ISSUE 15

JOURNAL OF WRITING + BUILDING

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ISSN 1526-2065
ISBN 978-0-9795159-5-8

Printed in the United States
by Flagship Printing

Cover image courtesy
Liam Young.
The metallic flake overlay UV
screen was printed by
New England Finishing
using alpha jewels glitter 376,
.004″ hex particles.

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SPECIAL THANKS
To those who supported the development and realization of this issue in various ways: ArchDaily, The Architectural League of New York, Center for Architecture, Andrew Colopy, Felicia Deonarine, Ed Eigen, Mark Goulthorpe, Guido Hartray, Abbott Lawrence, Ana Miljački, Pink Comma Gallery, Curtis Roth, Julio Salcedo-Fernandez, Ali Sandhu, Don Shillingburg, Fred Tang, Bob Beaupre, Mohsen Mostafavi, K. Michael Hays, Benjamin Profksy Jenny French, and Sarah Herda

Bad Architectures
Ashley Schafer, Amanda Reeser Lawrence, Irina Verona
January 2019

In the face of mounting social, ecological, political, and economic uncertainties, architects today seem ever more compelled to optimize, rationalize, and deliver solutions. The role of design is often framed (and measured) by the urgency to act and the aspiration to do "good."

Yet it would seem that, more often than not, this desire for good numbs the possibility for criticism, interpretation, and provocation. Do we still know how to question? Have good intentions and the desire for immediate efficacy stifled our ability to reject, to reimagine, and to call for revolution? How do we reckon with so much of today's reality characterized by sameness, degradation, scarcity, and the unoriginal? What would it mean to be radical rather than responsible, to be bad rather than good? These questions frame PRAXIS 15, "Bad Architectures." As we face global economic, social, and devastating environmental crises, we would argue that "good" is simply not good enough.

Yet our "bad" doesn't position itself as the opposite of good. Rather, we see bad as a nuanced practice of questioning rather than solving problems, provoking rather than ameliorating, pausing rather than reacting.

Perhaps as a predictable backlash to the theory-, form-, and digital-driven work of the nineties and noughties, sustainability, equity and even #metoo are today's predominant disciplinary narratives. Must they be? Community engagement, social justice, sustainability and gender equality must be an architectural mandate, but they do not drive an architectural discourse.

At a time when the response to the precarity of the present is met with ironically predictable responses, this last PRAXIS hopes to magnify the wrinkles, ripples, disturbances, disruptions, and glitches as opportunities and alternative ways of working or thinking. Perhaps the answers no longer lie in "interesting" projects but at the margins, in different modes of thinking and practice, perhaps even in failure, ugliness, and inefficiency. What might we learn from that which didn't work as planned?

Some of the work in this issue makes us uneasy, especially within the context of our early editorial intentions. We've included architects who are operating in places within the field that have conventionally been considered uninteresting, unworthy, trivial, extraneous, faulty, inferior, or grotesque. The shim—the small wedge of material that negotiates mistakes in measurement or tolerance—emerges as a place of exploration for First Office. Discrepancies between how a building is measured and how it is drawn constitutes research for Bryony Roberts. The drippy, excessive, unfashionable cacophony of the Rococo is an inspiration for Andrew Holder's contemporary installations. Tschumi's advertisements, as reframed by Sarah Rafson, LCLA's remade islands, and even engineer Erik Olsen's misty atmospheres perversely misuse materials, while Whitney Moon and Chris Grimley, Michael Kubo, and Mark Pasnik embrace failures.

To be clear, "Bad Architectures" is not a pessimistic position, or a critical project of negation, but rather a hopeful provocation. We find hope in architects who continue to challenge expected norms. We remain optimistic that by foregrounding these possibilities, we might create space for debate and discussion outside of or even within the predominance of neo-liberal and/or nationalist agendas. We find hope, too, in an ever increasing diversity of architects in the field—a geographic, ethnic, and gender diversity that this woman-led editorial team has quietly but consciously supported over the last twenty years. We find hope that we have offered a platform to voices that may open the field to different attentions, opportunities, and viewpoints.

As we were finalizing the issue we received news of Robert Venturi's passing and we were struck by the pertinence of the final article of our final issue: a text by Sam Jacob on the work of Venturi and Denise Scott Brown. Jacob's text is illustrated by a full-bleed photograph of Bob and Denise taken from the back seat of a car, framed by a windshield, ahead of which are signs and strip malls—what they would come to call "decorated sheds." It captures so perfectly how they asked us to look at the world differently: to embrace Americana and the imperfect, messy urbanity it produces. They opened the discipline to a more diverse set of interests and narratives long before it was politically correct to do so. The inclusivity they championed expanded ways of operating in the field, which deeply influenced us at PRAXIS along with generations of architects. We hope it does with the next, too.

March 31, 2017
Dear PRAXIS—

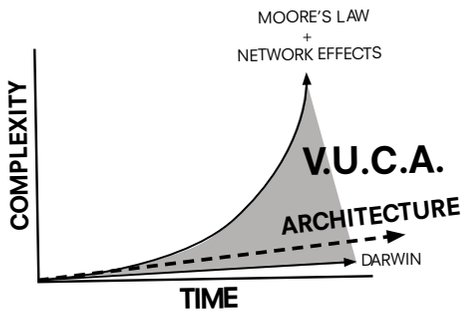
I wonder why it's taking so long to write such a short text, a letter even. I feel like I'm in slow motion trying to make sense of things. And it's only day 70…

Or maybe it's because I've sidelined writing as a practice in favor of just doing architecture and making things for the last ten years. In some way, a design practice seemed like an effective means to engage the world. For some reason, practice alone appears inadequate now and I feel the need to start writing as a way to directly bridge architectural thinking and the world at large. Writing seems like the most immediate way to stake a claim in the present situation. Architecture takes too long. My first letter was to the AIA. The second is a letter to you, PRAXIS. Don't read anything into that—it's just a coincidence since we actually started this conversation at the last Venice Biennale. You mentioned the last issue would be on "bad" architecture. Such a great topic. Such perfect timing for right now. I'm sure you had to rethink things a bit since January. Serendipitous, maybe, but necessary nonetheless when coming to terms with the definition of "bad" or let alone what constitutes "bad" architecture. What the hell does that mean?... It's so problematic.

Originally, I wanted to write about "bad practice." It was the first idea that popped into my head because there are many off-the-record stories of remarkable twentieth and twenty-first century firms that either went bankrupt—some multiple times—or managed to evade it through a miraculous bailout or indentured servitude. On further thought that topic seems a bit banal and readily explicable (service industry + idealism). I also realized that it would place me in a conversation with company I have always found a bit frustrating: architects who talk about a strategy of practice rather than a theory of architecture. We've noticed this tendency in New York, in which the financial and logistical pressures consume a large swath of mental bandwidth. It creates an illusion that your next mistake could be your last. To operate within these dynamic constraints is invigorating but can become overwhelming. Of course, this condition is not specific to New York but is arguably the generalized condition of 21st century neo-liberal capitalism. The military calls it V.U.C.A. (Volatility, Uncertainty, Complexity, and Ambiguity), describing the contemporary milieu of non-linear warfare, post-politics, post-rationality, etc.

Like other disciplines, architecture operates in a world where the market is the new sublime, an incomprehensible and illegible assemblage of power. For a profession that alleges to be ahead of the times in terms of intellectual proclivities, it is simultaneously behind the times in translating them into reality; Moore's Law and "network effects" push this temporal paradox to its limit. Now more than ever, to practice architecture is to master time and information as much as space.[1] I wonder what is the role of the architect when the primary medium of organizing people, information, and power is no longer the physical space in which we live. It's easy to argue that we still have bodies and, therefore, we still need space to organize ourselves, at least for the near future.

I'm increasingly interested in architecture as an aesthetic practice, which on a surface level may seem polarizing, even problematic, if one assumes aesthetics is narrowly defined by visual culture. The problem with this approach is that "taste" inevitably influences the conversation. How do we distinguish between "good" and "bad"? This polarity is an obvious wormhole. The only general rule of thumb is that what is considered "bad" now will probably be really good—or at least acceptable—in the future but it's just too weird to be considered at the present moment. I like Mark Fisher's definition of the "weird." He writes, "The weird is a particular kind of



Does architecture's slowness offer an inherent form of resistance?

1 "What does it mean to think of architecture as content management; that is, to think about the oldest and seemingly slowest medium—buildings—in terms taken from the newest and seemingly quickest medium, digital exchange?" Mark Wigley, *The Architecture of Content Management*, CLAB.

perturbation. It involves a sensation of wrongness: a weird entity or object is so strange that it makes us feel that it should not exist, or at least that it should not exist here."[2] And for this very reason, adopting an aesthetics of weirdness is a necessary step in actualizing new realities beyond our current nausea.[3] In order for things to get better, they first need to get a little weirder, maybe even weirder than they already are.

If we understand aesthetic practice as the making of sensible experiences to help us comprehend the world, there's a little more breathing room for both "good" and "bad." In fact, I would even argue that the architect's primary role is to make our world legible in ways that allow new connections between people, places, and things to emerge.[4] Architecture may not solve the ecological crisis or reverse social inequality, but can it increase the legibility of these situations either through its representational project or through actual built work? Is that enough? The Sisyphean task of continually revealing the world in new ways is more important than whether a building is "good or bad."

The task of newness may seem like a conundrum given the exponential acceleration of technology and that the market requires us to maintain a constant flow of consumption and production. Even in our increasingly rigorous regimes of resiliency and self-care, it's just too damn hard to keep up. It's not surprising that post-digital collage has replaced the photorealistic rendering as one of the preferred representation techniques of a current avant-garde.[5] I guess if we can't keep up with the flow, the safest move is to go backwards into the sanctuary of history and its stable referents.[6] Vitruvius' triad was a good start but things are way more complicated these days. The primary issues of the contemporary architect wouldn't be Function, Stability, Delight but maybe something like Collectivity, Legibility, and Weirdness.

This brings me to another realization: we are in a post-typological era of practice that is informed by the socio-technological generational shift of network culture. In other words, how we accumulate, produce, and disseminate architectural knowledge isn't directed toward specific typologies but rather towards the continual redefinition of one typology relative to another as part of the Internet of Things. Similar to the practice of continually learning new versions of software rather than becoming an expert in one version, architecture practice moves increasingly horizontally across emerging flows of knowledge with the occasional deep dive to become provisional experts relative to the situation at hand. (If you have a pre-internet practice, sorry, you're fucked.) To have a relevant practice is not about becoming really good at a few typologies anymore. Instead, we're learning that it's more about unlocking the latent potential in given situations (entrepreneur), making that legible to the relevant stakeholders (strategy/branding), and hybridizing typologies (hacker) to produce new social-aesthetic experiences (artist/shaman), while proving that architecture can solve real problems (engineer). Maybe this has always been the case for architectural practice, yet it feels different now. Maybe everything is just happening a lot faster.

When I first came to New York in 2002, the "paperless" studio had given way to a parametric kaleidoscope. The hangover from Deleuzian inspired formalism was still lingering as architecture was eagerly dissolving into the rapidly accelerating dynamics of globalism mapped out through incomprehensible diagrams of data flow. Nearly a hundred years after the beginning of the Futurist movement, it seems like the intoxication of speed has temporarily worn off again. The freedom to not move is as relevant as our desire for infinite mobility.[7] Wouldn't the ultimate luxury actually be to stay on Earth and not have to go to Mars? Meanwhile, the static architectural still life increasingly prevails as we retreat from hyper-complexity and constant flow in a search for new forms collectivity, legibility, and a bit of weirdness. Is architecture's stillness its most valuable virtue once again?

Sincerely,
Dominic Leong

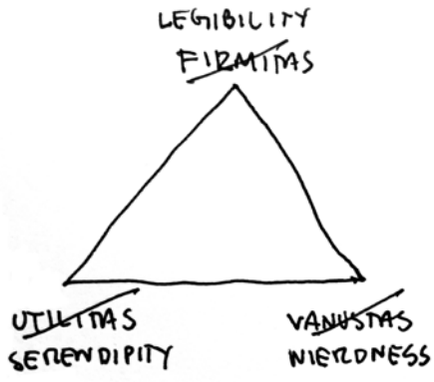
2 Mark Fisher, *The Weird and the Eerie*, Repeater Books, London, 2016, 15.

3 The weird is not a very scalable strategy by the way...at least we haven't figured out how to make weirdness appeal to a broad audience. Maybe it's just a matter of timing and surviving the lag time between now and the future. Timeless and elegance are definitely more scalable. If you can figure out how to package the weird into something that is timeless and elegant, you've got a win-win. Run with it.

4 "A distribution of the sensible therefore establishes at one and the same time something common that is shared and exclusive parts. This apportionment of parts and positions is based on a distribution of spaces, times, and forms of activity that determines the very manner in which something in common lends itself to participation and in what way various individuals have a part in this distribution." Jacques Ranciere, *The Politics of Aesthetics*, Continuum, New York, 2000, 12.

5 Sam Jacob, "Architecture Enters the Age of Post-Digital Drawing," *Metropolis Magazine*, 2017.

6 Today, history represents neither an oppressive past that modernism tried to discard nor a retrograde mind-set against unbridled progress. Instead, at a time when there is too much information and not enough attention—when a general collective amnesia perpetuates a state of eternal presentness—understanding the channels through which history moves and is shaped by architecture is more important than ever. *Chicago Architecture Biennial 2017.*



7 The current refugee crisis is a reminder that freedom is also exercised by not having to move but by the freedom to stay put.

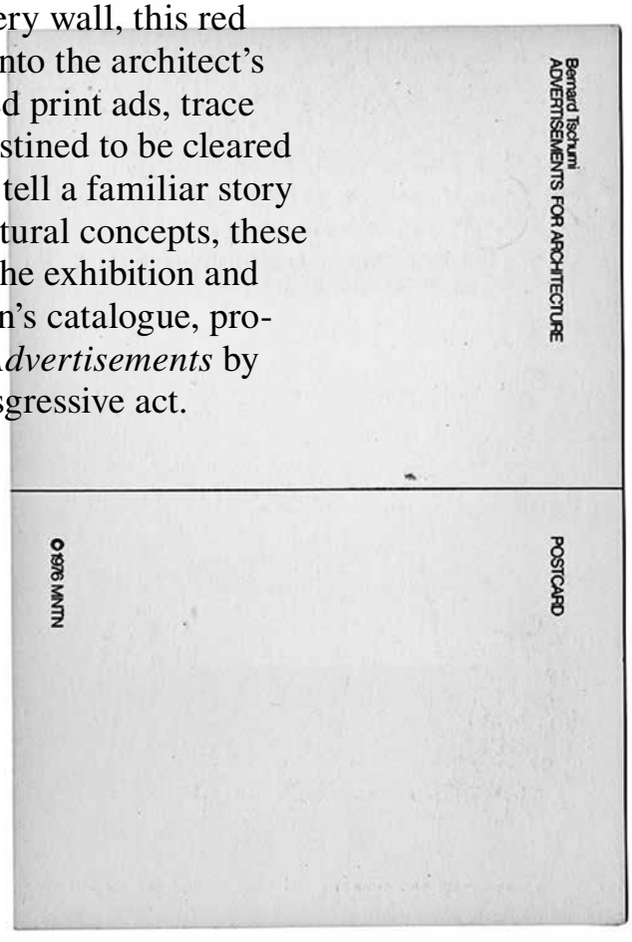
ROPES & RULES:

PERFORMANCE & PROCESS IN BERNARD TSCHUMI'S *ADVERTISEMENTS FOR ARCHITECTURE*

— SARAH RAFSON

A series of square red tables evoking the *folies* of Paris's Parc de la Villette punctuated the south gallery of the Centre Pompidou at Bernard Tschumi's 2014 retrospective exhibition.[1] Each table displayed previously unseen process work behind several key projects that helped establish Tschumi's reputation as an architect-provocateur. Among them, one table presented the material behind the production of *Advertisements for Architecture* (1976–78), Tschumi's somewhat overlooked but still resonant incursion into the world of print publicity. In contrast to the refined, more familiar prints of the *Advertisements* framed nearby on the gallery wall, this red table offered what seemed like a glimpse into the architect's desk mid-project—scattered with annotated print ads, trace paper sketches, and magazine clippings destined to be cleared away. While the wall-hung finished works tell a familiar story about Tschumi's engagement with architectural concepts, these messy ephemeral documents, included in the exhibition and published for the first time in the exhibition's catalogue, provide a new lens through which to see the *Advertisements* by illuminating the process of crafting a transgressive act.

1 Elements of this exhibition, including the *Advertisements*, travelled to the Swiss Architecture Museum in Basel (2015) and the Power Station of Art in Shanghai (2016).



right: While the original *Advertisements* were initially published in print, a selection was reformatted as postcards and, according to Tschumi, sold "amazingly well," at Unlimited, a store in SoHo.

The first *Advertisements* were published in *Oppositions 7* in 1976, alongside "Architecture and Transgression," after Tschumi convinced the editors to run the advertisements as full-page illustrations to accompany his essay. "After all," Tschumi later wrote, "popular magazines are full of ads that try to sell everything from Coca-Cola to waterproofing." Tschumi's *Advertisements* aimed to borrow the same strategies to "trigger desire for architecture."[2] The *Advertisements* would also accompany his articles in *Architectural Design* and *Art Forum*, and appear in a standalone piece in the Japanese magazine *Space Design*.[3] By placing bold imagery and bold slogans against a flat black background, Tschumi's campaign was easily recognizable. Each *Advertisement* addressed a different architectural polemic. Tschumi's slogans countered gentile notions of architecture by glorifying decay, rot, irrationality, eroticism, restraints, and the superficiality of building. In doing so, the *Advertisements* reflect an ethos of questioning and provocation that took hold post-1968, one "that doesn't necessarily exist today," Tschumi recently stated. At the time, Tschumi was one of several artists and architects trying to avoid creating standard artworks, instead challenging "the received idea of what art is, what culture is."[4]

Some *Advertisements* referenced ideas in the articles they accompanied—as the "Ropes and Rules" *Advertisement* illustrated "The Pleasure of Architecture"—while others circulated independently. At times the ad copy addressed the viewer in the second person—"To really appreciate architecture, you may even have to commit a murder," for example. In other cases, the *Advertisements* were more abstract. "Masks: Architecture simulates and dissimulates" shows an image of Tschumi's face obscured by a mask and a projection of a Jakov Tchernikov drawing (Masks).[5] The only *Advertisement* that was never published or shown, "eROTic", shows an airplane exploding in a terrorist attack with the slogan, "(the 'rotten' place) where glass meets mold." The different *Advertisements* in the campaign show the range of taboos Tschumi was testing. As he later admitted, with "eROTic" he "realized you could stretch it only so far."[6]

2 Bernard Tschumi, *Architecture Concepts: Red is Not A Color* (New York: Rizzoli, 2012), 42.

3 Bernard Tschumi, "Architecture and Transgression," *Oppositions*, no. 7 (Winter 1976): 63-78; "The Pleasure of Architecture: Its Function as an Instrument of Socio-Cultural Change," *Architectural Design 47*, no. 3 (March 1977): 214-218; "Advertisements for Architecture," *Space Design* (February 1980): np.; "Architecture and Limits (1)," *Artforum 19*, no. 4 (December 1980): 36-44.

4 Bernard Tschumi, phone interview with author, June 6, 2017.

5 Beatriz Colomina and Craig Buckley, "Interview with Bernard Tschumi," in *Clip, Stamp, Fold: The Radical Architecture of Little Magazines, 196X to 197X* (New York: Actar, 2006), 480.

6 Ibid, 480.

7 Ibid, 479.

8 Bernard Tschumi, phone interview with author, June 6, 2017.

9 Ana Miljački, "The Logic of the Critical and the Dangers of 'Recuperation', or, Whatever Happened to the Critical Promise of Tschumi's *Advertisements for Architecture*?" in *Critical Tools: International Colloquium on Architecture and Cities #3*, eds. Hilde Heynen, Jean-Louis Genard and Tahl Kaminer (Brussels: NeTHCA, 2011), 143.

10 Tschumi, "Architecture and Transgression," 73.

11 Colomina and Buckley, 480.

The mainstream promotional strategies Tschumi ironically adopted early in the campaign soon began to pay off, solidifying the *Advertisements*' standing in art and architectural circles. In 1978, two years after the *Advertisements* first appeared in publication, the Cibachrome "originals" were displayed at full scale at the Artists Space in New York, and then at the AA School in London in 1979. MOMA PS1 also printed one as a poster,[7] and Tschumi himself says that a selection of the Advertisements sold "amazingly well" as postcards at Unlimited, a store in SoHo.[8] Today, the *Advertisements* are held in museum collections, published as figures in architectural publications, and shared on Pinterest Boards—a far cry from their more radical or unexpected original contexts. What has been lost in the translation decades later?

Ana Miljački notes that any reading of Tschumi's work in terms of contravention must start with the *Advertisements* because they "are among the first manifestation of the theme of transgression in Tschumi's work."[9] Inspired by George Bataille's writings, at the time of their making, the images and poetic copy of the *Advertisements* probed architecture's discomfort with death, decay, and "the aspects of sensuality that it qualifies as obscene."[10] In the *Advertisements* themselves, particularly "Ropes and Rules," this initial transgressive act is equated with the pleasure derived from violating architecture's taboos. The bound and gagged body, a photograph Tschumi took himself during a performance he organized with RoseLee Goldberg in 1975 titled "Questions of Space,"[11] also reveals a critical link with the conceptual art of the 1970s. While this image is striking, we may wonder if the work's transgressive power is diminished when it is reproduced as captioned figure, as it appears here and in so many publications on contemporary architectural history and theory. In contrast, the immediacy of the process material accentuates the performative nature of Tschumi's project. After all, the *Advertisements* were designed to provoke, polemicize, and seduce, but their meaning inevitably shifts over time as they are subsumed into the annals of architectural history. To borrow a phrase from the *Advertisement* that opens "Architecture and Transgression," the project itself seems to be "an exquisitely perverse act that never lasts."

The most architectural thing about this building is the state of decay in which it is.

Architecture only survives where it negates the form that society expects of it. Where it negates itself by transgressing the limits that history has set for it.

Transgression. An exquisitely perverse act that never lasts. And like a caress is almost impossible to resist.

Look at it this way: The most excessive passion

you may even need

Sensuality has been known to overcome even Desire most rational of buildings.

Pleasure of architecture.

"Streetcar Named perfectly simulated the movement towards something missing, towards absence. Each fragment was aimed at seduction. Yet every time it was dissolved. Every time was substituted for another fragment. Only desire remained constant

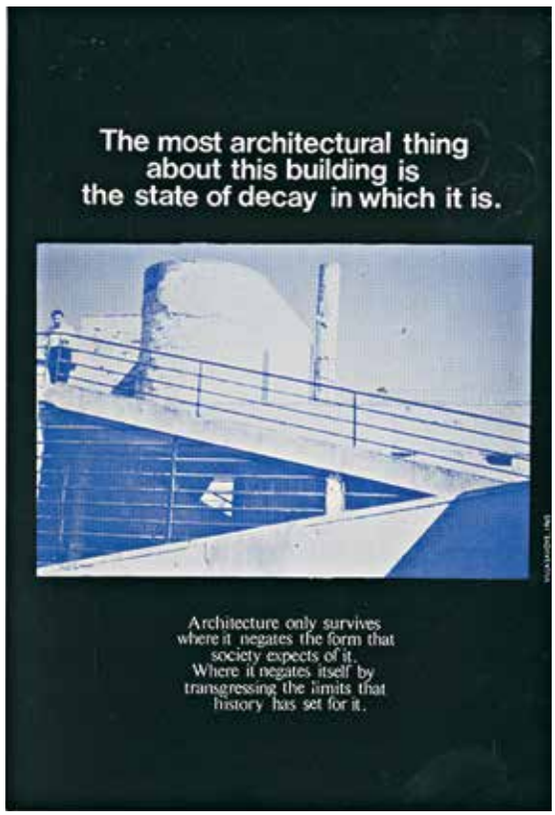
Rules and Ropes

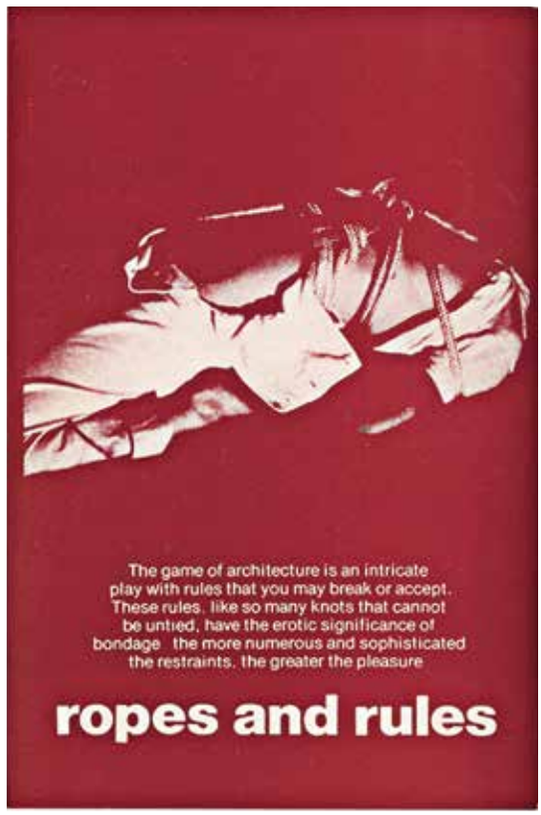
ropes and rules

Architecture is the ultimate erotic act. Carry it to excess and it will reveal both the traces of reason and the sensual experience of space. Simultaneously.

to commit a murder.

To appreciate architecture these days, you may even need to commit a murder



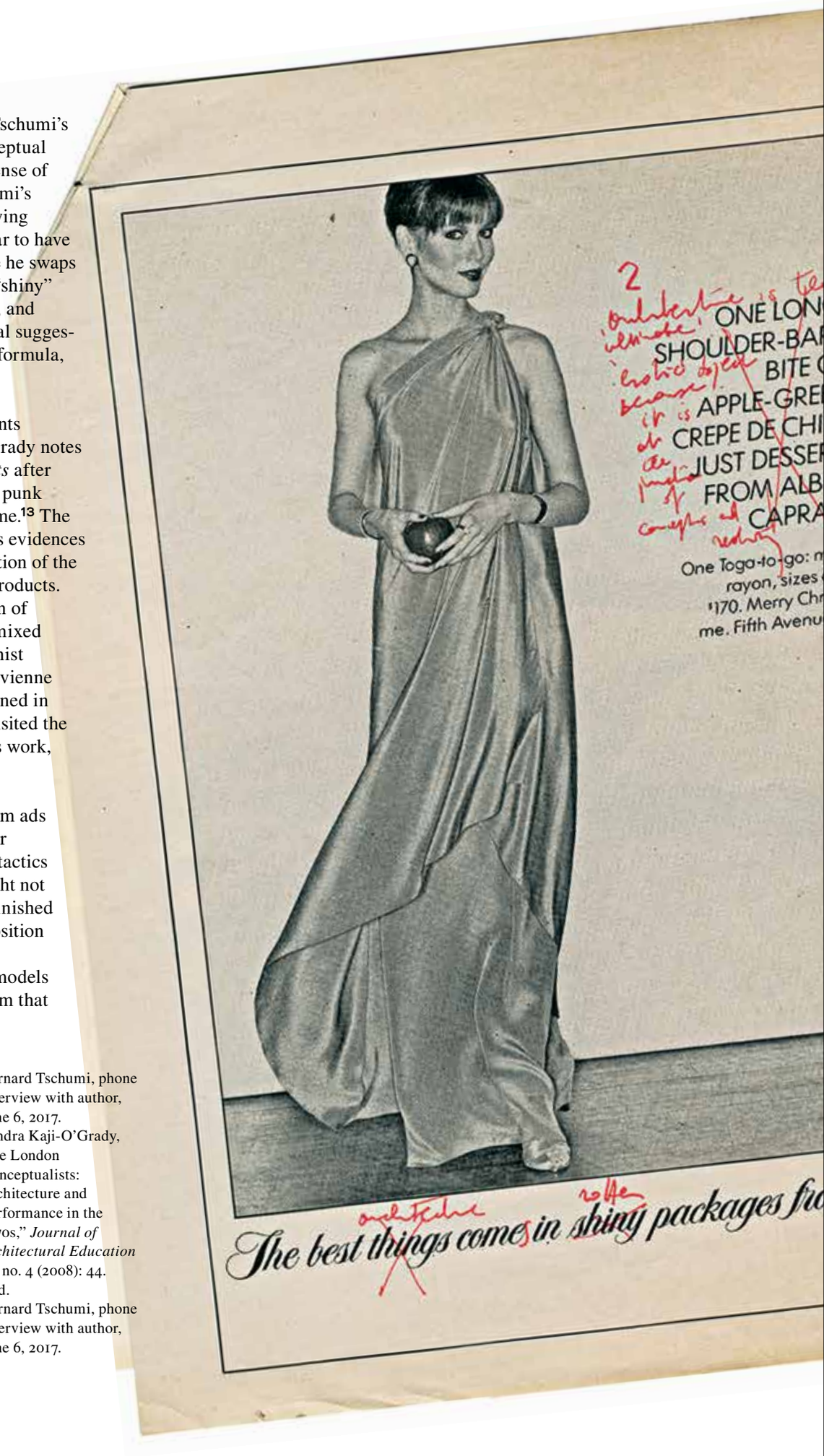


DESIRE

The graphic and material illustrations of Tschumi's thought process (re)connect us to the conceptual underpinnings of the project. Lending a sense of immediacy to his technique, we see Tschumi's initial ideas scrawled over ad copy, borrowing "lingo," as he puts it, from pages that appear to have been eagerly ripped from magazines. Here he swaps the word "things" for "architecture," and "shiny" for "rotten" in a Saks Fifth Avenue slogan, and renders Coty's slick copy into a paradoxical suggestion: "If you want to follow architecture's formula, break it."[12]

The process work also reveals the precedents Tschumi used as models. Sandra Kaji-O'Grady notes that Tschumi developed the *Advertisements* after formative years in London, where English punk subculture was the "sound track" of the time.[13] The crossed-out copy in the process documents evidences the *Advertisements*' counter cultural rejection of the bourgeois more clearly than the finished products. For Kaji-O'Grady, Tschumi's appropriation of popular slogans recalls the "T-shirts that mixed sexual taboos with Situationist and Anarchist slogans," which Malcolm McLaren and Vivienne Westwood sold in their shop, SEX, that opened in London in 1974.[14] While Tschumi never visited the Chelsea shop, he was aware of Westwood's work, and the similarities are apparent.[15]

The fact that Tschumi drew inspiration from ads with models sensually gazing towards their spectator reveals his interest in deploying tactics of graphic seduction—something that might not always be apparent in the imagery of the finished *Advertisements*, yet puts the viewer in a position of the voyeur or interloper. While the final *Advertisements* eschew the glamor of the models pictured, these sketches reveal the eroticism that underlies Tschumi's intention.



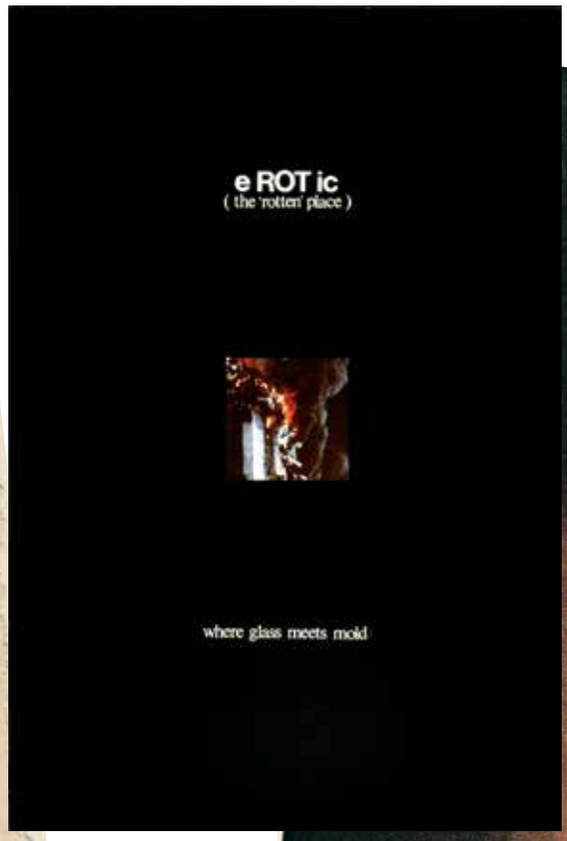
12 Bernard Tschumi, phone interview with author, June 6, 2017.

13 Sandra Kaji-O'Grady, "The London Conceptualists: Architecture and Performance in the 1970s," *Journal of Architectural Education 61*, no. 4 (2008): 44.

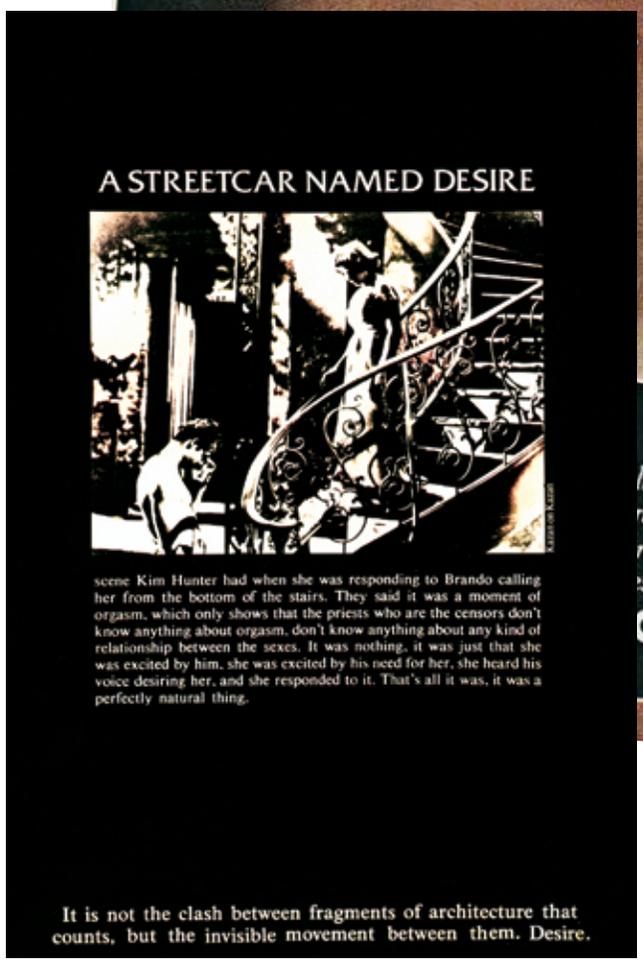
14 Ibid.

15 Bernard Tschumi, phone interview with author, June 6, 2017.


Saks Fifth Avenue


e ROT ic
(the 'rotten' place)
where glass meets mold

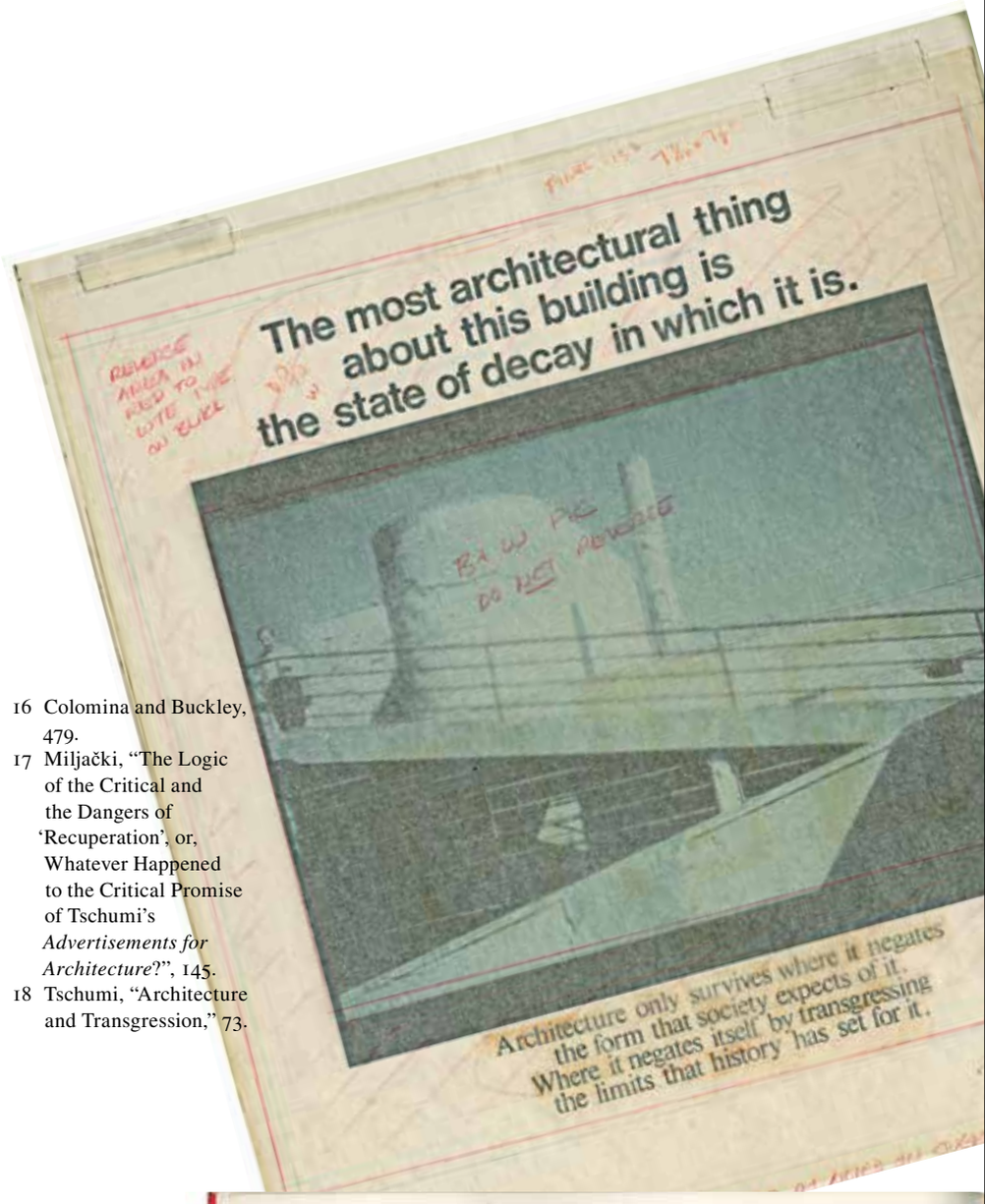

to capture someone's attention,
whisper.
OTY

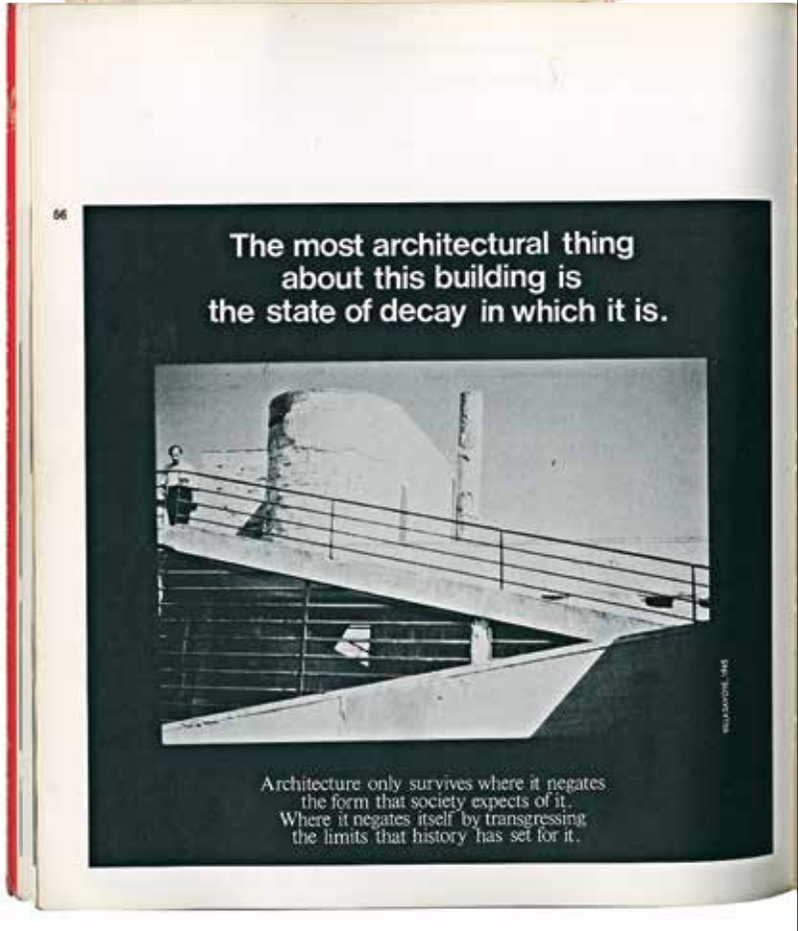

A STREETCAR NAMED DESIRE
scene Kim Hunter had when she was responding to Brando calling her from the bottom of the stairs. They said it was a moment of orgasm, which only shows that the priests who are the censors don't know anything about orgasm, don't know anything about any kind of relationship between the sexes. It was nothing, it was just that she was excited by him, she was excited by his need for her, she heard his voice desiring her, and she responded to it. That's all it was, it was a perfectly natural thing.
It is not the clash between fragments of architecture that counts, but the invisible movement between them. Desire.

PERFORMANCE

The first *Advertisements* Tschumi made, which appeared as a pair in *Oppositions 7*, were "The most architectural thing about this building is the state of decay in which it is" and "Sensuality has been known to overcome even the most rational of buildings."[16] Tschumi was hardly the first architect to take up the subject of advertising—as Miljački notes, the Russian Constructivists, CIAM, and Le Corbusier all studied advertisements. Yet Tschumi was uniquely "interested in the possibility of persuading his audience that his activity as an agitator was architectural."[17] Utilizing a modernist icon, like Le Corbusier, was one way of transgressing architectural norms. In a draft of the *Advertisement*, Tschumi writes: "This is the Villa Savoye. It was never so beautiful than [sic] when it was falling apart." Written fifty years after *Towards A New Architecture*, nothing countered the "new spirit" that had taken hold of the architectural establishment quite like an image of the plaster crumbling from the walls of the Villa Savoye.

Considering that Le Corbusier's 1927 manifesto dedicated a chapter to discussing the automobile, it is fitting to learn through these sketches that Tschumi directly transposed this *Advertisement*—the spacing, composition, and syntax—from an ad selling the 1977 Cadillac Eldorado. Le Corbusier heralded the automobile as the emblem of modernity in his mass-producible "Citrohan" houses, and cars often appear in the marketing of his finished works, as in the photos of the Villa Stein at Garches. In stark contrast to the gleaming cars in advertisements that appear in Le Corbusier's essays, Tschumi used a photograph from the AA slide library in this Advertisement, which evoked his own experience of visiting *the* Villa Savoye in 1965 where he found it "stinking of urine, smeared with excrement, and covered with obscene graffiti."[18] After noting the loss of sensuality and materiality in the Villa Savoye, it was eventually restored to its pristine state; Tschumi here challenges Le Corbusier using his own tools.





16 Colomina and Buckley, 479.

17 Miljački, "The Logic of the Critical and the Dangers of 'Recuperation', or, Whatever Happened to the Critical Promise of Tschumi's *Advertisements for Architecture*?", 145.

18 Tschumi, "Architecture and Transgression," 73.

be reached frontally. These things require analogies, metaph
or any other 'round-about' ways in order to be grasped.
instance, it is through language that psychoanalysis
the unconscious. Like a mask, language hints at s
behind itself. It may hide it, but implies it
time.

Architecture is the ultimate erotic act
and it will reveal both the traces of r
experience of space. Simultaneously.

transgression;

This is the Villa Savoye.
It was never so beautiful than when it was falling apart,
when rot and decay transgressed its ~~xxxxx~~ original purity.

Front-Wheel Drive. Provides impressive traction and directional stability.

Automatic Clima
Redesigned for 1977.
works only when nece

4. contradicts.
"erotic" capacity only wherever it negates itself, where it transcends its paradoxical nature by negating the form that society expects of it.
In other words, it is not a matter

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ety expects of it. In other words, it is not a matter

This is the Villa Savoye.
It was never so beautiful than when it was falling apart,
when rot and decay transgressed its original purity.

This is the 1977 Eldorado.

A car of impressive roadability. Rain. Sleet. Snow. That's when you really appreciate the pulling action of Eldorado's Front-Wheel Drive—in combination with Automatic Level Control, Variable Ratio Power Steering and Four-Wheel Disc Brakes. Engineered to pull you through. Eldorado 1977. At the summit of the car maker's craft.

Eldorado BY CADILLAC

Architecture

Transgress
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One issue
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theory is
on an analysis of historical
the twenties' architects conceived it). From the
des Beaux-Arts" to "computer-aided design," from
functionalism to typologies, from the accepted rules to the
invented ones, there is a comprehensive and ever-present
network of protective precepts. However, my purpose here
is not to criticize the notion of rules, nor to propose new
ones. On the contrary, the present article will attempt to
demonstrate that transgression is a whole, of which ar-
chitectural rules are merely one part.

Before speaking about transgression, however, it is first
necessary to recall the paradoxical relationship between
architecture as a product of the mind, as a conceptual and
dematerialised discipline, and architecture as the sensual
experience of space and as a spatial praxis.

Part One: The Paradox of Architecture

If one has a passion for the absolute that cannot be healed,
there is no other way out than to constantly contradict
oneself and to reconcile opposite extremes.
Frederic Schlegel, quoted by Novalis in Blütenstaub

The very fact that something is written here makes it part
of the field of architectural representation. Whether I use
words, plans, or pictures, each page of this publication
could be likened to the mythological world of Death: that is,
it benefits from the privilege of extra-territoriality; it is
outside architecture; it is outside the reality of space.

cing a re
prevalent architectural attitu
political implications of the production of bu
abundantly emphasized in the years following the 1968
crisis, the subsequent Hegelian reaction was revealing: "ar-
chitecture is whatever in a building does not point to util-
ity,"[1] and of course, by extension, whatever cannot be the
mere three-dimensional projection of ruling socio-economic
structures, as theorists of urban politics were then main-
taining. This emphasis on what Hegel called the "artistic
supplement added to the simple building"—that is, on the
immaterial quality that made it "architectural"—was no
return to the old dichotomy between technology and cul-
tural values. On the contrary, it set an ambiguous prece-
dent for those "radical" architects who did not regard the
constructed building as the sole and inevitable aim of their
activity. Initially intended as an ideological means of stress-
ing architectural "avant-garde attitudes" and refusing
capitalist constraints, the work of such "radical" Italian or
Austrian groups of the late sixties was an attempt to de-
materialize architecture into the realm of concepts.[2] The
subsequent statement "everything is architecture" had
more affinities with conceptual art than with all-inclusive
eclecticism. But if everything was architecture, by virtue of
the architect's decision, what distinguished architecture
from any other human activity?

RULES

On one level, the process of fabricating the *Advertisements* was straightforward. As Tschumi describes it: "Starting with the sentence structure of a given advertisement, words were replaced by others with architectural connotations. The new texts were then juxtaposed with images that would amplify their meanings."[19] The typographic experiments used adhesive Letraset type, standard to magazine publishing at the time, with the primary slogan set in the same heavy Helvetica. Just as he adapted the syntax and grammar of popular advertisements, Tschumi utilized the same graphic techniques employed in popular media. Tschumi recently described that through the *Advertisements* he intended "to reach a slightly larger audience" for his ideas than his writing might otherwise, "so I sought to use the language that was the most understandable by that audience."[20]

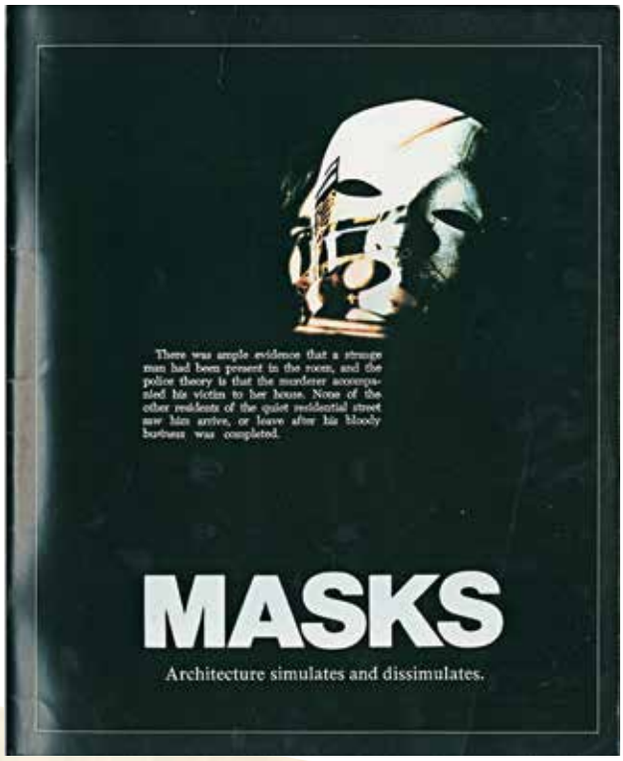
These typographic tests suggest Tschumi's careful calibration of irony in every aspect of the *Advertisements*. The testing of popular fonts with the Gothic "Rules and Ropes," as well as the experiments with italics in "Transgression," belie the philosophical underpinnings of the slogans, the literary and film references they encoded from Jorge Luis Borges's "The Garden of the Forking Paths" and popular films like "A Streetcar Named Desire." Tschumi points to Georges Bataille as a source for his interest in pleasure and excess—particularly Bataille's 1962 book titled *Eroticism: Death & Sensuality*. "Transgression: An exquisitely perverse act that never lasts" recalls Foucault's reading of Bataille in "A Preface to Transgression": "transgression incessantly crosses and recrosses a line that closes up behind it in a wave of extremely short duration."[21] Similarly, the cut-and-paste letters suggest a play within the "rules" Tschumi devised for the format of the *Advertisements*, a process that perhaps anticipates his poststructuralist engagements with Jacques Derrida that would follow in the mid-1980s. In his 1986 essay "Point de Folie," for example, Derrida examines Tschumi's use of order and madness (folie) in the Parc de La Villette.[22]

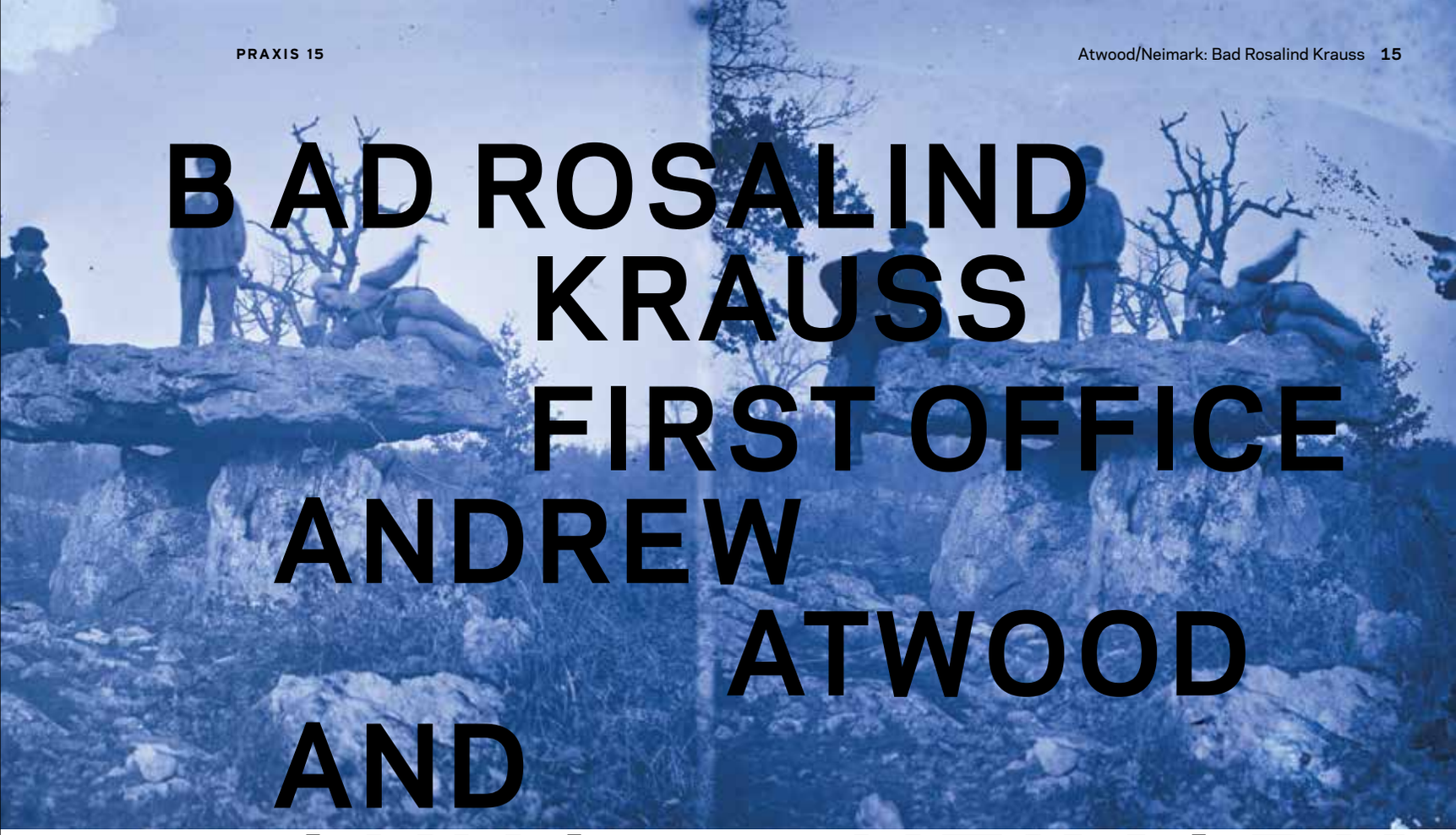
19 Bernard Tschumi, "Reference Tables," in *Bernard Tschumi: Architecture: Concept & Notation* (Paris: Editions Du Centre Pompidou, 2014), 221.

20 Bernard Tschumi, interview with Mark Terra-Salomão, in "Pittsburgh Transcripts," *Interpunct 2* (2015): 85.

21 Michel Foucault, "A Preface to Transgression," in *Aesthetics, Method, and Epistemology, ed. James D. Faubion* (The New Press: New York, 1998), 73.

22 Jacques Derrida, "Point de Folie—Maintenant l'architecture," in *La Case Vide: La Villette* (London, Architectural Association, 1986), 65-75.





BAD ROSALIND KRAUSS

FIRST OFFICE
ANDREW ATWOOD
AND
ANNA NEIMARK

RUDE FORMS Formal analysis can give architecture conceptual transparency through mathematical precision, and thus, a claim to truth. During most of the twentieth century, modernists rooted their work in classical precedent with this formula. Consider for a moment some stuff that cannot readily be explained in this way: Stonehenge, leopard spots, a mountain in the Himalayas. These things seemingly have nothing in common until you begin to draw them. Laid out against a grid or a set of coordinates, they come in and out of focus. They tend to misbehave as they are subjected to the interpretive frameworks of formal analysis; they only ever occupy geometrical rules informally. They cannot reduce to any clear diagram, massing, or algorithm. They align at times, but, more typically, they deviate from norms. Their imperfections—high tolerance, low resolution, dull finish—are rather difficult to pin down. To us, these case studies reveal the potential for constructing a set of internally inconsistent things. To do so, we follow a technique we call "informal analysis," adding thick coats of paint, butted corners, and shimmed details whenever necessary to bridge the gaps. Perhaps you'll say that paint, butts, and shims, alongside gaps, point toward bad craft in architecture. Yet we have grown fond of this sort of badness, and hope to expand on its appeal here through the work done on some rude stone monuments from the Neolithic period called dolmens.[1] These prehistoric structures, made of rude rather than hewn stones, gave us the idea to call our informally assembled analytical models: *Rude Forms.*

Dolmens date from around 4000–3000 BCE. We don't know much about them despite many efforts to uncover a logic for their being, their utility, or social role. What we do know—or we imagine we know—comes from simply looking at the stone remains and interpreting them. It is difficult to call them

1 James Fergusson popularized the term "rude stone monuments" with the title of his book, *Rude Stone Monuments in All Countries: Their Age and Uses*, (London: John Murray, 1872). Rude stones, which were not cut or finished smoothly, are opposed to hewn stones, which are polished. Fergusson described rude stone monuments as belonging to several categories including *menhirs*, or freestanding erect stones, *circles*, such as the most famous Stonehenge, and *dolmens*, compositions of stones that formed a chamber. These prehistoric formations can be dated to roughly 5,000-3,000 BCE and were possibly rude by default. Tools from the Stone Age did not allow for a hewn stone. The debate between the use of hewn and unhewn stone ensued in documented historic time. When Jews were fleeing Egypt, God directed Moses: "You need make me only an altar of earth… But if you make for me an altar of stone, do not build it of hewn stones; for if you use a chisel upon it you profane it." Exodus: 20.25, *The Harper Collins Study Bible* (London: Harper Collins, 1993), p.177.

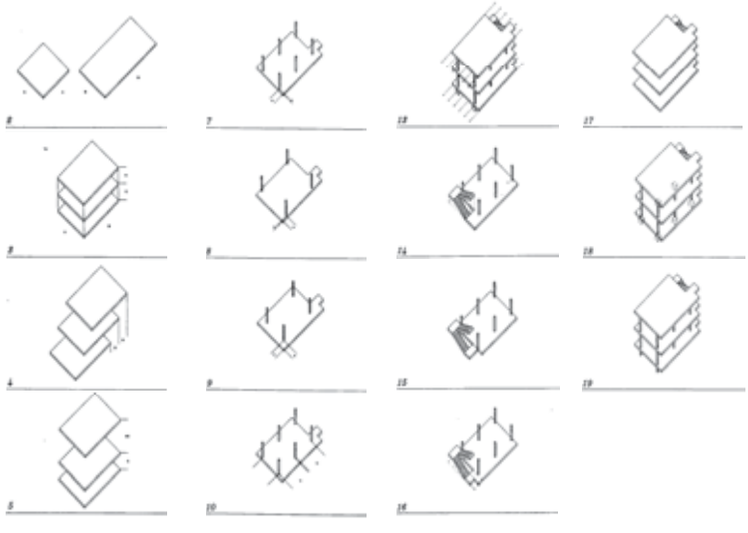
buildings because their monumental parts do not produce distinctly habitable interiors; the inner rooms appear too small to be occupied in any way we know how to live. If they are not clear to architecture, perhaps they could be understood through anthropology, archaeology, or astronomy. It is not surprising that there are various interpretations for dolmens since they preexist any kind of disciplinary norms. They are not only architecture, not just art, not merely tools, not purely landscape. We don't quite know what they are. One thing is certain: dolmens produce hesitation in our ability to read them with any degree of certainty. Despite all the ambiguity, dolmens are dolmens and you know one when you see one.

We like to think that a dolmen can be to us now what the Maison Dom-ino was to Peter Eisenman in the 1970s. In his hands, Corb's perspective sketch became a projected model of self-referential form. When Eisenman deduced a syntax from its parts, his essay—"Aspects of Modernism"—became a teaching tool for the analytical techniques of naming and drawing. In many ways, dolmens are similar to the Dom-ino. A dolmen's form can be described through a set of structural bays, composed of several upright stones that take the place of columns to hold up a colossal capstone, a one-story ruin of a post-and-beam construction system. Again, similar to the Dom-ino, the bay here is directional, or, to be more precise, longitudinal. Furthermore, it is capped by one single plate—the capstone—which extends beyond the columnar edge, not unlike the slab of the Dom-ino. Although the bottom is not raised on footings—it is, quite literally, the ground—it nonetheless implies a sense of the interior within a weak perimeter, with the entry usually located at the short end. One essential difference from the Dom-ino is that a dolmen is not authored; it is not of our time, nor does an original drawing of any such construction exist. And unlike the Dom-ino, which serves as a prototype for a variety of buildings, a dolmen is not yet a model for further architectural pursuits. Rather, there are many specimens, all different and unique, making it difficult to claim any one dolmen as an ideal from which to measure the rest. We would even stop short of calling it a precedent; it merely precedes.

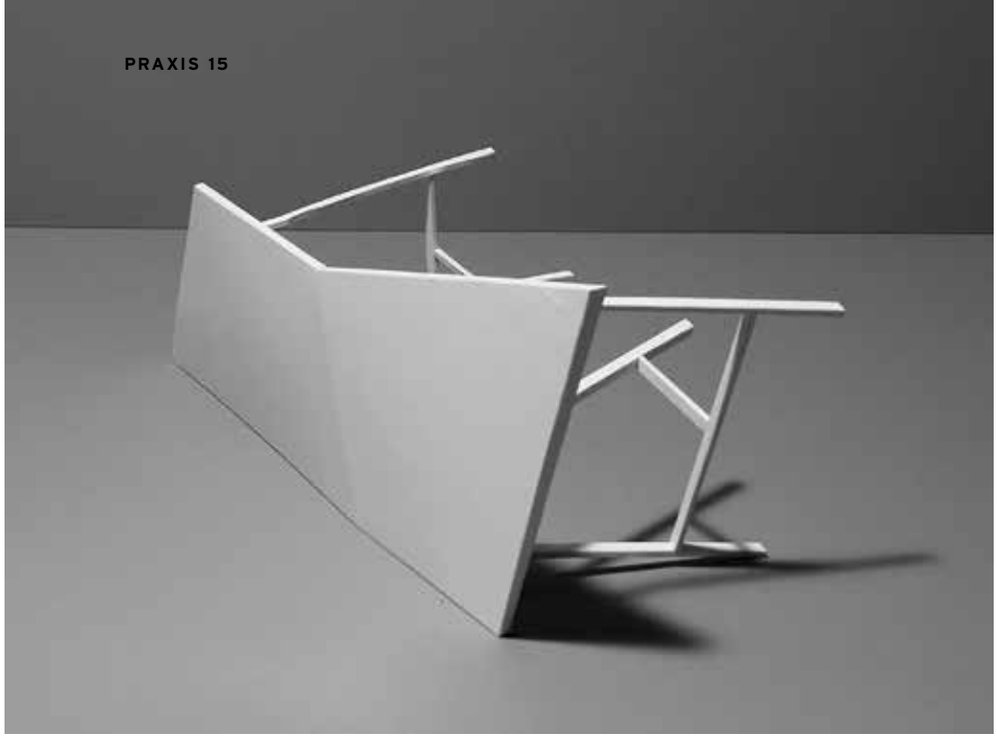
Nonetheless, dolmens offer the possibility for rude parts to construct a sort-of-syntax, which could, in turn, pose new directions for architectural pedagogy. Of course, the Dom-ino could produce anxiety. But it is quite a relief to come across a dolmen. It is less neat as an argument for formal precision and less clean as an axonometric of analytical logic. A dolmen's resolution is low, not high. Its joints are butted, not mitered. Its gaps are shimmed, not sculpted. Its stones are left rude, not hewn. Its ordinary formation alludes to architecture with forgotten narratives, eroded tectonics, and muddled grammar; it seems to be in conversation with no one in particular, and so it is agreeable to everyone. The stones, albeit directional, are just stones: not carved, not polished, not detailed. They stay in place by friction and gravity, leaning on one other for support. Perhaps unexpectedly, their rude forms seem to comfort us now—all of us, children included.

With these thoughts in mind, we proposed new dolmens for New York, Los Angeles, and Virginia to bring attention to a moment that is not our own in an attempt to close the gap between modern and prehistoric time. Whether the megaliths enter our contemporary consciousness or we lose our sense of timeliness, moving closer to the Stone Age is not all that important. Rather, it is important to feel a release from the present, to feel comfortable and at home now and then.

below: Peter Eisenman, Formal Analysis of Le Corbusier's Maison Dom-ino, from "Aspects of Modernism: Maison Dom-ino and the Self-Referenctial Sign."



POSSIBLE TA BLE

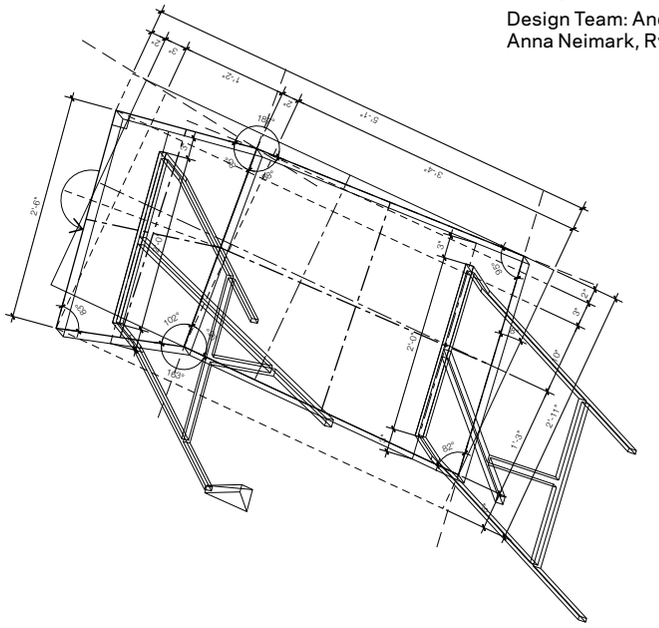


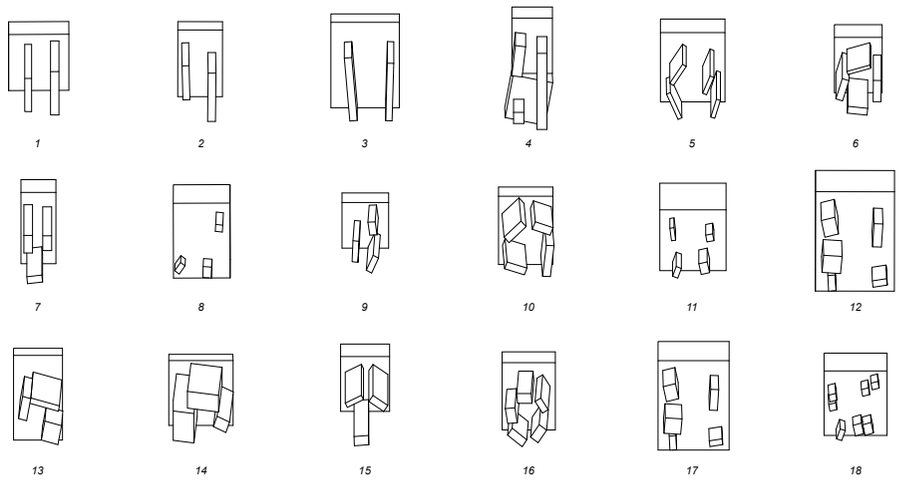
Possible Mediums Exhibition: Taubman College, University of Michigan, Ann Arbor, MI, January 2014

Design Team: Andrew Atwood, Anna Neimark, Ryan Roark

First an interjection from the editors: We saw the Possible Table as a possible precursor to the later Dolmen project series; the table embraces uncertainty, ambiguity and instability. Questioning conventions of contemporary representation and the relationship between model and image, the Possible Table (2014) considers the term rendering not as the outcome of computer graphics but as an application of physical media (typically charcoal, pencil, ink or watercolor) to transform a two-dimensional drawing into an image that creates the dimensional figure.

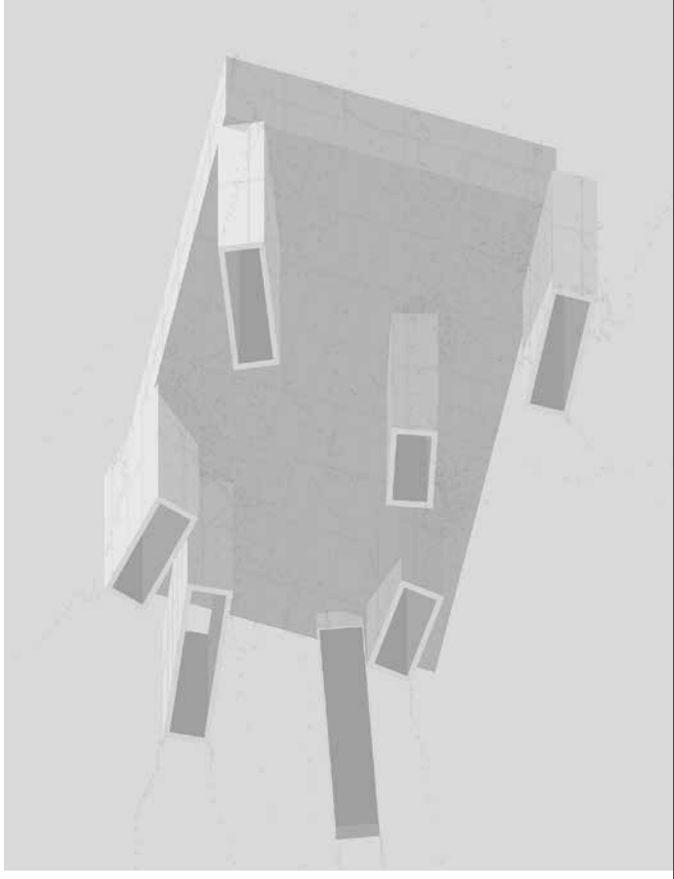
First Office constructed the table (as a three-dimensional object) from a drawing of a rendering of an image of a normative table projected onto a model of the table.





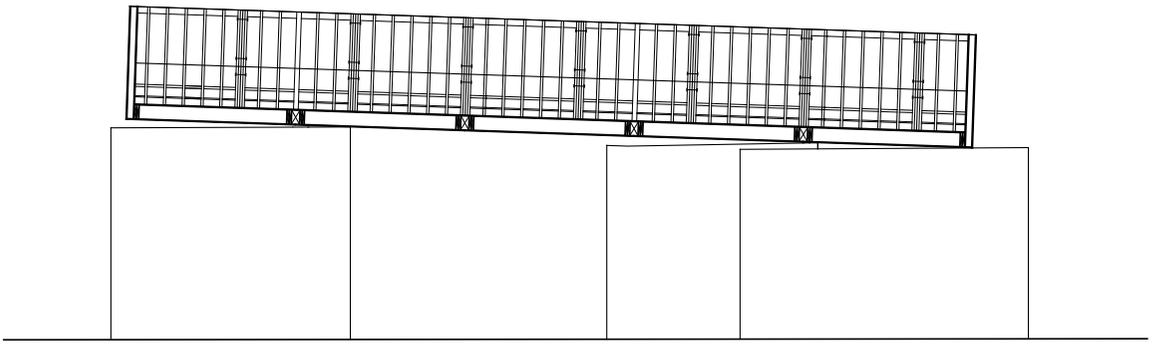
left: Dolmens Ordered by Leg Count: 1 Gochang County Dolmen, North Jeolla, South Korea; 2 Gal Massa Dolmen, Sri Lanka; 3 Dolmen du Djebel Gorra, Tunisia; 4 Domen Pentre Ifan, Wales, Pembrokeshire; 5 Dolmen at Kidston Lake, Canada; 6 Kilclooney Dolmen, Ireland, Donegal; 7 Dolmen dels Tres Peus, Spain; 8 Dolmen della Chianca, Bisceglie, Italy; 9 Dolmen Puig de Caneres, Cataluna, Spain; 10 Dolmen de Vaour, France; 11 Dolmen de Bagnol, Limousin, France; 12 Dolmen Bachwen, Gwynedd, Wales; 13 Dolmen of Sindh, Pakistan; 14 Dolmen at Gwangju, South Korea; 15 Chokahatu Dolmen, India; 16 Dolmen de la Piedra Gentil, Guatemala; 17 Dolmen de Menga, Spain; 18 Brownhill Dolmen in North Salem, New York, USA.

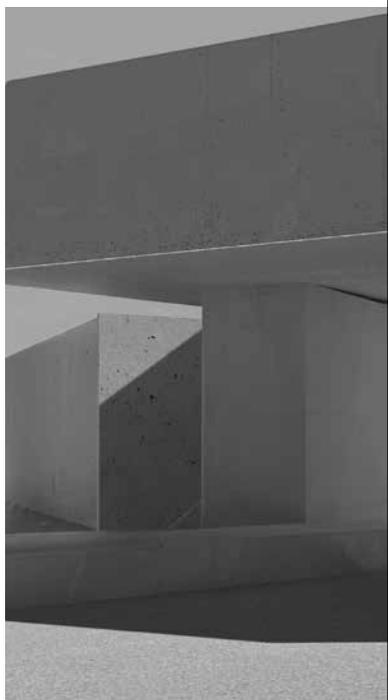
NEW YO RK DOLMEN



The New York Dolmen is the first one we designed and the only one we did not build. It is large, too big to be contained by MOMA PS1's courtyard. It hovers uncomfortably above the yard's walls in the site. We use the word "hover" even though it obviously does not fly. Actually, the dolmen's capstone just misses the wall by a few inches so that its weight is distributed to the legs. Maybe this helps maintain the appearance of its anachronism, as if it's from *outer time*—if that's even a thing. Its primitive monumental parts are out of scale with our bodies and outside of our passions.

But it also hovers because all the elements seem to be unstable, teetering toward collapse. The edges of every box are rendered dark with a cloud of nails that eats away at the sharp corners. Perhaps the tilting forms held together by rusticating details are best observed from below where the boxes lean informally one against the other. The capstone itself is set at a two percent slope to the ground and tilts toward the museum's entry. This out of normal rotation causes all sorts of problems: each of the regular boxes below must now rotate in plan to align two points of contact with the capping box. The connections feel tentative, as the surrounding gaps look sloppy. In the model, (at least) one of the legs rotates in section to accommodate the tilt of the capstone. A large shim is "slid" underneath it—that'll hold the whole thing up, *inshallah*!





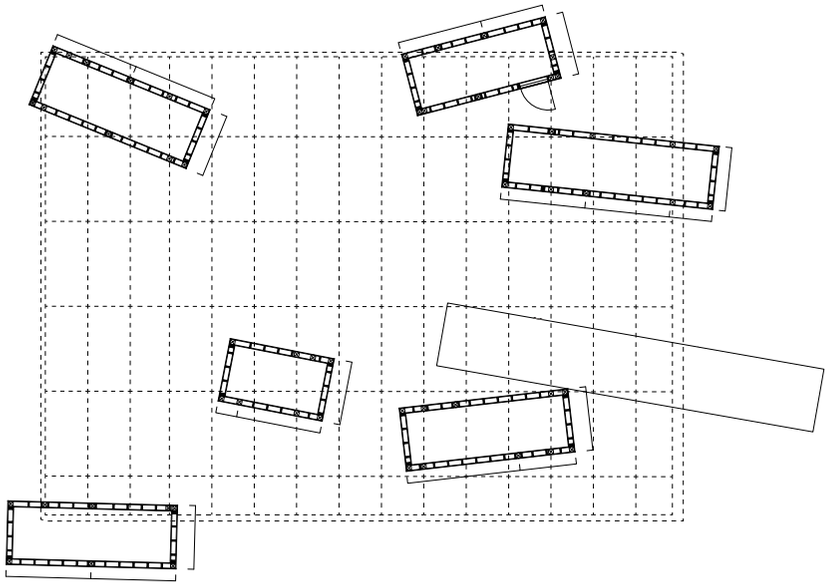
Competition Finalist: MoMA PS1 Young Architects Program, Long Island City, NY, January 2016, not built

Design Team: Anna Neimark, Andrew Atwood, Julian Daly, Deborah Garcia, Connor Gravelle, Brooke Hair, Daniel Hapton, Jeff Marsh, Lily Nourmansouri, Edwin Obrien, Alison Rust, Kyla Schaefer, Alex Spatzier, Tidus Ta

Engineer: Matthew Melnyk, Nous

Fabricator: Andrew Baccon and Erik Tietz, Machinemade

—



facing page, top: Worms-eye view rendered grey-on-grey reveals the legs's thinness.

facing page, middle: The model is rendered in two primary brands of the same glow in the dark paint creating the illusion of depth and color change from day to night.

facing page, bottom left: Longitudinal section, showing the tenuous connection of the capstone with the legs.

top right: Oblique view of model. The capstone captures water and intentionally "leaks" in response to the program requirement for a water feature.

above: Plan showing configuration of legs and structure of capstone above (dashed).

left: Computer rendering.

top: LA Dolmen completed and installed in First Office's temporary studio at 2426 SET. The finish uses two paints (Black Bean and Black Bean Soup) on plywood and screw patterns created with differing screw drive types to give a texture and to tease out relationships between the seams and the panels.

above: Full-scale mock-up re-installed as part of the group show *The Kid Gets out of the Picture* (2016), curated by Andrew Holder and Benjamin Freyinger at Materials and Applications. First approach is from the "front" view where the project appears solid.

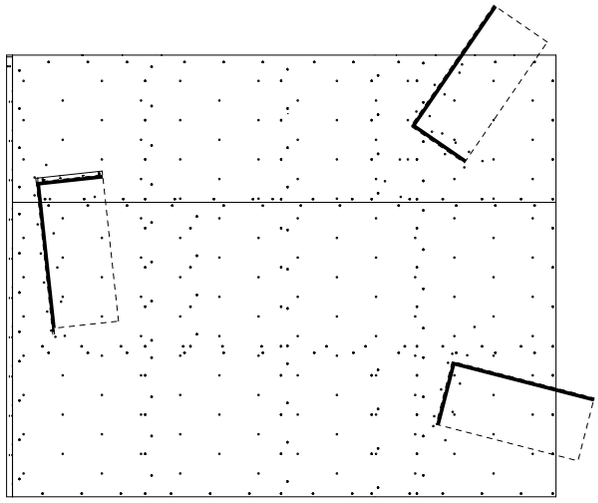
right: The project is conceived as a physical manifestation of a computer rendering, hiding any surfaces not frontal to the projection plane.

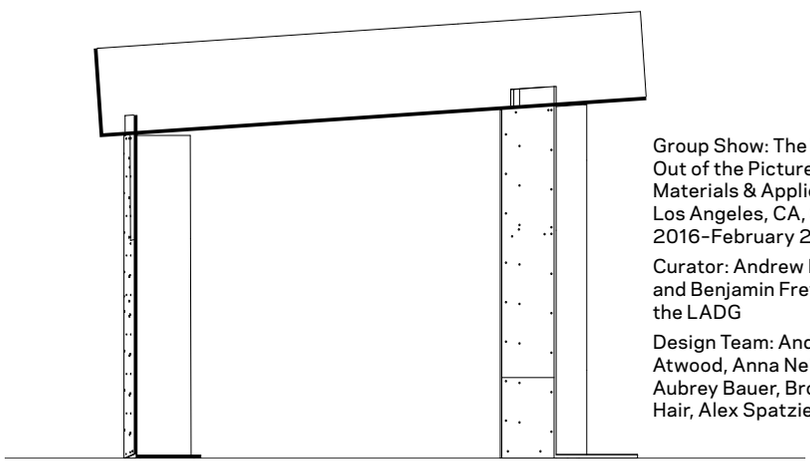
facing page, top: Plan indicating the configuration of the open, L-shaped legs.

facing page, middle: Project as installed from the "back" side evidences the thinness of its construction.

facing page, bottom: The section reveals the pattern of screws as both structure and ornament.

LOS ANGELES DOLMEN





Group Show: The Kid Gets Out of the Picture at Materials & Applications, Los Angeles, CA, October 2016–February 2017

Curator: Andrew Holder and Benjamin Freyinger, the LADG

Design Team: Andrew Atwood, Anna Neimark, Aubrey Bauer, Brooke Hair, Alex Spatzier

Compared to the NY Dolmen, the Los Angeles Dolmen is rather modest. Tucked in the back of a courtyard, its view is limited to the front corner—the privileged elevation. In rendering one axonometric projection of the LA Dolmen, we eliminate any surface—or finish—not frontal to the projection plane. The resulting physical model built from this rendered drawing is only half of the Dolmen's original form. Open at the top, the capstone also lacks a back wall, and the three remaining legs are constructed with three surfaces only: two vertical faces capped at the bottom by a flat foot. Each of the boxes is reduced to just one of its corners, making it less a stack of boxes and more a stack of surfaces. Every element is composed of a front and a back face: an unstable house of cards relying on the heavy capstone to keep everything in its place. And when viewed from behind—from beyond the rendered frame—the LA Dolmen exposes its raw plywood back at every corner.

A rendering is meant to produce depth—a three-dimensional effect—or something we can fall into visually and attach to emotionally. But the picture always reminds us that it has limits; its flatness and dimensions are firm. While architectural renderings tend to solicit subjective associations, their manufacture—projection of shade and shadow, construction of the frame, manipulation of the scene in relation to the drawing plane—is an objective, methodological process. The specific formats of the rendering environment cause direct and palpable effects, internal to that process. In paying close attention to how a picture gets built, we consider the physical materials that render a surface: paint, seams, and screw heads. This short list of elements corresponds to the dolmen's assembly. Paint assigns the color brown to the front of the LA Dolmen. The seams provide it with clearly demarcated parts as they trace juxtapositions of two pieces of plywood, or two layers of paint. A field of screw heads, and their different drives visually roughen a smooth surface when seen from a distance. While up close, the individual parts demarcate an edge or a seam. The specific combination of paint sheen, material seam, and screw head both constructs and renders this dolmen simultaneously. The two paints, "Black Bean" and "Black Bean Soup," reflect light slightly differently in the photographs. In this way, this dolmen's finish takes on the qualities of a rendering, making the physical and digital worlds inextricably linked. After all, the word "render" is a sort-of finish, and in the British case, it signifies the application of stucco to the exterior wall surface. We now extend this application to include other fabrication techniques, as we call these materially burdened surfaces "built renders."

VIR GIN IA DOLMEN

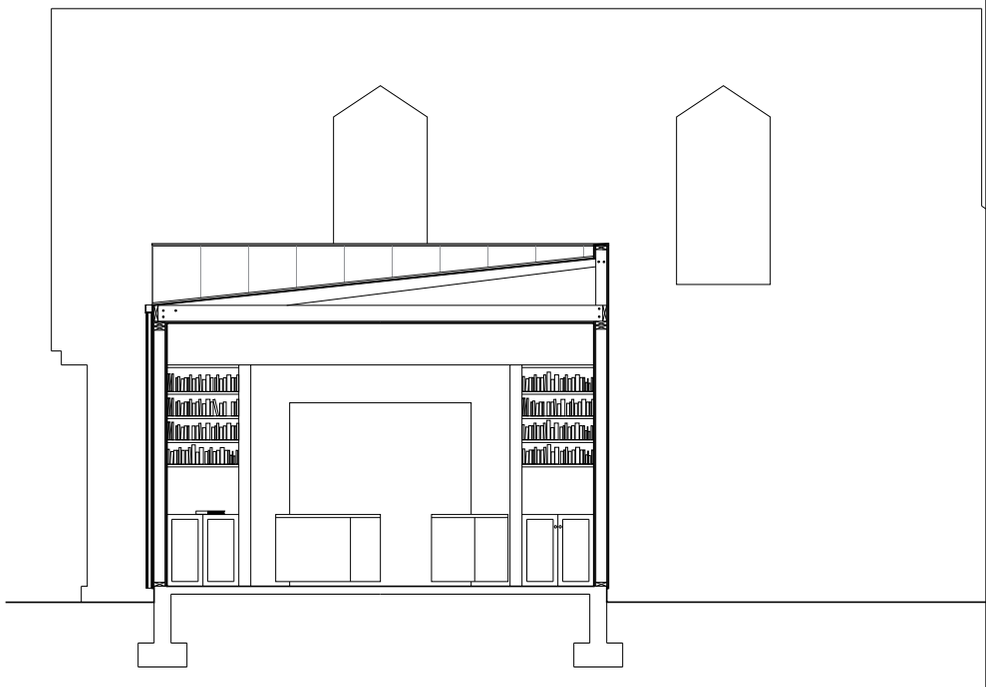
Please don't think the building of a rendering is solely a representational problem, or that it exists outside of straightforward building construction. On the contrary, material rendering occurs everywhere. In fact, in this practice of specifying everything to a contractor, everyone already builds images. We are dedicated to the description of renderings through construction materials. While there is no medium that is specific to our pursuit, we try to find specificity through different media. After all, the Specifications—commonly referred to as the "spec book"—is a form of representation, albeit, not primarily visual.

The Virginia Dolmen is an art studio connected to the main house by a corridor. It builds on the informal work developed in its dolmen predecessors. It falls on boxy legs—reminiscent of the NY Dolmen—and it's capped by a tilted box, a roof that is missing a face on one side, like the LA Dolmen. This dolmen, however, was built as a sealed interior and as a result there are some stark differences. The VA Dolmen requires attention to be paid evenly to all of its sides and not solely to the pictured front, as it is consistently too three-dimensional to behave like an image. It requires standard building parts, such as wood framing and waterproof roofing, construction materials that make it too heavy to "hover" like a model. One could say that the VA Dolmen is visibly less critical of its modes of representation, even though it absorbs many lessons from its more abstract predecessors. After all, this dolmen has paint, screws, and seams like the others.

Through drawing, we took great care in describing to the contractor the ways in which we wanted the finishes to be applied in the course of the project. But we also took pleasure learning the wonders of ZIP System Tape, a flashing product that was not present in earlier work, partly because it was entirely unfamiliar to us working in drought-ridden Southern California. It was in these types of real things—in the details that are almost never seen and rarely modeled—that we found a prolongation of the conceptual trappings of our models and the superficial limits of our images. We worked fastidiously on copper flashing details, which are especially significant where the copper roof of the connecting corridor intersects the slate roof of the existing house. We developed a love for regulating water flow and took time to describe the alignments among the standing seam metal roof, the copper box gutters, and the downspouts to the client (in phone calls and emails) and then to the contractor (in the spec book and general notes).

Yet, despite our best efforts, mistakes did occur. On one site visit, we noticed an additional line in the contraction joints of the concrete floor slab. In construction documents, we were careful to describe a set of lines that would make up these marks in the floor, and so we were puzzled by this extra joint in the slab that ran right through the middle of the dolmen. As we argued with the contractor about this joint, which we were sure would ruin the whole project by reinforcing a moment of symmetry that we were desperate to avoid, the contractor grabbed his set of construction documents and pointed to a line in the plan that was now cut as a joint in the floor. Our mistake was a classic First Office story: our drawing obsession returned from the repressed. The plan he showed us was simply titled, "Concrete Expansion Joints Plan." Only a few lines denoted the exterior shape of the slab, several more included dimensions for placing the joints. But there, in the center of the plan, was an additional line! To us it was clear that it looked like a centerline, demarcated with the conventional long dash, short dash line-type. We had forgotten to note it as "Centerline of Slab."

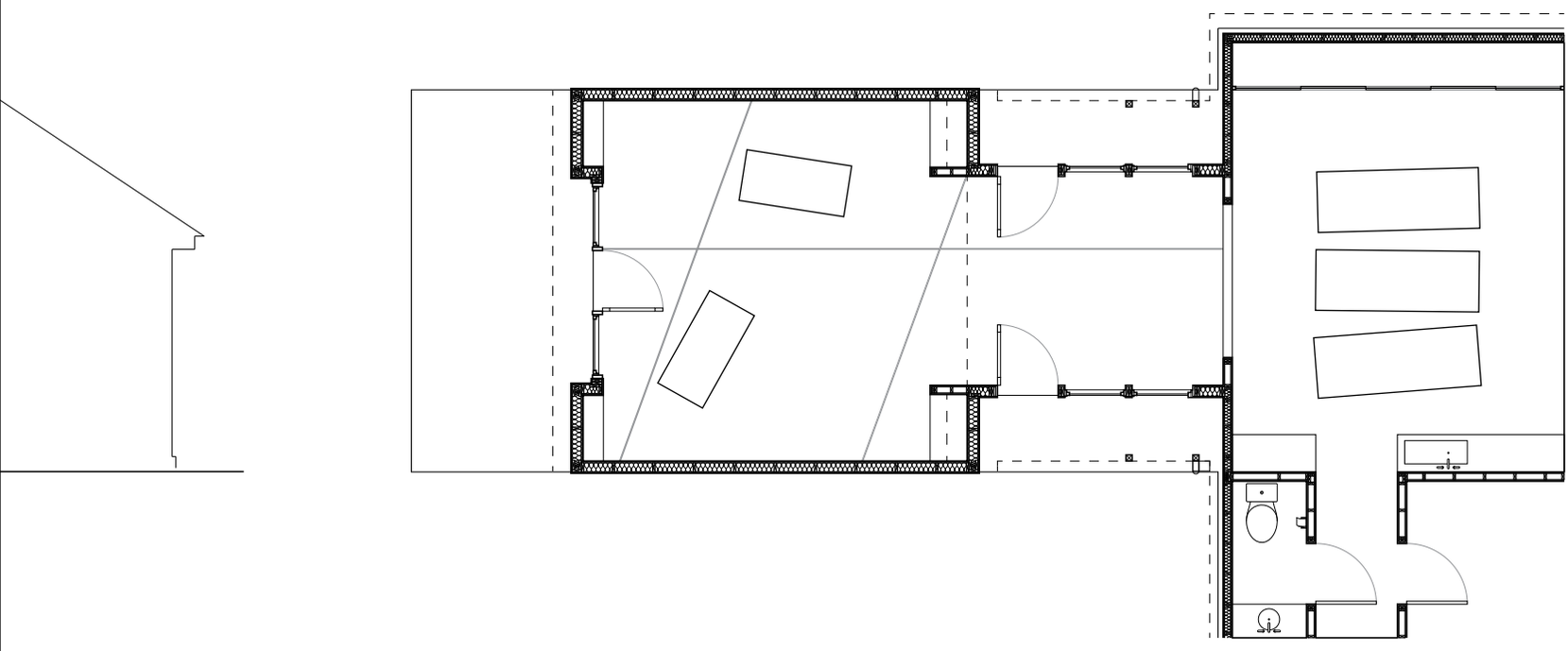
"It's like bad Rosalind Krauss," we said, then we moved on to talking about downspouts.



top: The white on white axonometric rendering shares a similar intention of hollow legs and capstone for the studio addition.

left: Studio addition as seen from the wooded site. Painted cedar cladding is attached with a precisely drawn pattern of fasteners.

bottom: Plan and cross section



Art Studio: Charlottesville, VA, April 2017

Design Team: Aubrey Bauer, Brooke Hair

Engineer: DMWPV

Contractor: Scott Abbot

left: The sloped copper roof can be seen from the north (or rear) side. The thin, tall parapet conceals it from the forest and entry facade.

below: South (entry) view of the attenuated passageway between the house and studio addition.

facing page, top: Interior.

facing page, bottom: Like the LA Dolmen, from the oblique, the forms give the illusion of a solid.

VIR GIN IA DOLMEN

AB STRACTING ABSTRACTING ABSTRACT ION

TO ANNA AND ANDREW—

Your book *Nine Essays* (2015) starts with a letter to Morgan Fischer based on Morgan Fischer's letter to John G. Hanhardt. It seems most productive to continue with this approach and write this review as a letter to your letter to the letter. This would, in many ways, approach the condition of pure faux—the ultimate objective and limit of your aesthetic practice—a wonderful marriage of a passion for formalism with a passion for hilariousness.

Like a letter to a letter to a letter, pure faux is a condition similar to what Umberto Eco described as hyperreality—an imitation of an object that is itself an imitation—a double mirroring. And a concept that a copy is exciting in proportion to its distance from the original. Larger, brighter, more entertaining, and, as you would put it in your description of mountains—"less disappointing." I browse your work in this book. You have apparently designed with a plan borrowed from an animal pattern borrowed from an animal. An exhibition that is a 3-D interpretation of a map interpreting Soviet infrastructure. A 3-D synthesis of Malevich's work that is itself a synthesis of the perceived world. An imitation of a house that is an imitation of a railroad carriage.

This is infinitely fun. And yet, it is also the result of a dedicated and systematic pursuit—the quest for an abstract architecture, fueled by a love for and frustration with abstract painting. What is the difference between architecture and painting? What is the relationship between the drawing and the object? What is a rendering? How can we "render" a building? How can we transform the entire world into a render? This quest is a formalist quest par excellence. It does not seem innovative at all, but as a foray into the memories of the 1970s and the 1980s. To cite just the most canonical examples: hasn't Zaha already tested the instability of the relationship between painting and building? Didn't Eisenman make his houses dysfunctional and uncomfortable to force the perception of form?

I have to admit I am initially offended by your formalism, that is, about what is absent from your inquiry—politics. All of it. By this I don't mean that your architecture is post-critical; there is no such a thing as post-critical architecture, as architecture cannot possibly be critical. But it can draw upon the social conventions embedded in its program. It can draw from the beliefs and expectations of its intended users. A consciousness and control of disciplinary visual conventions is politics par excellence. You don't give a damn. You draw upon abstract painting, Gilpin's interpretations of the picturesque, and Krauss's discussion of the grid. All with the purpose to "make buildings that not only look like their renderings but are made like renderings".

In *Nine Essays*, your painterly totalitarianism is, interestingly, coupled with a theoretical nostalgia for the Russian 1920s. But it is precisely through your architectural interpretation of Shklovsky's philosophical interpretation of Russian literature that your work does, in fact, become political, highly so. Shklovsky, as you remember in one of your essays, insisted that "estrangement" is the fundamental technique of art. That the purpose of the work of art is prolonging the process of perception, delaying recognition, so that the object presented can be grasped anew. This sort of formalism was political par excellence in a context when it functioned as resistance to applied Marxism and its totalitarian consequences, such as the pending annihilation of art's and academia's autonomy. And it was political in the sense that anything perceived anew can also be questioned.

What does First Office aim to estrange? What is the purpose of architectural abstraction in the interpretation of Atwood and Neimark? And is it in any way political? Your work is peculiar in that the object of your abstraction is already abstract. You lament how you cannot do it—how you cannot perform the subtle play between thing and image that the painting performs. How you don't have a medium. But it is precisely what you cannot do that does it. Your formalism is so different from the formalism of the 1970s and the 1980s in that you do not attempt to bring the building closer to the image. What your particular formalism accomplishes is the estrangement of architecture from the image. You base an entire city on an animal pattern. You are obsessed with computer rendering techniques. You engage in suspect 3-D interpretations of Malevich. You project Soviet maps, New York grids, outlines of mountains and subject them to disciplinary representation codes. But what you ultimately do is demonstrate that architecture cannot possibly be reduced to an image—of a pattern, of a map, of a grid, and, especially to an image of itself. The peculiarity of the architectural object is, as you point out, that it is not an object. That it can never be perceived in one take. And that it in this sense fails as an image. Ultimate abstraction is the loss of objecthood, which rests on the presence of a stable, coherent depiction.

This is absolutely political. The destruction of objecthood is a resistance to the commodification of architecture. The paradox of your endeavor is that you are obsessed with images yet use your projects to disallow the reduction of architecture to image, of the sort that would "sell" the project or, alternatively, replace it. This is quite an accomplishment.

TIJANA VUJOSEVIC

BAD TRANSLATION: DRAWING BY CONTACT

BRYONY ROBERTS

Bussola per rilievi (Surveying compass), Museo Galileo, Matteo Botti, Giovanbattista Botti, Fattura italiana, sec. XVII, Inv. 2506

Robin Evans famously claimed in his 1986 essay "Translations from Drawing to Building" that architecture is a process of translation. For centuries, the architectural discipline has tried to translate from idea to drawing to building with a minimum loss of information. However, he argues that such direct translation is impossible given the insurmountable distance between drawing and building. Instead, we should revel in the slippages and correlations between two- and three-dimensional space. By challenging conventional direct translation, Evans opened up possibilities for new methods and goals of architectural drawing, inspiring a generation of architects to develop ever more complex projection techniques for manipulating, rotating, and distorting geometry. Yet this challenge did not go far enough; it continued to uphold many longstanding limitations of the architecture discipline. To move away from idealism and to approach architecture from a position of material, corporeal, and interpersonal specificity requires introducing other kinds of "bad" translations.

As Evans rightly points out, the problem with direct translation is a philosophical one—it perpetuates the principles of essentialism. Stemming from Platonism, essentialism is the belief that forms originate in a higher realm of ideas, which are then translated into the physical world. This position values disembodied concepts over material conditions. In architecture, Evans describes essentialism as the "attempt at maximum preservation in which both meaning and likeness are transported from idea through drawing to building with minimum loss."[1] This belief underlays the development of orthographic projection particularly in the Renaissance and Neoclassical periods, enabling a clear transition from mathematical proportions to elevation drawings to low-relief facades. Evans attacks essentialism for creating overly planar architecture: "too much bound up in the elaboration of frontalities."[2] While he focuses on the aesthetic problem, I would like to emphasize the philosophical one. The elevation of disembodied concepts over the physical world keeps the origination of architecture in the realm of the general rather than the specific. Essentialism supports inherited ideals and downplays the possibility of learning from tools, materials, people, and sites.

Perhaps channeling the influences of Process Art from the sixties and seventies, Evans elevates *process* over inherited ideals by allowing the drawing process to be indeterminate and generative, producing concepts rather than simply translating them. Nevertheless, the tools involved in this process and its sequence remain highly conventional; drawings emerge only from the interaction between a person, a projection technique, and a planar surface. For Evans, drawings still precede any kind of material construction, as emphasized in his analysis of Karl Friedrich Schinkel's *The Origin of Painting* from 1830.[3] But if the aim is to dismantle the essentialism of architecture and its valuation of ideals over matter, then a far more radical questioning of the origins and techniques of design is needed.

If we take more seriously the precedents of Process Art, we can imagine a non-hierarchical feedback loop between concepts, material experiments, and drawings. Artists such as Lynda Benglis, Eva Hesse, and Richard Serra performed tactile material experiments, such as pouring paint, dripping latex, and throwing lead, translating them into concepts and writings, which were then fed back into further material tests. Things get even more interesting if we look further afield to Body Art, where artists such as Yoko Ono, Carolee Schneemann, and Vito Acconci used their own bodies as a medium to implicate both the artist and the audience as desiring, corporeal subjects. Applying this logic to architecture, one would radically undermine the influence of essentialism by starting the design process with both material experiments and desiring subjects.

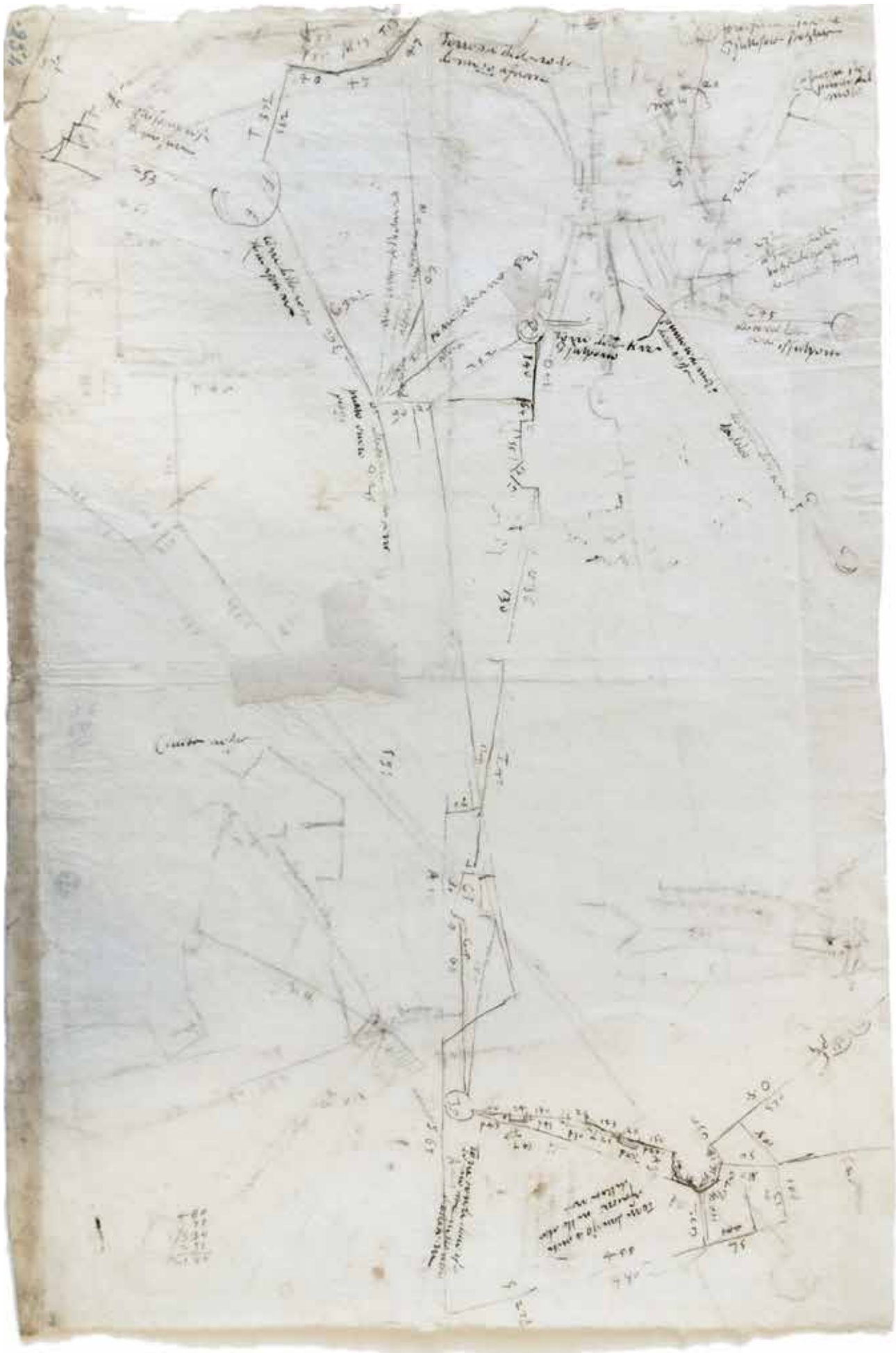
Now, let us consider the possibility for "bad" translation. This process begins with contact. At the beginning of most projects, designers come into contact with a site and the people who use it. But when framed as data-gathering rather than as an encounter, this stage yields pseudo-objective information rather than a record of inevitably biased, corporeal, and interpersonal interactions. In contrast, designers can approach a site self-aware of their own mess of cultural biases, physical discomforts, and human limitations, and allow those collisions into both the representation and

1 Robin Evans, "Translations from Drawing to Building," in *Translations from Drawing to Building* (London: AA Publications, 1997), 181.

2 Ibid, 172.

3 "Drawing in architecture is not done after nature, but prior to construction; it is not so much produced by reflection on the reality outside the drawing, as productive of a reality that will end up outside the drawing." Ibid, 165.

opposite: Antonio da Sangallo the Younger, Survey of Civitavecchia, 1538, Uffizi 934v



the design process. Representations—measurements, drawings, images, videos, molds, interview transcripts—can capture these specificities, not with the impossible aim of total translation but as a scaffolding for future interaction. These representations guide the design of insertions and alterations, which are tested materially and corporeally, and are documented with new representations. This process is a cyclical loop between the specific and the abstract—among people, drawings, materials, designs, and ideas—with known slippages between observations and representations. As with Evans, this challenge to architectural convention does not throw out disciplinary tools. It does not discard the idea of translation. Instead, it considers how changes in the order of operations and the insertion of new ingredients can redirect translation away from existing value systems.

By intersecting the material, the corporeal, and the social, this approach dodges several mine fields in architectural discourse. It may evoke a lineage of architects—from Antoni Gaudí to Frei Otto, Friedrick Kiesler to Frank Gehry—who experimented with materials to generate concepts and drawings. Unfortunately, such materialism has long carried a whiff of anti-intellectualism within the architectural discourse. Similarly, attention to the bodily experience has been dismissed for its connection to architectural phenomenology, and positioned as an enemy of critical discourse. But not every call for corporeal understanding aims to reinstate the universal subject and timeless typologies that permeate writings on architectural phenomenology. To begin with specificity—that is, specific materials and people with individual cultural and political biases—is precisely to connect physical conditions with a critical and political understanding. On the other end of the spectrum, more politically-inclined practices based on engaging existing conditions and communities have often disregarded the formal and representational questions in architecture, widening the schism between specificity and abstraction. The aforementioned approach of "bad" translation, in contrast, is about building a critical feedback loop between the specific and the abstract.

While this approach may seem thoroughly contemporary, it has existed for centuries as an ongoing strain of architectural practice. If we re-examine the mythical origins of western architecture in the Italian Renaissance, we see how integral physical contact has been to the discipline. Those credited with developing architectural drawing techniques in the 15th and 16th centuries, such as Donato Bramante and Raphael, prioritized the observation of existing structures as a starting point for design. Both Bramante's surveys of ancient monuments and Raphael and Baldassare Castiglione's letter to Pope Leo X signaled to their followers that the act of surveying existing buildings was central to the education of the architect and the development of drawing techniques, and that surveying was itself a physical process of physically negotiating with an instrument, a system of notation, and a site. Fulfilling their expectations, younger architects such as Baldassare Peruzzi and Antonio da Sangallo the Younger made extensive surveys of existing structures as references for their own design practices. They made hundreds of drawings through processes of physical observation—circumnavigating, climbing, and measuring existing buildings—to amass raw material for design.

Peruzzi and Sangallo's survey sketches documented their physical contact with existing structures. Their surveying processes involved the use of a surveying compass called a *bussola*;[4] this required the architect to move around the building and align the tool to the existing walls in order to notate the angles given. Dimensions were measured in palmi (hands) or piedi (feet), making explicit the physicality of the act of observation. But these sketches of historical buildings were subsequently transformed into finished drawings that erased the mess of dimensions and corrections—turning the notation of contact into disembodied abstractions. The finished drawings sometimes even contradicted observed dimensions to favor ideal proportions, as with Sangallo's drawing of the Pantheon where he adds a staircase to make the plan symmetrical.[5] When Serlio reproduced a number of Peruzzi's drawings in *Tutte l`opere d`architettura et prospetiva*, he made them even more abstract by relegating dimensions to textural descriptions on its facing pages. As Serlio's text was widely distributed, images of these idealized architectural drawings were disseminated instead of the messy traces of physical observation. The canon of Renaissance orthographic drawings, therefore, foregrounded a lineage of essentialism and sublimated the history of design that begins with contact.

4 Vaughan Hart and Peter Hicks, eds., "Appendix: The Letter to Leo X by Raphael and Baldassare Castiglione," *Palladio's Rome: A translation of Andrea Palladio's two guidebooks to Rome* (London: Yale University Press, 2006), 185.

5 Christoph Frommel, ed., *The Architectural Drawings of Antonio da Sangallo the Younger and His Circle*, Vol. I (Cambridge: The MIT Press, 1994), 136.

The long history of representation by contact in architecture can be mined for tools of contemporary design. Techniques intended for documentation, such as the surveys described above, actually recorded people coming into contact with materials. In the hands of contemporary architects, such tools can be used not only to document but also to generatively design interactions between people and matter. In addition to orthographic drawings, many other techniques were used in the 19th century for the representation of existing structures through physical contact, such as charcoal rubbings, wet paper "squeezes," and plaster casts. Through actions of rubbing and pressing, these processes created representations through the accumulation of mass rather than line. Multiple versions of an existing object were produced in a different medium and at 1:1 scale. These representational methods also recorded the contact of an observer handling a historic structure through repeated pressing and prodding. Moving even further from the architectural canon, there have been many types of ritualistic movement, which have unintentionally created ephemeral drawings of architecture. Religious processions in the Piazza San Marco in Venice, for example, occurred in dialogue with the patterns built into the paving stones. The movement of bodies mapped out the spatial organization of the piazza, which in turn was articulated in stone to guide movement. Similarly, we can imagine how performance might be used today to document the organization and scale of a space, and to completely transform it. These cases show that even today, historical forms of documentation can be used generatively to produce substitutions, replacements, and iterations of a found condition.

In the hands of contemporary designers, such techniques can be used self-consciously through the processes of "bad" translation. While Evans revealed the limitations of direct translation, he looked only as far as projective drawing techniques in his search for resistance and liberation. To truly break from the lineage of essentialism in architecture requires acknowledging that translation itself is a corporeal, material, and social process. From documentation to construction, design is in itself a process of interaction between bodies and material conditions. Rather than continue to erase these interactions, we can deploy the techniques that foreground them. The historical techniques mentioned above—surveying, rubbing, squeezing, casting—all form a bridge between documentation and design, ostensibly recording a condition but actually producing a transformation that records interactions. When folded into a feedback loop between contact, drawing, and idea, these techniques render design inseparable from physical experience. This kind of translation occurs through iteration rather than erasure, with each iteration introducing new alterations and distortions from interactions between people and materials.

This mode of design is biased, specific, and messy. Deployed with self-awareness, it reveals the inclinations, movements, and limitations of the designer, as well as the idiosyncrasies of a site. Beginning and ending with observation, this kind of design process wrestles with the details of existing structures, landscapes, and the people who use them. It abandons all ambitions of generality and universality. For too long, architecture has lived comfortably in the general, using techniques that privilege the universal over the messiness of the specific. But to be specific is to be political. At a moment when the specific needs of people and sites are clamoring to be heard, it is essential that we rethink our aims and our methods.

At stake in this discussion is the subject matter of architecture—whether its content should be understood as a timeless ideal, or, conversely, as the specificities of the external world. The mode of representation follows from its content. By aiming to translate an ideal into drawings, then into a building, one is guided toward the all-too-familiar drawing techniques of orthographic, axonometric, and perspectival projections, an interrelated system of linear representations. The very word "projection" speaks to this aim of catapulting an idea from one medium to another.

An alternative is to shift both the subject matter and medium of architecture. If we acknowledge that architecture begins with an encounter—with people measuring the messy material matter of buildings, landscapes, and other people—then we need to allow other tools of representation into the canon. This is where techniques of imprinting, casting, remaking, and performing offer entirely different ways of thinking about abstraction and translation. Matter produces abstractions, which produce ideas, which produce more matter.

BODY PROPS 2016

A series of wearable props join bodies and buildings together. Acting like prosthetics, these objects are precisely situated between the domains of body and structure. They interlock around shoulders, necks, or hips on one side, and into architectural corners or furniture edges on the other side. By materializing the negative space between bodies and structures, they augment experiences of sitting and leaning. The creation of these objects involved mapping the precise contours of bodies and structures onto foam panels. The outer contour of each body and architectural surface was traced onto a sheet of polystyrene foam held against the body or structure, and this process was repeated for several layers of foam to roughly map the changing surfaces of each object. The foam was then cut and glued to create objects that mapped the direct impression of bodies on one side and architecture on the other. Used both indoors and outdoors, they created surprising social situations. The project was extended to more complex and lush objects wrapped in felt for an exhibition titled *Tailored* at Pinkcomma gallery in Boston. These larger hanging objects interlocked only with bodies, rather than architecture, but allowed for multiple interlocking between different people.

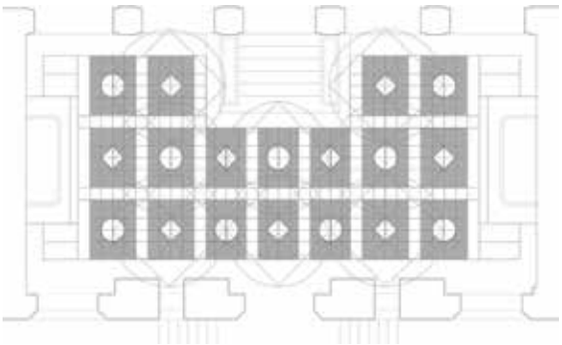
Bryony Roberts Studio

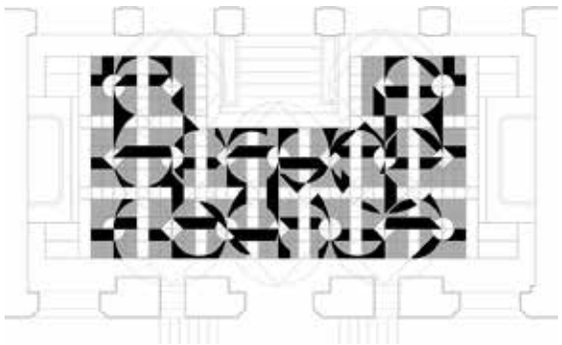
Assistance from Andrew Brookes, Zhuang Guo, Caleb Hawkins, Chris Mollica, Brian Park, Huopu Zhang

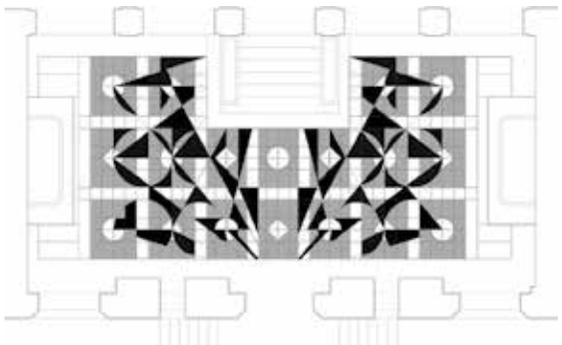
Materials generously donated by Filz Felt

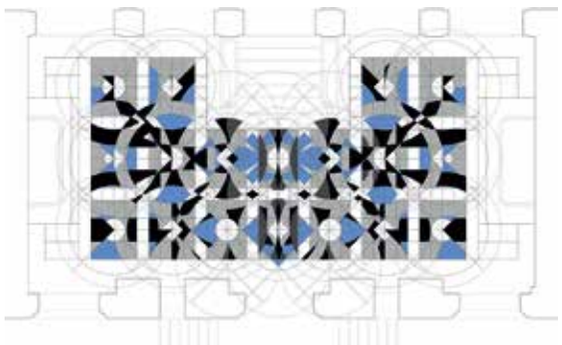
PRIMO PIANO 2016

This graphic floor installation at the American Academy in Rome foregrounds interactions with idiosyncratic existing conditions. The project began with documentation of the existing floor pattern—a grid of peperino stone rectangles inlaid with travertine circles and squares. Measurements of the existing floor revealed a complete irregularity across the panels and the impossibility of generalizing its geometries into a grid. Inspired by nearby Medieval church floors with elaborate stone inlay flooring, another geometric pattern was superimposed onto the ground for the project. This superimposed pattern revealed underlying geometric relationships with the existing floor, as well as moments of irregularity indicated by distortions and compressions. To further the interplay between generality and specificity, adhesive vinyl shapes were cut out according to the design of this new pattern, then adjusted on-site to fit each irregular stone panel. The adhesive pieces were then rubbed on with the hands and feet of volunteers. After the project was exhibited for three months, it was de-installed by the dancer Melissa Lohman, who peeled the shapes up as she rolled across the floor, ending with herself wrapped in a ball of vinyl. Thus, the project began and ended with the floor being measured by bodies.









Bryony Roberts Studio

Supported by the American Academy in Rome

Assistance from Daniel Clark

CORPO ESTRANEO
2016

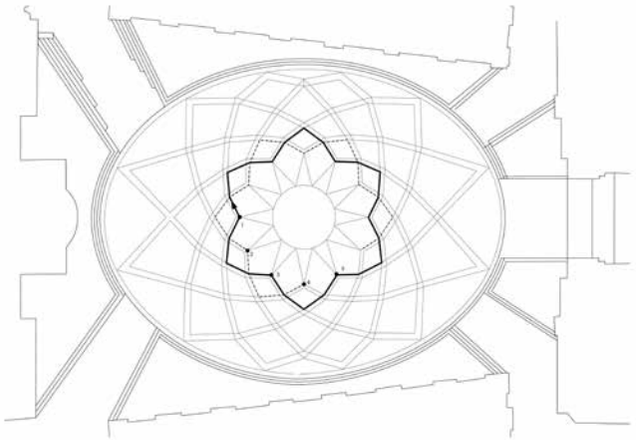
A recent project in collaboration with choreographer Melissa Lohman at the Piazza del Campidoglio in Rome, supported by the American Academy in Rome, turned the physical act of measuring architectural space into dance. Referencing the work of Antonio da Sangallo and Baldassare Peruzzi—namely, the act of learning by walking and surveying a site—the project was a performance with five dancers who mapped out and transformed the Piazza's existing ground pattern designed by Michelangelo. Armed with long white poles, five women began by slowly swinging and laying down their poles to measure the first inner ring of the spiraling pattern. As they moved to each successively larger ring in the pattern, their movements became more sweeping, ultimately measuring the distances with full leaps and swinging poles. Angling towards and away from the lines on the ground, the bodies of the dancers and their poles formed three-dimensional extensions and iterations of the original pattern. Plan drawings based on physical surveys of the site were used as loose notations for choreography, acting as a framework for future movement, but the performances were developed on site at 1:1, by the dancers measuring the ground pattern with their bodies.

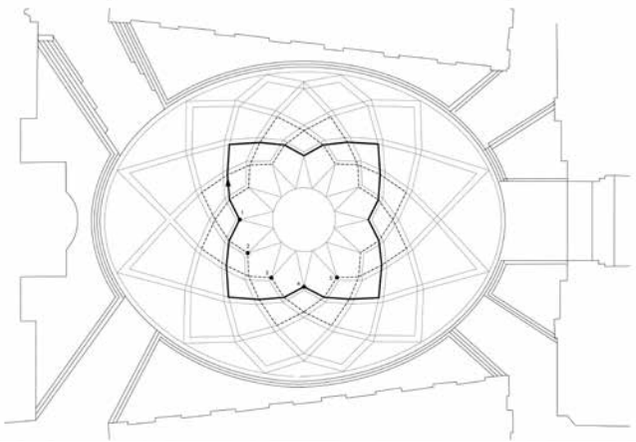
Bryony Roberts Studio in collaboration with Melissa Lohman

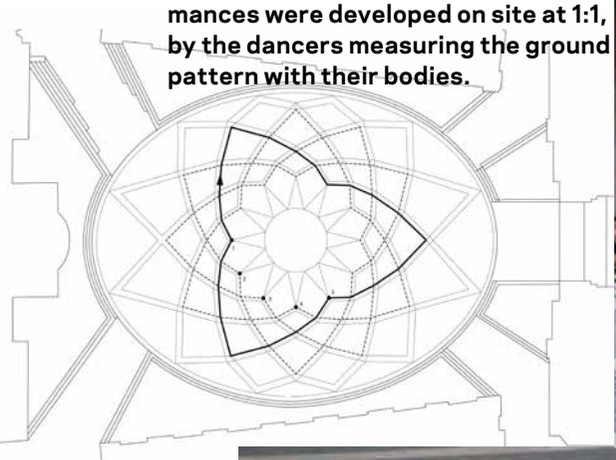
Supported by the American Academy in Rome

Dancers: Chiara Casciani, Maria Elena Curzi, Silvia Franci, Lucrezia Micheli, and Chiara Pacioni

Percussionist: Angela Naccari







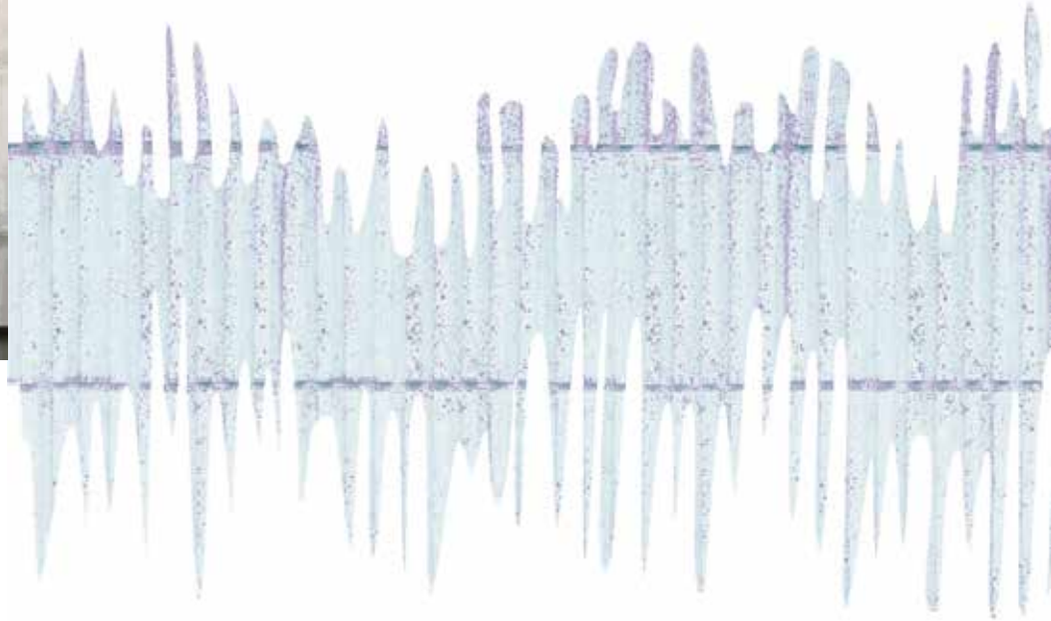
Bryony Roberts Studio

Commissioned by the Orange County Museum of Art

Fabrication by ADM Works

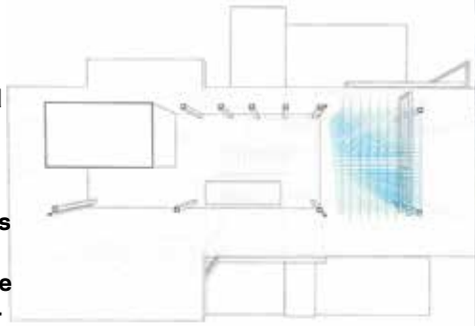
IMPRINT 2017

This project is a large-scale cast of a Brutalist façade at the Orange County Museum of Art in California. As the building is facing demolition, this cast serves as both a temporary entrance wall for an upcoming exhibition and a record of the building when it no longer exists. The facade of the building is an undulating ribbed surface of sand-blasted concrete with large pebbles as aggregate. To create a large, 26 x 7-foot cast of this facade, fabricators from ADM Works made a silicone cast of the building, which in turn acted as a mold for a fiberglass cast. The resulting fiberglass copy of the building is a 1:1 replica that captures every detail of the texture in a completely different material. It's translucent and light instead of opaque. Since the piece is installed in the glass windows of the front facade, the piece is backlit by daylight and appears even more ethereal. The positioning of the piece was meant to create sculptural continuity with the surrounding facade but noticeable material discontinuity. This highlights the artificiality of the representation—its difference from the original. This is an intentional contrast to other traditions of documentation and reconstruction in preservation, which aim for objectivity. Instead, this copy acknowledges its own artificiality and the corporeal dimension of its construction.



INVERTING NEUTRA 2013

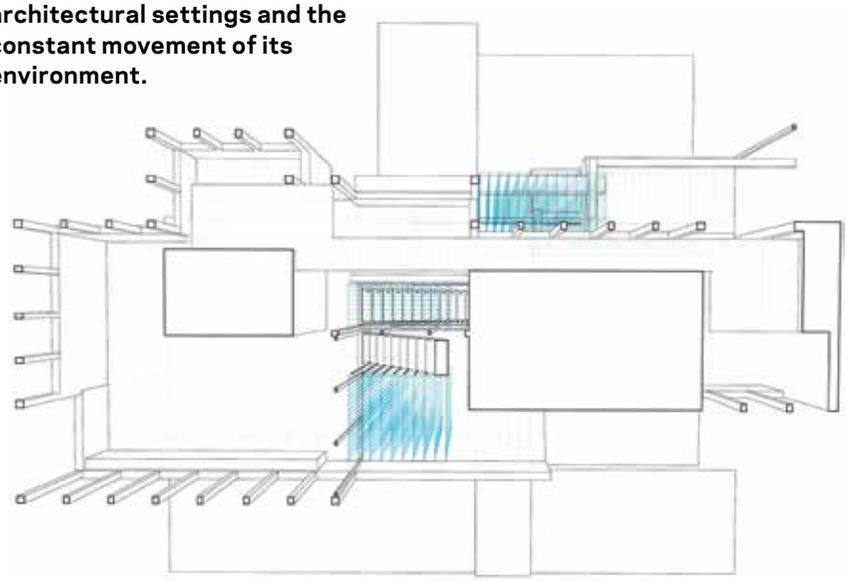
The project transforms the Neutra VDL House, designed by Richard and Dion Neutra, through three-dimensional drawing. The project calls attention to the void spaces of the house—a sequence of exterior patios that weave through the interior—by filling them with grids of hanging blue cords. The cords extend the organizing lines of the house, particularly the vertical lines found in stair railings surrounding the patio spaces. But rather than registering an underlying regularity, the project manifests differences in dimensions, scale, and natural conditions between the various exterior spaces. Despite the fact that the house was built based on a structural module, each of the patio spaces has slightly different organizing lines. The grid of strings therefore has a different spacing for each patio, expanding and contracting to fit its immediate site. The process of design, detailing, and constructing the frames for these cords followed a similar logic to produce bespoke structures and attachments for each patio. Each aluminum frame structure was created on site in a back-and-forth manner, oscillating between measuring and modifying in order to create a custom fit. Since the blue cords were weighed only with light fishing weights, they could move in the breeze and respond to human touch, thus visualizing the dramatic differences in wind exposure around the house and revealing variances in human occupation. The seemingly gridded system therefore registers the specificities of its different architectural settings and the constant movement of its environment.



Bryony Roberts Studio

Supported by the Graham Foundation

Fabrication by Jesse Cabildo and Andre Gharakanian



Set Up: A Conversation with Sylvia Lavin

PRAXIS After our initial conversation with you to set up this interview, we asked ourselves how we imagined your point of view would intersect with this last issue of PRAXIS, "Bad Architectures." Perhaps it was your 2013 *Log* essay, "Lying Fallow," where you speculated on the settling of the field after the critical and digital turns of the '90s and the noughties. You embraced the idea of a "boring" architecture. While we might not share your optimism for the boring, we agree with your appraisal of what you termed a "flattened context." We are searching for disturbances in this context with the hopes of restarting a debate or at least provoking discussion. That is where we are and why we wanted to speak with you. What do you think? Have we moved past the flattened moment? Do you see disturbances or resistance? Is resistance even a word we can use? Is there room for dissent in a field that is so focused on doing "good?"

Sylvia Lavin I appreciate the setup, but we should call attention to the fact that the setup includes a trap. You've constructed a narrative around the recent history of the field that makes the conclusion "our job is now to resist doing good" appear to be inevitable, indeed, to be both predicted and mandated by what you say has gone before.

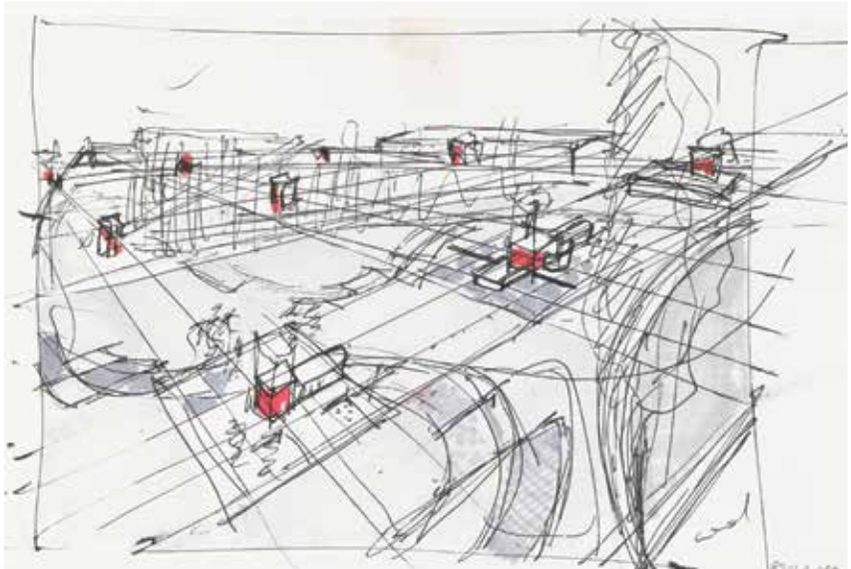
I agree that every present moment feels the pressure of its immediate past, as well as the anticipation of its immediate future, but neither is inevitable. In fact, the way you frame "bad architecture" strikes me as being based on some ideas that can be described historically and that began to form and take effect during the long post-war period, particularly in the United States. For various reasons that are beyond the scope of this discussion, but largely because modernism had succeeded in integrating the potentials of mass production into its formal protocols, architecture came to be asked to take on an increasingly broad range of issues. Unlike, say, prefabrication and cost, two things that can be directly related and measured, many of the new questions posed to architects—from how architecture shapes race and gender relations to what impact architecture has on the environment—were not as easy to answer in quantifiable terms. As a result, these questions ultimately challenged what architects thought their own medium was—to use period terms—a challenge revealed by the countless examples of architects having difficulty in empirically describing what architecture could do. Under these historical circumstances, it made sense to start to call on the concept of "architecture itself," which seems to be the immediate antecedent of your "bad architecture" and to oppose "architecture itself" with its impact on the world. It was in this way and under these conditions that "doing good"—in terms posed as external to architecture—came to be conceived of as intrinsically at odds with producing good—in terms posed as internal to architecture. What has appeared to be a boring kind of flatness over the past few years is probably more productively conceived of as an effort to get out from under the highs and lows of this false dichotomy.

P Yes, you're exactly right. We have no intention of reinforcing a good-bad binary, nor are we suggesting that socially-minded architecture inevitably produces "bad architecture"—rehearsing the autonomy-ideology arguments doesn't seem productive to us. The term "bad," however, has served to move the issue forward for us and our contributors, and to identify a set of architectural practices that are operating differently from the legacy of the last thirty or even fifty years. We were interested in the possibility of operating outside the binary of good design versus social good, even embracing notions of failure, misreading, and idiosyncrasy, which allowed us to consider oblique ways of framing the issue. These terms that may initially seem negative offered productive ways of practicing and perhaps offer a means to get past boringness. What are the implications of considering an architecture of excess or failure or ugliness or imprecision? Once we began exploring those nuances, we felt optimistic about the opportunities they offered even though we're still uncertain about a preconceived notion of "bad" hovering over the issue.

above: Peter Eisenman's House I (1967) in Barenholtz, New Jersey rejects modernist notions of form and function. Instead, it is a study in how a structural set of logical rules (or "deep structure") can establish alternative environments for living.

left: Park de la Villette pavilion #8 intersects what was once a trading market, now a theater. In the background is the former slaughterhouse.

below: Bernard Tschumi's sketch for the Park de la Villette project in Paris (1982). The superimposition of red pavilion "points," shown in red, over trajectories "lines" and "planes" is a study in "cross programming."



SL I can't help but think that perhaps the field needs to begin with something like the Hippocratic Oath: first, do no harm, in part because a boring surgery is exactly the kind of surgery you and everyone else wants. The terms are clear and shared. This is all to say that while medicine and architecture are both professions, and as such regulated in various ways, medicine is more (although not absolutely) certain about what is a good or a bad outcome. In architecture, good and bad are slippery terms. This is in part because of the confusion that allows one to say "good" when referring to the social domain and "bad" when referring to the architectural domain, thus simply passing over the question of whether those are in fact domains. The moment we recognize that confusion as historical rather than intrinsic, it becomes possible to notice that, even if only by framing your question in terms of good and bad, you are locating architecture within an ethical space. What seems to be distinctive about architectural discourse today is that even when committed to resisting politics, to somehow protect architecture from it, the language of that resistance reveals itself to be political. The rhetorical and ideological force of "architecture itself" has weakened and architecture has new work to do.

P Can you elaborate on what you think has changed in the last ten years?

SL Donald Trump was elected President. Not ten years ago, thankfully—although his will to power is such that it is now possible to imagine that in his mind he will be so beloved that term limits will be lifted for him—but the many things that made it possible for him to get elected, which began under Reagan, and picked up steam over the last ten years. What began then, but we can see clearly now, is that the very space of civility has collapsed, which is to say that even the one good thing about so-called bad boy architecture is that it upheld something like the right to privacy—the privacy of one's own thoughts—which no longer holds. When you walk into a classroom today, particularly at a large public university, it is no longer possible to assume, as everyone in the academy did until relatively recently, that the people in the room share the sense that they are participating in democratic society simply by being there. This kind of assumption is what enabled Peter Eisenman, for example, to proclaim his "badness" when talking about House I—which I take to be something like the primitive hut of the bad boy architecture you have in mind—because he deliberately disregarded the typical expectations directed at "houseness." The issue is not whether it was good or bad of him to not give his client the fireplace she wanted, or if his desire to undo the metaphysics of domesticity is what made it good architecture instead of bad, it is that both client and architect considered themselves to be operating in an arena with a social contract that could be honored or broken. That contract was more important to both than the architectural contract between them and, without the larger commitment to some notion of civil society, House I could not have been built. If that social contract can no longer be assumed to exist, then the question of bad architecture versus good architecture is simply "off-sides" as it were.

P We three editors are 1998 graduates of Bernard Tschumi's Columbia, an era that was the apotheosis of the apolitical context you're describing. Columbia was no exception, despite Tschumi's early political interests. In this issue, we look at an example of this early work, the *Advertisements*. The article reveals their instantiation as a "transgressive" moment. This transgression assumes that the audience will understand the terms of their resistance, at a historical moment when there wasn't a fundamental crisis in the same way that we're talking about it now.

Yet, the *Advertisements* offer a background from which we can potentially trace lineages of thought in the contemporary work in this issue. You're suggesting there's a fundamental challenge to that way of thinking now.

SL Unlike Eisenman, Tschumi always argued that architecture is performed in a political theater. But like Eisenman, Tschumi was able to assume that the very notion of theater, no matter how disruptive or transgressive, was part of a civil society that shared certain values. Tschumi's architecture "performed" the work of work, as it were—both at Le Fresnoy and La Villette, Tschumi worked hard to keep nineteenth-century industrial buildings within his scheme, to lay bare the labor of media production at the school, to show the socially constructed nature of program at the Follies. What he could not then know was that the media systems he was working so hard to engage were not only part of a massive reorganization of work from industry to information—a shift that would leave the proverbial "worker" of the Anglo-European theater of his performance without work—but that the information industry would help put in place an apparatus that would transform civil society and its architecture into a resource to be mined for manipulatable data. These mechanisms helped put Trump in power; this is not what Tschumi had in mind when he was exploring the rhetoric of advertising images, nor could it have been.

Your first question was what do we do after boring? My argument about boring was made not so much in praise of boring but rather to suggest that not everything has to be urgent all the time. Urgency is not always a good way to be thoughtful. Thoughtfulness takes a bit of time.

P So, urgency contrasts with boring. Boring implies a slowness and deliberateness?

SL Yes, but more largely, I am interested in the idea that not all ideas are possible at all times—historical situatedness is not just a matter to keep in mind when looking back but also important to keep in mind when look around at the conditions of one's work in the present.

P What do you think is important to write about? Have you changed the nature of the subjects that you research? What are you thinking about now?

Maybe you can speak specifically about the pavilion at the Chicago Biennial and its corollary installation at Princeton. You spoke about the inaccuracies of the Venturi House model. You recast the model as having its own validity equal to the house itself. Can you elaborate?

SL I've been doing a lot of work on postmodernism largely because I consider the very issues we have been talking about to be symptoms of the effects of postmodernization. The term "postmodernism," initially used to refer to the critique of modernism as dogma, eventually became a catch-all for a heterogeneous group of formal and stylistic attributes that dominated architectural production in the West until the early 1990s: color and decoration, linguistic games using irony and double coding, historical and figurative references, and an emphasis on what was often called "the art of drawing." Excluded from the many things to which the term postmodernism was applied, however, were the equally many institutional forms, communication and information technologies, economies, and materials in and through which architects produced their manifestos, axonometric drawings, and building façades. In fact, the most consistent attribute of the term postmodernism was not its definition but rather its effect, which was to establish as unarguable that certain things were immaterial to architecture's fundamental character as an independent art form and discipline with an autonomous and ahistorical essence. Postmodernism turned architecture into the myth of "architecture itself."

Institutions like the Deutsches Architekturmuseum (DAM)—that produced the Venturi model you asked about and whose collection I analyzed and represented in various ways at the Chicago Biennial, in the exhibition at Princeton to which you refer, and that is also presented at the CCA exhibition currently on view, Architecture Itself and Other Postmodernist Myths—played a major role in this process. Although often assumed to assign value with scholarly disinterest and critical objectivity and to stand in opposition to commercial interests, in reality, these institutions operated in a small but competitive market and ultimately became architectural consumers as well as producers in their own right. For example, Heinrich Klotz, the director of the DAM, helped generate a significant market for architectural models. Eventually, dependent as he was on public funding, he was priced out of the market he himself helped produce. In such cases, as with the Venturi model, he sometimes simply made a copy and inserted it into his collection in ways that make it appear as an "original." In other words, the very institution that we understand to be a place that stores facts for posterity, did precisely the reverse.

P At the moment, it feels like there's an assault on the territory of architecture, at least in terms of the specificity of our skillset, when "architecting" and design thinking has taken over every field. A friend who's a computer engineer said his new official job title is "architect." There's a kind of denuding and generalizing of the term architect until it is seemingly applicable to everything.

SL It is certainly ironic that everyone wants to call themselves an architect while more and more people with architecture degrees are going into other fields, everything from interaction game design to app development and robotics. But this is really to say that the immense range of things to which Hans Hollein referred when he said *Everything is Architecture* in 1968 has shrunk because, when we say "everything is architecture" today, what we really mean is that everything is based in digital informatics, something architects are trained in but have not made enough productive claims to. Of course, lots of people have reflected on the impact of digital tools on the field, but for the most part they have focused on how those tools support "disciplinary" conceits like drawing or form making. Maybe the point is that contemporary information industries challenge the idea that drawings have some intrinsic nature. This challenge was already visible by the early 1960s; for example, in *Complexity and Contradiction,* Robert Venturi famously described the rear elevation as ordinary because it used standard, double-hung windows. What is less well known is that he also described the facade as like an IBM punch card, which is to say as organized around the management of information in ways that were then becoming ordinary. The first "sketch" for the Guild House was not a drawing in the sense of visual representation of a possible building, but was a list of journals to be consulted, complete with an invented series of "icons" that indicated where the journals were located. The design began with research, with the acquisition and organization of information, which was "drawn" on a yellow-lined sheet of paper rather than yellow trace or the unlined sketchbook we associate with architects of that period. Venturi used pads of lined paper because the format made is easy to combine the writing, researching, and representing that were all becoming simultaneously necessary to the way architects worked. Historians have tended not to look at that kind of paper because it does not adhere to the standard of "drawing," but in fact it was precisely in that kind of paper where all kinds of activities were drawn together, making architecture more robust rather than less. That yellow-lined paper is now the desktop where an endless number of things are stored. Like an institution from the 1980s, such as the DAM, that distinguished archives from collections while becoming confused about originals and copies, we still tend to create compartments (Excel for accounting, Word for writing, Revit for modeling) and accord to only some of these the status of architecture.

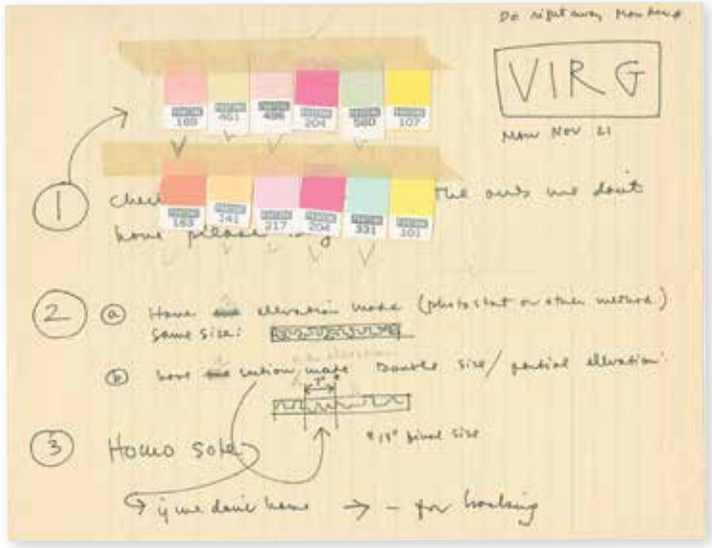
top left: A model of Robert Venturi's Vanna Venturi House (1964) exhibited in the *Super Models* exhibition at the Chicago Architectural Biennal in 2017, an installation by the team of Sylvia Lavin, Erin Besler and Jessica Colangelo and Norman Kelley.

above: Two non-functional stairs from Peter Eisenmna's House I form part of the exhibition *Architecture Itself and Other Postmodernist Myths*, curated by Lavin at the Canadian Centre for Architecture in 2018.

left: *Exhibition Models* (2017) and below: *Super Models* (2017). The two shows featured a collection of post-modern building models and were run concurrently at Princeton University and at the Chicago Architecture Biennial, respectively. A live video feed connected the two shows mirroring each other across the rear wall projection.

P You make an interesting point about the different things that go across the desk of an architect, certainly in physical or material terms. But there is much more information—a large part of it non-architectural—that is constantly on our desks. The flotsam and jetsam awash on our screens as stream of images and background media are at once homogenizing and simultaneously distracting. The drawing and even the making of autonomous objects may be a means of turning out those distractions. Could the reemergence of making (drawing and physical modeling) be a matter of cultivating a selective attention?

SL Instead of saying that architecture is at risk of losing its identity, because it can be anything, perhaps it is more productive to ask what architecture could become if we were to closely observe everything on the architect's desktop and say "that is architecture" (for now)? As a historian, I am trying to do this quite literally by making inventories of "everything" in a given context so that I minimize predeterminations about what belongs and what does not belong. Certain effects of this strategy are immediate and powerful: no one's notebook or desktop is produced or exists in isolation, which is to say that the architect as both author and producer becomes fundamentally less heroic and isolated; new authors and modes of production appear, and multiple forms of work come together. Other effects of this strategy require more time and attention—turning the close reading skills developed as an art historian and scholar to office ephemera, for example, does not discover but rather produces new forms of creativity by defining them as such—the way a secretary took notes, a curator faked a model, or a snag on a construction site was managed. I suppose what I am saying is that if we are so easily distracted from things, if things seem boring, maybe we need turn our attention elsewhere.



above: A library list of research for Venturi's Guild House on yellow legal paper as a form of architectural "sketch" shows the inclusion of a wide range of intellectual and physical materials into the practice.

right: Robert Venturi's (Venturi and Rauch) Pantone studies for the Best Products Showroom on lined paper, 1973–79.


WHERE
THE CITY
CAN'T
SEE
I AM
YOUNG


ROAD
CLOSED

The well-worn modernist narrative depicting a future made better through technologies that offer higher fidelity, greater information access, and increased social connectivity parallels a darker critical history of the cultural oppression those technologies empower.

Liam Young and Tim Maughan's "Where the City Can't See" (2016) enters these competing paradigms with a glimpse of the near-future seen through an eerily-resonant surveying (and surveillant) technology: the laser scanner. Laser scanning uses a remote, radar-like scan to rapidly capture shapes of objects, buildings, and landscapes. It is used by architects, landscape architects, and planners for site documentation as well as by movie producers to create visual special effects. Young and Maughan's fiction film, shot in Detroit, claims to be the first to use only laser scanning technologies. This film not only deploys the self-referential trope of using a surveillant technology to create a film whose protagonists are seeking to escape the "smart city," it refuses to resolve the effect, shattering the surfaces of buildings and people. The viewer sees through the surface. As we follow the story of young factory workers wearing digital camouflage, the pixelated, dematerialized surfaces serve as an analogical reminder that the scanner's gaze is omniscient: buildings, cars, trees, and people are all transparent. Their goal is to find an unmapped place in the city—a space that their driverless car cannot locate. In this dystopic landscape, where no space escapes the sentient city's scrutiny, Jeremy Bentham's Panopticon and Big Brother seem benign.

In Young and Maughan's film, reality is only that which can be mapped and therefore controlled. The grainy ghost-like buildings and characters are subject to the totalizing control of technologies and yet escape its grasp in their dissolved surfaces. This futuristic film shows us the city through the eyes of the technologies that control it today and asks us to question how contemporary envisioning technologies such as GPS, driverless cars, and urban management systems are shaping not only our experiences but the city itself.

—Ashley Schafer

EULOGY FOR THE UGLY

CHRIS GRIMLEY
MICHAEL KUBO
MARK PASNIK

"Modernity certainly does not have to be characterized by ugliness, but we may well have to make some revisions in our standards of beauty." —Edward Logue

AT A LECTURE IN CHICAGO OF 1882,

Oscar Wilde remarked on the Chicago Water-Works Tower of 1869, terming it "a castellated monstrosity with pepper-boxes stuck all over it."[1] A century later, Prince Charles famously railed against a proposed modern extension to London's National Gallery, calling it a "monstrous carbuncle on the face of a much-loved and elegant friend."[2] Mark Twain is said to have described the State, War, and Navy Building (later the Old Executive Office Building) in Washington, D.C. as the ugliest building in the country, a sentiment later echoed by Harry S. Truman when he reportedly referred to the building—though in fondness—as "the greatest monstrosity in America."[3] Its architect, Alfred B. Mullett, committed suicide two years after the building opened in 1888, perhaps in part due to the structure's dismal reception.

MONSTROSITIES ARE GENERALLY THOUGHT OF AS UGLY, LOOMING HORRORS

in urgent need of removal from our cities and landscapes. This all-too-pervasive label has led to repeated patterns of demolition and rebuilding, particularly when it comes to concrete masterworks from the 1960s and 1970s. Our own advocacy surrounding Boston's concrete modernism—an era we prefer to call Heroic rather than Brutalist—has seen the term monstrosity invoked across social and traditional media formats, particularly used as a line of attack against monumental civic complexes like Kallmann, McKinnell and Knowles' Boston City Hall or Paul Rudolph's Government Service Center.[4] Our research on concrete modernism began in response to the proposal of Boston's former mayor, Thomas Menino, to sell (or demolish) Boston City Hall. We felt an urgent call to expand the discourse around a generation of buildings that was widely disparaged and poorly understood. Other cities have already lost or may soon lose exceptional buildings of the era because they are currently unloved and dismissed as monstrous by those who would seek to remove them.

MONSTROSITY APPEARS TO BE A FAVORITE WORD

for those who wish to bully and belittle architecture into obscurity and onto a demolition list, in the more alarming cases. The discussion of concrete has been hard to wrest apart from the idea of monstrosity within contemporary debates. Google's definition of the word—not once, but twice—uses *concrete* architecture as an example of such a monstrous presence (are there really no stone or steel monstrosities today?) and lists equally offensive synonyms such as: eyesore, blot on the landscape, excrescence, horror. Monstrosity has been used by previous generations to describe Victorian architecture, French Second Empire buildings, and many other styles seen as outmoded at the time.[5] In order to survive, even the best of these buildings navigated the perils of what we call the ugly valley, the nadir of public taste that occurs around forty to sixty years of age when architecture is not quite new enough to be in good repair nor old enough to be valued as historic. Our contempt for this system of cyclical destruction should give pause when these buildings are rashly judged as unsightly or alien.

THE FOLLOWING PAGES INCLUDE SOME EXAMPLES

from the most recent course of this cycle of derision leading to destruction. These haunting images show an architecture once praised, yet a half-century or so later, now at its most vulnerable and vilified to the point of demolition. Suspended between life and death, these buildings remind us not only of the power that architecture can possess upon its inception but also of the forces that conspire against it when it is judged as old, out-of-shape, obsolete, or ugly.

SOME MONSTROSITIES MAY BE GETTING A REPRIEVE.

The Supreme Court of Vermont ruled in 2017 that it is not illegal for works of architecture to be ugly. This brings us hope. Ugliness is not merely in the eye of the beholder; rather it is subject to fickle forces that change over time. Preservationists often argue that buildings face their greatest risk near their fiftieth anniversary—the end of their first useful life—when many require significant investment to maintain or appear out of step with changing aesthetics and functional needs. Concrete modernism is only the latest era of building to face these dangers. Sadly, the rush to judgment appears to be speeding up. Marcel Breuer's Atlanta-Fulton Central Public Library (1980) and Michael Graves' Portland Building (1982) have both been considered for demolition well before reaching their fortieth year of use (after considerable pushback from the preservation community, Breuer's building now appears to be safe, but Graves's is being insensitively reclad).

If there is a lesson in the disfigurement and demolition of concrete masterworks, we do not believe it lies in exposing or punishing the hubris of the generation that created them. Rather, the current wave of destruction speaks to our own pessimism, the weakness of our potential building legacy, and our lack of patience to supersede the cycle of ugliness and make these monstrosities our own.

1 "Oscar Wilde: The Esthetic Apostle Greeted by an Immense Audience. Chiefly Drawn to Central Music-Hall by a Marked Curiosity. 'The Chicago Water-Works Tower a Castellated Monstrosity.' 'Only an Oriental Beauty Can Wear the Sunflower.'" *Chicago Daily Tribune*, February 14, 1882: 7.

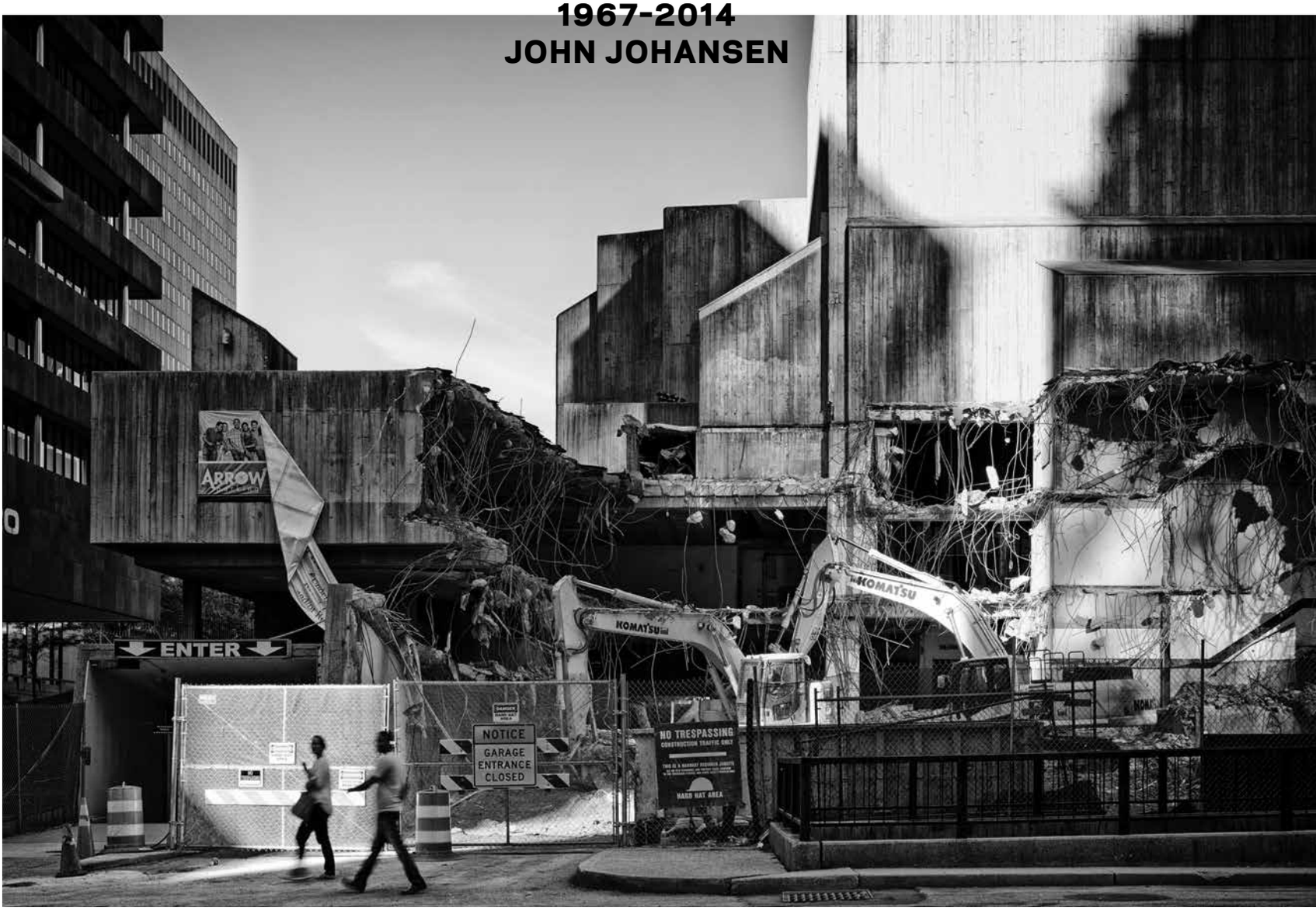
2 HRH The Prince of Wales, "Speech by HRH The Prince of Wales at the 150th anniversary of the Royal Institute of British Architects (RIBA), Royal Gala Evening at Hampton Court Palace," May 30, 1984, https://www.princeofwales.gov.uk/speech/speech-hrh-prince-wales-150th-anniversary-royal-institute-british-architects-riba-royal-gala.

3 While Truman's statement is often dated to 1958, in response to the proposed demolition of the building under President Dwight D. Eisenhower, the quote appears not to have been published in national newspapers before 1965. See Wolf Von Eckardt, "Let's See Those Gilded Sights," *The Washington Post*, January 10, 1965: G8; Louise Hutchinson, "Washington's 'Grand Old Lady' to Have Her Face Lifted: 21 Million to Be Spent on Beauty Job," *Chicago Tribune*, March 20, 1966: A4. An appearance of the Twain quote is Hugh A. Mulligan, "On The Street Where They Live," *The Sun*, March 17, 1963: E1.

4 See Mark Pasnik, Michael Kubo, and Chris Grimley, *Heroic: Concrete Architecture and the New Boston* (New York: The Monacelli Press, 2015).

5 See Terry Kirk, "Monumental Monstrosity, Monstrous Monumentality," *Perspecta 40: Monster* (Cambridge, MA: MIT Press, 2008), 6–15.

MORRIS A. MECHANIC THEATER
1967-2014
JOHN JOHANSEN



Baltimore now has a theater which it will make its own—but only with critical awareness and after thoughtful appreciation. It was initially conceived, then designed, and constructed as a community service of a special kind. This service is not only to accommodate theatrical performances. It is to deepen the sense of vitality and potential dignity of all those who use the building. As distinct from some trends in architecture today, this building can be called 'in the mainstream' of the contemporary architecture which primarily serves its citizens and goes beyond this to exalt them and give them a feeling of dignity. Overall the building is at once recognizable as a theater, but its shape goes further than needs. The resulting piers, walls, ceilings, which assert the forms and shapes of the building, should not be taken for granted, but in effect demand your attempted comprehension of every detail. This is the kind of participation which can make this building begin to belong to our community.

–ALEXANDER COCHRAN, in a pamphlet prepared by the Mechanic Foundation for opening day (cited in Danz, A., 2014. *A Brutal Truth: The Threatened Legacy of Baltimore's Brutalist and Urban Renewal Architecture*. Retrieved from libra.virginia.edu/catalog/libra- oa:7287)

The latest project, first announced in April 2012, has moved slowly because of a series of delays that kept the vacant performance venue standing amid protests from architectural preservationists. The Mechanic was heralded as a landmark architectural achievement that was crucial to the success of the Charles Center urban renewal plan in the 1960s. It has been eyed for redevelopment since David S. Brown Enterprises Ltd. acquired the site nine years ago… News of the demolition is sure to raise hackles by architectural preservationists, who had waged a battle to save the theater from the wrecking ball but ultimately lost.

–KEVIN LITTEN, "Mechanic Theatre demolition finally underway," *Baltimore Business Journal*, Sept 4, 2014

MARTIN LUTHER KING JUNIOR ELEMENTARY SCHOOL
1971-2014
JOSE LUIS SERT

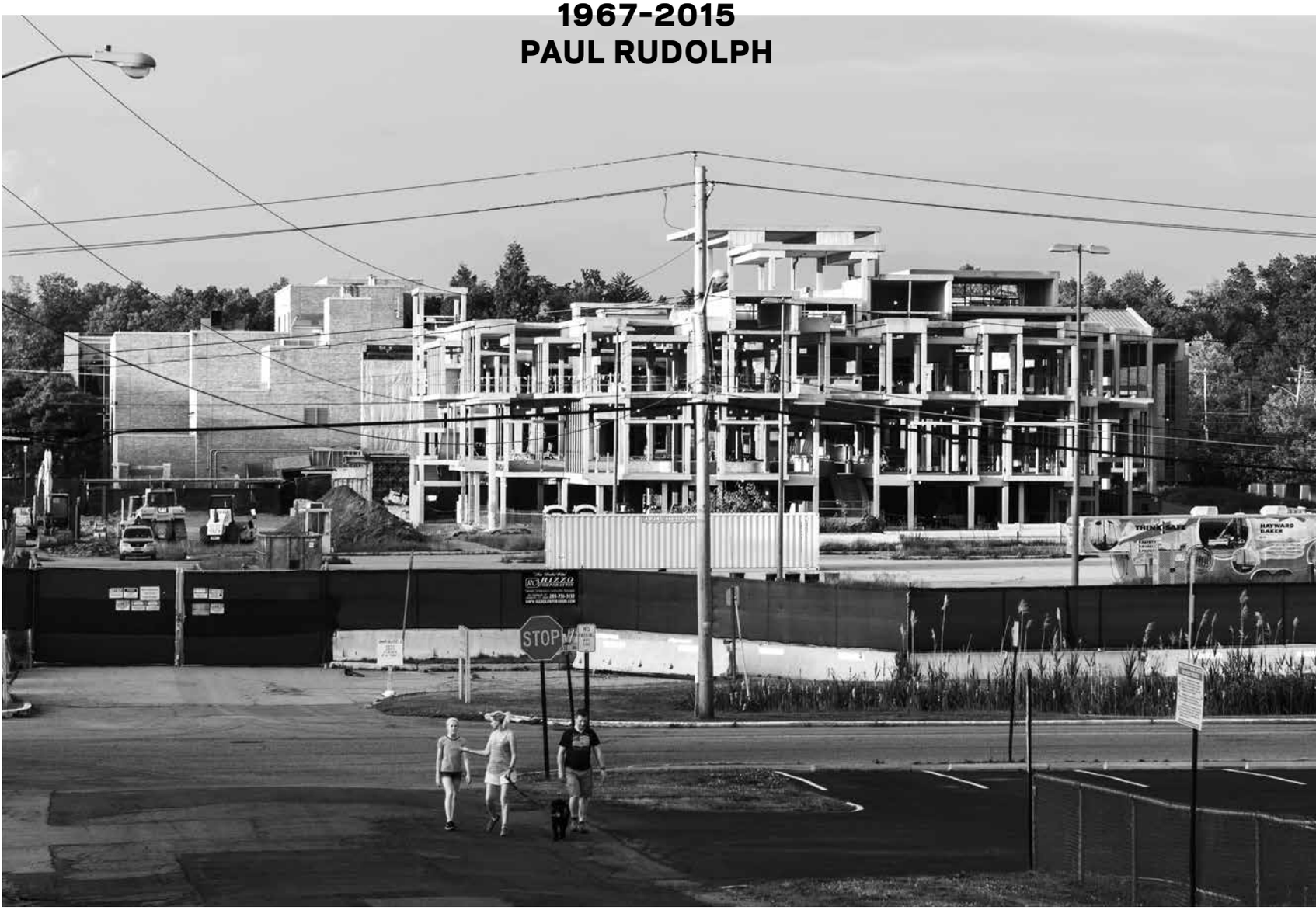
My school, Martin Luther King Jr. Elementary School in Cambridge, MA, was designed by the firm of Josep Lluís Sert: Spanish architect and planner, former Harvard Graduate School of Design dean, designer of the superb Peabody Terrace apartments just across the street, as well as buildings for Harvard and Boston University. My school came late in his career, late for the concrete walls and rhythmic geometric shadows that were signatures of his architecture, and late, too, for the architecture's relationship with the surrounding stick-built residential neighborhood known as Riverside. My school was demolished during the spring of 2014. Another King School is now under construction, this one of terminal beige exterior blandness, designed by Perkins Eastman. King School 2.0 trumpets its community connections, zones for students of different ages and natural lighting—just like the one it will replace.

–ALEXANDRA LANGE, "Never-Loved Buildings Rarely Stand a Chance: Josep Lluís Sert in Cambridge," *MasContext Legacy,* Spring/Summer 2015

"When you see the multi-ethnic murals in the front lobby of the Martin Luther King School in Cambridge, you get the distinct impression that this is not your ordinary school… It is in a diverse neighborhood including Harvard students living directly across the street and residents of a low-income housing project adjacent to the school."

–KATHY SHEEHAN, "A touch of far-away lands in Cambridge's King School," *Boston Globe*, 29 May 1977: F12

ORANGE COUNTY GOVERNMENT CENTER
1967-2015
PAUL RUDOLPH



Let's start with an obvious truth: Paul Rudolph is not an easy architect. He never was. His assertive modernist buildings of concrete and glass are not what anyone would call user-friendly. They can be harsh, and tough, and it is not surprising that to many people they are cold.

But oh, can they be beautiful, and there is a reward to feeling and appreciating the magic and dignity and even, let me say it, the grace that Rudolph's architecture can bring….Rudolph's Orange County Government Center in Goshen, New York, completed in 1971, has all of his strengths, and all of his issues. It's an energetic composition of concrete boxes, piled one atop the other, elevated on columns. The whole thing seems full of movement and energy, and yet at the same time it exudes the seriousness of purpose we expect of a public building. It is in every way an attempt to express in modern form the ambitions of a traditional civic building. At the same time it communicates an utterly important message that few traditional buildings are ever able to do, which is the notion that government is capable of creative imagination.

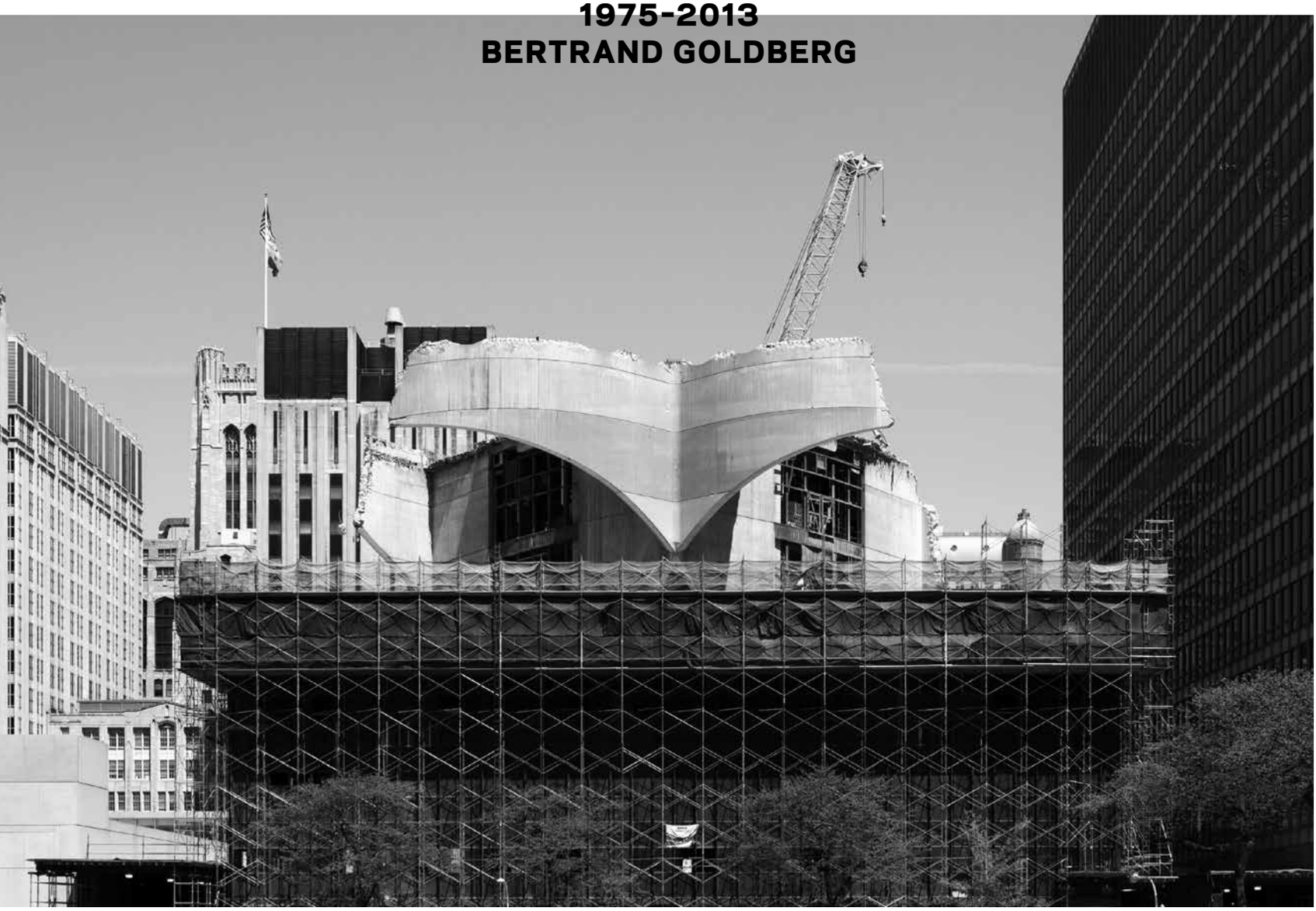
–PAUL GOLDBERGER, "Can Paul Rudolph's Architecturally Vital Orange County Government Center Be Saved?" *Vanity Fair*, May 2012

I am writing to ask you to stop any interference with the demolition of the Goshen Government Center. I am not sure who has deemed Paul Rudolph a genius, but based on his design in Goshen, I would strongly disagree. First, it is out of place in Goshen. This is a beautiful village full of Victorians that are extremely well-kept. The center sticks out like a sore thumb, except a sore thumb would be prettier. The design is just plain ugly. It looks like something my children would build with blocks when they were little; not very sophisticated. The center has a flat roof which just begs for flooding. Who puts such a large structure with flat roofs in upstate New York? We get snow here, lots of it.

When I read in the paper about how some self-important twit anoints Rudolph with the genius mantle I want to say that the emperor has no clothes. If one were to look at this structure with an unbiased eye, they would say it was ugly, out of place, and poorly designed. People like to feel so sophisticated because they can jump on the bandwagon that they see beauty where others do not. The emperor has no clothes. It is ugly.

–LETTER WRITER to Ernst Wagner, Director of the Paul Rudolph Heritage Foundation. Saturday, July 11, 2015 (paulrudolphheritagefoundation.org/goshen-1/2015/7/21/the-goshen-correspondence-pro-and-con. Accessed February 13, 2017)

PRENTICE WOMEN'S HOSPITAL
1975-2013
BERTRAND GOLDBERG



First things first: Why save Prentice? Many Chicagoans hate it. The taste for concrete buildings from the '70s is unpopular outside architectural circles. although it's spreading, and rightly so. Great late-modernist buildings, innovative and ruggedly beautiful, deserve respect, and, increasingly, careful custody.

–MICHAEL KIMMELMAN, "A Vision Enabling A Clover To Bloom," *New York Times*, 18 Oct 2012: C1.

With this essentially homemade software, Goldberg and Stainer were able to undertake previously unheard of amounts of engineering calculations in a matter of weeks. The result was a structural system at Prentice that had never been used anywhere else in the world. Both the lightweight concrete shell and the cantilever of the tower remain highly complex by present day engineering standards. Fixed element analysis and digital computing have since made possible an architectural revolution of convoluted shapes and sculpted structures by architects like Rem Koolhaas and Frank Gehry. The structure of Prentice also remains rare, and possibly unique. Few buildings in the world are supported by concrete shell walls as thin as Prentice's. The combination of this shell with the unusual forty-eight foot cantilever makes Prentice's structure a very unusual one.

–SUSANNAH RIBSTEIN, "Old Prentice Women's Hospital, Norman & Ida Stone Institute of Psychiatry," June 30, 2011

SEA/ PELAGIC ALPHABET LCLA

BORDER ISLANDS

Islands that are or have been disputed due to maritime claims

CLIPPERTON
10°18'N 109°13'W
South Pacific Atoll
France vs. Mexico
6 km²; top elevation: 29 m

EL TIGRE ISLAND
13.272°N 87.641°W
Caribbean Sea
Honduras vs. El Salvador/Nicaragua
Top elevation: 783 m

MEANGUERA ISLAND
13°10'47"N 87°41'51"W
Gulf of Fonesca
El Salvador vs. Honduras/Nicaragua
23,6 km²; top elevation: 783 m

SERRANA (ARCHIPELAGO OF SAN ANDRES)
12°33'N 81°43'W
Caribbean Sea
Colombia vs. Nicaragua
Total 52,2 km²; top elevation: 84 m
San Andres, 360 m Providencia, SW Cays 2 m, Cayos De Ese 2 m, Bajo Nuevo 2 m, Alice Shoal + Quita Sueño Submerged, Serrana 20 m, Roncador 4 m, Serranilla

NAVASSA ISLAND
18°24'10"N 75°0'45"W
Caribbean Sea
Disputed Haiti and United States
5,4 x 4,7 x 2,1 km; top elevation: 76 m

LOS MONJES ARCHIPELAGO
12°22'N 70°54'W
Caribbean Sea
Venezuela vs. Colombia
0,2 km²; top elevation: del Sur 70 m del Este 43 m del Norte 41 m

AVES ISLAND
15°40'18"N 63°36'59"W
Caribbean Sea
Venezuela vs. United States
374 x 50 m; top elevation: 4 m

MACHIAS SEAL ISLAND
44°30'10"N 67°06'10"W
Gulf of Maine
Canada vs. United States
8 ha
Population: 2 coast guards running the lighthouse

HANS ISLAND
80°49'41"N 66°27'35"W
Nares Strait between Baffin Bay and Arctic Ocean
Disputed Canada vs. Denmark
1290 x 1199 m

JAN MAYEN
70°59'N 8°32'W
Arctic Sea
Norway vs. Greenland (Denmark)
377 km²; top elevation: 2277 m

ROCKALL
57°35'46.695"N 13°41'14.308"W
Northeast Atlantic
UK vs. Ireland
784 m²; top elevation: 17.15 m

MÄRKET
60.301008°N 19.131432°E
Baltic Sea
Sweden vs. Finland
0.35 x 0.15 km
Population: 0

PEREJIL ISLAND
35°54'50"N 5°25'08"W
Strait of Gibraltar
Disputed Spain and Morocco
15 ha; top elevation: 37 m

ISLA DE TIERRA (ALHUCEMAS ISLANDS)
35.2152°N 3.9026°W
Mediterranean Sea
Disputed, considered to be under Spanish sovereignty but claimed by Morocco
192 x 87 m; top elevation: 11 m

IMIA/KARDAK ISLANDS
37°03'03"N 27°09'04"E
Aegean Sea
Greece vs. Turkey
40.000 m²; top elevation: 6 m

SNAKE ISLAND
45°15'N 30°12'E
Black Sea
Romania vs. Ukraine
0,17 km², 662 x 440 m;
top elevation: 41 m

TUZLA ISLAND
45°16'N 36°33'E
Strait of Kerch connecting the Black Sea with the Sea of Azov
Russia vs. Ukraine
2.1 km²; top elevation: 6 m

UKATNY ISLAND
45°55'28"N 49°34'40"E
Caspian Sea—sea or lake?
Russia vs. Kazakhstan
6.2 x 4.3 km marsh

HAWAR ISLANDS
25.60°N 50.77°E
Persian Gulf
Bahrain vs. Qatar
20 Islands, 54.5 km²;
top elevation: 22 m
Population: 250

AL HALLANIYA (KHURIYA MURIYA ISLANDS)
17°30'N 56°00'E
Arabian Sea
Disputed Oman vs. Yemen
Five islands

SOCOTRAN ARCHIPELAGO
12°30'36"N 53°55'12"E
Indian Ocean
Yemen vs. Somalia
132 x 50 km; top elevation: 1503 m

DOUMEIRA ISLAND
12.715465°N 43.148044°E
Red Sea
Disputed Eritrea Djibouti
13 km²

MBAÑE
0°48'38.5"N 9°22'43.4"E
Corsico Bay
Disputed Gabon and Equatorial Guinea
52,5 ha

CORISCO ISLAND
0°55'N 9°19E
Corsico Bay
Disputed Gabon and Equatorial Guinea
14 km²; top elevation: 35 m

RUKWANZI ISLAND
1°14'04.9"N 30°28'19.5"E
Lake Albert
Disputed Congo vs. Uganda
1000 x 600 m

MIGINGO ISLAND
0°52'58"S 33°56'17"E
Lake Victoria
Disputed Uganda vs. Kenya
2000 m²

GLORIOSO ISLANDS
11°33'S 47°20'E
Indian Ocean
France vs. Seychelles
56,13 km²

DIEGO GARCIA (CHAGOS ARCHIPELAGO)
6°00'S 71°30'E
Indian Ocean
UK vs. Maldives
56,13 km²

ST MARTIN'S ISLAND
20°37'38.12"N 92°19'21.28"E
Bay of Bengal
Bangladesh vs. Myanmar
16 x 0,5 km

BACH LONG VI ISLAND
20°08'N 107°43'E
Gulf of Tonkin
Vietnam vs. China
Top elevation: 58 m

WOODY ISLAND (PARACEL ISLANDS)
16°40'N 112°20'E
South China Sea
Disputed China, Taiwan, Vietnam
Archipelago with over 130 features;
top elevation: 14 m

SCARBOROUGH SHOAL
15°11'N 117°46'E
South China Sea
Disputed China, Taiwan, Vietnam
atoll 150 km²; top elevation: 1,8 m

PEDRA BRANCA
1°19'49"N 104°24'21"E
South China Sea
Singapore vs. Malaysia
137 x 60 m

SENKAKU ISLANDS/ PINNACLE ISLANDS
25°44'41.49"N 123°28'29.79"E
East China Sea
Japan vs. Taiwan
8 features: 800 m²–4,3 km²;
top elevation: nominal-383 m
(largest: Uotsuri-shima)

LIANCOURT ROCKS
37°14'30"N 131°52'0"E
Sea of Japan
South Korea vs. Japan
16 ha; top elevation:169 m

KUNASHIR ISLAND (SOUTHERN KURIL ISLANDS)
44°07'N 145°51'E
Sea of Okhotsk
Russia vs. Japan
123 x 30 km; top elevation 1819 m

WAKE ISLAND
19°18'N 166°38'E
Pacific Ocean
United States vs. Marshall Islands
7.1 km²; top elevation: 6 m
Population: 94

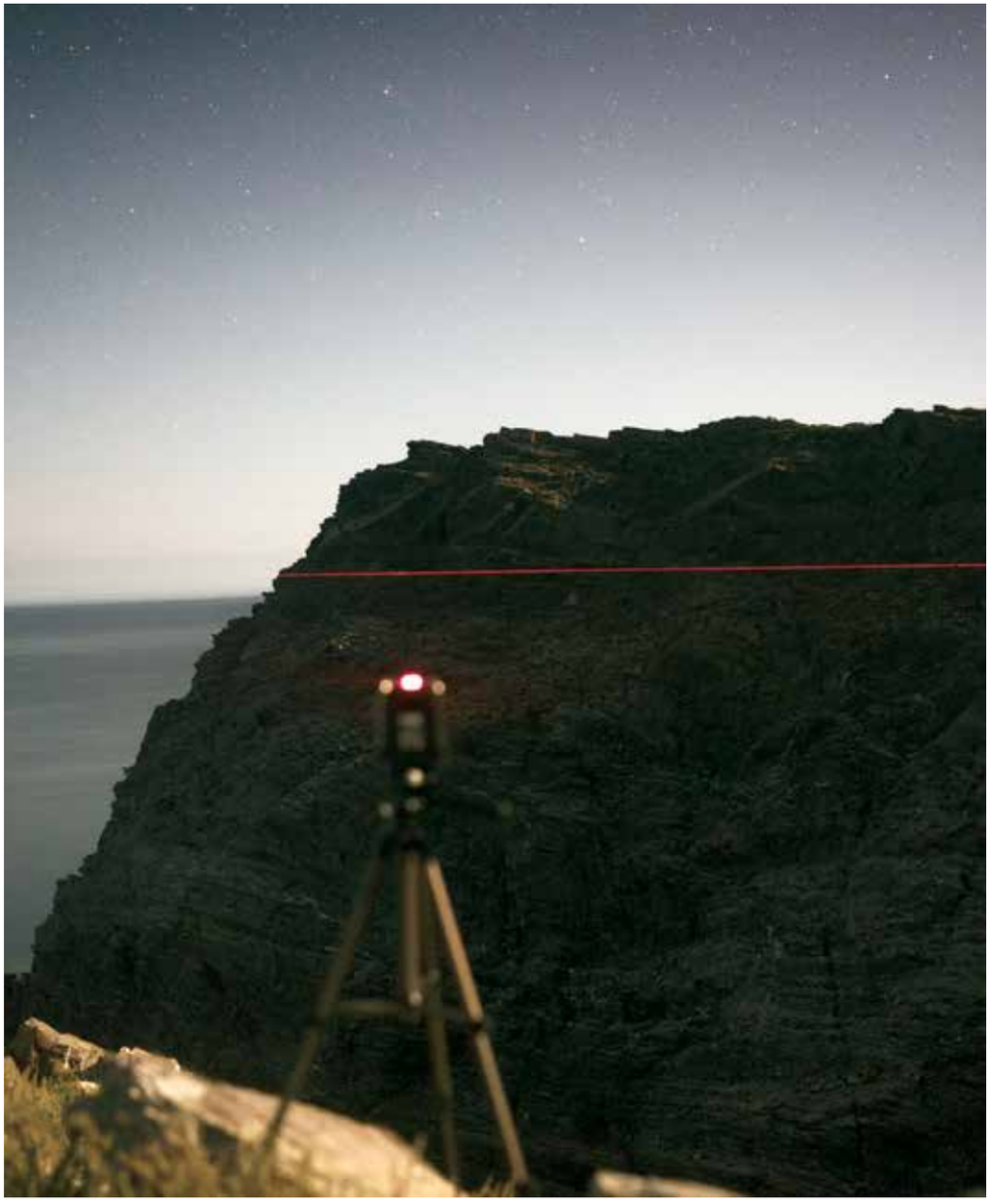
MATTHEW ISLAND
22°21'S 171°21'E
Oceania
France vs. Vanuatu
0,7 km²; top elevation: 177 m

HUNTER ISLAND
22°22'S 171°43'E
Oceania
France vs. Vanuatu
0,6 km²; top elevation: 242 m

SWAINS ISLAND
11°03'20"S 171°04'40"W
Pacific Ocean
United States vs. Tokelau
151 ha low

Islands, as physical and mental constructs require our embrace of contradictions: land and water, wealth and poverty, fixed form and fluctuating boundaries, paradisiacal beauty and, increasingly, ecological devastation. Charlotte Hansson and Luis Callejas's Pelagic Alphabet, exhibited at the 2016 Oslo Triennale, began with a study of islands that are the subject of territorial conflicts. Interrogating the legal definition of island, the project seeks to highlight the specificity of each geopolitical conflict, while also recognizing their typological sameness. The project documents and delineates forty such oceanic islands precisely in plan, but manipulates the topographic elevations to create each as a form of lighthouse. These projected transformations capitalize on loopholes in international maritime law to disrupt the islands' status, thus subverting the basis for established treaties with the intention to rebalance various territorial claims.

Pelagic Alphabet consists of a study of lighthouse islands. They are generic, as they belong to the isotropic condition of the sea. They are specific, as each one responds to different geopolitical conflicts. Displayed as ceramic models, each lighthouse intensifies and represents the invisible pressures to which these border architectures are subjected. Some have been contested for centuries while others behave as enclaves to claim future extraction sites in open oceans. Perhaps some of these ceramic models will outlast their real counterparts. Digitally drawn and hand modeled by Callejas and Hansson with fire, advice, and obscure formulas by Rodrigo Callejas and Juliana Velez, the bad islands are fictions where sand banks become rocky coasts, perhaps not possible to inhabit any longer . . . and where morphological transformations redefine their legal existence.



UNUSUAL SUSPECTS:

BAD

OBJECTS

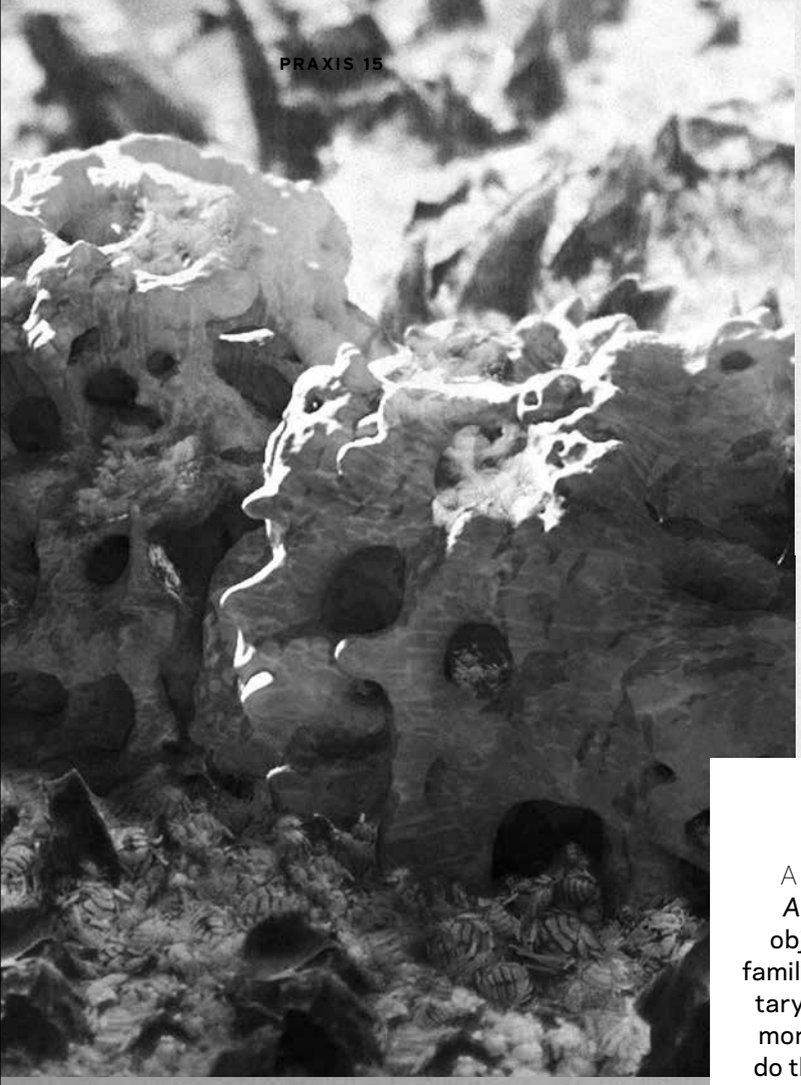
FILIP TEJCHMAN

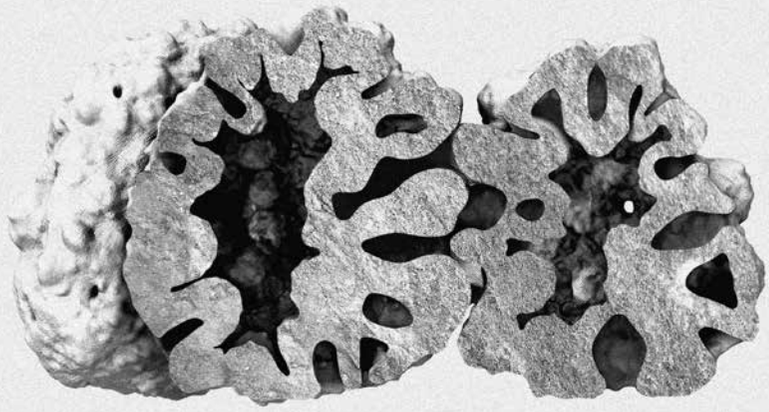
Introducing: *Bad*

Bad is not bad. It is not good either—by any virtuous or ethical measure—because *bad* does not necessarily connote an ideology, or otherwise signify some pre-existing or *a priori* value.[1] What *bad* represents is a form of "*trained judgement*" that thrives at the convergence of tacit and explicit disciplinary knowledge.[2] In this sense, *bad* is situated between positive and negative epistemic modalities; under certain circumstances it provokes the establishment of some new reference and in other instances *bad* destabilizes existing cultures or systems of classification, altering both political and aesthetic subjectivities.[3] In this sense, *bad* belongs to a special class of reflective aesthetic judgements that precede or emerge in response to the production of new knowledge. They work to activate and mutate the numerous subjectivities that are responsible for conditioning and enforcing those sensibilities that we value. In contrast to determinative judgements such as good, cute, or cool, which represent specific idealized virtues, *bad* can be recognized by the absence or negation of previously defined qualities; it represents a transitive moment preceding the establishment of a sensibility or specific frame of knowing. Behaving in a manner similar to "*interest*," which the literary critic Sianne Ngai defines as the synthesis of "*affect-based judgement and concept-based explanation*," *bad* operates as both performance and pedagogy in assigning value to a thing that has yet to be conceptualized or that diverges from a recognized norm in unfamiliar ways. The value(s) of *bad* is subsequently contingent on its ability to wrest novelty from the familiar.[4] In other words, interest can cultivate the attention we direct toward something the same way that *bad* provokes a confrontation with those ideas or standards that we most previously found satisfactory.

Lurking inside this confrontation with the previously satisfactory, or good, is a necessary sacrifice: the inevitable and occasionally unconscious decision to subsume or expel a disciplinary reference, habit, or principle.[5] This could be a particular area of knowledge, such as an encyclopedic familiarity with the classical orders, or mastery of a range of techniques, like those associated with manual drafting. Architectural history is built on the sediment of things and ideas that were at some point satisfactory, but which were eventually transformed into various types of anachronisms. Consider the introduction of Hal Foster's, *The Return of the Real* (1996), whose critical examination of artistic practices associated with the post-war Avant-garde began by asking, "*how do we tell the difference between a return to an archaic form of art that bolsters conservative tendencies in the present and a return to a lost model of art made to displace customary ways of working?*"[6] Indeed, how does a discipline—and its attendant institutions—negotiate between

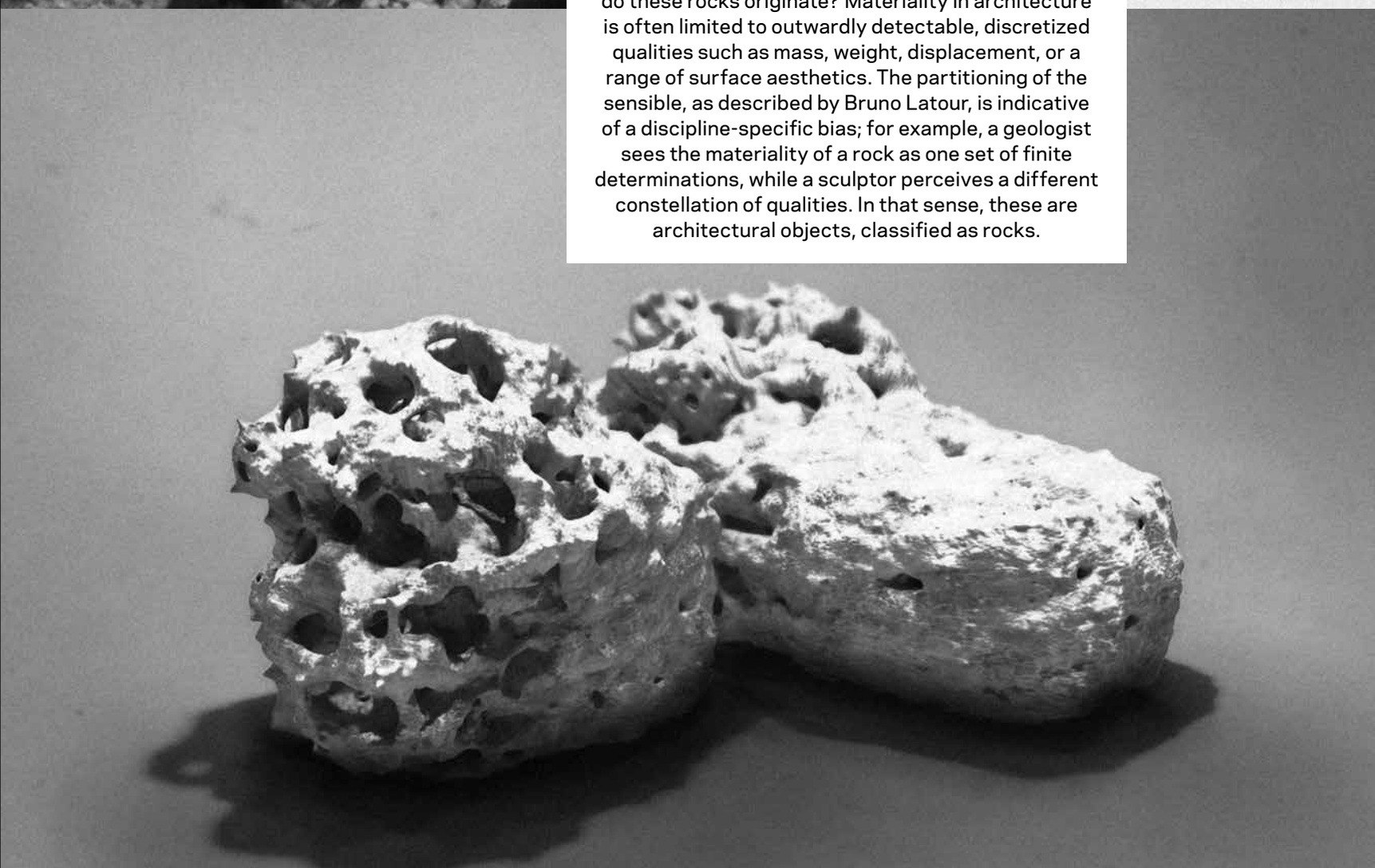
1 Terms used here such as determinative and reflective judgement, as well as purposiveness, are in reference to Immanuel Kant, *Critique of Judgement* (1790 orig.), trans. Werner S. Pluhar (Indianapolis: Hackett, 1987).
2 Sianne Ngai, *Our Aesthetic Categories: Zany, Cute, Interesting* (Cambridge: Harvard University Press, 2012), 110-173.
3 Bruno Latour, "First Lecture: On the instability of the (notion) of nature" from, *Facing Gaia: Eight Lectures on the New Climatic Regime* (Cambridge, UK: Polity Press, 2017), 8.
4 Ngai, *Our Aesthetic Categories*.
5 Mario Gandelsonas, "From Structure to Subject: The Formation of an Architectural Language" in *Oppositions Reader: Selected Essays 1973-1984*, ed. K Michael Hays (New York: Princeton Architectural Press, 2009), 201-223.
6 *Hal Foster, The Return of the Real: The Avante-Garde at the End of the Century* (Cambridge: MIT Press, 1996), 1.





ARTIFACTS

ADAM FURE/SIFT STUDIO describes these *Artifacts* as, "Not representations of rocks, not objects mimicking rocks, just rocks." They are not familiar rocks; they do not reveal patterns of sedimentary layering, igneous mineralization, or other metamorphic processes. From what dimension of nature do these rocks originate? Materiality in architecture is often limited to outwardly detectable, discretized qualities such as mass, weight, displacement, or a range of surface aesthetics. The partitioning of the sensible, as described by Bruno Latour, is indicative of a discipline-specific bias; for example, a geologist sees the materiality of a rock as one set of finite determinations, while a sculptor perceives a different constellation of qualities. In that sense, these are architectural objects, classified as rocks.

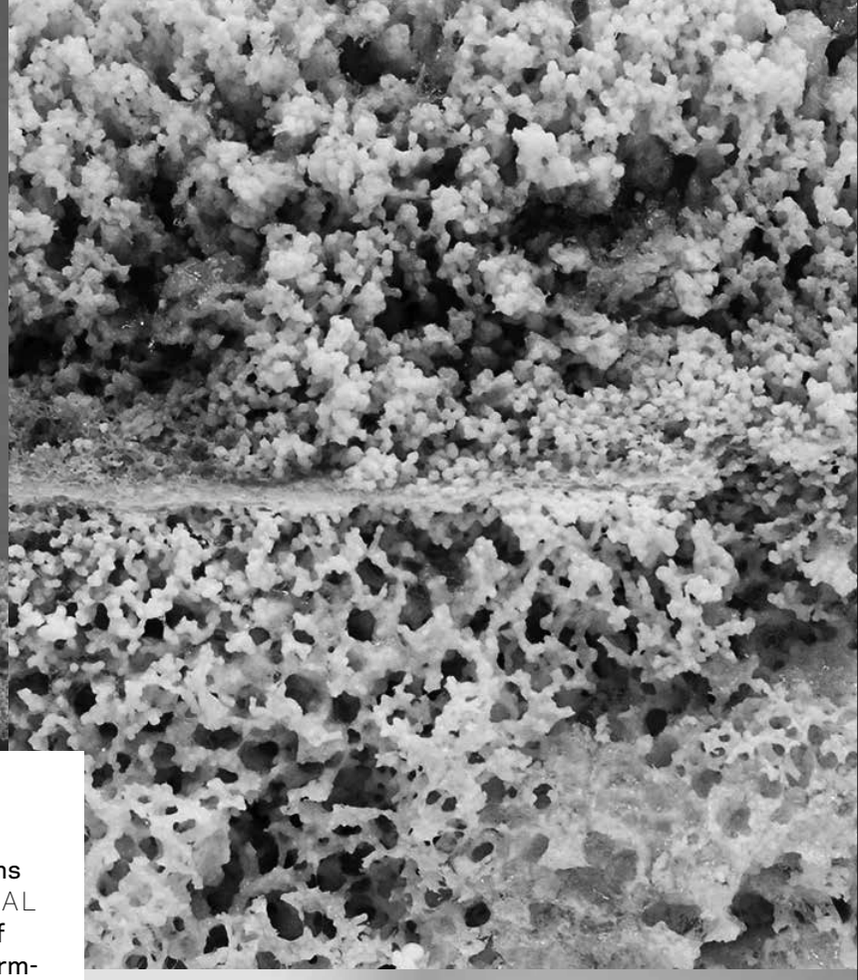


ROCKS NO. 1-12

In *Rocks nos. 1-12,* MICHAEL MEREDITH AND HILARY SAMPLE/ MOS ARCHITECTS distort the anticipated material effect of geology by sublimating it with something that was previously un-relatable: beanbags. Added to this is the flattening of sign and signifier, through which the utility of beanbag-as-furniture is displaced by beanbag-as-architectural-program. This reciprocal encoding of object and effect produces a loosening of architectural principles through the inability or insufficiency of disciplinary standards to describe or represent the *Rocks*.

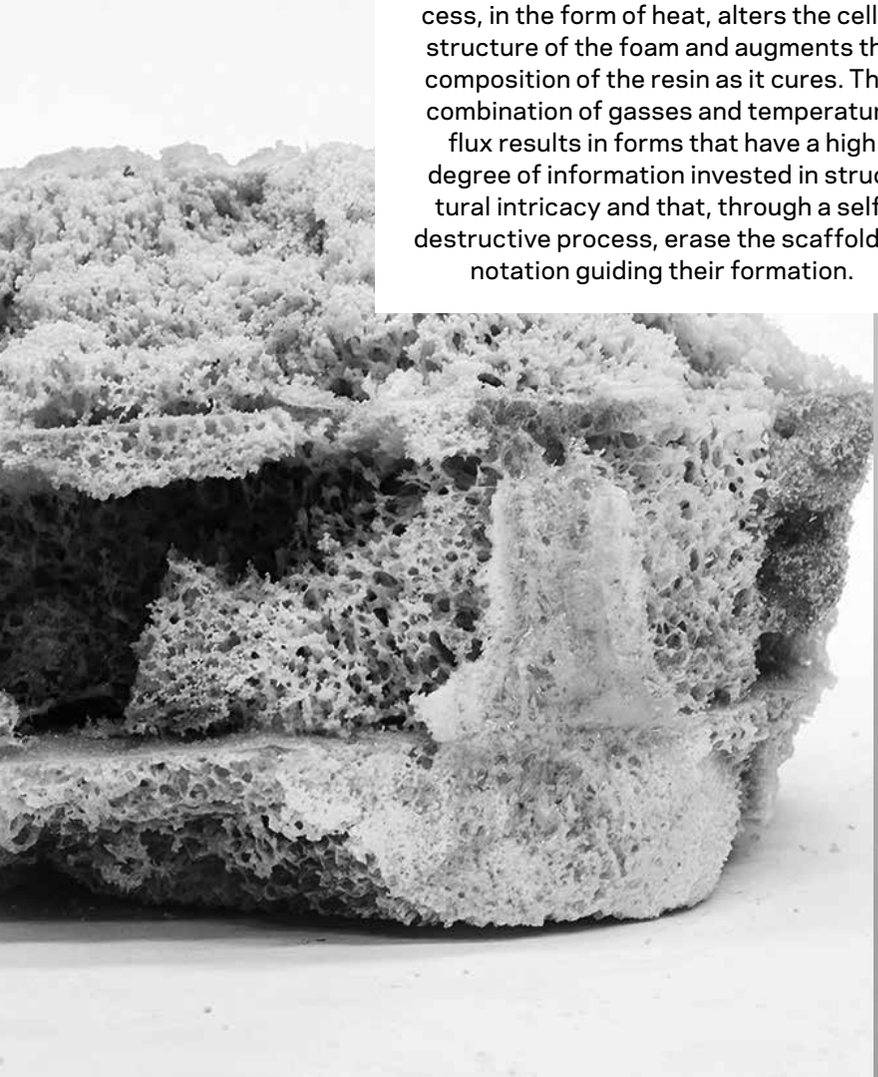
CITY OF GLASS BALLOONS

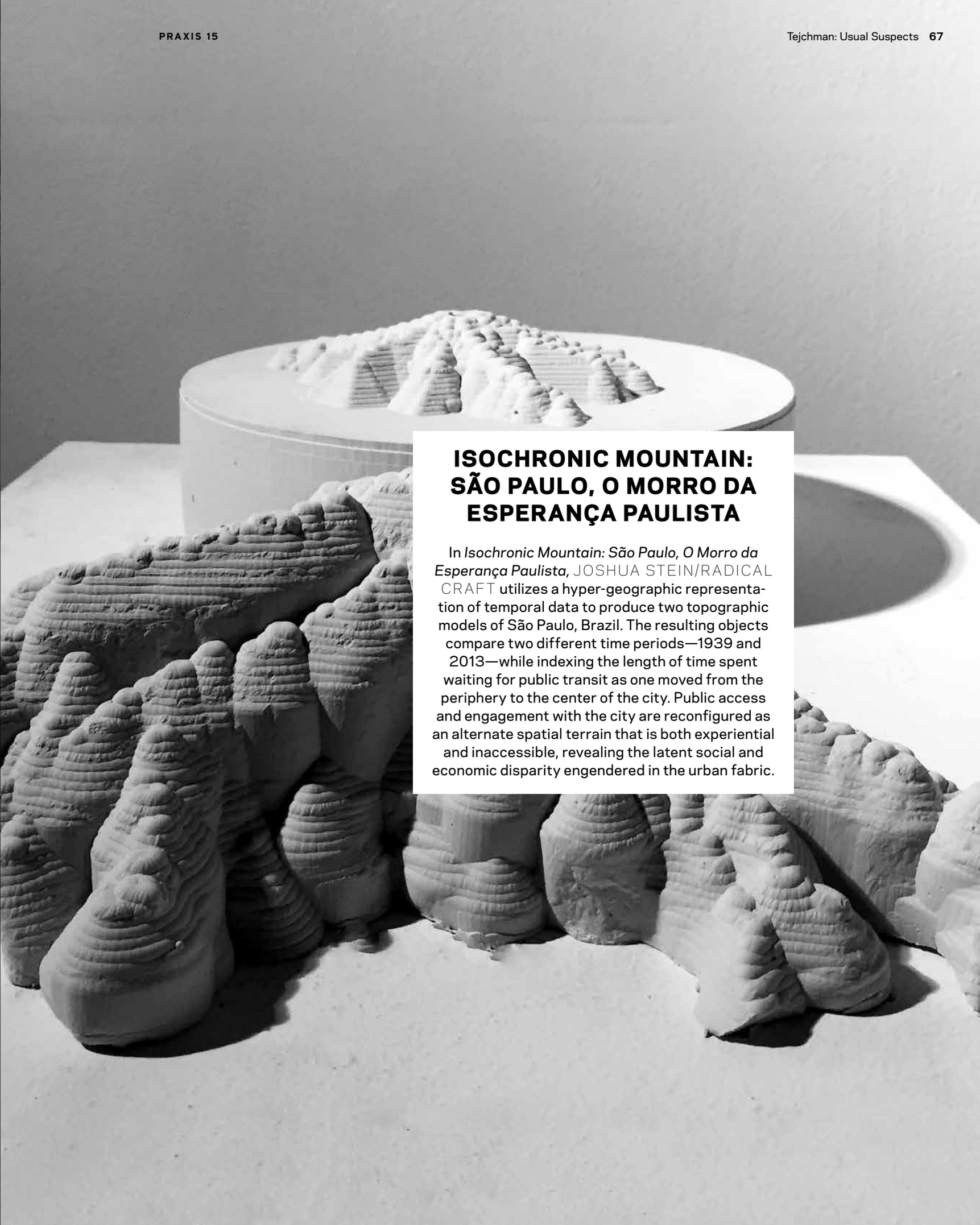
EVAN DOUGLIS STUDIO explores the indeterminacy of a material—molten glass—in relation to a set of fixed and calibrated constraints offered by another—stainless-steel meshes. The convergence of these two materials is a conflation of organizational and informational systems. The surface wire-frame is tangible but, rather than describe the extents of the volume, it indexes the original constraints. The newly emergent structure embodies the entropy, or the degree of order, corresponding to the information within the glass and mesh system.



SIT

Scaffolds or constraint logics informs the "volatile" formwork used by FAYSAL TABBARAH in the development of *Almost Natural Things* and *Sit*. The formwork is made of foam that ignites an exothermic co-reaction with the casting resin. Energy released through this process, in the form of heat, alters the cellar structure of the foam and augments the composition of the resin as it cures. This combination of gasses and temperature flux results in forms that have a high degree of information invested in structural intricacy and that, through a self-destructive process, erase the scaffold or notation guiding their formation.



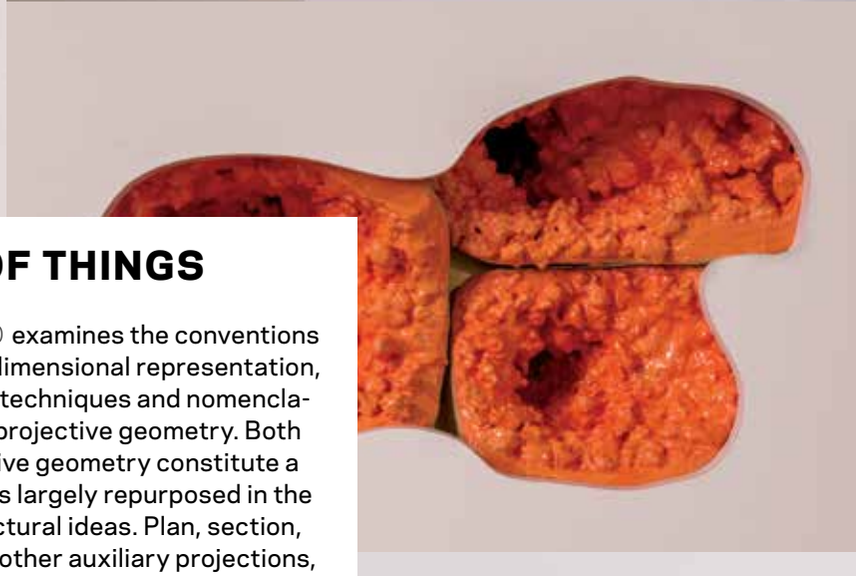


ISOCHRONIC MOUNTAIN: SÃO PAULO, O MORRO DA ESPERANÇA PAULISTA

In *Isochronic Mountain: São Paulo, O Morro da Esperança Paulista,* JOSHUA STEIN/RADICAL CRAFT utilizes a hyper-geographic representation of temporal data to produce two topographic models of São Paulo, Brazil. The resulting objects compare two different time periods—1939 and 2013—while indexing the length of time spent waiting for public transit as one moved from the periphery to the center of the city. Public access and engagement with the city are reconfigured as an alternate spatial terrain that is both experiential and inaccessible, revealing the latent social and economic disparity engendered in the urban fabric.

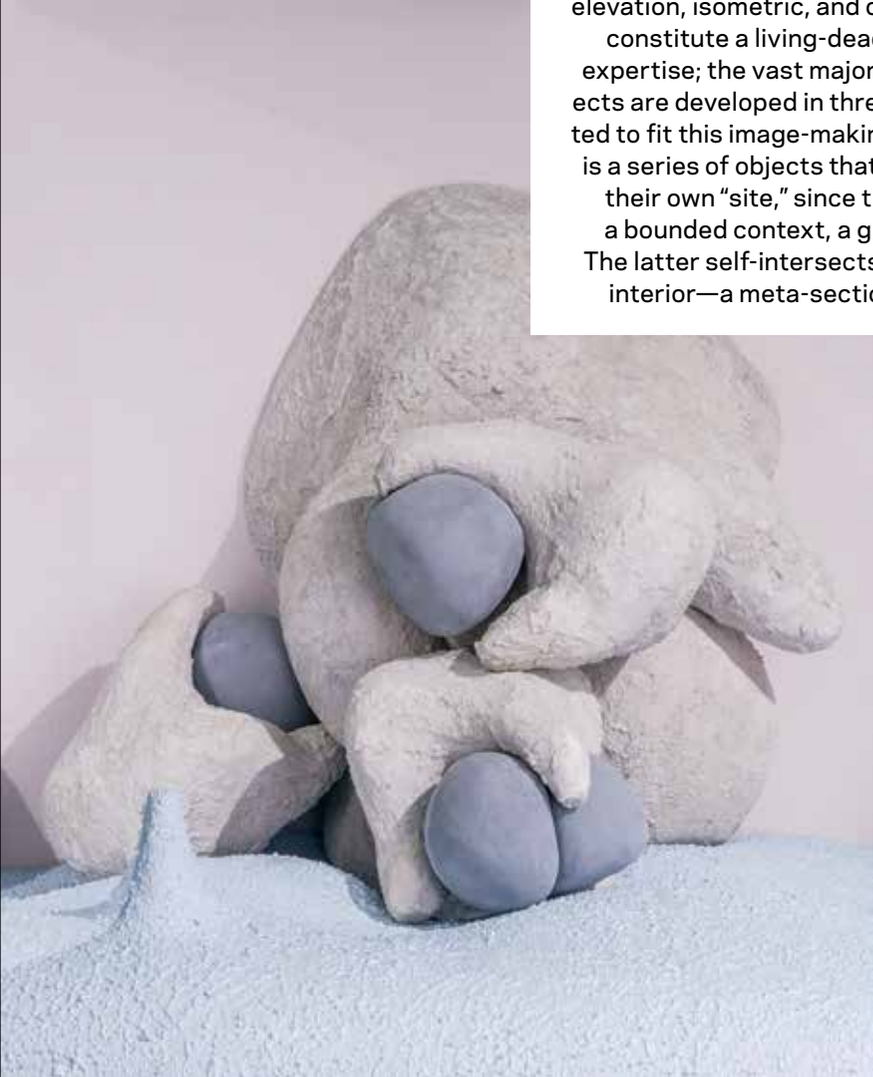
FACE-TO-FACE

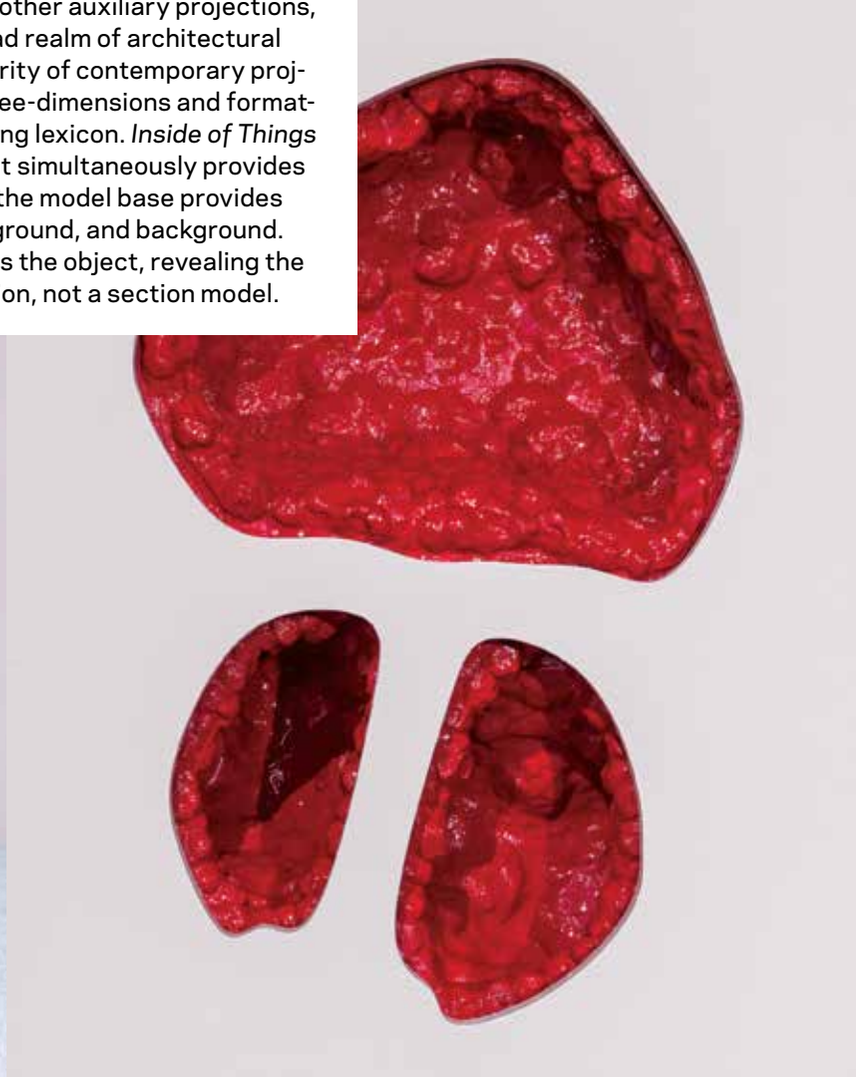
Face-to-Face, by FLORENCIA PITA AND JACKILIN HAH BLOOM/PITA+BLOOM, uses multiple operative references. The six facade layers, held equidistant from one another, use an abundance of elevations to produce a volume that suggests a house-like silhouette—a quality echoed in the stucco colors.

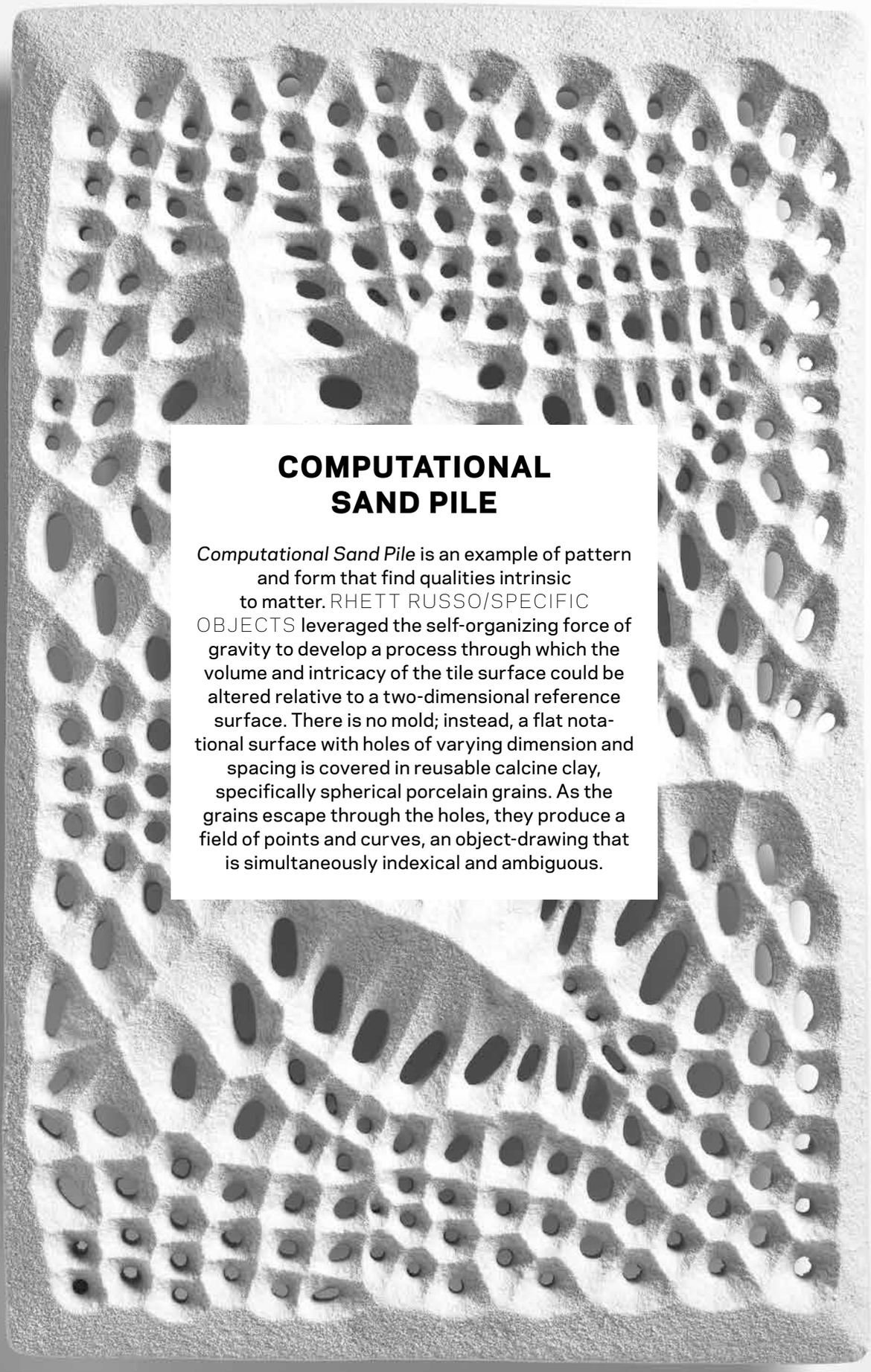


INSIDE OF THINGS

ELLIE ABRONS/EADO examines the conventions and mechanisms of two-dimensional representation, with an emphasis on the techniques and nomenclature of descriptive and projective geometry. Both descriptive and projective geometry constitute a body of knowledge that is largely repurposed in the presentation of architectural ideas. Plan, section, elevation, isometric, and other auxiliary projections, constitute a living-dead realm of architectural expertise; the vast majority of contemporary projects are developed in three-dimensions and formatted to fit this image-making lexicon. *Inside of Things* is a series of objects that simultaneously provides their own "site," since the model base provides a bounded context, a ground, and background. The latter self-intersects the object, revealing the interior—a meta-section, not a section model.

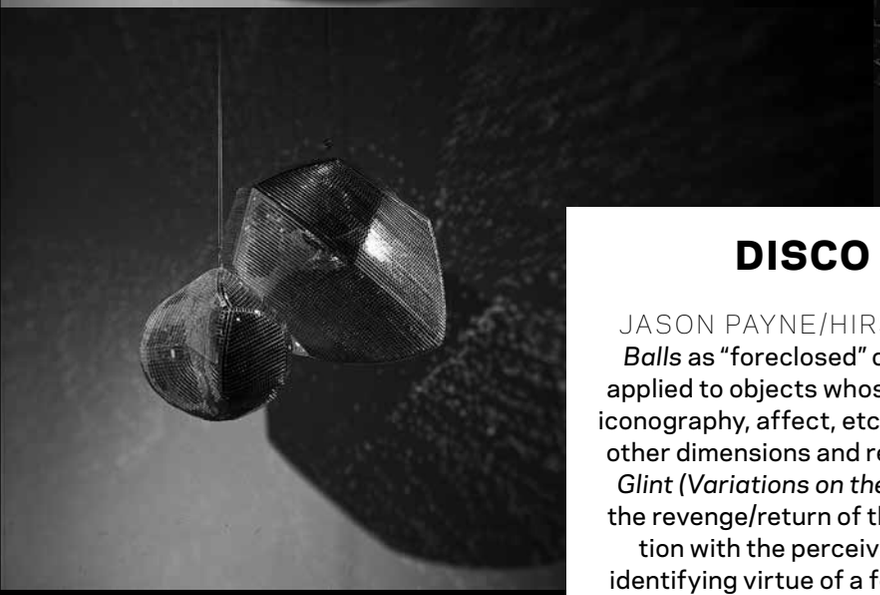


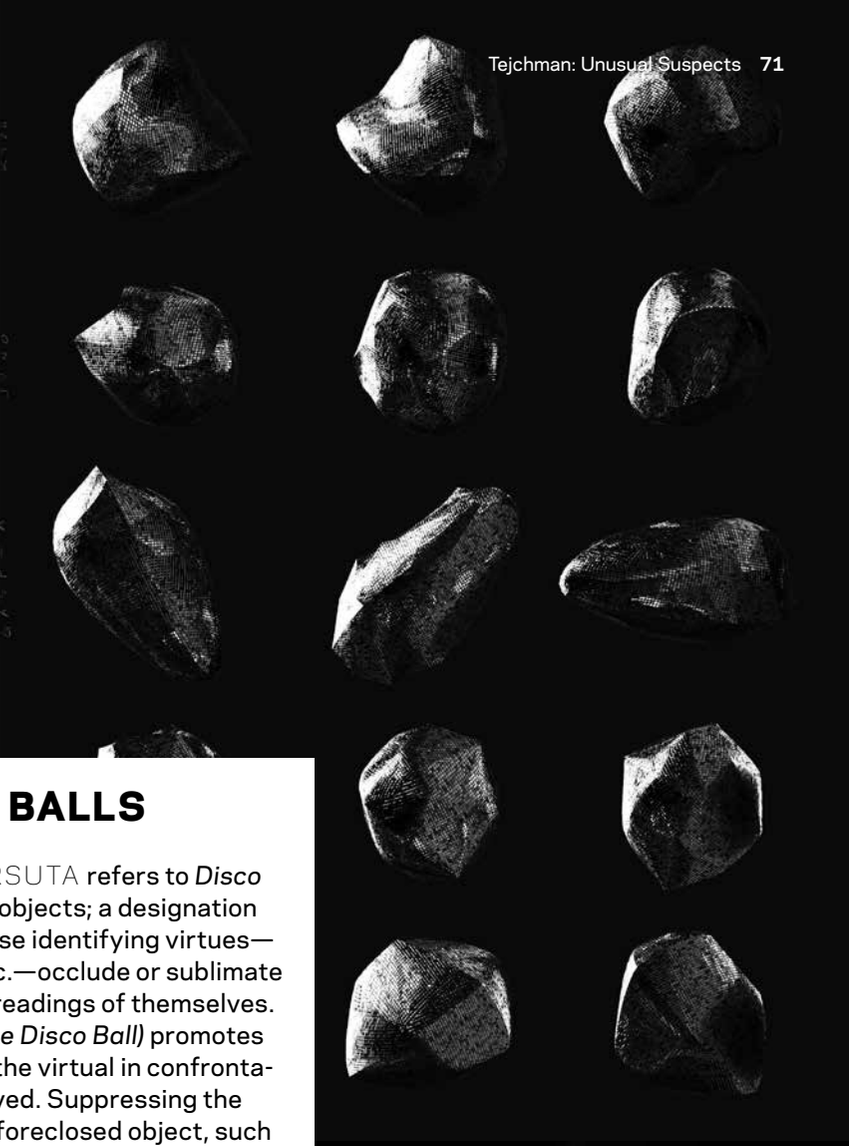




COMPUTATIONAL SAND PILE

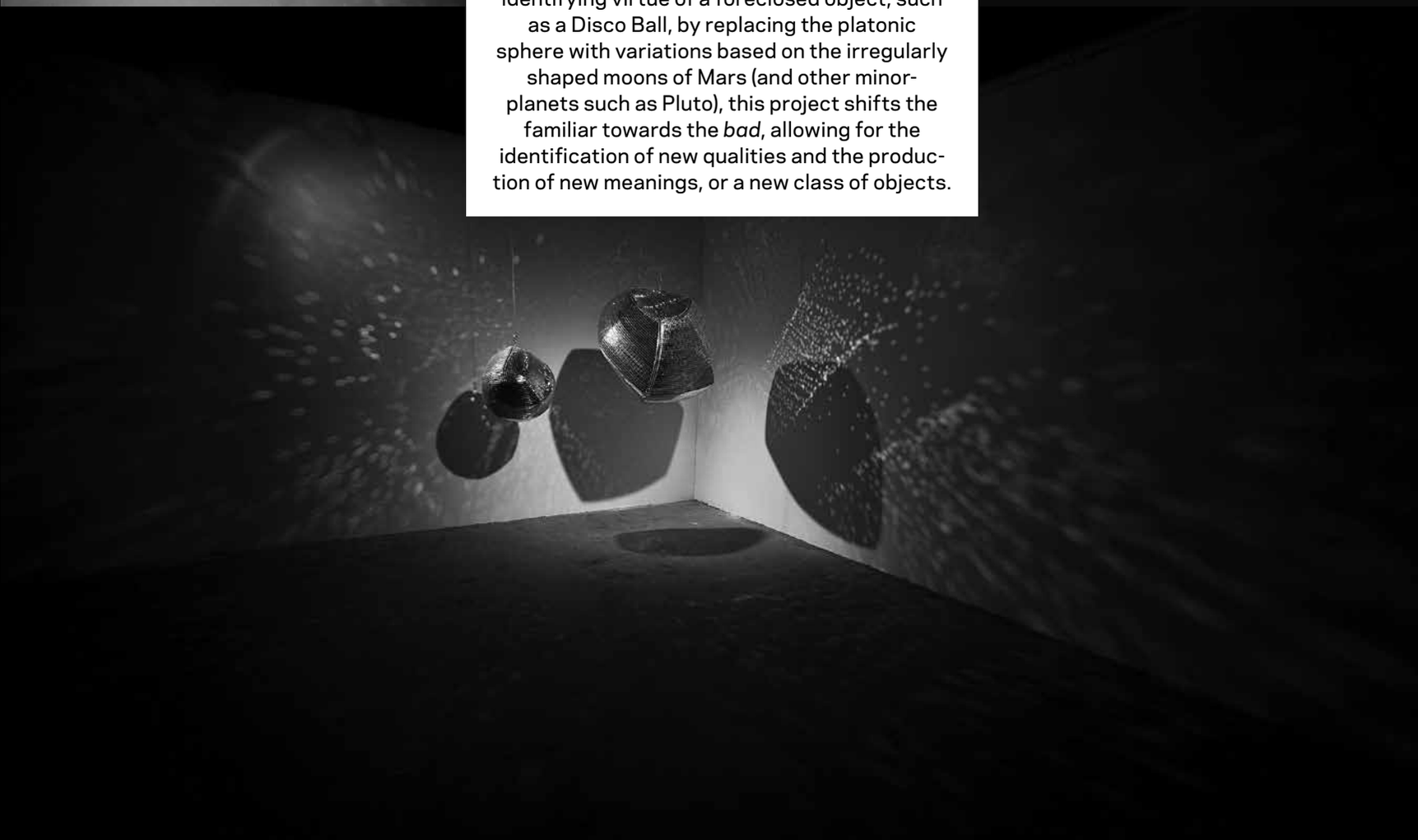
Computational Sand Pile is an example of pattern and form that find qualities intrinsic to matter. RHETT RUSSO/SPECIFIC OBJECTS leveraged the self-organizing force of gravity to develop a process through which the volume and intricacy of the tile surface could be altered relative to a two-dimensional reference surface. There is no mold; instead, a flat notational surface with holes of varying dimension and spacing is covered in reusable calcine clay, specifically spherical porcelain grains. As the grains escape through the holes, they produce a field of points and curves, an object-drawing that is simultaneously indexical and ambiguous.





DISCO BALLS

JASON PAYNE/HIRSUTA refers to *Disco Balls* as "foreclosed" objects; a designation applied to objects whose identifying virtues—iconography, affect, etc.—occlude or sublimate other dimensions and readings of themselves. *Glint (Variations on the Disco Ball)* promotes the revenge/return of the virtual in confrontation with the perceived. Suppressing the identifying virtue of a foreclosed object, such as a Disco Ball, by replacing the platonic sphere with variations based on the irregularly shaped moons of Mars (and other minor-planets such as Pluto), this project shifts the familiar towards the *bad*, allowing for the identification of new qualities and the production of new meanings, or a new class of objects.



PI][AR

ISAIE BLOCH/ERAGATORY subverts compositional and semiotic part-to-whole relationships and, by extension, the role and hierarchy of ornament. In *Pi][ar*, the classical column orders provide an *almost* recognizable reference, while the topological variations of the object's surface denote an emerging (rather than pre-determined) organizational logic. If ornament traditionally was deployed as an index of difference in the aggregation of parts (base, column, capital), here it emerges from indeterminate material processes and fabrication, yielding unpredictable local variations.

MASKS

Masks by WOJR/WILLIAM O'BRIEN JR is a series of elevations realized as objects. Though produced from a variety of materials—primarily wood and stone— the forms are materially agnostic. Yet their fabrication process was highly specific and was almost entirely numerically controlled, governed by variables such as the dimensions of tools—i.e. end-mill diameter or saw-blade kerf—or hierarchies of line-weight. The interchangeability of lines/profiles/tool-paths registers the underlying indifference of information. The re-formatting of an elevation as a tool-path, for example, shifts the accepted reference between elements in drawings, by conflating the path of information with the physical transformation of that information.

promoting concepts that undermine certain intrinsic virtues, while simultaneously maintaining those orthodoxies from which their collective disciplinary identity is constructed? The answer, obviously, is *bad*.

As a starting point for clarifying our understanding of *bad* we might ask the following: how do things—objects, concepts, landscapes, the real and the virtual—become architectural? [7] Historically, this quality could be contingent on the application of familiar typological elements such as the courtyard, the legibility of an originating *ur-form*, or the adherence to an institutionally promulgated organizational schema, such as the classical orders or grids. Some vestiges of these continue to haunt architectural culture-at-large. More recent histories of things-becoming-architectural have favored the formatting associated with various representational traditions. For some, it would seem that images have superseded objects as premier examples of the architectural and that the latter exhibit disciplinary purposiveness only in direct reciprocity to their representational origins. Are there other processes through which things enter into the disciplinary territory of the architectural? By way of provoking our attention and cultivating recognition through judgement, it would seem that *bad* is on some fundamental level concerned with disciplinarity and, once recognized, it serves to further alter the epistemic forces that underwrite the latter. More precisely, *bad* implicates those subjectivities intrinsic to practice, arising from the institutions and traditions that we collectively reinforce as extensions of techniques, pedagogies, criticism, or models of research. Likewise, since *bad* is manifested through exercising some type of trained judgement in practice, it inevitably contends with the techniques and methods of observation and representation. In this sense, *bad* objects are those things that, through negation or absence, subsume certain institutional orthodoxies—such as 20th-century definitions of spatiality and transparency, or prescribed forms of viewing—in favor of new emerging modes of abstraction.[8] Recent conversations about objects have been either reinforced or dismissed relative to their association with the metaphysical musings of *speculative realism* or Object-Oriented Ontologies (OOO). The *bad* objects presented here are wholly within the purview of the discipline and are architecturally specific without relying on the reference to other inaccessible subjectivities. Instead, *bad* objects articulate classes of emerging characteristics that reflect the changing conditions of how architecture is both conceived, interpreted, and described. Though diverse in origin, these changes are generally alterations to the epistemic virtues of the latter; they inform how we construct the ontologies that influence our cultural and disciplinary institutions and, as a result, they anticipate what will cultivate our attention and what will challenge those supporting standards and norms.

7 Here "thing" is used in reference to the primary substance and secondary effects of matter. For an extended interpretation of the boundaries of things as both material and metaphysical substances, see Tristan Garcia, *Form and Object: A Treatise on Things* (Edinburgh: Edinburgh University Press, 2014), 38–46

8 Stan Allen, "Notations and Diagrams: Mapping the Intangible" in *Practice: Architecture Technique + Representation, 2nd ed.* (New York: Routledge, 2009), 66–67

Amant—A Dirtier Truth

SO-IL

Man Ray's "L'Enigme d'Isidore Ducasse" (1920), a series of unknown objects wrapped and tied mysteriously in a cloth

In contemplating form, we have no desire to honestly represent a building's inner workings on its exterior, or for that matter, to make a project's generative diagram legible. Nor are we interested in elaborate façade manipulations to produce some new type of ornamentation or surface effect. As we perpetually rearrange arrays of atoms, we inevitably consider the visual and visceral effects of how users experience our new compositions. The volumetric definition of a building mass reflects a negotiation between internal and external domains, realms that are never one and the same. We are interested in pursuing forms that resist clarity.

In our new building proposal for the gallery Artes Amant, the form shifts between discernible and amorphous, sharp and blurred. As in the fable of the blind men who discover an elephant for the first time, the project's volumetric presence remains unresolved. By alluding to an essential character of a private arts organization that offers space for both the production and experience of contemporary art, our proposal investigates a formal expression that oscillates between articulation and ambiguity: a form not invested in legibility, only flirting with it (see Man Ray's *L'Enigme d'Isidore Ducasse*, previous page).

An array of formal experimentations results from material experiments: blow-dryers shrinking latex over ferrous frames and foam core volumes, shaping subtle curves that rapidly transform into steep inclines and sharp angles. Without warning, these sweeping curves give way to flat planes. Each formal test offers a different opportunity for spatial definition and specificity of use: shallow vaults and intimate spaces are produced as architectural surfaces transition to extreme heights and diffuse the natural light within the galleries. Stretched taut around the gallery volumes, the smooth curvatures allow for a synthetic understanding of the building as a whole and further suggest a relationship between the gallery spaces and their exterior openings. Both an assembly of pieces and a peculiar whole, the form is an uncomfortable presence along the street.

These formal tests were only the beginning. As we developed the design with increasing detail, each iteration added a new layer

Location: Brooklyn, New York, USA, 2017 (unbuilt)

Area: 2040 m² / 22000 sf

Team: Principals: Florian Idenburg, Jing Liu, Ilias Papageorgiou
Project Architects: Kevin Lamyukseung, Ted Baab
Team: Yuko Sono, Ian Olivier, Pietro Pagliaro, Alvaro Seles Gomez, Kerim Miskavi, Lucie Rebeyrol, Yuko Sono, Hannes Kalau vom Hofe, Max Hart Nibbrig, John Chow

Architect of Record: Andrew Reyniak

Structural: Schlaich Bergermann und Partner

MEP: AltieriSeborWieber LLC Consulting Engineers

Lighting: Renfro Design Group

Cladding Consultant: Simpson Gumpertz & Heger

Envelope Consultant: Certain Measures

Civil: PW Grosser

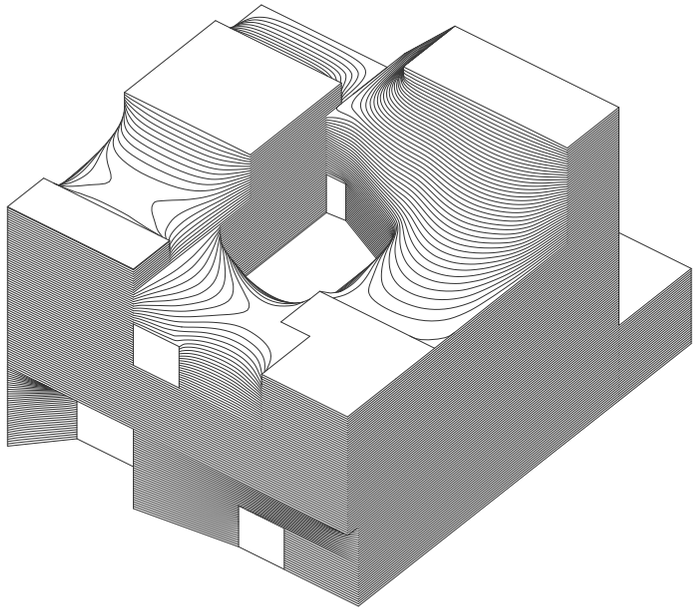
Expediter: J. Callahan Consulting, Inc.

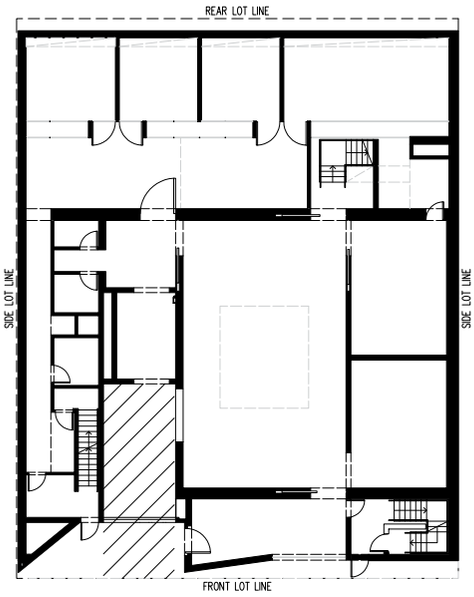
Concrete: Reginald Hough Associates

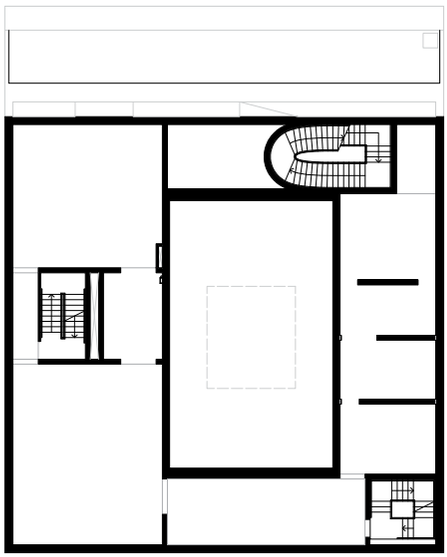
Geotechnical: Langan Engineering

Acoustics / AV: Harvey Marshall Berling Associates

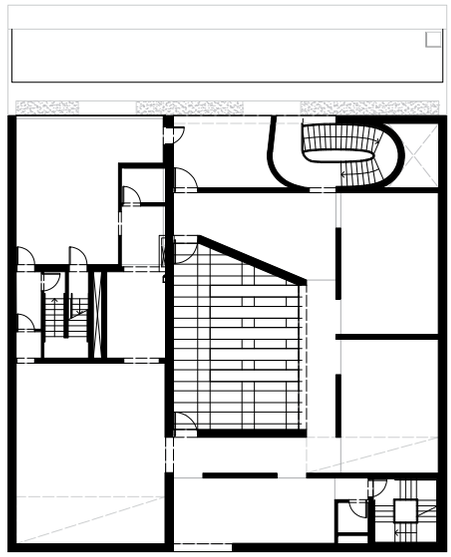
Project Manager: Paratus Group







LEVEL 2 [+43′-6″]

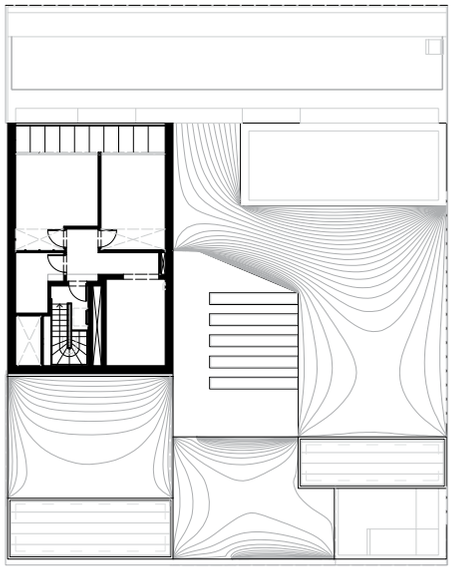


LEVEL 3 [+56′-0″]

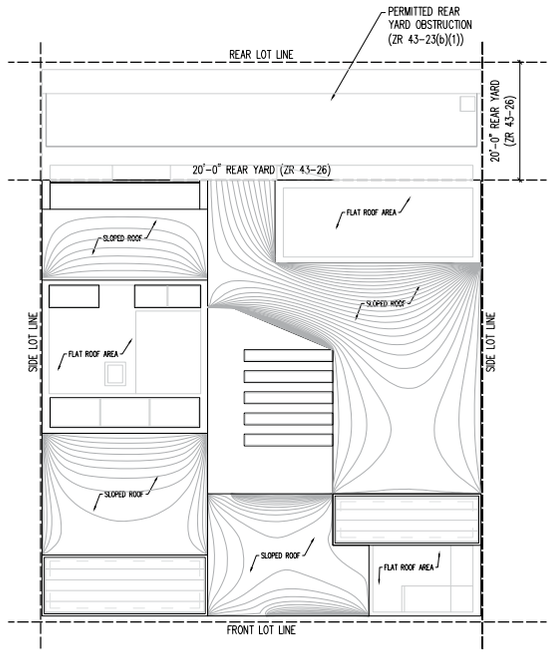
facing page, top: Fabric-wrapped study model.

facing page, below: Axonometric topo base.

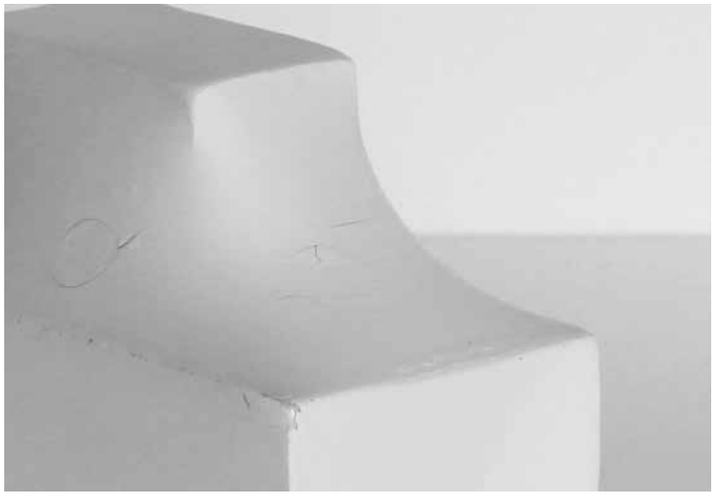
left and below: Floor plans. The proposal for Amant investigates a formal expression that oscillates between articulation and ambiguity. The project offers space for both making and the experiencing of contemporary art.

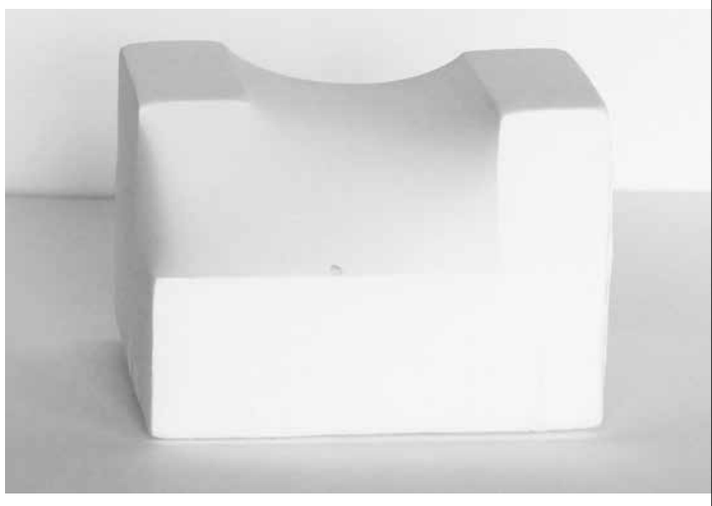


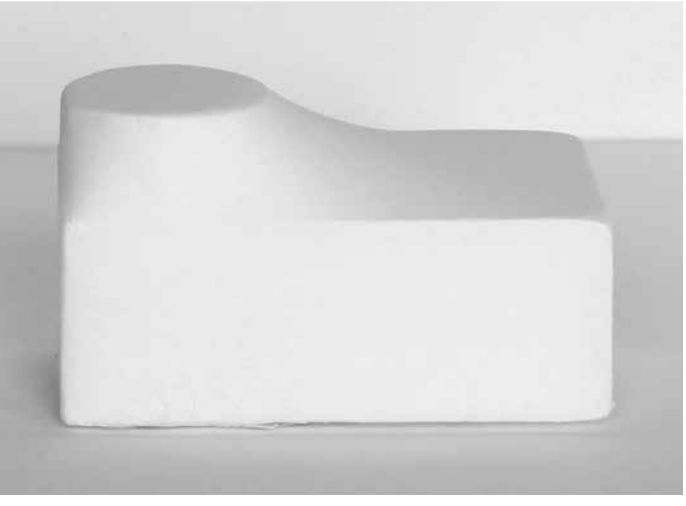
LEVEL 4 [+68′-0″]

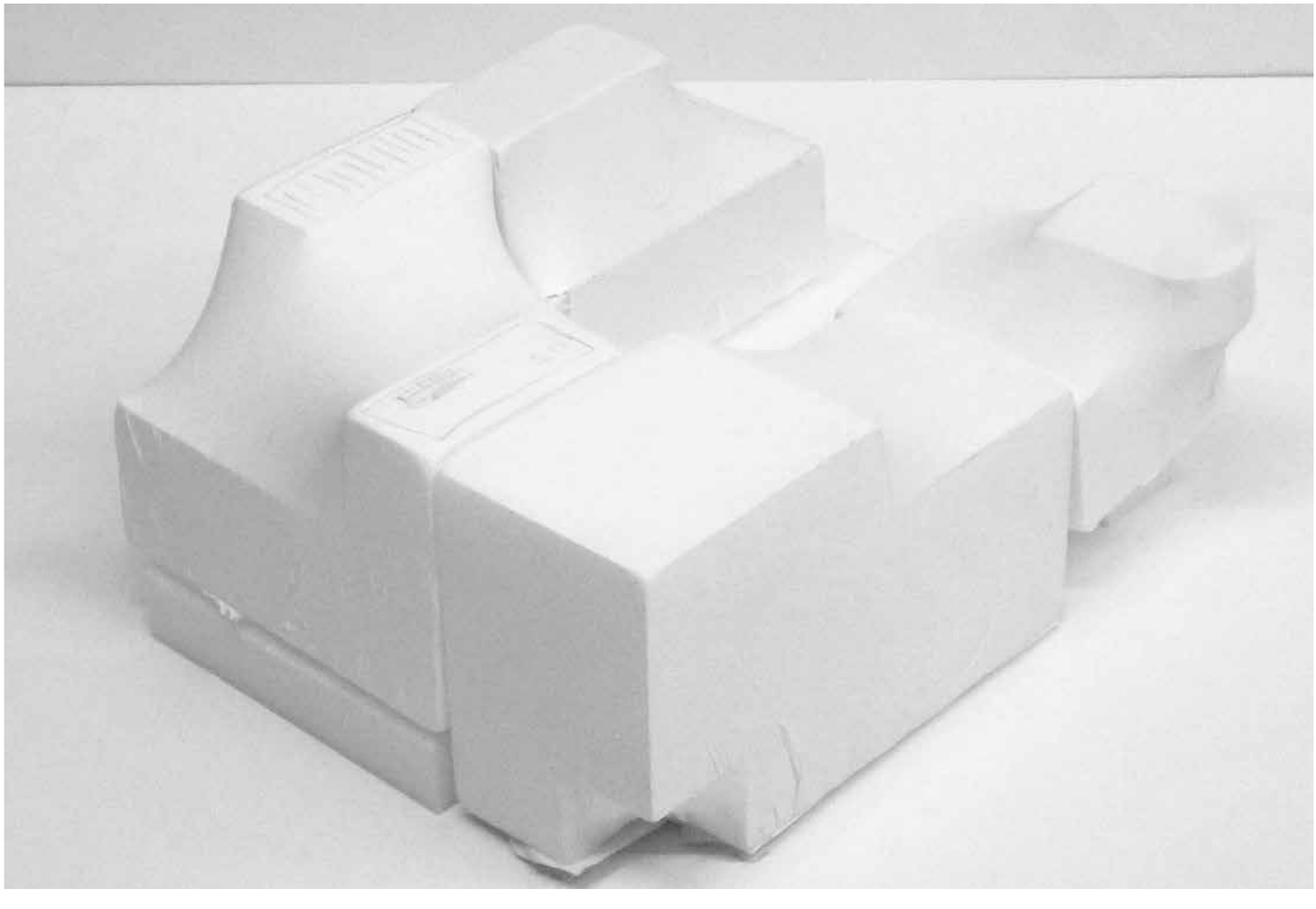


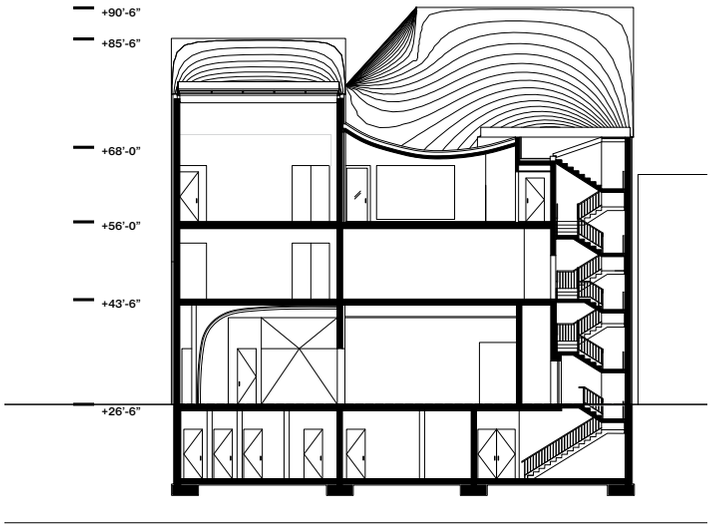
ROOF PLAN



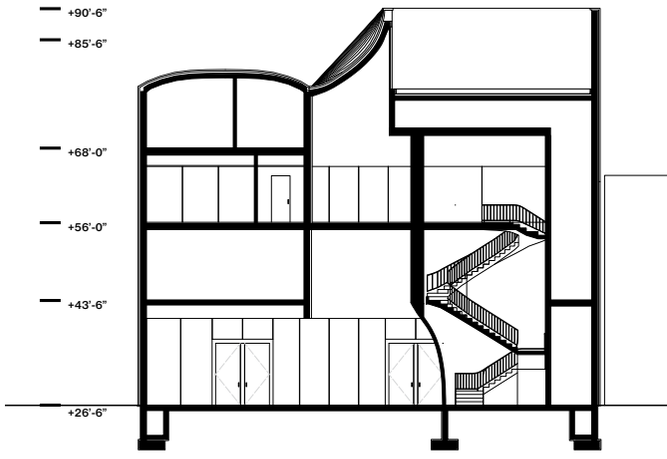








ZONING SECTION 3



ZONING SECTION 2

to the formal logic. For instance, the digital modeling of physical studies required a new precision to the curvature and intentionality of seams. At the same time, the shell as a structural system imposed new geometric constraints as well as challenges. Finally, the desire to work with exposed architectural concrete soon revealed the necessary logic of formwork systems and the unpredictability of shaping a liquid into a solid. Rather than dilute or compromise our original ambitions, we used each new layer of information to interrogate our rational method and to find new ways forward in terms of both design and construction.

Bastard typologies

Formal typology would seem to be distinct as defining characteristics clearly identify one form or geometry from another. While geometric topology is objective, the expression and reading of form is not always so simple. Moreover, certain forms can be duplicitous, belonging to seemingly mutually exclusive categories simultaneously.

While the initial studies of forms were comprised of individual, isolated shapes, we tested them as assemblages—or parts joined into a whole—that unified larger building moves and organizations. In this process of assembly, curved surfaces hinted at new qualities that were not necessarily native to the original tensile forms but instead belonged to a larger formal logic concerned not only with curved surfaces but also edges. Selected seams between surfaces became highly articulated, while others became invisible. The complexity of these double-curved surfaces increased with the addition of new edge constraints, such as an orthogonal window frame introduced into a stretched wall surface. While these moments of specificity were small, their impact on the legibility and synthesis of the volume as a whole was paramount. The formal variations evolved into a cohesive language of double-curved surfaces.

At first glance, these double-curved surfaces resembled classic shell structures and thus implied certain types of structural efficiencies and construction methods. Yet, in order to meet these characteristic efficiencies and construction techniques, the surfaces would have to follow strict and non-negotiable geometric rules. Structural purity and geometric topology were locked together.

Similar to arched vaults and saddle-like hyperbolic paraboloids, our project's double-curved forms could not fit neatly into a single structural category. Felix Candela's shells are not only sculptural, their form is synonymous with a structural logic. His work boasts an "honesty" that structure and form are exactly as they appear. Our intention to generate a diverse array of spatial experiences through adjacencies and overlaps made geometric duplicity both inevitable and more important than simply clarity or honesty.

Rather than hew to an expectation of structural and geometric legibility, we pursued impure logics and hybrid typologies so that each double-curved surface would not belong to only one geometric topology. We fused edges and forced tangencies between adjacent curved

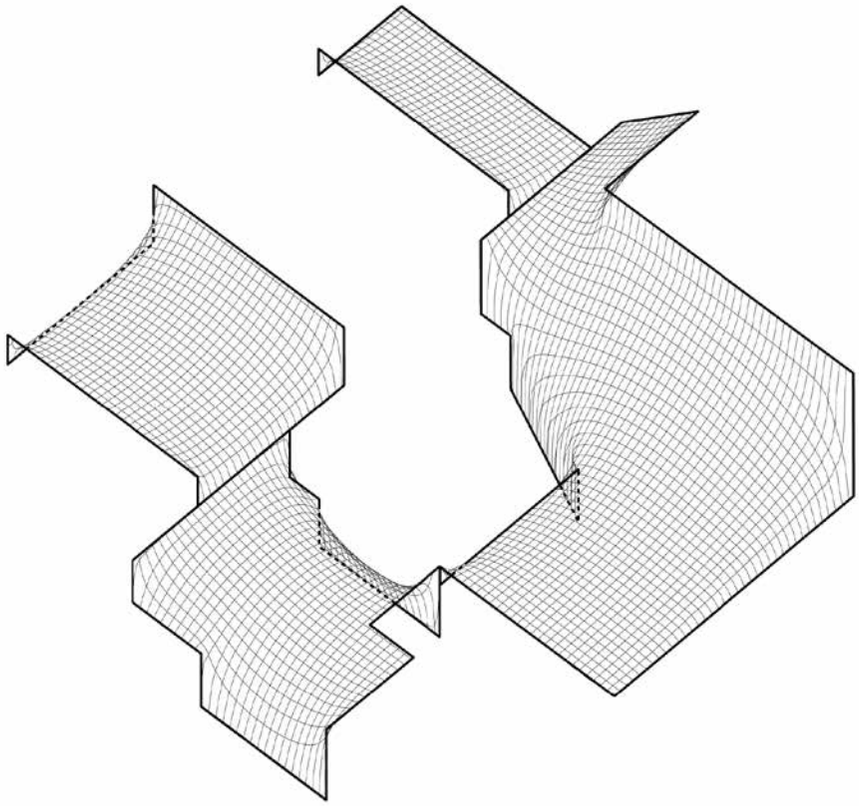
above: The building sections demonstrate how slight curvature transforms rapidly to steep inclines. Sharp angles dissolve into nothing and, without warning, gentle curves withdraw into flat planes.

facing page: The heat-shrink plastic studies (top and middle row)—each offering a different opportunity for spatial definition—were assembled into one massing (bottom).

right: Using Grasshopper scripts produced by Certain Measures, SO-IL created a fabric-like double-curved surface with a user-defined set of boundary edges.

below: The scripts allowed for the manipulation of the surface curvature and edges in order to respond to the programmatic needs of the building.

facing page: Unlike fabric, the digital model can control parameters such as relaxation or tautness in very ways.



and flat surfaces; the identity of individual surfaces belonging to different geometries started to blur and bear new similarities. Like slant rhymes—phrases that seem to rhyme, when in fact they do not—we created very different formal conditions and their resulting systems subsequently looked and acted as they belonged to one cohesive, formal idea.

We pursued this duplicity by testing the same forms within different material constraints and system logics. Cast plaster shells could stand on their own without support edges. Sculpted solid foam followed the tensile membrane shapes but could also allow for local behavior deviations around the edges, suggesting seamlessness between surface and volume. Each material study offered new insight on how to manipulate form, and each local sleight-of-hand benefitted a newly synthetic whole. Ironically, this method of grafting and faking surface provided a more formal architectural "consistency" than any prior geometrically or structurally pure form.

Digital Copies

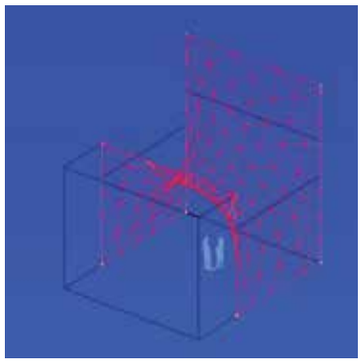
With a posture of precision endowed by unlimited zooming and decimal points, digital models of physical artifacts would seem to be perfect, but like the people who made them, digital tools round, crop, assume, and approximate form.

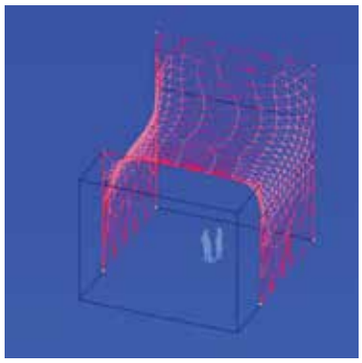
Ostensibly a simulation of the heat-shrink process used to make the study models, the translation of physical artifacts into digital form freed the building geometry of several constraints latent in the physical models yet introduced a new set of limitations related to precision and scale. To digitally control the double-curved surfaces, Andrew Witt of Certain Measures produced a set of tools that enabled the modeling and manipulation of shapes we could only model in physical form. These Grasshopper scripts enabled us to digitally create a fabric-like, double-curved surface within a user-defined set of boundary edges. The double-curved surfaces stretched between otherwise orthogonal program elements and structure. We manipulated the perimeter edges that defined the shape of each surface and then calibrated their curvature and "tautness" in order to control the shape of the gallery spaces inside.

During this process, Witt noted that many of the physical models had definitive characteristics—such as disappearing edges and sharp corners along boundaries—which proved difficult to reproduce digitally. Many of these model details were analog artifacts from the heat-shrink plastic wrap process and the variable tension achieved by differentially heating areas of the shrink plastic.

Witt devised modeling tools that allowed us to manipulate the surface tension through secondary inputs of controlled tautness, which enabled local manipulation and the creation of soft or hard edges. These secondary inputs tailored each surface to the needs of the building: increased height for ceilings, controlled edge tangency to meet vertical walls, and the introduction of seams at corners to meet adjacent volumes. Unlike fabric, the digital tools could control these parameters in precise ways. Witt noted that for some surfaces, we "wanted to control by absolute positions…or relationships," yet we also wanted to control the surfaces in more relative ways. The modeling script allowed us to achieve this by "measuring geodesically along the surface" and "manipulating that surface by that geodesic change," which caused the surface to relax or tighten.

Each digital manipulation enabled local deviations from the formal logic of the purely stretched fabric structure. Witt identified that there was a distinction between the production areas of the surface along edges and the smooth middle region. Edges were inscribed on the surface, with the minimal tension surface itself being only one of the inputs. The localized "mesh surgery" interventions changed the way the triangulated mesh pattern was divided along edges; it also preserved the sharp corners otherwise lost to the digital "stretching" of the surface. In the process of creating the digital copy of a physical artifact, there was a negotiation between a geometrically rigorous form and the necessary building requirements, such as clear ceiling heights and flat walls for mounting art. The digital tools facilitated the calibration of this balance.





With the local manipulation of surfaces, we questioned whether we were creating an "authentic" geometry or merely a sculpted one. Each manipulation was not fundamentally an aberration of a known original but rather a new territory of the surface with separate governing logics, what Witt referred to as "regimes." Instead of merely sculpting an *a priori* form, the process introduced new (unnatural) inputs that affected the dynamic topology of the surface as a whole.

Shells and Imposters

A shell is not a form, but a logic imbued with a Modernist interest in structural expression. This seemingly pure structural logic is ripe for corruption.

Derived from saddle-shaped tensile forms, the project's curved surfaces have geometric affinities with structurally-efficient tensile membrane structures (as in Frei Otto's work) and thin-shell concrete (as in Felix Candela's work) and, in particular, with anticlastic double-curved structures. Deemed negative Gaussian curvature or anticlastic, these surface curvatures face down along one axis and up along the other—similar to hyperbolic paraboloids. These unique qualities can allow a fabric membrane to function as a rigid structure when under tension, or a thin concrete layer to function in compression by eliminating the need for steel reinforcement. While the double-curved roof surfaces in our project came with promises of a shell-like structural logic, our architectural ambitions of a synthetic whole—composed of both double-curved and planar surfaces—meant that we had to resist forcing the envelope's individual parts to a strict geometric regime that could not be applied to the whole.

To realize the complex curved surfaces and concrete walls, we collaborated with Schlaich Bergermann Partner (SBP), a structural engineering firm well known for its use of double-curved and tensile structures. The structural design approach for Amant was a patchwork of both true structural shells and structural imposters: structural slabs with shell-like formal qualities. Formally, the two mimicked one another. In areas marked by significant double-curvature, true shell-like structural behavior allowed for extreme thinness.

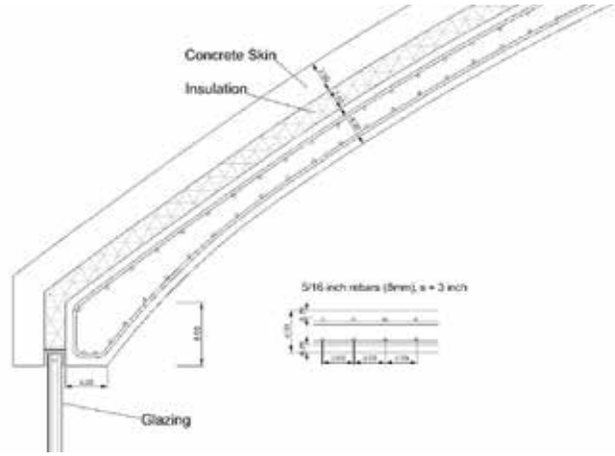
facing page: Detail sections through RS-3, showing local structural thickening at walls. As Stephan Hollinger from SBP explained, the inefficiency of RS-3 becomes clearest in section. In order to compensate for areas that cannot benefit from double curvature, the depth of the concrete rapidly thickens.

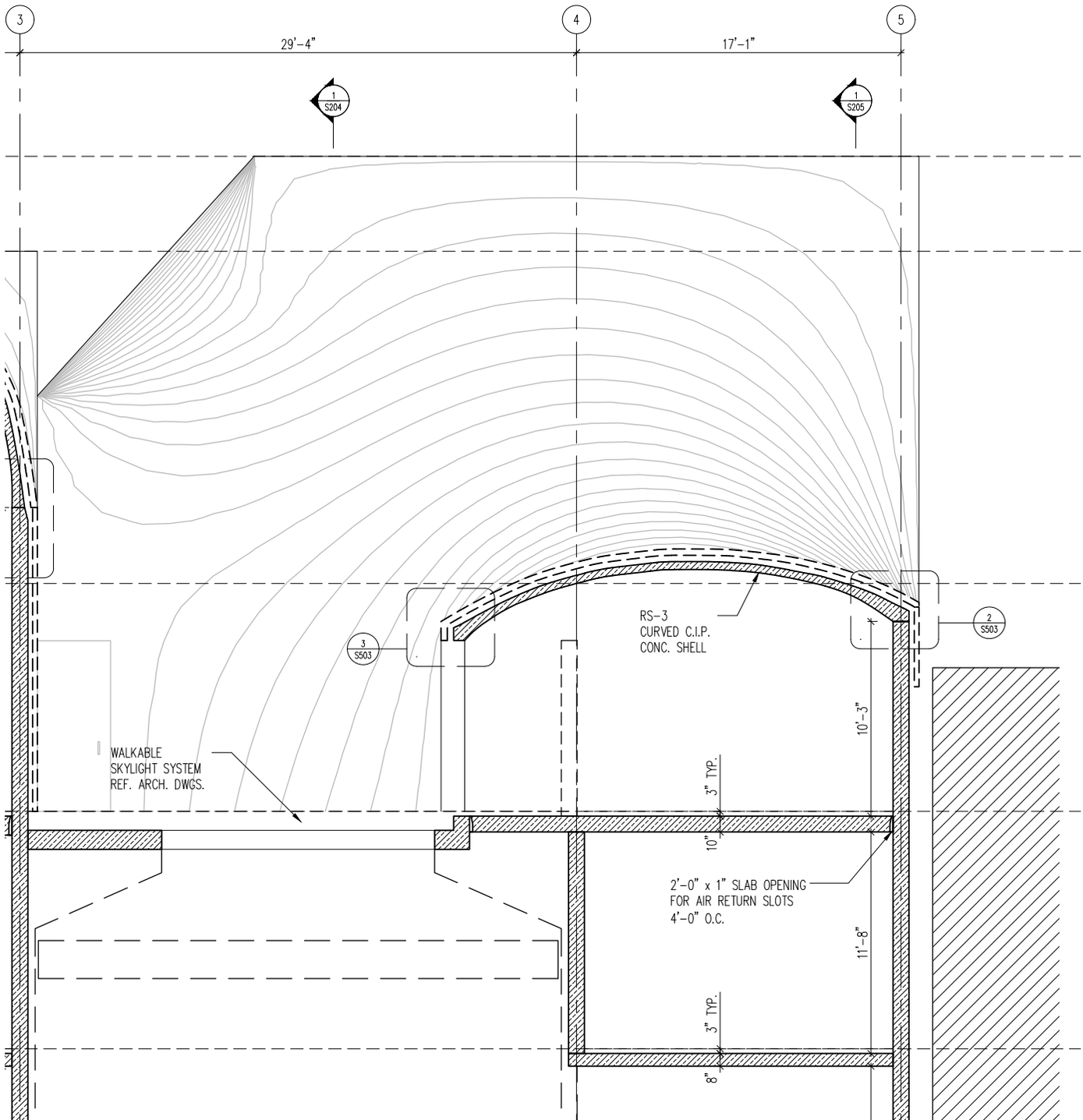
In areas of little or no curvature, the surfaces depended on alternative solutions—thickened concrete, or increased reinforcement—for surfaces to take bending stresses and span the same distances as the "true" shells. Unlike a true compression-only, unreinforced shell structure, the reinforced concrete performed structurally in compression and bent with very little visible difference, which allowed for significant structural bluffing.

We designed four primary roof surfaces, each with different formal objectives. Among these, the largest and most complex roof was over the third-floor galleries, which had the largest area and highest ceiling. The roof was bounded by variable edge conditions, only some of which could be used structurally, such as operable glazing on the west side and double-height open-air volume on the south. Geometrically, this roof deviated the most from the double-curvature required for structural rigidity and was marked by a large central region that approached flatness.

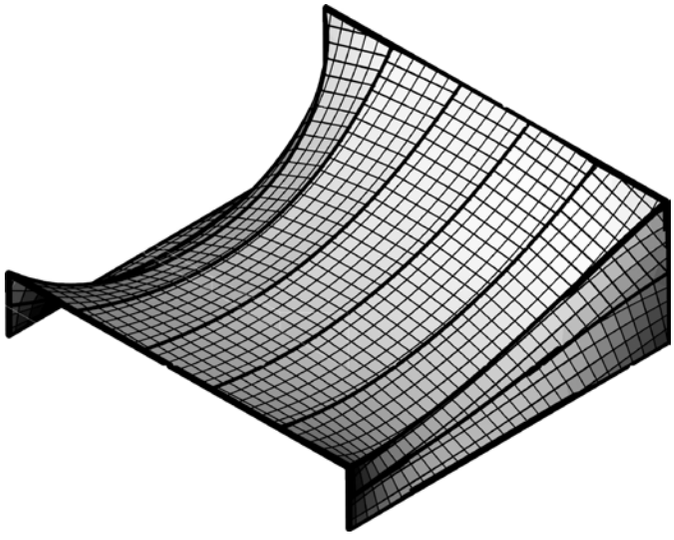
Stephan Hollinger from SBP explained that the roof structure was difficult to engineer because "compared to a pure shell…it was double-curved [and] was not a pure hyperbolic paraboloid." Due to its size and areas of flatness, the roof had to be designed to resist bending moment, and not only "axial forces within a shell," according to Hollinger. Additional formal demands, such as maintaining tangency with certain edges, complicated the effort to determine where the surface should perform like a shell and where it would need to rely on other means. The inefficiency of the large surface became clearest in section, where, as Hollinger noted, in order to compensate for the areas without double-curvature, the concrete surface had to be locally thickened. The concrete thickness was also increased at various moments throughout the building including "restraints to the walls" and "especially in corners" where "high stress would lead to a lot of bending moment."

The two smallest roof surfaces were very close to the ideal hyperbolic paraboloid, and, as Hollinger noted, "the easiest ones to analyze because they had most axial forces and almost no bending." The smaller surfaces were structurally more understandable compared to the hybrid structural approach triggered by the complexity of the curvature


Concrete Skin
Insulation
5/16 inch rebars (8mm), s = 3 inch
Glazing


3
4
5
29'-4"
17'-1"
1 S204
1 S205
RS-3
CURVED C.I.P.
CONC. SHELL
2 S503
3 S503
WALKABLE
SKYLIGHT SYSTEM
REF. ARCH. DWGS.
10'-3"
3" TYP.
10"
2'-0" x 1" SLAB OPENING
FOR AIR RETURN SLOTS
4'-0" O.C.
11'-8"
3" TYP.
8"

and edge conditions of the large roof surface. Even though these smaller surfaces were more predictable and "honest" in the Modernist legacy of structural expression, we were more attracted to the messy and insistent effort needed to engineer the large roof surface. This hybrid approach of mixing shells and slabs gave a new idea of the entire building as a single structure. Rather than suggesting that certain shells were truer than others, the approach started to fuse planar and curved surfaces as conceptually the same. The building became an assembly of complex surfaces, some acted shell-like (axial forces), and others slab-like (bending forces), although these distinctions were almost impossible to perceive.

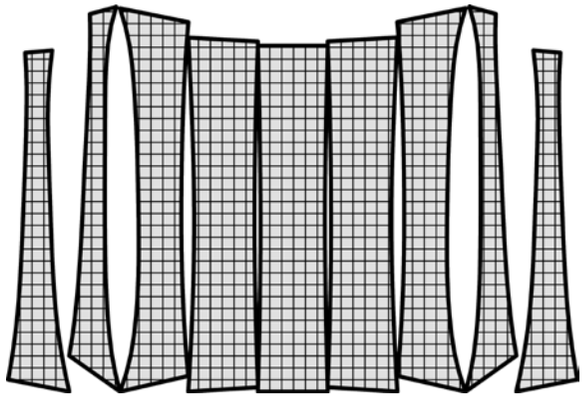


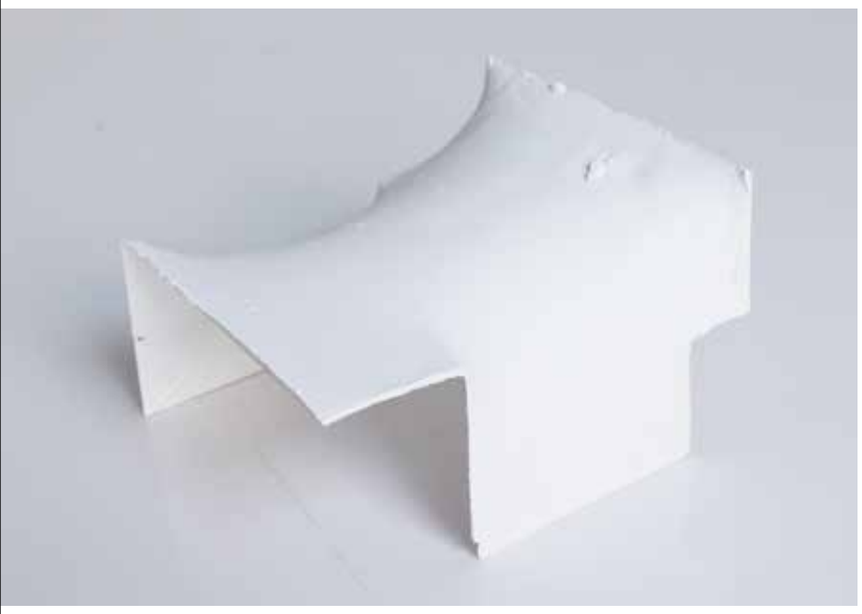
Fabric Forming

In an intimate act of symmetry, formwork must bear all the qualities of the finished concrete yet is typically constructed in ways far less plastic. While liquid concrete easily takes any shape, formwork poses a more rigid problem.

Standard formwork systems do not easily offer a way to form double-curved surfaces. In researching alternatives, we found most methodologies consist of either CNC-milled blocks of high-density foam layered onto standard formwork, or sheets of plywood bent across precision routed frames. Eventually, we stumbled across a more radical strategy that had a surprising resonance with our initial physical studies of heat-shrink plastic stretched over rigid forms.

As part of the BLOCK research group at ETH, Diederik Veenendaal researches formwork constructed of fabric.





facing page, top: The fabric formwork mock-up, engineered by Diederick Veenendaal, uses a high-strength fabric that, when put into tension, mimics the structural shell. Concrete is applied on top of the fabric, whose shape is designed to account for this dead load of the concrete.

facing page, below: Diagram of plywood formwork method, prepared by CW Keller. In this method, curved plywood forms are bent across a routed plywood rib structure. The plywood method has many benefits, not least of which is that it is compatible with flat and curved surfaces.

above: Study of heat-shrink plastic applied over museum-board structure and plaster-cast (top) and plaster cast on top of heat-shrink plastic (bottom).

Like tailored clothing, this system uses a high strength fabric, which mimics a structural shell when put into tension. Concrete is applied on top of the fabric, whose shape is designed to account for the deformation from the dead load of the concrete and to take on the designed curvature.

This technique was also dependent on the geometric logic of double-curved anticlastic surfaces. For our project, the method's feasibility depended on whether it could be used with the forms that deviate most from these criteria, as in the roof surface regions with very low curvature. Veenendaal explained that the fabric formwork, when compared to other methods, "is perhaps the most constrained in terms of geometry," and that most tests have been "limited to very simple saddle shapes" with clearly anticlastic curvature.

We were interested in the conceptual kinship between this softer formwork system and our first physical study models. Yet the fabric formwork method was not as geometrically forgiving as other approaches. Reinforced concrete could have some zones where pure shell-action could not be achieved, but fabric necessarily has no capacity to cheat. As a test of his method, Veenendaal did not want to advise on the form. Instead, he tested the method to meet the design as given. In analyzing our surfaces, he observed that "in general the shapes are anticlastic, which is a necessary condition," but that—as with the concrete structural analysis—the largest roof surface had regions that were problematically "very flat" and "corners and singularities" where the flexible formwork "technique is quite challenging" due to low curvature.

For good or bad, the fabric formwork acted as a test of geometric purity, as the structural analysis had before. As we developed the design through digital models, creating new formal continuities and architectural relationships, we departed from the simple logic of the physical forms. The process of revising the edge tangencies and relative curvatures between the surfaces was important to make the double-curved and planar surfaces work as a synthetic whole. This collage of local edits and manipulations blurred the more geometrically rigorous shells with areas whose curvature was purely an invention. Adapting these surfaces to the techniques and native structural logic of fabric formwork would only undermine the synthetic whole enabled by the local changes. It was a strange realization that the fabric-like forms would be undermined if we used actual fabric to form them. The strictness of the system was too honest. We needed a formwork method that could accommodate true shell geometries and "incorrect" ones.

The continuity of the curved forms played on the ambiguity of the whole, as both a structure and form, and allowed the structural typologies to invisibly bleed into one another. Our intention was to create a whole with parts that resist attempts to demarcate, classify or rationalize them. The exploration of fabric formwork brought into focus new priorities of the form: not for one part to be true, but for all the parts to become a whole.

Forming Fabric

When working with Certain Measures, the surfaces were drawn as triangulated meshes. We never viewed this as a representation of an eventual structural or construction logic, but as a by-product of the tool. Because of their experience with constructing tension systems, SBP reproduced the surfaces using a quad-panelization technique. This had the benefit of rationalizing previously contorted corners and integrating them more smoothly into the topology of the surface. While the triangular meshing was more about resolution than organization, quad panelization started to make visible the underlying surface logic. In particular, it highlighted the possible relationships to constructability and suggested a new—and undesirable—legibility. Like an x-ray, the orientation and graphic of the grid showed areas more compliant with traditional shells and called out those just playing along. In contrast to structural expressionism, we embraced the undifferentiated concrete and all its fibs.

Daniel Gebreiter from SBP studied alternative modeling techniques to address issues of rationalization and formal control important to the architectural intent. In understanding our desire to fluidly mix structural and formal logic without clear boundaries, Gebreiter looked beyond the world of structural engineering and architectural geometry. As he explained, in order to model the surfaces, he borrowed "a modeling technique from the film industry" called subdivision surfaces, which guaranteed surfaces "to be smooth despite their complex topology and tangential boundary constraints at their perimeter." Following a set of parameters and guidelines, the method permitted the precise articulation of the "distinct creases which fade into the otherwise continuous surface" while preserving the ability to be "represented using different resolution quad meshes." This fluidity meant that the "geometry generation, structural analysis, and fabrication could all reside within the same workflow," while preserving the design parameters, controlling the relationships, tangencies, creases, and corners of the surfaces.

As we studied double-curved formwork and concrete placement, there was the nagging suggestion that precast panels held the promise to simplify construction. As questions arose about the feasibility of pouring double-curved concrete, we decided to test how precast concrete panels would change the image of the building. Where seamless cast-in-place concrete allows for structural and geometric logics between walls, floors, and curved shells to be entirely masked, the demand for legible logics with precast panels inevitably provided too much of a geometrical index than anticipated—suddenly, walls and roof surfaces were clearly distinct and defined once again. Like the conceptual problem highlighted by fabric formwork, the material logic of concrete would be undone by coming into in focus too clearly.

Forming Limitations

Concrete is forever condemned to be a ghost of the formwork that came before. Does it always have to be so faithful? Sometimes knowing less is more.

Our concept of the building as a continuous whole composed of both curved and flat surfaces was not only a geometric problem but also a material one. Despite differing requirements of insulation, structure, and waterproofing, we believed it was important to construct all surfaces using the same formwork technique and the same concrete mix. Seemingly most native to our design process, the fabric formwork ironically would be most problematic for realizing the project. Accepting cast-in-place concrete was implicit for curved and orthogonal geometry to merge.

The formwork was the first physical manifestation of the form. Besides their geometric and structural fights, the roof surfaces also posed problems from a formwork perspective. The sharp corners that blended into smooth surfaces, as well as very rapid changes in curvature—from mostly flat to double-curvature, with negative Gaussian curvature—each suggested a different formwork construction technique to best describe their individual geometry.

Continuity and smoothness between curved walls, roofs, and floors is not only a feat of formwork but also of concrete technology and placement strategies. Reginald Hough Associates (RHA) helped to specify and describe a concrete that would support our ambition. As walls became roofs, the thickness of the structural slab and the embedded insulation layer change; making this transition smooth requires absorbing many differences. The biggest challenge was to cast the concrete in two layers with insulation and waterproofing embedded in between so that both the interior and exterior surfaces would be exposed concrete. We explored using a pressurized concrete spray called Shotcrete, which could easily construct the roof structure and even allow almost vertical curves to be placed without a top form. The Shotcrete mix is controlled at the nozzle and is thus highly dependent upon the skill of the operator; any variability in the water/cement mix would mean inconsistent color in the concrete. It would be a sad end to the project if we had to paint over the exposed concrete to cover up the flaws of the concrete application. Returning to formed concrete, RHA proposed the use of a

facing page: Street Facade. The whole comes together in a somewhat peculiar presence along the street.

very liquid form of concrete called self-consolidating concrete (SCC). Because of its density, SCC can be pumped into a form from the bottom and does not require vibration to expel air bubbles. Our investigations into formwork methods were based on using this concrete since it would allow walls and ceilings to be poured continuously.

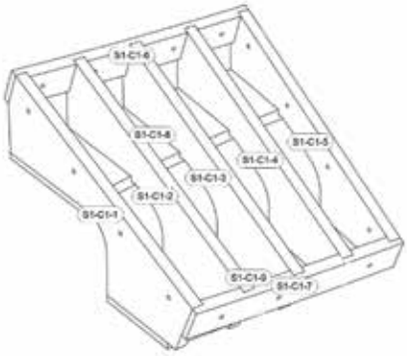
Two formwork methods emerged as contenders: curved plywood bent across routed plywood rib structures, and milled blocks of high-density foam with an epoxy coating. We explored the plywood method with engineering and fabrication firm CW Keller, and the foam method with two separate companies, Shelter Enterprises Inc—a roofing company with experience milling sloped insulation for complex roofs—and Arbloc, a prefabrication expert in Italy.

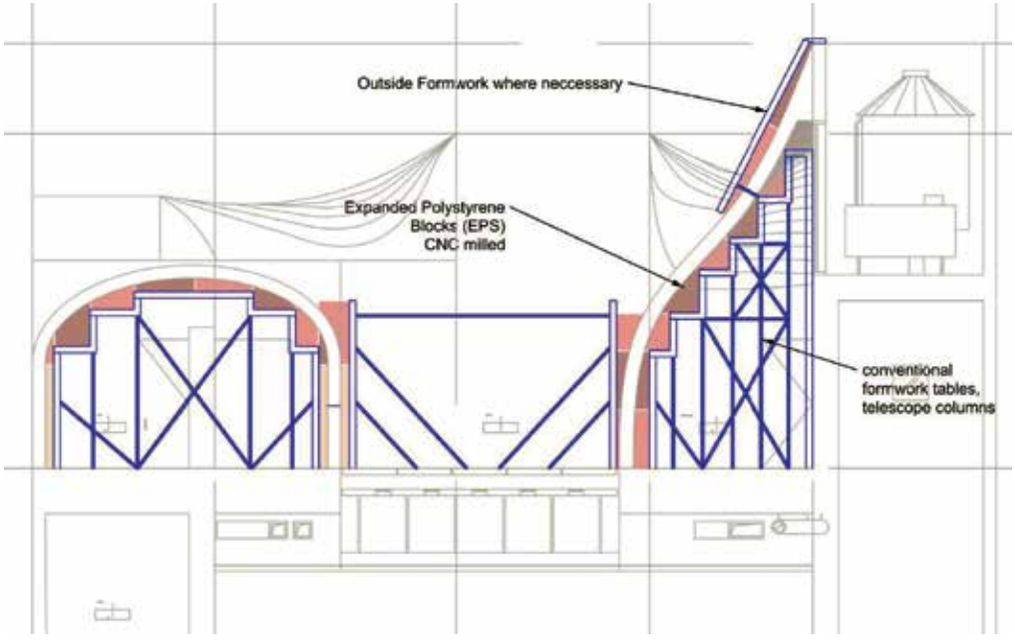
The plywood method had many benefits, not least of which was that it seemed the ideal technique if we were to use on both curved and flat surfaces. Yet it also came with its own limitations of curvature: wood can only be bent or twisted into double-curved shapes in very limited ways; otherwise, it must be cut into small strips. CW Keller's proposed method suggested we use mostly plywood and transition to milled blocks of foam at the moments of extreme curvature. Yet as in the case with precast panels, we did not want zones of foam mixed with plywood formwork, especially because they would most likely be used around areas where the smoothness and continuity of the surface was most critical for the ambition of a synthetic whole. Even though the curved plywood would work in most circumstances, it was a problem too big to overcome and the plywood would fall short in the most extreme moments when the continuity of the surface was most at risk.

Unlike these other methods, milled foam blocks would offer the flexibility we required. As a method, it is not as materially economical as bent plywood, and does not take advantage of geometric affinities as the fabric formwork. Foam is completely agnostic to curvature or form. It can describe curves or corners with equal precision. Rejecting the purity and efficiency of the other approaches, we chose the method with the least intelligence. Like our locally thickened surfaces, milled foam sponsored the impurity of the system—more structural and shell-like locally, or purely sculptural as needed—and seamlessly formed a tangent edge between surfaces or a sharp corner with similar impartiality. This dispassionate approach was surprisingly the most native to the project.

Coda

Unfortunately, this Frankenstein would not come to life. While roof surfaces and walls can merge architecturally, formwork systems and their specialty sub-trades don't as easily coalesce. For all its ambition toward a new impure fusion, the project's models, artifacts, and fragments will go on as a body of research and knowledge, catalyzing new projects.





above: The sample formwork component sketch, prepared by CW Keller, shows the limitations of the plywood method, as wood can be bent or twisted into double-curved shapes in very limited ways.

right: By contrast, CNC-milled high density foam formwork, supported by conventional systems, would offer much more flexibility. Like the locally thickened slabs, it would support the impurity of the system.

Who Let the Air Out? How Pneumatics Went From Rad to Bad in the 1970s by Whitney Moon

The year was 1970. Kenzo Tange and Uzo Nishiyama's World Expo in Osaka, Japan featured spectacular pneumatic visions within the long-span cable-stiffened dome of the US Pavilion, the air-filled arches of the Fuji Group Pavilion, and numerous other inflated, plastic, and bubble-shaped structures.[1] Simultaneously, Ant Farm was completing their *Inflatocookbook* (1971), which became (and has remained) the go-to do-it-yourself manual for pneumatic experimentation. Cedric Price and Frank Newby were also finalizing *Air Structures: A Survey* (1971), an extensive research report covering the history, principles, applications, and technical specifications for air-filled enclosures. The year 1970 also marked the formation of Chrysalis—a Los Angeles-based architectural collective—comprised of Mike Davies, Chris Dawson, Alan Stanton, and Joseph Valerio. As Master of Architecture students at the University of California, Los Angeles, the four members were committed to the design and construction of experimental structures, especially with a penchant for anything pneumatic.[2]

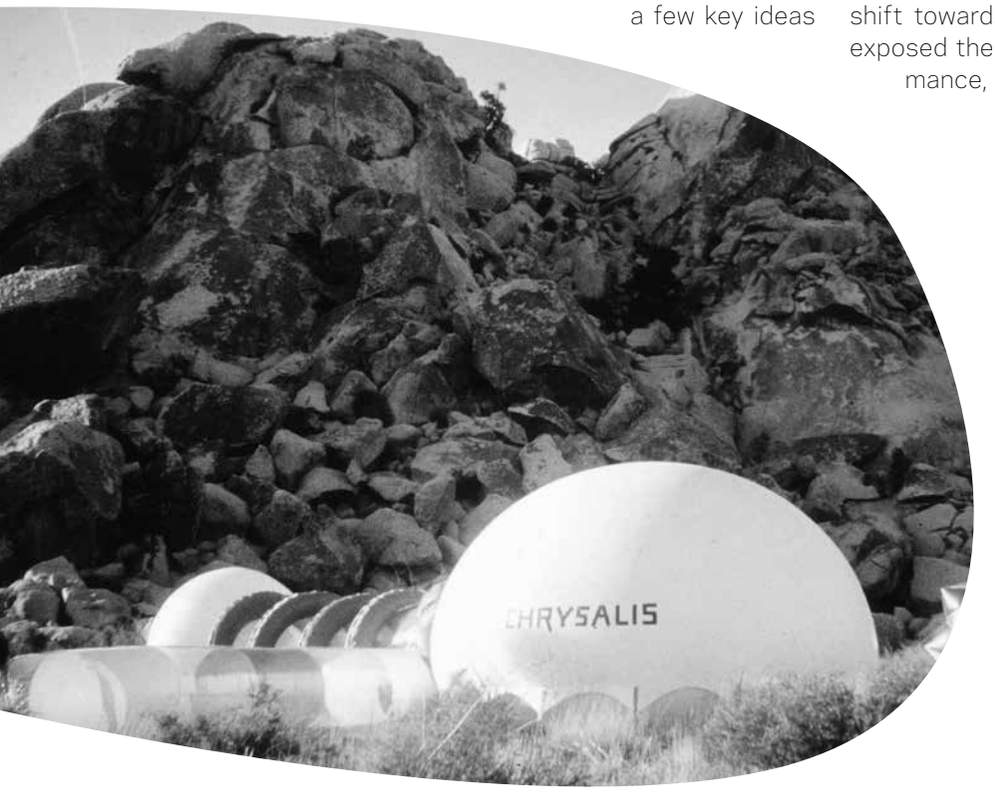
In 1970, Chrysalis headed to the desert. Unlike their counter cultural peers, who were fascinated by the barren landscape as an unchartered terrain for aesthetic and rhetorical exploration, they initially employed the extreme environment as a method for advancing both the technical and social project of pneumatic structures.[3] It was in Palm Desert, California that Chrysalis tested the thermal performance of various materials and inflated assemblies, calling into question issues of durability and human comfort. In the course of just a few years, they designed and executed dozens of innovative projects. Developed in collaboration with local aerospace, film, and media companies, Chrysalis's early works eclipsed the low-tech naiveté of pneumatics being generated by many of their contemporaries (e.g., Ant Farm, Archigram, Haus-Rucker Co., Coop Himmelb(l)au, etc.), and were guided instead by the refined structural and material experimentation of lightweight engineers like Frei Otto and R. Buckminster Fuller.[4]

Although little has been written about their practice, Chrysalis's pioneering constructions index a few key ideas and phenomena in the history of inflatable architecture: the rise of pneumatics as a radical project during the late 1960s and early 1970s, the viability (and promise) of air structures as an alternative solution to conventional buildings, and the factors which likely led to the collapse of inflatables by the mid-1970s. By examining a selection of experimental structures generated by Chrysalis from 1970 to 1975—including those that prompted their initial formation—this essay maps their contributions to the development of pneumatic architecture as both a radical and pragmatic endeavor. Through their work with air, this collective of four young architects made visible the potential and pitfalls of an unorthodox construction type.

"Rad"

Coopted by the 1960s "counterculture," pneumatics became the device for avoiding the formal, material, and ideological constraints of architectural modernism.[5] Capitalizing on the allure and availability of plastics, air was the "rad" alternative to the establishment's "bad" buildings. In addition to offering alternative methods of spatial construction and experiences, inflatables introduced an alluring temporality to an industry that has historically opted to monumentalize rather than ephemeralize.[6] Through their plasticity and perceived impermanence, architectural inflatables also avoided the aestheticized iconography of a modernism tarnished by failed utopias.

According to Cedric Price, an advocate for architectural lightness and a leading figure in the research and development of pneumatics, "The value of permanence must be proven not merely assumed."[7] Price's question of permanence within the pages of *Archigram*'s third issue—entitled *Expendability: Towards Throw-away Architecture* (1963)—called attention to the emerging ubiquity of disposable products in contemporary culture, and to how this trend might be informing architectural production.[8] These emergent types shared a conceptual and material quest for lightness, fueled by a radical rethinking of what architecture could be. This shift towards ephemerality in the mid to late 1960s exposed the discipline to new possibilities of performance, both technical and social. Building upon the recently



Chrysalis sought out the desert as an extreme environment to advance both the technical and social project of pneumatic structures. This inflatable, initially commissioned by the University of Southern California in 1970, was taken to Palm Desert, California to be tested and photographed along with a collection of other pneumatic experiments.

established architectural terms "clip-on," "capsules," "pods," and "plug-ins," novel architectures mirrored a pop-cultural fascination with notions of mobility, instantaneity, and scalability.

As a means to counteract the conventions, styles, and rules dictated by traditional definitions of architecture, Peter Cook—a founding member of Archigram—offered insight into a way out of this conundrum. In his book *Experimental Architecture* (1970) Cook writes, "Experimental work frequently finds its grit and inspiration in the desire to undermine and explode all rival positions."[9] Fed up with what he referred to as "decrepit technologies propped-up by an elitist aesthetic language," Cook proposed an alternative solution for the next generation of aspiring architects: "to *experiment out of architecture.*"[10] By encouraging the development of architecture beyond (and even against) buildings, Cook released a new generation of architects from the shackles of professional and disciplinary protocols. Yet, Cook's message was also problematic: it suggested an antagonistic relationship towards architecture as buildings, prompting many young practices to pursue their radical ideas exclusively through representation and rhetoric, rather than actualized constructions.

Pneumatics provided an answer to Cook's call for looking past "decrepit technologies" and a move "out of architecture," without retreating to drawing. They were constructions that were not buildings with a capital b. As Reyner Banham observed in 1968,

> All architecture has to mediate between an outer and an inner environment in some way, but if you can sense a rigid structure actually doing it (dripping sounds, tiles flying off, windows rattling) it usually means a malfunction. An inflatable, on the other hand, in its state of active homeostasis, trimming adjusting and taking up strains, is malfunctioning if it *doesn't* squirm and creak. As an adjustable and largely self-regulating membrane, it is more truly like the skin of a living creature than the metaphorical "skin" of, say, a glass-walled office block.[11]

An early advocate for inflatables, Banham romanticized their instability. In his 1965 essay "A Home is not a House" Banham proposed *Environment-Bubble*, a domesticated utopia equipped with modern amenities.[12] Although a radical and anti-monumental prototype for rethinking architecture's relationship to technology, humans and the environment, its pneumatic enclosure was a flimsy, barely-there membrane, deployed only when needed. So, did Banham and his contemporaries take pneumatics seriously? Banham did, after all, call inflatables "wind bags,"[13] and referred to his *Environment-Bubble* as a "standard of living package,"[14] suggesting, ironically, that the pneumatic environment, in the words of architect and historian Thomas Leslie, "may in fact be more of a lusty technofantasy than a legitimate tectonic proposition."[15]

Although pneumatics became the default strategy for artists and architects striving to push the boundaries of form and space, on the low-tech and DIY end of the spectrum, they also dismantled the notion of architectural expertise. For example, Ant Farm's *Inflatocookbook* instructed everyday users to make "fast, cheap inflatables," fueling the ethos "that maybe anybody can should must take space-making beautifying into her, his own hands."[16] As a result, their low-fi attributions perpetuated the image of air-filled structures as impermanent, unstable, and unpredictable, ushering in skepticism about their feasibility as an architectural solution. Despite any demystification on how inflatables were made—promoting their proliferation—Ant Farm also addressed the environmental impact of their afterlife, albeit in a rather alarming fashion. With respect to polyethylene, the plastic sheeting most commonly used for DIY pneumatic constructions, they write:

> The best way to recycle polyethylene is to reuse it, but when it gets many holes in it, it is no longer good as a rain cover. The worst thing you can do with it is to put it in a garbage can—it will probably end up as land fill and never decompose. The best thing you can do with it is BURN it. When polyethylene burns it breaks down into CO_2, H_2O, and carbon which is the ugly black smoke produced but which will precipitate out of the air quickly and be absorbed by the earth.[17]

This suggestion brings to light the darker side of pneumatics. Not only did the DIY approach rely on cheap and everyday materials like polyethylene, a petroleum-based plastic product, but it also perpetuated a problematic ethos of expendability in an era of increasing environmental awareness. Although these ephemeral constructions allowed for nearly instantaneous counter cultural experimentation, they were also resource-intensive and wasteful. In addition, because they needed to be "plugged in," pneumatics' efficacy as an alternative to

conventional modes of building was questionable.

In a 1971 edition of *Whole Earth Catalog*—a grass roots, DIY, counter cultural magazine published from 1968 to 72—founder Stewart Brand, who had previously expressed his fascination with pneumatics and supported the work of Ant Farm, began to question their viability.

> Inflatables are trippy, cheap, light, imaginative space, not architecture at all. They're terrible to work in. The blazing redundant surfaces disorient; one wallows in space. When the sun goes behind a cloud you cease cooking and immediately start freezing. Environmentally, what an inflatable is best at is protecting you from a gentle rain. Wind wants to take the structure with it across the country, so you get into heavy anchoring operations.[18]

Despite the romantic promise of the pneumatic project in the 1960s, cynicism set in by the early 1970s. Simply put, the proliferation of DIY pneumatics privileged the low-tech, and their reliance on non-renewable resources (plastic and electricity) undermined their radical agency.

Was there still a future for pneumatic architecture? In August 1972, *Progressive Architecture* published a feature on the latest developments in air structures, acknowledging their mixed reception, yet advocating for their promising future. Despite an "uphill fight for acceptance" as feasible and serious building types, the article focused on various pneumatic pioneers who were battling social misconceptions through technical solutions.[19] Challenging the perception of air structures as simply "tents, or tennis court covers, or temporary whims,"[20] the issue examined the future prospects for pneumatics in the wake of the Osaka 1970 Expo, highlighting their advantages from a technological, environmental, and social perspective.[21] A three-page spread featured a diverse range of proposed and built projects by Chrysalis, including two designs for pending pneumatic patents that addressed thermal comfort and mobility: a skin of varying opacities, and a self-anchoring device.[22] In addition to highlighting their novel technical solutions, the magazine applauded Chrysalis for their commitment in "the ability of the bubble to adapt, its speed of erection, its dynamic possibilities, and its alterability."[23]

Chrysalis

Although inspired by the rhetoric and representational allure of counter cultural architectural groups, Chrysalis aspired to realize pneumatics beyond an editorial project. According to Valerio, "What we did is we said: 'We believe in all that stuff, but we also think that we need to raise the level of technology so that it's not purely ephemeral.'"[24] Chrysalis viewed pneumatics as radical because they offered an alternative to the norms of professional practice and served as a vehicle to expand the boundaries of architecture without abandoning building. Chrysalis was dedicated to the advancement of inflatables as a viable form of architectural production by asking what air structures can do, and how they could do it better. Their desire to explore experimental lightweight structures as a counterpoint to conventional modes of construction was born out of a desire to, as Valerio explains, "do good architecture in the context of a system, and architectural profession, that seemed completely beholden to and part of the establishment."[25]

Chrysalis first experimented with pneumatics in Los Angeles during the late 1960s amid the entertainment and aerospace industries. Their inflatables initially served as stage sets for World Expos, Hollywood films, bathing suit advertisements, infant enclosures, and seaside bachelor pads in *Playboy* magazine, yet, they had a rigorous agenda that involved not only the cultural performance of pneumatics—namely, their construction in the media—but, more importantly, their technical performance (i.e., material, structural and environmental). As Valerio recounts,

> I think what we were always trying to do is to make a leap from this romantic vision to something that actually worked. One of the freedoms you had at UCLA in an academic environment is you didn't have to really work it all out. Then when we were working for any of the Hollywood studios or for any of the commercial work that we were doing, that was a situation where we seriously had to get building permits and we had to make these environments really work.[26]

The members of Chrysalis were committed to seeing their projects actualized. From ideation to inhabitation, their temporary experiments not only challenged conventional materials and methods of construction but also raised new questions about the future of building.

Although Chrysalis formed in 1970, their pneumatic beginnings trace back to 1968, when EnviroLab members Alan Stanton and Chris Dawson collaborated with a group of scientists and artists working with the Los Angeles division of Experiments in Art and Technology (E.A.T.) on the inner theater of the Pepsi-Cola Pavilion for the 1970 World Expo in Osaka, Japan.[27] Stanton and Dawson were the interim go-to experts on how to actually construct the mirrored inflatable,[28] an enormous, 90-foot diameter dome-shaped pneumatic structure comprised of Mylar[29] and conceived by the artist Robert Whitman. *Mirror Dome* (1968–70) was initially prototyped at a smaller scale: two 20-foot diameter air-structure models constructed on a donated soundstage at MGM studios in Culver City.[30] According to electrical engineer and scientific journalist Nilo Lindgren, "The group [Envirolab] actually did all the work themselves, laminating boards, constructing the gore patterns and taping them together to create the hemisphere."[31] Although Envirolab was able to deliver a technically resolved mirrored pneumatic dome at this smaller scale, production of the final inner-theater was turned over to G.T. Schlajdehal—a military contractor who had recently produced PAGEOS, an inflatable satellite for NASA.[32]

Mirror Dome, the Pepsi-Cola Pavilion constructed at the 1970 World Expo in Osaka, Japan, and conceived by artist Robert Whitman. Although EnviroLab (Alan Stanton & Chris Dawson) & E.A.T. produced 20-foot diameter scaled mock-ups of the dome, final production was eventually turned over to G.T. Schlajdehal, a military contractor who designed inflatable satellites for NASA.

Informed by Envirolab's prototypes of the inner dome for the Pepsi-Cola Pavilion in Osaka, Chrysalis was commissioned to construct Myra Dome (1970), a full-scale mirrored pneumatic dome for the film *Myra Breckinridge*, directed by Mike Sarne. The psychedelic effects generated by their impeccably crafted set further demonstrated the potential for inflatables to perform both technically and culturally.

In an attempt to prevent structural failure and to achieve optimum optical effects, the logic of the pneumatic was inverted: rather than being inflated, the inner-theater employed negative pressure technology (i.e., a vacuum effect). As Billy Klüver, head of the E.A.T. group and overseer of the pavilion's conception and actualization recounts, "The Mirror was the largest spherical mirror ever made and was the first use of a Melinex, negative-pressure, air structure."[33] After some trial and error tests in a blimp hangar at the Marine Corps Air Station in Santa Ana, the full-scale mock-up convinced E.A.T. to move forward with its fabrication in Japan. The final mirrored dome was inflated inside the primary pavilion structure—a 120-foot diameter faceted dome, designed by Japanese architect Tadashi Doi—whose exterior was engulfed in an artificial cloud, created by artist Fujiko Nakaya and physicist Thomas Lee.[34] The result was an immersive multimedia experience—referred to by E.A.T. as a "living responsive environment"—that dissolved the boundaries between art, architecture, and technology through multiple interventions and collaborations.[35] Although Stanton and Dawson were not responsible for the final construction of the inner-theater, word of their ability to technically solve the structural, material, and atmospheric logistics of the mirrored inflatable led to yet another commission.[36]

In 1970, Chrysalis designed and fabricated *Myra Dome,* a mirrored pneumatic dome for the film *Myra Breckinridge*.[37] The film is about a man named Myron Breckinridge (played by Rex Reed), who has a sex change and becomes Myra Breckinridge (played by Raquel Welch).[38] The enormous pneumatic set contributed a psychedelic flair to key scenes in the roundly maligned film.[39] Clearly borrowing from the material, structural, and technical logic of the inner-theater at Expo '70, *Myra Dome* allowed Chrysalis to execute their previous twenty-foot diameter dome mock-ups for Osaka at the intended full scale, further advancing their architectural experimentation into the realms of both technical (aerospace) and cultural (entertainment industry) performance.

The next pneumatic set designed by Chrysalis was *Dodecahedron* (1970), a hybrid structure comprised of a metal frame with infill panels of inflated mirrored mylar.[40] Commissioned by Jantzen, a women's swimwear company, it was conceived as a stage to photograph their new swimsuit collection.[41] A polyhedron with twelve flat faces, it evoked the geometry and ethos of Fuller's lightweight geodesic domes with the pop playfulness of Andy Warhol's silver-lined Factory. Instead of a flimsy and variable pneumatic environment (a la Ant Farm's "pillows"), or a monumental technical feat (as demonstrated with *Mirror Dome* and *Myra Dome*), *Dodecahedron* was well tailored and suited to the scale of the body, much like Jantzen's fashions. Although humble in scale, and conceived as a temporary construction, the complex system of tubes designed to inflate the individual panels anticipates the logic of what is now known as an ETFE (ethylene tetrafluoroethylene) cushion system.[42] The lighting experiments carried out in their previous two dome constructions additionally allowed Chrysalis to further interrogate the potential of Mylar as a surface for producing optical effects. By incorporating contemporary materials and methods in this demountable structure, they fashioned a lightweight and mobile environment that elevated Banham and Dallegret's notion of a portable living module. Rather than the pneumatic membrane as a "barely there" form of enclosure, the inflated panelized system of *Dodecahedron* asserts the potential of advanced hybrid constructions at the scale of domestic inhabitation.

Although Chrysalis demonstrated their pneumatic prowess with large-scale spectacle-inducing installations in collaboration with Hollywood and the aerospace industry, they were also focused on tackling technical issues that related to environmental controls—such as energy, thermodynamics and human comfort. Davies, along with four other students at the Architectural Association (AA) in London, had previously authored the feature article in

the June 1968 "Pneu World" issue of *Architectural Design*.[43] In the essay they challenged the commonly held assumption that a pneumatic is a basic enclosure system—a bubble or pillow—as they explored the potential for double-layer systems performance (i.e., to control light, heat, and sound). They write, "What can pneumatics offer in furthering the relationship between environmental control and the individual?"[44] Providing not only definitions and illustrations of various types of pneumatics but also a critical commentary of their advantages and disadvantages, the article also featured the students' own experiments for traveling and modular pneumatic systems. Referring to their proposals as "a kit of metamorphic parts," they advocated for the lightweight, flexible, and mobile potential of inflatables—all properties Chrysalis would later uphold and further advance.[45]

The *AD* article paid special attention to the opportunities for developing thermal controls with inflatable skin systems, as discussed in the work of physicist Nikolaus Laing.[46] Laing's unique designs for "a multi-layer skin system incorporating heat-reflecting and heat-absorbing elements, which can be dynamically controlled solely by air pressure," elevated the pneumatic discourse beyond simply bubbles and into the realm of environmental controls.[47] Undoubtedly, Laing was a major influence in the development of Davies's *Light Mat* (1970) project at UCLA. As illustrated in the photograph on the following page, the mock-up on the left demonstrates maximum opacity and prevents solar access, while its counterpart on the right illustrates a 50% transmission of sunlight. The appearance of Davies's arm and hand behind the cushions indicates how the upper half of the module is composed of opaque white PVC (polyvinyl chloride), whereas the bottom half is completely transparent. Davies technical prowess and curiosity can be seen in drawings of the role of air pressure in cylindrical pneumatic chambers to modulate the transmission of light and heat.

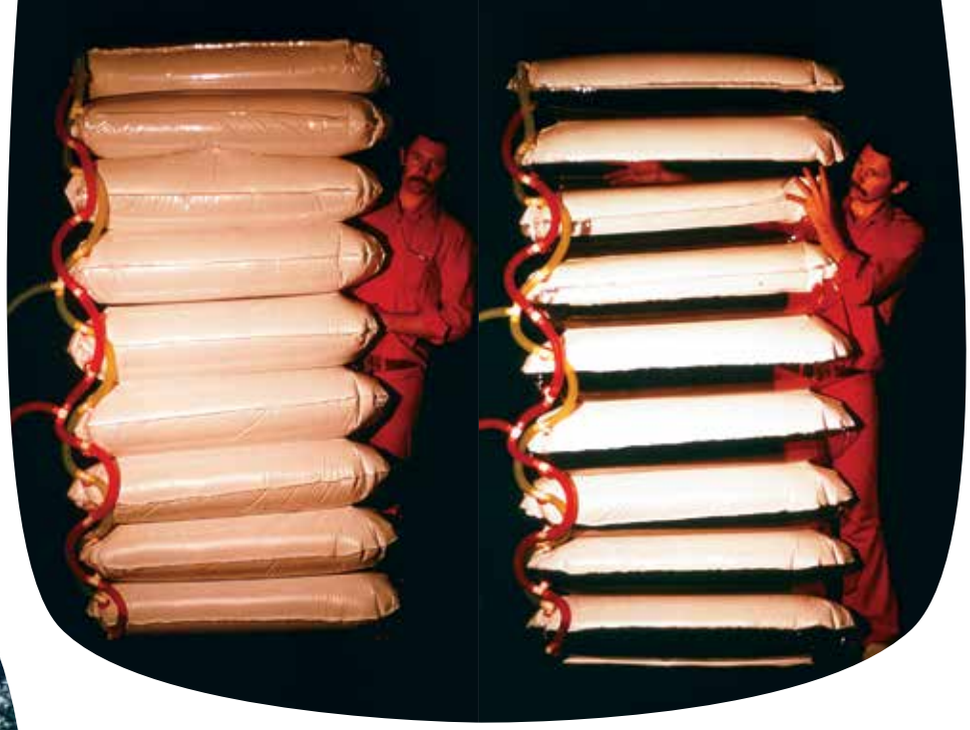
Alongside the enhancement of thermal performance in an active air-filled building system, Davies challenged the then dominant counter-cultural narrative that pneumatics were merely playful and ephemeral constructions. The *Light Mat* mock-up was part of a studio project called *Energy House* and carried out by Davies at UCLA in fall 1970. The house, a technologically adept deployable structure, was also a hybrid construction; it was comprised of a folding, lightweight structure and dual-walled pneumatic mat, as indicated by Ping-Pong balls in the physical model. It was mobile, off the grid, barely touched the ground, and collected enough solar energy to operate a TV set. Valerio, who assisted Davies with the project just prior to their formation of Chrysalis, explains that the *Energy House* demonstrated a "leap from Romanticism to making things work."[48] He adds, "It's mobile, you could pack it up, put it in the back of your van, take it out to the desert, and deploy it."[49] The performative pneumatic skin featured in the *Energy House* was further developed by Chrysalis as *Solar Mat* (1971), a proposal for an inflated solar-collecting roof canopy in the California desert.

Parallel to the development of technical performance in pneumatics, Chrysalis was also exploring their formal, material, and spatial possibilities. For example, they were invited by the University of Southern California (USC) School of Architecture in 1970 to create a conceptual pneumatic structure.[50] Reminiscent of the more abstract, sculptural, and playful pneumatic forms of artist Graham Stevens, the USC inflatable demonstrated mastery in crafting a variety of geometries out of clear, opaque, and colored PVC meticulously seamed together. What Chrysalis learned was that most pneumatic structure designers, users, and clients are content with their delightful other worldliness as pseudo-psychedelic environments, rather than a viable alternative to conventional buildings. Although the project was initially installed on the USC campus, it was taken soon thereafter to the California desert to be photographed. Chrysalis saw its potential once again as a stage set—as evidenced by the abandoned helicopter—and captured the inflatable in the near extra-terrestrial terrain just east of Los Angeles, where many films and commercials were shot.

Despite its allure as a destination for counter cultural experimentation, the desert is also a hostile environment. Ant Farm experienced this first hand in January 1971 when they were invited by *Whole Earth Catalog* founder Stewart Brand to erect a 50-by-50 foot pneumatic enclosure and two geodesic domes in Saline Valley, California for the production of the "Truth, Consequences" supplement.[51] Their air-inflated vinyl enclosure, a transparent single-membrane, featured a second semi-inflated opaque white roof to deflect the sun. In addition, a giant cable net was designed to counteract uplift with tie-downs. Attempts to respond to the extreme temperatures that ranged from 106 degrees to freezing, coupled with the unusually high winds, ultimately failed. As a result, the catalog supplement was assembled in Brand's airstream trailer home shared with his wife, Lois. The pillow's failure demonstrated the limitations of air structures and converted Brand from a pneumatic advocate to a skeptic virtually overnight.[52]

Coincidentally, as Ant Farm was packing up their plastic pillow in defeat, Chrysalis was headed to the desert to test their pneumatic experiments. As Davies explains, "In the spirit of *Dune*, the first eco-novel of the 1960s, we decided to build some oddball inflatable environments, some experimental solar collectors and desert survival suits for ourselves".[53] He continues,

> We obtained the obligatory roll of Mylar shiny film and cut out nice body-tailored outfits and silver drapes to keep the sun off. In the broiling heat, we put our silver suits on and were drenched to the skin within five seconds! We learnt very quickly that in that environment, body transpiration is staggeringly high and without air circulation, you virtually drown in your own exuded body fluids! Back to the drawing board!—cookie cutters with spurs, prickly wheels all over the suits, vent holes!



Physical mock-ups explore how pneumatic cushions can be designed to modulate the transmission of light and heat through both opacity and 50% transparency. Similar to the network of tubes used to inflate the panels of Dodecahedron (1970), Light Mat (1970) designed by Mike Davies preempts the logic of ETFE cushion systems.

Chrysalis's Dodecahedron (1970)—a lightweight metal frame with infill panels of mirrored Mylar—commissioned by Jantzen to photograph their new swimsuit collection. A network of pneumatic tubes, visible on the far right and left sides of the construction, regulates the inflation of each panel, anticipating the logic of what is now known as ETFE (ethylene tetrafluoroethylene) cushion systems.

This model—a lightweight structure, comprised of a dual-walled pneumatic mat (indicated here by Ping-Pong balls)—was designed by Mike Davies as the off-the-grid Energy House (1970) that could be easily packed up into a van, driven, and deployed just about anywhere.

From the outset, Chrysalis was fascinated by the extreme environment of the desert as a testing ground to document both the technical and cultural performance of inflatables. Here, a collection of inflatables—including one commissioned by USC (1970)—are composed in a cinematic setting, aided by the presence of an abandoned helicopter.

Sealed with a valve, the extremely lightweight, easily packable, and instantly deployable Strolee Playpen (1971) by Chrysalis was designed as a mobile enclosure for toddlers. Unlike many of its pneumatic counterparts, this playpen was not reliant on a blower or energy source to remain inflated.

Although the desert provided a cinematic setting to document their inflatables, Chrysalis was also there to perform a variety of tests to measure both building performance and human comfort. Functioning as architectural instruments to assess passive building technologies in an extreme environment, Chrysalis's custom Mylar desert survival body suits (1970) were tailored (and adjusted) to maximize solar collection and airflow.

Lightweight, transportable and economical, the twenty-five-foot diameter air-supported Pneudome (1971) by Chrysalis offered 500 square feet of living space. Constructed of fire-resistant PVC, it featured transparent wall sections and an opaque reinforced nylon roof.

> The modified suits were more tolerable—even though they were still sweaty, they were definitely keeping us cooler.[54]

Chrysalis gained from these desert experiments "an understanding of construction and environmental engineering."[55] Through trial and error, they tested the pros and cons of various material assemblies with respect to solar gain and airflow rates. Namely, Chrysalis's research began with the concept of failure and a pneumatic "project" emerged from these field tests. Building performance and human comfort were evaluated under drastic scenarios that could be measured both qualitatively and quantitatively (e.g., solar exposure, heat gain and loss, condensation, etc.). Upon closer inspection, however, their "experimental solar collectors and desert survival suits" functioned as architectural instruments to assess passive building technologies under extraordinary circumstances. The standard readymade pneumatic arsenal of plastic, vinyl, and Mylar was deployed, analyzed, and modified to amplify material performance.

Chrysalis once again brought one of their pneumatic prototypes to the desert, this time as a demonstration in its ability to be easily deployed amid any environment. Strolee, a major maker of products for young children, approached the architects to develop an inflatable enclosure for toddlers. Operating as a flexible, lightweight, mobile, and instantaneous enclosure, *Strolee Playpen* (1971) was sealed with a valve and could travel just about anywhere. One prototype, constructed from white and clear PVC, featured a series of plastic snaps along the playpen's six arches, which allowed adults to monitor a child's movement. A thin orange cord along the interior edge also facilitated vertical stability in young toddlers. According to Valerio, "The design was simple, inexpensive, and the Strolee analysts described as completely safe. But, in the end, the company felt the idea was just too forward leaning, and it never went into production."[56] Chrysalis would soon design pneumatic enclosures for children, albeit unexpectedly, through a rather adult-centric audience.

In 1971, Chrysalis developed their own pneumatic prototype for "a good sized one room enclosure that was inexpensive, required no expertise to install, and offered additional living space for a family (with the land to deploy it)".[57] Widely covered by the media, *Pneudome* (1971) was featured in an article entitled "The Bubble House: A Rising Market" in the April 1972 issue of *Playboy*.[58] The three-page spread presented Chrysalis's inflatable enclosure as situated on a bluff overlooking the Pacific Ocean, an ideal romantic seaside getaway for two couples. A lightweight, transportable and economical pneumatic living space that required no expertise to install, the magazine pitched the house as a "pumped up pleasure palace," and "the most revolutionary concept in mobile living since somebody invented the trailer—and a lot more fun."[59] A twenty-five-foot diameter air-supported dome constructed of fire-resistant PVC, *Pneudome* featured transparent wall sections and an opaque reinforced nylon roof. Touted as "ventilated and dust-free, too," it was inflated in eight minutes with a portable air blower, and stabilized by either a water-filled tube along the dome's perimeter or cable tie-downs.[60]

According to historian Vanessa Grossman, "Pneudome represented the dematerialization of the bachelor pad, which was turned into a moveable package."[61] The "nearly 500 square feet of living space to do with as your imagination dictates" could also be packed down and easily transported in a 42" x 60" x 12" box.[62] The first photo in the article shows two women and two men carrying a large box in which the inflatable is packed, demonstrating Pneudome's lightweight and mobile features. According to Valerio, the box was empty for the shoot, as "it was actually pretty heavy, and not easily moved by four adults."[63] In another image, two models are shown filling up the 400-gallon tubular base of the pneumatic dome with a garden hose; the water, along with the electrical outlet for an air blower, were magically supplied at this remote seaside location. Available for purchase for $1950, readers were prompted to write to the magazine for more information.[64] For *Playboy*, the concept was to be able to create an impromptu dwelling in an isolated setting—a picnic cum beach house—yet the magazine failed to find a consumer market in its wide-ranging readership. Some seven years after Banham and Dallegret's *Environment-Bubble* (1965), Chrysalis had made the mobile pneumatic bachelor pad a reality. Much to their surprise, *Pneudome* found its actual home as a classroom for children. In 1972, the Denver School District purchased five for a new school.

C.O.W.

Although Chrysalis had advanced the design, fabrication, and marketing of pneumatic architecture, and was featured in the August 1972 issue of *Progressive Architecture*, the group geographically scattered in pursuit of other professional opportunities.[65] In 1972, its British members—Davies, Dawson and Stanton—returned to Europe to work on Renzo Piano and Richard Rogers's newly awarded Pompidou Center project.[66] In the previous year, Valerio temporarily relocated from Los Angeles to Washington D.C. (1971–73) to design pneumatics for an exhibition at The Smithsonian.[67] After completing this project, for which he received independent study credit, Valerio graduated from UCLA and accepted a teaching position in the School of Architecture and Urban Planning at The University of Wisconsin-Milwaukee (UWM).[68] Soon after arriving in Milwaukee, Valerio formed C.O.W. (Chrysalis of Wisconsin). There the Carnegie Institute commissioned the design of a demountable theatre and performance structure for The Three Rivers Arts Festival in Pittsburg, Pennsylvania.[69]

Designed by C.O.W. members Valerio and Kent Hubbell, *Three Rivers* (1973–75) was a large-scale, double-layered pneumatic membrane developed and fabricated in collaboration with architecture students at UWM.[70] At 35-feet tall, the inflated mobile exhibit and performance enclosure sat 200 people within a yellow prismatic form. *Three Rivers* was typically erected on a concrete plaza located over a parking garage adjacent to the Westinghouse building in downtown Pittsburg. The project presented a myriad of technical challenges for Valerio and Hubble. The client wanted to inflate and deflate the project as needed, so that

resolving a convenient location for the air supply became an important problem to resolve. An existing air shaft divided the plaza and parking garage, which allowed them to run a conventional HVAC duct between the blower (permanently installed in the garage) and the inflatable structure.

For *Three Rivers*, the decision to work with a double-layer pneumatic membrane allowed for greater flexibility in the size, location, and number of apertures; it additionally provided enhanced thermal and acoustic properties. The inflatable could easily be repositioned and was anchored by either catenary edge cables or water ballast. Utilized as a seasonal event-space in Pittsburg for ten years, Valerio describes the temporary pneumatic enclosure as a "serious building."[71] He adds, "*Three Rivers* was supposed to be all about implied mass. The structure that in truth weighs less than a pound per square foot had a presence implying a far greater weight—air made visible and solid at the same time."[72] This "ambiguity of the structure" oscillated somewhere between ephemeral and permanent, stable and unstable, light and heavy, and indexed Valerio's desire to push pneumatic technology closer to that of buildings.[73]

Due to its dual-walled enclosure and lack of an air seal or lock, *Three Rivers* afforded more structural, spatial, and programmatic freedom, yet much like a building, its plan was shaped not only by program and site but also by codes. In response to egress requirements, an extra access door was added to the north side of the event structure; likewise, electrical wiring for the lighting and sound systems was carefully incorporated into the design. Rather than simply running cords along the floor—those which might otherwise be taped down—the inflatable included an additional fabric sleeve (e.g., conduit) along its perimeter base, and O-rings were built into small fabric tabs at the access door. Despite being a temporary structure erected and dismantled each year, the attentiveness to detail and meticulous craft of *Three Rivers* demonstrated an advanced degree of expertise in the design and construction of DIY inflatables.

Who Let the Air Out?

On October 17, 1973, The Organization of Petroleum Exporting Countries (OPEC) made a decision to decrease oil production and to significantly raise prices.[74] Over the next few months, oil barrel prices quadrupled, calling into question the reliance of western nations on an economically unstable and environmentally non-renewable resource. The oil crisis of 1973 positioned plastics, and hence pneumatics, not only in a precarious political, social, and economic context, but also raised questions about environmental ethics. According to architect and author Simone Jeska, "By the end of the 1970s at the very latest, plastics no longer represented progress and modernism, but instead were associated with the stigma of ugly, cheap materials, and they disappeared temporarily from the architectural landscape."[75] The conditions that allowed inflatables to flourish in the 1960s—namely, the rise of plastics, the lure of expendability, and the quest for alternative environments—were the same factors that led to its demise in the 1970s. The optimistic rise and ironic fall of the pneumatic project involved factors far beyond the purview of any one individual or collective, yet Chrysalis played an instrumental role in demonstrating the architectural values of plugging in and blowing up.

Chrysalis was steadfast in their commitment to the advancement and development of inflatables "beyond just an editorial."[76] Self-described by Valerio as "a group of resources, applied to solve particular problems," Chrysalis produced well over a dozen projects dedicated to pushing the pneumatic envelope in the course of just a few years. Their experimental output was grounded in a fascination with environmental controls and building technology, allowing them to innovate air structures through multiple forms of architectural performance. According to Davies, "We learnt much about design and environmental engineering, not by conventional routes but by learning from practical experience, mock-ups, trial and error, and experiment."[77]

Although most historical narratives continue to re-write the rise—yet rarely the fall—of inflatables as a barely-there form of disciplinary propaganda fueled by rhetoric, representations, and playful performance, Chrysalis deployed air structures as a means to pioneer new avenues for architectural experimentation and production. Its members went west to seek new opportunities for material and structural experimentation, tapping into the wide range of resources afforded by the greater Los Angeles area. Working with experts in aerospace and Hollywood, Chrysalis approached complex problems with a keen commitment to novel solutions. The rigor and precision they exercised suggests an alternative historiography of the rise and fall of the inflatable project—one that challenges the "trippy, cheap, light" ethos propped up by the counterculture, and offers in its place a compelling case that pneumatics were viable alternatives to conventional buildings.

Their pneumatic output resonated with various forms of media, including star-studded films, fashion catalogues and *Playboy* magazine, yet for Chrysalis, the project was never about inflatables per se. Once they, namely Valerio, caught wind that plugging in plastics was deemed "bad" and no longer "rad," they were complicit with letting the air out.[78] According to Valerio, who also worked extensively with tension structures at the time with C.O.W., it was always about reusable lightweight demountable structures. He adds, "Experimental structures were a way to explore a different approach to building." In the end, their decision to pull the plug was not predicated on a subjective or aesthetic agenda, but rather a moral and ethical decision that the pneumatic project was inextricably reliant on petroleum-based products, and no longer captured the ethos of an environmentally minded generation.

ACKNOWLEDGEMENTS

The author would like to thank Chicago-based architect Joe Valerio for his time and generosity in providing indispensable information and unfettered access to the early works of Chrysalis.

The Denver School District purchased five Pneudomes from Chrysalis in 1972, for use as classrooms for young children.

Fabricated in collaboration with architecture students at University of Wisconsin-Milwaukee, the Three Rivers double-layered pneumatic membrane performed as a seasonal event-space on Westinghouse Plaza for ten years.

Shaped not only by program and site but also by building codes, the Three Rivers pneumatic event space in Pittsburg, PA (1973–75) designed by C.O.W. seated 200 people and provided all of the necessary electrical and AV support for a range of performance types.

1 According to the Expo '70 official guide, the United States Pavilion featured an "elliptical translucent domed roof" and was, at the time of its completion, "the largest and lightest clear span, air supported roof ever built." Similarly, the Fuji Group Pavilion was "the world's largest pneumatic structure" to date. For a comprehensive overview of the 1970 Osaka Expo, see *Expo '70 Official Guide* (Osaka: Japan Association, 1970) 57 & 191.

2 Davies, Stanton, and Dawson met at the Architectural Association in London, where they studied under Ron Herron of Archigram. Upon graduating, the three received scholarships to UCLA and headed west. See Mike Davies, "Exploring, rehearsing, delivering" in *Innovation in Architecture*, edited by Alan J. Brookes and Dominique Poole (London/New York: Spon Press, 2004) 15–28.

3 According to Davies, "[We] promptly headed for the desert in California to try out our crazy inflatable structures, which we were building and experimenting with at the time." Davies, "Exploring, rehearsing, delivering" in *Innovation in Architecture*, 19.

4 As noted in *Joe Valerio: Valerio Dewalt Train*, "The firm focused on interdisciplinary design approaches teaming architects, artists, and scientists." See Joseph M. Valerio, *Joe Valerio: Valerio Dewalt Train* (New York: Rizzoli International, 1999) 152.

5 "Counterculture" is a complex and loaded term typically attributed to the rise of anti-establishment thinking by a politically and socially left-leaning youth, beginning in the 1960s. For further reading on the emergence of the artistic and architectural counterculture during the 1960s and 1970s, see Elissa Auther and Adam Lerner, eds. *West of Center: Art and the Counterculture Experiment in America, 1965–77* (Minneapolis: University of Minnesota Press, 2012); Caroline Maniaque-Benton, *French Encounters with the American Counterculture 1960–1980* (Surrey, England/Burlington, VT: Ashgate Publishing, 2011); Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago/London: University of Chicago Press, 2006); and Andrew Blauvelt, ed., *Hippie Modernism: The Struggle for Utopia* (Minneapolis: Walker Art Center, 2015).

6 R. Buckminster Fuller coined the term "ephemeralization" in 1938. A proponent of technology and advocate for resource conservation (i.e., material, time and energy), Fuller's aim was to do "more and more with less and less until eventually you can do everything with nothing." See R. Buckminster Fuller, *Nine Chains to the Moon* (Anchor Books [1938] 1971): 252–59.

7 See Cedric Price, *Archigram* 3, 1963. It should be noted that in 1966, Price and Newby approached the British Ministry of Technology with proposals to conduct research on the use of air structures in the construction industry. According to Price and Newby, the publication "surveys the current research and development in this field and makes a number of proposals for future research." Cedric Price and Frank Newby, *Air Structures: A Survey* (London: Her Majesty's Stationery Office, 1971) iii.

8 This societal and material shift from heirloom to throwaway was addressed as early as 1960 when Banham addressed the topic of expendability in *Architectural Review*. He writes, "One of the great worries at the margins of the architectural profession is that building design just does not match the design of expendabilia in functional and aesthetic performance." Reyner Banham, "Propositions 5," *Architectural Review*, June 1960, 385.

9 "Experimental work frequently finds its grit and inspiration in the desire to undermine and explode all rival positions. Yet there is the broad and horrific mainstream of recent architecture which must be recognized, and which the more cerebral world of experiment has to refer to and fight against—and ultimately give its sustenance: for in architecture this is its ultimate role." Peter Cook, *Experimental Architecture* (New York: Universe Books, 1970) 7.

10 "[A] redefinition of experiment in architecture: to experiment out of architecture." Cook, *Experimental Architecture*, 7.

11 Reyner Banham, "Monumental Windbags," 18 April 1968, vol. 11, no. 290: 569–570, *Arts in Society*. Reprinted in *The Inflatable Moment: Pneumatics and Protest in '68*, ed. Marc Dessauce (New York: Princeton Architectural Press & The Architectural League of New York, 1999) 31–33.

12 As illustrated by François Dallegret's rendering, air-conditioning systems inflated a transparent plastic dome and could be sited anywhere, even on a rock. A mobile bachelor pad with mechanical servicing, it featured the latest in environmental controls and electronic entertainment. Reyner Banham, "A Home is Not a House," *Art in America*, Vol. 2, 1965: 70–79.

13 Banham, "Monumental Windbags," 31–33.

14 Banham, "A Home is Not a House," 70–79.

15 See Thomas Leslie, "Just What is it That Makes Capsule Homes So Different, So Appealing? Domesticity and the Technological Sublime, 1945 to 1975," *Space and Culture*, Vol. 9, No. 2 (May 2006): 183. http://sac.sagepub.com/cgi/content/abstract/9/2/180 (accessed February 15, 2018).

16 Ant Farm, *Inflatocookbook*, 1973.

17 See "Recycling" on the "Materials" page of Ant Farm's *Inflatocookbook*.

18 *The Last Whole Earth Catalog* (Menlo Park, CA: Portola Institute, 1971) 107.

19 "For some reason, it has been difficult for some people to take membrane structures, as a viable building type, seriously. Viewed as tents, or tennis court covers, or temporary whims, the structures have had and continue to have, an uphill fight for acceptance. A relatively small but growing group is doing battle with the misconceptions, however, and is solving the real technical problems." James A. Murphy, "Air Fare" in *Progressive Architecture* (August 1972) 76.

20 Murphy, "Air Fare" in *Progressive Architecture*, 76.

21 In addition, an essay by engineer David Geiger defines the technical performance and economic advantages of air structures, whereby he argues that their future resides in an "expanded scale." See David H. Geiger, Ph.D., "Pneumatic Structures" in *Progressive Architecture* (August 1972) 81–84.

22 Murphy, "Air Fare," 87–89.

23 Murphy, 87–89.

24 Joe Valerio, in conversation with the author, 06 October 2016.

25 Ibid.

26 Ibid.

27 The key text on the history and development of the Pepsi-Cola Pavilion at Expo '70 is *Pavilion*, eds. Billy Klüver, Julie Martin, Barbara Rose (New York: E.P. Dutton & Co., 1972). In addition, recent essays by Mark Waisuta and Sylvia Lavin provide detailed narratives about the development of its inner pneumatic theater. See Mark Waisuta, "E.A.T. in Osaka: Transducing Technology" in *Exhibiting Architecture: A Paradox?*, ed. Eeva-Liisa Pelkonen (New Haven: Yale School of Architecture, 2015) 83–94; Sylvia Lavin, "Poof (2006)" in *Flash in the Pan, Architecture Words 13* (London: Architectural Association, 2015) 110–122.

28 "More properly called the Inner Theater at the Pepsi-Cola Pavilion at Expo '70. Prior to my arrival in LA, Alan and Chris were drawn into a group of scientists and artists working with the EAT group in New York. The problem with the LA group, they didn't have anyone who knew how to build anything. The outcome was that Alan and Chris took things over in a very benevolent way to build the inner theater of the Pepsi-Cola Pavilion at Expo 70." Joe Valerio, email correspondence with author, 07 July 2016.

29 Mylar, a metalized film (polymer film coated with a thin layer of metal, usually aluminum), offers a reflective silvery surface that is more lightweight and cost-effective than aluminum foil. Although typically used for decoration and food packaging, Mylar's

high-insulation properties made it popular with the aerospace industry.

30 Lavin, "Poof (2006)" in *Flash in the Pan*, 111.

31 Lindgren adds, "Moviemaker Eric Saarinen, who had been making films on artists, helped build the Mirror and began to shoot a movie of the project as well. The model domes were erected on the giant sound stage of an MGM movie studio, which the company had donated to the group." Nilo Lindgren, "Into the Collaboration," in Klüver, Martin, Rose (eds.), *Pavilion* (New York: E.P. Dutton & Co., 1972) 36.

32 Lindgren provides a clear account of this transition from Envirolab to G.T. Schjeldahl. "The small model simply did not convey an impression of what would really happen inside the full-scale ninety-foot Mirror. After discussions, it was agreed to push ahead to make a full-scale inflatable mirror structure, a project clearly beyond the means of the Los Angeles group." Lindgren, "Into the Collaboration," in *Pavilion* (New York: E.P. Dutton & Co., 1972) 36. See also Waisuta, "E.A.T. in Osaka: Transducing Technology" in *Exhibiting Architecture: A Paradox?*, 90.

33 Klüver adds, "It used the inside reflective surface of a sphere for the first time. It is conceivable that this method of making a concave reflective surface could be used in making various types of antennas." Klüver, "The Pavilion" in Klüver, Martin, Rose (eds.), *Pavilion*, xii.

34 See Jimmy Stamp, "When PepsiCola Allowed a Team of Artists to Wreak Creative Havoc" in *Smithsonian Magazine*. http://smithsonianmag.com/arts-culture/when-pepsicola-allowed-a-team-of-artists-to-wreak-creative-havoc-109661/ (Accessed 22 March 2017); Sebastian Schumacher, "All You Can E.A.T.: The 1970 Pepsi Pavilion in Osaka," in *Uncube Magazine*. http://uncubemagazine.com/blog/13753251 (accessed 22 March 2017).

35 For a thorough description of the Pepsi-Cola Pavilion, and a first-hand account of the optical and visual experience of entering into the mirrored inner inflatable dome, see "Experiments in Art and Technology—New York and other cities" in Jim Burns, *Arthropods: New Design Futures* (New York: Praeger, 1972) 122–128.

36 As Valerio explains, "With the success of the Mirror Dome, we were contacted by another studio to create a stage for the movie Myra Breckenridge." Joe Valerio, email correspondence with author, 07 July 2016.

37 Project lead: Alan Stanton.

38 The film also features Roger C. Carmel, Farrah Fawcett, John Huston, Roger Herren, and Mae West.

39 According to Valerio, Welch refused to be photographed inside the mirrored inflatable dome because "she didn't like how her nose looked in its reflection." Apparently, this caused a "major brouhaha" with the studio, but actor Rex Reed "loved the set." Joe Valerio, email correspondence with author, 07 July 2016.

40 Project lead: Alan Stanton.

41 Jantzen, whose own designs sought to express the contemporary woman, was also known for innovating with new materials and methods—the company began in 1910 as Portland Knitting Company, and earned acclaim within the rowing community for its warm and lightweight knitted wool bathing suits. In the 1970s, they expanded their swimsuit line into beachwear and active wear, and began to work with nylon and spandex. See Jantzen, "Heritage," http://www.jantzen.com/timeline.html (accessed May 31, 2017).

42 Remarkably, *Dodecahedron* (1970) anticipates by several years what is now commonly known as an ETFE (ethylene tetrafluoroethylene) cushion system. Architect and author Annette Lecuyer claims that it was not until 1973–74, as a result of the first oil crisis, that architectural interest in ETFE emerged. Yet, it would be another decade before field-testing would prove its efficacy as a permanent building material. ETFE is more widely accepted in the construction industry, although its status is relatively novel. See Annette Lecuyer, *ETFE: Technology and Design* (Basel/Boston/Berlin: Birkhäuser, 2008) 32.

43 Commissioned by *AD* editor Monica Pidgeon, their feature article was a thorough compendium of lightweight pneumatic structures—possibly the most comprehensive to date. The "Pneu World" issue also featured an essay and works by the French student group Utopie—whose theoretical (and material) investigations into pneumatics were featured in the exhibition "Structures Gonflabes" at the Musée d'Art Moderne in Paris in March 1968. Simon Connoly, Mike Davies, Johnny Devas, David Harrison and Dave Martin, "Pneu World," in *Architectural Design* (June 1968) 257–272. See also Beatriz Colomina and Craig Buckley (eds.), *Clip Stamp Fold: The Radical Architecture of Little Magazines, 196X to 197X* (Barcelona: Actar and Media and Modernity Program Princeton University, 2010) 106.

44 Connoly, Davies, Devas, DaHarrison and Martin, "Pneu World," in *Architectural Design* (June 1968) 268.

45 Connoly, Davies, Devas, DaHarrison and Martin, "Pneu World," 268.

46 Connoly, Davies, Devas, DaHarrison and Martin, 267–268.

47 Ibid., 267. Additionally, it should be noted that Laing's pneumatically operated walls, which incorporated folding films inside cylindrical air chambers to mediate between transmission and reflection, anticipated what is now referred to as a triple-layer ETFE (Ethylene Tetrafluoroethylene) system, where a third interior layer of a pneumatic pillow is capable of modulating its degree of transparency or opacity.

48 Joe Valerio, in conversation with the author, 06 October 2016.

49 Ibid.

50 Project lead: Alan Stanton.

51 *Difficult but Possible Supplement*, January 1971 (Menlo Park, CA: Portola Institute). The supplement cover is not labeled as "Difficult but Possible," but rather "Truth, Consequences," although architectural historians Felicity Scott and Caroline Maniaque-Benton both refer to it as the former. See Felicity D. Scott, *Living Archive 7: Ant Farm* (Barcelona/New York: Actar, 2008) 81–85; Caroline Maniaque-Benton (ed.), *Whole Earth Field Guide* (Cambridge, Mass.: MIT Press, 2016) 38–40.

52 "My love-hate relationship with inflatables is in full bloom here," Brand writes. "They're trippy, cheap, light, imaginative space, not architecture at all. They're terrible to work in. The blazing redundant surfaces disorient. One wallows in space. When the sun goes behind a cloud you cease cooking and immediately start freezing. (Ant Farm is working on insulation schemes.) To counteract the cold Fred hung heat lamps from the ceiling which ascended and descended with variation in pillow pressure. Here, during blower adjustment, my light is busy scorching the floor. nvironmentally, what an inflatable is best at is protecting you from a gentle rain, not a problem here." Stewart Brand, "Production in the Desert," 42. Brand's account of the event was similarly captured about six months later in *The Last Whole Earth Catalog*, June 1971, 107.

53 Davies, "Exploring, rehearsing, delivering" in *Innovation in Architecture*, 19.

54 Davies, "Exploring, rehearsing, delivering,"19.

55 "All these experiments gave us confidence and an understanding of construction and environmental engineering in the sense that, despite the fact that we were struggling with the boundaries, we were learning, imagining, creating and moving forward, achieving things. We built inflatable structures where the margin between comfort and discomfort is very slight; where small differences have big effects..." Davies, 21.

56 Joe Valerio, email correspondence with author, 07 July 2016.

57 Ibid.

58 "The Bubble House: A Rising Market" in *Playboy*, "Modern Living," Vol. 19, No. 4, (April 1972) 117.

59 Ibid.

60 Ibid.

61 Vanessa Grossman, "Chrysalis's Pneudome, A Bubble-Pad-Survival-Kit or London Meets L.A." Edited by Beatriz Colomina, *Volume* 33 (Fall 2012) 27.

62 "The Bubble House: A Rising Market," 117.

63 Valerio, in conversation with the author, 06 October 2016.

64 *Pneudome* could also be customized, in terms of size and window area.

65 See Geiger, Ph.D., "Pneumatic Structures," in *Progressive Architecture* (August 1972): 81–89. Chrysalis's work, including *Pneudome*, is featured on pages 87–89.

66 According to Valerio, there was a large budget to fill the plaza in front of the Pompidou with pneumatics, but this was cut for financial reasons. Joe Valerio, in conversation with the author, 11 March 2016.

67 Valerio was invited by Phillip Ritterbush to work on an exhibition at The Smithsonian. Around this time, Chrysalis was asked to develop a movie set for a picture that was never released. Valerio took the lead on the project—*Giantess* (1972)—an enormous, abstract inflatable female figure to be used as a supersized backdrop during a dialogue scene. Although the pneumatic set was completed, the film was never released. Joe Valerio, email correspondence with author, 07 July 2016.

68 Valerio began teaching at UWM in January 1973. Valerio in conversation with the author, 06 October 2016.

69 The Carnegie Institute client had seen Chrysalis's work, featuring Joe Valerio, in the August 1972 issue of *Progressive Architecture*.

70 The Three Rivers Festival Event structure was completed in 1975. The team: Joe Valerio, Kent Hubbell, Michael Szczawinski, Aerovironment, Inc. (aeronautical engineering), Walter R. Ratai, Inc. (m/e/p engineering). See Valerio, *Joe Valerio: Valerio Dewalt Train* (New York: Rizzoli International, 1999) 61 & 155.

71 Valerio, in conversation with the author, 06 October 2016.

72 Valerio, *Joe Valerio: Valerio Dewalt Train*, 61.

73 Valerio, 61.

74 Giovanna Borasi and Mirko Zardini, eds., *Sorry, Out of Gas: Architecture's Response to the 1973 Oil Crisis* (Montreal: Canadian Centre for Architecture, 2007) 50. Although the exhibition did not specifically address pneumatics, its discussion of the relationship between architecture and oil in the 1970s sheds light on the development of environmentally responsive building materials, methods, technologies and concepts.

75 Simone Jeska, *Transparent Plastics: Design and Technology* (Basel/Boston/Berlin: Birkhäuser, 2008) 22.

76 "We wanted to move beyond just an editorial." Joe Valerio, in conversation with the author, 06 October 2016.

77 Davies, "Exploring, rehearsing, delivering," 21.

78 In several conversations with the author, Valerio attempts to pinpoint the exact moment that he caught wind that pneumatics were a "bad" idea. He cites that the *Whole Earth Catalog* must have had something to do with it—as well as a larger pop cultural understanding that energy and oil were no longer finite resources. For an elucidation on the disadvantages of inflatables, see Robert Greenway, "Inflatocookbook" in *Whole Earth Catalog* (January 1971) 43.

UNCOMFORTABLE: A DRY CONVERSATION ABOUT BAD WITH ARCHITECT ERIK OLSEN/ TRANSSOLAR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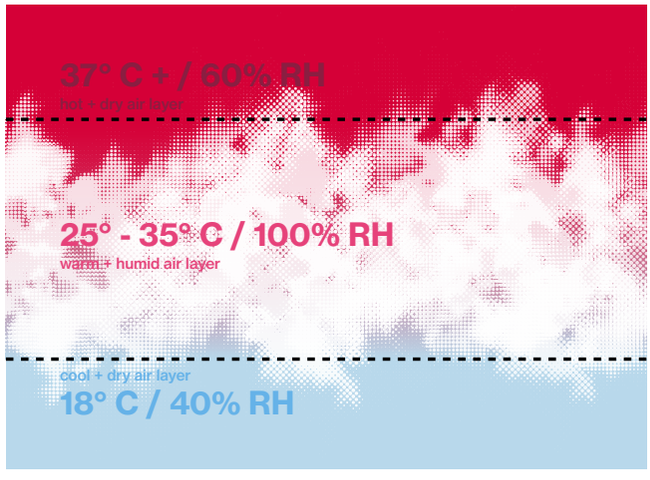

37° C + / 60% RH
hot + dry air layer
25° - 35° C / 100% RH
warm + humid air layer
cool + dry air layer
18° C / 40% RH

Filip Tejchman When considering the concept of "bad"—in relation to architecture, engineering, and specifically environmental engineering—I'd like to start with the criteria that dictates "thermal comfort," since this term represents attitudes shaped by quantitative and qualitative criteria.

Erik Olsen At Transsolar, we often understand comfort as culturally determined. No universal standard defines comfort for everyone. It can be defined physiologically, but it's also a cultural construct, a result of prior experience and personal expectations. We're intentionally creating experiences that achieve a level of comfort and delight not conventionally recognized by our culture.

A simple example that we have used in many projects—such as the Angelos Law Center—is an exposed concrete ceiling slab, often heated or cooled by embedded radiant tubing. If one focuses on air temperature as a number, they might conclude they should be uncomfortable; in reality, if they listen to their bodies they discover they *are* comfortable. And this construction type usually offers the advantage of higher ceilings and improved daylight.

A richer example is semi-conditioned buffer zones, such as the south-facing winter gardens at Manitoba Hydro Place. These spaces aren't designed to be fully heated in the winter—their temperature varies significantly depending on available solar radiation; in summer, they essentially have the same conditions as the outdoors. Because these aren't fully programmed office environments, they provide a welcome connection to the outside and an opportunity to experience a different environment during the workday.

FT Your work negotiates the unexpected and preexisting standards with norms or tastes. In this sense, the unexpected you just described provides a subjective criteria, yet there is always some objective truth. Does the latter vary according to the comfort model being used?

EO ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) is the dominant institution for indoor thermal comfort standards in the US; they establish the reference for acceptable thermal comfort in quantitative terms. It is very much an institutional definition of comfort.

FT Since ASHRAE represents the HVAC engineering "establishment," is diverging from those standards "bad"?

EO The ASHRAE standards are very dominant in North America; there is a preconception they are too limiting and that we shouldn't be bound to these institutionalized standards. Is ASHRAE bad because of these constraints? The reality is more nuanced. ASHRAE 55 is much more flexible than most people realize. Over the past ten years, it has accepted a wider range of definitions of comfort.

Our industry and its standards are always changing; ASHRAE gradually incorporates these shifts and is usually ahead of most clients. Often, our challenge is to have a client willing to use the full range of comfort accepted by ASHRAE. 80°F air and radiant temperature, along with 70% relative humidity, and a ceiling fan on very low speed is considered perfectly comfortable for someone wearing pants and a short-sleeve shirt. That's hard for a lot of clients expecting an air temperature of 75°F to accept.

FT The ASHRAE standards function as instruments of practice/service—tools that project and even enforce certain institutional biases and subjectivities. The last fifty years of ASHRAE comfort models recognize changing expectations and desires of building atmospheres, both on a cultural and an individual level; a meta-history of taste, measured through a range of comfort definitions.

previous page: Engineers from Transsolar KlimaEngineering test a mock-up of Cloudscapes, designed in collaboration with Tetsuo Kondo for the Architecture Biennale in Venice 2010.

above: Zaryadye Park, Moscow is an outdoor park incorporating typical Russian micro-climatic experiences. Within the park is a glass canopy that parallels the contour of the hillside site, organizing the thermal gradient of interior air to create a "warmth bubble," resulting in a partially conditioned four-season space in which the division between interior and exterior is constructed thermodynamically. The goal of the environmental control systems for Zaryadye Park is to produce an interior climate that is adaptive to the seasonal changes of Moscow. During the winter, for example, when outdoor temperatures can drop as low as -35°C/-30°F, the interior temperature will be significantly warmer through a combination of solar and radiant heating. Apertures in the canopy are opened in the warmer months to allow outdoor air to move through the space based on a stack-effect.

facing page, top: View of visitors ascending and descending a ramp (Designed by Tetsuo Kondo) that passes through the indoor cloud of the Cloudscapes installation at the Architecture Biennale in Venice 2010.

facing page, center: Infrared camera image of the temperature stratified layers of Cloudscapes.

facing page, bottom: Generating an indoor cloud for Cloudscapes is predicted by the relationship of vapor pressure, humidity ratio, and temperature. Hot air with a relative humidity of 60% has a saturation or dew point temperature of approximately 28°C so when it contacts lower temperature (18°C) the vapor pressure drops and water droplets form.

EO Yes, definitely. Any comfort standard is a tool, one of many, that we utilize in our work. You could say we are "bad" because our ideals are not governed by standards—we are willing to be transgressive and work outside of these standards. For us, a project's success comes from using a number of approaches, defining and analyzing the problem in various ways, with different models, simulations, mock-ups, and tests.

Advanced modeling can allow for a more nuanced discussion and understanding of the definition of performance. Thermal comfort has traditionally been evaluated with air temperature, an incomplete representation that ignores a host of physiological metrics. We use dynamic thermal simulation software such as TRNSYS (Transient System Simulation Tool) to calculate key inputs, such as radiant temperature, to the latest thermal comfort models. The results of this modeling require discussion with the client to agree if the expected range of comfort is acceptable for them; thermal comfort standards are only one reference point in this discussion.

FT What we define as comfortable or appropriate often requires satisfying radically divergent contextual and subjective criteria. For example, David Gissen explores various systems that produce atmospheres—clean, polluted, mediated, social, political—and presents a history of building atmospheres. His essay, "The Architectural Production of Nature," examines the design competition for the Temple of Dendur's exhibition space. The Metropolitan Museum of Art proposed building an enclosed space that supported an atmosphere and intended to preserve the temple in perpetuity. The HVAC system had to accommodate both the comfort of the museum visitors, and the preservation of the temple. The design emphasis was to create the "appropriate environment"—the atmosphere of the museum as an environment for the preservation of art work. If the goal was preservation, then the art, the temple, and their entire collection should be sealed-off away from light, air, varying moisture and temperature. The physiological premise for comfort is then undermined by the cultural and political demands of optimized performance and energy savings. Is there an inescapable compromise between performance and comfort? Can you have both?

EO The reinforcement of that perceived contradiction is one criticism of LEED. Blind pursuit of LEED—or any certification—often results in a focus on specifying equipment, fixtures and assemblies. Each "performs," but in the end you're just selecting a high-performing, slightly more efficient version of standard practice.

Rather than applying standard solutions, we focus on how that environment changes by asking critical questions. We embrace the idea of climate-responsive design and accept the variable nature of the environment. We use tools to probe the interaction between indoor and outdoor environments to understand how different design concepts will influence the built environment. The glass canopy at Zaryadye Park in Moscow, for example, doesn't create a fully conditioned space but establishes a semi-outdoor environment that is much warmer than the outdoors in winter. The ventilation rates and resulting thermal conditions have been studied to confirm that the design produces the desired experience.

Traditional mechanical system design accounts for extreme conditions rather than an understanding of the variability in between. Frankly, what we do is difficult. Because the environment is so extremely variable, there are many possible conditions. Ultimately, we're systems thinkers interested in system dynamics that are constantly changing in response to many different inputs, both quantitative and qualitative. Our experience allows for exceptional comfort and energy performance.

FT External variables, such as weather or taste, heavily influence the negotiation between quantitative and qualitative criteria, like building performance and occupant comfort. Failure is not absolute, even if the performance lies outside of the expected norm. Do you think architects have incorporated this type of systems thinking or an eco-consciousness that strategizes building operations and occupants' experiences beyond short term needs?

EO It's not typical for architects to think this way yet. The tools are different—drawings are static. Sometimes, we discover that our collaborators and clients can't imagine buildings being designed for variation rather than as a static condition.

FT Is that because architects do not associate programmatic variability with fluctuations in the indoor climate? Meaning that there is an unchanging correlation between building program and indoor climate.

EO Yes. The unique challenge of environmental engineering is designing for a multitude of unknowns. That variability is at odds with expectations of a static indoor environment. For instance, a classroom might need to remain comfortable, whether occupied by one or fifty people. How is this accomplished if we partially rely on architecture—such as its exposed thermal mass—to deal with this variation? It becomes necessary for the space to begin slightly cooler and end slightly warmer.

FT Does this absence of a critical architectural attitude to variable environmental conditions—both indoor and outdoor—represent a type of failure?

EO As part of the design process, once a certain range of

top: The first Behnisch Architekten proposal for Artists for Humanity—a net-zero project in Boston—included a curtain-wall scheme that could not achieve the required U-Value necessary for a net-zero project.

bottom: The revised scheme by Behnisch Architekten replaced the curtain-wall with a more effective wall assembly.

environmental conditions are predicted, then there is an expectation of what to achieve. Whereas, if there are no predictions, it probably was not discussed and there is no expectation. Failing to have this conversation is probably a failure of the design process.

At the same time, if a particular outcome is predicted, there is already a possibility for design failure specifically because it creates expectation. If we expected a limit to a predicted range, and it's significantly warmer, then that could be a design failure. Maybe it's a failure of the process that the design team—architects and consultants—or the owner didn't identify a possible use scenario.

FT With more advanced predictive abilities, is there a greater likelihood of identifying possible failures, even those that might occur under rare circumstances?

EO Our increasingly sophisticated palette of tools might also predict that a space isn't going to be comfortable all the time. It's possible to recognize that and the client can then say, "You know, we accept that." What might have been considered a failure before would now be considered acceptable. For the Karl Miller Center at Portland State University, the client accepted a small percentage of hours above the comfort threshold in order to achieve a building with no mechanical cooling.

FT Contemporary architectural discourse includes ideas and concepts such as scenario and systems planning, emergence theory, and indeterminacy, but the outcomes are counter-intuitive and they usually manifest in stable forms or static compositions. How could the architectural discipline adopt these modes of thinking as previously mentioned?

EO Post-occupancy evaluation is the most important tool that allows us to examine how architecture is changing from the perspective of the occupants. As a tool, post-occupancy evaluation may even start to alter the relationship between the architect and the project, which generally focuses on the delivery of a finished product and does not usually include some form of long-term monitoring or feedback-loop. Looking back at our work helps us understand how the indoor environment actually varies over time, how the expectations of the occupant change, and how these changes occur in relationship to one another. Whether intentionally designed or not, this interplay happens in every building. Without this feedback, the idea that environmental conditions are good or bad remains hypothetical and, again, definitions of failure are based only on standards and not a real, lived experience. Evaluating your own work allows for better design in future variability. If you document that occupants value space with variability, clients are more willing to accept it. In the last few years, we pushed much harder to perform post-occupancies studies in our completed projects and the findings have been immediately informative both for ourselves and for our clients.

FT That architects could reconceive and appropriate the post-occupancy evaluation in order to develop a design-specific feedback loop is an intriguing proposition. It would be another way to nudge architectural thinking towards strategies that are not bound to static outcomes. What do you think are some of the obstacles to this strategy in practice?

EO Not every client is ready to take the time and engage in a meaningful way. They may also be hesitant to allow the design team to directly interact with their full community, which is critical in getting feedback that represents all perspectives. Of course, design teams would prefer to be compensated for this work, which means we must

Backstage at the Munich Kammerspiele. Producing a cloud that hovers over the stage inside a theater is a tremendous technical challenge. The environmental control systems of theaters need to accommodate the extreme internal temperature gains of audiences, performers, and lighting, and are designed to efficiently move air out of the space. To prevent the cloud from being removed immediately after emerging, Transsolar KlimaEngineering used a series of additional fans and ducts to carefully control the stratification of air above the stage.

offer value to the client and not just for our own future work. This is easiest with clients interested in long-term, collaborative relationships.

FT When I've worked on projects with developers, they often don't have an occupant. As an architect, you are designing for…

EO For unknown people. I've seen that problem on commercial building projects; brokers or tenant representatives demand that you design for a high occupant density or super high plug loads, which result in massively oversized equipment. It's a waste of money because you install for an unnecessary capacity and it's inefficient to operate.

FT In recent years, real-estate developers, brokers, and architects, have been particularly aggressive in touting building performance and sustainability. On one hand, this could be interpreted as a shift towards greater environmental responsibility. Then again, as you mentioned earlier with regard to LEED, simply replacing one system, material, or part for a "greener" version is likely an ineffective and excessive approach. This is certainly a flawed design strategy.

EO The piecemeal approach only layers on technologies without questioning underlying assumptions, such as the unnecessarily high plug loads previously mentioned. Does it impact the people that are there? Not really. It could still be a fantastic building, except the developer spent five-million dollars or more for a capacity that will never be used because somebody thought they might need it and also because someone applied a "standard"—often unwritten—without any critical thinking. Rather than using cost savings, by questioning traditional assumptions to fund other aspects of the project, the technologies required to be "green" are inevitably seen as an additional cost.

FT It's a perverse form of conspicuous consumption that simultaneously reveals a form of excess while projecting an essentialized, rational aesthetic. How much of that is intrinsic to contemporary architecture because it persists in upholding certain modernist orthodoxies—the legacy of transparency, for example?

EO Anytime a project begins with an end in mind—whether that includes an idealized form or a specific material vocabulary—then it is a bad start. It means that too many contextual variables are being ignored while the solution space is already unnecessarily constrained, which can limit the potential to reveal the "best" design option. Form and material need to respond to site-specific conditions and that doesn't mean the response is deterministic. If the contemporary canon is biased towards an indiscriminate use of a material, like glass without clear intent, then that is a design failure.

Our work with Behnisch Architekten on Artists for Humanity, a net-zero building project in Boston, is an example of a problem driven by assumptions. The aesthetic expectations associated with high-performance design in prevailing design culture assumes the curtain wall. The client is amazing and ambitious; they want a net-zero building on a very tight site and budget. We've redesigned the façade multiple times to get the project within budget. It started with a super radical-looking façade that evokes a beehive while integrating fixed shading, translucent glazing, and photovoltaics. It eventually became obvious that the curtain wall suppliers could not make the required U-value work as a curtain wall system within the project budget. Not because of the glass, but because of the frame. If the expectation was energy-performance, maybe that wasn't the right starting point for the project. Sometimes, we have

to go back and rethink the question and our expectations.

FT What if you were hired first, before the architect?

EO We would still need to maintain our usual roles in the end. I struggle with architects who expect our input to drive the project—this idea that climate-responsive design is deterministic—*that* makes me uncomfortable. It's the difficulty of a blank-page and the challenge of architecture: you start with nothing.

We need to see architectural proposals to form the right questions. You have to start with the bad to get to the good. It's part of the process. Architects are more comfortable with the unknowns of the design process; they understand that the first idea is not going to be good. Engineers are not typically comfortable with this and it's something we focus on in our practice as inherent to the process of collaboration, going outside our personal comfort. The architects who expect us to act as a traditional consultant ask us for a concept and we deliver the fully baked, complete and correct concept on a platter—the first time. But we expect to see their ideas, start noodling on our own—including good and bad ideas—and begin a discussion. Authorship of the concept is truly collaborative and the idea develops over time, with the result being something neither of us would arrive at individually. This process is how you get from bad to good, and it's different every time.

FT When something is good, are we really saying that it is just-good-enough? Perhaps in order to be "bad"—as a form of productive transgression—we have to be extremely precise about the terms, such as the criteria we use to evaluate performance. In this regard, your Cloudscapes project at the Venice Biennale succeeds as the embodiment of meteorology at the scale of architecture. It produces a spatial experience that challenges expectations. It is both a theatrical performance and high-performance.

EO That's the point: a special experience emerges from a mixture of art and science that thinks carefully about the application of physics and has nothing to do with any standard definition of the indoor environment. Most engineers, and even many architects, just want to be handed the rules, the roadmap of standards.

FT There is a play between the hard data accrual in something like TRNSYS (transient systems simulation tool) or CFD (computational fluid dynamics) and the quick-and-dirty mock-up, like those you did for Cloudscapes.

EO Our use of simulation loosely relates to the idea of starting with the bad to get to the good. Very few design firms take a critical approach to simulation; it's rare for someone to ask whether the simulation results validated your design, or better yet, helped shape it. What needs to adjust in response to its predictions? Architects should learn how to have a dialogue with the results in order to draw conclusions and further ask questions. Without a clear impact on the design process, simulation for the sake of simulation is definitely bad.

FT As we discussed, Cloudscapes performs in multiple ways—as theater, a climate, an experience—and I could imagine a future in which the definition of building performance includes entertainment through some type of thermodynamic theatricality.

EO There's certainly space for designing experiences that can challenge end-user expectations; they are meaningful and powerful by being not-so-polite or not-so-comfortable. The cloud we designed for the Munich Kammerspiele, a repertory theater, hovers over the stage and requires highly controlled environmental conditions to remain stable.

Why can't we expand that notion to also include the audience and the space that the audience occupies as well? One goal of the cloud was not to simply have the cloud float out over the audience; there's already iterations like the fake snow falling at Radio City or Random International's Rain Room at MoMA. Why can't that be considered part of the performance?

What if the action in the play was heating up, it's getting more and more intense, and the whole auditorium gradually gets hotter at the same time, so everyone's sweating and they're super nervous, asking "Why am I so sweaty?" Their endorphins are going and the moment there is catharsis on stage, the air conditioning turns on, and everyone feels a sudden drop in temperature, "Oh, thank God."

Though this example is extreme, the same idea can extend to non-performance spaces. The sound of rainfall on an ETFE membrane roof—which essentially acts as a drum—is generally seen as a liability, but it also can be part of the space's theatricality, an attraction in itself.

FOREVER AFTER
OR, THE WORK OF ARCHITECTURE IN THE AGE OF ITS CHRONOLOGICAL SUPERFLUITY

ANDREW HOLDER

Circa 2018, architecture's favorite habit is to name itself *after*. Its conventions for self-designation come always with a prefixed stress on the past: it is post-digital, post-medium, post-post-modern, not to mention the late's, the after's, the meta's, and all those other four- and five-letter anachronizers. Although it is tempting to "just get over it" and be contemporary, this risks ignoring the near total consensus that *after* is, in fact, an accurate encapsulation of our present and of our immediate future.[1] *After*, after all, may not be the name of a time that fits neatly into a linear periodization of history, bracketed by something that came before and soon to be replaced by The Next New Thing. Instead, it may be the totalizing and de-facto condition of possibility: a chronological nether-region wherein forward and backward, progress and retrogression, even the relational "toward" and "away from," are no longer viable terms for plotting the output of the field *precisely because such movement has already occurred*. This is the *after* of an after-party.[2] It's not a reaction *per se*, but it *is* characterized by the acute awareness of occurring in the wake of what came before.

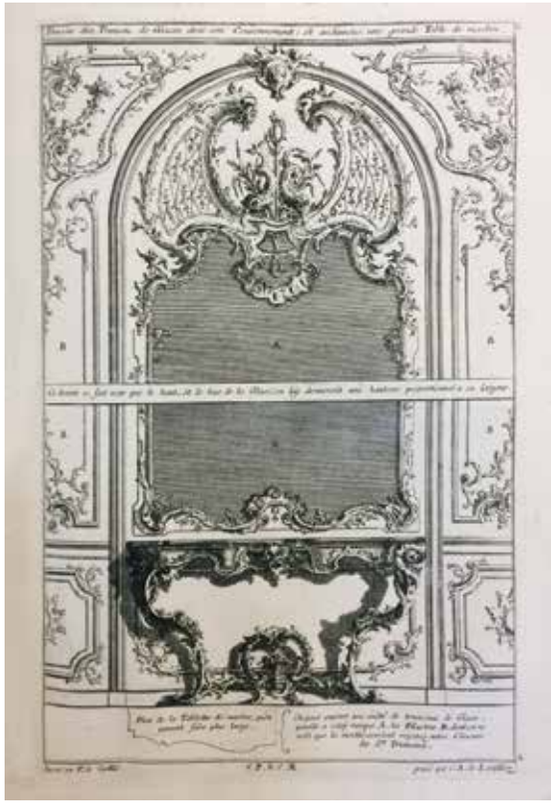
The problem in this situation is not epoch-naming. That work seems to have already been done by popular acclamation. Rather it is to supply *after* with a positive theory of its own. My interest here is not in a generalized model of architecture's historicity, or, God forbid, of time itself.[3] I would instead like to offer a guide for the production of work under the present conditions, where it seems a question of available models. What kinds of work can we do after the work has already been done? And what would stimulate this work if we are to labor under the persistent sense of activity already having drawn to a close? Answering these questions requires abandoning the messianic expectation of a future after *after* in favor of mustering enthusiasm for a present that may last forever. Because architecture is a perennially future-focused endeavor founded on the ability of its practitioners to deliver fresh starts and clean slates, this requires new motives.

An example of this variety of after-ness—one that stands on its own rather than as a lamprey-attachment to its successors and predecessors—can be found in the exchange between Rococo design and its critics in the first half of the 18th century. As a period, it was brief: the style emerged almost exactly at the turn of the century and by 1750 was on its way to being out of favor at the French court. Despite this short lifespan (where one might assume the object of criticism would be the novelty of its brief flash), the Rococo was in fact criticized for not being new enough. In their *Encyclopedia of World Art* entry on the Rococo, Hans Sedlmayr and Hermann Bauer characterized the prevailing critical opinion:

> *The new style neither developed theories of its own nor named itself. The best definitions came from the opposition… In 1754, in an attack on the new style, Charles Nicolas Cochin (Cochin the Younger; 1715–90) summarized the academic opinion when he stated that nothing had been produced since Meissonnier that was not already present in the germ of his works.*[4]

Meissonnier here refers to Juste-Aurèle Meissonnier, a decorator, silversmith, and architect favored by Louis XIV. One imagines that Cochin intended this "nothing had been produced…that was not already present" to land as a quick and sweeping dismissal of a huge body of work to which he was ideologically opposed, the kind of brush-off a critic delivers with an imperious "it's all been done before" hand-wave to a popular or institutionally-sanctioned practitioner. An accident of biographical trivia, however, contravenes this reading. Meissonnier was born in 1695 and died in 1750, which means that his lifespan was almost perfectly superimposed on the duration of the Rococo itself. There was effectively no Rococo before him. This begs a more radical resaying of Cochin's critique that detaches "after" from the stress of chronological sequence: the Rococo was fully formed and closed to future development from the moment of its first appearance.

Meissonnier's importance in this scheme is less a fact of his existence as a person than in the way he is



analogous for Cochin to the "party" in "after-party,"[5] or to any of the nouns in "after-shock," "after-hours," or "after-the-fact." He is a name for the kind of acute awareness—the party, the shock, the fact—that pervades and defines the stillness of his moment. In his output, we can see three mechanisms that construct this awareness and permit activity (even pleasurable activity) to continue in a field that is in some sense already bounded and impervious to development. The first has to do with a generalized sense of familiarity and reappearance that characterizes the Rococo. The second and third have to do with the collections of objects that appear, or what we might call the heuristic availabilities that allow things to be thinkable as denizens of his pictures.

First, consider one of Meissonnier's little decorative scenes that frequently appear in the *Oeuvre* alongside his designs for major commissions.[6] It contains an entire roll call of ways to play one of the Rococo's favorite games: reminding us that we are looking at a picture and seeing things that are only possible inside that space. The giant pilaster at center becomes a frame that brackets off the upper-right quadrant of the scene as a picture-in-picture. A short run of stairs reconnects this inset fragment to the rest of the scene and makes a circular puzzle of entering and exiting picture-in-picture space. Figures, indiscernible as sculptures or representations of actual people, all look away, with the exception of one woman who may be staring directly out from the page, meeting the gaze of a viewwho is presumably staring back. Trickling, running, sprouting, and otherwise animate matter makes appearances as multiple objects, like the burbling substance cascading underneath the figure (at right) is both foam and shell for a moment, at the point of contact between the two. The small decorative hole between the two stairs vanishes into a swirl of immeasurably deep space, while the apparently much larger gap underneath the monumental arch behind is so flat and devoid of atmospheric perspective that it is almost miniature. A single Meissonnier drawing is such a dense storehouse of ideas for how to evince awareness of picture-viewing that other instances of the same devices are, at best, patterned *after* it.

Beyond the simple density of ideas, there is a complication to the engraving that creates a generalized sense of familiarity or *paranoid repetition*, where the suspicion of reappearance persists even without evidence to support the existence of an actual copy. Modern viewers delight in discovering the evidence of self-awareness in pictures, pointing back to so-called "problems" of representation more generally, but it is unclear if we are actually able to see and isolate these instances as features or if they are simply phantoms produced by the collision of subject matter and medium. The objects on display, are, after all, fairly banal. If these ruins and fountains occasion meta-thoughts about the status of the picture, why any old ruin or fountain? Artifacts of the print and the translation of drawing-to-print redouble this suspicion of a creeping generality. The moment where water transmutes into shell could be merely the residue of cross-hatching, where the strokes conform to the shape of a scalloped edge. The discrepancies in scale and foreground/background relationships at the two holes could instead be the attributed to the bald patch of paper or the omission of detail necessary to maintain the "sketched" quality of the pictorial surface when it is translated from drawing to etching. None of this is to

facing page, left: Juste-Aurèle Meissonnier, Plate 32, one of the decorative scenes, and typical storehouse of picture-viewing techniques, in his *Oeuvre*.

facing page, right: Francois de Cuvillies, Design for an Apartment, Cuvillies's *Oeuvre*.

right: Gilles-Marie Oppenord, Frontis-piece, *Livre de frag-ments d'architectures, recüeilis et dessinés à Rome d'après les plus beaux monuments*.

infer Meissonnier's actual intentions or those of Gabriel Huquier, who had the task of turning the drawings into prints. It is instead to remark on how the subject matter and its technique of reproduction conspire to cut against evidence of the picture's self-awareness and replace this with the quotidian. As soon as these moments are uncovered and named, the manual processes of the picture's format and medium threaten to reinter them as completely natural artifacts of deadpan representation. This midpoint between coy awareness and natural artifact process lodges Meissonnier's scenes as a general lens through which the rest of the Rococo will be observed.[7] The pictures are impossible to un-see. Having noticed the conjunction between shell edge and water foam, the echoes of this similarity leaks beyond the bounds of a single artifact as a generalized paranoid suspicion: a consistency of mind behind the appearance of things repeats a set menu.

Second, moving from the suspicion of repetition to the actual catalog of objects on display, there is a strange capacity for the picture to anticipate things that are not yet depicted. Though not specifically represented in the picture, other Rococo elements are anticipated by Meissonnier's *additive prefiguration*.[8] The scrolls that make up the abutments and archways in the picture are borrowed from a baroque strategy for welding together the attic and base of church façade but are used here as free-floating conjunctions. Unattached and un-bracketed by terminating elements to either side, the scrolls accept and anticipate future additions, making the engraving a kind of absorptive tissue. Places are set for the forms yet to come and the authors who will produce them.

Nearly all the elements of Meissonnier's picture work in this way. The reclining body prefigures a support not yet present to receive it, the part in the clouds soon to be infiltrated by rays of light, the steps over which water will cascade. The picture is full with prepositions that are only half-complete, awaiting things that will be rested on, leaned against, perched atop…it dreams of future objects. This additive power makes it possible to imagine not only the generic appearance of "another thing added" but also the specific insertions of one author inside another. Francois de Cuvillies' brittle, intricate border foliage is not actually here, yet a blank-ish panel awaits his decoration. Gilles-Marie Oppenord's ribbons, skins, and knotted sheets are anticipated by the naked backs and legs of the putto they would half-cover.

Third, surveyed as a stockpile of things susceptible to listing, the contents of Meissonnier's picture make a *presentimental inventory*. Its contents may begin fountain, balustrade, cloud, shell, and rock, but they could continue without limit: shoe, television, flag—every non-sequitur is welcome and completely neutered of any shock that may come from its addition. The entirety of the world's things could plausibly make an appearance. *Meissonnier The Archivist* has put everything already in place. The contents of the pictures are inexhaustible but antedated by the suspicion that some other, greater subject has composed it, only to leave the scene shortly before our arrival.

What would it be like to inhabit such a world? In some sense, we already know. Consider again Sedlmayr and Bauer's *Encyclopedia* entry and Cochin's dismissal of Meissonnier's work. Consider how the provenance of these words as they move from one speaker to another opens a set of possibilities for the reading subject. The critique formatted above as a quotation is, in fact, one man's statement of opinion that's been paraphrased and nested inside the opinion of two others, found in a sixty year-old encyclopedia entry that contains no reference to the source text and is then translated from its original French. Silted over by layers of translation and movement through various documents, Cochin's supposed utterance suddenly acquires both credibility and easy comportment with the other tidbits around it. It is completely naturalized and ready for use, even though—and perhaps *because*—it was retrieved from a vague corner in some unknown library by archivists (Sedlmayr and Bauer) with familiar-sounding names who are no longer around to vouch for the accuracy of their work.

1 See for instance the preponderance of "____-modernisms" in Vermeulen and Akker's "Notes on Metamodernism." Timotheaus Vermeulen and Robin van den Akker "Notes on Metamodernism," *Journal of Aesthetics and Culture*, January 2010, Volume 2.

2 See, for instance, the Office KGDVS Belgium pavilion at the 2008 Venice Biennial entitled "After the Party."

3 A parade of minds after Hegel have of course thoroughly debunked the idea of inexorable, linear historical progress. Latour, Feyerabend, and even Kuhn come to mind as sophisticators of science's movement through time. Nearer to our own field, Rosalind Krauss made it impossible to receive Clement Greenberg's grand narrative of modernist progress as an accurate recounting of events (although it remains an excellent work of fiction).

4 Hermann Bauer and Hans Sedlmayr, "Rococo," *Encyclopedia of World Art* (New York: McGraw-Hill, 1956), 231.

5 This is not to be confused with making Meissonnier analogous to the party itself. The stress here in on the way in which Meissonier helps to characterized the state of acute awareness that saturates his period—the terms or rules under which work occurs.

6 Gabriel Huquier, *Oeuvre de Juste Aurele Meissonnier, Peintre, Sculpteur, Architecte &c., Dessinateur de la Chambre et Cabinet du Roy* (Paris: Chés Huquier, 1742).

7 Pun intended.

8 Among the many species of prefiguration, this kind anticipates by opening to addition. This is related to prefiguration by becoming, whereby objects demonstrate they are sufficiently plastic to convert themselves from one state to another. With addition, each object remains itself and need not melt into base material in order to become another thing—its edges are instead sticky and receptive to future cohabitants.

It arrives concrete and ready-to-use because of its sense of having been pre-arranged by some subject who is no longer on the scene. This is what it would mean *to know* inside the worlds of Meissonnier's pictures. The preselected but infinitely numerous blocks, slabs, and chunks of this world are ready for arrangement.

Taken together, *paranoid repetition, additive prefiguration,* and *presentimental inventory* are forms of *closure without limit.* They circumscribe growth and repetition, give it coherence, yet do not negatively exclude anything in particular; together they are impervious to linear chronological succession. The entirety of the Rococo is and was already in a single picture, innumerably populated by things of which we have always been dimly aware. In this way, Cochin's Rococo is *Forever After.* It begins at the point dramas end: there are no more plotted obstacles to make the story difficult or uncertain because "certain kind of parallel lines… start converging" in the distance.[9] The motive to continue is not waiting for a surprise, but instead to add one's self and work to a world that welcomes endless contribution.

This kind of closure—by prefiguration and presentiment—has to be pried apart from another, which might be called closure by *lateness.* Frequently in the critical imagination, late art signals its impending death by circulating known forms. The story goes something like this: at the very end of the line, technical mastery reaches its apogee and itself becomes the primary occupation of its practitioners. Virtuosos diddle with their rarified abilities at this stage, consumed with elaborations on already immaculate curlicues. Invention and novelty recede in favor of rearrangements and misappropriations of a known language, as though the master, now technically perfect, contents himself with the smallness of the field of available objects and no longer bothers with the invention of new toys. The master retreats from the work as the signature author, allowing art to "speak for itself" as a romantic foreshadowing of the eventual (terminal) withdrawal of the author. "Touched by death, the hand of the master sets free the masses of material that he used to form." This is Adorno's late-stage Beethoven. He has achieved technical preeminence. He could presumably impose himself upon found material and absorb it into a work of his own, yet "one finds formulas and phrases of convention scattered about. The works are full of decorative trill sequences, cadences, and fiorituras."[10] The familiarity of forms does not open onto further fields of possibility. It opens onto a corpse and to all the myths of progress that require death so that the future might retain its mystique.

With this story in mind, distinctions can be drawn between *lateness* and what be might called, positively *Forever After* along the lines of repetition, technique, and subject-hood. Repetition in lateness is the arrangement of known forms to signal the end. Repetition in this mode is writing, meant to be read not for the specificity of its symbols but for the alphabet of recurrence itself; in the end, it will always spell in stuttered letters "the end." *Forever After's* repetitions trade meaning at this level for the sheer capacity to act entailed by a world of total availability. An already exhausted and limitless catalog of bricks issues a happy imperative: assemble! As for technique in *lateness*, there is a cost for achieving mastery. As it increases, its trenchancy and breadth of

9 David Foster Wallace remarking on the end of "Infinite Jest." DT Max, *Every Love Story is a Ghost Story* (New York: Viking, 2012), 32 ln 19.
10 Adorno, "Late Style in Beethoven," in *Essays on Music* (University of California Press: Berkeley, 2002), 565–566.
11 This follows Kimball's identification of the Rococo's first emergence at Versailles and Marly. Fiske Kimball, *The Creation of Rococo* (Philadelphia Museum of Art, 1943).

relevance recede until creative production is stuck in backwaters unlikely to be revisited—like stereotomic masonry or the art of Gothic crown molding. In the *Forever After*, technique is more akin to timbre, where levels of mastery become gradations of sensation, felt by the audience on a spectrum from the raw to the cooked, or from Oppenord to Meissonnier. No amount of rarefaction can alienate artifacts from their essential compatibility with one another. Finally, subject-hood in *lateness* is merely a way of re-mapping the human cycle of birth and death onto fields of cultural production, which must, of course, terminate in the rudest caricature of old-age: withdrawal from active participation in the public sphere. Subject-hood in the *Forever After* is the perpetual offer to re-engage a world of fundamental compatibility—guaranteed by the pervasive sense of pre-selection by an über-but-unspecified beneficence—rests underneath the most disparate forms. There is a tacit collectivity built into things.

If closure no longer seems an inevitable death sentence, there remains the problem of motive in the *Forever After.* In a world of easy assembly and pre-arranged compatibility, why bother? Although form retains an allure in this situation, the difficulties of its design in the singular and aggregation in multiples no longer supply the difficulties that have served as a convenient pretext for architects to work on solutions. Broadly construed, "fit" is a settled issue, to the point of engendering cavalier indifference to architecture's sacred cows: the fitness of form to its programmatic task (in the *Forever After*, go ahead and use whatever); the fit of one form against another in tectonic assemblies (most things work); the fitting together of people with symbolically significant things (everything seems so familiar, it's almost like you said it yourself). If not form—or at least, if not the difficulties of form—what will supply motive? Again, the Rococo is a ready storehouse of models.

About a decade after its initial appearance in Pierre Lepautre's chimney pieces at the very end of the 17th century, the Rococo appeared in Bavaria.[11] It was taken up by the Catholic church as an in-house style for a building program to refresh an aging stock of medieval and Gothic buildings. The program of building was triply sealed off from linear, progressive movement and "problems" of building as modern architects might conceive them. The work was isolated from the grand historical narratives of court life. It was executed with a fixed catalog of forms inherited from decorative schemes of the French Rococo and the more bombastic parts of the Italian baroque. And it was mostly on the inside, not only removed from public view, but also non-structural and unconstrained by statics, or at least in the way physical forces were understood to motivate Gothic decoration. Insulated from exterior prodding, formal motives were instead interested with organizing the church interiors into zones of significance, where movement of objects between arenas endowed them with a kind of charge. For instance, a portion of the interior might be a theater that shares furniture and statues with an audience. There are zones for living things and for dead things, for celestial objects and earthly ones, and for sculptures and paintings. Even as objects are held in common between any of these pairs, they acquire differences in significance by moving back and forth between them. These zones are not quite program, but set up the bounds within which subjects might appear and act. In other words, contrary to the view that the Rococo represents a culminating synthesis or unity of the arts, the Bavarian Rococo is motivated by the partitions and segregations (however temporary) it establishes in a world of total compatibility.

Following these models, projects in the *Forever After* can: (1) trade on power of re-partitioning by establishing these zones of significance in fields of things that, counterintuitively, seem predestined for easy, flat compatibility; and (2) invent ways of subordinating this field of things to an organizing superstructure, even when they are diverse nearly without limit.

Here are four such projects.

The exhaustion of building materials leaves utility in doubt. What is here because it is necessary? Is this here because it is an accident or a prop? With the help of this doubt, theater can become more real and reality more theatrical.

RUPTURED THEATER

A stage with a hole in it. Props and effect spill out. Actors are left with only patchy physical support for the illusions of their roles. Meanwhile, the audience is salted with out-spilling theatrical devices, clearly fake, but still carrying some of the enchantment of the stage.

Zwiefalten Abbey Church, J.M. Fischer (Architect) and J.M. Feichtmayr (Stuccator), 1744–1765. In a niche opposite the pulpit at Zwiefalten, the figure of Ezekiel steps out from a small proscenium arch onto a promontory of plaster moss and flowers. Behind him is a lush scene loaded with all of the objects to support the story of his canonization. These objects are the narrative props of the theater, but they are also the devices that generate its intangible and scenographic effects to create the sense of a world. They are tinted by some leaf-filtered hazy light and sag demonstratively under the force of some other world's gravity. The fall of his foot, the hem of his trailing garments buffeted by a wind—all of these are bolstered by the illusionistic effects of the object in the theater from which he emerges. Yet the proscenium and stage are too small. Not only too small but inverted, pushed out toward the audience on a convex surface so that each niche is just a small recessed vestibule in a larger ice-cube tray flexing outward to eject its contents.

Ezekiel is stepping *forward and out* from this ruptured theater. His raised hand is not inside the scene that supports him but floating free in the nave. He leads a double life, partially inside a world that reaffirms his significance, while dangling out in another, denuded and subject to a different set of conventions. Ezekiel is half tchotchke. This may be a fall from his station as a saint, but it is also an accrual of another form of credibility. Out of the theater, he doesn't require constant, exhausting reference back to symbolic content. Instead, he sits on a shelf, perhaps gets moved for dusting, and receives fawnings over the beauty and skill of his manufacture. He becomes a part of the way the audience arranges and appreciates a domestic field.

The audience changes, too. The over-spill of props from the ruptured theater—foliage sludging in all directions beneath Ezekiel's feet, clouds and rays spilling out at the top and bottom of the altar—fall in the space where onlookers would normally sit undisturbed and removed from the scene. As they leave the scene, the props lose the quality of illusion they had while inside. They're clearly fake. Less than fake, even, because as they make contact with the "real" outside the theater, they are obviously base. The clouds are just blobs of plaster encrusted on the wall and the sunbeams are merely a bundle of metal rods in gold ganache. The implausible distance from the thing they are intended to represent, though, re-injects these things with charm. The feat of seeing clouds in a plaster crust enchants the world with theater underneath the abjection of its material, tugging the audience back toward a grandiosity.

The sense of Forever After's *missing subject—The Archivist who has left the scene in advance of our arrival—need not be a nostalgia for something missing. Instead, objects can bear the anthropomorphized presence of that other, missing intelligence, as though we are joined by a crowd of inanimate subjects.*

ANIMIST MATTER

A conjunction of the anthropomorphic error and base material. It works in two parts. First, some little trick of empathy—a baby's face, a voluptuous curve—solicits the anthropomorphic error. Maybe the form of the thing intimates an inner, secret life, or maybe it has a way of coming to the hand that suggests the reciprocal touch of a body. In any case, it's a matter of convenience: it's easier to accept a co-equal subject than to vigilantly maintain the critical distance required to inhabit a world of mere objects. Yet once the error has been made, there is a rush of paranoid possibility. Base material seems more lifelike, seething and squirming everywhere with possible animisms. And living things seem arrested, confined in concrete and stucco. There is no controlling the seepage of audience into material and material into audience.

Osterhofen, J.M. Fischer (Architect) and the Asam Brothers (Stuccator and Frescoer), 1727–1730. Adjacent to the pulpit at Osterhofen there are the heads of two children with the body of a cloud. Like other fairy tale oddities, it is just a concatenation of familiar things into an unfamiliar whole—more suggestive of the scale of possible combinations than a disturbance of anything fundamental known about clouds or children in advance of their combination. The act of combination—the anticipation of it being repetitious—supersedes any disturbance that might attach to this particular instance of unfamiliar pairings. But over and against the arbitrariness of a mere accident of combinatorics, head and cloud are reciprocally entangled. The fat infant head atop the cloud arches back, head bearing up, and the arch of the throat is transmitted to the posture of the cloud cantilevering away from the wall. The cloud arches too, not just supporting the head from below, but initiating the whole posture. The second head works this way too, with a mad gleam in the eyes, turning slightly left, to be received and supported by the bulge and twist of the cloud, just like its brother.

Working in tandem with the catalog of accidental pairings, this is a double transmission of properties between the animate and inanimate. The arch of the first child's neck is written into the base material of the cloud. And the leaning of the cloud away from the wall is written into the head. It is impossible after this recognition to separate inert material from animate figure. Matter becomes animist, full of motives and postures that did not previously belong to it. Animate figures acquire the material cast—weighted down and semi-crystalized.

Because new things are no longer possible, projects in the Forever After *turn attention to the effects of things and their arrangements.*

THING-NICHE

Adjacent to things—the vacancies between and beside them—are the niches where people go. If a priori space is bounded with walls, drop ceilings, and windows cut to fit, this is the opposite conception: things precede any notion of space. There are qualitative differences between the two kinds of inhabitation. In the first, everything is fit to your needs, or at least should be. Good rooms are formed by the proper subordination of things to your purpose. In the second, things are more obtrusive. To inhabit a thing-niche is to be a thing-neighbor.

Asamkirche (Saint Johann Nepomuk in Munich), The Asam Brothers, 1731–1746. The pulpit at the Asamkirche begs a question of composition and assembly. There is a wall in the sense that it is not possible to walk through the solid surface of gray scaloglia, but it isn't typical of the way walls are usually made. Instead of a vertical surface supported by a structure from behind, the wall has to be described as a series of episodes between things. First, the pulpit is lodged between two pink pilasters, in which there are two additional pilasters of grey scaglolia with concave edges nested slightly inside. An arch tops this composition, although it too has a concave outer edge, as though the concave surface could continue back into its recess and make a small stage. The objects in this tiny theater though, are not the focus of attention but are instead a further set of brackets and gateways: more pilasters, and set within them, a door. The three sets of pilasters form a repeating series that moves further back as it decreases in scale, which presumably could do so *ad infinitum*, continuing until out of view. This series is encapsulated inside a niche, perversely set inside the first order of pilasters. Are the pilasters in or out of the niche? Does the door at the back go somewhere, or does it just provide access to some further recess of the same vitrine?

These are not the only constituent parts of the wall. To account for the rest, the mode of observation has to shift from the real—or at least measurable—to the subjective and empathetic. Four figures protrude from the corners where the pulpit is fixed to the wall. They are squeezed through some gap with visible heads poking out and bodies presumably behind. The dimensions of these spaces can be inferred from the expressions on the faces of each: the serene maid floats out from some roomy aerie; the agonized swan is crushed between solids; the stolid ox feels the press of some physical weight but has enough room to survive; the blasé lion fixes its stare on something in the distance, spatially equivocal.

What to make of all this? First, the wall is an assemblage of things, each discrete, nameable, and separable from its neighbors. Second, each thing in the assemblage produces a gap, either by formal or subjective means, and these potentially occupiable regions propagate indefinitely inward from the surface. It is not a wall in the sense of determining the absolute limit of the church interior. It is simply a sufficiently dense episode in a collection of artifacts. In this view, the door is not a portal to another space but a surface that will be encountered on its reverse as an unadorned wooden panel, just as it is on the front, like the recto-verso of a coin.

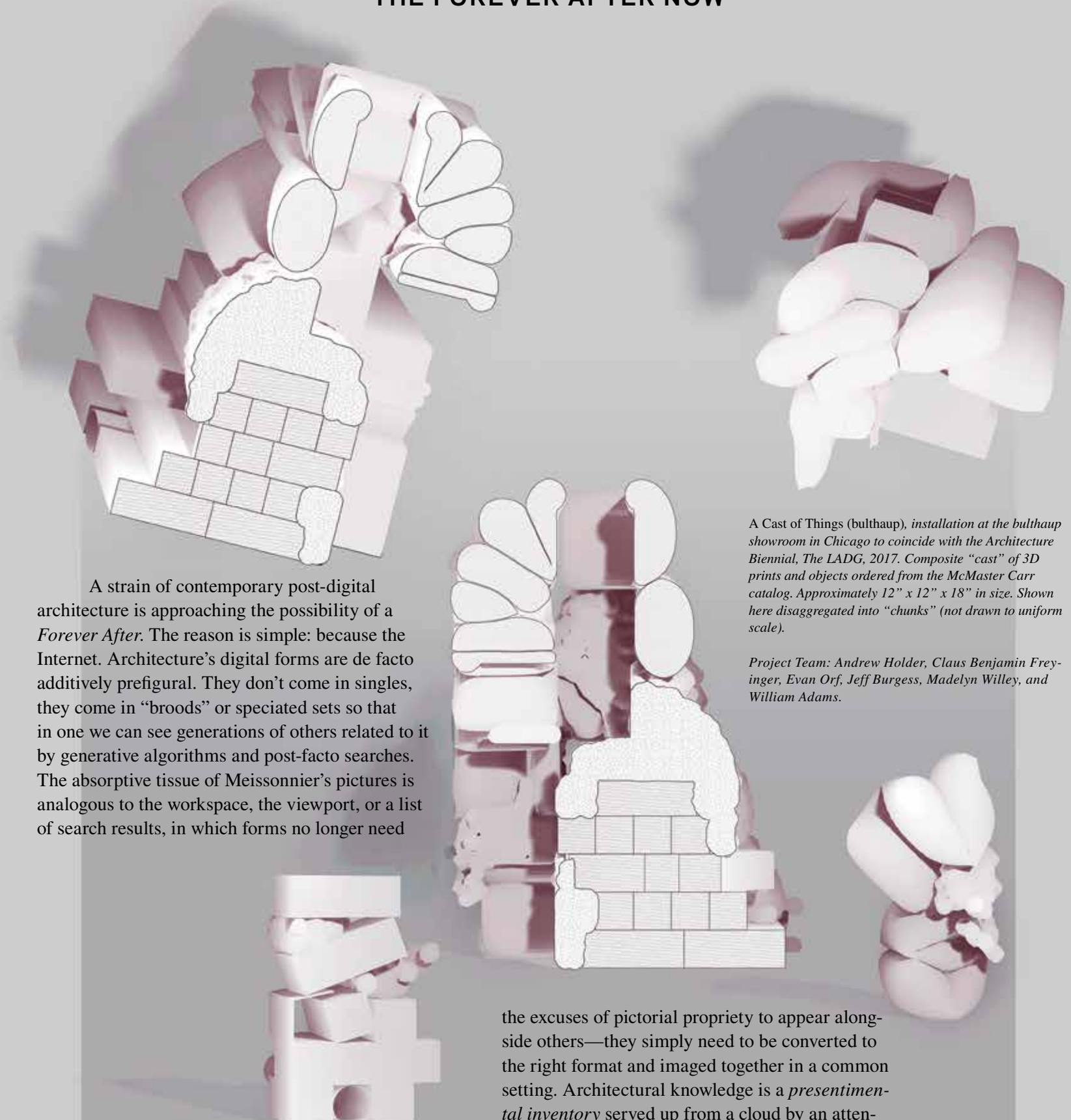
There is no difference between building materials and model materials in the Forever After. *Constructions lead double-lives as models.*

FULL-SCALE MODEL

A full-scale piece of architecture that, nonetheless, has the attributes of a model. Parts are not entirely "for real," either because they beg to be read as representations of other architectures (other buildings, other cities, or entire worlds), or because there is the appearance of a physics that do not properly belong to the context (alternate gravities, invisible winds, or the intimation of material qualities that are not literally present). The full-scale model is present and useful but also projects forward alternative possibilities. It is the co-presence of things as they are and things as they might be.

Weltenburg, the Asam Brothers, 1725–1728.
The scale confessional booth beneath the pulpit at Weltenburg is not entirely *for real*. It has an actual size, of course, a priest and a congregant can both fit inside it like a large piece of furniture or a tiny hut. There are indications, however, that this *real* scale is not what the pulpit is *for*. The wooden columns flanking the central bay are a 2:1 enlargement of table legs. The scrollwork of the arch atop these legs is larger still, maybe a 3:1 or 4:1 study of decorative scrollwork at the base of a column, while the arch itself might be a portico to a vast scene beyond. The rocks to the left and right are a further complication. Magnified pebbles? Actual medium-sized boulders? Model mountains? Sedlmayer famously identified the "micromegalithic" ornament of the Rococo that represents vast scenes at a small scale, yet this does not go far enough. The confessional is not just a representation of a confessional but a real piece of furniture. The scalar shifts are not all in the direction of the vast rendered small. The confessional is a full-scale model, both plausible as a thing occupying the real space of the here and now, in addition to a representational device that constantly projects its possible appearance at other scales for other uses.

THE FOREVER AFTER NOW



A Cast of Things (bulthaup), *installation at the bulthaup showroom in Chicago to coincide with the Architecture Biennial, The LADG, 2017. Composite "cast" of 3D prints and objects ordered from the McMaster Carr catalog. Approximately 12" x 12" x 18" in size. Shown here disaggregated into "chunks" (not drawn to uniform scale).*

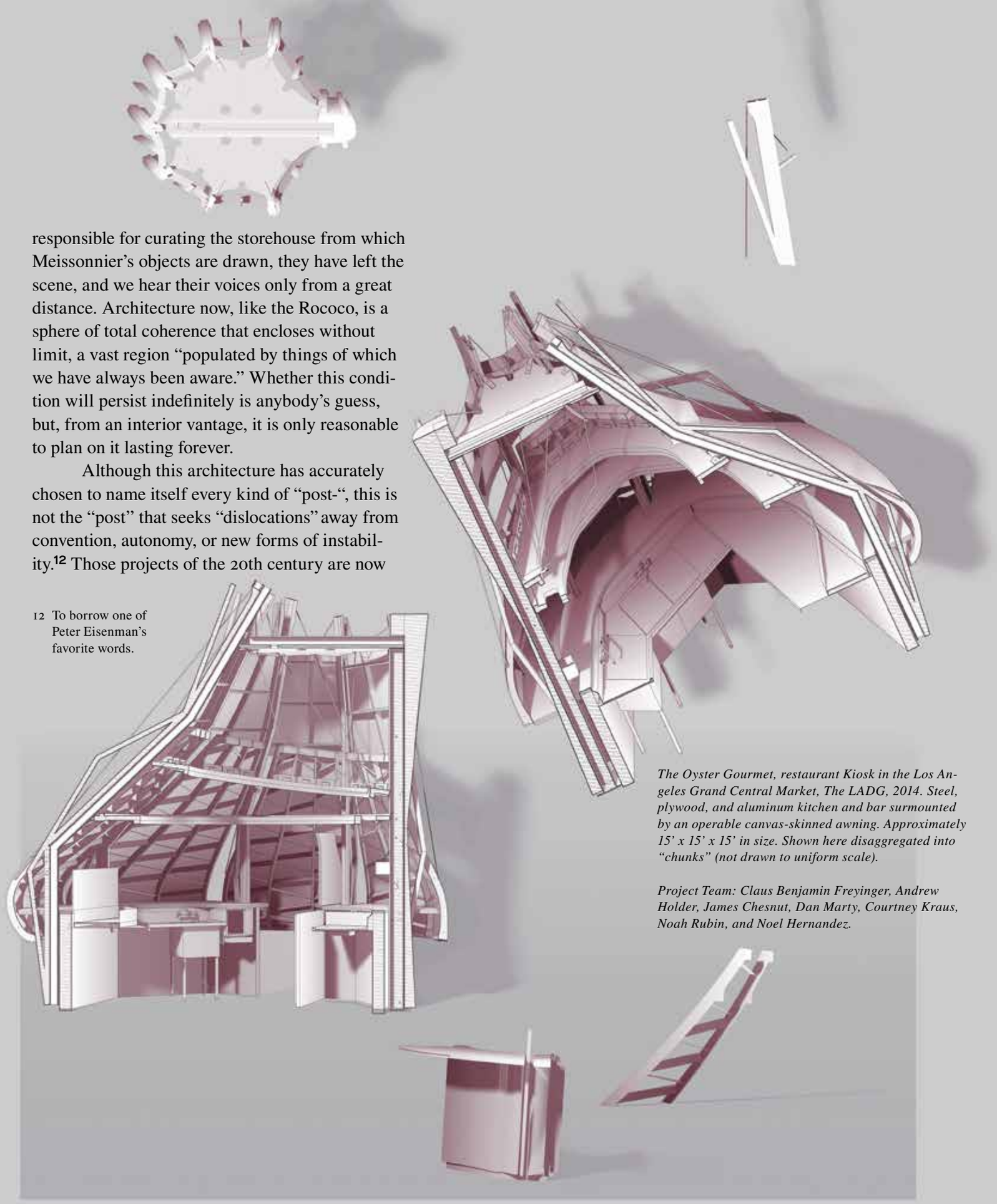
Project Team: Andrew Holder, Claus Benjamin Freyinger, Evan Orf, Jeff Burgess, Madelyn Willey, and William Adams.

A strain of contemporary post-digital architecture is approaching the possibility of a *Forever After.* The reason is simple: because the Internet. Architecture's digital forms are de facto additively prefigural. They don't come in singles, they come in "broods" or speciated sets so that in one we can see generations of others related to it by generative algorithms and post-facto searches. The absorptive tissue of Meissonnier's pictures is analogous to the workspace, the viewport, or a list of search results, in which forms no longer need the excuses of pictorial propriety to appear alongside others—they simply need to be converted to the right format and imaged together in a common setting. Architectural knowledge is a *presentimental inventory* served up from a cloud by an attendant named Siri, or some other vaporous sylph who works in near absolute mystery. We do not know where they are or how exactly they have decided to arrange the vast storehouses in which we wander and make our selections. Like the missing subject

responsible for curating the storehouse from which Meissonnier's objects are drawn, they have left the scene, and we hear their voices only from a great distance. Architecture now, like the Rococo, is a sphere of total coherence that encloses without limit, a vast region "populated by things of which we have always been aware." Whether this condition will persist indefinitely is anybody's guess, but, from an interior vantage, it is only reasonable to plan on it lasting forever.

Although this architecture has accurately chosen to name itself every kind of "post-", this is not the "post" that seeks "dislocations" away from convention, autonomy, or new forms of instability.[12] Those projects of the 20th century are now

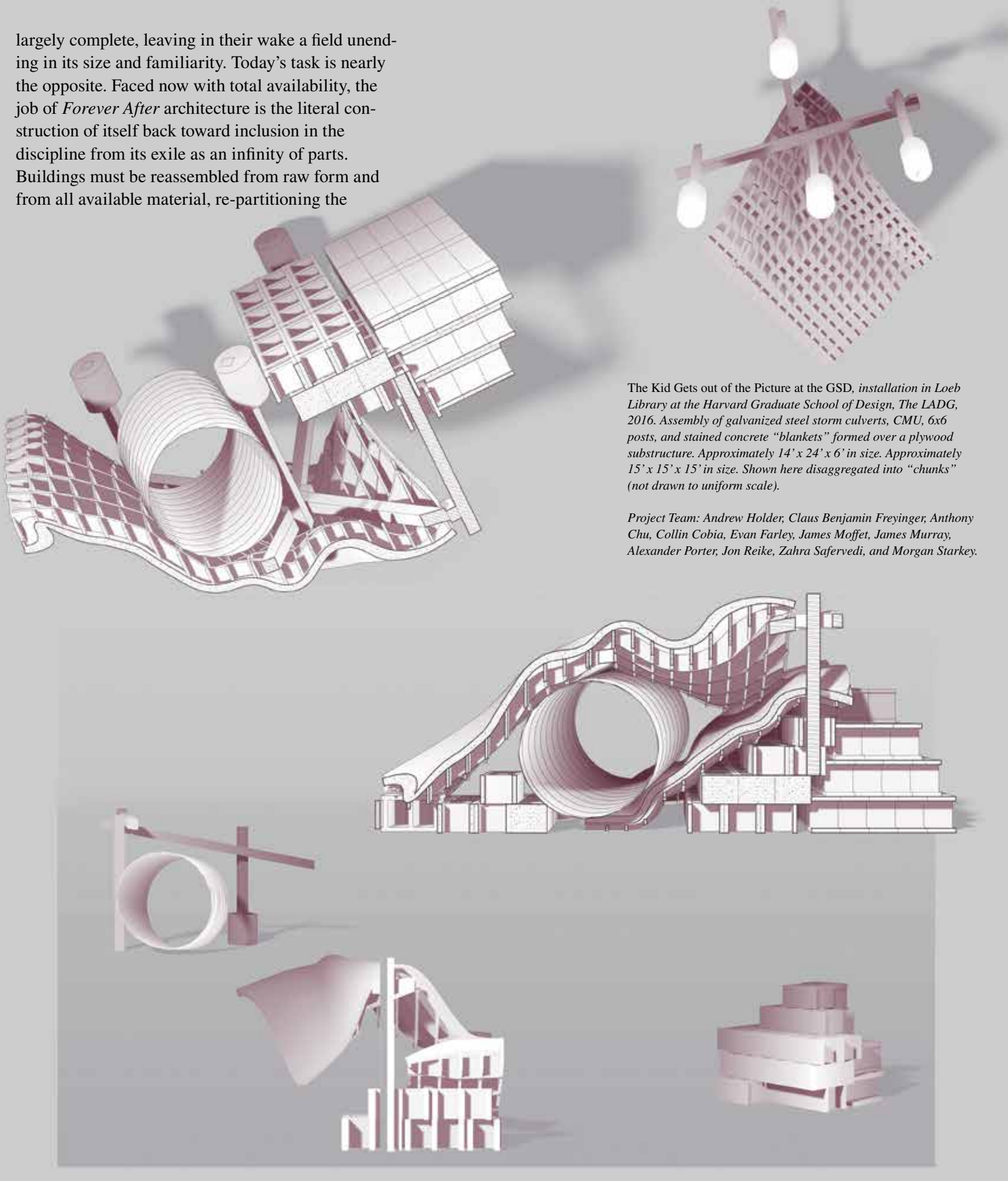
12 To borrow one of Peter Eisenman's favorite words.



The Oyster Gourmet, restaurant Kiosk in the Los Angeles Grand Central Market, The LADG, 2014. Steel, plywood, and aluminum kitchen and bar surmounted by an operable canvas-skinned awning. Approximately 15' x 15' x 15' in size. Shown here disaggregated into "chunks" (not drawn to uniform scale).

Project Team: Claus Benjamin Freyinger, Andrew Holder, James Chesnut, Dan Marty, Courtney Kraus, Noah Rubin, and Noel Hernandez.

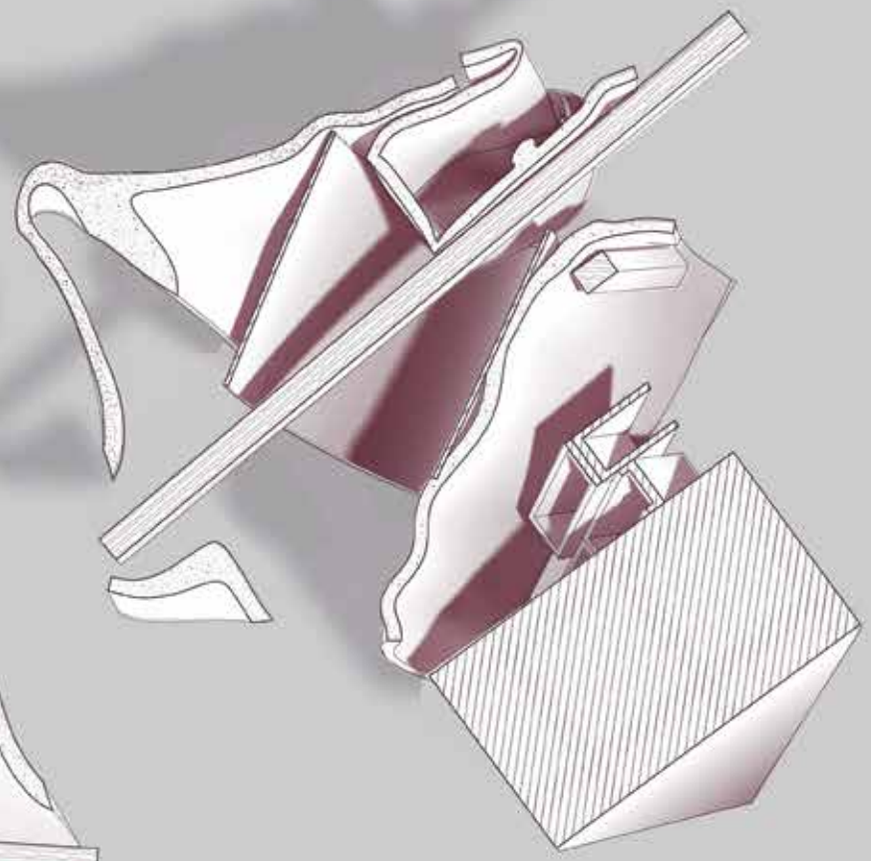
largely complete, leaving in their wake a field unending in its size and familiarity. Today's task is nearly the opposite. Faced now with total availability, the job of *Forever After* architecture is the literal construction of itself back toward inclusion in the discipline from its exile as an infinity of parts. Buildings must be reassembled from raw form and from all available material, re-partitioning the

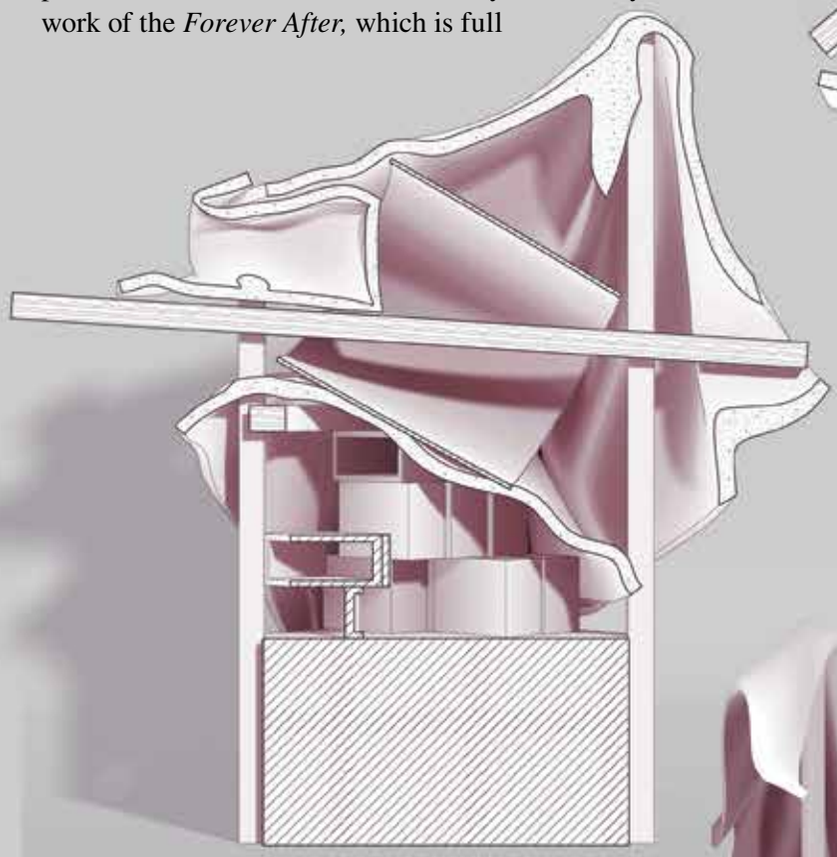


The Kid Gets out of the Picture at the GSD*, installation in Loeb Library at the Harvard Graduate School of Design, The LADG, 2016. Assembly of galvanized steel storm culverts, CMU, 6x6 posts, and stained concrete "blankets" formed over a plywood substructure. Approximately 14' x 24' x 6' in size. Approximately 15' x 15' x 15' in size. Shown here disaggregated into "chunks" (not drawn to uniform scale).*

Project Team: Andrew Holder, Claus Benjamin Freyinger, Anthony Chu, Collin Cobia, Evan Farley, James Moffet, James Murray, Alexander Porter, Jon Reike, Zahra Safervedi, and Morgan Starkey.

contents of the disciplinary inventory re-declare the terms of inhabitation. This is a manual task, surveying a "shattered" world "to build a new one out of its very elements: solid, three-dimensional bodies …" Architecture must "go into the quarry, so to speak, to get the blocks for a new structure … but in putting those blocks together [it will] resume, to some extent, the devices" and ends of its predecessors.[13] We can see this already in the early work of the *Forever After,* which is full





Tchotchke*, a preparatory study of picturesque clumping for* The Kid Gets out of the Picture*, The LADG, 2016. 3D print, aluminum tubing, brass tubing, basswood, and polypropylene block. Approximately 4" x 4" x 6" in size. Shown here disaggregated into "chunks" (not drawn to uniform scale).*

Project Team: Andrew Holder, Claus Benajmin Freyinger, Alex Porter, Morgan Starkey, and Anthony Chu.

of primitive huts, simple trabeated stacks, and barely-processed objects posing as monoliths and infrastructure.[14] Whether this nascent effort succeeds or fails depends upon how rapidly it demonstrates a capacity to formulate propositions about its own efficacies. In other words, the new eccentricity of construction must be paired with new formulations of architecture's powers. To find these, we need only convince ourselves they are already here.

13 Panofsky describing the task of Carravagio in the 17th century. Erwin Panofsky (Irving Lavin, ed). "What is Baroque?" *Three Essays on Style*, (Cambridge, Mass: MIT Press, 1995), 38.

14 I have in mind here the First Office "PS1 Dolmen," Bittertang Farm's "Bessie" tent, and Ensamble Studio's "Truffle House."

THE FEAR OF LOVE: LEARNING TO LOVE THE THINGS WE HATE

SAM JACOB

Recent architectural debate seems to drive in two opposite directions: on the one hand, that its measure should be laid out in terms of social good; on the other, that architecture is an exercise in pure formalism. This so-called debate arises around every state-of-the-profession event—the bigger Biennials, such as Alejandro Aravena's Venice, Sarah Herda and Joseph Grima's Chicago—or around the announcement of recent Pritzker laureates. It's an argument that seems to be organized around a generational axis: older as digital, expressive international starchitect formalists; younger as local activists with an eye on history. It's the older camp that expresses its concerns more publicly—we've seen the late night Facebook posts and the letters bemoaning the perceived inadequacies of the new generation. Yet we can't help but read into those same posts an existential fear of the spotlight passing on.

The debate—as it's framed at least—seems to say that architecture is either all politics or entirely outside of politics. Setting out architecture's role in such high contrast and in such oppositional ideas of "goodness" though, leaves us in the dark. Because, of course, both positions are wrong; architecture is, to borrow that key phrase in praise of ambiguous architecture, both/and rather than either/or. It is disingenuous to separate form from politics, or to disregard the politics produced by form. This attempt to polarize architectural endeavor into two opposing camps misses the point of architecture entirely. It is reductive, partisan, and tabloid. And while both camps make claim to the "discipline," they find themselves assuming positions for non-disciplinary reasons.

To clear things up—architecture is always political. Yet its politics are its architecture. That's to say that architecture is sited in multiple contexts simultaneously, whose ground, though physically solid, shifts as soon as you attempt to fix its significance. The kind of polarization we have seen in architectural culture is not unique. This lack of the possibility of ambiguity and nuance is seen across the political world. Traditional positions of left and right have been in collapse for decades. Both simultaneously reconstruct themselves as nostalgic—and caricatured—visions of themselves.

From social media trolling to national referenda and elections, the vast doubts and fears of the 21st century are countered with ghost outlines of arguments drawn from the 20th (and earlier). Rhetoric around sovereignty, freedom, welfare are rephrased as specters are brim-full of feelings of certainty that are only matched by their fictional quality. It's not the "Making America Great" that's at stake, it's the "Again." Not "Taking Control" but the word "Back." What these retrospective slogans attempt to manufacture is a sensation of solidity even while the ground beneath our feet collapses. They posit binary positions of good and bad in a world whose moral compass seems to spin according to other magnetic fields. These are ideas of "good" and "bad" that are external to us. They are off-the-peg opinions that we use to shore up our fragile sense of identity, ideas that we internalize as a moral code that polices our worldview. But "good" as much as "bad" are value judgements, not moral absolutes. And the more we organize the world according to these values, the less we have to confront the world as it is. Instead of leaping to judgement, we should look inside the mechanisms of these forms of moralization. For it is here that the real, visceral questions of good—both politically and formally—reside.

On long drives together, Denise Scott Brown and Robert Venturi would pass the time with an in-car parlor game. The aim of the game was to shock each other by proclaiming their love of the unlovable things that passed by. "Learning to love the things we hate" was what they called it. But we could really think of it as a psychological shock doctrine: a challenge to our internal moral authority: a challenge to the preconceived notions of "good" and "bad" that reside within us all. All those rules of proportion, taste, appropriateness that have soaked into us through the osmosis of education. Venturi and Scott Brown's game sits within a long tradition of techniques of looking open-eyed at the world as it is, in order to reinvent the world as we imagine it. Think of the Modernists' references to grain silos and industrial buildings that we appropriated and deployed against Beaux-Arts idea of architecture. How Postmodernism embraced pop culture to

displace Modernism's abstractions, how Reyner Banham used LA to counter prevailing ideas of the city, how Rem Koolhaas used junkspace to theorize new forms of spatiality. All assaults on the commonly agreed "good" through the use of "badness."

For Venturi and Scott Brown, it was more hard-core. It was precisely the fact that they didn't look at an exception, that they simply looked at the world through their windshield, that a far more difficult project emerged. What they looked at may have been the kinds of commercial vernaculars shut out of canonical architecture, things whose aesthetic codes or status meant they were either "bad" or ignored. We can imagine them: strip malls, casinos, decorated sheds of varying descriptions. Things that would appall the architect educated within the black box of the profession and would counter the narratives of taste that act as the lens through which we see the world. Indeed, this was exactly the project in Venturi and Scott Brown's behind-the-dashboard project. As their car nosed its way through the real landscapes of the world, what was revealed was not the world as it should be but the world as it is: flawed, problematic, compromised, and often ugly. And certainly in conflict with the canonical ideas of architecture that both our protagonists also carried with them by virtue simply of being architects, the high culture of Modernism, Classicism and all the other recognized isms. By staging this conflict, Venturi and Scott Brown were able to see both versions of the world differently.

Their highway was imagined as a place where worlds collided, where capital A architecture was first figured as impossible, then remade as a lens through which the everyday could be reclaimed. By confronting the received assumptions of good and bad, a new set of ideas could emerge to develop a different sense of what good or bad might possibly mean.

Of course, Venturi and Scott Brown's private game had influence far beyond the interior of their car. The lessons they drew from these journeys through the world changed all of our ideas about what good and bad might be. Their road trips changed the way that they could see the world, and, in turn, how we see the world.

For us though, questions of good and bad, or right and wrong, are different. It's not enough to stage the same encounter between high and low. Yet our challenge remains the same: how can we explore the space that exists within contemporary value judgments? How are they made? Who decides? And Why? What is wrapped up inside the aesthetic and moral choices we make? How can we square the ideological framework from within which architecture emerges with ideas of how society might be organized? How does architecture make the world … and what kinds of world might we want to make?

Venturi and Scott Brown's game remains important precisely because it does not go into the world with preconceptions of what is good and bad. Not a contrived opposition. Rather, it asks us to open our eyes to the landscape before us with an ambiguous position. It asks us to survey first without judgment, to see without prejudice. It argues that moral questions are not sentiments we hold inside us as feelings intimately connected to an idea of personality, fully formed and ready to be projected into any scenario. It suggests that we might reach different conclusions, ones that might even surprise with their potential, by simply withholding judgment.

In the accelerated 21st century, judgment is instant. It only takes an instant for an image to scroll past us before opinion starts to pile up. Even the first morning of a biennale press preview generates a stream of reaction—snapped, tweeted, or liked before the paint is dry. Judgment comes fast and because of this, it can only reinforce existing prejudice rather than allow us to interrogate positions in ways that could produce new under-standings, new alliances, and new possibilities for what architecture might be or what architecture might do. Could we imagine ourselves as the modern day Bob-and-Denise: our digital windshields used as tools to observe the landscape of information laid out before us to challenge convention?

The Venturi's "Learning To Love the Things We Hate" is not easy, and may only resonate for the similarly architecturally perverse. Yet it represents one approach to a form of self-interrogation. It sites this challenge within us rather than as an external subject. It recognizes that it is here, where the moral codes of good and bad have been so tightly bound up with our sense of self that they appear to be both natural and true. Its challenge is really towards the way we construct our own identity. And by seeing this identity as a more fluid construct, we might be able to rewire the productive possibilities of how good badness might be and how bad goodness could also be. Perhaps in an age where opinion is so quick, voluminous, and pervasive, the most radical act is to resist the urge to judge the world and instead to explore the act of judgment itself.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C O N T R I

DOMINIC LEONG, founding partner of Leong Leong based in New York, received his Master of Science in Advanced Architectural Design from Columbia University, graduating with Honors, and his Bachelor of Architecture from California Polytechnic State University, San Luis Obispo. He was awarded the Architecture League Prize in 2007 and the Emerging Voices Award in 2017 by The Architectural League of New York. Leong has received recognition for his work that includes a Graham Foundation Grant for his interest in the role of research in contemporary architectural education and practice. He is an Adjunct Assistant Professor at the Columbia University Graduate School of Architecture, Planning and Preservation, where he teaches Advanced Design Studio.

SARAH RAFSON is an architectural writer, editor, and curator who founded Point Line Projects, an editorial and curatorial agency for architecture and design. She was the 2017–18 Ann Kalla Visiting Professor at the Carnegie Mellon University School of Architecture, where she continues to teach, and won the Columbia University Buell Center Oral History Prize for her graduate research. Rafson serves on the board of Architexx, has worked on exhibitions with the Centre Pompidou and Museum of Modern Art, and edited two books, *Parc de la Villette* (Artifice, 2014) and *Builders, Housewives, and the Construction of Modern Athens* (Artifice, 2017).

FIRST OFFICE
In Los Angeles, ANNA NEIMARK is a faculty member at the Southern California Institute of Architecture (SCI-Arc). ANDREW ATWOOD is Assistant Professor at UC Berkeley. Neimark and Atwood founded First Office in 2011 to promote an exchange of ideas between the academy and the architectural profession. Together, they work on building proposals, art exhibitions, and collaborative texts in the belief that architecture is a form of cultural production. They have engaged in collaborations with the MAK Center for Art and Architecture, the Chicago Biennial, MoMA PS1's Young Architects Program, and the Architectural League of New York, and have received honors for their manifold contributions. The texts and works of First Office have been compiled in a Graham Foundation book, *Nine Essays* (Treatise Press, 2015), and the book by Andrew Atwood, *Not Interesting: On the Limits of Criticism in Architecture (Applied Research and Design, 2018)*

BRYONY ROBERTS is an architectural designer and scholar. Her practice Bryony Roberts Studio, based in New York, integrates methods from architecture, art, and social practice to respond to complex cultural sites. She has been awarded the Architectural League Prize, the Rome Prize, and the Miller Prize, as well as support from the National Endowment for the Arts, the Graham Foundation, and the MacDowell Colony. She has published her research in the *Harvard Design Magazine*, *Log*, *Future Anterior*, and *Architectural Record*, co-edited the volume *Log 31: New Ancients*, and edited the book *Tabula Plena: Forms of Urban Preservation* published by Lars Müller Publishers. Roberts teaches architecture at the Columbia University Graduate School of Architecture, Planning and Preservation in New York.

SYLVIA LAVIN is a historian, critic and curator of architecture and design. She received her Ph.D. from Columbia University. MIT Press published her first books, *Quatremère de Quincy and the Invention of a Modern Language of Architecture* and *Form Follows Libido*, in 1992 and 2005. Her most recent books include, *Kissing Architecture* and *Flash in the Pan*. Her exhibitions include *Architecture Itself and Other Postmodernist Myths* (CCA 2018), *Super Models* (Chicago Architecture Biennial 2016) and *Everything Loose Will Land* (The MAK/Schindler House, The Graham Foundation and Yale School of Architecture 2013–14). Lavin is Professor of Architecture at Princeton University and was Director of the Critical Studies program in the Department of Architecture and Urban Design at UCLA, where she was Chairperson from 1996 to 2006.

LIAM YOUNG is a speculative architect who operates in the spaces between design, fiction and futures. He is cofounder of Tomorrows Thoughts Today, an urban futures think tank, exploring the local and global implications of new technologies and Unknown Fields, a nomadic research studio that travels on expeditions to chronicle these emerging conditions as they occur on the ground. He has taught internationally at the Architectural Association, Princeton University, and now runs the ground breaking MA in Fiction and Entertainment at SCI-Arc in Los Angeles.

CHRIS GRIMLEY is an architect and designer at OverUnder. He has taught at the University of British Columbia, Rhode Island School of Design, Northeastern University, and Wentworth Institute of Technology. He is coauthor and designer of *Imagining the Modern: Architecture and Urbanism of the Pittsburgh Renaissance* (2018), *Heroic: Concrete Architecture and the New Boston* (2015), and the designer and editor of *Henry N. Cobb: Words & Works, 1948–2018* (2017).
MICHAEL KUBO is Assistant Professor in the History and Theory of Architecture at the College of Architecture and Design, University of Houston. He was previously Associate Curator for the US Pavilion at the 2014 International Architecture Biennale in Venice. He is coauthor of *Imagining the Modern: Architecture and Urbanism of the Pittsburgh Renaissance* (2018), *Heroic: Concrete Architecture and the New Boston* (2015) and *OfficeUS Atlas* (2015), and is currently preparing a book on The Architects Collaborative and the authorship of the architectural corporation after 1945.
MARK PASNIK is a founding principal of OverUnder and a professor of architecture at Wentworth Institute of Technology. He has taught previously at the California College of the Arts, Carnegie Mellon University, Northeastern University, and the Rhode Island School of Design. Pasnik coauthored *Heroic: Concrete Architecture and the New Boston* (2015) and edited *Henry N. Cobb: Words & Works, 1948–2018* (2018). He has received the AIA Young Architects Award and recognition for his scholarship from the Graham Foundation, Docomomo US, the Boston Preservation Alliance, Historic New England, and the Boston Society of Architects. He is currently the historical advisor to the Getty Foundation-sponsored conservation management plan for Boston City Hall.

LUIS AND CHARLOTTE, LANDSCAPE AND ARCHITECTURE (LCLA) is positioned at the intersection of architecture and landscape architecture. Based in Medellín and Oslo, the studio is led by Colombian architect and landscape architect LUIS CALLEJAS and Swedish architect CHARLOTTE HANSSON. Callejas has taught at Harvard University's Graduate School of Design since 2011 and has been an Associate Professor at the Oslo School of Architecture and Design since 2016. Hansson's experience in Scandinavia includes working at Space Group, White Arkitekter, and Alab. LCLA projects range from scenography design to master plans, cities, gardens, installations and vast landscapes. LCLA was awarded with the

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Architectural League of New York Prize for Young Architects in 2013 and selected as one of the world's ten best young practices by the Iakov Chernikhov International Foundation in 2010.

FAYSAL TABBARAH is an architect and educator, currently Associate Professor of Architecture at the American University of Sharjah, U.A.E. He received his Master's in Architecture and Urbanism at the Architectural Association School of Architecture's Design Research Lab (AADRL).

ADAM FURE is an architectural designer and educator teaching in the areas of digital fabrication, material experimentation and design. He received his Bachelor of Science in architecture from the University of Michigan and a Masters in Architecture from UCLA.

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JOSHUA G. STEIN is a Professor in the School of Architecture at Woodbury University, the founder Radical Craft and the co-director of the Data Clay Network, a forum for the exploration of digital techniques applied to ceramic materials. Stein received his Master of Architecture from UCLA.

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FLORENCIA PITA is a partner and founder of Pita & Bloom, a design and research collaborative based in Los Angeles. She is also principal of FPmod. She graduated in 1998 from the National University of Rosario in Argentina, with a licensure degree and in 2001 she received her Master's Degree from the MSAAD Program at Columbia University.

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ISAÏE BLOCH is a Belgian architect and founder of Eragatory, a creative company with a focus on design for 3D printing and creative fabrication. Bloch teaches Architectural Design in the MArch Part 2 program both at the Bartlett UCL and UEL in London.

RHETT RUSSO is Assistant Professor and Undergraduate Chair in the School of Architecture at Rensselaer Polytechnic Institute in Troy, NY. Russo earned a Bachelor of Environmental Design degree from Texas A&M University and a Master of Architecture degree from Columbia University.

MOS Architects is a New York–based architecture studio, founded by principals HILARY SAMPLE (B.Arch Syracuse University, M.Arch Princeton University) and MICHAEL MEREDITH (B.Arch Syracuse University, M.Arch Harvard Graduate School of Design) in 2005. Sample and Meredith teach at Columbia University and Princeton University, respectively, and their academic research occurs in parallel to the real-world constraints and contingencies of practice, informing and elevating both.

SO – IL is an internationally recognized architecture and design firm based in New York. Their cultural work includes a tent to house New York's Frieze Art Fair, large-scale art installations, innovative furniture for Knoll, and a revitalized public square in Paris. They have been featured in publications including the *New York Times* and *Architectural Record* and have received recognitions including the Curbed Groundbreakers Award and the MoMA PS1 Young Architects Program Award. Institutions like the Museum of Modern Art and the Art Institute of Chicago have acquired their work. The *LA Times* has heralded their work as a "fresh direction for American architecture." SO – IL was founded by FLORIAN IDENBURG and JING LIU in 2008.

ERIK L. OLSEN, PE is a managing partner at Transsolar KlimaEngineering, an international climate engineering firm determined to create exceptional, highly comfortable indoor and outdoor spaces with a positive environmental impact. He has been lecturer and guest critic at universities including Harvard University, MIT, University of Pennsylvania, and Columbia University. In addition to his specialist work at Transsolar, he has worked as a consulting mechanical engineer on a wide variety of building types and launched and directed the City of Chicago's Green Permit Program. Olsen is a graduate of the Massachusetts Institute of Technology and Purdue University.

WHITNEY MOON is Assistant Professor of Architecture at University of Wisconsin-Milwaukee, where she teaches history, theory and design. Her research interests reside in 20th and 21st century art and architecture, with an emphasis on theatricality, performance and ephemeral works. Her writings on pneumatics have been published in *e-flux, JAE*, *Room One Thousand, The Other Architect* and *Dialectic*. A registered architect in California and Wisconsin, Moon earned her Ph.D. in Architectural History & Theory from University of California, Los Angeles, and B.Arch from California Polytechnic State University, San Luis Obispo.

SAM JACOB is principal of Sam Jacob Studio for architecture and design, a practice whose work spans scales and disciplines from urban design through architecture, design, art and curatorial projects. Recent projects include the V&A Gallery at Design Society, Shenzhen, *Fear and Love* at the Design Museum, a new mixed use building in London's Hoxton, public realm design and cultural strategy for a south London market and a landmark project for London Design Festival with Mini Living. He has worked internationally on award winning projects and has exhibited at major museums such as the V&A, MAK, and The Art Institute of Chicago as well as cultural events including the Venice Architecture Biennale. He is Professor of Architecture at UIC, Chicago and columnist for *Art Review* and *Dezeen*. Previously he was a founding director of FAT Architecture.

The End

Amanda Reeser Lawrence, Ashley Schafer, Irina Verona

January 2019

"One ought not to repeat oneself continuously. Others, younger people will have younger ideas."[1]

We founded PRAXIS in 1999, a tumultuous and exciting time when the critical and digital projects were unsettling the field of architecture. There were positions to take, issues to argue, and a sense of urgency generating salient disciplinary debates.

Our intention was to create a print journal to foster conversation between architectural theory and practice. The project of PRAXIS—and we always thought of it as a project—created a place for architecture that elided the two polarities of architectural publishing at the time: theoretical academic journals and glossy trade publications. We sought to engage these debates through the specificity of architecture, to publish architects who were building and writing, writers who were architects, or at least writing about buildings, and projects that emerged from or incited discourse.

We foregrounded the interdependence of technology, design, theory, and history across a set of contemporary issues. And after the first two issues, we decided that publishing timely work on a timely schedule wasn't a priority (much to the dismay of subscribers and subscription agencies)—publishing well was. Nevertheless, along the way, we captured crucial moments of emerging architectural thought: "Landscape Urbanism" in 2004, "Program" in 2008, "Narrative" in 2013.

In the early years, we were committed to the documentation of the architectural object, but as the field changed, so did the artifacts of documentation. Our insistence on including plans, sections, details, and process diagrams in order to thoroughly document projects gave way to speculative drawings, renderings, comics, and filmstrips that conveyed atmospheres and ideas. Yet, what remained constant was our editorial insistence on conveying the principles underlying the work.

Sometime around the end of the last decade, or the beginning of this one, architectural design seemed to lose the presumed innocence and virtue that it acquired at the turn of the century. The publication of scientific research implicated buildings as primary contributors to climate change. Reports revealed unethical labor practices in developing countries where many architects had found enthusiastic audiences for iconic projects. The scale of concern shifted from the building to the city to the country and ultimately to the planet. Global issues including environmental degradation, species extinction, climate change, social inequity, population growth, housing shortages, labor practices, the vast migration of displaced peoples, and rising nationalism came to fore. Architecture could no longer retreat from social responsibility. Paradoxically, however, it seemed impotent in its inability to tackle these problems, even as—and especially so in the Trump era of denial—these problems seemed ever more in need of solutions.

At the same time, the distinction between theory and practice, or between the academy and the profession, narrowed and at times overlapped. Labs and other industries started to collaborate with, and to find a space within, the university. Instead of asking new disciplinary questions, even ideologically-driven practices turned their focus to new technologies and forms of production.

In this flattened context, we wondered if a journal of writing and building (or theory and practice) was still a relevant project and we found ourselves seeking alternative formats such as interviews (Issue 11/12) and storytelling (Issue 14). As we did so, we realized that the binary that had inspired us to produce PRAXIS needed to be remixed and reimagined into new disciplinary alliances and approaches.

Even before algorithmically-enhanced "breaking news," smartphone-enabled instant connectivity, and Instagram-filtered favorite feeds delivered us new images by the minute, PRAXIS moved more slowly than other media. Our slowness allowed us to wait for specific photographs of a building, to redraw a section, or to produce diagrams explaining a project. It allowed our editors to meet with architects in their studios and rifle through their flat files (we

published a number of hand drawings in the first issues) and hard drives (remember the Iomega Jaz?) Yet the true luxury that time afforded us was the ability to reflect and understand the motivations behind the work so to frame it with a critical eye. It allowed us to commission writers and to wait for revisions. Freed from the need for instantaneous feedback, we could even allow contributors to respond to one another.

Admittedly, this issue was slow even by our standards.[2] In the end, we felt that however long it took, it was important to conclude the PRAXIS intellectual project deliberately. "Bad Architectures" includes essays and projects that collectively conclude the project we began twenty years ago, and yet at the same time point to something that might be next—even if it isn't captured in another issue of PRAXIS. With the help of many colleagues, collaborators, and contributors who listened, reacted, provoked, and suggested, it seems a fitting final theme. More than with any other issue, we owe our deepest gratitude to those of you who supported us financially and intellectually.

In our first editorial, we shared five questions that inspired us and informed our decision to begin the PRAXIS project. As important as the content of the questions themselves was the premise that we would working through inquiry, rather than statements.[3] In 2019, as we bring PRAXIS to a close, we would like to offer a new set of questions. These are intended as a possible harbinger of another project, for us, for younger people, and for the field at large.

1. With the demise of the modernist narratives of utopia, progress, and "success," what are the new paradigms? Could failure be the new success?
2. In a world that is ever more homogeneous and globalized, how does architecture participate in cultural specificity?
3. Where can architectural experimentation and innovation occur today? In what medium, format, and/or context can new architectural thought be tested?
4. If architecture has traditionally been produced through the abstraction of representation, as the distance between the design tool and the design object decreases, what is the role and responsibility of the architect? What is the agency of representation today?
5. On what terms can architecture stop being reactive and become (again) proactive?

1 Le Corbusier, quoted by Beatriz Colomina, "The Media House," Assemblage 27 (August 1995): 56.

2 The catalog for the US Pavilion at the 2014 Venice Biennale, *Agenda*, was edited by PRAXIS, but was ultimately a different intellectual project.

3 Le Corbusier declared five points. We asked five questions.

The following back issues of PRAXIS are available for $25 per issue, including shipping and handling, or for $20 per issue if purchased as a three issue package. PRAXIS can be purchased online at praxisjournal.net or at amazon.com.