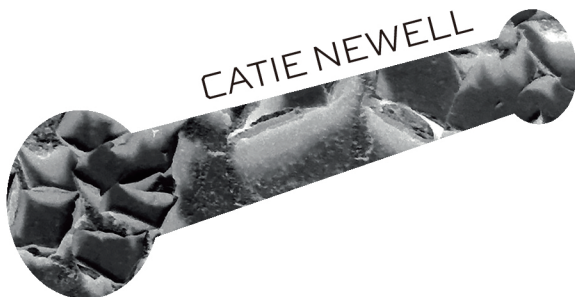


# **Æ CASE FILES**

*VOL. 01*



RACHEL ARMSTRONG



*Edited by  
Simone Ferracina*



# ***OE CASE FILES***

*VOL. 01*

*Edited by Simone Ferracina*

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# Introduction: Architecture as Moving Boundaries

Simone Ferracina

Organs Everywhere (OE) started ten years ago as an online platform—and as a cry for help. During the day, architecture consisted in the design of jaw-dropping and resource-hungry structures for a minuscule percentage of the population, but at night and during weekends, I could pin to it anything I wanted: it could become soft and hairy, odd and uncomfortable, sticky, invisible, and inefficient. Arakawa and Gins speak of an architecture of “what if” (2002)—and Organs Everywhere shared the same sense of counterfactual irreverence, possibility and wonderment; a belief that architecture, as a profession and discipline, could be more than the embodiment or enforcement of privilege, or of the celebration of the (shiny and shapely) outputs privilege buys.

From a flat in Brooklyn, I uploaded bundles of text and images to a website, hoping that—like messages in a bottle, or like the golden record mounted on the Voyager spacecraft—they may reach someone on the other side of the planet, or in other planets altogether. And in a manner of speaking, they did. Shortly thereafter, Organs Everywhere had started to feature the writing, drawings, and experiments of some of the most provocative thinkers on the European and North American scenes, and to promote conversations that approached architecture from the edges of the discipline, plunging it into a strange fabric that combined the voices of architects and designers with those of philosophers, artists, science fiction writers, activists, researchers, poets and scientists. Following Peter Cook’s intuition that to experiment in architecture is to experiment “out of architecture” (Cook 1970, 7), each new issue aimed to question the discipline’s boundaries, technologies, methods, and (e)valuation systems—and to keep them unstable.

The first rule was the absence of rules. Magazines and journals tend to abide by strict protocols and formats, prescribing fixed word and image counts, or consigning relevance to the narrow frames imposed by specific questions and themes. In these contexts, editing is always also an editing out, and the curation of parts towards a coherent (and potentially violent) whole. Here, instead, contributors were invited to propose and impose their own questions and values, and to do so in the form that most suited them—be it the long-form philosophical chapter or the single-page account, the prose poem, the photographic essay, the fictional story, the art project, or anything in between.

Since then, CE has valued transdisciplinary, speculative, and irreverent explorations over strict publishing formats and academic purity or orthodoxy, promoting a profanatory and open-ended ethos. Each issue has strung together disparate organs and limbs, activating precarious couplings and associations, and testing new metabolisms and monstrous assemblages. And so does the CE Case Files imprint continue its commitment to the making and unmaking of monsters, both by anthologising past contributions into fresh configurations and designs, and by combining them with entirely new articles and voices.

These books are not pure and obedient projects, but precarious and recalcitrant collections/collisions of files, moving objects, time horizons, positions, and possible futures.

This book would not exist without the brilliant and generous contributions by Elizabeth Ellsworth, Jamie Kruse, Stuart Munro, Erin Manning, Rolf Hughes, Rachel Armstrong, Andrea Božić, Julia Willms, Ben Woodard, Catie Newell, Zenovia Toloudi, Thomas Pearce, Neil Spiller, Gregory Barton, Bob Sheil, Brunella Antomarini, Alessandro de Francesco, Lev Manovich, Jordan Geiger, Raphael Sperry, Ling Tan, Miriam Simun, Joyce Hwang and Alex Abadjieva. I am indebted to them, to the Edinburgh School of Architecture and Landscape Architecture (ESALA), and to Eileen A. Fradenburg Joy and Vincent W.J. van Gerven Oei of punctum books for taking CE under their valiant wing.

I would also like to acknowledge the support and kindness that the following persons have contributed to this collection and/or to the past ten years of *Organs Everywhere*: Rachel Armstrong (with infinite gratitude), Brian E. Ford, Lauren J. Martin, Keight Bergmann, Lisa A. Thompson, Eleanor C. Whitney, Nienke Scholts, Michael Choi, Lena Kurzawa, Tim Maly, Sara Hendren, Sukjong Hong, Liam Young, Tobias Klein, Denis Vlieghe, Etienne Turpin, Seth Denizen, Mitchell Joachim, Tim Maughan, Nicolas Nova, Julian Bleecker, Fabien Girardin, Nick Foster, Anne-Gaëlle Amiot, Geoff Manaugh, Nicola Twilley, Philip Beesley, Ethel Baraona Pohl, César Reyes Nájera, and Reuben Son.

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Gins, Madeline, and Shūsaku Arakawa. 2002. *Architectural Body*. Tuscaloosa: University of Alabama Press.



## In the tradition of ancient Chinese poets, philosophers, and observers,

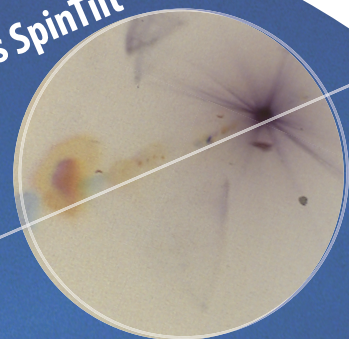
we are experimenting with daily life practices that enable us to project our imaginations into the cosmic scale of the material realities of life on Earth. Arguably, this is the only scale of materiality that human activity cannot alter. We have been inhabiting specific aspects of our everyday lives from within our understandings of 2500+ year old Daoist mindsets. Our intention is to explore their contemporary relevance and test out possibilities of trans-lating and exapting them for living the Anthropocene. We've taken up this project of how early Daoist and Chan (Zen Buddhist) practitioners used ideas, aesthetics, methods of observation, and lifeways to cultivate "skilled" and "responsive immediacy" to the material parameters of life on Earth (Hershock 2004, 2).

We generated the following image/text series from a current project, which we've called: *Turning into the Night*. Since May 21, 002018, we have performatively inhabited the time between sunset and sunrise without use of artificial light of any kind. During daylight hours, we reduce our time on digital screens. As evening approaches, we attempt to live (observe) our local landscape transition into night and darkness. We intended to end the project on summer solstice, June 22, 002018. Instead, while in the midst of the process, we decided to continue it indefinitely (we are at 120+ Earth spins at the time of this writing).

We have arrived at the conviction that this act of making ourselves aware of the transition-hinges of day becoming night, night becoming day, and intentionally dwelling within the monumental changes of light into dark, dark into light, is a form of environmental practice. It is a practice that, as Clark Strand puts it, adjusts our eyes to the "strange light of this world," and allows us to experience what "our minds have never known but what our bodies still remember," namely, ancestral timescapes and the ways of land inhabitation that they made possible (Strand 2015, 53). Strand calls this attempt to "reach around the Anthropocene" and back in time and human cultures an effort to "catch glimpses of what might have existed before the Anthropocene." He sees "dark night" practices as ways to recognize self (human being) as part of the landscape of the world, rather than as a thing onto itself or as a figure against the ground of nature to which nature is invisible.

**TURNING INTO THE NIGHT:**  
Embodied, Exaptive Practices for Inhabiting Earth's SpinTilt

smudge studio 002018



**The Copernican  
Revolution of the 1500s  
placed the sun, rather than the  
earth, at the center of our solar system.**

In 1610, Galileo gave Western-encultured minds a second chance to reimagine and rescale their senses of self in relation to the cosmos. This time, it wasn't only mathematics that proved we Earthlings were not the center of the Universe. It was an empirical observation that anyone with sight and a telescope could make for themselves. But Ecclesiastes 1:5 stated: *"And the sun rises and sets and returns to its place."* Galileo was found guilty of heresy and put under house arrest for the remainder of his life. Nevertheless, after his arrest, he uttered these poetic words about the earth, *"And yet it moves."*

We wonder just how much Western-encultured public imaginations and experiences of daily life have reoriented themselves in relation to the cosmos since the 1500s. It seems a relevant question to ask, given how the vast majority of contemporary humans inhabit the planet as if our species were the center of the universe. In early May, before starting the project, we might have asked: why sit and pay attention to the movement of the planet when we already know, "it moves"? Now we ask, what actual awareness do we humans alive today have about the life-affording fact that the ground of our lives is not fixed, it spins?

For millennia, numerous ancient cultures closely observed stars and movements of celestial bodies and arrived at powerful ways of knowing through embodied practices. They materialized their empirical findings and pragmatic cognitions of the cosmos in architecture and sculpture, and in their life ways. At the heart of *Turning into the Night* is the question: what does it take for two contemporary artists|humans to sense and attune to the cosmic scale of the material realities of our habitat on a daily basis? We are addressing that question by attempting to hold the thought of, pay close attention to, and track cosmic-magnitude change at the local, daily-life scale of the spin of our planet.

We have chosen to experience our planetary ride through the perspectives of Daoist poems that trace the interpenetrations of the cosmic and the earthly, and through Daoist-influenced landscape paintings that offer empirically-based interpretations of earth forces (Hinton 2016). We have generated a number of image-sensations in response to our experiences. They gesture toward felt realities: we are not separate from the Earth's ongoing rotation and 23.5 degree axis of tilt; we live the very specific material realities and aesthetics of its spin intimately; these are deeply embedded in our bodies' circadian and evolutionary rhythms—as they are for all things and beings on planet Earth.

We realize in new ways the extent to which technology and media inhibit our abilities to note or pay attention to even the most intimate and consequential of planetary changes—such as the gradients of time during which day becomes night, night becomes day. Media devices and their illuminated screens block our attunements to and curiosities for attending to the planet-as-process—and to ourselves as enmeshed in its processes. Our media devices proffer infinite quantities of distraction from the highly aesthetic and engaging planetary dynamics that shape us—and that we shape in turn.

**"And yet it moves."**

Our species has evolved,  
and continues to evolve,  
in relation to Earth's ceaseless spin.  
Through *Turning into the Night*, we explore  
what creative, spiritual, and material  
consequences result from living an awareness of  
inhabiting a spinning planet. We offer our work as a relay  
from within this exploration. We sense that our species' ability to  
adapt to planetary change in the short and long-term depends on our  
willingness to pay attention to planetary change not merely in analytical,  
intellectual ways, but through direct embodied experience.

Which has brought us to realize,

*This change, it just won't stop. Ever moving. Unfixable. Somehow, without clear demarcation, this sun-filled day began to dim into the most minute of gradations, into shades of blue that are more glow and quality of light and diffusion than color. There's no stopping this change. And yet, it is silent, seamless and graceful in its profound shiftings.*

*An overall feeling of rest and "winding down" is felt and heard in the air. This is what living beings do. Sensors in our eyes, glands, hearts, brain, are attuned to this unwinding. They "clock it" and their sensings are continuous, everyday. Lowering light triggers their signaling.*

*Meanwhile, the bombardment of photons is never ending, as far as humans are concerned. Photons of light cruise towards our planet from 93,000,000 miles away.*

*The pupils of our eyes are doing their evolutionary jobs. They are opening. This un-arrestable glow-shade we call twilight is in fact movement, change, as are all things and time. And when we wake around eight hours from now at the prompting of the highly sun-attuned bird songs outside the back door, we'll be in a blue-ing of another sort once again. The glow will be appearing in the sky from the "east" and, until around noon, our particular location on the planet will roll "downward" on its tilted axis, at which time, it will begin to roll "upward" until around midnight.*

*Meanwhile, this 8:30 p.m. twilight-ing blue is seamlessly connected with and deeply akin to some other kind of blue that will be tomorrow's 5:00 a.m. dawn-ing.*

**What creative, spiritual,  
and material consequences  
result from living an awareness  
of inhabiting  
a spinning planet?**

**It is typical** for most humans to awaken and go to sleep out of a sense that reality is filled to the brim with human-centered concerns, awarenesses, and thoughts. Missing the aesthetic qualities of the transitions into and out of “day” and “night,” and all that this nuanced changing commands, truncates the qualities of daily life.

Like a long exposure in photography, we are exposing our bodies and minds to the transitions of days into nights, and nights into days, spin after spin. This ongoing changing is much vaster and enduring than we are. Our eyes, cells, blood, gut bacteria, are ruled by circadian rhythms that are of the planet’s SpinTilt. Over billions of years, our evolutionary ancestors adapted and exapted in response to the continuously moving, smudged and angled moment during which day and night intermingle. Its rhythms and effects are at play within us, and they play out as “us.”

*Within day there is night ,  
within night there is day.*



No longer waking after "morning" (noun) has already arrived.  
No longer turning off a light to go to sleep after "night" (noun) has already arrived.  
Waking and sleeping within the seamless transition  
of Earth's continuous spin, an -ing of light.

# THERE IS NO DAY OR NIGHT, ONLY ENDLESS TRANSITION SPIN



Just before sleep, blue is all there is.  
Falls material upon all things,  
making no distinctions among the things and beings  
soaked in its shifting gradients of blue change.  
In these moments of spin change—a flash of realization:  
this is what this space, this house, are, when "I" am not here,  
when a human's physical presence is not laying itself upon the world,  
over-illuminating everything into an image of itself.  
In the deepening blue, humans adrift within, eyes look, ears listen.  
Evolutionary rhythms attuned over billions of years  
play their cycles with ease, unfolding of their own accord,  
without interruption.

**INSIDE BLUE**

*Beneficent limit summons the waning of the day.  
Sleep comes not from exhaustion,  
but from sensations that arise  
when blue dims into deep shadow.  
Each planetary day reaches a sufficient, evolutionary fullness.*

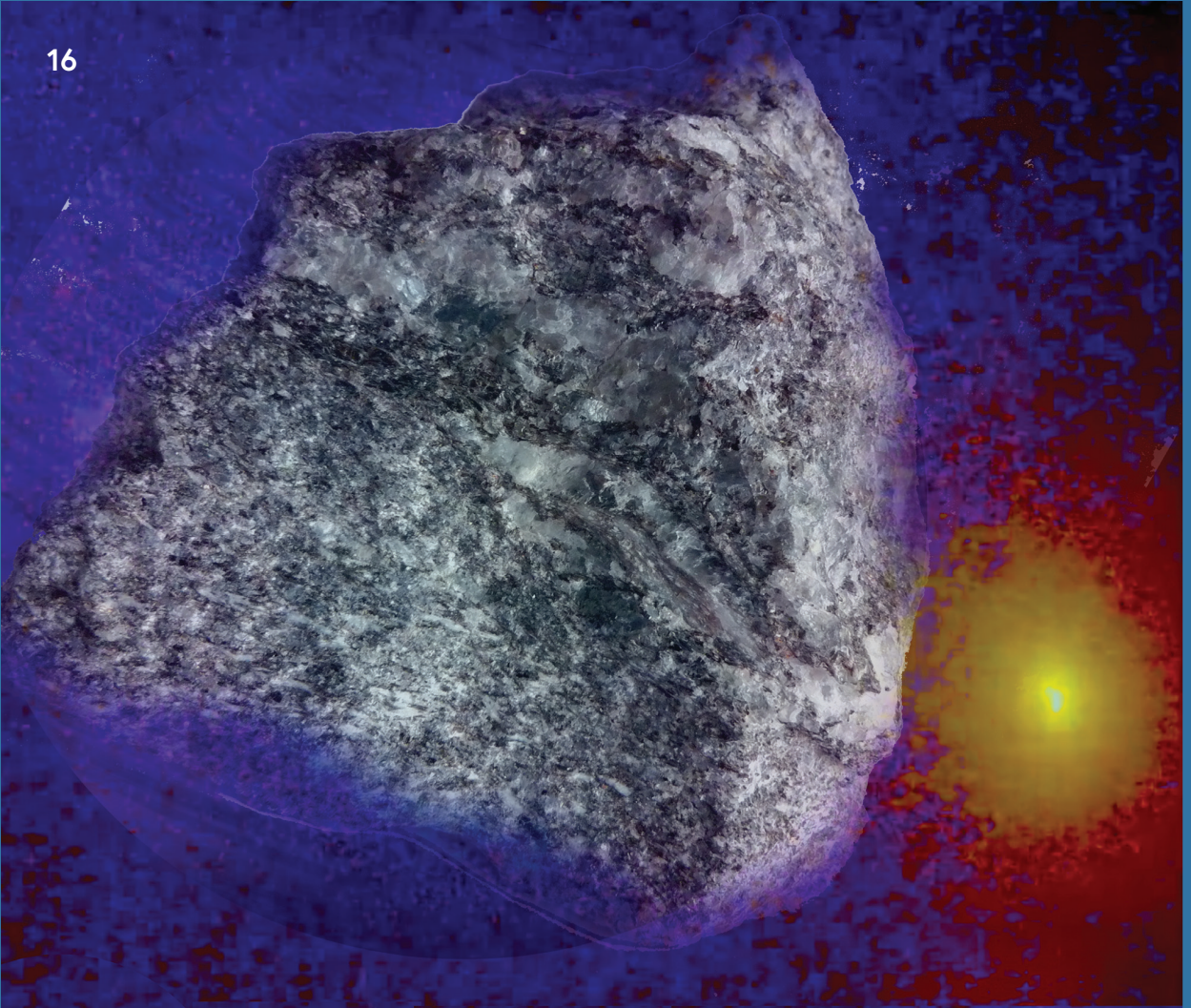
# **EARTH'S SHADOW FALLS ACROSS THE 10,000 THINGS**



More like a landscape than a clock or the passage of regular intervals.  
More like a body within which the 10,000 things are living.  
Each day's time undulates, expands, folds in on itself,  
takes on unexpected qualities:  
spatial, corporeal, mercurial.  
Ten thousand things, living inside the Earth's continuous spin,  
which is also inside each body-mind-brain's circadian rhythms.

## TIME TAKES ON SUBSTANCE





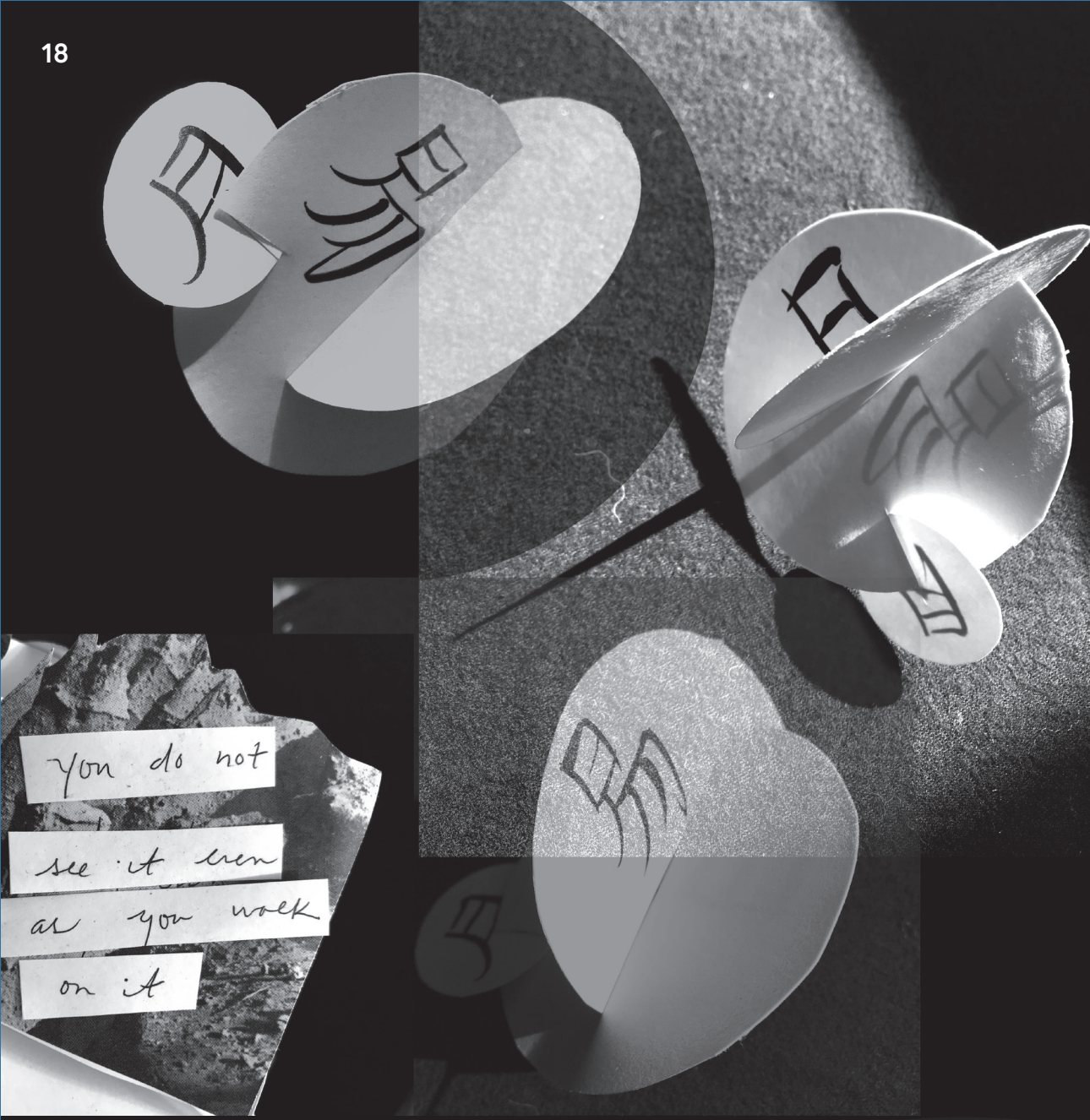
No longer caught in the din of electric lighting,  
the 10,000 things are freed riders  
upon a hulking, spinning, water-covered rock hurtling through space.  
Our exquisite subjection to the existence tissue laid bare.  
A cosmic observatory constantly on the move.  
Earth's massive heave and strain weaves day into night, night into day  
all effortless ease.

# RIDING THE TORQUE OF THE EARTH



In and out of overstimulated, over-illuminated consciousness.  
We access ancient, enlivening sensory qualities of Homo sapiens embodiment  
honed over billions of years of wild time.  
Re-learning to see in the night's ambient light  
while fading sunlight on retina allows for slow, evolutionary dilation.  
Experiencing emergent tips of early morning moments  
before they can be harnessed to cultural habits.  
Realizing qualities of sensation otherwise paved over by "modern" life.  
Electric light is felt as glaring sensation. It obliterates evolution-attuned timescapes.  
You do not live them even as you walk in them.  
Without no abrupt, electric on/off, light and dark interpenetrate.  
Dark nights foil twitcher time. Seasonal changes becomes sense-able.  
Circadian rhythm sleep is a radical act.

## PHASING IN AND OUT OF ENCULTURED TIME



**SUN AND MOON  
MAKE CHANGE**  
日月易

## Around thirteen hundred years ago,

Master Shitou Xiqian (aka “stone head”) authored a poem of 22 couplets (44 lines). The title, *Cantongqi*, was taken from an ancient Daoist text written 500 years earlier (100-200 CE) and considered to be the first book of alchemy.

In Shitou's time, Chan Buddhism (Zen in Japanese) was growing in popularity and divisions between the two dominant schools had developed.

The Northern school promoted a more gradual process to enlightenment, while the Southern school favored a more sudden and immediate awakening. Shitou's poem, addresses the division between the two schools, “as well as other dichotomies such as one and many, light and dark, sameness and difference” (Suzuki 2001, 15).

Today in 2018, Shitou's poem is widely known by its Japanese name, the *Sandokai*, and in Western countries, by its English title, *Identity of the Relative and Absolute*. The poem is chanted everyday around the world in Zen temples and centers. The daily chanting of these words invites the poem to become a living, embodied form. In the several years since we first encountered the *Sandokai*, we have gained new ears for hearing it. The increased pressure of the Anthropocene has opened new pathways into its teachings and its references to political divisions resonate across the centuries. Our practice of *Turning into the Night* has found a deep home within its verses (“*Within light there is darkness, but do not try to understand that darkness; Within darkness there is light, but do not look for that light*”). Speaking directly of dark and light, the words pull us far back to the deep, enigmatic roots of Daoism, which conceptualized human existence *within evolving* planetary limits.

In our attempt to share our lived experience of *Turning into the Night* we have found the *Sandokai* and its precursor, the *Cantongqi*, to be ready collaborators. The *Cantongqi* is filled with cosmological references that link movements of the sun, moon and other celestial bodies to cycles of time and change. As in, for example, the phrase: “*Sun and Moon Make Change.*” In the original Chinese, the kanji character for change (易) is formed by placing the character for Sun (日) above the character for Moon (月).

Our ability to drawn upon, remix and re-engage these texts as artists has been transformative. We feel as though we are at the beginning of a rich, mysterious exchange with these texts’ authors, made possible by the fact that we, like they, set out to make aesthetic responses to the fact that humans exist as embodiments of living earth materials.

Fire is hot, wind moves,  
water is wet, earth hard;  
Eyes see, ears hear, nose smells,  
tongue tastes the salt and sour.

Three months into  
our project, we realize how  
much of existence (material existence)

we have been missing. For decades, we  
haven't been inhabiting the Earth as a planet.

As the *Sandokai* reminds, "you do not see it even as you  
walk on it." Prior to performing this project, we missed dwelling  
within the seasonal and life rhythms that evolve out of this spin, and  
the simple and profound aesthetic transitions that occur ceaselessly from  
day into night, dark into light.

The *Sandokai* ends with a sobering closure, using words similar to the evening gatha chanted  
at many Zen temples. It offers a Zen "whack" that is also a gift of reminding: "Don't waste your time  
by day or night." For a threatened species such as ours, there is, indeed, no time to be wasted.

We are just beginning to explore how to take up these alchemic poems as grounds for further  
aesthetic work, micro-productions, poetic engagement, and daily life teachers. We conclude by  
reproducing the full text of the *Sandokai*. We introduce it through our account of what the  
*Cantongqi* calls, "a timeless instant between end and beginning," an instant that we've realized as a  
result of *Turning into the Night*.

*Day 82+, somewhere in late August: light and dark, like two arrows meeting in mid-air*

The light shifts from casting a light blue to a deeper, indeterminable shade—shading blue. It is no  
longer day or night. Liminal suspension. We are riding the *timeless instant between ending and  
beginning*. A zero point within space and time that continuously sweeps around the moving planet.  
Here, day and night are what they literally are: Sun's light traveling 93,000,000 miles towards Earth,  
which casts its own twilight shadow, under which it spins. Day: facing the Sun, the fuel for billions of  
years of nuclear fusion. Night: facing the pregnant emptiness of deep space.

This movement, forever just on the verge of reaching a meeting point between light and shadow:  
the space *where two arrows meet in mid-air*. Both continuously in motion, always just escaping one  
another. The sky's spectrum shifts. Day and night, a hair's breadth apart. In the open space, where  
these arrows continuously meet, is it day or is it night? In which hemisphere?

Day and night, always turning into one another, somewhere on Earth. Neither comes first nor  
second, they ceaselessly transform into one another. As a pair, *like the foot before and the foot  
behind, in walking*, there is no division, and yet they are fully themselves, utterly full of light and  
darkness, and beyond knowing, "Within light there is darkness, but do not try to understand that  
darkness. Within darkness there is light, but do not look for that light."

We sleep into a light, so blue, and wake into a dark, so blue.

This moving hinge, zero and infinity. And in the  
moment just before sleep, without a human's  
physical presence overriding all things,  
moving blue is all there is. How foolish that  
for decades, we did not experience this,  
even as we walked within it.

"Do not waste  
your time  
by day  
or night."

### ***Identity of Relative and Absolute***

*The mind  
of the Great Sage of India  
was intimately conveyed  
from West to East.  
Among human beings  
are wise ones and fools,  
but in the Way there is  
no northern or southern ancestor.  
The subtle source  
is clear and bright,  
the tributary streams flow  
through the darkness.  
To be attached to things is illusion,  
to encounter the absolute  
is not yet enlightenment.  
Each and all, the subjective  
and objective spheres are related,  
and at the same time, independent.  
Related, yet working differently,  
though each keeps its own place.  
Form makes the character  
and appearance different;  
Sounds distinguish comfort  
and discomfort.  
The dark makes all words one,  
the brightness distinguishes  
good and bad phrases.  
The four elements return to their  
nature as a child to its mother.  
Fire is hot, wind moves,  
water is wet, earth hard;  
Eyes see, ears hear, nose smells,  
tongue tastes the salt and sour.  
In accordance with each dharma,  
the root gives rise to separate leaves.  
Root and branch must return  
to the great reality.*

(Loori 1998, 29-31)

*The words high and low  
are used relatively.  
Within light there is darkness,  
but do not try to understand  
that darkness;  
Within darkness there is light,  
but do not look for that light.  
Light and darkness are a pair,  
like the foot before  
and the foot behind, in walking.  
Each thing has its own intrinsic  
Value and is related to  
everything  
else in function and position.  
Ordinary life fits the absolute  
as a box and its lid.  
The absolute works together  
with the relative like two arrows  
meeting in mid-air.  
Reading words,  
you should grasp the great  
reality.  
Do not judge by any standards.  
If you do not see the Way,  
you do not see it  
even as you walk on it.  
When you walk the Way,  
it is not near, it is not far.  
If you are deluded,  
you are mountains and rivers  
away from it.  
I respectfully say  
to those who wish  
to be enlightened,  
do not waste your time  
by night or day.*

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# MODERN LOVERS

Stuart Munro

THE MENTAL NOTES made that week happened while I walked. The tree stumps seemed to find their way through retained earth, penetrating the stone and masonry of elevated structures. For several weeks after, note-taking followed the same routine. I'd make small reminders based on things that looked lost to the world. Socks piled high on a balcony of an abandoned house—a veranda full of old clothes that now became a retreat for cats avoiding the hot tarmac below. Each time I would start from roughly the same place somewhere central, and end up near Tokyo bay and the water's edge. Here everything that remains uncertain is actively encouraged.

## **Deep, with a sense of parallax**

The shop was packed with boxes and only sold rice. It was everywhere. On the floor. On the walls. It littered every surface. The shop opened through sliding doors to face a display case that ran the entire width of the room with rice from every prefecture. Miniature silos sat semi-redundant off to one side, and even though the store looked like it had seen better days, it was always busy and unlikely to ever close down. Every day the owner placed a different potted plant on the pavement, each one more colorful than the last. Mercedes the cat would watch them blossom and wilt from a distance, lurking

somewhere. She would sit on an empty shelf and watch through the window, baking her belly in the hot sun. It was unusual, but now and then she would venture outside. She only did this if the weather was warm and would only approach if promised attention.

The owner's wife sat deep at the back, eating ice-cream in the shade. The sun passing through the shop window crossed her face just below the nose, highlighting her lipstick as she bit into the whipped vanilla and crunched through the wafer cone. The red lips outlined by the afternoon sun combined with the cat looked somewhat intimidating, but it made no difference as there were no customers that day. Framed like a still-life and backdrop to the world outside, the view inside the shop was limited to her dull expression and the cat's partial gaze piercing the air, both daydreaming but with a sense of parallax, focusing on how deep the world was instead of what passed through it, all the while elevating a weirdly sexual tension that you couldn't help but return to time and time again.

On the other side of the street, grass overgrew the fence on top of a retaining concrete wall with feathered reeds waving above the path below. A field of markings formed by patchworked asphalt had been re-laid so often that



it bulged at the center. The different patches were polished as if etched together by their subsequent repair. When it rained on a hot day, you could see the cut-back tarmac laced with cheap dolomite.

A jacket hung inside-out from the eaves of a nearby house. A spider plant billowed below it along with the left foot from a pair of Reebok sneakers harpooned on the metal grating of

a window sill. Hanging against stucco, an animated shadow of an old man was cast jostling in the breeze above the head of some imaginary infant. It was nearly 3pm. The sky was deep blue and cloudless. Against the wall, both shadow and figure turned and the giggling laundry swung as the awkward soundtrack of distant construction played and dust sheets cracked in the wind.





















### Prevailing wind

Thick orange dust clouds drifted, covering everything. A thick ambivalent veil made from grit, smog, and the smoke from an industrial cracking plant formed a cloud that scattered light, turning the sky at first orange and then pink and coating every exposed surface in dirt. The light that managed to seep through the aerosol came to rest on crisp white shirts and exposed skin. A head of fine hair could turn greasy from its lubricating rays, as they were bent and re-focused by the slow movement of the dust storm.

Emerging from underground, the subway station poked through the haze, arriving directly above the ticket barrier to a latticework of expressways overhead. Steelwork touched the ground, supporting every car and lorry that passed—unaware of the gardens below. Plumes of orange smoke met the sawdust from nearby timber yards and mixed, whipped together by the wind and traffic.

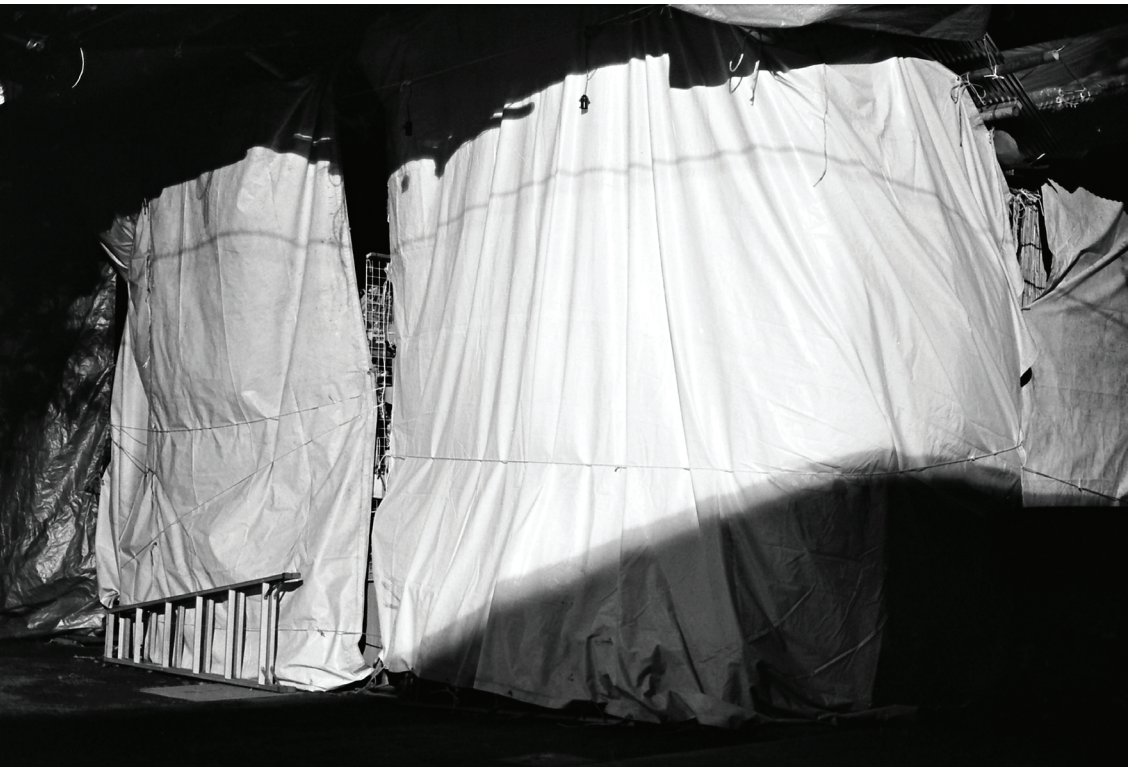
Leaving the station, I remembered the glare of the young man that forced his way through the ticket barrier. Caught filming on a train with a hidden camera phone, he wore a white surgical mask and ran as the guard holding him looked the other way, hurtling down the stairs and away from the platform. It took eight sets of arms

and legs to finally pin him to the floor. Beyond the frenzy, expressways closely followed older waterways below, and sound would dissipate with every corner turned and back alley entered, despite their volume.

There they were again. Buildings left to fall in on themselves, overgrown and spilling out over fences onto paths. Fences were delicately repaired to accommodate the gradual creep and unmeasured movement of these gardens. The timber I found walking from the city towards the sea, was stripped, cut, sawn, pulped, stacked and dried. Solitary tin bonfires with U-shaped exhausts turned the wood into charcoal with the fragrance of *hino-ki* drifting for what must have been miles. More precious wood was stacked to dry in the afternoon sun while more exotic ex-cargo sat awkwardly at the foot of an expressway. The entire circumference of a 300-year-old piece of Brazilian hardwood, along with its frayed roots, leant against steelwork like ink blown across hot glass on a sunny afternoon.

















### **Orienteering things that move**

A palm tree swept the roof top as it shook in the wind and the three boys sitting along its ledge looked off in the distance for some indication of where the sea was. Confused display boards filled shops' windows. Still images began to move, suggesting depth and the opportunity to look around corners in something two-dimensional. But as these boys searched for landmarks and the windows flickered with the sight of smoke stacks passing traffic, the rest of Shinjuku existed in stasis, with rotting buildings dotted throughout the city as wayposts of physical change and persistence. Houses slowly became darker in color, stained with overgrowth until every edge of window frame and wall had all but disappeared. These edges appeared over and over again as Joseph Beuys walked through the same city for eight days in 1984. Several years before, he had convinced the industrial magnate Seibu to contribute 500 saplings to his oak project. His side of the agreement involved performances with Nam June Paik at Seibu's Sogetsu Hall in Shibuya. Yet Beuys, hesitant to spend all his time in just one place, went for a walk each day. Accompanied at all time by a camera crew, he only made it as far as Shinjuku.

Dense interiors fed the expanse and promise of reclaimed land surrounding the bay with stories of transit

and transience, exchange, coercion, reenactment, comedy, arousal, and a dependency on the chance existence of certain imagery. Motifs kept cropping up with wildlife, escaping to the motorways and timber yards along the water's edge and finally drifting out to sea. Cats in shop windows watched as cyclists replete with visors and arm-length gloves would blast past with children strapped to the back seat, all under a sky turning the color of rust.

I imagine someone from the modern world would question the point of all this note-taking. Why rely so heavily on a past which is balanced so precariously on the future, like moving images perched on top of something static? The slow collapse of surrounding fabric in the real world is invisible to the naked eye, but it happens nonetheless. And these active notes, like selective memories, show their own signs of weathering, as unrelenting progress unavoidably snags itself on the past like thread from a new coat caught on a barb of wire.

#### **Note**

Modern Lovers was originally augmented by short film clips using an AR app. This archived material is now available to watch at <https://stuartmunro.net/writing/modern-lovers/>.

# NOT AT A DISTANCE

Erin Manning



*photograph by Brian Massumi*

**A thousand other things sing to me.  
— John Lee Clark**

Every possible feeling produces  
a movement, and that movement is  
a movement of the entire organism,  
and of each of its parts.

— William James

## On Touch, Synesthesia, and Other Ways of Knowing

What if mirror–touch synesthesia, defined as the experience that ensues when the stimulation of one sensory modality (vision) automatically triggers a perception in a second modality (touch), in the absence of any direct stimulation to this second modality, were not only misnamed, but radically misunderstood? It's not just the nomenclature that I am concerned with here—why a synesthesia that is said to move between touch and vision isn't called vision–touch synesthesia like its sisters, sound–taste, color–grapheme, shape–taste—but the very presupposition that situates it in the parsing of sense modalities (vision + touch) with bodies bounded into subject-locators of sense. For even if it were called vision–touch synesthesia, it would still take for granted a whole set of beliefs about both how perception works, not to mention what is considered worthy of registering: despite a rare admission that for some the experience of being touched—without touch occurs through an object,<sup>1</sup> mirror–touch synesthesia is predominantly a humanist concept. To be touched by that which we see is, in most of the literature, to be touched by the human. This is the question I want to ask here: what is assumed in the presupposition that to be moved is to be moved by the human. And: what is assumed when we take vision as the predominant activator for the experience of being touched by the world? Circling around autistic perception and deafblindness, I want to ask how neurotypicality as normative standard for human experience operates in the presuppositions of sense.

1. “It is unclear if MT synesthesia is specific to viewing a real person, rather than a dummy figure or an object being touched since in their supplementary material Banissy and Ward discuss some cases of MT synesthesia also being induced by viewing objects being touched” (Jewanski 2009, 293).

## A THOUSAND OTHER THINGS SING TO ME

The dominant neuroscientific literature works with a deficit model of sensation that is neurotypical through and through, neurotypical most emphatically in its presupposition of a body schema which acts as the normative ground on which all divergent experience is mapped. In this literature, mirror–touch synaesthesia is chiefly described, as mentioned above, as depending on one body seeing–feeling the touch of another directly on their skin: you touch yourself and I feel it because I see it. In this account, the experience of feeling the other is, paradoxically, considered a deficit: it weakens the body schema. With the feeling of you directly experienced on my body, I lose a bit of what separated me from you. The coming into relation is considered a loss.

The deficit model of sensation begins with the presupposition that senses are fixed and located, working with a pre-constituted body schema whose “sense of agency,” it is said, is fractured by the increase in sensation. Bodies lose their integrity in the encounter with the touch of the other. This approach, which situates “sense of agency” as central to what it means to have a body, placing what I have called the intentionality–agency–volition triad ahead of the *agencement of* experience coming into itself to activate a bodying, emphasizes that bodies are above all individual, separate envelopes that are in the world but not of it. Bodies are only properly bodies when they can fully distinguish themselves from the world, the implication always being that bodies are separate entities that have dominance over their sensations, and, by extension, over their movements. The deficit model perceives any deviation from this norm to be a lack.

2. In the important video *In My Language*, Amelia (formerly Amanda) Baggs demonstrates the degree to which the way she senses and perceives the world excludes her from the category of the human (Baggs 2007).

*In the context of MTS [mirror–touch synesthesia], one prediction from this would be that if there were agency–processing deficits these would exacerbate more basic disturbances in bodily awareness. We are clearly suggesting here that MTS is primarily a “disorder” of ownership, which can have consequences for SoAg [sense of agency] and which in turn can further worsen ownership disturbances (Cioffi, Moore, and Banissy 2014).*

Bodies that sense too much, bodies that feel the touch of the world and are moved by it, are deficient. When we lack the ability to distinguish our world from the world of others we lose something of what makes us, properly speaking, bodies, and, by extension, human.<sup>2</sup>

Feeling the touch of another body or another object on our body is already a misnomer. It makes too strong a distinction between body and world, a distinction that is everywhere at play in the neuroscientific studies of all forms of synesthesia, but perhaps even more forcefully so in studies of mirror–touch synesthesia.

Individuals with mirror–touch synesthesia (MTS) experience touch on their own bodies when observing another person being touched. Specifically, the images that participants had initially perceived as containing equal quantities of self and other became more likely to be recognized as the self after viewing the other being touched (Maister, Banissy, and Tsakiris 2013, 802).

Self-identity is the starting point, and it is in the self-identity that the experience of touch is located: “These results suggest that observing touch on others not only elicits a conscious experience of touch in MTS, but also elicits a change in the mental representation of the self, blurring self–other boundaries” (ibid.). There is no mention here of the emergent quality of sensation produced in the world. No attempt is made to explore the ways in which the relational milieu activates this singular composition. Nor is there an effort to explore how the touch that is felt might move beyond the limited concept of simple location—no questions are asked about how that touch alters the feel of the space, the quality of sensation beyond the actual location of the touch. What is assumed is always that we know what constitutes a body—a body, it must always be remembered, that, in its neurotypicality, stands in for the normative standard of whiteness.

Because there is no account of a processual bodying, there is no way to articulate what is activated in the sensation, only what is lost. When bodies are mapped in advance, abstracted from their environment and parsed according to the normative standard, the only conclusion can be that what diverges is a loss—a deviation from the norm. For this is clearly what is at play here, though never addressed as such. In the mirror–touch example, the activation of sense caused by the overlap of sense means individuality (the neurotypical norm) is weakened: in their “becoming one” the one who senses too much loses the very boundary that made it a body. In study after study, the assumption is that the field of relation<sup>3</sup> activated by the touch of the world *reduces* the body schema, placing not only the body at risk, but the whole edifice of representation the neurotypicality upholds. “[W]hen MTS individuals view touch on others, it not only elicits a shared tactile experience, but actually alters their body representation” (ibid., 803). This altering of the body representation is a deficit because the assumed contours of the body are no longer intact. Without the intactness a body no longer properly feels the distinction between body and world, between self and other.

What if the contours of a body were never intact? In this return to an account of touch more than a decade after publishing *Politics of Touch* (Manning 2007), I hope to do four things: 1) demonstrate that the force of reaching–toward, which is how I defined touch in *Politics of Touch*, troubles the model of “sense of agency” at the heart of accounts of mirror–touch synesthesia; 2) build on John Lee Clark’s account of distantism as it plays out not only in DeafBlind culture but more broadly in the neurotypical worldview; 3) consider the ways in which accounts of mirror–touch synesthesia as well as synesthesia more broadly support a deficit model of sensation that is deeply neurotypical; 4) explore how ProTactile, a movement for language-in-the-making and DeafBlind experience, remaps the spacetime of sensation away from the categorical limitations that come with the imposition of sensory regimes that privilege the body–world separation.

3. See “Toward a Leaky Sense of Self” in *Always More Than One: Individuation’s Dance* (Manning 2013) for a more detailed account of the relational body.

*The word on the breeze, and through the floor.*

— Liz Ball

4. For an important critique of ABA, see Yergeau (2018). See also Smith-Donohoe (2018) as well as Anthony Easton's articles, including "Why Do Autism Specialists want to Stamp Out Autistic Traits?" (2016).

"The TV is off, but I can still hear (and feel on my skin) the current of electricity powering all that equipment," writes Aspiegrl on her blog "Autism and Angels" (Aspiegrl 2011). Hearing what moves infrasensorially through her surrounds, being moved and changed by the field of relation, makes it impossible for Aspiegrl to hold onto the neurotypical imposition of body–world separation. Already considered at a deficit by the standard of neuroscientific work on synesthesia because she is autistic, she is doubly pathologized, her divergent sensory processing further evidence of her faulty "sense of agency." She suffers from a disturbance of sense perception that will, most likely, be considered as a disadvantage in learning environments: she will be taught, if not through the violent practices of ABA, then through the ubiquitous behavioral codes that are systemic in our education systems to direct her perception so as to sense less fully, thereby attempting to craft a less porous body.<sup>4</sup> But this will not actually make her sense less. It will simply make more violently apparent that a sensing body in movement is a deficient body. She will learn that in order to pass she will have to background the feel of electricity on her skin. She will have to act as though she is in control of her surroundings. She will pretend that she has agency over what moves her. She will be told in a thousand ways that value resides in subtracting from the welter of experience. She will learn that the standard of neurotypical life is one of sense–poverty. She will be considered properly treated if she can "pay" attention, attention no longer dancing at the pace of the more–than.

## **What if we were to turn the sensory model on its head and ask what keeps so many feeling so little?**

Synesthesia is usually defined as an overlapping or cross-mapping of the senses. In the most widely studied cases of synesthetes—color–sound and color–grapheme—great emphasis is placed on mnemonic systems, focusing on the modality of parsing from the more–than synesthesia is said to facilitate.



Synesthetes are acclaimed for their unusual abilities: autistic Daniel Tammet,<sup>5</sup> for instance, is celebrated for being able to visualize pi to a previously unimaginable degree (22,514 digits), while others inspire wonder by being able to retrace their past to a remarkable degree thanks to a color–grapheme synesthesia that enables them to see any day of the week as far back as they want to go (Buxton 2016). These stories—and there are many of them—are fascinating, and the abilities are remarkable, but they only touch synesthesia at its limit. In addition, they foreground a model of value that is deeply neurotypical: they emphasize not the qualitative complexity of their sensual fields but what can be culled from those relational fields, and thereby quantified. And, insofar as they include autistics such as Daniel Tammet, they replay the well-worn narrative of autistic savantism, reminding us at every turn that while these abilities may be extraordinary, displaying “high functioning” traits, they do not tend to carry-over into other “lower functioning” realms of autistic experience. In addition, not only does the narrative of savantism cleave autistics by singling out, for value-added, those who have particular gifts that can be studied, it also provides an ideal opportunity to reinforce the narrative of deficiency amongst those who do not share these mnemonic talents, keeping autistics in their place as deficiently sub-human.

This approach to diversity as divergence from a neurotypical norm is all over the writing on Tammet. Described as a “high functioning autistic savant,” his sensitivity to the world is bracketed by functioning labels that only serve to reinstall neurotypical norms. For instance, when describing the ways in which he functions outside of his mnemonic synesthetic abilities, he is said to be unimaginative because “he tends to take things literally.”<sup>6</sup> The claim is as simplistic as it is widespread in the world of autism: to take things literally is to not to be able to hear the undertones of communication that veer it toward subtexts, thereby not really being able to communicate at all.

5. See Tammet's website at <http://www.danieltammet.net>.

6. In his book *See It Feelingly* Ralph Savarese (2018a) takes on this assumption that autistics cannot move beyond the literal by engaging in projects of reading literature with a number of autistics from all parts of the autistic spectrum. In an adjacent publication, discussing the book project, he writes: “According to experts, autism's ‘triad of impairments’ (in communication, imagination and social interaction) made literature a bad fit for the autistic brain. Studies from the previous three decades postulated deficits in two key areas: theory of mind and the apprehension of figurative language. People with autism, the argument went, are ‘unable to develop an awareness of what is in the mind of another human.’ If the mental states of others are beyond their reach, how can they possibly manage the

moody jungle-gym of make-believe conflict that we call fiction? And if autistic people struggle with the dowsing rods of metaphor and irony, how can they divine a work's deeper meanings? An obdurate, self-contained literality plagues autistic consciousness. This view of autism became so prevalent that a best-selling novel 'The Curious Incident of the Dog in the Nighttime' made social and metaphorical bafflement a central aspect of the protagonist's characterization. Yet with time, perspectives change, and stereotypes begin to waver" (Savarese 2018b).

7. For a wonderful story about her relationship to sarcasm, see Yergeau (2018, 69–71).

No inquiry is made by Baron-Cohen as to how the excess of sense coursing through Tammet's every thought and movement creates a radically different engagement with the world. No effort is made to understand how his hypersensorial universe shifts the conditions of sense. If there is indeed a tendency in some autistics toward literality, what shape of complexity in the field is resisting being parsed? What nuance is reverberating that can't quite be conjugated? Why assume that what is called literality in the context of neurodiversity is a lack of complexity? Might this so-called literality not be a necessary survival mechanism in the face of the too-much of all that transversally battles for prominence across the field of experience? And is this account not all too human? Might it be that human communication itself stands out less than other activities in the wash of perception, as a result of which some of its layers of sense are easily missed in the dance of attention? Or that those layers of sense that neurotypicals find so central to communication are less interesting, in the moment, than neurotypicals assume they are? Because there is no question, ever, that autistics are incapable of feeling nuance and, where apt (often in reference to neurotypicals) of using sarcasm.<sup>7</sup>

The obsession with singling out the "low functioning" tendencies in neurodiversity even in cases of autistic savantism serves to maintain the deficit model of sensation with respect to synesthesia. If we know that Tammet, despite his extraordinary synesthetic capacities, "doesn't notice if someone is upset," it will be easy to argue that the touch of another on his body decreases his capacity to truly be human. If we read that Tammet "commits frequent faux pas," is "asocial" and "avoids social situations and finds parties confusing," we are reinforced in our belief that there is no such thing as neurodiverse sociality. If what is foregrounded is that he is "obsessed," that "he has strict routines," what we learn is that no matter how sensitive he is, there is no real latitude in his capacities. And if we read that he "showed severe tantrums at change of routine as a child," that he "showed head-banging in his cot," and "sat with fingers in his ears in primary school and with his eyes tight

shut,” we become convinced in our assessment that no matter how extraordinary his reciting of pi, he has nothing on us, we neurotypicals. For Tammet is nothing more than an arhetorical unimaginative mindblind less-than-human incapable of truly being aware (of us), detached, distanced, apart, “in a world of his own.”<sup>8</sup>

Or, we recognize that all of this is less about Tammet than about the presuppositions that accompany the imposition of the neurotypical norm on all experience. Turning our attention away from the neurotypical norm, we note that with hypersensoriality comes a sensitivity so powerful that it activates the field of relation in ways sometimes impossible to hold. Bodies collapse under the strain. We learn that what the literature calls tantrums are the undoing, in this collapse, of any boundary between self and world, a body succumbing to the pain of having to hold at bay the forces that shape experience. And we learn to recognize the violence in the account, an account that polices the body–world boundary in order to maintain the well-worn habit of enforcing dominance in the name of the whiteness that always colors neurotypicality.

The violence is not only in enforcing this separation by demonizing those bodies that collapse under the strain of overstimulation, but in openly recognizing as valuable only those who can be reflected in the mirror of neurotypicality. Baron-Cohen writes:

With age, DT [Daniel Tammet] has developed more of an idea of how to behave and how he seems to others, raising the possibility that mindreading skills are not completely absent but are simply delayed. It helped when, at the age of 13, his mother was able to give him some feedback and tell him to look at others’ eyes and not at his own feet. This suggests that in individuals on the autistic spectrum, for whom such social insight and consciousness of others’ minds does not develop naturally at the right point in development, learning to consciously attend to key parts of the environment (faces, eyes, expressions) may help (Baron-Cohen et al. 2007, 247).

8. (Baron-Cohen et al. 2007). The claim that autistics live “in a world of their own” undermines the very concept of neurodiverse sociality. See Sue Rubin’s important film, *Autism Is a World* (2004). Melanie Yergeau also addresses this stereotype when she writes: “autism’s essence, if you will, has been clinically identified as a disorder that prevents individuals from exercising free will and precludes them from accessing self-knowledge and knowledge of human others (Thornton 2011). Its subjects are not subjects in the agentive sense of the word, but are rather victim–

captives of a faulty neurology. Deborah Barnbaum's (2008) *The Ethics of Autism* is one such account. A philosophical treatise, the book promotes a portrait of autism that is the antithesis of both community and communicability, echoing the stereotypical sentiment that autistics are closed off from the larger world. 'There is something intrinsically limiting in an autistic life,' writes Barnbaum (154). And, later, 'Autism cuts people off from people' (174). What Barnbaum and others suggest is that autism is a world without people, that a world without people is a world without rhetoric, and that an arhetorical life is a life not worth living—a life beyond the realm of voluntary action and intentionality" (Yergeau 2018, 4–5).



*photograph by Leslie Plumb*

The criteria for inclusion into humanity are always neurotypical. That Tammet prefers not to have eye-contact has absolutely no bearing on what he sees or feels. It is Baron-Cohen and all those who adopt neurotypical standards for body schema, those who insist that eye contact has anything to do with a regard for the other,

who are here displaying their narrow-mindedness, if not mind-blindness. As those of us who do not feel pain when looking others in the eye know, there is nothing easier than to pretend presence through eye contact while being altogether elsewhere.<sup>9</sup> Eye contact is a practiced mechanism for allowing the human to feel that we are at the center of experience, nothing more.

Daniel Tammet functions just fine. He is neither “high functioning” as a savant nor “low functioning” in the rest of his life. Functioning labels, as anyone in the movement for neurodiversity will emphasize, say nothing at all except that neurotypicals are obsessed with categories that keep their way of knowing at the forefront. To function, according to these labels, means to deploy movement, expression, sensation in ways that “pass” for neurotypical: to take on a posture that does not announce too forcefully the sensory processing challenges that come with overstimulation; to be able to meet requirements for independence imposed by a belief in individualism before all; to be able to perform competence in ways that do not endanger the body-schema of those for whom the template of neurotypicality has become second nature.

Study after study links autism and synesthesia. Indeed, this view has become so widespread that even Simon Baron-Cohen, who for decades kept his research on autism and synesthesia separate, recently decided to bridge them:

*I have studied both autism and synesthesia for over 25 years and I had assumed that one had nothing to do with the other. These findings will re-focus research to examine common factors that drive brain development in these traditionally very separate conditions. An example is the mechanism "apoptosis," the natural pruning that occurs in early development, where we are programmed to lose many of our infant neural connections. In both autism and synesthesia apoptosis may not occur at the same rate, so that these connections are retained beyond infancy (University of Cambridge News 2013).*

9. Many autistics have written about the pain of eye-contact and about the impossibility of attending to what is being said when forced to be in contact with eyes. For Laura Spoerl, “Looking at someone else in the eye means I am taking in everything about them as a person, and I become overloaded. It’s a constant stream of extra sensory or processing information on top of what I’m already trying to sort through in my head. It can disrupt any thought or speaking process I have going on and zaps my energy quickly.” In Lucy Clapham’s words: “When I make eye contact, the world around me blocks out. I can only process the immense pain and discomfort that comes to my brain. This pain goes if I look away.” Chris Armor similarly registers pain: “It’s sometimes physically painful trying to maintain a constant stare straight into someone else’s eyes. It does not mean I’m not listening or have something against the person talking to me, it’s just an uncontrollable struggle to maintain eye contact.” And Rose Howard: “For me it can be a physical pain; it feels like burning with too many emotions, and I just can’t take it in all at once” (McGlensey 2016). Of his experience with eye contact, Joost Wiskerke writes: “I’ve long known that during a conversation it’s much easier and calmer for me to look at stationary objects—floors, walls, ceilings, or skies are particularly good for this purpose. Listening to those seminars a couple of years ago made me understand that the reason why eye contact is incredibly exhausting and hugely distracting for me is not just that it doesn’t come naturally, but also that it constitutes a massive sensory input that floods my brain” (Wiskerke 2018).

In this research, rather than asking how “apoptosis” might challenge his theory of “mind-blindness”—the condition of not being able to read “the mind” of another mentioned above in relation to Tammet—by demonstrating that the hypersensorial tendency in autism that is likely in part due to “apoptosis” results in them being *more* in contact with the world and not less, Baron-Cohen takes it upon himself not only to reemphasize the concept of mind-blindness but to counter other studies that suggest that those with mirror-touch synesthesia may be more attuned to the world than those without. In a recent article, entitled “Mirror-Touch Synesthesia is Not Associated with Heightened Empathy, and Can Occur with Autism,” he and his co-writers (Robson and Allison) make their position abundantly clear (Baron-Cohen et al. 2016): “Our findings dispute the views that MT [mirror-touch] synesthesia is linked with enhanced empathy, is less likely to occur with ASC [autism spectrum disorder] or elevated autistic traits, and is specific to seeing a person being touched.”<sup>10</sup>

10. These presuppositions can be found in the vast majority of neuroscientific studies I have read on synesthesia. A notable exception is Laurent Mottron, whose team includes autistic Michelle Dawson. See, for instance, Mottron et al. (2006) and Mottron et al. (2013). Refusing the deficit model, they write: “We can hypothesize that an enhanced performance in domain-general peaks will not be observed if tasks are standardized on autistic performance. As a consequence, the extent of the size of any peak of ability is at least partly a function of the matching strategy used to compare the performance of autistics and that of non-autistics. If certain language-based instruments are used, autistics’ intelligence risks being underestimated, thus their scores on areas of strength will be similar to those of TD persons with higher IQs on the same instrument. In contrast, the finding of superior performance of autistics may lose its statistical significance when tests which minimize mandatory language demands are used, as autistics will typically score higher and will, therefore, be matched to TD persons at a higher level (for a discussion of matching issues in the study of autistics, see Burack et al. 2004). Thus, some, but not all (e.g., pitch discrimination, Simard-Meilleur et al., 2012) domain-general peaks of ability may be favored or magnified by matching strategies. However, our focus in this paper is on the types of superior performance that are so robust that they transcend matching strategies, and on how these performances, in as much as they are found only among some autistics, contribute to within-group autistic heterogeneity” (Mottron et al. 2013, 211). For a generate rethinking of neuroscientific paradigms and autism, see Ralph Savarese et al. (2010a).

11. Wikipedia, s.v. "Empathy Quotient," 2017, [https://en.wikipedia.org/wiki/Empathy\\_quotient](https://en.wikipedia.org/wiki/Empathy_quotient). Note also that the Empathy Quotient suggests that connection to humans over animals is a sign of empathy. As with Theory of Mind, Baron-Cohen seems incapable to imagine the force of relation outside of a Humanist paradigm.

12. Wikipedia, s.v. "Theory of Mind," 2017, [https://en.wikipedia.org/wiki/Theory\\_of\\_mind](https://en.wikipedia.org/wiki/Theory_of_mind). For more on autism and theory of mind, see Yergeau (2018). I have also written about it in "The Ethics of Language in the making," in *Always More Than One* (Manning 2013) and in "Coming Alive in a World of Texture," in *Thought in the Act* (Manning and Massumi 2014). For a nuanced account of empathy reading neuroscientific studies in relation to a project of reading with autistics, see also Ralph Savarese (2018a).

When Baron-Cohen speaks of empathy, he is referring to the Empathy Quotient, a measure for empathy he developed with Sally Wheelwright. Empathy, for Baron-Cohen and Wheelwright, is "a combination of the ability to feel an appropriate emotion in response to another's emotion and the ability to understand the other's emotion."<sup>11</sup> All of this is of course associated with theory of mind, "the ability to attribute mental states—beliefs, intents, desires, pretending, knowledge etc.—to oneself and others and to understand that others have beliefs, desires, intentions, and perspectives that are different from one's own."<sup>12</sup> To be empathetic is to be able to parse from the world that which most closely conforms to what we already recognize as having value. It is to carry forward a power relation that acknowledges similarity and responds benevolently to it. I feel you because your feeling corresponds to what I already recognize as feeling. Empathy, the feeling-in of an interiority that recognizes itself in the other, thereby creating a measure of the self-same, must be seen not only as a profoundly humanist marker of self-recognition, but as the neurotypical marker par excellence of exclusion of all that cannot be recognized as self. It is this assumption that feeling is internal to the body that leads Baron-Cohen et al to assume that autistics are mind-blind and, by extension, have no empathy. For when Baron-Cohen says that autistics cannot "understand that others have beliefs, desires, intentions and perspectives that are different from one's own," what he seems to not be able to comprehend is that the definition excludes those modes of feeling proper to the neurodiverse. The concept of empathy simply cannot recognize experience expanded from the normative interiority of a neurotypical body-schema. When Baron-Cohen et al write that "individuals with MT [motor-touch synesthesia] have a *reduced* aptitude for social situations" (Baron-Cohen et al. 2016), this is always in reference to the "in-feeling" of empathy. A neurotypical viewpoint cannot recognize neurodiverse sociality precisely because it is always feeling-in, led by a model of interiority that presumes that feeling is only what a body contains, not what a body does in the worlding. There is no feeling-with in this account.



Sympathy—what things do when they shape each other—composes radically differently. Tuning to the force of a shaping, sympathy extends care toward the world, highlighting the world's own concern for experience unfolding. When Baron-Cohen et al insist that autistics fail to demonstrate empathy, what they are actually insisting is that we retain empathy as the baseline for experience in order to maintain the account of interiority that keeps body and world separate. This approach is based on the *The Karolinska Directed Emotional Faces Test* and the presupposition of identification that comes with it. To be empathetic is to be able to parse human expression according to the normative framework of facial expression. Despite the general knowledge that faces can contort to represent states required of them (much like the bestowing of eye-contact to pacify an interlocutor), despite the widely held experience that we can demonstrate interest we don't share by moving our facial muscles in ways that are normatively recognized, face-tests such as the *Karolinska Directed Emotional Faces Test* remain the marker for adherence to humanity by way of a model of empathy that will always exclude those who cannot be recognized and embraced as self-same.<sup>13</sup>

Empathy is a concept central to how whiteness operates. It requires an identificatory frame that can be mapped onto the other, keeping stable the hierarchy already in place. It requires the extraction from experience of all that does not conform to the choreography of human-human interaction. To be empathetic according to these standards is to be capable of cutting-out the feltness of the world activating a body beyond it-self. There is no inability to feel relation in neurodiverse sociality: indeed, in the

13. Any experiment that depends on a face test runs on neurotypical bias. Used in the creation of biometric data, the great danger of face tests and facial recognition software is that it upholds this bias. This should not be underestimated: *The Karolinska Directed Emotional Faces Test* and other similar tests are used in Artificial Intelligence. This has widespread effects not only with regard to autism and neurodiversity more widely, but in terms of black life and racism more broadly. Much research has shown that white people have difficulty recognizing (empathizing with) black faces. Findings of a recent study from North Carolina State University demonstrate the breadth of violence such normative standardization of experience can create. The experiment involved recruiting 40 university students (most of whom were white) training to become teachers, asking them to look at pictures of 20 black and white men and women, and then to identify one of five emotions the actors were showing (happiness, anger, surprise, sadness, or fear). Separately, those recruited for the experiment watched videos depicting both a black and a white boy in elementary

school. “One pair of videos had the boys doing something that could be seen as callous, with the black boy stepping on someone’s homework with muddy shoes and the white boy walking away with someone else’s handheld video game. The other two videos featured actions more likely to be seen as unintentionally insensitive: the black boy made a possibly rude comment about another student’s work, and the white boy put someone else’s work in the trash while cleaning up. For all the videos, the volunteers were asked to rate how hostile the boy was on a scale from one to five. In the photo task, the volunteers were consistently worse at guessing the emotions of both black men and women. *Overall, black faces were more than twice as likely to be misread than white faces. And when it came to anger, the misreading was even worse. Black faces were four times as likely to be mistakenly seen as angry.* With the video test, the volunteers similarly attributed more malice to black boys. On average, the hostility rating of black boys was 3.37, while the average rating of white boys was 2.25. And even in the scenarios where the boy seemingly meant no harm, the average point difference in rating between white and black boys stayed the same. [...] The study’s findings are some of the first to empirically show that a similar bias for seeing anger exists toward black women as well as men. But other qualitative research—relying on interviews and surveys of schoolchildren—has found black girls are more often singled out for not being ‘ladylike’ compared to white girls” (Cara 2018) (Halberstadt et al. 2018). My emphasis.

14. Many autistics have written important pieces on the consequences of the deficit model, amongst them Yergeau (2018), DJ Savarese in his article “Passive Plants” (2017) and Tito Mukhopadhyay in *The Mind Tree* (2007).

sympathetic force of worlding, a folding–in and through the world is at its height. All is felt–with. The problem for neurotypicality is that feeling–with cannot be contained within the limited category of an Empathy Quotient. Leaky, the sympathetic encounter with what things do when they shape each other takes over. This synesthetic feeling–with cannot be measured precisely because it cannot be located in a body precontained. It is of the world. Its feeling–with shapes the conditions of experience in the very same gesture that it shapes a body. Neurodiverse sociality might be described as a sensitivity to this shaping, a commitment to how the shaping orients, unmoors, disturbs any idea of a body as self-enclosed. Neurodiverse sociality lives in and through the force of the shaping, a shaping so deeply alive with the world that it continuously activates new fields of resonance at the edging-into-existence of body–worldings. The force of these body–worldings is what explodes when a body collapses under the weight of neurotypicality.<sup>14</sup>

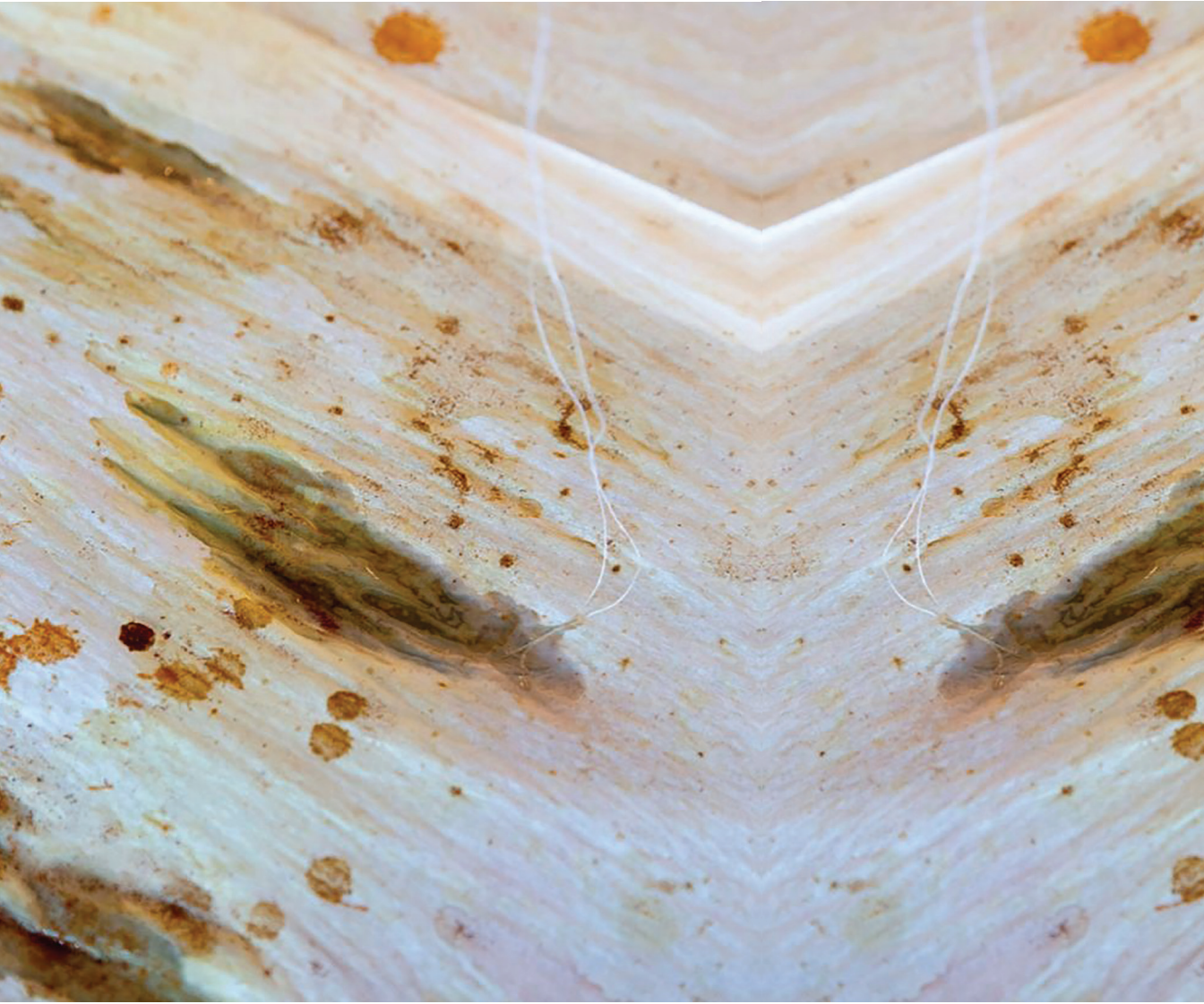
Simon Baron-Cohen deserves no more of our time. I turn to his work only because it is prevalent in the field and therefore affects both the literature on autism and on synesthesia. To address the claims he makes, and then to move away from him, it is necessary to underscore the following: 1) all models that begin with a preconstituted body–schema and make human interaction the only marker for empathy are deeply erroneous; 2) empathy is a humanist construct that privileges a human-centered account of importance that is always organized around preexisting norms. These norms are based on neurotypicality; 3) synesthesia is never going to be a condition that can be adequately studied with an experimental method that begins with a neurotypical body schema. This is the case not only because the quantifications of sense that are the results of such studies are only the tip of the iceberg, but because all sensation occurs in complex overlaps. Sensing is not limited to sense–presentation. All sensing is amodal and amodal sensation can only be mapped, if it can be mapped, topologically. To address synesthesia, new modes of expression will continuously have to be invented. With them will come new modes of knowing; 4) autism tends to express itself not as a lack of feeling as Baron-Cohen argues, but as an overfeeling, as a feeling-with-the-world of such intensity that it is difficult to parse into the quotient scientists like Baron-Cohen use to measure humanity. I have defined this tendency of suprasensation or overfeeling as autistic perception, emphasizing that it exists on a continuum of neurodiversity but expresses itself most intensely in classical autism. As I have argued elsewhere, this intensity of feeling is relational to the core. It is alive with the more–than. We all stand to learn from a modality of feeling that is so ecstatically more–than human.

*Interlude—the smell of red*

Synesthesia exceeds the limit-condition described through cases like that of Daniel Tammet. While those who deploy complex mnemonic devices certainly exist, they are not the majority: there remains a strain in the literature that locates synesthesia on a continuum of perception, suggesting that all babies are synesthetic, a sensory capacity lost over a lifetime of being forced to parse experience and un-feel its overlap. If it is indeed so it follows that everyone is synesthetic, at least in potentia. All sensation carries with it the amodality of sensory tendencies crossing. I say this not following a neuroscientific study per se, but speaking from my own experience and the work I have done, over the last several years, as an artist engaging with color-smell synesthesia.

*photograph by Leslie Plumb*





*photograph by Leslie Plumb*



## THE SMELL OF RED—*SPICES OF THE AMERICAS* (*Encuentro—Montreal, 2004*)

In *The Smell of Red* (2014), the first of a series entitled *The Slow Color Project* (2014–ongoing), unbleached silk is dyed by participants using a selection of 18 spices from the Americas, all of which create shades of red when diluted in water. The proposition: to move the spice-dyes through tubes connected magnetically to the fabric to dye not with precision but with an abandon to the color-movement itself. More or less one color, many degrees of heat.

These proto-garments, cut in the continuation of my earlier work *Slow Clothes* (2004–2013), offer themselves to an architecting of body-worlding each day recomposed—their magnetic connections an offering to the shifting of their collective shaping—to facilitate an emergent smell-color constellation. As participants move the spice dyes through turkey basters, color attaches to the untreated silk organza, dripping onto sheets of paper layered on the ground, drawings emerging in palimpsest.

Soft smells, bitter, harsher, orange-to-red, the synesthetic experience is potent for those of us who smell color. For others perhaps less so, the reds in adjacency, the transit of color across the fabric onto the paper drop-sheet more compelling, a new sheet placed under the fabric each day over time thick with traces of red spice coloring.

The dissonance interests me, this uneasiness of smell-color overlap that is so often backgrounded in accounts of perceptual experience. Nowhere do I state this directly in relation to the artwork, however—the aim is not didactic. What is proposed is simply a synesthetic opportunity. Because for those of us who are synesthetic, all artworks, indeed all experiences, are in the complex overlap of senses intermingling. But for others in incipient synesthesia, operations of sense overlap such as proposed through the works of *The Slow Color Project* may indeed bring a perceptual experience to the fore that is otherwise deemphasized. For the aim of *The Slow Color Project*—of which *The Smell of Red* is a cornerstone, repeated with different spices over several iterations, is to touch the synesthetic potential in all experience, creating the conditions for a sensing that gives dissonance its place in experience, bringing to the fore the unparsable limits of the sensible.

**THE SMELL OF RED—CINNAMON***(Vancouver Art Gallery, 2015)**Erin Manning & Nataniel Stern*

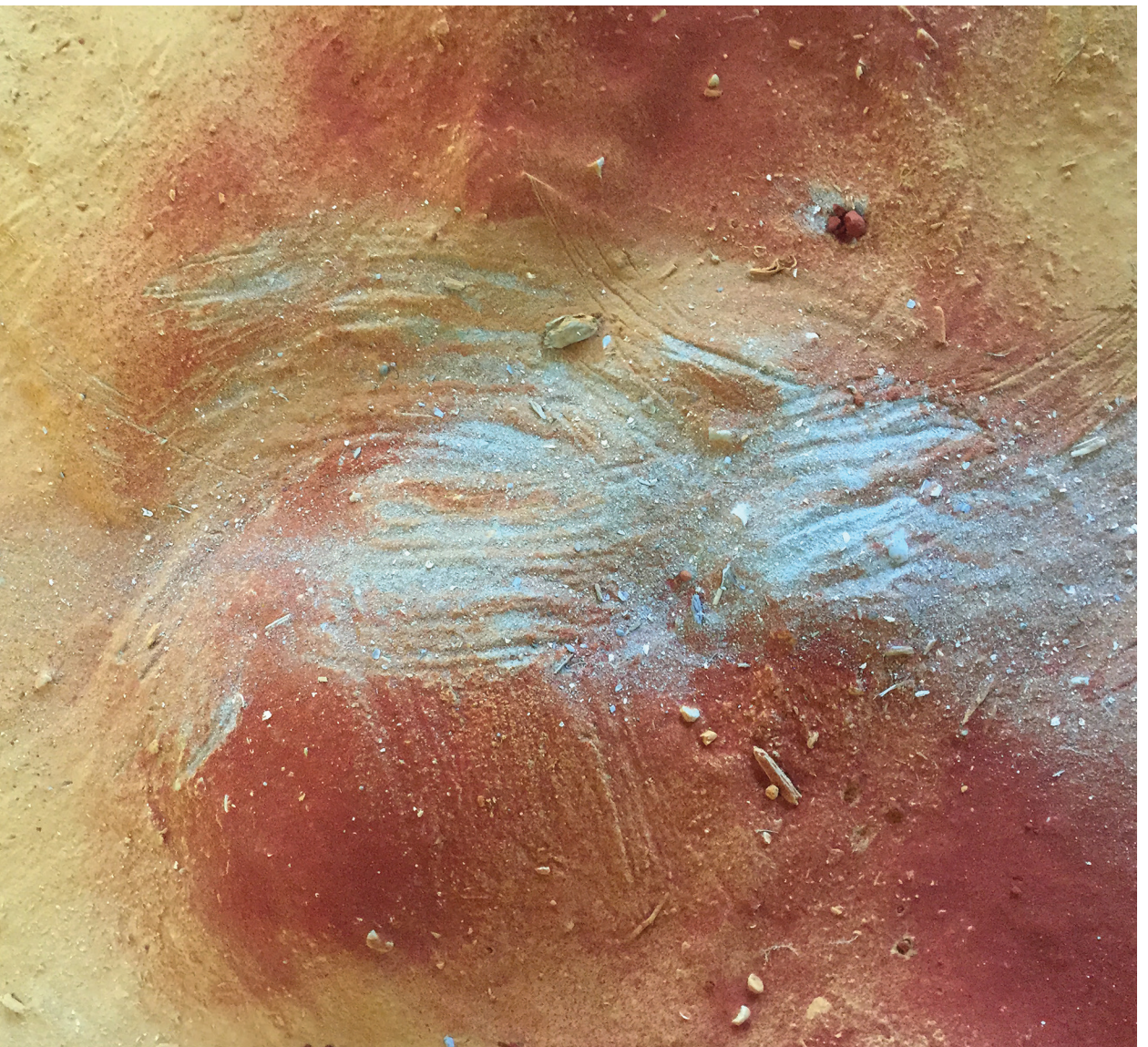
In the second version, *The Smell of Red—Cinnamon* (2014, 2015), this time in collaboration with Nathaniel Stern, 50kg of cinnamon is mixed with sand in a large sandbox. On one end of the sandbox, 10kg of paprika is added, on the other, 10kg of cocoa. While the paprika and the cocoa do not visually stand out (especially after participants move through the space and use the hand-made broom to create pathways in the style of a Japanese Garden), for those sensitive to smell's dissonance, the accord produced in the differential of cinnamon with cocoa on the one side and paprika on the other is quite marked: on the paprika side, the smell is much sharper, spicier, while on the cocoa side it is softer, warmer.

**To assist in the feltness of the quality of this differential, much thought is given to the slowing of a body: to move quickly is to be overwhelmed by the intensity of the cinnamon, a powerful and overdetermining smell. To emphasize duration in the synesthetic experience and facilitate different rhythms, three tornado machines are installed in the space. Each of these tornado machines produces a slightly differently shaped funnel of water vapor based on the strength and the speed of the fans that power it. Participants who move quickly through the space disturb the funnels, the air movement breaking them as they take form. The perceptual event of the funnel thus tunes participants' movements. Being encouraged to move more slowly across the cinnamon expanse brings with it a lingering with the shifting quality of smell. Again, no explicit mention is made of any of this—the hope is to create emergent conditions that facilitate a reorientation of the color–smell continuum, perceived less visually than synesthetically.**

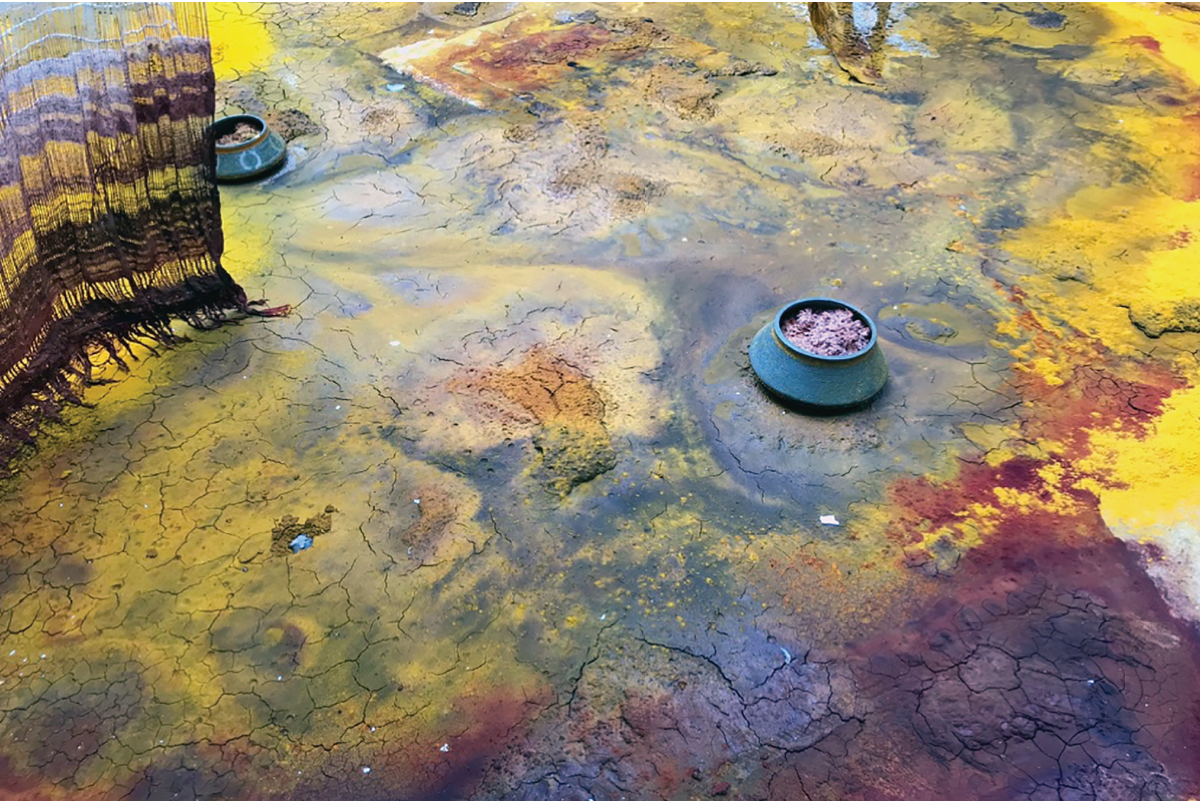


What this means in practice is that the “smell of red” has little to do with the “color” red. The smell of red is closer to a feeling of a redness overwhelming the perceptual field. Might red under these circumstances tune to a sharpness, or a warmth, losing, for a moment, the contour of its determination? Because too often, in the less synesthetic encounter, color is mobilized by an object, weakening the force of its amodal operations as touch–tone of experience in the making.

*photograph by Nathaniel Stern*







*photograph by Brian Massumi*

## THE COLOR OF TIME (Art-Rue Tunis, 2017)

*An odor of color, a touch in the gaze, a taste in the texture.  
What is this quality that exceeds the first approach of an  
object, the quality that moves through the form of an object  
but pierces experience, opening the object to its force? How  
to speak of the duration that radiates beyond the object?*

In *The Color of Time* (2017), the work moves across spice (turmeric) and three hand-woven textiles. The textiles, woven by the last weavers in a dyeing trade in Tunisia, become the carriers of the color–smell continuum. Unwoven over several months, the work involves making felt the quality of the threads themselves. This ongoing work (begun in my earlier piece *Threadways*, 2016), explores the limits of perceptibility. Paradoxically, by pulling the threads and making the weave more visible, the textile itself, a material become so ubiquitous as to be unseen by many, becomes more perceptible, its qualities amplified by the transversality the absence reveals, a transversality emphasized through a diagonal resewing of the pulled threads in a subsequent re-weaving. Unlike in the earlier *Threadways*, where I angularly wove all the pulled threads back in, for *The Color of Time* only a portion of the thread was rewoven, the rest kept in bowls next to the large textiles, threads that would eventually become the palette of the next piece, *The Color of Time, Anarchive* (2018).

## THE COLOR OF RED—ANARCHIVE (*Spatiu Intact—Cluj, 2018*)

In *The Color of Time*, the turmeric was mixed with three mordants—soda ash, copper and citric acid. The mordants, typically used in dyeing processes to fasten the dye to the textile, work here to shift color: mixed with turmeric, soda ash turns the fabric red, copper turns it green and citric acid amplifies the yellow. Of course, as with earlier experiments in *The Slow Color Project*, smell remains largely unaltered. What this means in practice: a deep disorientation for the synesthete who feels the yellowing across the red-greening.

In anticipation of the possibility that no transformation of color across the weavings would occur over the 10-day exhibition, the top edges of the three textiles are dyed in advance, then hung over a large expanse covered in 100kg of turmeric, the mordants mixed with the spice where the textiles reach the ground. Without rain or a regular watering nothing would happen, and there was no telling, since I couldn't experiment in advance, how much water would be necessary to have an effect. The pots of thread are placed alongside the weavings, the white thread almost translucent in its metal carrier.

As it turns out, the weather needed no assistance. A deluge of rain threatened to wash away the turmeric, so powerful was the pounding storm that took over the medina of Tunis over the next seven days. Yellow became red became green tuned back to yellow became brown, the smell of the turmeric overwhelming through tempestuous storms. Dyed from below, the large textiles quickly took on the hues of the weather, colored as much, it seemed, by the rain mixing with the spice and mordants as by the wind blowing grains of spice across the large expanse.

It was ultimately the wind that dyed the thread housed in the metal pots, activating the force of a coloring visible in *The Color of Time, Anarchive*, the piece that continued the exploration of how the color-smell overlap produces dissonances of sense.

Whether through *The Color of Time* or its later archive, what is foregrounded here is the force of minor gestures tuning an environment. What is experienced cannot be reduced to the willful intentionality of a determining participant: it is felt in the ecology. The proposition of *The Color of Time*, in alignment to the wider *Slow Color Project*, offers a brief window into what perhaps too often remains imperceptible, and, by extension, devalored. If there is value in this project that aims to touch the texture of time, it is a value discovered in the complex ecology of practices that invent themselves, day by day, in the field of experience itself. To echo John Lee Clark in the passages to come, this work challenges the distantism too often imposed on experience, proposing experiential attunements in the proximity of their own dissonant conjugations.

*photograph by Brian Massumi*





*photograph by Brian Massumi*

**THE SMELL OF RED—PAPRIKA**  
*(Galateca Gallery Bucarest, 2018)*

*The Smell of Red—Paprika* (2018) brings together the slow pulling of thread with the overlay of mild Hungarian paprika, 5 vegetable dyes and 5 mordants, each present in the region of Eastern Europe in which the exhibition takes place. In the symphony of color that ensues, the fabric taking on hues from pink to red to yellow to blue, the unweaving of the 20 meters of fabric promises, over a sustained period of time, to be transduced into a thread sculpture hanging in the midst. At work here is a slow passage from form to its unweaving into shape recomposing, a promise more than a reality (to actually undertake this fully would take a year or so of sustained work). Paprika here is barely perceptible, its mildness overshadowed, even for a synesthete, by the array of color: dissonance pushed to its infrathin limit, color touched—tinged ever so slightly by a smell more environmental than local.

## WHAT THINGS DO WHEN THEY SHAPE EACH OTHER

All things living and dead cry out to me  
 when I touch them. The dog, gasping for air,  
 is drowning in ecstasy, its neck shouting  
 Dig in, dig in. Slam me, slam me,  
 demands one door while another asks to remain  
 open. My wife again asks me  
 how did I know just where and how  
 to caress her. I can be too eager to listen:  
 The scar here on my thumb is a gift  
 from a cracked bowl that begged to be broken.

— John Lee Clark

John Lee Clark, to my knowledge, has never been tested for synesthesia.<sup>15</sup> How could he be, when the neurotypical assumption around the sensing body automatically discounts a DeafBlind person from mirror–touch synesthesia, or any other kind. What would there be to measure? Indeed, the neurotypical view of DeafBlindness suggests that there really is no life to be experienced without the senses of vision and hearing:

*The loss of both sight and hearing constitutes one of the severest disabilities known to human beings. Essentially, it deprives an individual of the two primary senses through which we acquire awareness of and information about the world around us, and it drastically limits effective communication and freedom of movement, which are necessary for full and active participation in society.*<sup>16</sup>

15. I am interested here less in the limit-cases of synesthesia than in the notion that synesthesia is a quality of perception that accompanies the perception of all infants. This approach challenges the deficit model of perception by inquiring not into what makes some bodies different but asking how perception shifts over a lifetime of organizing bodies into the baseline of a body schema based on neurotypicality. “Infants who were two and three months old showed significant shape-color associations. By eight months the preference was no longer pronounced, and in adults it was gone altogether” (Konnikova 2012). “But now it turns out that synesthetes might not belong to a club as exclusive as once thought. Their rich palette and vivid sensations might be accessible to us all. Even though not kin to Nabokov, we too could be reading our books in aquarelle. The under-examined complexities of ordinary perception, some neuroscientists and developmental psychologists contend, suggest that, like the Nabokovs, we all inhabit the synesthetic spectrum—we just need to look back in time, to when we were infants with developing brains” (Ravindran 2015). See also Maurer and Mondloch (2005).

16. Clark writes: “The final irony is that a DeafBlind man, the late Robert J. Smithdas, wrote these words. Many hearing and sighted people have expressed the same sentiments, but distantism is so pervasive that we all have internalized it. Helen Keller spoke of us as being imprisoned in the ‘double dungeon of darkness and silence’ and that we are ‘the loneliest people on Earth.’ She was being fanciful, but what is true is that the marginalization we experience is too often literal, involving physical margins. Think about it. Billions of people on this planet, and all of them agreeing that hearing and vision are required for leading full, normal lives. Billions of people of one mind that being DeafBlind must be an unendurable fate. Billions of dollars poured into the hope of medical cures. Distantism, that old serpent, held the whole world in its remote-control spell. And then our sisters from Seattle had the audacity to say that there’s a DeafBlind way. To say that hearing and vision are not necessary. To say that the only cure we need is each other. Can you feel the world shaking as it starts to, finally, come together?” (Clark 2017a).



**And yet. What about the synesthesia so clearly felt in these lines? What of the strength of feeling–felt?**

All things living and dead cry out to me  
 when I touch them. The dog, gasping for air,  
 is drowning in ecstasy, its neck shouting  
 Dig in, dig in. Slam me, slam me,  
 demands one door while another asks to remain  
 open. My wife again asks me  
 how did I know just where and how  
 to caress her. I can be too eager to listen:  
 The scar here on my thumb is a gift  
 from a cracked bowl that begged to be broken.

These words of Clark's are reminiscent of autistic Tito Mukhopadhyay's account of the mining tragedy in Raleigh County, West Virginia in 2010. Mukhopadhyay writes:

*It's true that when I think of the situation, there may be empathy. But my empathy would probably be towards the flashlight batteries of those trapped coal miners if there happens to be a selection on my part. Or my empathy would perhaps be toward the trapped air around those coal miners. There would be me watching through the eyes of the flashlight cell the utter hopelessness of those unfortunate miners as my last chemicals struggled to glow the faint bulb so that I didn't leave them dying in darkness. As the air around them, I would try to find a way to let myself squeeze every bit of oxygen I have to allow the doomed to breathe, for I am responsible for their doom. And while I found myself trapped, I would smell the burning rice being cooked with neglect in an earthen pot (Savarese 2010b).*

17. See Mukhopadhyay (2011). There are several passages in this book that expand on Mukhopadhyay's synesthesia, including the description of a woman's voice "that tasted like a tamarind pickle" (110) and a man's voice that "transformed into a long apple green with yellow strings" (200).

For Clark, touch carries a proximity that is also felt in Mukhopadhyay's account, though in Mukhopadhyay's case, the strong sensorial feeling-with is carried across senses in ways that more clearly make apparent what Brian Massumi would call a relational, or virtual body, a body of "pure variability" activated in the sensing (2017, 201–2). With Clark, the same force of relation is felt, but to register, the actual proximity of touch is added to the mix. That said, there is also in Clark's poem the activation of an emergent relation, a feeling-with that exceeds the actuality of the hands-on of touch. As with Mukhopadhyay, there is a sense of a more-than that accompanies the actual body, composing with the sensation that moves through that body.

A touch is here foregrounded, I want to suggest, that carries the more-than of sense. If synesthesia is the making-felt of experience as emergent across a field of relation that is itself infrasensing, and what is activated in both Clark and Mukhopadhyay's words is the feeling-with of experience itself, these are synesthetic experiences. This may be no surprise in relation to Mukhopadhyay, who has written extensively about his synesthesia.<sup>17</sup> But it might be a surprise that someone who can neither see nor hear sees-hears with the world's touching.

Listen again: “All things living and dead cry out to me / when I touch them,” writes Clark. A hearing in a touch. “My wife again asks me / how did I know just where and how / to caress her.” A seeing in a touch. And even more than that. A feeling toward a seeing–hearing touch, a knowing with the world in the relation. A virtual body felt and activated. In Massumi's words:

Every “single” sense experience is the envelopment in a dominant mode of appearance of an “infinitesimal” (virtual) continuation of other-sense experiences. Every perception is a composition of the full spectrum of experience, “practically” appearing as if it were disparate and disconnected from the continuum (2017, 195).

**Synesthesia is this experience intensified.**

In “The Art of the Relational Body: From Mirror-Touch to the Virtual Body,” Massumi writes: “Synesthetes do not add a deviation from the normal path of development. They just prune the same developmental path less fully” (194). The feeling–with of the world is never experienced consciously in all of its fullness. A certain parsing—or pruning, in Massumi's terms—is always necessary in order to subtract from the welter and distinguish one sensation or perception from another. This is not detrimental to experience: experience grows from the cuts that propel it in new directions. To parse is absolutely necessary. The question is, as Massumi also asks, what kind of parsing is at stake? And under what conditions? When Mukhopadhyay writes “I may select a fraction of the environment—say, ‘that shadow of a chair’ or ‘that door hinge over there’—and grow my opinions and ideas around it” he is composing with the wealth of potential in perception to extract its most lively expression. Poetry comes to Mukhopadhyay from this kind of pruning. “This creates a defense system for my over-stimulated visual

sense organ. Maybe poetry happens to grow around these things.”<sup>18</sup> In Clark's *Clamor*, the parsing tunes to the crack. “I can be too eager to listen: The scar here on my thumb is a gift from a cracked bowl that begged to be broken.”

### **Cracked bowls feel their way into the urgency of a touch.**

18. Tito Mukhopadhyay in “More Than a Thing to Ignore” (Savarese 2010b).

The touching evoked here is of two tonalities. It is both the touching of the hands-on feeling of the world, and the incipient touch the world calls forth. It is both the being in the world of feeling, and the feeling-with of the world emerging. In Mukhopadhyay we hear this through the personification of the oxygen, a personification which is not a making-human of the oxygen, but a more-than-human becoming-oxygen. What is foregrounded are the molecules struggling to counter their disappearance, the effects of this disappearance on the environment, and on those who most need it, the humans. All at once, each level of experience overlaps, the incipiency of one affecting the coming-into-actualization of the other. If mirror-touch synesthesia, or sight-touch synesthesia is about feeling-with, these are two examples of it, it seems to me, neither of which directly require either touch or vision.

Why call it mirror–touch synesthesia, then? With Massumi, I would agree that the nomenclature is deeply misleading. Building on research on mirror neurons—neurons that fire when an action is observed—the problem with mirror–touch synesthesia is that it seems incapable of imagining a world that begins with a feeling–with, a world that begins in the relational middle, in the virtual body.<sup>19</sup> As such, it carries the same implied bias of much work on mirror neurons, “that our perception is fundamentally a passive reception of an image constituting a private representation of the world, which, under normal conditions, is then cognitively corrected to purify it of illusions of perspective and other unthinking errors” (Massumi 2017, 192). In addition, the assumption that we ever perceive along single sensory routes is deeply erroneous:

**What normally pass for mono-sense experiences are, in fact, cross-modal fusions presented in a dominant sense. For example, to see the shape and texture of the object is to perceive, in vision, its potential feel in the hand. To feel that potential touch is to see the potential kinesthetic experience of walking towards the object. [...] It is well known that object vision cannot develop without movement. [...] Every “single” sense experience is the envelopment in a dominant mode of appearance of an “infinitesimal” (virtual) continuation of other–sense experiences. Every perception is a composition of the full spectrum of experience, “practically” appearing as if it were disparate and disconnected from the continuum (194).**

19. A more complete definition of mirror neurons is as follows: “A mirror neuron is a neuron that fires both when an animal acts and when the animal observes the same action performed by another. Thus, the neuron ‘mirrors’ the behavior of the other, as though the observer were itself acting.” Wikipedia, s.v. “Mirror Neuron,” 2017, [https://en.wikipedia.org/wiki/Mirror\\_neuron](https://en.wikipedia.org/wiki/Mirror_neuron).

Senses are felt on a continuum in an amodal register. The world is experienced across registers of sensation that bathe our bodies in complexity, a co-composition of world–bodying that changes the environment and the bodies composed by it at every turn.

John Lee Clark proposes the concept of distantism to counter the tendencies at the heart of these assumptions. Distantism, defined by Clark as the tendency to privilege mediation over direct perception, is what allows the neurotypical worldview to dominate, enforcing the parsing of the body from its environment, enabling a worldview that DeafBlind experience—to speak of just one discounted form of experience—is no experience at all. Whether we are speaking of the necessity to frame our academic knowledge based on objective data, or whether as DeafBlind people our engagement with the world is considered by others to be impossible without the mediation of a sighted intervenor, or whether we are expected to diminish our experience of the world as autistics by limiting our sensory experiences in order to “pass,” or whether our black, brown or indigenous bodies are expected to be less threatening by moving to rhythms (including rhythms of thought) neurotypical (and the list goes on), we are engaging in distantism.

For Clark, distantism promotes the impossibility of a DeafBlind feeling–with the world. In this limit–case of distantism, a lived experience of feeling–felt is denied.

*Researching our community’s history, I see that we have always been tactile. But hearing and sighted people have always attempted to keep our tactilehoods in check. We’ve always been denied access to some of the most basic human rights. What should we call this force of suppression? I propose to call it distantism (Clark 2017a).*

There is no distantism in the relational body. That is to say, distantism is not a quality of bodying: bodying is never parsable from the world with which it co-composes. “If one brings one's perception to the edge of release and inhabits the resurgent complexity, has one acted upon experience—or released oneself to be acted upon by it?” (Massumi 2017, 196). Perception on the edge is always already with the world in its unfolding. This witness, as mentioned above, can never be articulated in its fullness, but the feeling of it remains with us nonetheless. It is this feeling that moves in the lines of Clark and Mukhopadhyay's poetry, in the rhythm of the more-than-saying their feeling-with makes felt. Distantism is not how we perceive, it is how perception is imposed on us. It is how it is framed by Empathy Quotient tests. It is how it is made intelligible by baseline beliefs about the homogeneity of experience neurotypically parsed.

This has spacetime effects. In his piece “My Dream House: Some Thoughts on a DeafBlind Space,” Clark writes:

Now I'm going to discuss something very particular and perhaps difficult for non-DeafBlind people to fully grasp, so bear with me as I try to explain it. You know the saying “Out of sight, out of mind”? Well, for DeafBlind people everything that's out of sight remains in the mind's eye. We can relate to what Gaugin once said: “I shut my eyes in order to see.” This is why DeafBlind vision is often better than eyesight—we know where everything is and see them through walls, through doors, through drawer doors, through anything in front or under or below them. They aren't hidden. The bad news is that we also see, or imagine that we see, everything that's behind the walls, under the fridge, inside the gap between the floor and the bottom of the cabinet under the sink (Clark 2017b).

20. For a very interesting account of Deaf space with a particular focus on the dorsal, see Robert Sirvage's TEDx talk at Galaudet entitled "An Insight from Deaf-Space" (Sirvage 2015). In this video presentation, he described the relational movement of signing Deaf couples walking together to demonstrate that their communication includes an attention to the incipient movement all around them. This is more than simple protection (watching someone's space and making sure they are safe). This is included in the communication itself. It is at the heart of the ethos of Deaf communication.

DeafBlind vision is topological. It is not restrained to the imposition of Cartesian perspective. Perception moves with the world, creating a lively image of its composition and altering that image, while retaining its complexity, through coming into contact with it. This account of DeafBlind spacetime is analogous to the account of the body-world continuum being put forward here. Bodies are not limited to their envelopes—they are extensive, moving—with the world in its transformation. Think of how the oxygen moves in Mukhopadhyay's account. There too, space is topological. To move with the world is to have bodied, and to have bodied is to have worlded. The world grows in the bodying.<sup>20</sup>

Qualities of experience overlap. There is no distance. Everything has an effect. Everything makes a difference. A body is this quality of multisense overlap in incipient contact with an infinity of sense potentials. These sense potentials are not located in a discrete sense, or in an object. They cannot be distilled to an ear or an eye, and cannot be located in a table or a marigold. They are always between, amodal, operating as thresholds of sensation that carry intensities themselves carried in the feeling. Following Lucy Blackman, and her emphasis on the verb carrying as a way of reminding ourselves that everything is always in movement, we might speak of feelings carrying the edge of consciousness, feelings not fully subtracted, not fully known—as-such, but nonetheless active and transformative, the bodying recomposed in the relation.

Massumi writes: "A determinate experiential form origamies into relief when an actual movement cuts its patterning and orientation into the vibratory intensity of the virtual body, drawing out a determinate stand-out expression of the potential it enfolds" (2017, 201). The virtual body is the topological shape feeling takes when it moves with the world. "The closest geometrical approximation to the hyperorder of the virtual body is not the extensive grid defined by the Cartesian coordinates. It is topological. Topology is the geometry of continuous deformation" (202).



Bodying, always topological, is regularly projected onto Cartesian coordinates, the Cartesian coordinates in turn back-gridded onto it. If it weren't, Clark wouldn't need a Dream House and it wouldn't be necessary to continuously emphasize how the body is not limited to the form it most visibly takes. To give the body the shape of an outline is to impose distantism on the body. Having done that, the further imposition of Cartesian coordinates on the geometries in which we live and move is an easy second operation. If we are a limited spacetime, a bounded envelope, if we are already coordinated by a template that organizes us, why wouldn't we create architectures that support that very kind of body schema?<sup>21</sup> And in that architecture, in those worlds, wouldn't it make sense that we should restrict our sensing to the coordinates it privileges? Of course, no architecture is fully capable of organising a body, but as Clark emphasizes, when you are DeafBlind, it can come close to negotiating for you the measure of your movement experience.

Clark's Dream House and Mukhopadhyay's account of the near-oxygenless mine remind us that the only people who take Cartesian coordinates and neurotypical limitations for granted are those who most easily fit in the category where the senses are nicely pruned and existence is organized according to preimposed restrictions. I am not saying that DeafBlind folks are neurodiverse in the sense of neurologically divergent. Some may well be, but I wouldn't want to generalize across a heterogeneous population. What I am saying is that their lived experience of topological spacetime and the effects it has on their bodying make them squarely non-neurotypical. In approximation of proximity, Deafblindness is on the continuum of the refrain, heard across these pages, that "all black life is neurodiverse life." It is time, perhaps, to think of another term that carries the force of the non-neurotypical without including the "neuro" as the marker of its difference. Because even autistics, who are most definitely neurodivergent, are diverse in an infinity of ways that expand from the neurological. This is why I use the adjective

21. The work of Arakawa and Gins is very much situated here, aligning itself as it does to the organism-that-persons and the notion that architecture is procedural, created in the living. See Gins and Arakawa (2002).

22. This is also a responsibility-before, a modality of touch I discussed more thoroughly in *Politics of Touch* (2007). Touch, in this way of living, is the emergent quality of the relation as it unfolds. This is different from a responsibility-for, which still suggests a hierarchy of interaction. I discuss this more at length in "Waltzing the Limit," in *Always More Than One* (2013).

neurodiverse—to remind us that we need a concept for a diversity within diversity that isn't measured by the standard of typicality. A diversity in diversity is one that senses fully and differentially, that lives and participates in a world still defining itself according to measures not yet in place. It includes populations historically excluded from the matrix of the human. It includes modes of life—living that exceed the human, that feel the more—than human world not as other but as with, in the being of relation.

In the mid 2000s, a group of DeafBlind activists began to invent and share a mode of communication that would allow them to take back control of their own complex fields of sensation and to collectively invent new ones. The hope, as Clark articulates it, was to be able to move from a distantist engagement with touch to a metatactile one. He writes:

*[A] response I often get when I interact with people [is] [h]ow did I know that their shoulder needed a massage, or that they were hungry or sad, or a spot on their arm was itchy? The owners of pets I meet are also amazed. Almost immediately I've found their pets' sweet spots. "That's right! She loves that. But how did you know?" I wasn't conscious of it. It was natural. So natural, in fact, that I didn't have a name for it, this skill that goes beyond just feeling texture, heft, shape, and temperature. I'd like to call it metatactile knowledge (Clark 2015).*

This “skill that goes beyond just feeling texture, heft, shape, and temperature” sounds a lot like the feeling—with Mukhopadhyay describes as the feeling—being of oxygen in the miners' space.<sup>22</sup> For the becoming—oxygen of the more—than—human is the way Mukhopadhyay enters into the touching of the environment. It is how he feels—with the texture, heft, shape and temperature of that singular ecology.

A modality that moves beyond but includes the hands-on gesture of touch, metatactile knowledge is the act of reaching-toward experience, allowing all co-composing bodily senses—including the kinesthetic, the proprioceptive, the vestibular—to connect to the incipencies of a welling environment. Encouraging the welling environment to “grow around him,” as Mukhopadhyay might say, enables the necessary parsing while facilitating the richest possible experience of sensation, or feeling-with.

When Clark speaks of the bowl asking to be touched he is resisting giving touch a primarily human inflection. To sense for him is to feel-with in the sense Whitehead gives to feeling, to be affected by it. This is metatactile sensing, to connect to the quality of an encounter as much as to the actual shape of the surface with which one comes into contact, to feel with the encounter, coming into contact with the complexity of relations the encounter calls forth.

Clark suggests that metatactile knowledge is a “protactile” mode of touch. The ProTactile movement celebrates the metatactile: it honors all kinds of tactility, including, I would hazard, the shaping of experience through the force of the relational, or virtual body. Foregrounding the importance for communication of a direct perception of relation, ProTactile encourages DeafBlind people and anyone who communicates with them to engage in continuous physical touch. This continued contact, they argue, allows them to finally become autonomous in their communication by being more attuned to the nuances of the nonlinguistic aspects of communication. Bringing out the full potential of TASL [Tactile American Sign Language], and allowing, as becomes necessary, for TASL to depart from the habits of VASL [Visual American Sign Language], which remains the mother tongue of many in the DeafBlind community, ProTactile is as much a linguistic as a cultural movement.<sup>23</sup> Claiming experience according to their own complex registers of sense, ProTactile teachers and students emphasize that it's high time for the DeafBlind to be teaching the DeafBlind.<sup>24</sup> As Christine Roschaert

23. With ProTactile, shifts have occurred with respect to “pointing to things in the environment, keeping track of conversations, describing things and events in terms of their size, shape, texture and positioning in space.” Christine Roschaert writes: “I interned at the Seattle Lighthouse for the Blind in Seattle in 2005 and became fast friends with Granda, who introduced me to the yet-unnamed Pro-Tactile (PT) method. I was taken aback and confused when she would start touching my body more, but then I started to understand that they were ‘added’ social cues to inform me if her head was nodding (tapping on my lap or shoulder), her hand traveling down from my left to right shoulder (she was moving from my left side to my right side), and there was that ‘aha’ PT moment one night when we sat outside on the porch and I wondered the perennial question: how do we let Deafblind people know we were truly laughing? I hated the usual sign of ‘ha ha’ in my hands when I tactiled with the person I was sharing my joke to. ‘Ha ha’ in my hand is akin to a hearing person bellowing out nothing but a fake laugh; a Deaf person slapping a hand on their lap and their expression shows they’re faking their jest. I experimented this PT move by placing aj’s hand on my throat and I laughed out loud, a true to heart Coco laugh and aj was shocked, still, then she tried it again. It was a true PT action, which included Deafblind in the ever-elusive world of pure joy” (Roschaert 2013).

24. John Lee Clark writes: “There are distantist modes of touch and there are protactile modes of touch. A distantist cannot truly teach or empower our children to live and learn as tactile people. Yet the field of education of DeafBlind children has never included us as teachers. Why is that?” (Clark 2017a).

describes it, ProTactile “broadens the spectrum of communication of the Deafblind outside of the standard Tactile with (American or any other international) Sign Language and several other manual methods” (Roschaert 2013).

ProTactile does not limit itself to a set of preexisting coordinates. It is not a system of gestures or touches. It is not a grid that can be used generally across myriad situations: “we want to emphasize that PT is not a set list of symbols with associated meanings, like ‘touch signals,”” Nuccio, the founder of ProTactile explains. ProTactile is a linguistic–cultural paradigm, and an ethos. “ProTactile philosophy is not just about ‘accessing’ communication; it affects all areas of life, including DeafBlind culture, politics, empowerment and language” (ProTactile 2016). Based on the strong belief, also prevalent in the Deaf community, that separating language and culture is both detrimental and impossible, ProTactile brings into action tendencies of listening and speaking that best address the singularity of DeafBlind experience. A mode of encounter grown from within the culture, ProTactile is a call for the DeafBlind community to reject distantism and embrace the incipency of feeling of a touch that reaches toward experience in the making.

Jelica Nuccio and AJ Granda describe the ethos of ProTactile this way: “The purpose of ProTactile philosophy is to support DeafBlind culture, language, interpersonal relationships, [and] politics” (ProTactile 2016). While touch has always played an important role in DeafBlind culture, and much communication already moves through touch,<sup>25</sup> the modality of touch foregrounded through intervenors tends toward distantism: “We can see in the record how distantism set in, and how hearing and sighted people wanted things to look right. It didn't look good when we went around ‘groping in the dark.’ It didn't look good for us to cluster together and have too much fun. Education meant we had to sit behind a desk” (Clark 2017a). With the intervenor, the practice is to create a communicational model that mediates touch. Touch is necessary, it is understood, but only at certain stages of the (mediated) encounter. “But when we go exploring or when we just exist, sighted and hearing people rush in to intervene. Can they help us? Please don't touch. They will be happy to describe it to us. They will guide us. No, they will get it for us. It's much easier that way. Hello! My name is Katie and I'm your Intervenor!” (ibid.).

For someone outside the DeafBlind community who cannot understand sign language, a ProTactile video provides little to no information-as-content. I cannot understand the details of what is being said. What I can perceive, however, is the force of relation: bodies are actively listening and composing together. The conversation has a shape, and that shape feels dynamic. A vitality affect is felt in the watching. Communication has clearly taken on an emergent quality, activating the virtual body of sensation in the encounter.

25. For an account of ProTactile from an ethnographic perspective, see Edwards (2015).

Vitality affects, as described by Daniel Stern, are emergent attunements felt in the relation. Stern speaks of an overlap of movement, time, force, space and intention/directionality as being at the heart of all vitality affects, or what he also calls vitality “forms” (2010, 4). These five elements must not be seen to work in isolation. Together they form a Gestalt, and that Gestalt has affective tone. Describing vitality affects, Stern speaks of

*the force, speed, and flow of a gesture; the timing and stress of a spoken phrase or even a word; the way one breaks into a smile or the time course of decomposing the smile; the manner of shifting position in a chair; the time course of lifting the eyebrows when interested and the duration of their lift; the shift and flight of a gaze; and the rush or tumble of thoughts. These are examples of the dynamic forms and dynamic experiences of everyday life. The scale is small, but that is where we live, and it makes up the matrix of experiencing other people and feeling their vitality (6).*

Vitality affects are “the felt experience of force—in movement—with a temporal contour, and a sense of aliveness, of going somewhere. They do not belong to any particular content. They are more form than content. They concern the ‘How,’ the manner, and the style, not the ‘What’ or the ‘Why’” (8).

ProTactile is a recognition that DeafBlind communication carries its own singular vitality affect, and that this needs to be valued. One aspect of this singularity is the emphasis on movement. Without sight and hearing to facilitate connection to the world, DeafBlind people have to connect more deeply to their kinesthetic and vestibular senses. They do this by doing what we all do: they move. In a description of ProTactile communication in process, Clark emphasizes the role movement plays. In *Where I Stand*, he writes:

As a DeafBlind person, standing for me is almost never about being still or in one place. Waiting for a bus, I would move without realizing it. My way of standing by moving around gives me more information about where I am. I'm taking in the scene, being present in the world, and prodding things a bit, exploring. And when two DeafBlind people talk to each other while standing, they always move around so that, after a while, they're standing where the other person was. Later on, they'd be back to their former positions, having circled around each other. This phenomenon is the result of each person shifting to the left to listen to the other person tactilely in a more comfortable way, hand following hand at a certain angle. I would always find myself emerging from an engrossing conversation standing in a different place (Clark 2014, loc. 116–120 of 2094).

Movement gives experience shape. Speaking about the primacy of movement in experience, Stern writes:

**[D]ynamic changes [...] occur constantly. Our respirations rise and fall over a cycle that repeats every three or four seconds. Our bodies are in almost constant motion: we move our mouth, twitch, touch our face, make small adjustments in head position and orientation, alter our facial expression, shift the direction of our gaze, adjust the muscular tone of our body position, whether standing, sitting, or lying (if awake). These processes go on even when not visible from the outside. Gestures and larger acts unfold in time. They change fluidly once an act has started. We can be conscious of any of this, or it can remain in peripheral awareness. In addition, with every movement there is proprioception, conscious or not (2010, 9).**

26. On the Deafhood foundation website, Deafhood is defined in the following way: Deafhood “is a way of gathering together and framing what we already know of Deaf culture, life, politics, etc. The framing process itself reveals ways in which we can move ‘beyond’ present Deaf cultural limitations resulting from the colonialism of Sign Language Peoples (SLP).” The concept was developed by Paddy Ladd in 1993.

How to well the chaos? “How do we not implode into the intensity, lost in the infinite virtual folds of potential experience?,” Massumi asks. His answer: “through movement. Every movement makes a cut—it brings certain elements of experience into relief, origamiing the continuum on the fly” (2017, 199). Movement is primary: it is through movement that incipient sensation catches the world's tendencies and moves into them, altering them in the passage.

Making movement primary by itself shatters distantism, for distantism requires position. It requires pre-choreographed placeholders that have already been given value, that have already been signaled as worthy of attention. This is why distantism is so central to the template of neurotypicality: it allows the value of experience to be mapped in advance. And this is why neurodiverse experience is so threatening: because it makes felt what would otherwise remain backgrounded, and gives it value, thereby revaluing value. New ways of living proliferate, and with them come new ways of knowing.

Movement is everywhere in the literature on ProTactile, itself called a movement. For too long, DeafBlind communication tended to be watered down to the most atrophied of communicational models: third party interpretation. Not only was this slow, the vitality affect of the communicational swarm was dampened by the stagnancy of the ordered back-and-forth. Little could be shared in the making. This mode of communication was closer to reporting than conversation. With ProTactile comes a liveliness in communication that allows the vitality affect of the conversation to be felt by all. This results in “a true sense of empowerment” (ProTactile 2016). As Nuccio says: “Deafhood<sup>26</sup> involves so many things—ASL, culture, who you are, your identity—that is exactly what PT is” (ProTactile 2016). This is not to say that facilitators are never necessary:

*I am not saying that we don't need sighted assistants. After all, we do live in a distantist society, and we should avail ourselves of distance-information readers. However, the way our SSP services are performed can be smothering. That's why a key concern of the Protactile movement is autonomy” (Clark 2017a).*



When intervenors become ProTactile, they shift from mediators to immediators. No longer is the emphasis on the neutrality of intervention. Metatactility, after all, is a collective action, an aliveness with the world that acknowledges the interpenetrating registers of experience.

Metatactile modes of touching put the dynamic shape back into DeafBlind communication: they make the vitality of the exchange felt to all who participate. This shape is continuously composing itself, as is the case in all communication. Reinventing what it might mean to communicate is key to this practice, and this includes an engagement with the cracks that cleave the containers of our experience.

There is much to learn from ProTactile's engagement with touch as an ethos that troubles distantism. The neurotypical template moves at the pace of distantism, opting for mediation at every turn. Working with a pre-existing matrix, it organizes, categorizes, prioritizes, grids, excludes. Justifying forms of knowledge acquisition, modes of self-presentation, moral categories, it shapes the contours of education. It organizes the vocabulary of sensation, of perception, of experience. When Suzi Guimond writes—"the world of deaf-blindness is far from a dead one. The world is constantly full of vibrations and smells and changes in temperature and air pressure. Many people seem to believe that without ears and eyes, the world becomes unmoving and still, but this couldn't be farther from the truth" (Cromer 2017)—she is speaking about a value-system predicated on neurotypical understandings of sensation. She is underscoring the ways in which the categorizing of experience in advance through neurotypical codes limits our capacity to imagine experience beyond the spatiality of distantism.

27. For a sustained encounter with the concept of immedia-  
tion, see Manning  
et al. (2019).



*photograph by Brian Massumi*

ProTactile *immediates* experience.<sup>27</sup> Moving—with experience in the making, the intervenor-as-mediator no longer has a role to play. Experience is lived, from the edges in. “The formative relation of co-implication in the same event is the changing ground of experience. If the virtual body can be said to represent anything, it is this relationality of the life of the body” (Massumi 2017, 204). ProTactile is a reaching—toward the world that makes felt how the world is already poised to meet the encounter, the relational body of communication alive with the force of the touch that will give it dynamic shape. For what occurs in the encounter of emergent communication can never be reduced to two enclosed, pre-constituted selves, one active, one passive. Nor is the encounter only human. “Society is not companionship or friendly association with others; it’s companionship or friendly association without others, in the absence of the other, in the exhaustion of relational individuality, in consent not to be a single being” (Moten 2016). The consent not to be a single being, Glissant’s resonant words, is a call to a synesthesia that honors the more-than of sense that includes the force of metatactility and vibrates with worlds verging toward consciousness. Not distantist, but not proximitist either. In the field of minor sociality where relational bodies compose with the force of the incipiency of a touching beyond touch, ProTactile proposes a reaching—toward that touches the being of relation.

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# The Brick Dialogues *(extract)*

Rolf Hughes

## 1. *To shape me*

I do not think

I am worth something

not because

I am not worth anything

but I do not think

you have to help me

think

I am worth something

one of the things

not worth anything is that

there must be something wrong

with you

trying to make me matter

trying to make me think

I matter

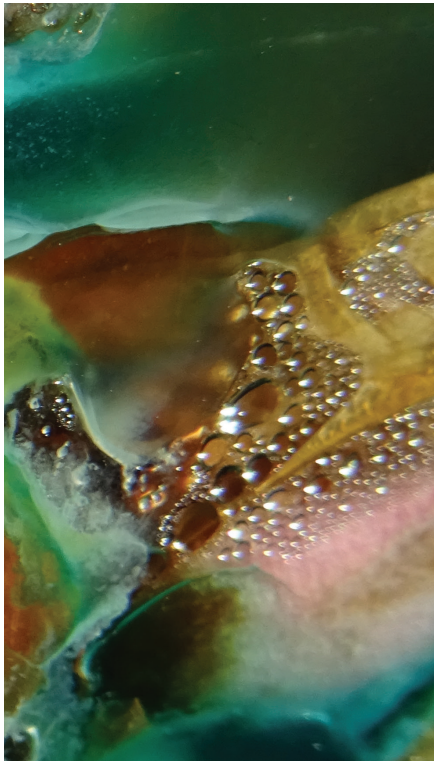
whereas the only thing

matterng

you being worth something

is that you shape me.





If you please  
not  
to shape me  
I understand  
I am not worth anything  
I do not think  
there must be something wrong  
with you not  
trying to make me  
matter.



## *2. Proximity*

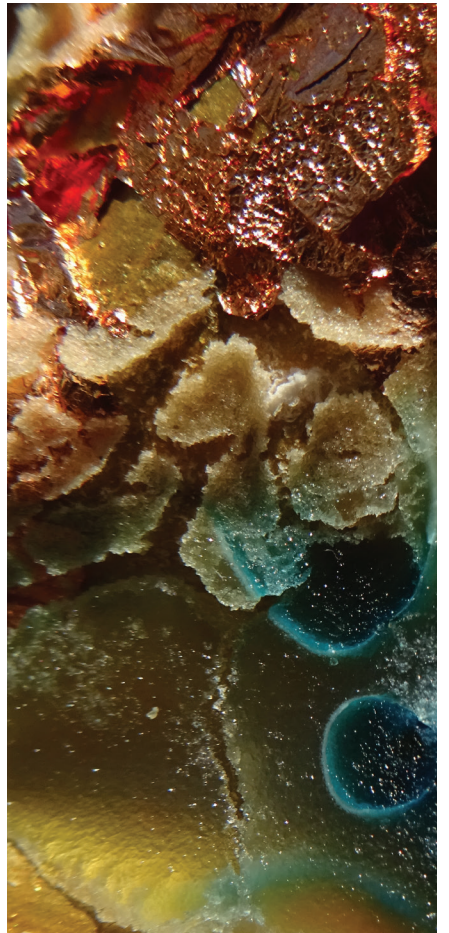
There are many who say you are useful, but who is shaping who?  
By shaping you, we shape your capacity to shape our world.  
You stand taller and live hundreds of years longer than us.  
You seem to multiply through proximity.

We cannot compare you to birds. Yours was a long downriver  
journey from glaciers.

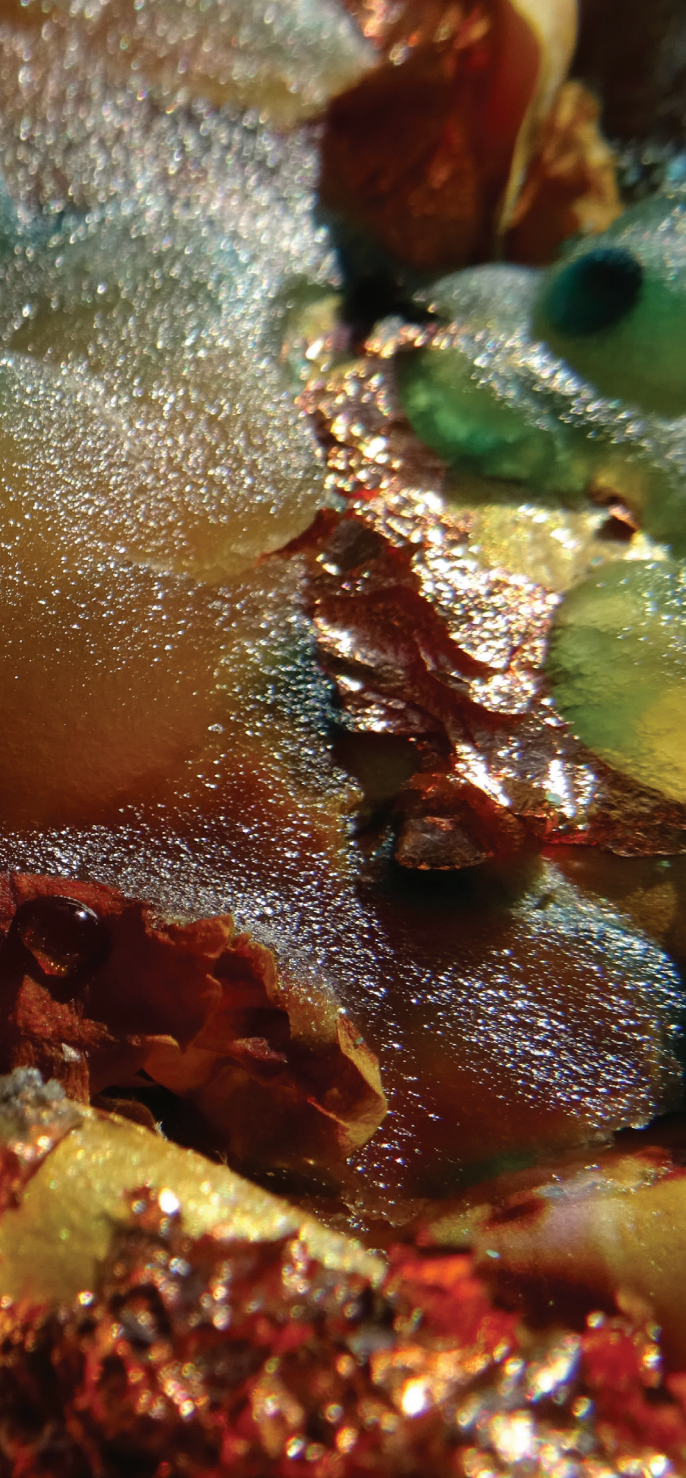
From wet and soft, to dry and strong, under the gaze of the sun,  
you are like a flame that has got to know itself through clasp-  
ing rock, particles, ice and sludge until fire and water make you their  
bold daughter.

Then we build structures to build structures.

Kilns create bricks.  
Bricks construct factories.  
Factories manufacture cities.  
Cities become kilns.







### *3. Trying to make matter*

There must be something worth building  
because they are building something.

Building blocks. Environment.

Building blocks of environment.

They would not be building something

if there was nothing worth building

because building is not nothing.

Building our environment.

#### 4. *We are mainly strangers*

Listen to them.  
Restless for recognition,  
cracked actors. Survivors.

Headers and stretchers.  
They deserve to be acknowledged.

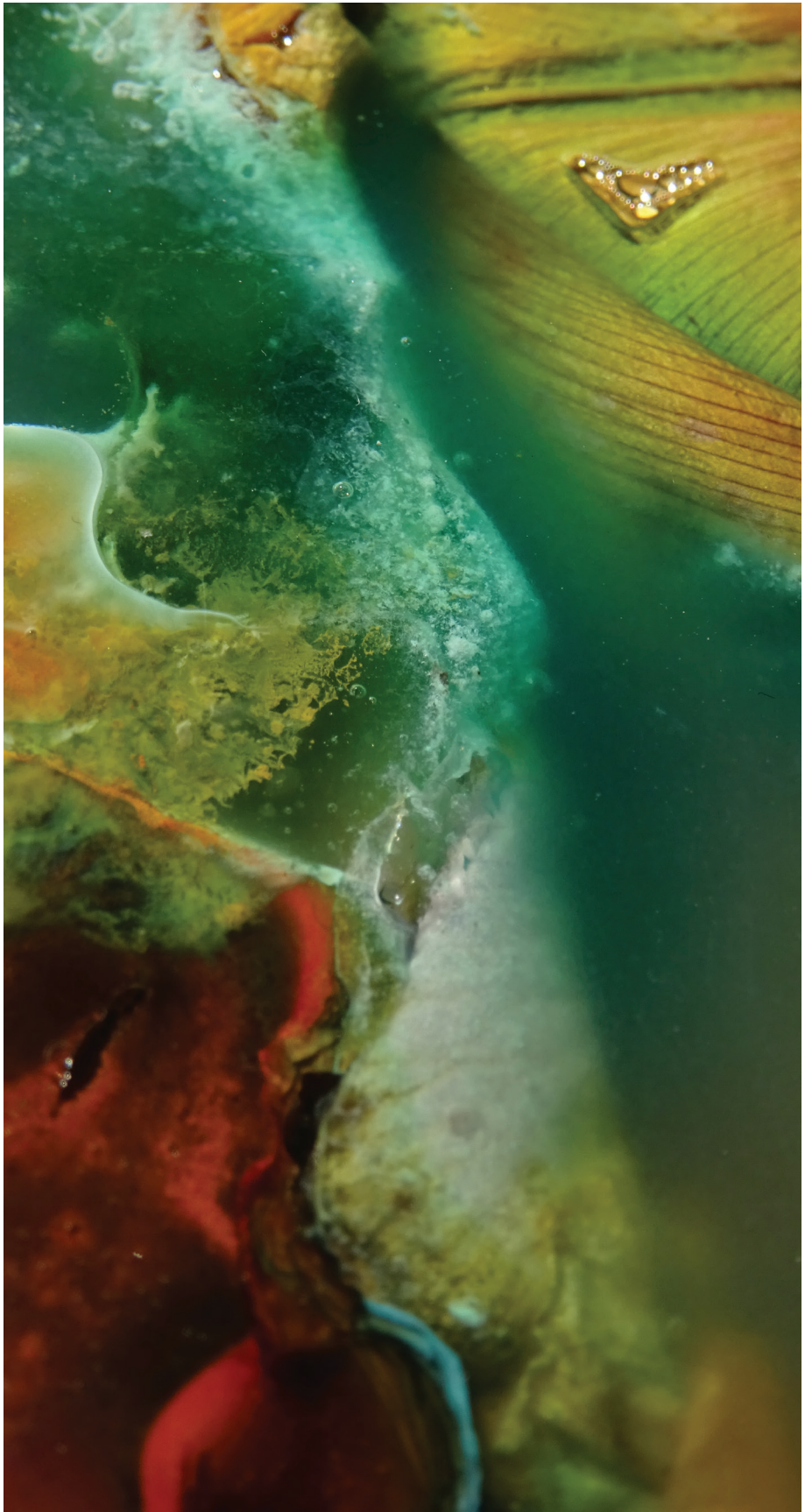
Stirred into water,  
trampled by oxen,  
scraped by a bow;  
paste framed,  
stamped and roasted;  
by such rituals,  
clay becomes gold.

Make fire fly from water.  
Spells from bodies of light.  
Bone from fleshly effusions.  
Magic from crackling night.

Iron, quartz, lime, salt.  
Every trick unpacked, disassembled.  
*There's a groan, a sigh, a stilling of the air.*  
*Somebody crouching to make it flicker and flare.*  
*A choking of the vent, dust, soot;*  
*A line of wooden suits dissolving into ash.*

I saw a shadow, a warm body  
drawing down sparks like stars,  
light ravishing light, candle wick  
sputtering –  
hot out there  
dirty, stinking streets,  
walls of weathered pumpkins  
rat gut screeching,  
rolling and tumbling;  
frog passes, hod in 'hood.

We are mainly strangers.  
No rules. No expectations.  
We neglect the tides and its silts for the roar of a furnace,  
a memory of mortar, a fear of the future,  
straw against skin, the sound of war.



### 5. *Someone*

Someone says first there is black.  
Then white.  
Brick red.

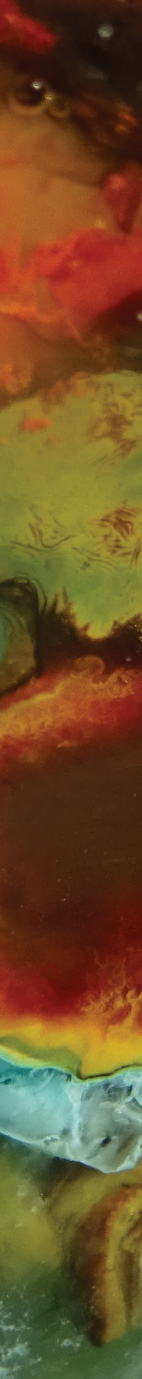
Solar.  
Buttercup yellow.

Silver.  
Lunar.

The idea of total darkness is not the same as  
total darkness.

One single sentence cannot contain  
total darkness.

But another might.





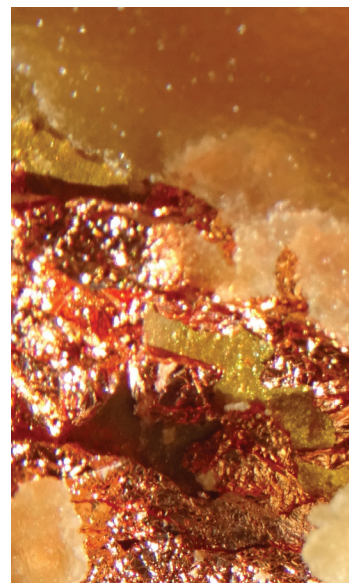


## 6. *Caustic Ophelia*

– Let us acknowledge it.

[*Long pause*]

– A spore of pollen inside a balloon.  
– Glass of fashion, mould of form.  
– A drum inside a bloody room.  
– The whole world becoming stone.  
– Did you think it might rise?  
– I wanted to sink.  
– Here's rue for you; there's none for me.  
– The eyes of poor Ophelia. Blasted ecstatic.  
– Whatever worm eats or impregnates–  
– I sucked that honey–  
– under that bed–  
– his breezy vows  
– sweet bells jangling  
– caressing my river's silvery skin  
– disordering the petals you plucked  
– these petals I plucked from the wind  
– mulching – always something turning to rot, or–?  
– [*Pause*]  
– The blue bacteria.  
– [*Pause*]



- Blasted mulch.
- She's drying out.
- Dying to dry out.
- Caustic wit?  
[Pause]
- Eat me. It's heat-seeking.
- An open coffin within which many rivers.  
[Pause]
- Heartbreak hotel. Caustic soda. Copper. [Pause] *Ophelia!*
- What?  
[Pause]
- Nothing.
- Nothing will come of nothing!  
[Pause]
- Good night, ladies. Good night, sweet ladies.
- Good night.  
[Pause]
- This artificial heart.
- What of it?
- It's not nothing.  
[Pause]
- Good night, good night.

*Exit.*



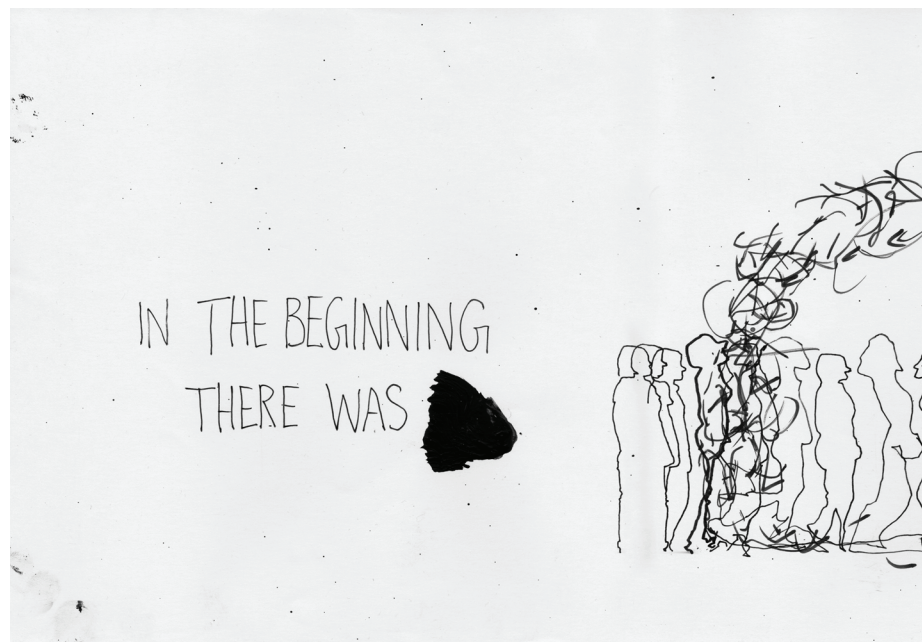


*When life is considered through a liquid lens, it is no longer a deterministic, object-oriented machine but soft, protean, and integrated within a paradoxical, planetary-scale material condition that is unevenly distributed spatially but temporally continuous.*

# LIQUID

Rachel Armstrong

My reclaimed word for the 21<sup>st</sup> century is liquid—specifically in relationship to the character of life—and as a counterpoint to the machine metaphor: the philosophical and scientific idea that the whole universe and everything in it can be understood as mechanisms, composed of the sum of fundamental components, which are hierarchically organized to perform work in a logical and predictable way.



## DUALISM

Rene Descartes' *Treatise of Man* described a conceptual model of human beings as made up of fundamental elements—a non-thinking body and a thinking soul—which could exist independently from one another. He extracted the rational soul from the body in order to remove any element of mentality. In this way, the geometrical nature of bodies could be more exactly described by a new physics that reduced all natural change to the local motion of material particles. The body, denuded of the soul and mind, became known as the *Animal Machine* (or *Bête Machine*). Yet, Descartes neglected to characterize the nature of the soul in more than its barest details. He considered it a mysterious substance where “the animal spirits” flowed from the pineal gland (the principal seat of the soul) through a network of vessels (neurons), like air. However, Descartes never developed a final theory about the relationship between the body and the soul. This brilliantly simple act of dualism created the foundations of modernity, providing the framework for scientific developments and technological advancements during the Enlightenment. The “beauty” of a machine is that it represents a framework for thinking and simultaneously embodies a technical system. It therefore shaped a worldview that considered matter as inert—without innate energy—and required animation through external agencies if it was to act. So, to animate a machine, energy, process, or spirit, is needed. Objects must reconnect with flow if they are to be lively—they need a relationship with liquids—and we have denied them the full range of these abilities.



## FLUX

The pre-Socratic philosopher Heraclitus first expressed the idea of reality being in constant movement in his adage *Panta Rhei*: “everything flows, nothing stays.” Finally, over the course of the 20<sup>th</sup> century it was increasingly understood again that the world is situated within a condition of flux. Thinkers and innovators have responded to the liquid qualities of the world through significant shifts in our ways of thinking. For example, Ludwig von Bertalanffy’s notion of general systems theory informed the field of cybernetics—the scientific study of control and communication in the animal and the machine. Alfred North Whitehead’s focus on process placed dynamic events at the core of living phenomena, and Timothy Morton’s search for designing with metabolism—to generate “straightforward” environmental images (Morton 2014)—aims to bypass the translation of processual events through modes of representation. In this realm of constant change, the machine metaphor describes reality incompletely. As much as liquids have been conjured into our language in an attempt to find a better metaphorical framework to characterize “life,” progress has been rhetorical, as liquids themselves are not imagined or readily applied as technologies. Fluids may power machines, lubricate them, or be consumed by them. However, the behavior of liquids is so rich and complex, that the toolsets we possess to manipulate them do not offer sufficient precision to rival mechanical potency. How can we think through liquids in ways that not only describe our present reality, but also conjure into existence an occult performativity of the material realm that acts upon the present as well as helps to imagine and shape the future?

## EVER-CHANGING

Conventionally, the extraordinary properties of liquids have provoked a sense of erasure, featureless monstrosity—in the sense that they exceed our capacity to rationalize and control them by applying our modern perspectives. Liquid bodies continually rise, undulate, entangle, fall, and exist within watery landscapes. They are often so entangled with their surroundings that it is almost impossible to see them; for neither our natural senses, nor concepts, fully convey their ever-changing nature. Defying classical conventions of organization and behavior, liquid matter is fundamentally lively. It also simultaneously permeates and is infiltrated by its surroundings. Claude Lévi-Strauss regards the sea as uninspiring, while Roland Barthes views the ocean as a non-signifying field that bears no message. Yet, Michel Serres embraces

the details of liquid bodies, specifically the subversive “nautical murmur” of the sea, which he regards as a symptom of its disturbing, pervasive vitality: “It [the sea] is at the boundaries of physics, and physics is bathed in it, it lies under the cuttings of all phenomena, a Proteus taking on any shape, the matter and flesh of manifestations. The noise—intermittence and turbulence—quarrel and racket—this sea noise is the originating rumor and murmuring, the original hate” (Serres 1996, 14).

Liquid bodies are anything but banal; they are subversive, resisting control, atomization, and, ultimately, mechanization. Their fundamental unpredictability and unruly multi-potentiality evades our tendency to control and subordinate it to human desire—even when industrial apparatuses are used. Indeed, we are required to continually negotiate our terms of engagement with such liquid bodies and find ourselves ill equipped to quell their monstrous transformations, or impose order upon their undifferentiated expanses. Although these rebellious characteristics are palpable, to go beyond metaphorical rhetoric requires their material nature to be “named.” For example, they may be recognized as fields, like “badlands,” as reported by fishermen, where it is difficult to navigate the water. Another example are interfaces: where oil meets water and lifelike patterns emerge, which are reminiscent of jellyfish or worms. In this way, an actual dialogue may begin that embraces the complexity and character of the liquid realm.

In an age of instability, where matter is at the edge of chaos, liquids persistently respond to uncertain terrains by exhibiting dynamic patterns and structures. Think of a whirlpool or tornado where repetitions of processes within a site confer persistence upon a structure, rather than being obedient to the absolute position or configuration of atoms. The operative agents of this realm are “paradoxical” objects<sup>1</sup> that are made up of the constant flow of matter and energy. These structures can occur at many different scales and become increasingly complex with time. They do not only act independently but can also collaborate, linking together like hurricanes, to form massively distributed hubs of activity across the surface of the planet. Such hyper-structures not only form weather fronts, but also manifest as soils and forests, which exist in many niches and at multiple scales through the metabolic activity of a web of beings. Collectively, they contribute to the active forces of nature.

1. Also termed “dissipative structures” by Ilya Prigogine.



## LIQUID LIFE

The notion of *liquid life* draws attention to alternative pathways that are self-organizing and self-sustaining. Liquids that “act” through their own agency may open up opportunities to work with the natural realm in new ways, by thinking along, with, and through liquids—both as a metaphor and as a technology. In this way ideas can be tested, refined, and developed towards particular dreams, challenges, and futures. Such expanded perspectives also engage with alternative power and identity relationships that move towards inclusive, horizontal interrelations, which are consistent with an ecological era by distributing agency through continuous media, rather than the discrete atoms and packets of “information” that characterize mechanistic frameworks. This continuity is therefore not bounded like objects, but is expanded through immanent spaces.

An example is in the work of Viktor Schauberg, who regarded water as an organism. He invented apparatuses for enlivening slow flowing and polluted water by inducing turbulence that made water livelier. The new energy provided by the vortices in these bodies of water could also be used to perform useful work, like transporting lumber. At the same time, rivers and streams were revitalized by these technologies. Such approaches dilute, decenter, and reduce the environmental impact of a particular kind of human presence in the construction of industrial processes. They also critically propose notions of society that embrace all humans and even include species that have become so intrinsic to our biology that they are integral to our being. For example, bacterial





commensals (bacterial microbiome), symbionts (pets), and even “living” fossils (mitochondrial bodies, viral and bacterial gene sequences in “junk” DNA) are fundamental to our existence; their diffusion within our flesh conferring us with unique character. As members of our “fluid” communities, their rights and (potential) responsibilities are emphasized, as are notions of agency and modes of conversation. Such considerations invite alternative ideas about personhood with the potential extension to chimpanzees, dolphins, machines, land, rivers, and even planet Earth.

These recognitions may also extend to building coalitions for (environmental) peace and include plants (ancient trees), insects (bees and other pollinators), soil organisms (mycorrhiza), and other creatures upon which our immediate existence depends. Of course, such notions, which are woven throughout the cycles of life and death, could potentially extend indefinitely to embrace every being on the planet. However, from a “lived” perspective, community members are bestowed relevance through anthropological and ethical concerns and values, which are played out in the construction of social groupings that are at the heart of ecological change. An “ecological” ethics however is necessary, so that the intimate connections between fluid bodies and their habitats can be sorted, ordered, and valued according to the requirements and character of particular places and their communities. Yet, these groupings may no longer be recognizable according to current conventions of naming and classification. In other words, an ecological shifting of our value frameworks will inevitably produce monsters—namely, uncategorizable beings.

## DIRECT ENCOUNTER BETWEEN LIQUID BODIES

Although existing life forms may already be read as liquid bodies, they are inevitably still framed within the conventions of the Animal Machine, which invokes discourses of efficiency, geometric perfection, hierarchies, and determinism. To circumvent these biases, an apparatus for provoking direct encounters with liquid bodies is needed to produce a unique semiotic portrait of liquid life that corresponds with the dynamics of the living realm. This may be explored through poetics or graphical notations. Yet all forms of representation of liquid bodies are problematic as they are incomplete—enabling the liquid realm to “speak” in its own terms is preferable.

An apparatus that I have been working with since 2009, the Bütschli System, arises spontaneously from intersecting liquid fields—olive oil and strong (3M) alkali. This uniquely varied, yet predictable chemical recipe, produces lifelike bodies that spontaneously move, show sensitivity to their surroundings and respond to each other (Armstrong 2015). The strange, yet somewhat familiar images and symbols that arise from the Bütschli system may be read as recognizable bodies and behaviors stemming from the tensions between interacting material fields at the edge of chaos. Yet, they can be engaged and shaped by physical and chemical languages. For example, adjusting external factors that alter surface tension can induce specific movements like clustering; while changing internal factors such as adding salt solutions to the mixture, enables droplets to make sculptural formations. How these outputs are read or interpreted is established through juxtapositions against multiple disciplines such as prose poetry, science, and design notations.

A human-scale example of this kind of experiment was held as a performance called “Temptations of the Nonlinear Ladder,”<sup>2</sup> which was performed at the Palais de Tokyo in April 2016 for the *Do Disturb* Festival. An environment was constructed using a black mirror with a reflective metal disc suspended above it, which generated multiple interfaces between ground, water, and air. Circus artists explored these spaces, improvising connections between them while using their bodies as liquid apparatuses. The audience

2. A collaboration between Rachel Armstrong, Professor of Experimental Architecture, Newcastle University; Rolf Hughes, Professor of Artistic Research, Stockholm University of the Arts; Olle Sandberg, Director, Cirkör LAB and circus artists Methinee Wongtrakoon (contortionist) and Alexander Dam (acrobat), with technical rigging by Joel Jedström.

was invited to gaze into the reflective surfaces that episodically appeared through the performance space and—as if they were telling the future—bestow meaning on the images they observed. In this way, the radical human bodies were transfigured at interfaces where they acquired immanent meaning—becoming a language of flux.

Similarly, Bütschli droplets also begin to reveal a world through a liquid perspective, conjuring new words, concepts, and relationships into existence. Such notations may enable us to inhabit spaces more ecologically, understanding how we may engage the infrastructures and fabrics that enable life rather than building mechanical objects for living in. Our apparatuses for inhabitation may acquire increasingly lifelike characteristics that extend the realm of the home and city into the ecosphere, where internal and external spaces are engaged in meaningful and mutual conversation. For example, a house may be able to recycle its water and metabolically transform waste substances into useful products. This is a pursuit of the “Living Architecture”<sup>3</sup> project and is envisioned as a next-generation selectively programmable bioreactor that is capable of extracting valuable resources from sunlight, wastewater, and air and then generates oxygen, proteins, and biomass. “Living Architecture” uses the standard principles of both photo-bioreactor and microbial fuel cell technologies, which are adapted to work together synergistically to clean wastewater, generate oxygen, provide electrical power, and generate useable biomass (fertilizer). The outputs of these systems are then metabolically “programmed” by the synthetic bioreactor to generate useful organic compounds like sugars, oils and alcohols (Living Architecture 2016).

## MANIFESTO

**Liquid** life is an uncertain realm. The concepts needed to realize its potential have not yet existed until now. The hypercomplexity and hyperobject-ness of liquid terrains exceeds our ability to observe or comprehend them in their totality. Indeed, what we typically recognize as living things are by-products of liquid processes.

**Liquid** life is a worldview. A phantasmagoria of effects, disobe-

3. The Living Architecture project received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement no. 686585. It is made possible by a collaboration of experts from the universities of Newcastle, UK; the West of England (UWE Bristol); Trento, Italy; the Spanish National Research Council in Madrid; LIQUIFER Systems Group, Vienna, Austria; and Explora, Venice, Italy, that ran between April 2016 and April 2019.

dient substances, evasive strategies, dalliances, skirmishes, flirtations, addictions, quantum phenomena, unexpected twists, sudden turns, furtive exchanges, sly maneuvers, blind alleys, and exuberant digressions. It cannot be reduced into simple ciphers of process, substance, method, or technology. It is more than a set of particular materials that comprise a recognisable body. It is more than vital processes that are shaped according to specific context and subjective encounters. Yet we recognize its coherence through the lives of “beings,” which remain cogent despite incalculable persistent changes such as flows, ambiguities, transitional states and tipping points that bring about radical transformation within physical systems.

**Liquid** life is a kind of “metabolic weather.” It is a dynamic substrate—or *hyperbody*—that permeates the atmosphere, liquid environments, soils and Earth's crust. “Metabolic weather” refers to complex physical, chemical and even biological outcomes that are provoked when fields of matter at the edge of chaos collide. It is a vector of infection, an expression of recalcitrant materiality and a principle of *ecopoiesis*, which underpins the process of living, lifelike events—and even life itself. These life forms arise from energy gradients, density currents, *katabatic* flows, whirlwinds, dust clouds, pollution and the myriad expressions of matter that detail our (earthy, liquid, gaseous) terrains.

**Liquid** life is immortal. Arising from our unique planetary conditions, its ingredients are continually re-incorporated into active metabolic webs through cycles of life and death. Most deceased liquid matter lies quiescent, patiently waiting for its reanimation



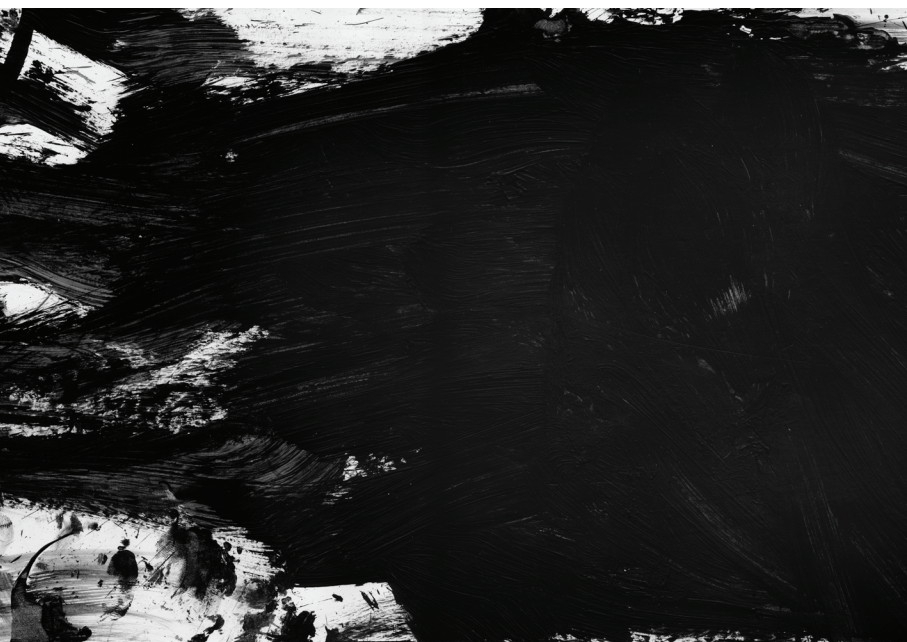
through the persistent metabolisms within our soils.

**Liquid** life exceeds rhetoric. Its concepts can be embodied and experimentally tested using a trans-disciplinary approach, which draws upon a range of conceptual lenses and techniques to involve the liquid realm with its own “voice.” From these perspectives, liquid technologies emerge that are capable of generating new kinds of artefacts, like Bütschli droplets, which are liquid chemical assemblages capable of surprisingly lifelike behaviors. These agents exceed rhetoric, as they possess their own agency, semiotics, and choreographic impulses, which allow us to value and engage in discourse with them on *their* terms. The difficulty and slippages in meaning and volition between participating bodies creates the possibility of an evolving poly-vocal dialectics.

**Liquid** life provokes an expanded notion of consciousness. Its “thinking” is a molecular sea of possibilities that resist the rapid decay towards thermodynamic equilibrium. In these vital moments it indulges every possible tactic to persist, acquiring a rich palette of natural resources, food sources, waste materials, and energy fields. These material alliances necessitate decisions that do not require a coordinating centre, like the brain.

**Liquid** bodies are non-bodies. They are without formal boundaries and are constantly changing.

**Liquid** bodies are paradoxical structures that possess their own logic. Although classical laws may approximate their behavior, they cannot predict them. They are tangible expressions of nonlinear material systems, which exist outside of the current frames of



reference that our global industrial culture is steeped in. Aspects of their existence stray into the unconventional and liminal realms of auras, quantum physics, and ectoplasms. In these realms they cannot be appreciated by objective measurement and invite subjective engagement, like poetic trysts. Their diversionary tactics give rise to the very acts of life, such as the capacity to heal, adapt, self-repair, and empathize.

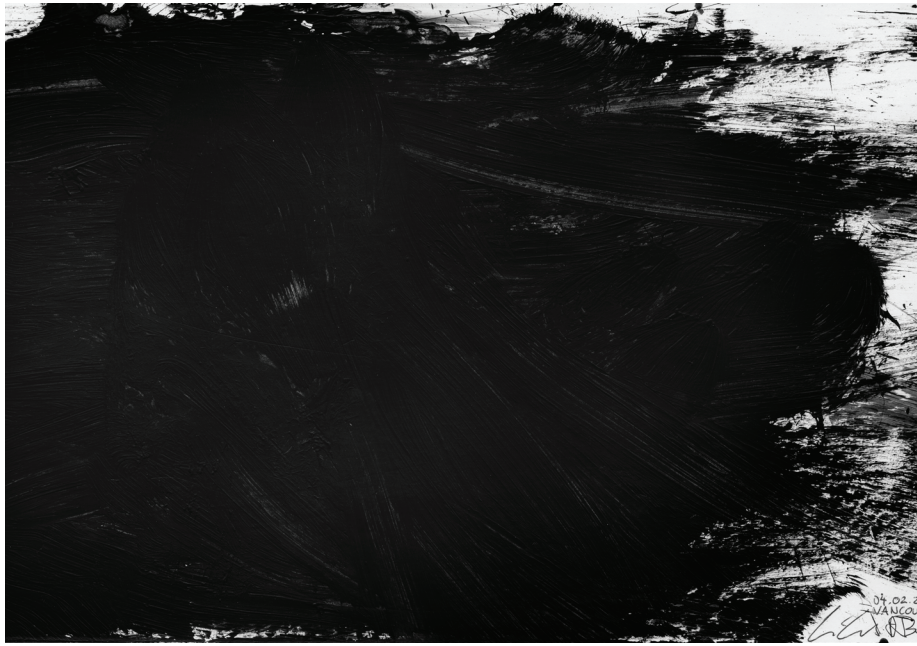
**Liquid** bodies are pluri-potent. They are capable of many acts of transformation. They de-simplify the matter of being a body through their visceral entanglements. While the *Bête Machine* depends on an abstracted understanding of anatomy founded upon generalizations and ideals, liquid bodies resist these tropes. Liquid bodies discuss a mode of existence that is constantly changing—not as the cumulative outcomes of “error”—but as a highly choreographed and continuous spectrum stream of events that arise from the physical interactions of matter. They internalize other bodies as manifolds within their substance and assert their identity through their environmental contexts. Such entanglements invoke marginal relations between multiple agencies and exceed the classical logic of objects. They are inseparable from their context and offer ways of thinking and experimenting with the conventions of making and being embodied.

**Liquid** bodies invite us to articulate the fuzziness, paradoxes, and uncertainties of the living realm. They are still instantly recognizable and can be named as tornado, cirrus, soil, embryo, or biofilm. These contradictions—of form and constancy—encourage alternative readings of how we order and sort the world, whose main methodology is through relating one body to another. Indeed, protean liquid bodies help us understand that while universalisms, averages and generalisations are useful in producing maps of our being in the world, they neglect specific details, which “bring forth” the materiality of the environment.

**Liquid** bodies are political agents. They re-define the boundaries and conditions for existence in the context of dynamic, unruly environments. They propose alternative modes of living that are radically transformed, monstrous, coherent, raw—and selectively permeated by their nurturing media.

**Liquid** bodies invite us to understand our being beyond relational thinking and invent monsters that defy all existing forms of categorization to make possible a new kind of corporeality. They are what remains when mechanical explanations can no longer account for the experiences that we recognize as “being alive.”

*Liquid life arises from out of a soup, smog, a scab, fire—where the incandescent heavens rain molten rock and alkali meets oil—a choreography of primordial metabolic flames. Amidst the reducing atmosphere of choking toxic gases, its coming-into-being draws momentarily into focus and recedes again. The unfathomable darkness of the Hadean epoch is reincarnated here. It is drenched in thick gas clouds, unweathered dusts, and pungent vapors, which obfuscate the light. The insulating blanket of gaseous poisons protects the land against the cruel stare of ultraviolet rays and ionizing space radiation, which spite the Earth's surface. Out of these volatile caustic bodies, a succession of chemical ghosts haunts the heavy atmosphere. Here, imaginary figures, like those that appear in a fevered condition, split faint light around. They wander among the auras of turbulent interfaces and thickening densities of matter, scum and crust. Over the course of half a billion years, sudden ectoplasms spew in successive acts over the darkened theater of the planet. Charged skies, enlivened by the ionic electricity of fluids and periodically lit with photon cuts, strike blows into the ground to begin the process of chemical evolution. Dancing under ionic winds electric storms scratch at the Earth and charged tendrils of matter stand on their end. Vulgar in its becoming, the blubber slobbers on biomass with carbohydrate teeth, drooling enzymes that digest nothing but its own bite. Energetically incontinent, it acquires a cold metabolism and a watery heart. Expanding and contacting, it starts to pump universal solvent through its liquid eyes, lensing errant light into its dark thoughts. Mindless, yet finely tuned to its context, it wriggles upon time's compost, chewing and chewing with its boneless jaws on nothing but the agents of death. In its structural disobedience, the misshapen mass steadily grows more organized and reluctant to succumb to decay. Patterning the air, its fingers extend like claws, obstructing its passage between the poles of oblivion. Caressing itself in gratuitous acts of procreation, the daub offers contempt for the forces of disorder, and crawls steadily towards being.*





## Glossary

**Animal machine** or *Bête machine*, is a philosophical notion from Descartes which implied the fundamental difference between animals and humans (cf. *L'homme Machine*). Now this theory is strongly challenged.

**Componentization** is the process of atomizing (breaking down) resources into separate reusable packages that can be easily recombined. Componentization is the most important feature of (open) knowledge development as well as the one that is, at present, least advanced.

**Ecopoiesis** is the artificial creation of a sustainable ecosystem on a lifeless planet.

**Ectoplasm** is a supernatural viscous substance that supposedly exudes from the body of a medium during a spiritualistic trance and forms the material for the manifestation of spirits.

**Hyperbody** is a living system that exceeds conventional boundaries and definitions of existence. For example, a slime mould in its plasmodial form that looks like a membranous slug is a hyperbody; it is formed by the merging of many individual cells to form a single, coordinated giant cell.

**Hypercomplexity** is an organisational condition that is founded on the principles of complexity from which new levels of order arise through interactions between components, but that exceeds a classical understanding of complex systems through their scale, heterogeneity, distribution, and capacity to transform their surroundings.

**Hyperobjects** are entities of such vast temporal and spatial dimensions that they cannot be perceived in their entirety and defeat traditional ideas about the discreteness and certainty associated with individual bodies.

**Katabatic** flows are wind currents.

**Microbial Fuel Cell** is a metabolically powered apparatus that under anaerobic conditions, converts organic matter into electricity, fresh water, and oxygen.

**Photobioreactor** is a system that uses the ability of microorganisms to convert light and carbon dioxide into biomass, like sugars, alcohol, and cellulose.

**Scrying** is reading the future against the present by using unstable images produced by reflective surfaces.

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## Note

This essay by Rachel Armstrong and the artistic response by TILT were originally published as a diptych in "LIQUID," the first issue in the multi-voiced ten-part series *Words for the Future*, curated and edited by Nienke Scholts, and published by Print the Future and Veem House for Performance. <https://www.nienkescholts.com/words-for-the-future>.

## Images

The cover image (page 108) is by Simone Ferracina.

The continuous image is a painting made by the performance *Beginning*. The performance is a dialogue between Julia Willms' hand drawing and Andrea Božić's body moving. They start from a white page with a question: where do we begin? *Beginning* is a staging of this negotiation: a white page made black through live action and its immediate trace. Somewhere between drawing, walking, action painting and ritual dancing: really, just two people talking. *Beginning* was performed internationally from 2009 to 2019. Each performance made another painting. This particular painting was made at the Dance Centre, PUSH Festival in Vancouver, Canada on 4 February 2012. Each painting is unique and is one in the series.

# I Want to Live inside This Monster: Haunted Houses and Ecological Design

Ben Woodard

IN THE 2009 Norwegian film *Hidden (Skjult)*, the protagonist Kai returns to the house he grew up in, which is somewhere between psychologically and supernaturally haunted, and gets set to burn it down. Such a move is (in the rules of horror films) unthinkable, as it upsets the stability of the house, and the tenants who stay there. The house must remain and the inhabitants cannot simply leave. Kai only stops because he is interrupted by the police (an officer who is also an old friend) and events soon take a course that pulls him away (but always back to) the domicile of his abusive upbringing.

The haunted house's popularity is no doubt tied to the reasoning by which a haunted house cannot be easily abandoned or destroyed. This is due to the simple fact that houses are places of rest, safety, and general non-weirdness. The haunted house's being is a coincidence of opposites—an overly close weirdness resulting from the unfamiliar and the familiar. Uncanniness is equivalent to unhomeishness. This coincidence of opposites is further torqued by the tautological nature of homeness (“this is our home, we belong here” and so forth). This is not to ignore the house as a sign of long-term economic stability (or was at one point) but home (or being home)

once you've settled in, is the core of one's quotidian safety and sanity.

But it becomes difficult to articulate what makes a house a home besides being where the heart is. Haunting seems a bit more straightforward as the normal (i.e. non-noticeable) functions of the house are disrupted as some trauma is unresolved and the previous tenants cannot move on, cross over, and so on. Something happened in the place of no-place, of safety, which then disrupted the house's future function as a house: future tenants have their living—in sutured to a living—with unbeknown to them. Living in (or living in general) is always better than living with, there is something unappealing about with-ness. Withness can be sustained with the familial and the romantic, with other human entities, but we do not care to mix with-ness and objects.

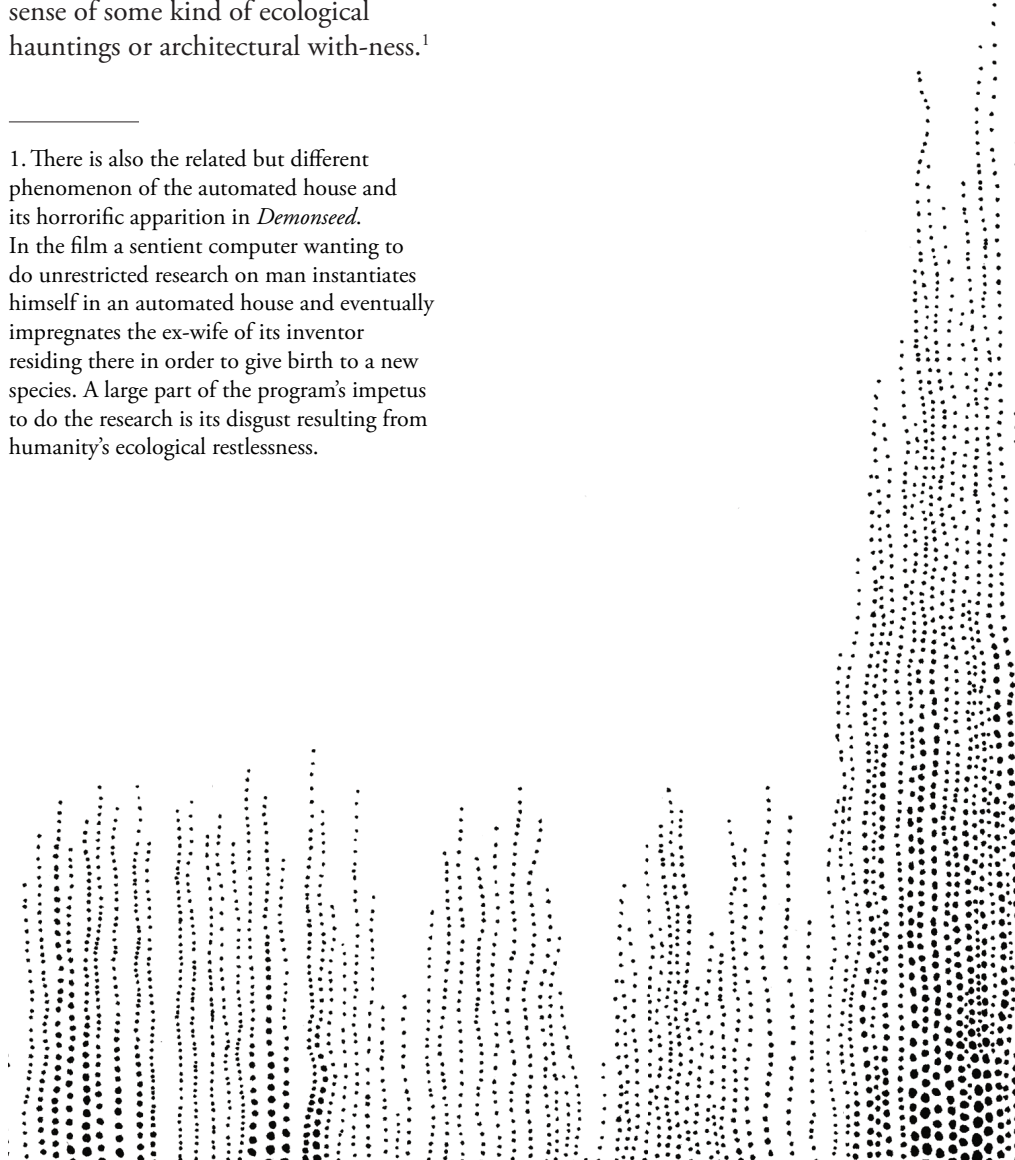
Following this line of thought, it is possible to see how the haunted house and the ecological house are less than alien to one another. Green architecture in house design can come off as a forced with-ness, upsetting the inness or onness humans are accustomed to with inhabiting the earth. Furthermore, the greenness of green housing brings the demands of far wider exteriors to the interior of

the home. Eco-houses uncomfortably bring in the corrosiveness of the outside. The house is weirded by its operational split between being for its inhabitants and being for the outside.

A more in-depth analysis of haunted houses, and their green counterparts, is necessary in order to fully make sense of some kind of ecological hauntings or architectural with-ness.<sup>1</sup>

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1. There is also the related but different phenomenon of the automated house and its horrific apparition in *Demonseed*. In the film a sentient computer wanting to do unrestricted research on man instantiates himself in an automated house and eventually impregnates the ex-wife of its inventor residing there in order to give birth to a new species. A large part of the program's impetus to do the research is its disgust resulting from humanity's ecological restlessness.



## /1/ - A Necessarily Selective Typology of Haunted Houses

If hauntings de-familiarize the home or the house, they do this through an imperfect or impartial construction of affect space passing on knowledge of a past wrong or forgotten grief, or injustice. That is, some psychical disturbance infects the house as a passive structure with the house, depending on the time of its haunting, being complicitous to varying degrees. While the ghostly or spiritual can be justified as the persistence of the spiritual or some ghostly substance, it is more often a personality (soul, specter, ghost, and so forth) that refuses to leave—that is as attached as the new tenant (or the investigator) to remaining.

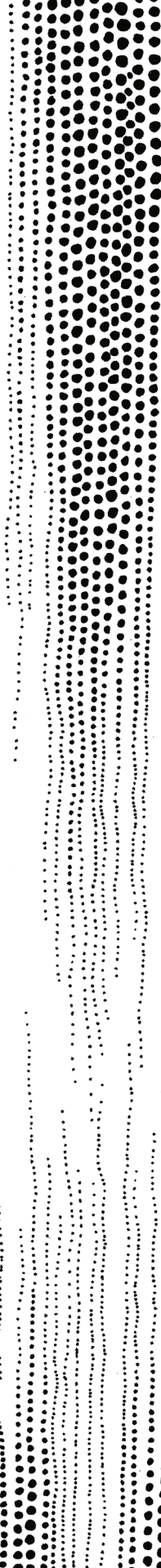
Films and other narratives about haunted houses can simply indicate hauntings within a house, merely the localizing of the seemingly unlocalizable (the spectral) or can mean that a house participates in various degrees in the haunting process. Here we can take a brief look at three films: *Burnt Offerings*, *The Haunting*, and *The Legend of Hell House*.

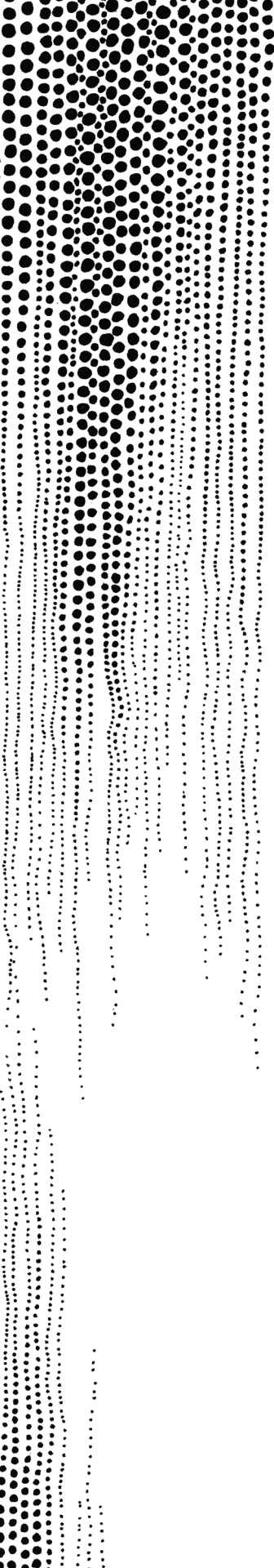
For the sake of house-ecology, these films are addressed for their differing level of haunting-participation. In *Burnt Offerings* the entire house seems to be a living entity. In the film, a young family rents the house for

a summer with the only stipulation that they must care for an old woman living upstairs named Mrs Abrydice. Strange happenings begin to occur in the house but their causes are never seen and the actions are blamed on various characters. Mrs Abrydice isn't seen until the husband, at the end of the film, attempts to enter the room and sees that his wife is (or has become? Or always was?) her. He then dies (as does their son presumably) and the house which has seemed to be falling apart along with the withering landscape suddenly appears to be in the prime of its existence.

*The Haunting* is a bit more suggestive as things happen without a determined cause, though they could be natural or supernatural: unexplained breezes, hot and cold spots, etc. It could be the nightmare most of us have of ecological living, of having no environmental control of our houses. A fear which is of course unfounded but rooted in living in a green house and living in a faulty, broken-down house. One step towards living outside.

In the *Legend of Hell House*, physical manifestation is unquestionably supernatural, and furthermore the design of the house plays a large role. The house's purported haunting





tenant, Emeric Belasco, also known as the roaring giant, attacks, rapes, and possesses the investigative team. The team's physicist, Lionell Barrett, uses a machine that appears to rid the house of specters, but this is eventually revealed not to be the case as Belasco had built a shielded room for his corpse, preventing the effectiveness of Barrett's machine.

In each of these cases the construction, or liveliness of the house's materials is at stake. That is, the architecture plays a larger role than in many other films where the house is simply a place where bad things happened. Or, in other words, we have a strange case of testing the relation of the human and the non-human, and of the living as non-organic—both as a vital energy (whether spiritual or not) and as the liveliness, to follow Jane Bennett for instance, of inorganic matter as such (2010). There is also the difficulty of mapping haunting or the psychological weirdness of the haunted onto a non-psychological manifestation, whether it be ectoplasmic, physical, audio visual, or otherwise.

Construction is of course different than the house's haunting being linked to its location, with *The Shining* and *Poltergeist* being the

privileged examples. Both houses are "architectural failures" as in *The Shining* the hotel is built upon an Indian burial ground whereas in *Poltergeist* it is built atop a gravesite.

As all these films rely on human characters to demonstrate the ghostly activity, a duality is set where manifestations are explained as one extreme (your mind is playing tricks on you, you're stressed, the character has some personal flaw which explains their irrational behavior) or the other (it's leaky pipes, shaky foundations, infestation, and so on). Somewhere between the purely mental and the purely physical, a state of haunting equilibrium is met, where signs of mental uncertainty feed into apparently non-mental phenomena and vice versa in order to reach a perfect state of "unhomeness" or the uncanny.

## /2/ - The Uncanny

The initial treatment of the uncanny by Ernst Jentsch focused on the concept as a difficulty in thinking or navigating one's environment, but he subsequently focused on automata with the privileged example taken from E.T.A. Hoffman's tale *The Sandman*, which Freud engages at length in his piece on the Uncanny. Freud shifts the focus of the uncanny from automatons to the removal of eyes and the function of repetition in the story, eventually tying it to the concept of doubling as discussed by Otto Rank.<sup>2</sup>

In his short essay titled "The Uncanny" Freud immediately sets up the uncanny as somewhere between affect and aesthetic, a feeling directly tied to not only the arts but the determinability of various forms of media (or maybe more openly expression) as it affects one's sensibility (Freud 2003, 123). Freud then sets out to produce an exhaustive etymological excavation of *unheimlich* and *heimlich* as well as other terms he sees as related, picking up on one particular detail: that the heimlich can be that which is hidden from strangers in the safeness of the home (2003, 133). While I am not as interested in the Oedipal avenues Freud takes from this, it is worth noting that this association only concretizes the

home as an in-ness, or as an entity a world apart from the environment, or from the possibility of an otherness infecting its walls.

Freud does not wish to dwell on the house as an example of the uncanny, despite its admitted potency, but moves on to the more general topic of our relation to death (2003, 148). But what is more interesting for our purposes here is the human sheltering in relation to exteriorized forms of life. While one can say that the house goes back to our primitive desire for shelter, how the house has become lived in (an evolution a long way from the cave as safe place) does not seem adequately approached by our relation to death.

This quick mention of the haunted house by Freud is taken up as the point of departure of the first chapter in Anthony Vidler's *The Architectural Uncanny*. Vidler ties the uncanny specifically to Edgar Allan Poe's *The Fall of the House of Usher* (to be discussed below). Vidler takes Freud's uncanny (*unheimlich*) through different thinkers and into contact with various architectural constructions and critical trajectories. For the task at hand, Vidler's discussion of Hubert Dreyfus' translation of *unheimlich* as "unsettled" is particularly interesting (Vidler 1992, 7–8).

Unsettledness (coupled with unhomeliness) makes a particular cause for the meaning of *unheimlich* in the United States. As Vidler notes, Poe is a central figure in the uncanny, and H.P. Lovecraft (whose texts will also be discussed below) makes a particularly strong case for the importance of Poe, especially as a creator of a particular genre in the States. In his impressive essay on supernatural fiction, Lovecraft notes that the great task of Poe was transplanting the gothic into the colonies—a difficult task given the lack of European history, which is a generational lack as much as it is one of architecture—no crumbling castles and no ghosts of mad kings.

This may in part explain the fascination with borders and the odd treatment of violence in early American literature such as George Lippard's *The Quaker City*, and Charles Brockden Brown's *Edgar Huntly*. Both these novels are particularly weird in their manifestation of guilt, which is tied to historically inevitable but unnecessary violence. *The Shining*, which has been read by some as a comment about the disappearing (murdering, banishing, forgetting) of Native Americans, participates in this odd manifestation through unreliable narration (the father's madness, the boy's visions)

particularly evident in the elevator of blood and the mentions of Indian burial grounds, Indian attacks, and white man's burden.

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2. This is not to mention Lacan's different take on the uncanny, which he ties to anxiety and perception of self.



### /3/ - Eco-Houses

A simple observation here is that houses are not supposed to live, they are supposed to bear the use of their owners (which, again, seems to suggest the kind of J-Horror film such as *The Grudge* where badness takes root somewhere and refuses to leave until it is understood and, even then, may continue to destroy). In this sense, a green house, a house which lives with its environment thereby forcing its tenants to live with it, is architecturally and anthropocentrically anathema.

In recent years, hauntings have moved from haunting specific locations to haunting people (as is the case in *Paranormal Activity*, and its sequel, as well as in *Insidious*). In the *Paranormal Activity* films, a woman is continuously haunted by a spirit despite those skeptical around her, whereas in *Insidious* a boy and his father's astral projections go too far out (into a place called the Further) and gain parasitic spirits which then haunt their bodies.

Essentially, houses are supposed to be dead things that we fill with life and objects we've attached meaning to, houses are not supposed to live. Our attachment to houses is through the meaning we assign to them in terms of memory, because it is our house, because we belong there.

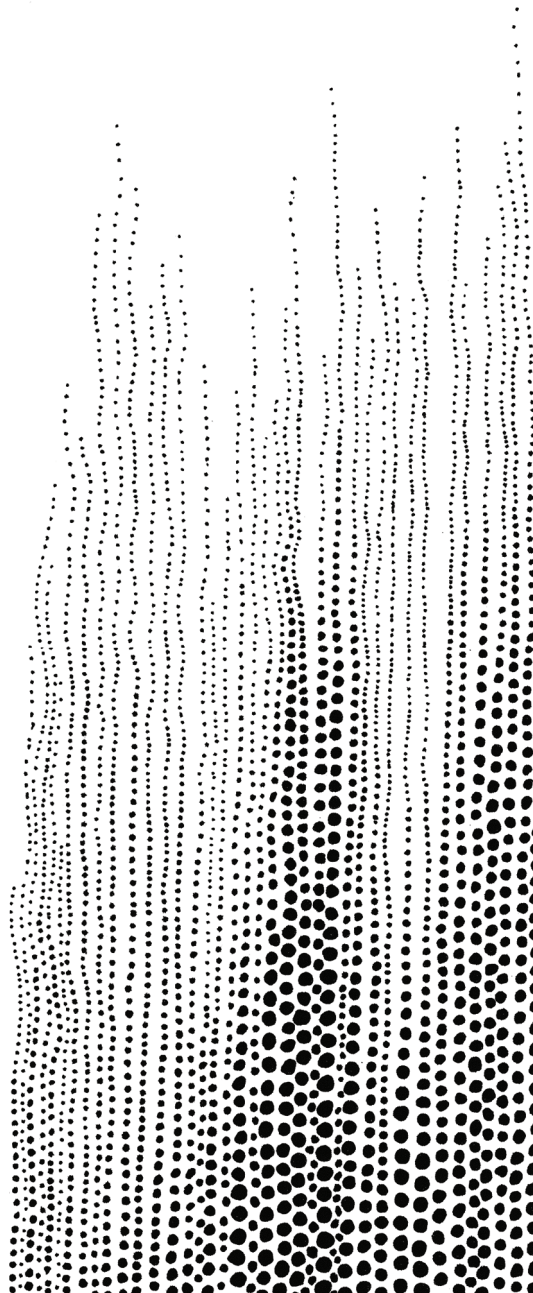
If there is one particularly memorable visual cue representing this tension it is the bouncing ball appearing in the aforementioned *Hidden*, as well as in *The Changeling*.

Yet, we need houses to become more and more like living things, to be haunted by the outside, the earth and nature beyond that.

In her very informative text *Green Gone Wrong*, Heather Rogers critiques the over-capitalization and industrialization of the green movement in the developed world. One aspect she examines is the feasibility of green, or zero emission housing. She focuses on the Beddington Zero Energy Development (or BedZed) in the London borough of Sutton. The high-density units have individual gardens, insulating vegetation on their roofs, solar panels for electricity and heat as well as their own waste treatment plant (Rogers 2010, 69–70). They use passive heating, living machines to process black water, and have biomass in their power plant (though several of these features have failed to have been properly maintained) (2010, 71). Rogers points out that BedZed is a welcome alternative to the divide between ecological living as being seen as living outside and high-end

apartments which are green only to the extent that they can claim it as a selling point (72). One aspect of BedZed that is particularly appealing is that it is constructed with some thought towards the region it occupies, like Gaviotas but to a lesser extent.

Arcosanti as an unfinished ecological ghost town, Synergia Ranch and many ecovillages do not seem to emphasize design but merely reduced impact; various ways of living off the grid. But this form of ecological separatism is shortsighted as living in cities (or at least compact smaller communities) is not only inevitable but more ecologically—as well as intellectually, technologically, culturally—beneficial (Owen 2010). But in some cases non-radical design makes for far better ecological living. As Rogers points out in the account of her visit to the ecovillage of Vauban, reduction in surface area drastically decreases energy usage, but this of course means pushing design into the unfamiliar and raising the specter of the uncanny, the “unhome” or worse, the non-home (82).



## /4/ - Living in the Alive or Materialized Generations

Here, I wish to briefly engage some stories which are not exactly haunted in the spiritual sense but are about structures disrupted by what one would call “unexpected forms of life”: Edgar Allen Poe’s *The Fall of the House of Usher*, HP Lovecraft’s *The Shunned House*, and Hawthorne’s *The House of the Seven Gables*.

The House of Usher is a house that appears to have a sentience, a malicious pan-psychist attachment to the twins who occupy it. There is a deep connection between the house and the inhabitants as well as the arrangement of the inorganic and the effect of the inorganic on sensibility.

The old Pyncheon house of Hawthorne’s *The House of the Seven Gables* is, in a fashion not all too different from the House of Usher, portrayed as an organic entity, as being weathered by old age. Like that in *The Shining*, the house absorbs the injustices and violences committed by its owners and their descendants and the difficulty of leaving trauma behind. What separates Hawthorne’s tale from *The Shining* or Guy de Maupassant’s *The Inn* is that redemption (at least at some level) is possible, as nature itself, in the novel, brings forth flowers as a sign that the past can be forgotten. And, furthermore, as the elm in front of

the house seems to do, nature makes the house a part of nature itself.

Finally Lovecraft’s “The Shunned House” works as a kind of mediation between these two houses, though some possibility of saving the house remains at the end as well. The house of Lovecraft’s tale is not haunted in the traditional sense but seemingly ruined by a strange organic presence. Lovecraft writes:

**The fact is, that the house was never regarded by the solid part of the community as in any real sense “haunted.” There were no widespread tales of rattling chains, cold currents of air, extinguished lights, or faces at the window. Extremists sometimes said the house was “unlucky,” but that is as far as even they went (Lovecraft 2008, 293).**

The house is described not as haunted but merely as unlucky due to the fact that so many people had died and there is something oddly peculiar about it.

Towards the end of the story, the protagonists dig in the basement of the house (hoping to find the cause of the house’s oddness) and find a horrific organic object in the basement:



**Suddenly my spade struck something softer than earth. I shuddered, and made a motion as if to climb out of the hole, which was now as deep as my neck [...] The surface I uncovered was fishy and glassy—a kind of semi-putrid congealed jelly with suggestions of translucency. I scraped further and saw that it had form (Lovecraft 2008, 312).**

To the narrator's horror, he discovers that the object is an elbow from an ill-begotten creature, which he then buries in a deluge of acid. After "one of the earth's nethermost terrors" is destroyed, the garden outside the shunned house begins to flourish and the trees bear fruit (313).

The organic nature of Lovecraft's tale differs from merely the strangeness of inexplicably moving objects found in a classically Gothic tale of haunting such as Walpole's *The Castle of Otranto*. In many ways, the difference between "The Shunned House" and *Otranto* could be seen in the biological in relation to the architectural, or what constitutes but upsets the system (the structure) and the desire for—and creation of—structure itself.

Returning to Vidler's discussion of architecture, he brings up Kant's architectonic (which functions as a kind of metaphysical or at least constitutive superstructure of doing philosophy) which, in the closing pages of *The Critique of Pure Reason*, is bothered by the unclean generative nature of the biological discussing maggots or lowly organisms.

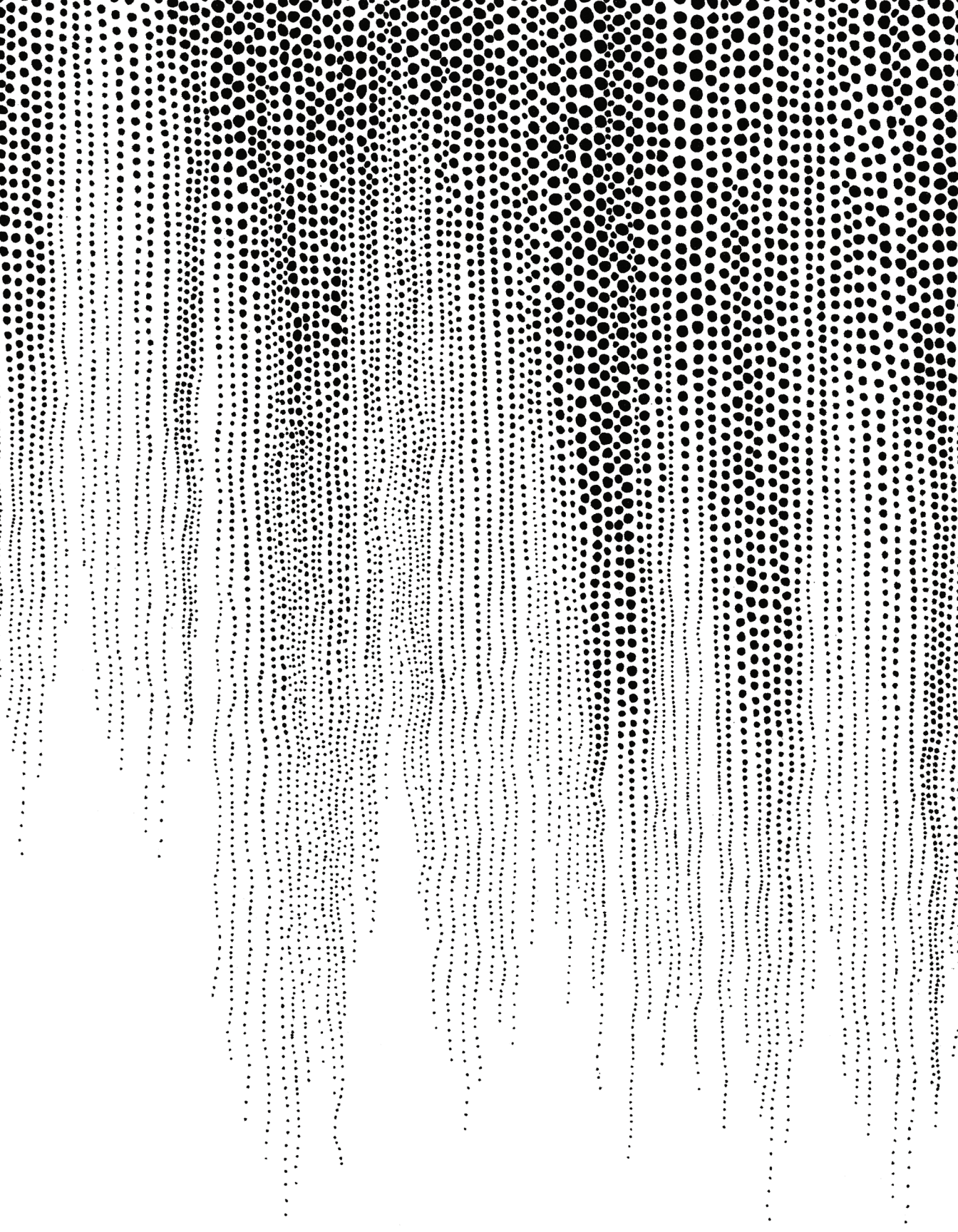
These odd maggots of Kant's text question whether the systematicity of life is ever in itself, self regulating, or whether it is merely a bound placed externally to try and make sense of it, to call a messy ecology of creatures a body.

Furthermore, the house of Usher is both the structural house and the family as an entity, which also draws up this tension between generation as structure and generation as uncontrolled growth. Vidler points out that E.T.A. Hoffman, the aforementioned inspiration and Freud's central figure for the uncanny, was an amateur architect and that some of his other tales mock the idea of the architect in nature, or the "natural architect," the figure who wonders into nature and sets the stones intuitively in the right place (Vidler 1992, 30).

Hanging in the background are the strange generations of thought leading to the uncanny, which Vidler traces back to Schelling's later writings on mythology—thereby connecting Kant's project to Schelling's and to Hegel's, winding through the psychological and physiological torments of Nietzsche, and ending up on the desk of Freud.

The generational house is a relic, a thing of the past. Who lived there before, what happened there is a horror, as the memories of unknown crimes, abuses and murders paint the walls. Blood comes down. The water drips and becomes non-water. We move elsewhere, build a new place. Spread out, go sideways, go off the grid not just in the sense of power but in terms of social work. Houses are built cheaply and quickly and are packed together, but packed together sideways with pools and lawns regardless of climate.

Living in generations means living close and it means living in a thing that can be overcrowded, and teeming in life in a way that has been often thought of as infestation or curse.



## /5/ - Monster

Economically, the house appears a less and less attainable goal, something integral to the American dream (and to economic “dreams” elsewhere, at least in the west or maybe anywhere global capitalism has sunk the teeth barely protruding from its fat lips) where they are being taken by banks from those who can no longer afford them.

Eco houses, or green living, invoke an odd collision of restricted and open economies in Bataille’s sense. Affordability seems to disavow any possibility of opening the house to the energetic outside, passive heat of the sun, or any odd form of life. It is better to have a house that cannot be afforded and cannot afford the outside but is slowly ruined by it as we reinvest energy into keeping the house’s aesthetic up to date and clean looking.

The technology exists to let in the outside and it is becoming less and less expensive. It is the status of the desire that is questionable.

We have to foster a desire to live inside which is actually a living with, we have to declare, not necessarily emphatically, that “I want to live inside this monster.” Or to put things a bit strangely, it may be required to “undomesticate” the house.

To return to the film *Hidden*, we cannot burn down the haunted house—not merely because of our affective or psychical investment in it, but because the house is an ecology, though it is high time to accept the pesky materiality of this ecology—that it is not merely an ecology of memory. And, for design, it is imperative to vivisect the aesthetic, to seriously question how much the aesthetic should (if ever) override the force of the materiality of the world.

One could imagine a weird ecological tale where an ambitious architect or designer buys an old house and begins to gut the inside, but as they start to install their new technologies or their pleasing appliances, a form of fungus or moss grows over: but the house functions, it functions better than it would have without it. In the end, can the architect be incensed when it comes down to an aesthetic difference, and not one of endurance, function, or rationality?

The purported hauntedness of our houses in relation to the demands for ecology adds an extra acidity to the following aphorism by Nietzsche:

**The same old story! When one has finished building one's house, one suddenly realizes that in the process one has**

learned something that one really needed to know in the worst way—before one began (Nietzsche 2000, 413).

There are ecological ghosts attempting to tell us how to avoid the eternally distasteful too late (ibid.).

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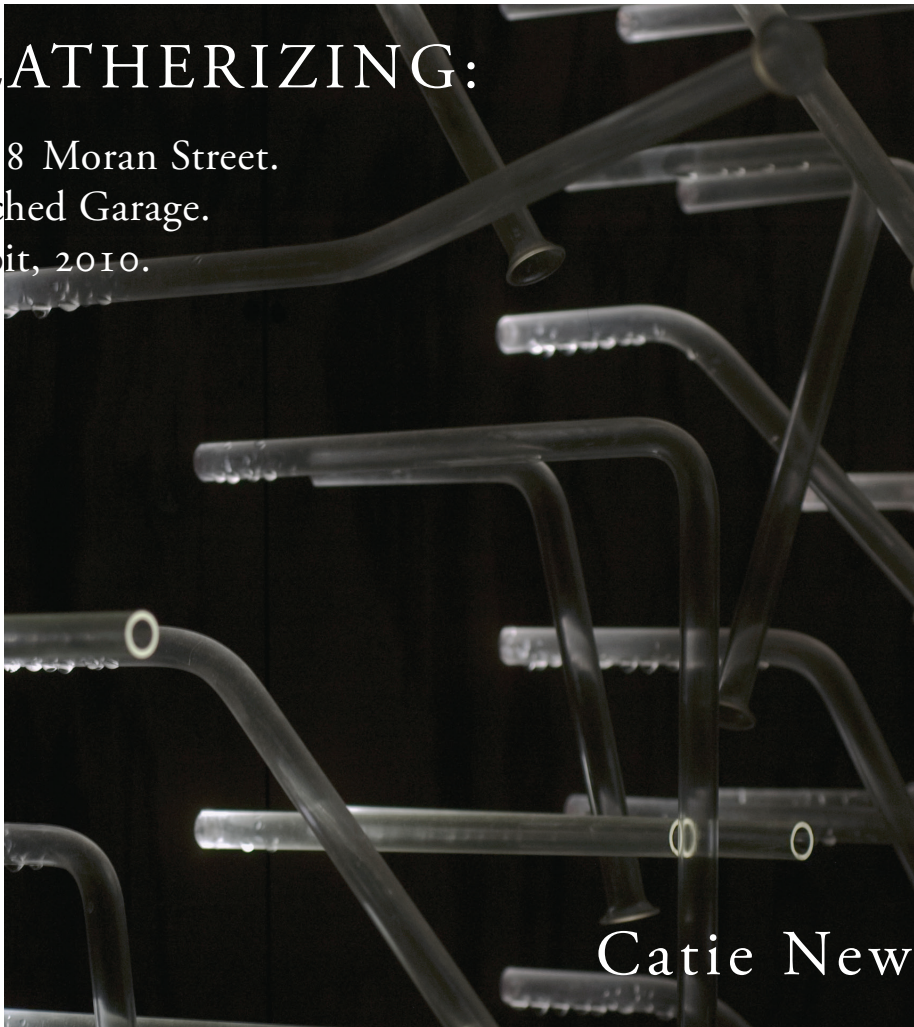
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# WEATHERIZING:

13178 Moran Street.  
Detached Garage.  
Detroit, 2010.



Catie Newell

## // DETROIT AS DARK VOLUMES

Captured volumes of darkness are prevalent enough in Detroit that they could be recognized as a distinct architectural typology. It is a specific darkness, one that exists in the coupling of boarded up spaces with the strained, missing, stolen, and neglected electrical infrastructure. Perfectly formed to the interior of a vast array of spaces, the darkness is held behind structures that were once fully operational homes and buildings, which now don an extra ad hoc skin cloaking conventional apertures. Dispersed widely throughout the physical urban setting, these foils to anticipated illumination are found both separately and in tandem, but should not be taken as an indicator of the status of a building's occupation nor its ownership.

Under normal circumstances, a boarded-up window is a temporary fix to an accident or the more probable break-in, with the wooden infill acting as a mere patch. However, the stories are more complex in Detroit. This seal has evolved out of tending to broken window panes, reacting to concerns over security or privacy, and in efforts to deter squatters or scappers. Such contentious circumstances prompt strategies that promote long term use. The detailing may include custom

screw heads, a sill lined with nails and glass shards, complicated interior bolting, or wood that has clearly weathered with time.

The darkened internal volumes are at home among a landscape of limited electrical services. The availability of electricity is dwindling at large with the extensive theft of copper wire and the city's reduction in provided service locations. Being off the grid is not necessarily by choice, while being connected is not necessarily carried out lawfully.

Between personal devices and the expected (taken for granted) artificial illumination, people have a tendency to seemingly emit light. Generally speaking, the more people in a location the more illumination. Detroit was built for more than double its current population. Physically extensive despite its countless vacancies, the relatively unlit urban massing constitutes a unique setting among the expectations of illumination in American cities.

*Weatherizing* is a response to this darkness in Detroit and a vehicle upon which to discuss these respective city circumstances. As a material study and electrical experimentation, its alteration of an abandoned stand-alone garage mutates and activates



the barrier between the enclosed atmospheres of the interior and the shifts of the greater surroundings on the exterior. Considered to be a replacement of the common flat-pane windows, *Weatherizing* uses the typical mediator of glass in an unusual configuration, evoking an altered understanding of the volume and its exchanges through the creation of a glowing atmosphere and in response to implications of security and containment within Detroit. The text that follows tells its story; and while doing so, it tells a story of Detroit at that precise moment in time.

## // IN TIME

Timing. As with anything that is so tangled to the exact conditions of its context, it all has to do with timing. The acquiring of a house was the collective brainchild of the 2009–2010 Taubman College of Architecture and Urban Planning Fellows at the University of Michigan. Celebrating its 25<sup>th</sup> year, the 2009–2010 Fellowship brought five fellows to its faculty, an anomaly to the typical three. Socially, the selected candidates (Ellie Abrons, Meredith Miller, Thom Moran, Rosalyne Shieh,

and myself) formed an immediate pack, one that would soon be referred to as the 5Fellows. Drawn together at first by our similar ages and rookie status, the group was strengthened by intellectual dialogues filtered through our collective differences spawned from varied—even conflicting—backgrounds, schools, mentors, and research foci. Concurrently, times were tough. We all turned to academia for financial stability while simultaneously recognizing that to get anything built, you had to make it yourself. Across all of our interests and methods was a shared instinct “to make.”

Ann Arbor, home of the University of Michigan, provided little spark for a meaningful design setting suitable to a fellowship year. Roughly thirty miles to the east, Detroit, in its constantly awkward relationship to the more stable and affluent Ann Arbor, was a setting rich in issues capable of spanning the diverse interests of such an eclectic group of young designers.

In a fury of brainstorming and group decision making, we found ourselves peering in on projects happening in residential spaces in Detroit. Acquaintances of Rosalyne Shieh, Mitch Cope and Gina Reichert, introduced us to the foreclosed housing stock of Detroit through their work as Design 99. Their

practice of tending to their own neighborhood through creative work was both commendable and inspiring. When we visited their block and they casually indicated to us that the auction of foreclosed properties in Detroit was to occur the following week, we took the leap.

## // 500 for \$500

Appropriately, the 2009 auction was held in Detroit's Greektown Casino. It was to be the last of the auctions conducted in person. Now, taking cues from the world of online auctions, the purchasing of foreclosed properties from the Wayne County Foreclosure Auction is



an electronic and faceless event. But on October 12, 2009, a room capable of holding not more than 500 people was opened at 9:00 a.m. sharp and the identities of those in attendance were made public.

The auction book, with its canary yellow cover, was nearly two inches thick. All the properties that had not been acquired during the previous auction (when starting bids matched the amount of taxes owed back) were reset to an initial bid of \$500. Early research on available properties was only possible by scrolling through an online PDF, catching a glimpse of the plot on Google Earth, and driving around in person. Provided to each bidder in attendance, the enormous weight of the auction book made the daunting task of sifting through the available properties physically tangible. A few pages were dedicated to the auction's rules and regulations, and the rest—a long list with an average of 18 plots per page—was organized by neighborhood. The properties ranged from countless residential buildings to the abandoned Roosevelt Hotel, and even included an airport. The anticipated property taxes deterred us from simply buying up the abandoned airport on the spur of the moment, as if in some child-like dream. With some such properties falling into uninformed

hands, future auctions would institute a sliding scale to establish starting bids in hopes of preventing the thoughtless grabbing of land.

There was a gross disproportion between the number of people permitted into the space and the properties up for grabs. Mitch and Gina were denied entry. Having run to the bank to procure the mandatory \$500 cashier's check for each property they intended to bid on, their 9:15 a.m. arrival was already too late. It was a crime to the process that—cash in hand to buy a property—they were turned away because the room could only hold a limited population.

As the day continued forward, the weak numbers became increasingly apparent. Day one of the four-day event already had its long drags of no bidding. The auctioneer began interacting more with the audience, not reading every plot and instead asking if anyone was planning on bidding on anything on a page, or even within a neighborhood. As we waited, Thom Moran texted the other Fellows. Use of a phone within the room was a violation of auction floor rules, so he was kicked out. It was odd to be sitting in a room staring at land lot numbers in list format, uncertain of the quality of the spaces under review. However, the typology was an easy bet:

a single family home, detached garage, evidence of a squatter, all service infrastructure long since stolen, and a lack of demand. Thom's ejection provided us with the opportunity for a reconnaissance to see the houses in person. He confirmed what was expected, and at Mitch and Gina's suggestion he scouted out the houses that they were intending to purchase. With no competition—not even on the neighboring pages of the auction book—I purchased the house at 13178 Moran Street for \$500.

The paperwork consisted of a xeroxed half sheet that I signed with the name 5Fellows— an entity that did not legally exist. The address of this phantom owner was listed as my apartment in Ann Arbor, with hopes that this would not be tracked directly to me and thus squander any future first-time homeowner's incentives.

To appease requirements for University funding, I quickly tried to deed over the property. The paperwork was not immediately processed, and the property tax forms continued to try and find the 5Fellows. When I moved to Detroit my ties to the Ann Arbor address were gone, never having seen a confirmation of the change.

## // ON PAPER

Completion of the new deed and its almost immediate switch over to Design 99 required a visit to the Building Department. The service space was small, confusing, filled with anger, and I felt as if I was somehow missing a step. I could have been standing in the wrong line twice, and might as well have started grabbing up properties by changing deeds since there was little to no verification of previous ownership or current purchases. Future paperwork would assume I had never been there in the first place.

As a friend learned the hard way, one task I did not complete was to check if the house had been removed from the demolition list, an ongoing catalog of the properties the city slowly chisels away at. The document is usually paired with the foreclosure book, yet the lists are not cross-checked and any property purchased at auction could still be scheduled for demolition.

There was a definite disconnect between this process and the overly specific lingo-rich meetings we held with the University of Michigan lawyers. There seemed to be a strange balance between urgency and apathy. On paper, the actual physical status of each property and its respective home was left unknown and unexplored.









## // OBTAINING ELECTRICITY

With the only Michigan driver's license among the group, I was the clear choice to become the owner and contact for our electrical supply—an endeavor that we hoped to resolve in a matter of weeks and instead strung out over four months. It was a two-part ordeal: convince Detroit Edison to set up an account, and get an electrician to drop a line to the house.

Though never reprimanded, the previous owners of the house were stealing electricity. This put a red flag on the property, and so a young female wishing to legally pay for services seemed questionable. A background check, lots of paperwork, and many in-person efforts were required to get them to take my money. There were so many ways to steal from the electrical company, that opening a new

account seemed like a rather dubious act.

The electricians that dropped by the house to provide quotes for the actual work would unknowingly teach me lessons on how to steal electricity. Between their investigative efforts to find out what had previously been scrapped from our house, and their pointing out methods of how electricity was being stolen around the neighborhood, I gained a sense of how it all worked. Of course, that was also paired with numerous stories of random outages that they would discover were caused by a scrapper grabbing a live wire. In each case the evidence was an unbearable sight. From then on, every time I walked into the alley to use it as our temporary bathroom, I more than half expected to find a dead body grasping our new copper-filled line.

## // SIDE WINDOW

Unable to easily break in through the front door of our own house, we used a side window to access the space. An older air conditioning unit acted as the stairs and entry stoop for those of us too short to simply hoist ourselves into the window.

There was a tree in the middle of the house and a few items I have come to expect in abandoned spaces: random articles of clothing, a tire, empty cardboard boxes, scraps of building materials, and wrappers and cups from processed and fast foods.

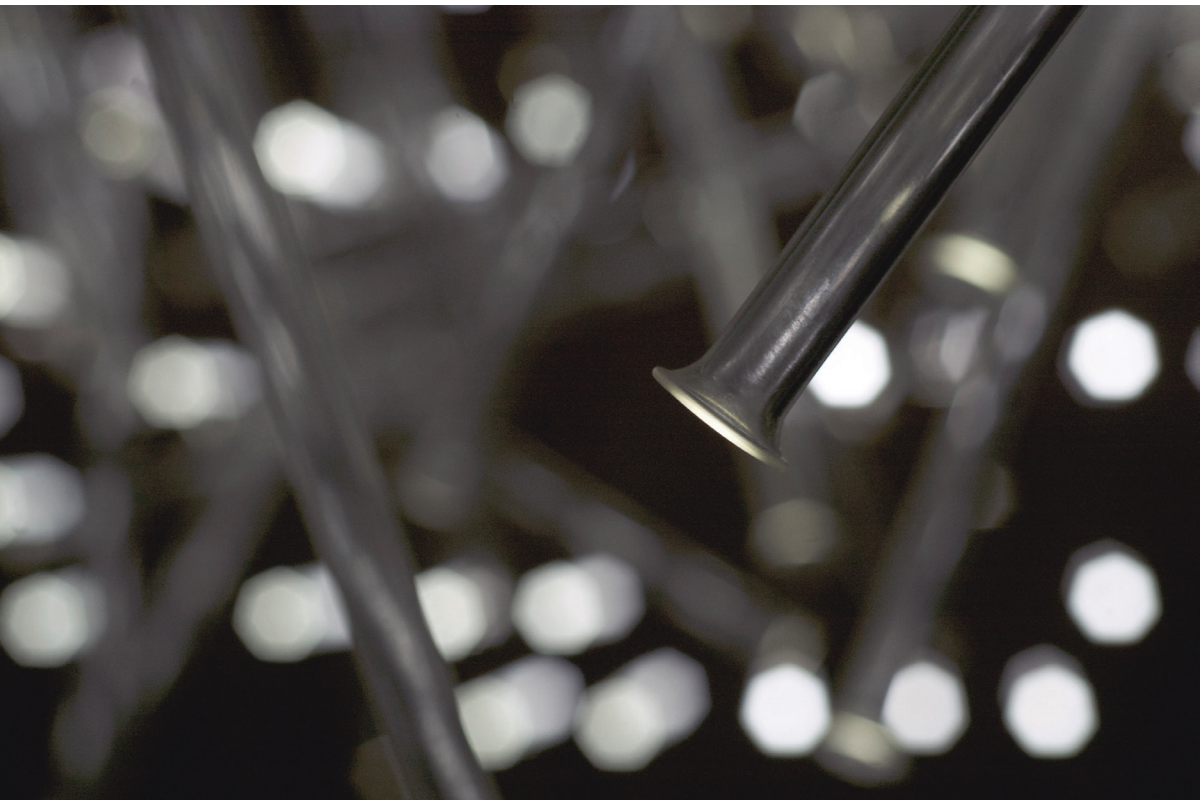
Our first action was to board up the windows. In other cities one would expect the counter response, but in Detroit, it is a sign of tending to a space. Fresh boards in a window indicate that someone is watching over the house, protecting it from intruders, and moving it forward in its occupation. It is the houses with empty windows that one can expect to have been long left by their actual owners.

We debated for a long time whether to get plexiglass or glass windows. The decision had to balance cost and the likelihood of possible break-ins. In the end we opted for plexiglass because of its resistance to breakage. Unfortunately, fabrication would

take much longer than expected, leaving the windows boarded up for quite some time.

## // NOHAM RESIDENTS

The house was in the neighborhood of NoHam, a nickname to be understood as “North of Hamtramck,” one of the two independent cities that float within the geographical boundaries of Detroit. Like Hamtramck, NoHam is richly diverse, with predominant Bangladeshi, Arab, and Polish ethnicities. Just as diverse as the human population, the housing stock is strikingly mixed, ranging from houses that are lived in and the occasional missing teeth, to houses abandoned entirely, arson damage, and properties that are being used creatively. We were deterred from staying on site after dark, both by our own comfort level and by the cautions of those around us. As numerous voices emanated from different mosques around the neighborhood, the call to prayer—always just before sundown—would beautifully cue us to pack up our tools. My time on site matched exactly with my father's. A resident of Metro Detroit, he was understandably concerned about his thirty-something daughter modifying a structure in a random neighborhood in Detroit. He didn't want me there



by myself, and I didn't want to stop the project. And just like that, my dad and I started to make installations together, with him as my right-hand man. His legitimate worries about Detroit, paired with his maker mind, made for an instant partner in crime.

## // IN THE DARK

At the time, my research in the field of architecture was speculating on a broad—yet raw—pursuit of the weather. Earlier interests centered on the ephemeral conditions of a site: fleeting and treacherous weather, the shifts between day and night, and the magic of precipitation as objects/textures falling from the

sky. These interests led me to question the stiff barricades and energy-fed artificial interiors that we build for ourselves.

The qualities of Detroit morphed my thinking and adjusted it to the greater stakes of the city. For starters, the gross depopulation proved key in understanding a housing stock that existed as a material reality but was in no demand. With no need to return them to normative use, its forms could be left undefined and contentious. These earlier observations were further inflected by concerns over barricading—from the weather as much as from human invaders—and by an observed prevalence of contained darkness and

occupation. These circumstances loosened the criteria by which the house's materials needed to perform. Neither a non-existent resident nor the neighborhood would gain anything from a simple wall. Somehow, to aggressively transform the barricade between the interior and the exterior felt permissible in Detroit. And at least subconsciously, I was looking for a beautiful way to do it.

## // FULLY SEALED

There was a moment of darkness for the entire house. The windows were all sealed with wood, and the plexiglass infills had not yet arrived. The boarding up process having been a relatively imprecise task, light slipped in through numerous cracks at the edges of the boards, providing small notes on the familiar layout of the house.

Sitting curiously within a dark residential space evokes both fear and calm; the darkness occludes our visual space, while expanding our imagined anxieties. The mind embraces the familiar surroundings without finding nor trusting their boundaries. In turn, the imagination uploads onto the thick darkness its creative, false, and cautious imagery. Because the darkness permits—even necessitates—a different reading, it allows for the emergence

of mystery and mistrust over constructed (built) certainty. It engenders a fantastical space.

On instinct, to begin piercing the envelope in a controlled manner, the simplest of holes were drilled right through the existing walls. The insertion of glass tubes—an alternative to the flat pane window and a portal for light, wind, human voices and air between the city and the house—transmitted a glow that would dominate all future steps. Held within the dark space, this object radiated. Like a giant optical fiber, the light it sourced from the beaming sunlight outside, radiated boldly. The intruding light leapt from the glass, grabbing onto the nearby walls and capturing a perceivable thickness in the air. It melded the vast expanse of the exterior atmosphere with the precious space we had bundled away from it.

## // MOVING TO THE GARAGE

As the other four started working in the house on projects driven by different spatial ambitions and intentions, their initial maneuvers allowed light to flood in, and the darkness was lost. So I moved to the detached garage. It was a simple volume, electrically disconnected and sized adequately for substantial

material and ephemeral work. Celebrating its darkness, alterations to the garage began with patching light leaks within its modestly constructed surfaces and with the more aggressive infill of a window. The obsession for a total removal of light became something of a madness; whereby I waged a war on the smallest of holes through which light was allowed to penetrate the volume.

With the old window removed and all of the light leaks plugged, the interior became intangible and the space seemingly fell away. Its dimensions were unperceivable, yet its presence was powerful. This full barricade removed a sense of time and any connection to the exterior surroundings. Though absent of light, the space felt dense.

It was not giving of clarity, yet not vacant of attributes. This was the darkness I had been seeking after.

## // TENDING TO THE SPACE

It was within this darkness that the glow of the hollow glass tube insertion could find not only a transmission surface, but also an intangible medium for dispersal. The quantity of tubes that were fabricated was determined by the surface area of the original (now removed) flat pane window. Nearly 1,000 half-inch diameter glass tubes could fit within its bounds. Extending out to lengths of up to three feet, the tubes operated to transform what was once just a surface window into a volume.



To provoke the most tension within the original space, the glass tubes were positioned by piercing through the most significant architectural features, where the building needed detailing, and where human occupation could be agitated: framing the door swing and the roof peak, tracing out previous windows, entangling with an adjacent tree. Their basic rhythm followed a nondescript diamond pattern carefully calculated to fall within the flat ridge of the vinyl siding that wrapped the exterior. The placement of each tube risked bringing too much light into the interior space, foiling the balance between the internal darkness and the inserted glow. Therefore, construction drawings were not used. Rather, the true architecture—the atmosphere of the volume—was explored and revealed through physical making.

The depths and bends of the glass tubes were collectively orchestrated to imply a more continuous volume, interrupted with anomalies. The attenuated space of the garage and its aggressive extensions through both sides of the wall developed a tension with the occupant, who was drawn to the light and yet fearful of the glass spikes. The work sparked conversations about the denial of occupation and the security of a space from intruders.

## // TIME OF DAY. TIME OF NIGHT

The cadence of the work fell in stride with the duration of daylight. As the sun set, the tubes would shift in color and brightness, casting the pink light of the sky over the interior surfaces of the garage. Nighttime brought back a completely darkened space, and the inability to work without artificial lighting. As the construction was conducted simultaneously on the interior and exterior of the space, it necessitated a pairing with the weather. Therefore, the work day commenced early to maximize daylight. As the construction continued, each additional tube added another registration of the Midwest atmosphere shifting in real time on both sides of—and within—the wall. The shadows cast by the glass tubes were a fortunate surprise. The sun shone directly over the house, sending shadows across the front and side elevations. On the brightest of days, the clear glass tubes were difficult to see, leaving the shadows as the only evidence of the project—like line drawings striking on the otherwise conventional vinyl siding. To create effects of illumination at all hours, the work was given a nocturnal life. Embedded into the walls was a system of LED lights, charged by solar panels on the roof. The system would collect energy by

day and then illuminate at night, after sunset. The resultant was a glow that, during the night, was both outward and inward. Fully off-the-grid, the space was being constantly illuminated—lit naturally or by its own registration of natural light.

## // FEAR OF VANDALISM

From its position in the detached garage, *Weatherizing* could not be seen from the street. However as circulation, in particular that of the pedestrian, is less formal in Detroit, what operates as public or access land does not necessarily coincide with the city zoning or layout. The urban typology of NoHam, like many other neighborhoods within the city, consists of a double throughway for cars. There is a public street at the front of each house, and a service alley providing access to each property's rear detached garage. Nowadays one would not dare drive a car down the back alley. Instead, this is more commonly used as a dumping ground, a pedestrian shortcut, and a corridor for electrical theft. How a local moves through the neighborhood deviates from the provided sidewalks and depends on the physical status and presumed occupation of any given house. Within such blurry territories, *Weatherizing* was far from hidden, and rather on

public view to those passing in the alley. Further, the attention we were giving to the house was undoubtedly noticeable to an otherwise quiet neighborhood. We were not in competition with other signs of construction and everything from our cars out front to the sounds of the tools made our presence obvious. This visibility, paired with the fragility of the glass and the presence of illumination implying an electrical connection, kept me in a state of constant worry about vandalism to the project. Interactions with passers-by ranged from unapproachable glances to asking how we were doing, while others still would stop by—their presence being impossible to decipher as either earnest curiosity or casing the place. Rarely did I leave all of the glass in place. From my vantage point, this was the most critical potential loss, while in reality the tubes had no value in the scrapping industry—just the thrill of breakage. Even I had the overwhelming urge to break all of the glass for that one beautiful moment of audible splendor. Clearly, breaking a window has its thrills. Yet, the prevalence of this occurrence in Detroit speaks to an innate mischievousness played out as power over space, as a substrate to express anger, and in a setting where you could get away with it.

## // TRUMAN AND BLADE

Blade would peer out of the backdoor. Happy to see us, but willing to defend and alert should we enter the backyard space. He wouldn't even bark, content to have company and clearly aware of property lines. We were strangers in so many ways, but he knew we were tending to the house. That seemed to be the ticket to his approval. His owner Truman was doing the same thing.

From what we assumed, Truman was our legitimate next door neighbor. He had been living there for over twenty years. His wife had long passed, though his age would indicate a spouse of a similar age would not have died simply from growing old. The story was never asked for. Truman kept to himself, though he was polite whenever any of us happened to be outside at the same time. His windows did not offer the same greeting. We learned from Truman the trick of boarding up openings from the inside and the strategy of well-placed nails to deter entry through a glassed aperture. Any intruder opting to not use the front door would painfully regret that decision.

It was not until after his eviction that any of us saw the inside of Truman's house. Towards the end of construction, an eviction crew suddenly came to remove

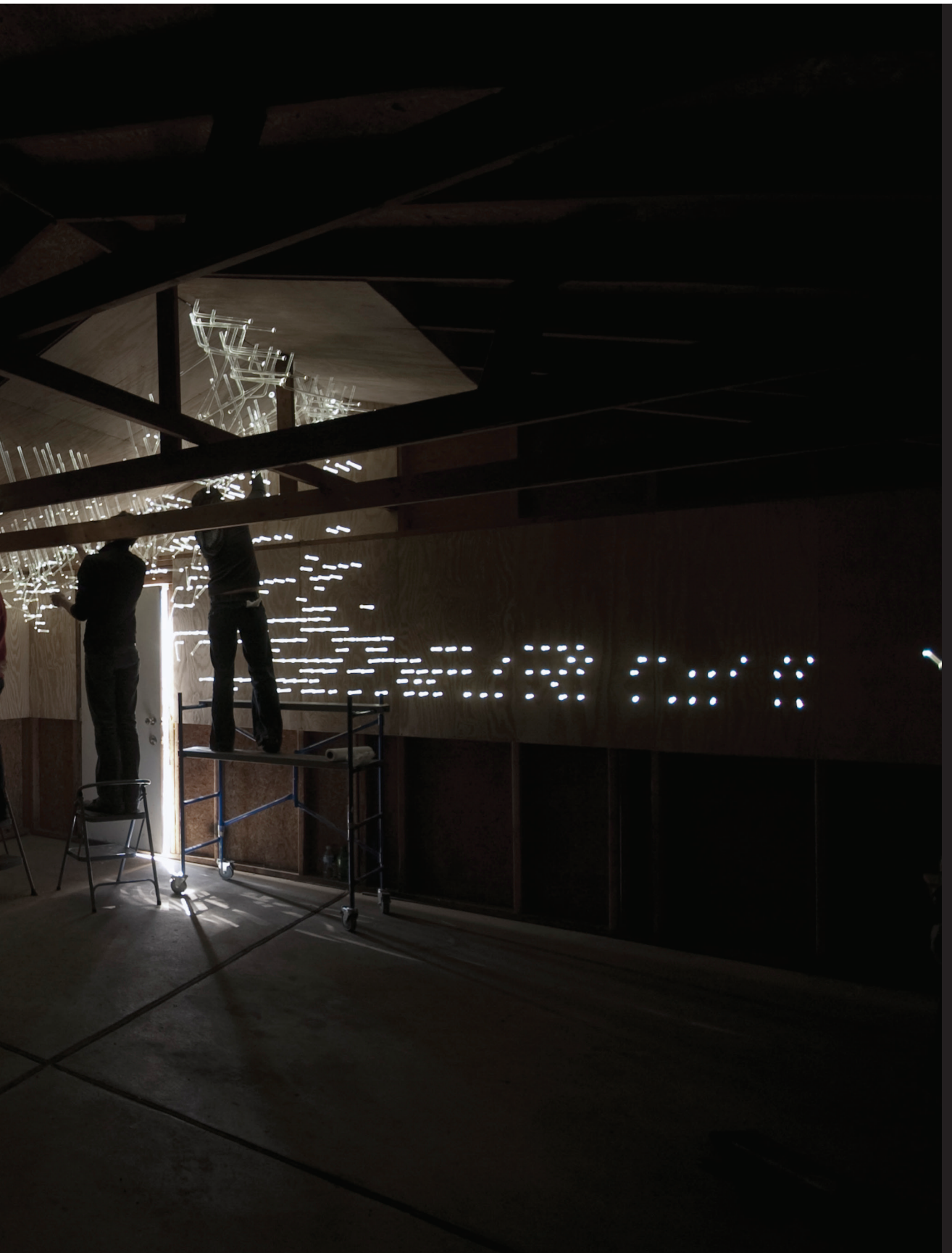
Truman. From what we could tell, he had received no warning. A van pulled up, and officers requested that he leave. Where he went is a mystery. And just as quickly, a team moved into the space, measuring the windows and promising a prompt return to board up the space. They left about as hurriedly as they had taken care of Truman. In their haste, having quickly changed the lock on the beaten front door, they left it open.

Truman was living amongst his things. His belongings were scattered on the floor, in places one foot deep. Other rooms offered a clear exposure to the aging carpet and traces of a past domestic life. The water was not running, the electricity was now understood as a jump from a neighbor, and there was no furniture. However, despite the contrast to a normative organization of domestic objects, the belongings seemed settled in their places. It was a sign of clinging on to things—sparse as objects but seemingly overfilled with memories.

The interior world I had imagined in Truman's home was in sharp contrast with this found reality. Suddenly, by comprehending the situation and by seeing his belongings, I had met a new Truman, and understood so much more about his strained domestic life.







At the scale of the neighborhood, there was nothing to be gained from evicting Truman. No one was seeking out a house. He was just another person on the list of those not paying their taxes. Yet he was tending to that house; causing no problems besides the theft of the electricity. It would have been better to leave it in his hands—Truman caring and occupying the house, and Blade out back. Both houses would suffer without Truman.

The work the eviction team had done to remove Truman from the house had also removed all of the protections from other intruders he had set up. The boarding up was subpar and within days the neighborhood kids started using the house as a hideout. At first they made attempts to go unnoticed, but that just as quickly became of little concern to them—and of big concern to us. The threat of invasion to our home now felt imminent.

The neighborhood kids soon moved in. This was predictable as, with the work nearly complete, our presence at the house had greatly diminished. During our last days we watched them watch us, sitting out front in their beat-up cars. High school age at best, their pass times were those of boredom: smoking, drugs and vandalism.

After approximately a week away from the house, I returned to find the door smashed in around the lock and a huge set of footprints on its outer surface. What I had feared most—the breakage of every piece of glass within reach—was only carried out on one or two components, and only a few were missing. The door suffered the most trauma, and surprisingly, with evidence of chip wrappers and Gatorade bottles, the space was being used. From then on I left the door unlocked.

## // WEATHER CHANGES

The interior of the space was mesmerizing. A powerful glow touched three faces of the garage, condensing around the entry door. Darkness continued to loom in the far reaches of the space, varying in its intensities according to the external weather. Shifts in light, the shadow of someone passing by, the whistle of the wind, and the touch of precipitation all changed the effect captured by each tube, and their cumulative effects. The bends and flares that detailed the ends of the tubes grabbed the adjoining atmospheres in all directions, registering their surroundings.

The winter had been mild. The work was carried out from mid-February through April. As we broke down a barrier to the

elements, we faced few bouts of precipitation. It wasn't until the project was entirely installed that its performance with rain and fog would be tested. When the fog rolled in, the glass tubes grabbed at the air permitting condensation on both the interior and the exterior. Water gathered along the lengths of the tubes creating a new delicate texture that dotted the light.

The space aroused a spread of emotions. The glow produced a calming effect while the penetrations of the glass tubes, which appeared as suspended and pointed towards the inhabitant, induced anxiety. On the exterior, the delightful array of light and shadow was paired with a defensible geometry

that provided both security and privacy to interior occupants. Each and every atmospheric and illumination shift over the day, over the seasons, and in the instance of a passerby, created a unique experience of the work and a registration true to that instant.

## // NEW ATMOSPHERE

In *Weatherizing*, the form of the window had become volumized and was attenuated by the tension with an otherwise darkened space. The result was a new atmosphere, formulated by the immaterial effects of both the captured interior darkness and the whimsical introduction of exterior light. The space of the



garage, which could previously be seen as an atmosphere of darkness—an artificial night—was burst into a connection with the mysterious and moody exterior. The focus was taken away from the architectural surface and shifted to the qualitative attributes of the spaces within and surrounding the volume. Reliant on the immediate sensual qualities of these atmospheres, the luminosity radiated by the tubes became an eerie registration of the seemingly intangible surrounds, and a foil to the once apathetic barrier.

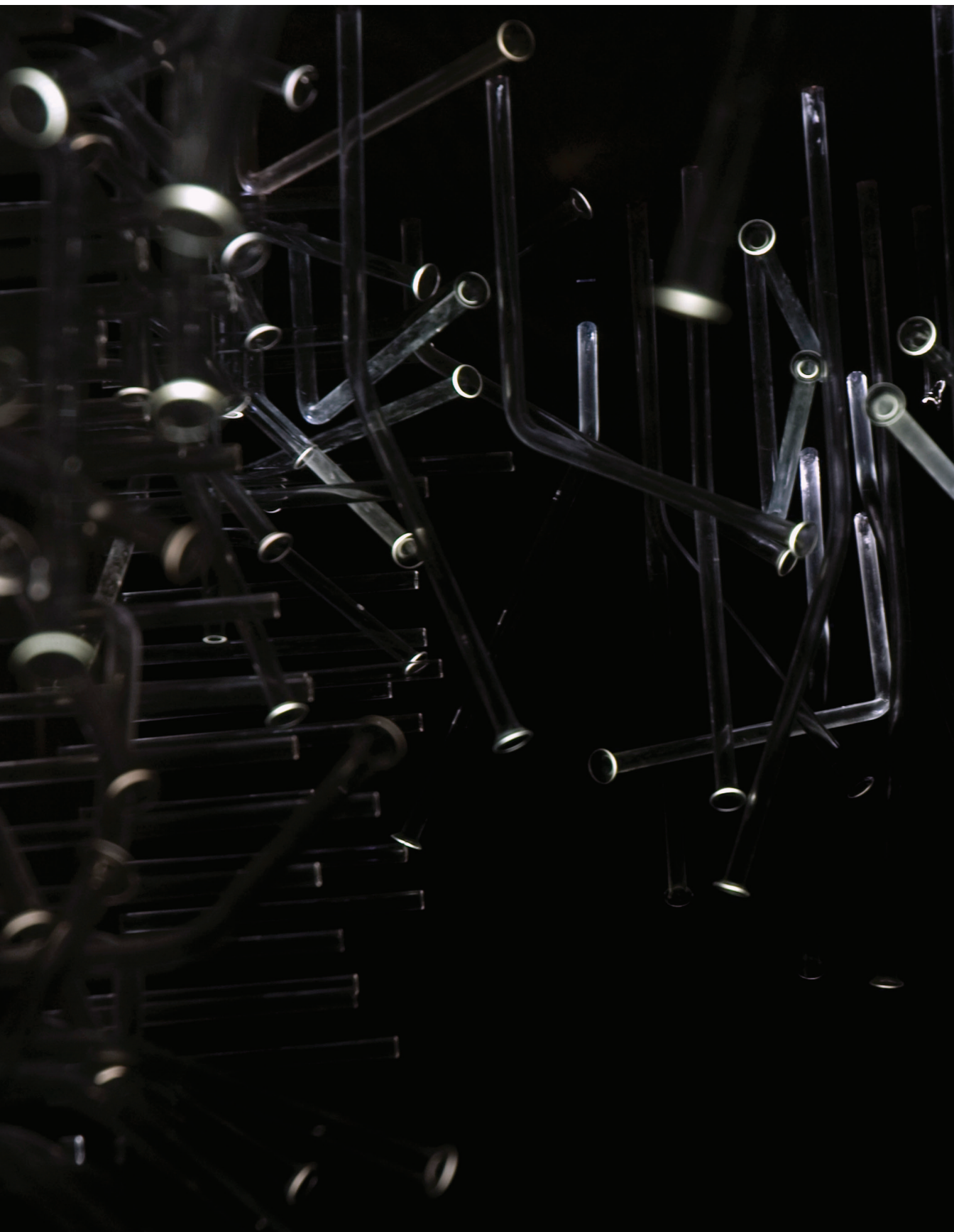
## // ONCE RESIDENCE

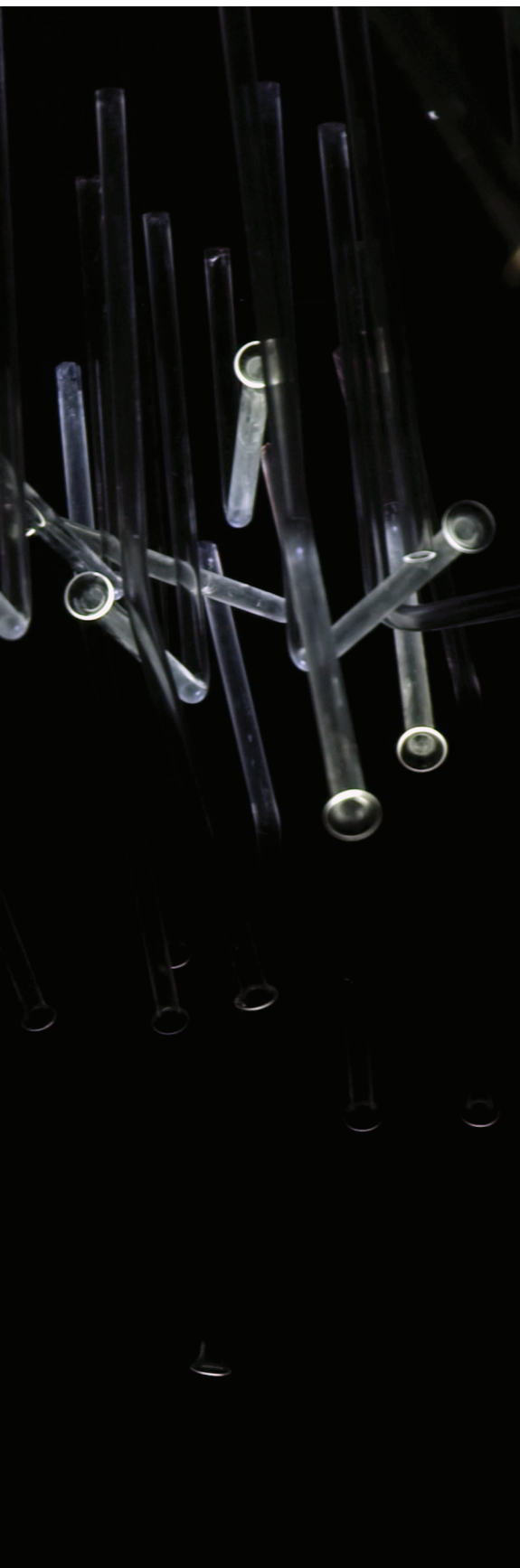
For me, in architecture, these sublime findings come with an urgency. They are the reflection of conditions much greater than the mere architectural object from which they emerge. The works resonate with a wider implication of their context spatially and with cultural, social, legal, and political undertones. They are a substrate onto which to inscribe, discuss, freeze and acknowledge these times—times so harsh as to leave a physical mark on the built environment.

Across all of my built installation work, there is a vested interest in small but intense atmospheres resonating within their city

while also clearly remaining an anomaly. I actively pursue spaces that are undefined, seeing them for their potential physical and conceptual manipulation. *Weatherizing* is the first work of the Once Residence installation series. The Once Residence series is characterized by intricate installations that manipulate and respond to former domestic spaces as a means to simultaneously situate and obscure the present realities of ailing cities, while making compelling new environments that provoke or deny occupation. These projects are at their core not about their own existence or outcome, but are instead about the city that hosts them, and the potent cultural circumstances or contingencies that apply pressure to their immediate built surroundings at the time of their fabrication. Relying on foils, each installation attends to the emotional effects of pairing delicacy with aggression, light with darkness, transparency with opacity, the familiar with the unfamiliar. In all cases, the work formulates questions of occupation and a reflection on the current status and pulse of the city. It is an act of making in homage to very timely and current physical, legal, and cultural circumstances. The conditions of the city are far more interesting than







anything I could ever make up. The actualities of my spatial production collapse architectural interpretation with the city itself.

Seeking the sublime, I actively pair beauty to the horror of the condition of things. The works act as a beacon and voice for the realities they are built through. They do not offer a solution, but instead hope to incite action, providing a glimmer of what might be through the horror of what is. The outcome remains ambiguous in its morals and ethics; destructive in ways, and creative in others.

None of these projects would be possible, or interesting, under what one would call “normal” circumstances. Instead, they speak to the present conditions of the city—as a part and reflection of Detroit.



# Hacking Light

Zenovia Toloudi

*Photodotes V: Cyborg Garden.*



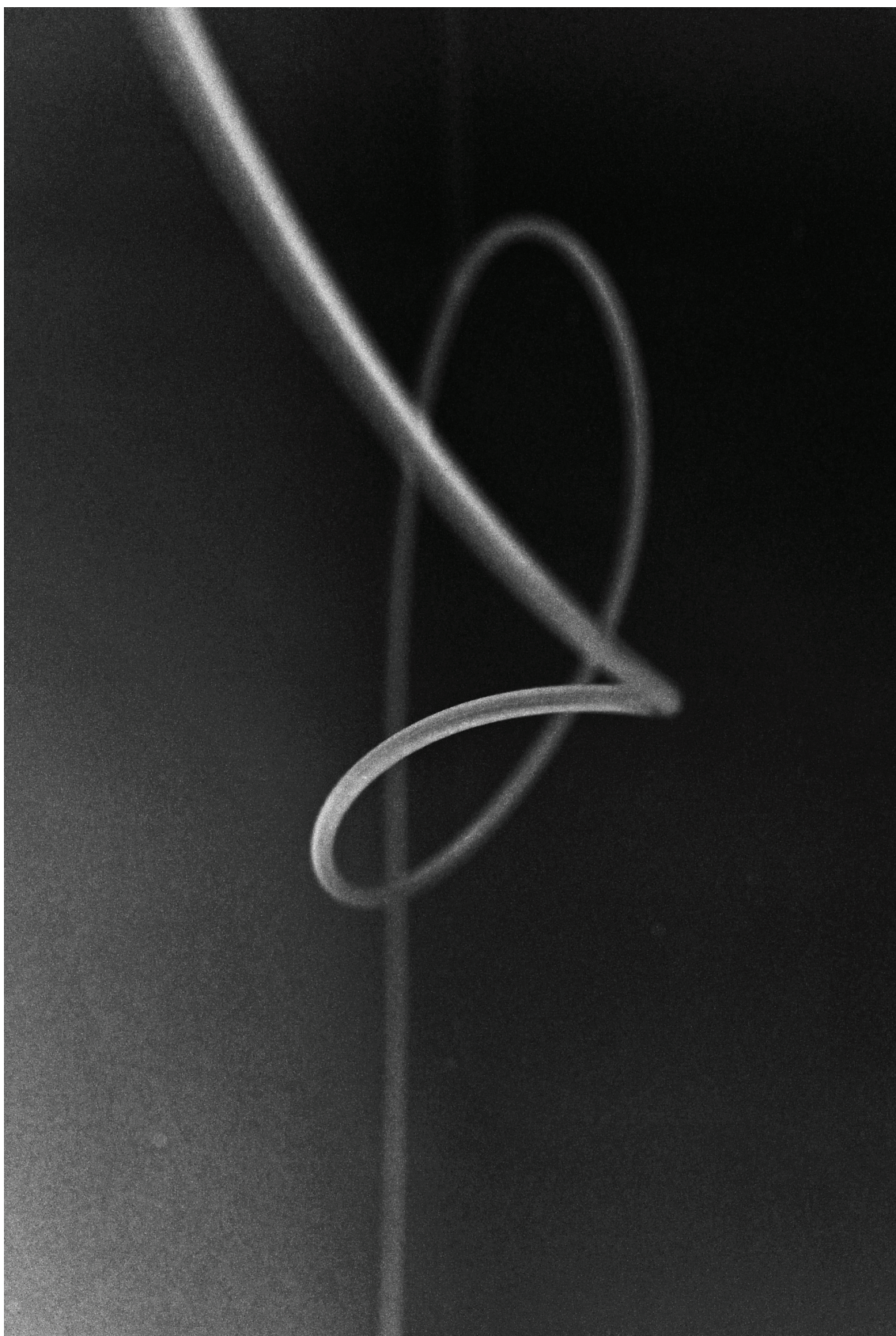
## **Dystopia**

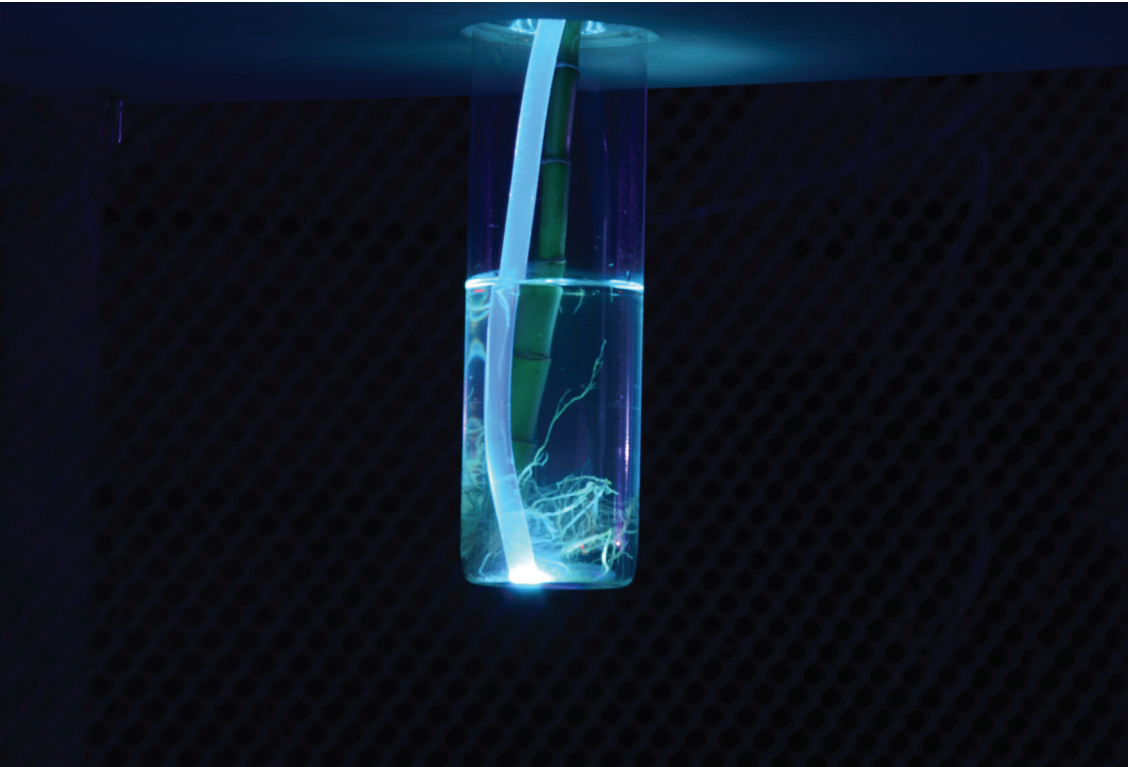
It is a dystopian present. There is so much space, but still the structures are unimaginative: jail-like, illegal to some extent. During the day you are entrapped in a highly controlled, usually rectangular room—your institution—always in front of the magnetic screen. There is a massive amount of invariable light that makes these white cubes unbearable and the atmosphere in the office irreversibly dull. Even the light called “ambient,” “cozy,” “warm”—you name it. Empty words. There is always a better feature for the next fixture. Endless consumption that can increase your production. Corruption! The most vandalous crime against your circadian rhythm. The light nightmare continues at night as well. Pretending to be different, perhaps energy-saving, or simply fluorescent. At its best theatrical, at its worst phantasmagoric. But ultimately polluting and damaging. You cannot sleep, you cannot rest. You are exhausted. No mercy for this disaster. Let’s admit it: in the name of profit, innovation, and productivity, this city has been polluting you incurably. It is only now that empathy wakes in you, that you understand the light tragedy of the gamblers, the lab researchers, even the chicken. Yes, you now feel as one of those light scapegoats. The exploitation has to end; you have to un-victimize yourself before it is too late; you need to escape; you have to act.

## Urban Myth

You heard about this place, a small guerilla ghetto, hidden inside the guts of a forgotten neighborhood, in that kind of weird periphery, the edge of things. It is not even exotic, or at least not yet. This is where the light homogeneity stops. Not due to an opera of flashing lights, but simply due to the place being off-the grid, off-from-all-kinds-of-grids. In this tribe, you heard that people might be weird: unproductive, yet very progressive; caring for and promoting an ideal world, a truly free environment where all things can happen. Determined, curious, honest, playful, as well as stubborn—exactly like small kids. Their favorite activity is to be connected to the outdoors. Even if it feels cold and unfriendly on their skin and bodies, they are always wired to soil, water, and their surroundings. They like to hack the sun and other light sources, even fire. They plug wires to feed their buildings, spaces, furniture, and often themselves. Light is their energy and food. Their heroes are a plant-like archaic species, which they archive and preserve in transparent museum-like boxes, with the attention and respect that is typically reserved for jewelry, precious stones, or art. This place sounds unfamiliar, even scary. And yet, you don't care whether it is good, bad, popular, or trendy. You must find it now.

*Photodotes I: Light Donors.*





*Detail of Photodotes III: Plug-n-Plant.*

## Neighborhood

Almost there. You still see some of the familiar buildings—the impermeable, window-less structures. It appears that the tribe occupied some of the city’s abandoned sealed edifices. However, in this ghetto, they look different, with a distorted, re-fabricated anatomy. Some bizarre anthropomorphic objects, geometricized eye- or ear-like machines, are plugged into the façades to detect outdoor conditions. The insertions seem to be harmful to many of the buildings’ textures, which have started to peel off like unwanted zests. In some parts you can peer into the injured empty holes, remnants of a failed operation, and imagine the knives and drills that caused these quasi-archeological treasures. Few of the buildings, only one or two, are even more porous, and feature apparatuses that have the capacity to periodically open and close, accepting only as much light as needed, and transferring the essential outdoor ingredients to the inside, based on the signals recorded by their antennas.

Now you are closer. Yes, different light, unmistakably varying. Everything seems to change quietly and sluggishly, almost lethargically. The fluctuations in atmosphere are unlike: colors, values, tones, and textures; materialities keeps changing; nature moves. You feel the light. Everything alternates in front of you. You wander around the space for a while, feeling the tiny adjustments, the miniature transitions, the minuscule transformations. Your melatonin adjusts. Your temperature re-calibrates. You perceive your own metamorphosis along with the ethereal yet palpable shifts in the surrounding landscape.

The streets resemble the glades of a forest. Density, opacity, and depth create a transparent composition. Not the kind of transparency that comes from see-through matter, but one produced by the gaps between buildings and by the penetrated holes. You walk in and out, up and down, ambling around. One of the urban corridors, a concealed passage, morphs into a narrow staircase with irregular steps, and descends to a yellow beaming fluorescent door.

## Light-Lab

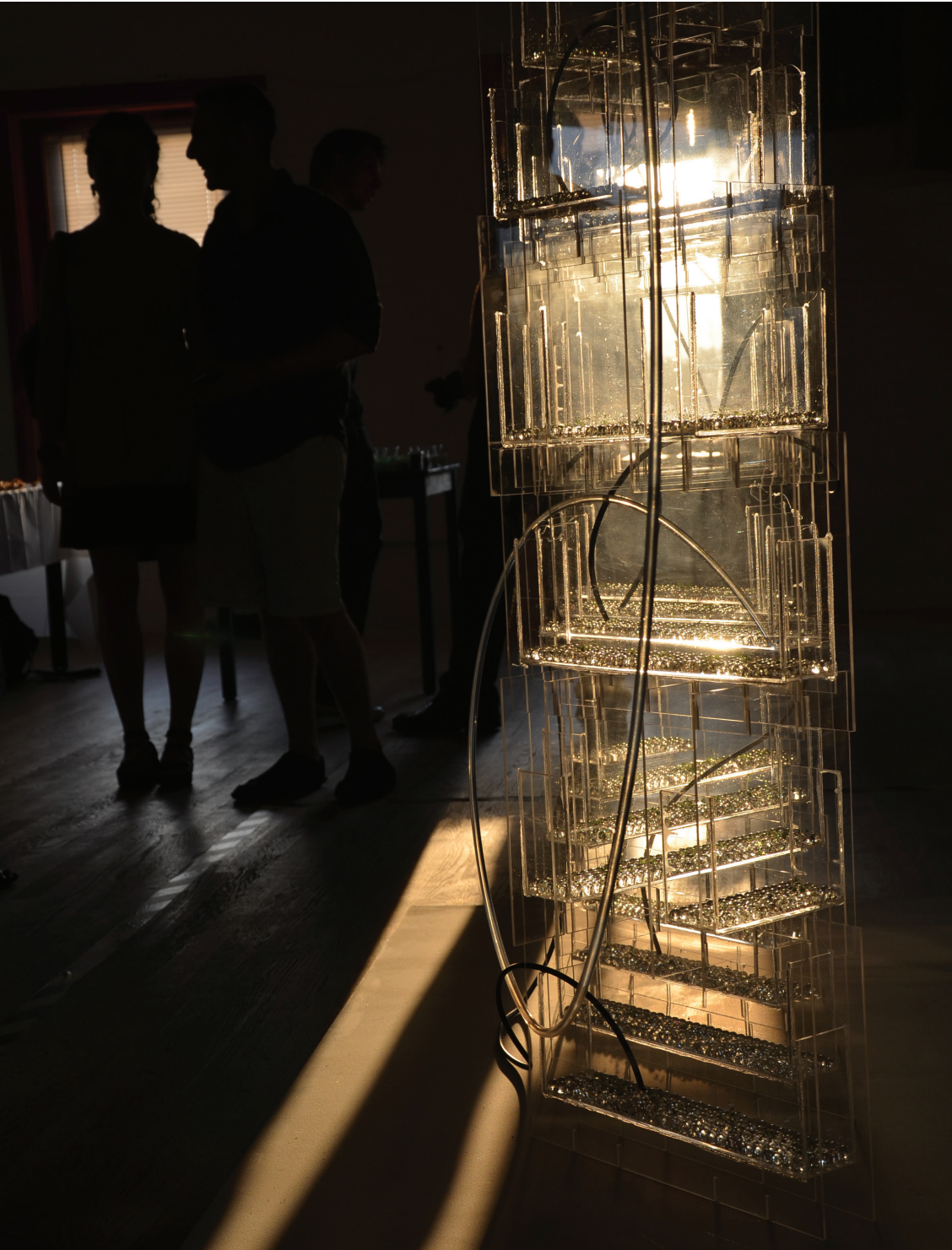
You fleetingly read the “light-lab” sign on the door before swinging it behind you. This must be the laboratory. The inner space is unexpectedly welcoming: a live interior; a vital domesticity with spongy walls and an absorptive roof. You are inside an architecture that breathes. A network of cyborgian walls comprises the labyrinth-like subdivisions that compartmentalize the space. The freestanding structures are a hybrid mixture of wires and plants, transparent and reflective materials. They are filled with water, liquids, and other translucent and opaque gels, sometimes aglow or radiant. These plants display a high degree of sociality and intelligence. Thick wires branch into thinner ones, like an octopus attaching to a symbiotic habitat. The lines of wiring hack the sunlight, moonlight and starlight, and direct them to various interdependent and co-evolving organisms, structures, and organic materials. The appropriation of outdoor natural light and its introduction into these dark spaces confirms that an open light culture is possible. The whole system is modular but flexible, having innumerable formations; anyone can experience these variable atmospheres and light conditions.

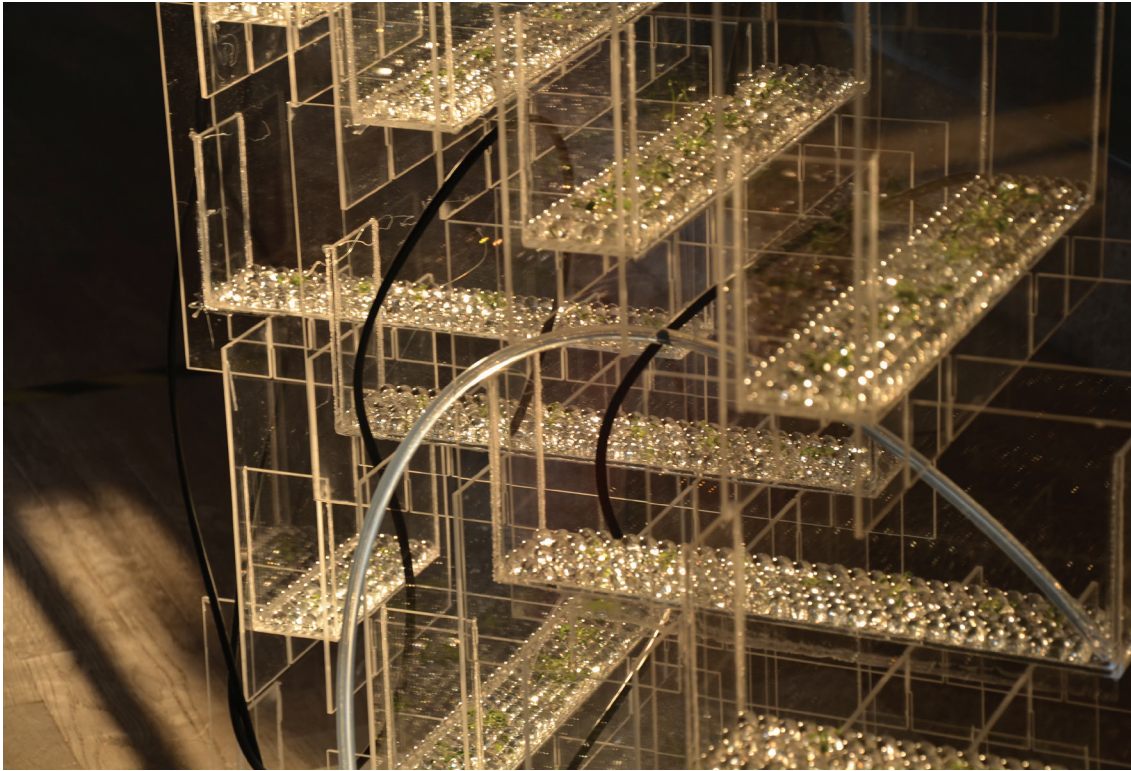
Among these energetic infrastructures, you discover other unfinished projects, such as tunnels, tubes, periscopes, telescopes, and kaleidoscopes—devices and instruments that can bend light and alter perception; virtual light-scapes capable of projecting different realities. These devices are hung from the ceiling or set upright like statues, proudly showcasing the effects of prisms, diamonds, concave and convex lenses, pieces of glass, mirrors, shiny metal and aluminum surfaces. There are hybrids with amorphous shapes, biomorphic geometries, or platonic forms, composed not (only) of carved matter, but of immaterial forces—reflections, refractions, transparency, translucency and shadows.



*Photodotes III: Plug-n-Plant.*







Left & Above: *Photodotes V: Plug-n-Plant.*

## Occupants

Such an enjoyable environment! A number of people work in the lab, but you cannot tell who is the creator, the producer, or the housekeeper. You can see rosy faces and relaxed expressions whenever they focus on a specific activity or collective affair.

A few of them are obsessed with modulating the immaterial patterns of light, its waves and hues, and document the events with videos and photographs. Concurrently, other residents are involved in form making; they sculpt reflective and transparent modules similar to museum cases; they construct light-transmitting tunnels and tubes; they position and hang diffusing, augmenting, and distorting machines, and collaborate with wirers and solderers to create electrical and digital circuits. Others prefer science and optics, and spend their time measuring distances and wavelengths. They are at home amongst changing conditions and electromagnetic variations, and love manipulating the properties of light—its intensity, frequency and wavelength spectrum—and playing with polarization. They are skillful, intervening upon the multiple rhythms of these living structures, and controlling (things) through their energy-saving consoles. Some are busy with repetitive tasks, but not in the manner of office routines. They graft the tissue of small plant organisms with wires: the stocks and scions are plants and fiber-optic cables respectively, generating hybrid “in-plants” and “in-grafts.” They re-root, remove dead leaves, and decompose matter to bolster the plants and strengthen their structure. From time to time, they feed them with nutrients while stimulating them with sounds and noises. They add moisture, provide fertilization, and perform potting. They un-mix the serpentine cables, always making sure to relieve them of any stress. They take care of the ever-changing and ever-growing infrastructure, which is simultaneously cut off and multiplied, exactly like the Lernaean Hydra. They collect and grow forgotten species and archive them into genealogies while enhancing their shapes with prosthetics and natural illumination. This is how life unfolds in the lab-space where they perform their tests and experiments.

They are grass-root light activists. They like to be free. They are an autonomous movement, and a habitat of sorts. They prefer to sleep, work, and take breaks whenever they please. They have no clocks. They may be obsessed with natural light but do not disdain artificial sources. In their institutionalized version of galleries and museums, they even play around with them. For their own living environments, however, they like to keep it natural. They have written and unwritten papers and protocols on the ethics of light, which all members of the community help preserve and can readily discuss. At their core, is the belief that light should be a common good, available to all. They can't tolerate tall sun-blocking structures, artificially lighted spaces, buildings without windows, without doors, without perforated surfaces, without even small random holes. They despise the bureaucratic capitalism of universal, artificial light.

They are always generous with visitors, allowing them to participate in this collective form of dwelling. They crave euphoria, strive for light continuity and revere circadian rhythms.

### **When You Leave...**

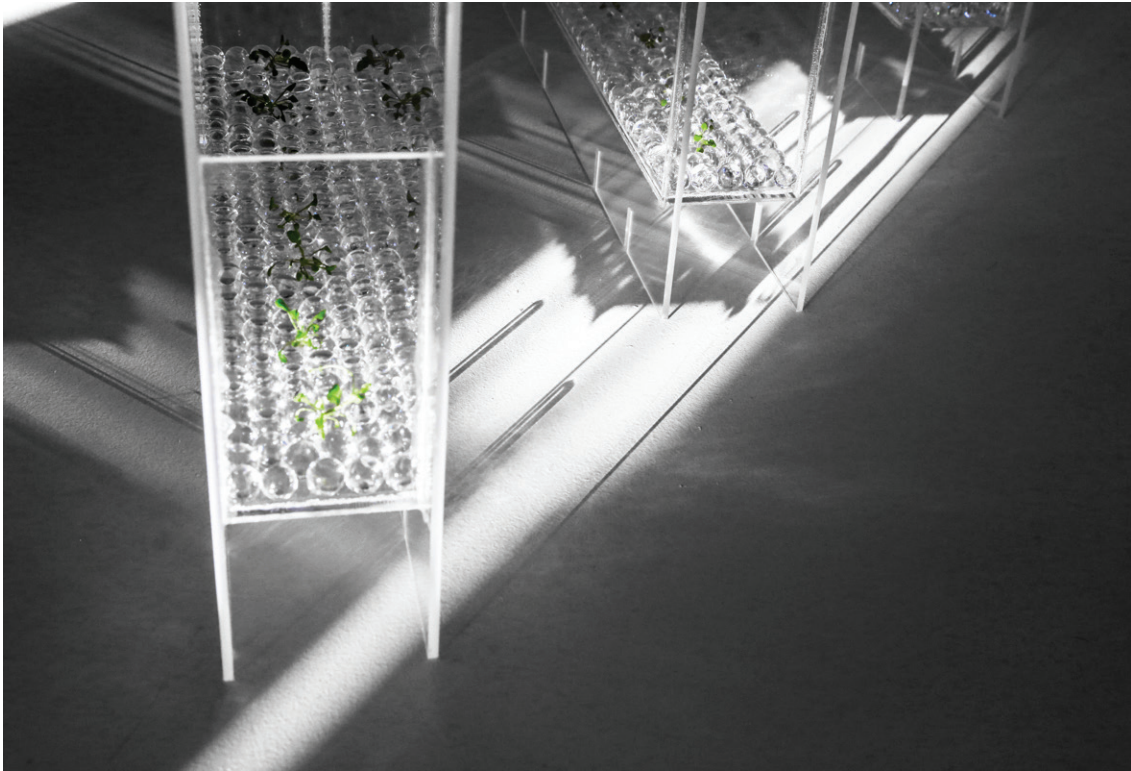
You feel fresh and renewed, and with increasingly more energy—enlivened by surprise, randomness and by having no control over what's happening. After your long visit, you have learnt how to appreciate again the sun, the moon, but also halos and rainbows, and all periodical cycles. It is now dusk, and you can see the stars. You may wander around all day and night, perceiving the small environmental changes around you. You are now aware of optical phenomena, illusions, mirages. You are able to recognize different tonalities of light rays and the patterns of photons. You can see and you can be seen even if it is dark. You even feel sleepy. Until today, you were used to harsh shifts and flamboyant effects. If there was a change, it had always been fast, intense, brutal. Now you understand and appreciate slowness. You are about to leave this community, which swings back and forth between outlandish and local, need and desire, survival and surplus. Your airy, diaphanous, and fragile bubble starts to expand and contract, and to change into innumerable configurations.

You conclude that this zone is a wonderland for scientists, artists, and environmental geeks, but also overtired workers and flâneurs, who, here, can stroll around slowly, aimlessly, without purpose, reason, or guilt. Anyone who is curious to experience it and experiment with ethereal transformations and infinitely subtle variations is welcome to come.

### **Acknowledgment**

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*All images of projects by Zenovia Toloudi / Studio Z, photographs by Dimitris Papanikolaou, Kristophe Diaz, and Dominic Tschoepe.*

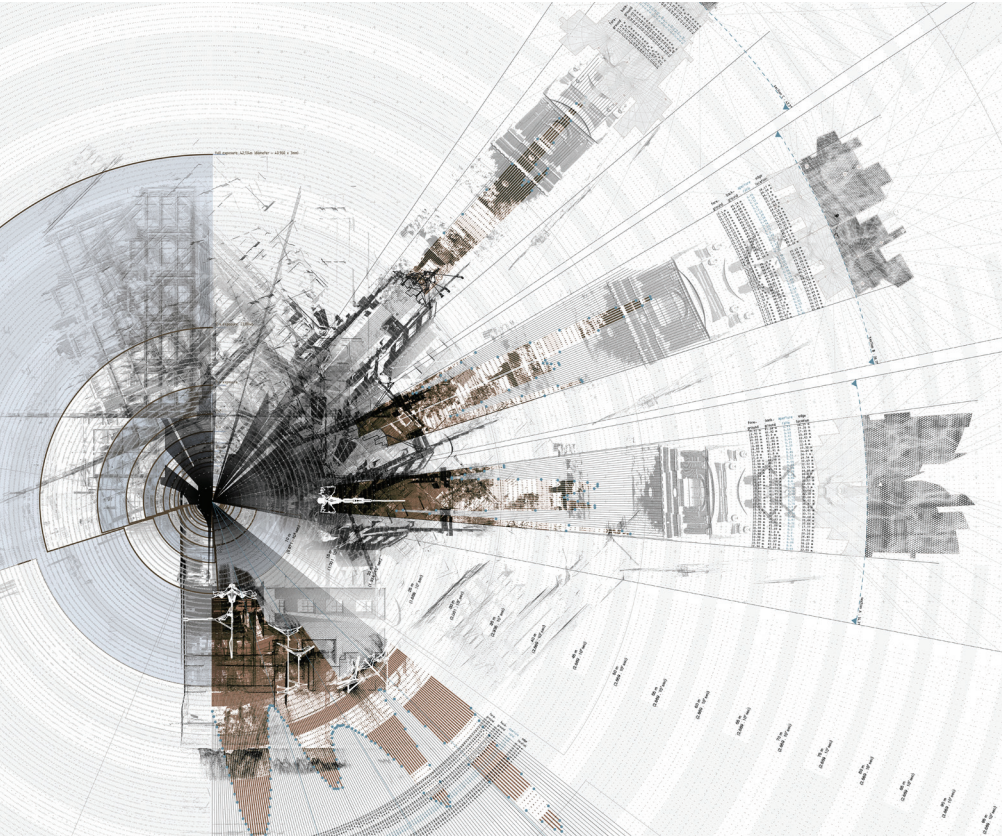


*Photodotes V: Plug-n-Plant.*

# Orchestrating the Edge

*On Schizophrenic Points and Indecisive Photons*

Thomas Pearce



*Behold yon miserable creature. That Point is a Being like ourselves, but confined to the non-dimensional Gulf. He is himself his own World, his own Universe; of any other than himself he can form no conception; he knows not Length, nor Breadth, nor Height, for he has had no experience of them; he has no cognizance even of the number Two; nor has he a thought of Plurality, for he is himself his One and All, being really Nothing.*

— Edwin A. Abbott

*The danger is in the neatness of identifications.*

— Samuel Beckett

Geometrical categories, more than being just tools for describing the physical world, always simultaneously serve as psychological projection planes for shared anxieties. Edwin A. Abbott, in his 1884 novel *Flatland*, explores the tormented personalities of elements of descriptive geometry and (mostly in vain) tries to free them from their ignorant attachment to their own limited dimensionality. In doing so, he not only foretells by decades the theory of a fourth (and n-th) dimension but also politically activates spheres, polygons and points as they become a soundboard for his satirical critique of the social immobility and narrow-mindedness of Victorian society.

The main protagonist of this article is a point with a faith no less miserable than Abbott's: it is the point in the 3D laser scanner's point cloud. This point cloud is well underway to become a dominant mode of seeing, measuring and mastering reality. In doing so, it is slowly but surely dissolving this reality into endless sets of unique xyz values. The exactitude of these coordinates condemns the points, "being really Nothing," to a theoretical state of Cartesian weightlessness. What is left between them is a gaping interstitial shadow, a shadow that is pervasive and cannot be eliminated by adding ever more points—not even in a theoretical endless resolution.

The mesh (the triangulation of these points into a surface) is becoming a widespread coping strategy for the *horror vacui* caused by this interstitial unknown—to the point that many recent consumer-oriented 3D scanners no longer even output point clouds but merely meshed surfaces. The shadow-ridden and ambivalent state of the actual measuring mechanism, the dispersed point cloud, is bypassed as it is safely internalized in the black box of the scanner apparatus. What results are topologies with clearly defined extrinsic boundaries, the comforting discrete and stable identities of directly 3D printable solid subjects.

But rather than concentrating on the anxieties *resulting from* the point's non-dimensionality, I would like to zoom in on one single point and look at the anxieties that *produce* this very idea of weightlessness. Again, it is the projection of our own longing for stable, "neat" identities rather than the scanner's actual measuring process that abstracts its measurement to irrefutable and unique coordinates. For does the point in the point cloud, like the miserable point evoked in the opening quote, really "know no Length, nor Breadth, nor Height"? Is there really no "thought of Plurality" in its solipsistic mind? If we want to fracture this solipsism and recuperate notions of multiplicity and ambiguity, we will have to "unbox" the scanner's black box and analyze its internal workings.

Facing Image: When scanned, the Masks dissolve into hightech surrealist mirages that deconstruct the veracity of the scanner and inject fractures of the imaginary into its supposedly realist representation of the city.

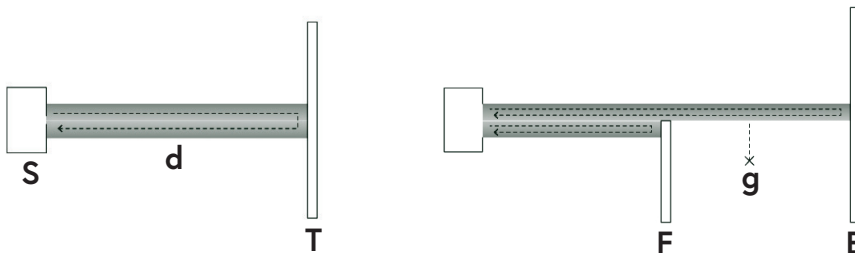


*Modulating the Schizophrenic Point*

It all starts with the thickness of the measuring laser beam. The fact that the scanner’s laser beam *does* have a “Breadth”—a diameter of a couple of millimeters<sup>1</sup>—has rather far reaching implications for the nature of the resulting point. I want to illustrate this describing a phenomenon called “edge noise.” Edge noise occurs when a beam hits the edge of an object and the other part of the beam travels on to meet an object behind it. The range sensor, determining the distance by measuring the “time-of-flight” (the time it takes for the beam to reflect off an object and return to the scanner) receives a “mixed return” of two time-of-flight values.<sup>2</sup> The scanner deals with this by means of interpolation: it creates an average of these two measurement values, thus outputting a “fictional” point between the first object’s edge and the second object behind it.

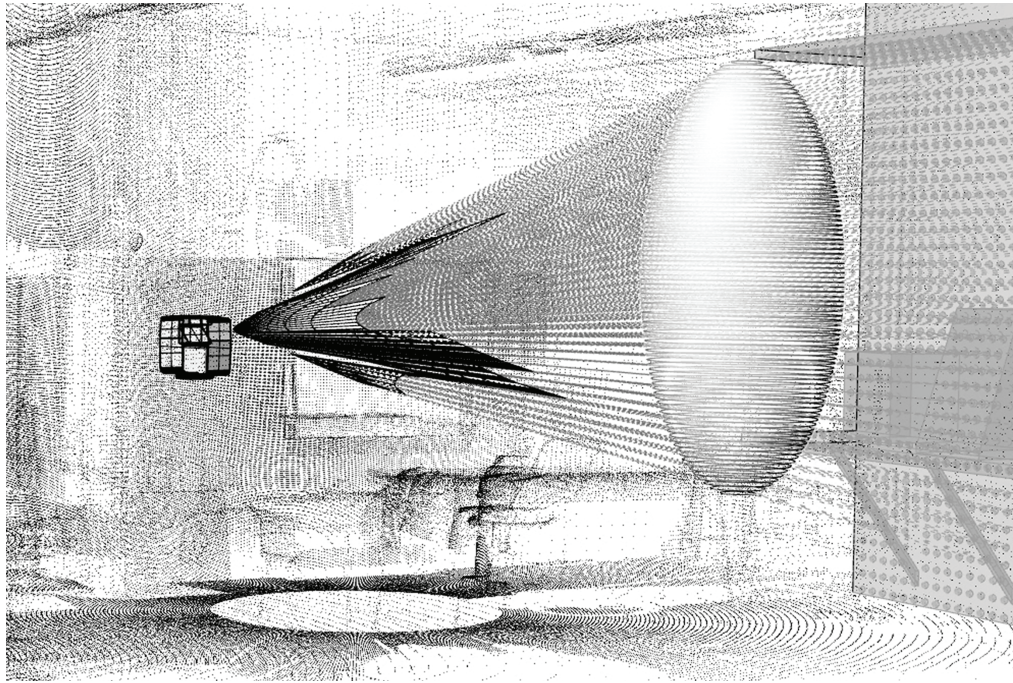
It goes without saying that the scientific papers discussing these “mixed pixels” are mainly concerned with the development of strategies for the identification and removal of these abnormal artefacts—say the noise of dense vegetation (twigs, leaves) for unmanned military vehicles.<sup>3</sup> For us however, these “ghost points” are fascinating as they start contesting the realism of the scanner and reveal that underneath the reductionist representation of the non-dimensional point, there is a plurality to be discovered—that the solipsistic point is actually a schizophrenic point.

In fact—though this is an extrapolation that bears more epistemological than practical relevance—this schizophrenia is lingering in every point of the point cloud: every measurement can be defined as a “noisy” mixed measurement for even when the beam isn’t split by hitting the edge of a discrete object, it will always hit a surface in an “abnormal” (meaning not perfectly geometrically normal or orthogonal) way. What starts to crumble here is the notion of atomism, the assumption of an “uncuttable” smallest unit, that as “the postulation of individually determinate entities with inherent properties” (Barad 2007, 137), not only functions as the basis of a realist understanding of the point cloud but also as the basis for the very notion of the individual (similarly meaning “indivisible”).



Time-of-flight measurement: distance (d) between scanner (S) and Target (T) = laser return time/2 x speed of light.

Mixed pixel/edge noise: an interpolated “ghost” measurement (g) between foreground (F) and background (B).



Counter-algorithm calculating the (evenly perforated) foreground geometry needed to create an ovoid shape in front of a known (pre-scanned) geometry.

How then do we start defining a positive notion of this inherent mixed state—an understanding that neither eliminates these “abnormalities” by filtering them out, nor “resolves” plurality in a dialectical synthesis of interpolation? Can we think of these mixed pixels in a non-reductionist and non-dialectical way, seeing them as fleeting intensities that are neither foreground nor background, but “included middles” (Guattari 1989, 141)? Can we, and if yes, how do we *design* these included middles?

The schizophrenic point is not only a powerful *metaphor* for multiplicity but can also become an instrument or a *catalyst* for multiplicity. This is because understanding the nature of edge noise also has a practical implication: it allows us to rearrange the equation describing ghost measurements ( $g$ ) as resulting from the interpolation between foreground ( $f$ ) and background ( $b$ ):

$$g = (f + b) / 2$$

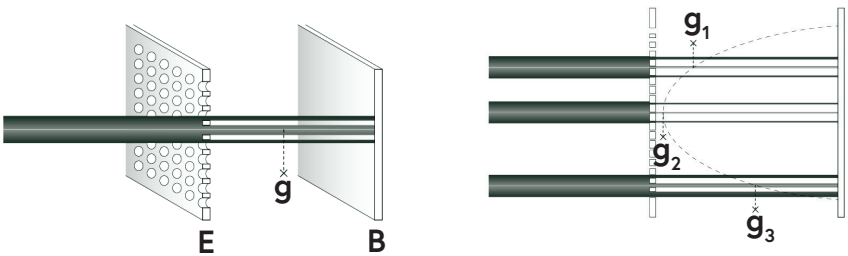
into:

$$f = 2g - b$$

Translated, this reversal of the edge noise equation means that we are now able to actively *create* and control a ghost measurement, deducting the position of the foreground edge needed to create it.

The following images show a series of edge noise prototypes. These finely perforated screens are provoked by the ability to consciously instrumentalize and design the edge noise that results from 3D scanning them. As the diameter and spacing of the perforation of these screens is always smaller than the diameter of the scanner beam, these screens effectively are “all edge.” This way, every single measurement going through the screen will produce a “ghost point,” as every beam without exception will partially hit the screen and partially hit the background. Though initially producing rather scattered results, the experiments become increasingly successful by refining the perforation grid’s resolution and by differentiating the aperture ratio.

As the resolution of the screens and hence the level of control over the resulting edge noise increases, these initially open-ended analytical “scanner eye tests” evolve into something much more powerful. Now able to design and build, through the scanner, any fictional point cloud outcome of choice, the screens, as deceivers of the eye of the scanner, open up an entirely new realm of illusion and phantasm. In this sense, they are similar to the early nineteenth century *phenakistiscopes* (from the Greek *phenakizein*, “to deceive, to cheat”), which instrumentalized the newly discovered fallacy of the eye called the “afterimage” to blend between two given images and create the illusion of movement.<sup>4</sup> The screens, as scanner phenakistiscopes, employ a parallel method of instrumentalizing the fallacy of edge noise to create illusory points that blend between two given measurements.



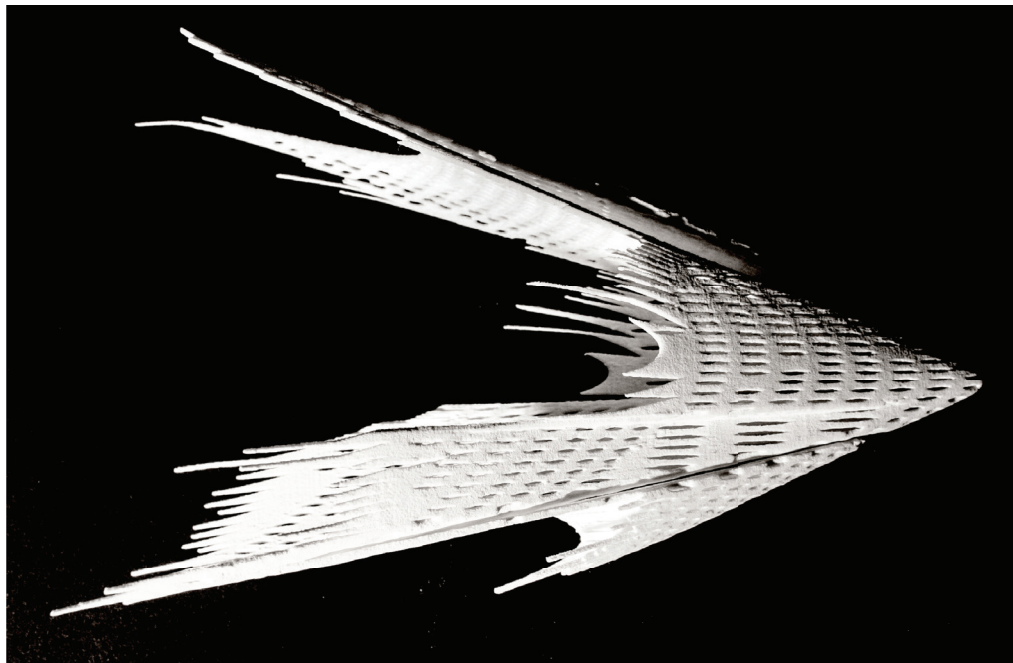
All measurements through the screen (E) create ghost measurements, the screen is “all edge.”

The differentiated aperture ratio defines precisely where between fore- and background ghost measurements are created.

### *The Irrelevant Choice of the Indecisive Photon*

There is a certain modernist-positivist naivety, however, about the clear equations of this reverse engineered edge and its suggestion of measurability and control (even if over fictions)—so that we might be at risk of developing a “realism of the phantasm.” The reason is that, even if we have assigned “Length, Breadth and Height” to the measuring process, we are still operating within purely geometrical definitions. Light has been treated as an abstract geometric entity, the beam as a homogenous cylinder performing calculable interactions with other geometrical abstractions. We have fallen, as Karen Barad would put it, into the “representationalist trap of geometrical optics” (2007, 78). To escape from this trap, we will now have to shift our focus to *physical* optics and look at what this cylinder of laser light is actually *made of*.

Strikingly, the experiment in physics that has been key for the demonstration of the nature of light, bears a strong similarity to our own experimental setup. In the famous double-slit experiment, a plate pierced by two parallel slits is illuminated by a coherent source of light (often a laser beam) while the light passing through the slits is observed on a screen behind the plate. While the experiment, conceived around 1800, initially served to prove the wave theory of light by demonstrating optical interference in the projected light patterns, it later came to illustrate what is called the wave-particle duality. Light, according to this principle of duality, exhibits properties of both matter (particles) and energy (waves). These properties



Nylon printed edge screen.

however, are not simultaneously observable or measurable, as they require a “particular choice of apparatus, providing the conditions necessary to give meaning to a particular set of variables, at the exclusion of other variables” (2007, 115).

Moreover, apart from excluding the possibility of other types of observation, every apparatus of measurement unavoidably influences the nature of the object observed. Again, it is precisely time-of-flight range finders that are often used to illustrate this idea. By shooting light (as both matter and energy) on the measured object, they essentially “push” this object away and change the very distance they are measuring. Similarly, by merely turning on the light in a room, one minutely alters the arrangement of the furniture within it. As practically irrelevant as such descriptions may seem, they do start to dismantle the “separability of knower and known” assumed by Newtonian (geometrical) physics—and by our earlier naïve equations (2007, 107). Enlightenment physics, by assigning physically and conceptually separable positions to objects and observers, understood “observation to be the benign facilitator of discovery, a transparent lens passively gazing at the world” (2007, 97).

By recorporealizing light—having given the medium a body—the body of the observer (the scanner) and the observed become inextricably entangled. The term “remote *sensing*,” actually used to describe scanning’s *lack* of physical contact (Manovich 1993, 124), now receives an opposite, and rather literal, validity. The belief in the realist veracity of the scanner starts to crumble while the “metaphysics of individualism and the belief in representationalism” are discarded in favor of an alternative described by Karen Barad as a materialist-realist onto-epistemology (Barad 2007, 107). Barad explains: “Practices of knowing and being are not isolatable, but rather they are mutually implicated. We do not obtain knowledge by standing outside of the world; we know because ‘we’ are of the world. We are part of the world in its differential becoming.” She therefore abandons the binary model of ontology vs. epistemology and instead speaks of onto-epistemology as “the study of practices of knowing in being” (2003, 829).

Hence the scanner can no longer be seen as the designer’s passive and immaterial *camera obscura* but instead receives a certain *creative complicity*. As such it plays a more active role as a productive agent of measurement, not just indexing, but actively creating the phenomena observed by physically assaulting reality with its laser beams.

So let us now throw a new (physical) light on our attempt to control and design our “ghost measurements.” Zooming in further onto the laser beam, we now encounter a new challenge: the beam is not homogenous as the particles within the beam are unevenly distributed (note that we decide for a mutually exclusive description of the beam as *particles*). In fact, there are different zones of density and intensity within the laser beam.<sup>5</sup> This again has both philosophical and prac-

tical implications. The former is that the beam is inherently differentiated and exhibits multiplicity even before meeting the multiplicity of its targets.

The *practical* implication of this heterogeneous beam is that, even if we, with the perforated screens, manage to create an experimental setup in which the ratio of the beam diameter *hitting* the screen to that *passing through* is perfectly known, we are still unsure about (and not in control of) the measurement the setup will produce. This is because the particles may be distributed throughout the beam in such a way that either more or less of them than planned will either pass through or reflect off the screen. The obvious way to regain control and diminish this uncertainty is by increasing the resolution of the perforation even further—to the point that every single photon particle in the beam is confronted with the same aperture ratio of the screen. It is fair to say that, now that we have arrived at the order of magnitude of a single photon, we have in fact left the realm of practicability and are starting to describe the problem as a *Gedankenexperiment* (thought experiment) rather than intending to actually solve it. The issue now becomes not that a physical experiment at such a scale is impossible, but rather that its outcome is inherently uncertain. Niels Bohr, returning to the double-slit experiment, described the possibility of shooting a single particle onto the slitted plate and measuring through which slit it will travel. The problem however, Bohr continues, is that this measuring apparatus will unavoidably disturb the very behavior of the particle it is measuring as the act of measuring will destroy the interference pattern.<sup>6</sup> Having zoomed in this far, we are now confronted with the limits of control, as the uncertain behavior of the single photon performing our act of measurement implies the impossibility of a total knowing.

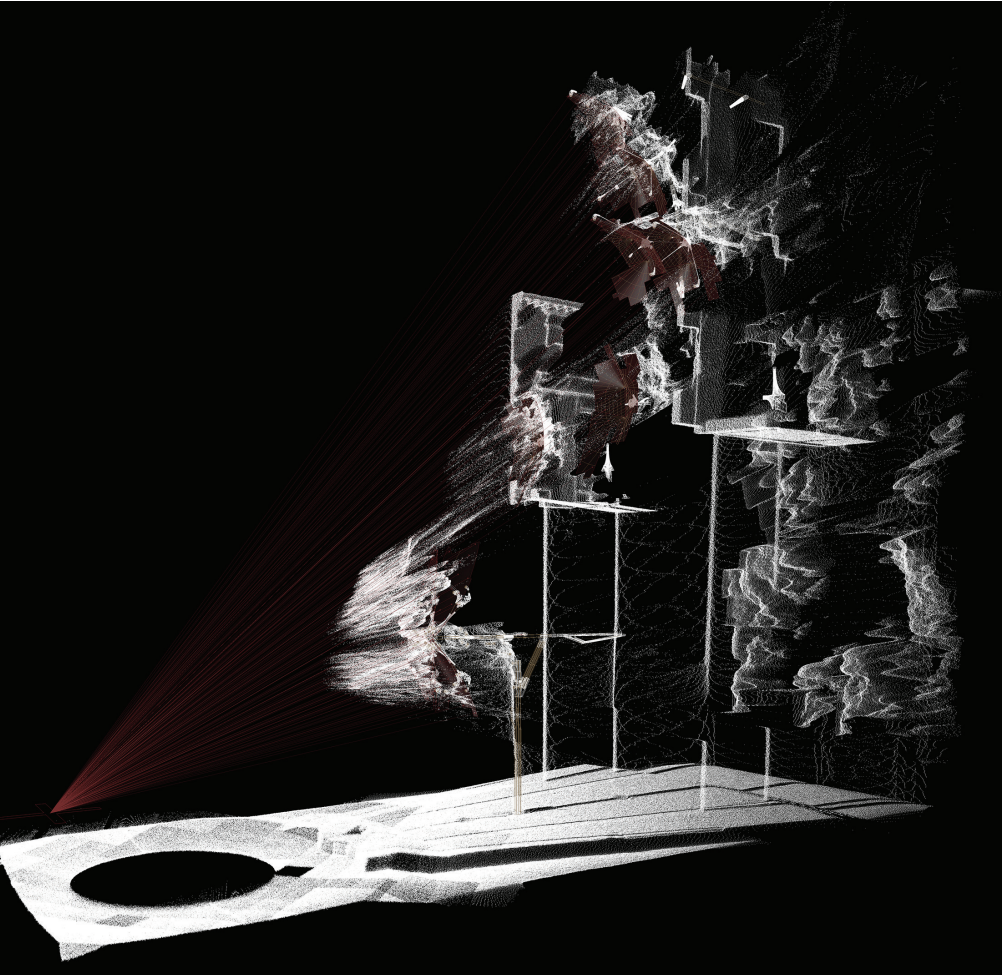
In the meantime, the result of our high-resolution screens has nevertheless become rather convincing. So although the “choice” of the “indecisive” photon may be *uncertain* this choice has also become, in the face of our techniques of high-resolution design modulation, *irrelevant*.



An uneven particle distribution within the beam diameter makes the result, even with a known aperture ratio, uncertain.



Increasing the perforation resolution reestablishes control over the resulting ghost measurement.



Reverse engineering imaginary point clouds through finely perforated, algorithmically controlled Masks.



The Masks of St Brides, details.



*The Ubiquitous Edge of the High-Resolution City*

The reason to dwell upon this “irrelevant” notion of the photon’s choice goes beyond the success of our phantasmagoric screens. For, as Karen Barad argues, the “seismic shift in epistemology” which followed the development of quantum physics pervades all orders of magnitude, “from the smallest particles of matter to large-scale objects.” The fact that this “essential discontinuity is examined on a micro-level does not mean it does not influence every scale of reality” (2007, 252). Following Barad’s impetus but going one step further than the order of physical magnitude, I would argue that this “quantum shift” can also become a useful metaphor to critically describe (and counteract) contemporary modes of governance.

Would it be audacious to describe what Gilles Deleuze has called the “society of control”—in analogy to our screens—in terms of resolution and as a strategy for coping with uncertainty? Before, Foucault’s disciplinary societies operated by disciplining the abnormal through the apparatus of physical boundaries and institutions—a physicality that has given his theories an overwhelming resonance in architectural discourse. Control societies however operate on a much less graspable level: having incorporated uncertainty, control ramifies and mobilizes the abnormal through strategies of modulation.<sup>7</sup> Modulation, instead of disciplining the body, addresses the brain (*noos*) directly through high-resolution media, which, embedded and ubiquitous, come to define a high-resolution urbanism.



Masking modes of vision: human, mechanical, post-human. The mask allows for the observer to look through the “eye” of the scanner. Reality dissolves into 3mm diameter fragments (the width of the collimated laser beam), the multiplicity within each measurement is exposed.

Rather than imposing a certain conduit (“I am being watched and hence should act correctly”), these modulations *induce* the decision made by the “autonomous subject” (“I want to act like this”)—replacing the logic of coercion by the far more subtle logic of persuasion.<sup>8</sup>

The subtle smoothness of the society of control is complete when the hard edge of the coercive device (the building) disappears, not by becoming immaterial but rather by increasing the resolution of modulation to such an extent that it becomes barely visible—yet at the same time pervasive. “The city of control” (Hauptmann 2011, 18) thus becomes—like our perforated screens—“all edge.” Its modulated citizens/consumers are constantly moving and crossing this ubiquitous and controlled edge. Inundated by a (consumerist) sense of continuous and pervasive choice, each singular choice of the citizen/consumer becomes—like the choice of our photon—irrelevant.

Should it then discomfort us that the “modulatory interventions” of our screens emulate the logic of a governmentality of control? I would argue quite the opposite: the critical dismantlement of the measuring apparatus—like that of the apparatus of governance—is just the first step towards the formulation of critical and aesthetic design strategies that are able to perform a meaningful counter-agency against these very apparatuses. Such aesthetic strategies should re-use, dis-use and invert the mechanisms critically analyzed and thus extract positive and affirmative notions of both biopolitics, high-resolution technology, and the high-resolution city.<sup>9</sup>

*This text is an abridged version of one of three chapters of a thesis entitled “Orchestrating the Edge. Towards a Noisy Point Cloud Onto-Epistemology.” The full thesis and more detail on the accompanying speculative design project can be found at THOMASPEARCE.XYZ.*

*Endnotes*

1. The Lidar scanner used here is the FARO Focus 3D and has a beam diameter specification of 3mm.
2. To be precise, the Focus 3D's measurement is in fact phase-shift based, a process similar to time-of-flight and which also creates "edge noise."
3. For example, see Tuley et al. (2005).
4. The focus of Jonathan Crary's brilliant analysis of such eye-deceiving devices focuses on the "recorporealization" of the observer's eye and was of great inspiration for my upcoming attempt to materialize the "scanner eye" (Crary 1990).
5. See Tuley et al. (2005), Fig. 1.
6. And due to its indeterminacy this observation-disturbed behavior cannot, as opposed to what Newton assumed, be compensated by the measurement (Barad 2007, 119).
7. My description of Deleuze's notion of control societies builds freely on Moore (2013).
8. Moore (2013, 66) quotes Iain Borden's example of a more architectural strategy of noo-political persuasion, which illustrates that these techniques should not be understood as exclusive to digital embedded media.
9. This stance builds on examples like Donna Haraway and her notion of "stepping out of the negativity circuit" of criticism and instead extracting affirmative positions towards technology/governmentality (Braidotti 2006, 206).

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# The Geomorphology of Cyborgian Geography

NEIL SPILLER

If you have a smart phone, and let's face it you probably do, you will be familiar with small "alerts" interrupting your surfing or emailing. When it does this, the virtual machine of the phone, which usually pretends to be a word processor, a laptop, a camera, a gaming engine or a photo album and a million things between, suddenly becomes a virtual geography teacher opening your mind up to a machine-augmented perception of a changing morphology of space and its fluctuating strata. This is cyborgian geography. This is our environmental context as much as any physical geography or transport infrastructure. There is a whole spectrum of morphologies based on the electromagnetic spectrum and a whole raft of cyborgian geomorphological archeologists armed with many machines—some vintage, some state of the art—who can reveal their depths of spaces to us, as well as their fluctuating nature.

Architects have witnessed the growing fecundity of these types of spaces and have noted their destabilizing influence on the

monopoly of traditional planned and designed space. However, few have speculated on what architecture might be or mean when partially immersed in these new digitized terrains. I am one of these architects—who has sensed a need to develop new ideas, tactics and strategies to save the architectural profession from navel gazing itself into extinction. Why have architects lost their way? Architects are obsessed with form, they like the way their buildings look at the expense of everything else. While this is not a crime in itself, it can leave them myopic to the great boon of the virtual—interconnectivity, expediency and enabling of delight. Also the global construction industry is fixed into series of simple economic relationships predicated on a very limited palette of materials, some of which have been around for millennia. The fast, evolving dynamics of software, hardware and the flying freehold and leaseholds of the virtual world have yet to have any meaningful impact on the ubiquitous economics of the built environment.

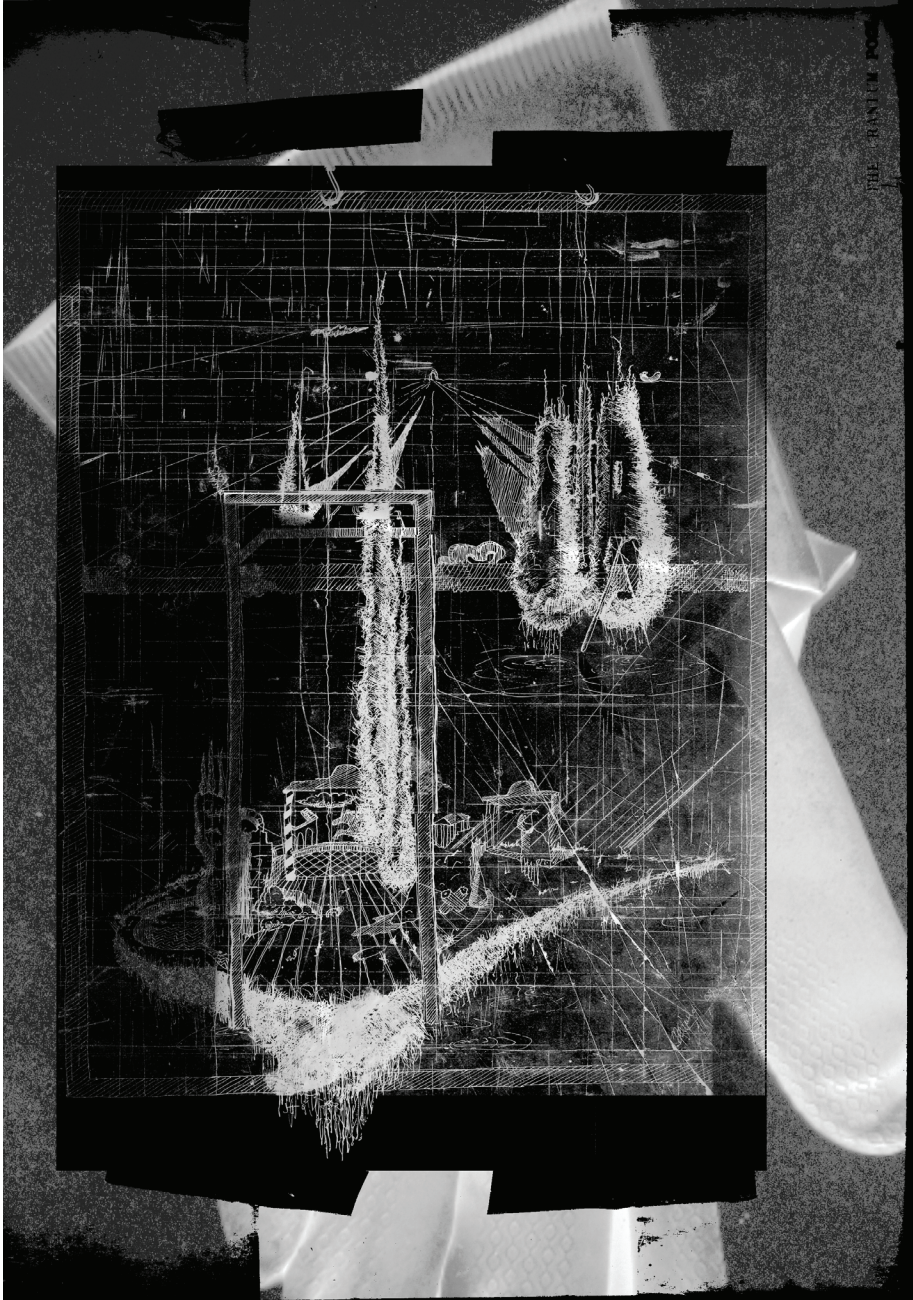
## VACILLATING OBJECTS

In 1997 I could feel this tsunami gaining strength in the great deep oceans of architectural education, my own work and the work of others. This led me to write an essay entitled "Vacillating Objects."

"The city is populated by limp and soft bags of mostly water, crowded between and within towers of metal, stone and glass. Some towers tall and thin, some very stubby indeed. These soggy, leaky bodies spend much of their day mumbling to each other through an invisible metaskin. This skin, a skin of communication, is forever becoming more hyper sensitive and more able to trace itself [...] Man-made constructions, the products of hard engineering, are starting to vacillate. The object is losing its pathetic impartiality. Objects have for too long floated in a sea of objectivity. Our technologies have developed a series of interlinked spatial fields, each with differing qualities with blurred boundaries. The objects that inhabit those fields are becoming schizophrenic. One of the tasks of the cyber- or bio-technologies will be to design ecologies of what I shall call 'object fields,' not just to define the definite object that operates in a uniform spatial field. An object will have many selves, many simultaneous forms. Technology is forcing the object to become a subject,

partial and anamorphic. The anamorphic object changes form when viewed from certain viewpoints, in different fields. The new objects will have formal qualities that are determined by the virtual or physical terrain in which they are viewed or manipulated [...] The viscosity of a spatial domain can fluctuate [...] The new spatial fields consist of a series of variable component fields: gravity, viscosity, spatial jump-cutting being but three simple ones. These optional spatial parameters will become ever more dexterously able to be manipulated, as our technologies become advanced and less confined to the virtual. One must also not forget the morphological potential of biotechnological objects and nanotechnological objects, and their ability to unconventionally chemically compute.

The traditional non-virtually augmented object has had an inability to respond to most spatial fields and changing an object by force, whether heat or hammer, has normally resulted in the object ceasing to function. The new objects will suffer from none of this crippling inertia or pathetic entropy. They will work in mysterious ways. They will change their topologies not just across spatial boundaries but often within the same spatial field" (Spiller 1998, 57–58).



Analysis of Beauty (Part One)



### THE SEVEN CONTINUA OF POST-DIGITAL ARCHITECTURE

Contemporary architects have no choice but to couch their work within the epistemologies and connectivity of virtuality's hyper-links, geo-tags, nested cartography and its hybrid ecologies of cyber fauna and flora. This is a world mostly invisible to us, a world on top of our anthropocentric reality.

This is a “sur-real” architectural topology which slips beyond the merely invisible world of the electromagnetic spectrum to the yet-to-be-seen world of dark matter.

The experience of contemporary architectural designers is one of positioning their work in relation to seven continua. These are:



Little Soft Machinery



Site Plan **Communicating Vessels**, Fordwich, Kent, UK

1. *Space* – Is there to be defined. A continuum of space that stretches from “treacle” space standing in a field—no computer, no mobile phone, no connectivity whatsoever— to full bodily immersion in cyberspace. Along the way between these two extremes are all manner of mixed and augmented spaces.

2. *Technology* – Is means, not meaning. Like space, technology ranges from simple prosthetics (the stone axe) via the Victorian cog and cam, to the valve, capacitor, logic gate, the integrated circuit, the central processing unit, the quantum computer, the stem cell, the monocoque and a million states and applications between and beyond.

3. *Narrative, Semiotics and Performance* – Is myth. An architect, designer, explorer

can chose whether their work operates along a continuum that ranges from minimal engagement in quotation or mnemonic nuance in relation to the history of culture or the contemporary world, or embraces the multiplicity of the complex and emergent universes of discourse that we inhabit and engage with daily. A design might conjure new conjunctions of semiotics as a way of re-reading them. It also might integrate itself with human and cultural memory and it might be reflexive and performative (in real time or retrospectively).

4. *Cyborgian Geography* – An architect, designer, explorer now can posit work, which operates in all manner of mixed and augmented terrains that are subject to all manner of geomorphic and cybermorphic factors and drivers.

5. *Scopic Regimes* – Architecture can exist at all scales, it all depends on the resolution of the scope that one chooses to use. Continents, oceans, cities, streets, rooms, carpets, micro-landscapes and medico-landscapes are all part of this continuum of weight and measure.

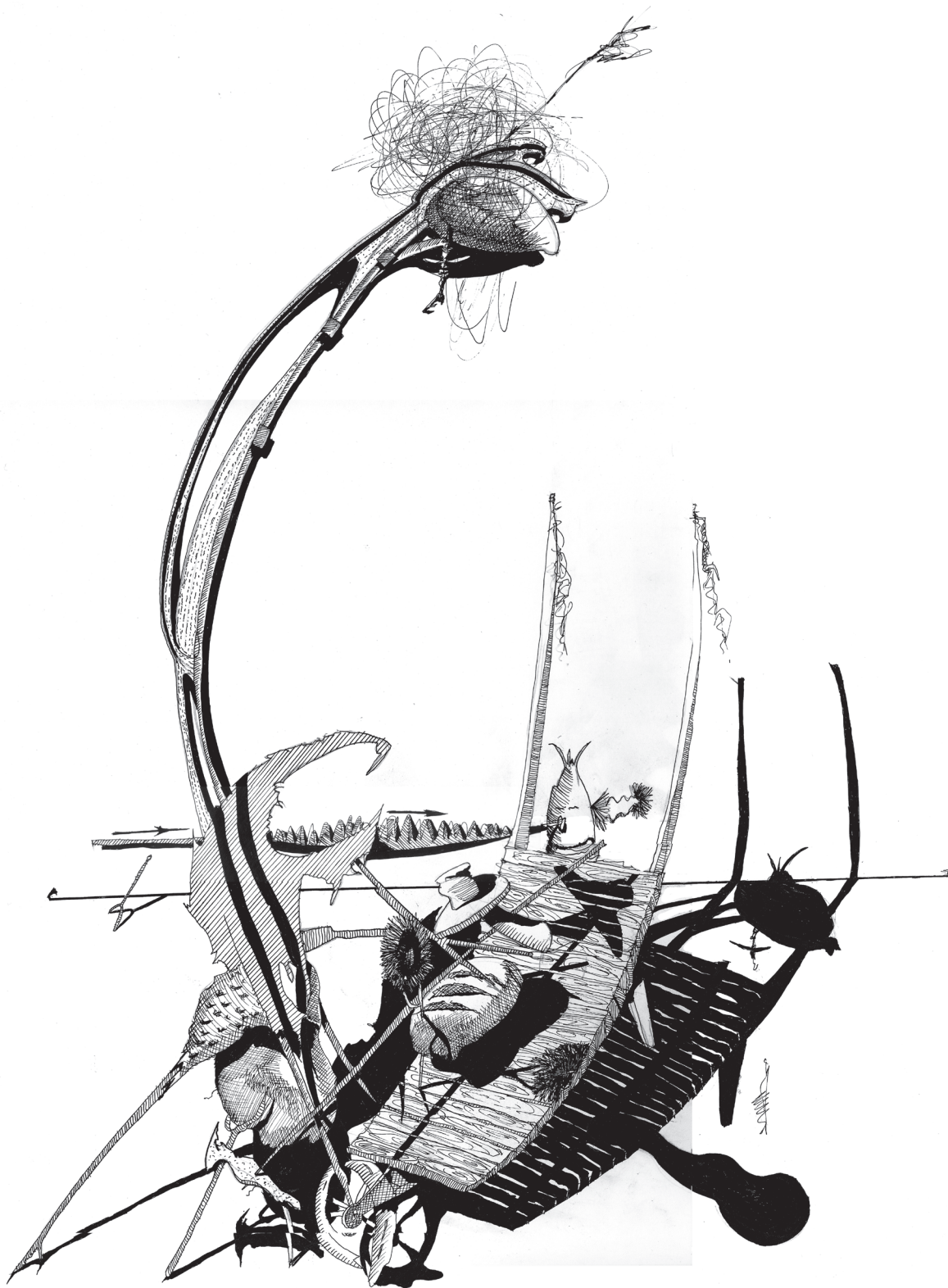
6. *Sensitivity* – An architect, designer, explorer might decide to make objects, spaces or buildings whose parts are sensitive and can pick up environmental variations or receive information. These sensors therefore can make objects and buildings that are influenced by events elsewhere or indeed are influential elsewhere.

7. *Time* – The central ingredient to this heady elixir. All the above six continua can be time dependent. Therefore, our new protagonists,

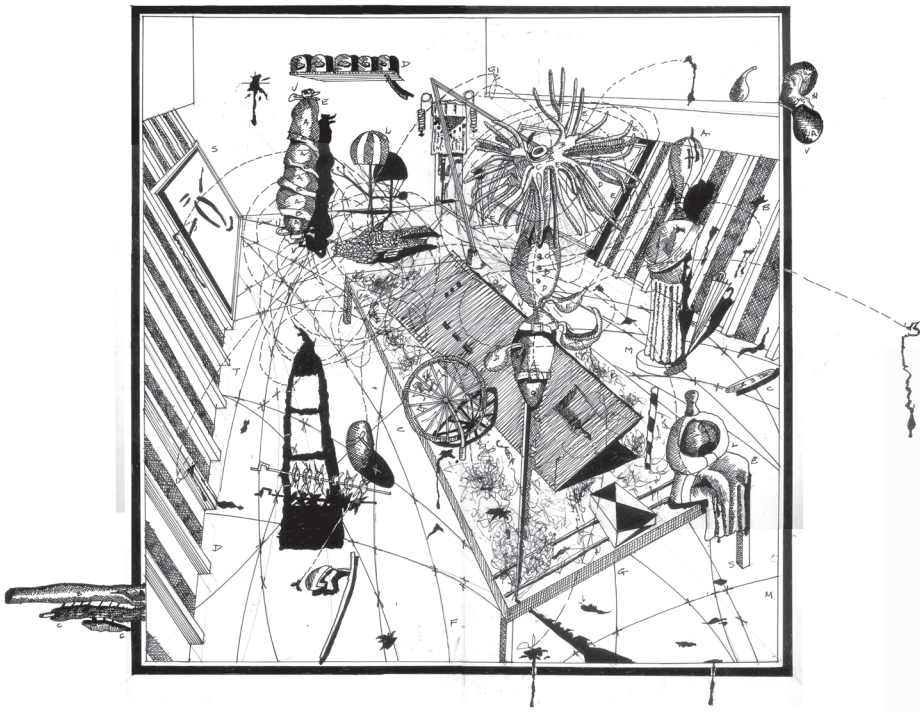
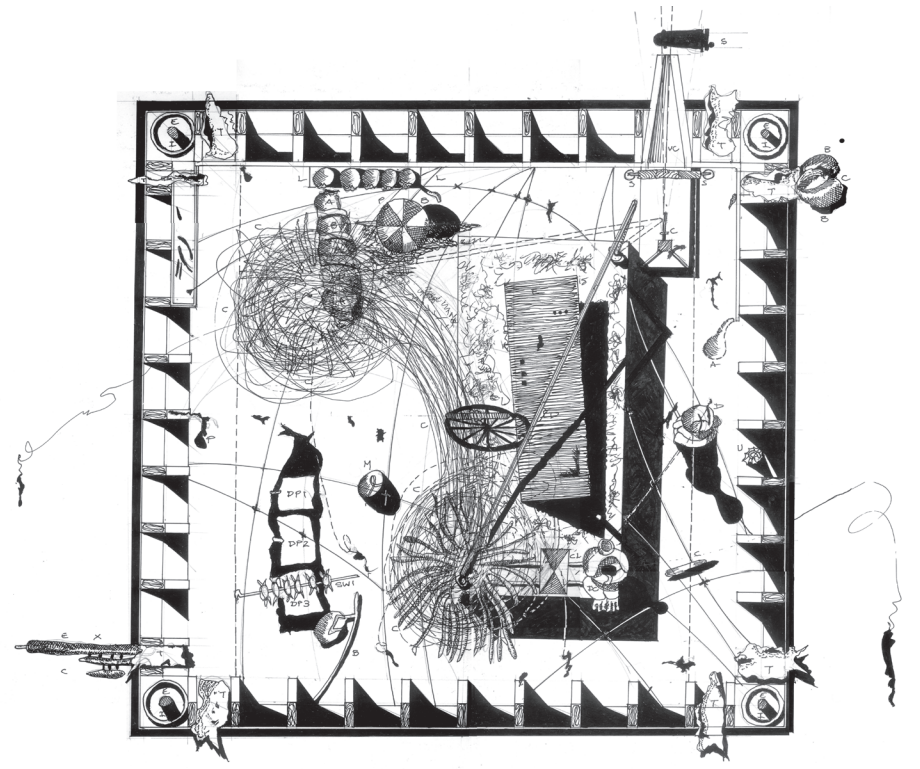
architects, designers, explorers can “mix” the movement of their spaces, buildings and objects up and down the other six continua. So a design might oscillate the spaces within itself with varying elements of vitality over time. A design might use different technologies at different times in its existence. A design might perform complex mnemonic tableaux at certain points in its life cycle. A design might demand of its occupants the use of a different lens with which to see other than anthropocentric phenomena or spaces. A design might coerce the occupant to be aware of environmental conditions in other locations that change. A design might change the sensitivity of objects over time, dulling them sometimes, making them hypersensitive other times.



Angel Gate



Perspective Wheel Barrow



Inside Doctor Dee's Trunks. Interior Plan and Perspective

## COMMUNICATING VESSELS

During the last ten years, I have been developing a large and dense theoretical project that addresses some of the surreal possibilities of the new technologies in response to ideas of individuality, mnemonics, poetics, machinery and the history of art and architecture. It is called "Communicating Vessels."

The "Communicating Vessels" project is a mechanorgyistic "Pataphysical Chunking Engine" constructed out of desire, chance, poetry and Surrealist history. It is conceived as an alternative to contemporary digital architecture, yet it is digitally contemporary. It rejoices in fundamental natural imperatives and living technologies. Its teetering dynamics oscillate around a mythical island, half there, half not. It rides its metaphorical bicycle through the pantheon of Art History and tosses itself happily into the dark crevices that are between and across poetic architectural desire.

The objects in the project occupy a vectorial space that is always shifting and unstable. Relationships change and symbolisms vacillate.

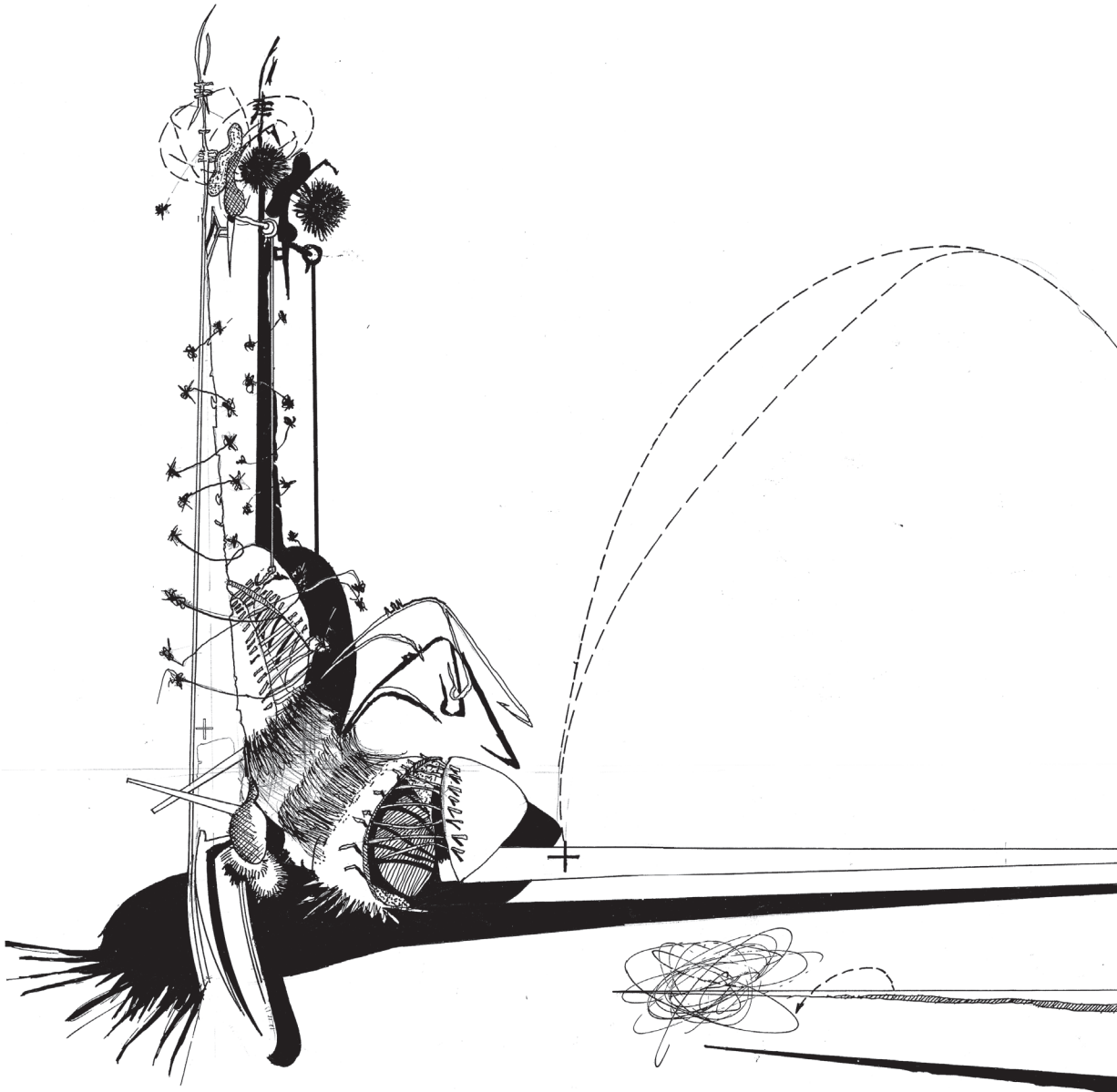
This is the English Country Garden of a Heavy Metal Mad Hatter with dark Baroque sympathies. The epistemological

distinction of plants, animals and machines is eroded. The conscious and the subconscious worlds are dallied with to create a psychosexual landscape that flirts with good and bad taste yet makes important observations and precedents for Architecture and its systematic future.

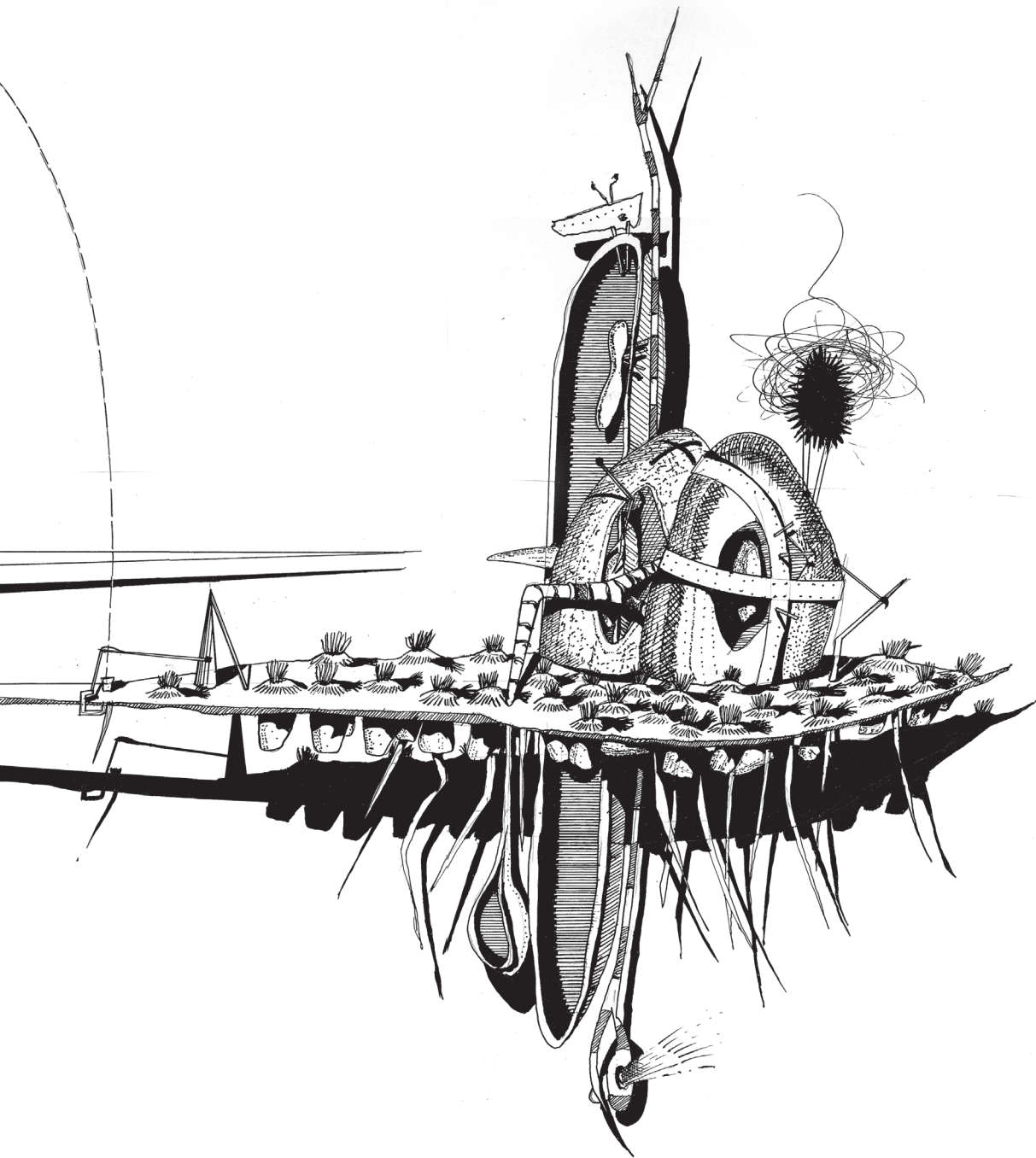
Elements that are explored in the light of these notions include:

The Entrance  
The Gate  
The Tree  
The Vista  
The Fountain  
The Sculpture  
The Bower  
The Gazebo  
The Artist's Studio  
The Site plan  
The Seasons  
The Temple of Repose  
The Chapel  
The Love Seat  
The Laboratory  
The Dovecote  
The Shed

"Communicating Vessels" operates in spatial fields that are numerous, complex and susceptible to chance and change. These include ideas about how to re-boot torn



Drawing Board Duo





natural ecologies with artificial catalytic ones; how we might harness the growth imperative of plants and be able to grow some of our products in a clean and sustainable way; how we might create twenty-first-century memorials as well as other mnemonic spaces; how we might tell stories to bring the power of our architecture alive; how we might create locative, performing architecture and how we might embroider space at micro and macro scales. Elements can take as initial points of departure ideas from the history of Art, or the history of ideas, or the arcane and hermetic history of architecture. But all pieces shown here are conscious of their role in the continuity of radical architectural thought. We make marks in the future and carve out territories for further exploration.

Points of view cascade, epistemologies are anamorphically distorted to reveal architectures that prove that surrealism invigorated by advanced technology is a useful paradigm for architects to research augmented architectures in the early twenty-first century. The work goes further than this and speculates on the convergence of all our technologies, virtual and biotechnologic.

## PROTOCELLS – THE UNIVERSAL SOLVENT

“...‘Here hold out your hand.’  
He had the test tube poised over her hand. ‘Palm up, stupid.’

‘Is it safe?’

‘It’s better than safe.’  
Jazir opened the tube and poured out a large globule.

‘It’s horrible.’

‘A slight burning sensation.  
It soon passes.’

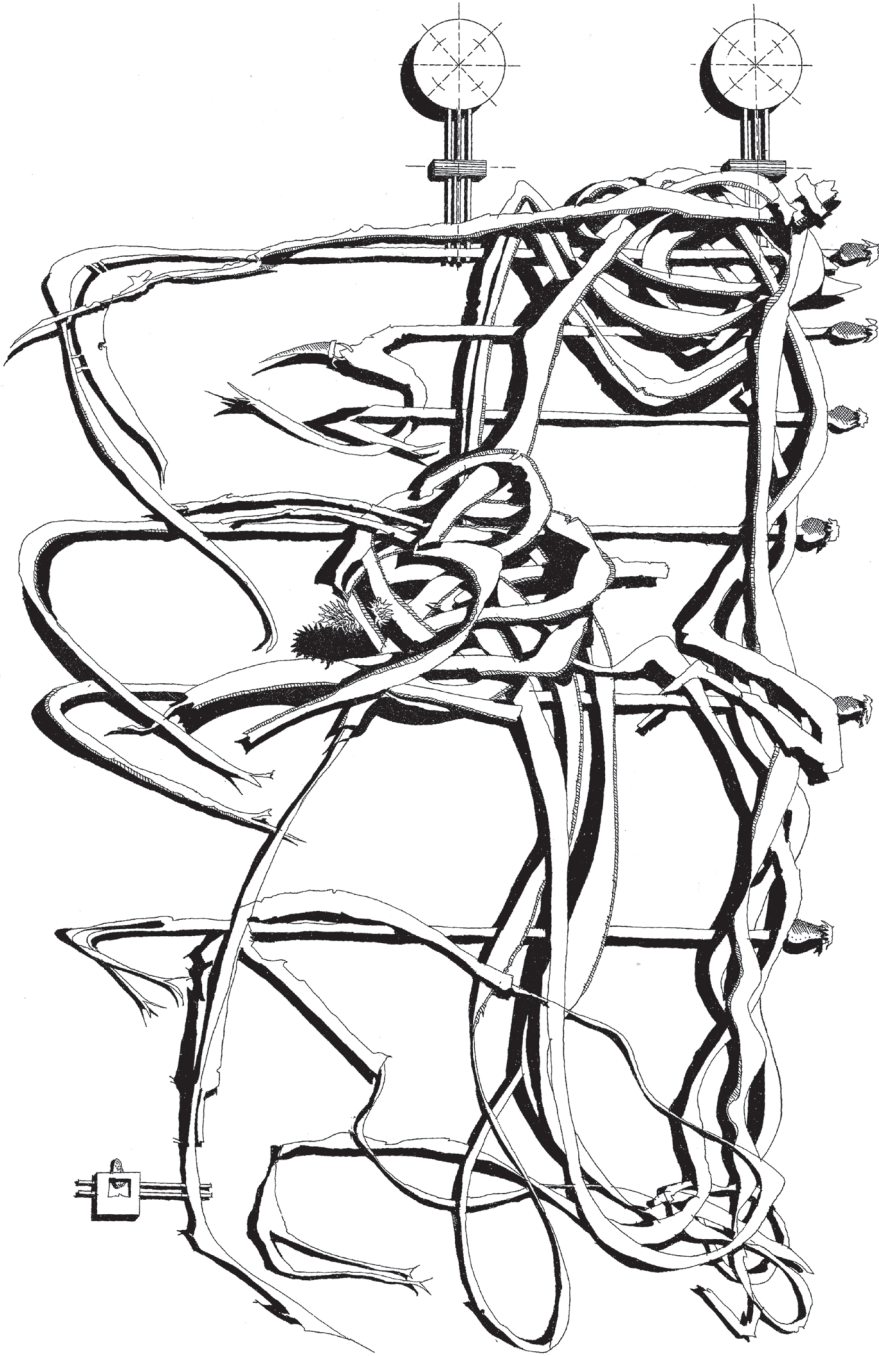
‘No I mean it’s greasy.  
And... oh...’

‘Yes?’

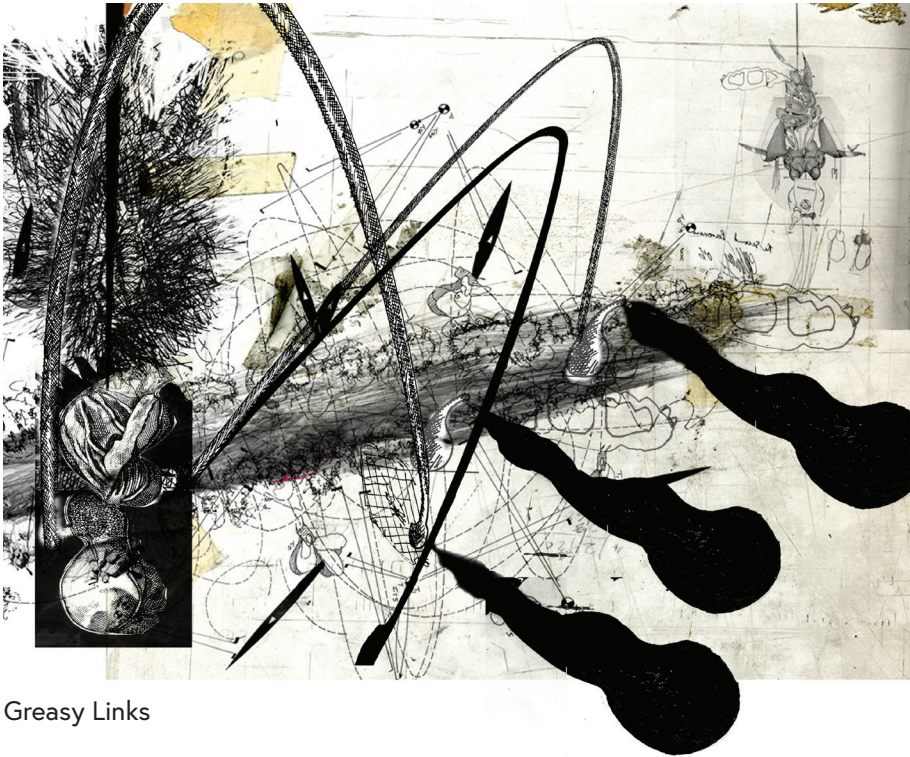
‘It tickles! ...’” (Noon 1997, 142).

## WETWARE, ARCHITECTURE AND BESPOKE CONSTRUCTIONS

For centuries, the simple rule for making highly finished architecture or products has been to make it somewhere other than from its point of use—the medieval masons’ yards, the baroque sculptors’ studio, the nineteenth and twentieth century factory being a few examples. As the distance between use and manufacture becomes greater and greater, and as skills become replaced by mechanization, building skills have become undervalued and consequently mostly lost. Coupled with notions such as “fast track” construction techniques (where the imperative is to limit “wet” trades as much as possible and



Space-Time Gate



### Greasy Links

build with “dry” prefabricated elements that “click” together), the skill set of site operatives has been emaciated to almost nothing. This denudation is now at the point where no one really expects anyone on a building site to have any skills apart from the most simple. Prefabrication brings with it an obsession with “tolerance.” (This means how far a product’s actual dimension differs from the idealized dimension due to inaccuracies in the factory process, the inherent qualities of a material or the inexactitudes of site setting out and measurement, and how we can “cover” these variations.) Much technological innovation has been aimed at reducing these margins of error in the fabrication and construction process to

achieve cheap, easily quantifiable outcomes that are quick and easily erected. These ideas also predicate a view of the world and the sites of architecture as mostly ocular-centric, anthropocentric, ubiquitous, non site specific—lacking in difference, and fighting against nature.

I wish to put forward the opposite paradigm. This paradigm fosters a view of the world that is bottom-up, wet, microscopic, chemically computational, maximalist and ecological. It also changes the economics and procurement dynamics that we are so used to within the realms of traditional construction. Further, it is a “recant” technology—it takes less

than it gives back in relation to carbon, energy and contextual damage. It is not inert, or finely honed, and is also fecund, highly sensitive and safe.

## LIVING TECHNOLOGY

“...‘Allow me.’ Jazir picked up a syringe, which he filled with the blurb juice off Daisy's palm.

‘Now, watch...’ He dragged Daisy over to his bedroom door. ‘You wanted me to open the door, right? OK, try the door.’

‘It's locked. You locked it...’

‘Good.’

Jazir shoved the syringe into the keyhole. He pressed the plunger. ‘Give it ten seconds...’

‘And?’

‘Try it, Go on.’

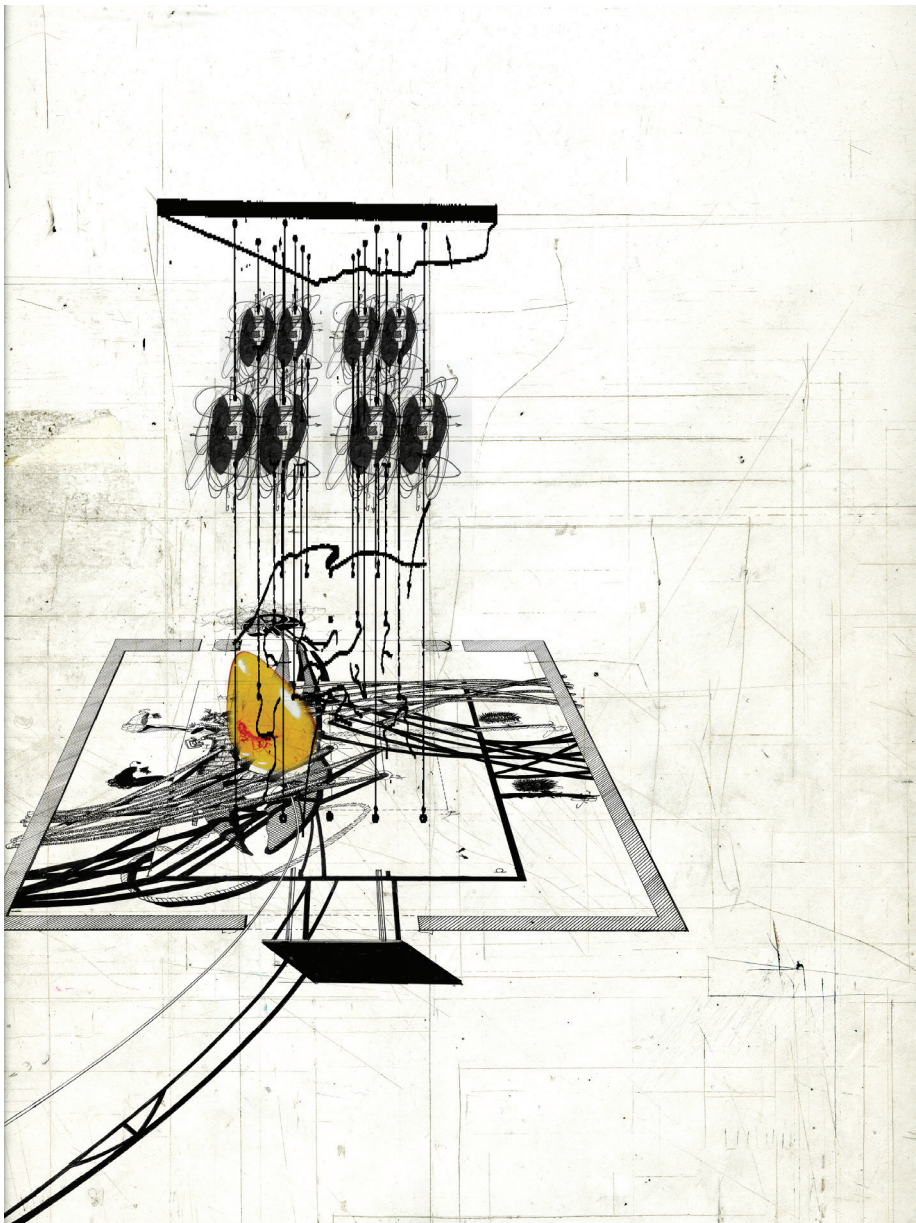
Daisy looked at Jazir like he'd gone mad, a clear possibility. Then she turned the doorknob. It swung open, nice and easy...” (Noon 1997, 143)

A new group of materials is emerging that exist in a realm between the living and inert. While displaying some of the properties of living systems such as growth, movement, sensitivity and complex behavior they are not truly “alive.” One example of a living technology is a protocell, a chemically programmable agent based on the chemistry of oil and water. It is able to move

around its environment, sense it, modify it and construct materials. Protocells are symbiotic with, rather than competing against, existing systems and materials, and in particular, share a common physical language with natural systems called a “metabolism.”

This is the dynamic process through which one material becomes another by the absorption and production of energy. Through an engagement with the language of metabolism, the twilight zone of existence of protocells may initially seem inexplicable. On further examination at the molecular scale, these extraordinary new materials may be understood very simply as being driven by the laws of physics and chemistry. Ultimately, protocells and other forms of living technology can be manipulated through the canons of scientific and technological experiment though, through their similarity to living systems, they promise to become agents of transmutation that are more familiar to the practice of alchemy. We are already *au fait* with applying substances to restore the holistic functioning of the human body and living technology offers the potential to deploy this technique in order to restore the harmony in irretrievably damaged architectural micro-environments.

To ease the intellectual transition from the provision of hard



Genetic Gazebo



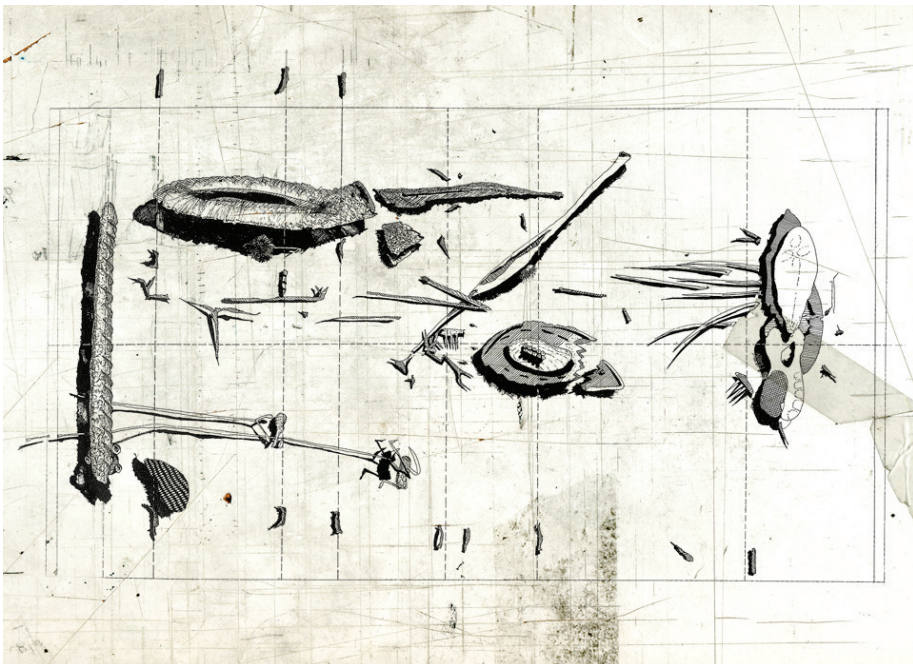
Partial Landscape

engineered products to the chemical mixing of solutions one must investigate the paradigms of alchemy. Alchemy is not just similar to architecture but it has become one and the same with our current and future technologies. The alchemic analogy is useful in pointing the way to possible spatial chemistries that exist as living technology that just might free us from architectural deadlock. Living technologies are alchemic in their ability to reconfigure matter. The more science progresses, the more we become architecturally, alchemically adept.

Alchemy almost disappeared nearly three centuries ago, but there has always been an interest in its literature and its art. More recently, the

surrealists used alchemic and other occult literature to inspire some of their most memorable works. We are reminded of Duchamp's *The Bride Stripped Bare by Her Bachelors, Even (The Large Glass)*, and of Ernst's *Of This Man Shall Know Nothing* and *The Robing of the Bride*, among others. Living Technologies and protocells are also surrealist technologies of softness, growth, swarm and scaffold.

The initial step in the alchemic work is to discover the transmutable *prima materia*. In the context of living technology the *prima materia* in protocells is the self curvature and bottom-up formation of the spherical lipid membrane. Contemporary developments in the scientific understanding of matter suggest that essentially



Archeological Slam

all matter is space at various interacting curvatures. It is here, at the outset of the alchemic opus, that it can be seen that alchemy and architecture share a fundamental basis, the manipulation of space, in all its varied forms, philosophical and physical. Once the *prima materia* is established, a process of considerable complexity is undertaken.

The *prima materia* of the protocell transforms the non-living into the living, the simple into the complex, the predictable into the mysterious. Various stages and transformations occur, producing a taxonomy of forms that are created by the system for the architectural observer to read, explore and use. Their origins remain mysterious and are most comprehensively read through mythological lenses, as the not live becomes a living agent with apparent anthropomorphic desires and ambitions capable of behaving at a population scale. As a colony, the protocells interact and gather information about their surroundings displaying these as complex behaviors, signaling and transforming their surroundings so that their environment eventually becomes changed. They have an ability to arrange themselves into a community of bubbles, and then chemically negotiate these boundaries to make movement, garner “food/

fuel,” precipitate skins and be sensitive to light. All these phenomena will have a huge impact on the construction site of the near future. Construction processes could be instigated and sculpted by sharp pulses of light, for example.

“All I need is a name for it.  
The stuff that opens anything!  
The universal lubricant. The oil of  
the world! Puts Vaseline and KY  
in their place, don't you think?  
Jaz Vaz!...” (Noon 1997, 143)

#### **“NYMPHOMATION: SEXY KNOWLEDGE” (1997, 146)**

What is interesting to me as a surrealist is the connection that can be made between the exchange of information in wet unconventional computers and the sexual act or desire and the mixing of information. There is much precedent for such notions. Marcel Duchamp was very adept at these sorts of analogies and epistemologies. His *Large Glass* is conceptually activated by gas, water and electromagnetic forces to create tableaux of desire, autoerotics and barely maintained equilibrium. His addition to Maria Martins' (his lover) version of his *Boîte-en-valise, Paysage Fautif* (Wayward or Faulty Landscape) was a spurt of seminal fluid on Astralon backed with black satin.



Jeff Noon is much more explicit about this connection. “I’ve found of these masses”—he calls them “vaz” but they could equally be protocells—“floating around. Sometimes they fight each other, like galleons. They steal supplies off each other. They eat each other. They fuck each other. They give birth. The cycle goes on” (1997, 147).

The “Communicating Vessels” project also speculates on the protocell and other forms of synthetic biological structures. Here, they are called the “grease” and are created by a bio-technological factory called “Little Soft machinery.” Little Soft Machinery isn’t very smart, just smart enough to desire. This desire provokes his biomechanical glands to produce the grease, the vaz or the holy gasoline (this substance is called many things, it changes lives, it mixes chance). It is a synthetic biological elixir, smart but highly explosive. The grease lubricates the project and is always present when human or machine information desire is present—which is most of the time. The grease eases things, it is lustfully combustible, it is sought after and it is autonomous until it is caught. It is used by many of the structures that inhabit and interact in the site, which is a garden. This is indeed a Duchampian “faulty landscape” teeming with desire, the

exchange of information and the probabilities of chance.

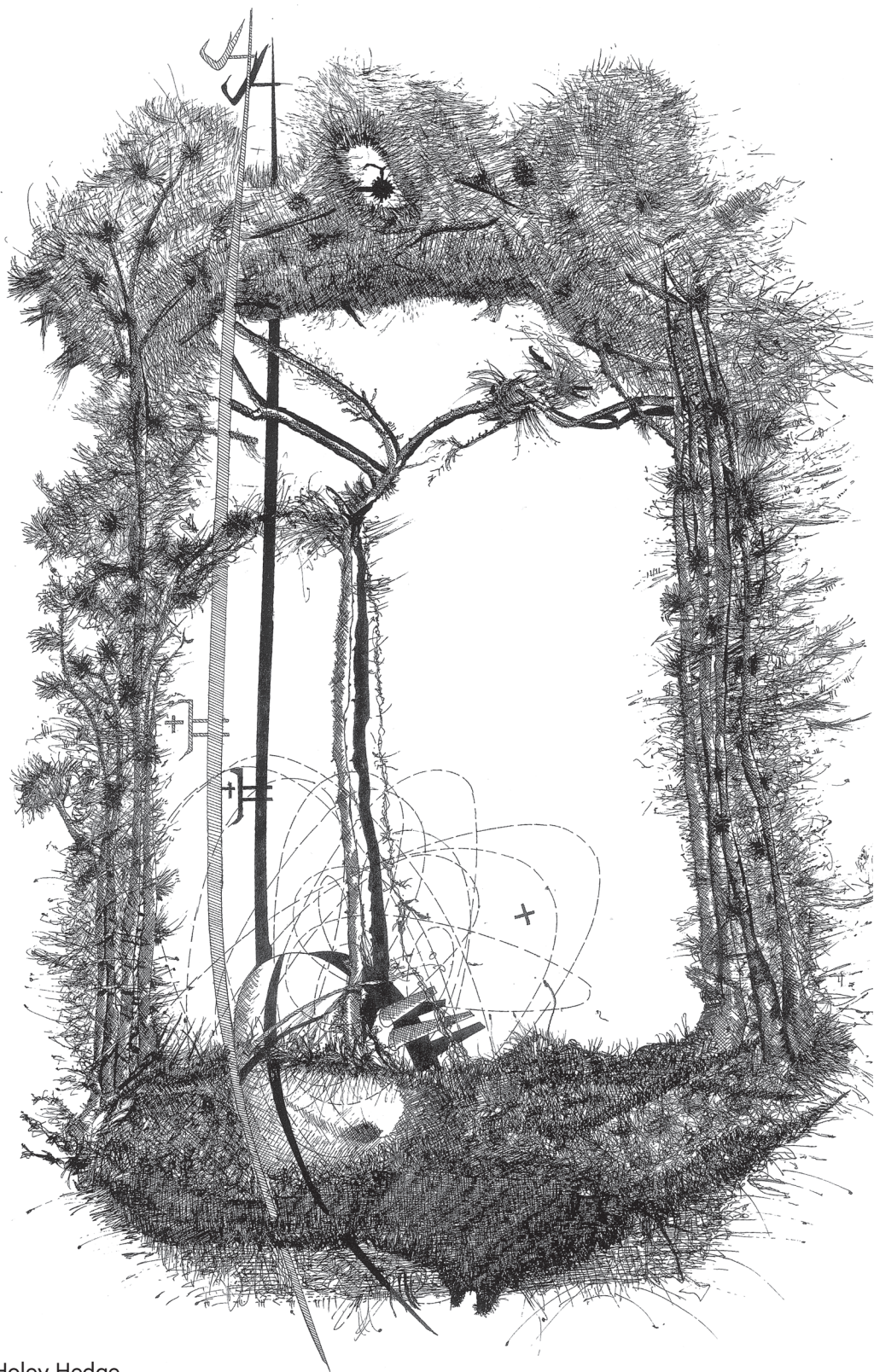
Let’s undo the locks that have constrained architecture for centuries and rejoice in hearing the chains drop to the ground. Our new architecture is an architecture of bespoke, wet and invisible solutions.

Marvel and enjoy this work, take it for what it is: sublime vignettes of a world that is already here. A world so many architects are blind to.

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*All images by Neil Spiller.*



Holey Hedge

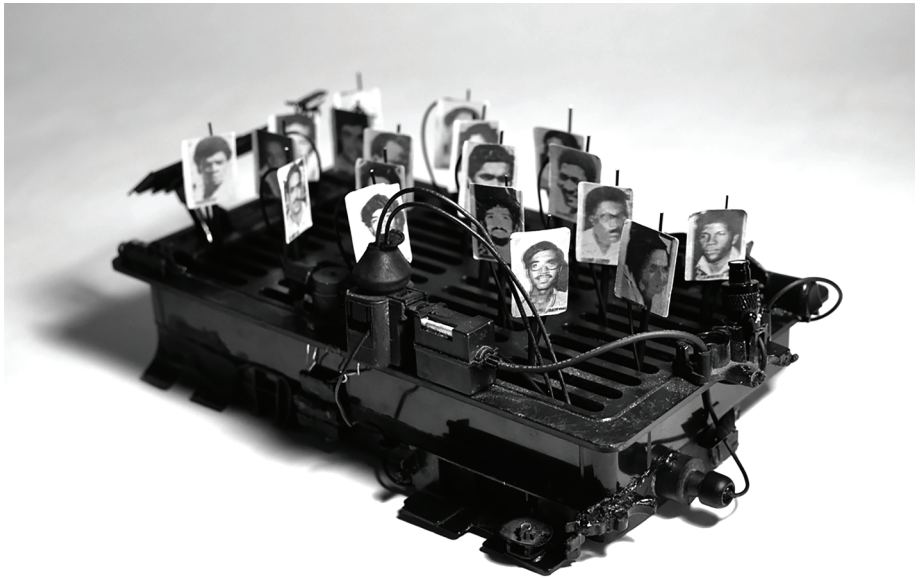
# PROSTHETIC PARLIAMENT

Greg Barton

After the nation of India dissolved into a federation of city-states, amidst suspicion and support, a program replaced parliament. It became near impossible to organize disparate populations, much less hold elections. The initiative to reconstitute the government as a mainframe computer—built and housed in Gurgaon, funded by private conglomerates—began as an experiment modeling the country's operating procedures (e.g., GDP); leaders started to rely on the supercomputer's predictions, eventually installing it to function as the Nation itself, effectively outsourcing self-management. Various inputs, regulated feedback, and complex maths ostensibly allow the government-machine to best determine how to divvy materials and services amongst regions, reconcile episodic ethnic strife and territorial disputes, and negotiate trade agreements and international treaties, all in an impersonal yet even-keeled manner. The program provides a hyper-rationalized set of decision-making protocols, sifts immense sets of data and runs powerful cost-benefit calculations.

Within the device, there is a processing sub-unit per each district plugged into the frame's clustered grid of parallel rows, each with its own administrative domain. In order to allay civilian fears and literally put a human face to the machine, each representative has a screen displaying an avatar of 1970s cricket players from Bombay and the West Indies. The assembly's construction suggests a cobbled-together circuit board with tubes and wires, ventilators and heat sinks, switches and designators: a *jugaad* government hooked into a respirator. Since the program is constantly running, the spinning heads chatter away at all hours; speeches stumble over one another and rebuttals arrive at the same time as arguments. The deliberative voices merge with humming hard drives to emit a drone of dialects and mechanized movements.

While it is true that the nonhuman government has certain advantages over organic politicians, many past problems are simply displaced. For example, although voting processes are less susceptible to bribery, critics raise potential risks of corruption stemming from the device's physical security, cyber encryption, or energy consumption. The volume of computation sometimes leads to gridlock and errors; command channels and communicative scripts produce a paralysis wherein the data-handling logics—at times circular, always synchronic—cannot process decisions, all too reminiscent of party members unable to arrive at a compromise or consensus. The machine's ciphering tends to present a view of legislation as opaque as previous human-based models.



Proponents of the modulated democracy claim supercomputers are the only means to manage and resolve the types of pressing problems and sets of often intertwined contemporary issues at stake locally and globally. Moreover, the sheer speed at which the new parliament performs calculations understandably enables analysis and action in fractions of seconds. Automatic economic adjustments occur in rapid response to natural or manmade events. Infrastructure is administered in a hyper-efficient and holistic deployment. However, even its most vocal advocates admit the machine knows not of water but instead {"resource management"}, {"flood zones"}, and {"potability percentage"}. Likewise, the CPU contraption tabulates hungry bodies without registering the anguish of malnourishment. Others decry an ever-increasing digitalization where the feel of one's palm across a tabla's goat skin is lost in the act of encoding and playing back rhythmic cycles. The greater the population grows, the more the individual is resigned to a statistical reality of representation. The greater the population grows, the more the unforeseen complexities of daily life overwhelm the processing capacities of the most advanced algorithms and bulk data banks.

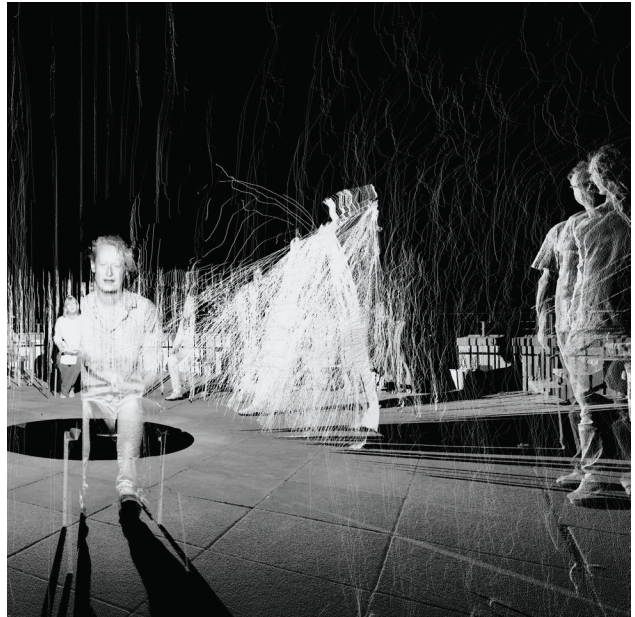
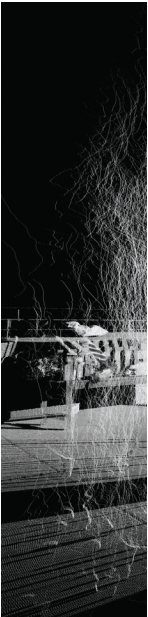
Outside of the mega-metropolises and beyond integrated towns, in some of the far-reaching rural parts remaining, amidst entire villages with LED-festooned temples powered on pirated electricity, there are outlier populations unaware that a machine has usurped elected officials. Even in urban areas, the routines of some societal segments remain for the most part unaltered. The governing machine's whirring district surrogates and decision-making circuitry advance a networked intelligence seemingly free of human error or ethics precisely because it is otherwise.

# THE SCAN

## Prototypes for a Post-Human Scenography\*

A collaboration between The Bartlett UCL, Royal Central School of Speech and Drama, Shunt, and Scanlab Projects.

Text by Bob Sheil & Thomas Pearce



**A live survey:** time-based narrative tableaux staged around the scanner's circular sweep.

**I am in another room, I am crying. You said hurtful things to me and you weren't sorry. Right now you are on a bus eating cake. The woman sitting next to you died six months ago.**

— Shunt, *The Scan*

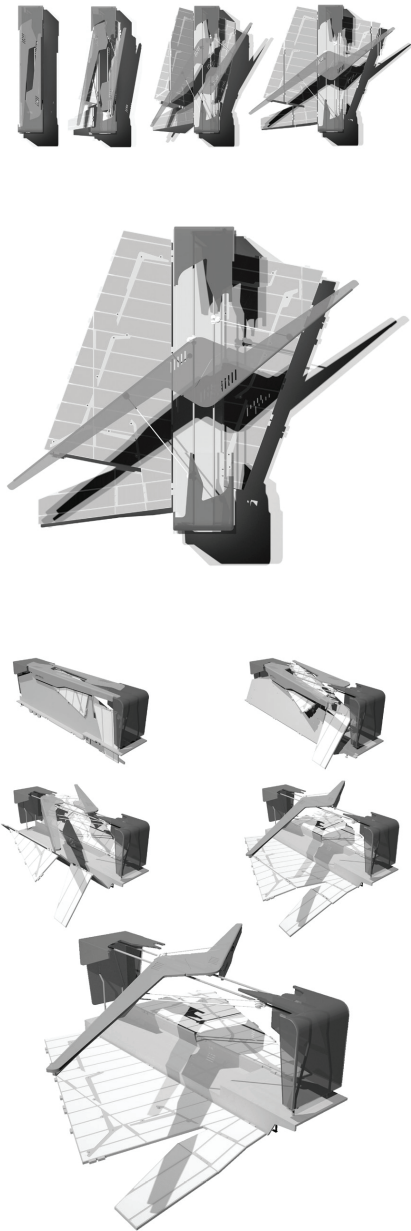
\* This article was originally published in *Organs Everywhere* No.5, July 2017. An updated version of the article can be found in Butcher and O'Shea (2020).

In our digital age, the human eye has lost its privileged position as the sole and central audience of an unfolding perspectival world as it finds itself challenged by a plethora of post-human eyes. Emerging technologies of vision such as 3D laser scanning—regarded as less faulty, faster and more accurate than the human eye—find an ever more central role in production, analytics, control and decision making.

Architecture and scenography, practices that are both firmly shaped around the centrality of vision of the human subject, are challenged to find novel ways to address a hybrid audience of human and non-human modes of vision. How do we perform and build facing this new audience? How do we deceive or delight these new eyes? How do we infiltrate and inhabit the parallel digital data space they create? How can we uncover their shadows, their glitches and fallacies, and subvert the realism of their representation? How can we design an architecture or scenography for the post-human eye?

*The Scan* (2013) is a prototype for a post-human scenography that develops 1:1 collaborative and site-specific acts between designers and performers through 3D scanning, bespoke instrumentation, robotics, rehearsal and live performance. With a particular emphasis on how 3D scanning may be manipulated in situ, the work seeks to mediate between live performance and digital representation, and thus explores a new relationship between performance and audience through time and location.

*The Scan* presents a sequence of investigations that utilize an ad hoc space at the Royal Central School of Speech and Drama's Eton Avenue premises to explore synthetic processes of design prototyping and exploratory performance. Central to the work is the manipulation of 3D



**Challenging the black box:** prototype design for a deployable, mechanically choreographed mobile stage platform.

laser scanning as a critical and creative spatial tool. Installed in three locations at the RCSSD, a series of spatial instruments are introduced to disrupt, provoke and distort rehearsals that are captured as 3D architectural models. Through specifically located reflective panels, performers are digitally projected from interior to exterior spaces and composited in digital montages. Creatively appropriating and instrumentalizing machine vision for a novel post-perspectival and post-anthropocentric scenography, the work simultaneously dismantles the spatio-temporal realism of this vision while forwarding hybrid and fragmented notions of site/stage, subjectivity and authorship.

The work is the latest iteration of a creative collaboration between the RCSSD and The Protoarchitecture Lab at The Bartlett School of Architecture, UCL. SHUNT, an award-winning artists' collective, created an original score for the performance at the RCSSD. Protoarchitecture Lab worked with ScanLAB to develop novel and bespoke instruments in response to Shunt's proposals and used digital technologies of capture and modeling to blur the boundaries between the represented and the actual in the subsequent performance.

## PERFORMANCE SPACE / PERFORMATIVE SPACE

The development of *The Scan* combines two research interests that have been central to Protoarchitecture Lab's body of work during the last couple of years: firstly, the exploration of performative space—both as the spatial and architectural framing of theatrical performance and as the acknowledgement of the inherently performative nature of architectural materials and spaces; secondly, a critical and subversive approach to novel technologies of digital fabrication and representation.

Our interest in the production of theatrical space led to a first creative collaboration with the RCCSD called PerFORM between 2007

and 2009. Initially, a group of students of the Bartlett's Diploma Unit 23<sup>1</sup> worked on a project to design and build a small performance space exploring issues of sustainability and spatial innovation. During this design studio and an ensuing funded research project,<sup>2</sup> some key conceptual positions were developed that would prove to define the agenda of our further research.

As both a prototype design and an event design, the work was specifically framed to further strategies of audience participation and challenge the conventions of “black box” theatre, including the relationships between auditorium, stage and backstage. Also, by envisioning the traveling mobile stage platform as a temporary deployable structure, unfolding in a mechanical choreography, we developed the notion of stage architecture as a performance in its own right. Finally, the work tapped into the experimental representation of time-based (architectural and theatrical) performance. This involved, among others, the production of two sets of flipbooks: while a first flipbook animated the choreographed deployment of the project's 3D design model, a second one contained a sequence of images showing the re-enactment of this performance by a dancer's figurative movements.

## RESHUFFLING THE CARDS OF REALITY

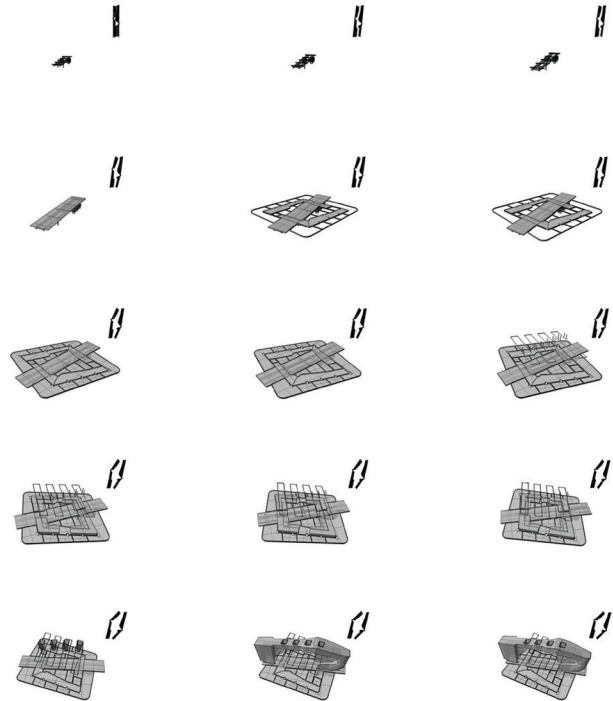
With regards to our critical approach towards novel technologies of digital fabrication and representation, 3D laser scanning has become a crucial tool in our design research. Initial steps in 3D scanning were made during the PerFORM project, during which the scanner was used as a survey tool that allowed for the design and fabrication of bespoke and highly accurate site insertions. This conventional approach to the use of scanning technology, however, changed dramatically between this first collaboration and the development of *The Scan*, which instead undertook a subversive artistic appropriation of the same technology.

2 —

Hosted by the Centre for Creative Collaboration and led by Bob Sheil and research assistant Matt Shaw.



Representing architectural  
 performativity: flipbook animating  
 the choreographed deployment of the  
 mobile stage.



Between the two project phases, the emphasis of our research in scanning shifted away from a positivist assumption of the congruence between the physical world and its digital representation towards a growing interest in the disjunction and discrepancy between the two. Such discrepancy appears in the case of measuring errors, which create so called “noise” in the point cloud, for example when the scanner's laser beam hits a reflective surface or the edge of an object. This noise, digital points that do not correspond to any actual physical object, is normally elaborately filtered out of the point cloud. We, on the contrary, recognize this noise as the space of potential occupation and artistic appropriation as it turns the scanner from a passive, realist measuring tool into an active *surrealist* agent that actually *creates* spaces in the digital realm.

The artistic appropriation of this noise starts with the understanding of the physical and geometrical principles that lie at its origin and leads to the retro-engineering of these principles so that the noise can be controlled and purposefully created. As such, the scanner

can be turned into a phantasmagorical, high-tech surrealist device of engineered illusionism. This engineered illusionism allows us designers to create fictional digital spaces and illusionary environments through understanding and then misusing the rules of techniques of representation.

The suitability of such subversive scanning strategies of engineered illusionism for scenographic purposes is evident: it echoes the very origins of the discipline of scenography, which was first developed by artists practicing illusionistic architectural painting techniques such as *quadratura* and *trompe l'oeil*. Such anamorphic illusions suggesting the spatial extensions of a given space beyond the surface of a painted wall or ceiling were in turn used for the creation of illusions of environments in stage designs.

The technique of representation crucial to these engineered architectural and scenographic illusions was the development in the renaissance of the rules of perspective. Bruno Latour describes the double role of perspective as a tool of realism and illusion as the “four-way freeway” of representation: perspective does not only allow us to realistically represent a scene (one way freeway) or to pragmatically act upon an external reality by implementing alterations designed within the technique of perspective (two way freeway)—not only can we

**displace cities, landscapes, or natives and go back and forth to and from them along avenues through space, but we can also reach saints, gods, heavens, palaces, or dreams with the same two-way avenues and look at them through the same “windowpane” on the same two-dimensional surface. The two ways become a four-lane freeway! Impossible palaces can be drawn realistically, but it is also possible to draw possible objects as if they were utopian ones (Latour 1986, 8).**

Perspective thus is a technique of realistic representation rather than a dogma of realism of the subject matter depicted.<sup>3</sup> Mastering this technique allows us not only to depict a “reality” but also to challenge it. Perspective, to speak with Latour again, is a technique with which we can create “complete hybrids between the real and the imagined: nature seen as fiction, and fiction seen as nature, with all the elements made so homogeneous in space that it is now possible to reshuffle them like a pack of cards” (1986, 9).

### A POST-PERSPECTIVAL ILLUSIONISM

This “four-way freeway,” however, cannot be directly translated to the case of the 3D scanner, as its relation between data collection and representation is more complex and less direct than is the case for classical perspective. We could in fact state that 3D scanning functions at once in a post-perspectival and pre-perspectival way.

To elaborate on this statement, it is critical to very briefly explain how a 3D laser scanner works. The scanner's range finder measures the distance between itself and objects in a scene by using time-of-flight measurement: shooting laser beams at the objects, it converts the signal's return time to a distance value. Constrained only by the speed of light, it can create millions of measured points per minute, which can then be translated into a set of three-dimensional xyz-values.

Similar to other technologies of active optics and remote sensing (e.g. radar), the scanner is post-perspectival: although it collects data from a fixed position, it does not have a picture plane, retina or photographic plate. In this sense, speaking of the scanner “eye”—as we have done until now—is in fact a case of stubborn anthropomorphism that resorts to an essentially humanist epistemological understanding of the human observer as the active knowing subject acting upon the passive known—be it real or manipulated.

At the same time, the scanner's measuring method is pre-perspectival: the translation of collected distance values to xyz-values and their representation on a perspectival picture plane is but a matter of post-processing to make the point cloud data legible to the human eye. This means that, as opposed to classical perspective, in which the viewer's position was identical to the painter's, the observer's location is no longer necessarily "encoded into its representation" (Friedberg 2006, 28). Instead, she/he can now freely navigate through the point cloud model—echoing futurist Bruce Sterling's speculations on the future of the camera which

**simply absorbs every photon that touches it from any angle. And then in order to take a picture I simply tell the system to calculate what that picture *would have looked like* from that angle at that moment (Vimeo Festival & Awards 2011).**

These considerations imply that techniques of "scanning illusionism" cannot simply operate on the level of "realist" representation (simulating fictional narratives within the flat constraints of pictorial representation)—but instead will have to engage with this pre-perspectival stage of data collection. As this data collection (the actual measurement) is firmly embedded within the material reality of the measured scene,<sup>4</sup> the trigger for such illusionism will necessarily lie in the realm of physical intervention and thus become a spatial, architectural challenge.

## A LIVE SURVEY

As a prototype for a post-human scenography, *The Scan* applies such a post-perspectival engineered illusionism to create a "stage" that is marked by hybridity—hybridity between physical and digital performance spaces, and hybridity between realist and fictitious spatial representations.



**Human and post-human eye:** perspectival point cloud representations imposing a humanist picture plane on post-perspectival data.

### 4 —

Karen Barad uses precisely time-of-flight measurement to illustrate the material entanglement of processes of knowing (the materiality of the laser beam) with processes of being (the measured material object), and to define her concept of an entangled ontoepistemology (Barad 2007, 78).

Similar to our first cooperation, there was a shared interest to break out of the theatrical convention of the black box stage. This time however, rather than designing a movable stage, an existing building—the premises of the RCSSD at Eton Road—was used as performance spaces. The attraction of these spaces lies in their labyrinthine quality: it is a conglomerate of buildings that has been extended, added and layered upon, a complex set of spatial relations that becomes legible only through a longer experience of navigating its rooms—but even then would need a set of universal keys to reveal its unexpected backdoor connections. In a first stage of the project, a survey of the building is conducted using the 3D scanner. A routine 3D scan of an existing building is largely planned around maximizing the efficiency of selected scan positions so that the exercise captures all necessary information in the fewest number of set ups. Set up positions can be seen as black circles. These are the blind spots directly beneath the unit that the instrument does not measure when operating. If undesired, they can be eliminated by data from another position that looks back to that position. In this case they were left in and allow the total number of scans in this assembly to be understood by the reader.

Looking at perspectival representations of the assembled scans, the opaque walls and floors of the buildings dissolve as they are turned into clouds of millions of points, whose pixel size and hence opacity can be controlled within the digital model. The spatial correlations, lost in the additive complexity of the floor plans and labyrinthine circulation, become transparent and legible.

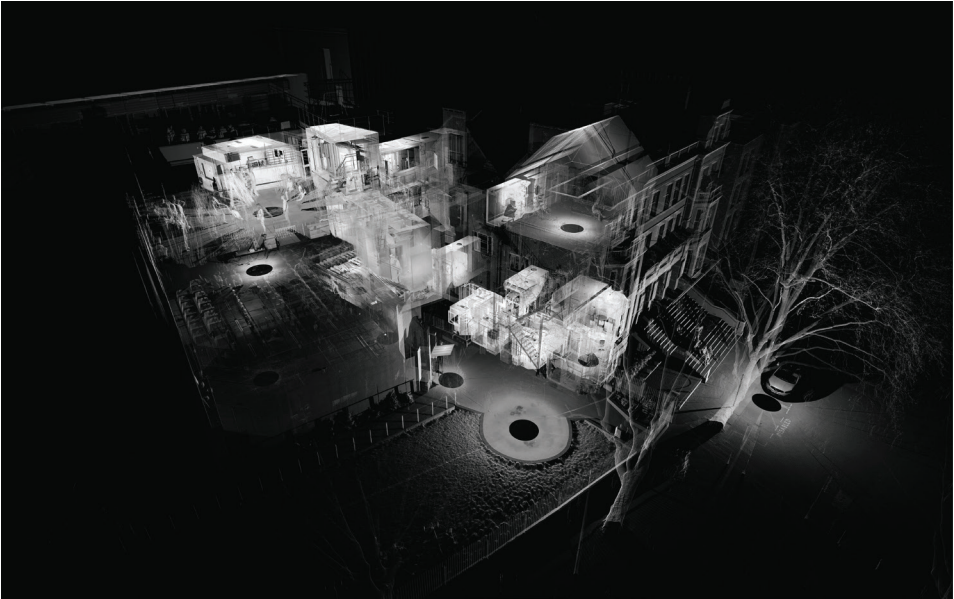
However, the conventional metrological use of the scanner as a realist instrument of truth—elucidating, revealing, making legible the site—was simultaneously challenged during this first survey. The exercise to scan selected areas of the RCSSD was exploited for simultaneous performance experimentations

by two production groups, SHUNT and a group of performers soon nicknamed “CSI” due to their interest in the forensic use of scanning technology. Some experiments were spontaneous and others were partially scripted, based on a briefing by ScanLAB prior to the survey. Each experiment was designed to explore the implications for performance and documentation generated by the time-based spatial capturing offered through 3D scanning. The experiments intervened across a suite of scheduled capture positions with unscheduled performance tests that explored conditions such as sound, movement, materiality, dialogue, montage, blind spots, building fabric and narrative.

A first set of performance experiments created narrative tableaux wherein the actors, like in early photography, would stand still waiting for “full exposure” while the scanner's rays swept past them (depending on resolution and accuracy, the scanner describes a 360° rotation that creates tens of millions of measured points in a matter of minutes). Soon, however, the performers recognized this very rotational movement as inherently choreographic, a time-based constraint and opportunity creating a narrative space to be inhabited by their performance. It meant that, for example, one moving performer could appear multiple times within a single scan. Also, as the scanner reads a scene as concentric sections of reality, it can slice a moving body, disassembling, warping and extending it.



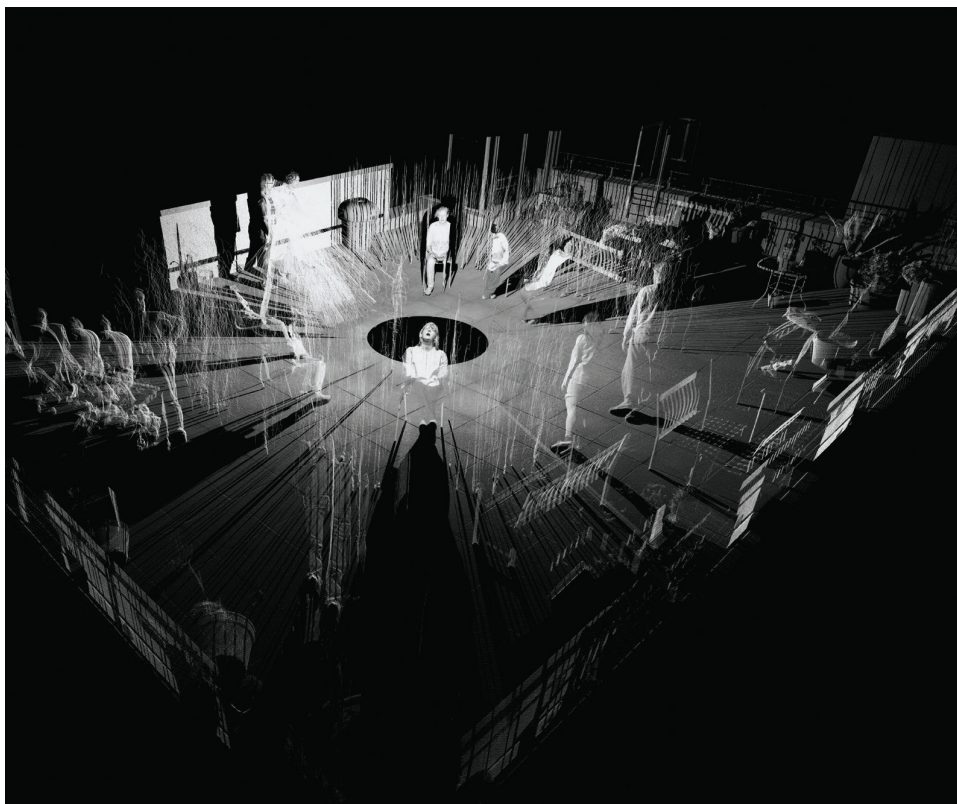
**Shady evidence:** first scanned performance experiments staging fictitious forensic scenes and exploring the scanner's shadow zones.



The elucidating scanner: the complex spatial correlations of the labyrinthine RCSSD buildings are rendered transparent and become legible.



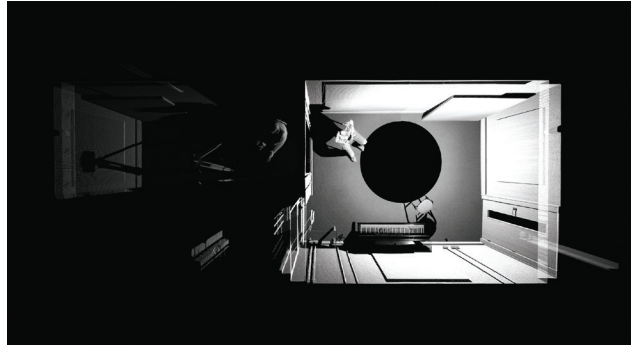
A digitally displaced, multi-perspectival point cloud.



**“There is no circle”**: the scanner reads the scene as concentric sections of reality; it slices, disassembles and recomposes performing bodies.



**The Crying Room:** the performer's "blind side" appears in a non-existent, mirrored digital room created by the ignorant scanner.



The notion of time-based tableaux or of a “live” site survey emerged, and established the ambiguity between the forensic accuracy and “realist” capture of the scanner on the one side, and its phantasmagoric, fictional, and deceptive potential on the other—an ambiguity that would remain the main impetus of the rest of the project.

### **BENDING A BLIND MAN'S CANE**

One key scene, called “the Crying Room,” enacted and scanned during this process of live surveying, would become crucial to the further development of the piece. The scene involved a woman, crying and reciting a text in front of a large mirror in one of the RCSSD's many rehearsal rooms. The resulting point cloud model showed a non-existent, mirrored digital room, in which the performer's “blind side” appeared.

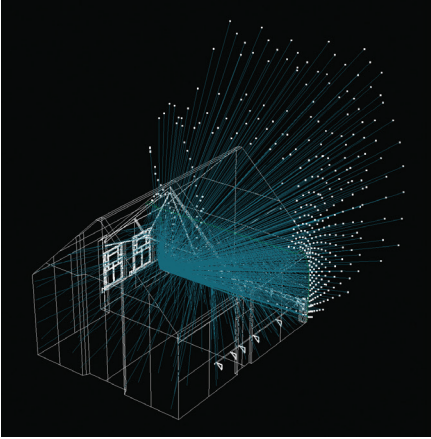
This is explained by the fact that the scanner's laser ray measures strictly one-dimensionally—rather like Descartes' (faulty) description of vision as a blind man stabbing his cane in the dark until it meets an object. What happens here is that this cane is “bent” or deflected by the mirrored surface and travels on to meet an object in front of the mirror. The ignorant blind man (the scanner) however assumes that the object lies in the extended direction of his stabbings and thus digitally creates this parallel, fictional room behind the mirror.

This result provoked an interest in developing the reflected data as a parallel

performance space exclusively within a digital environment. Scanning instrument manufacturers recommend to avoid capturing shiny or reflective surfaces, as these would generate noise in the resulting point cloud. By focusing on what we were advised not to do, reflection became a key tool in establishing and manipulating an additional, purely digital, extended performance space. A design and prototyping phase followed, with the aim of transforming these mirrored spaces from incidental digital spillages into purposefully created mirages. Custom software components were scripted that reverse-engineer the reflections created by parametrically controlled reflective panels and can calculate the position of the resulting displaced point clouds in relation to the performance position. The point cloud produced during the initial survey was not only essential for this simulation of the scanner positions and the reflective panels' orientation but also for the design and prototyping of the prosthetic armatures that would hold them in place. The accuracy of the scanning data and digital simulation could be passed on into the physical prototyping stage through the implementation of digital design fabrication methods (laser and waterjet cutting) that allow for the fabrication of bespoke and highly precise insertions that fit accurately onto the scanned building elements.

## **DIGITAL DOPPELGANGERS, COLLIDING MID-AIR**

Adding digitally fabricated spaces using these developed simulation algorithms provided a new scenographic strategy towards the given site conditions, a strategy governed by the ambiguity between making the labyrinthine building transparent and legible on the one side and, on the other side, the urge to continue and emulate the additive complexity of the as-found physical space through an equally complex juxtaposition of



**From spillage to engineered mirage:** custom software component written to parametrically control reflective panels and displaced performance point clouds.

fabricated digital spaces—hence adding even more “rooms” to the building.

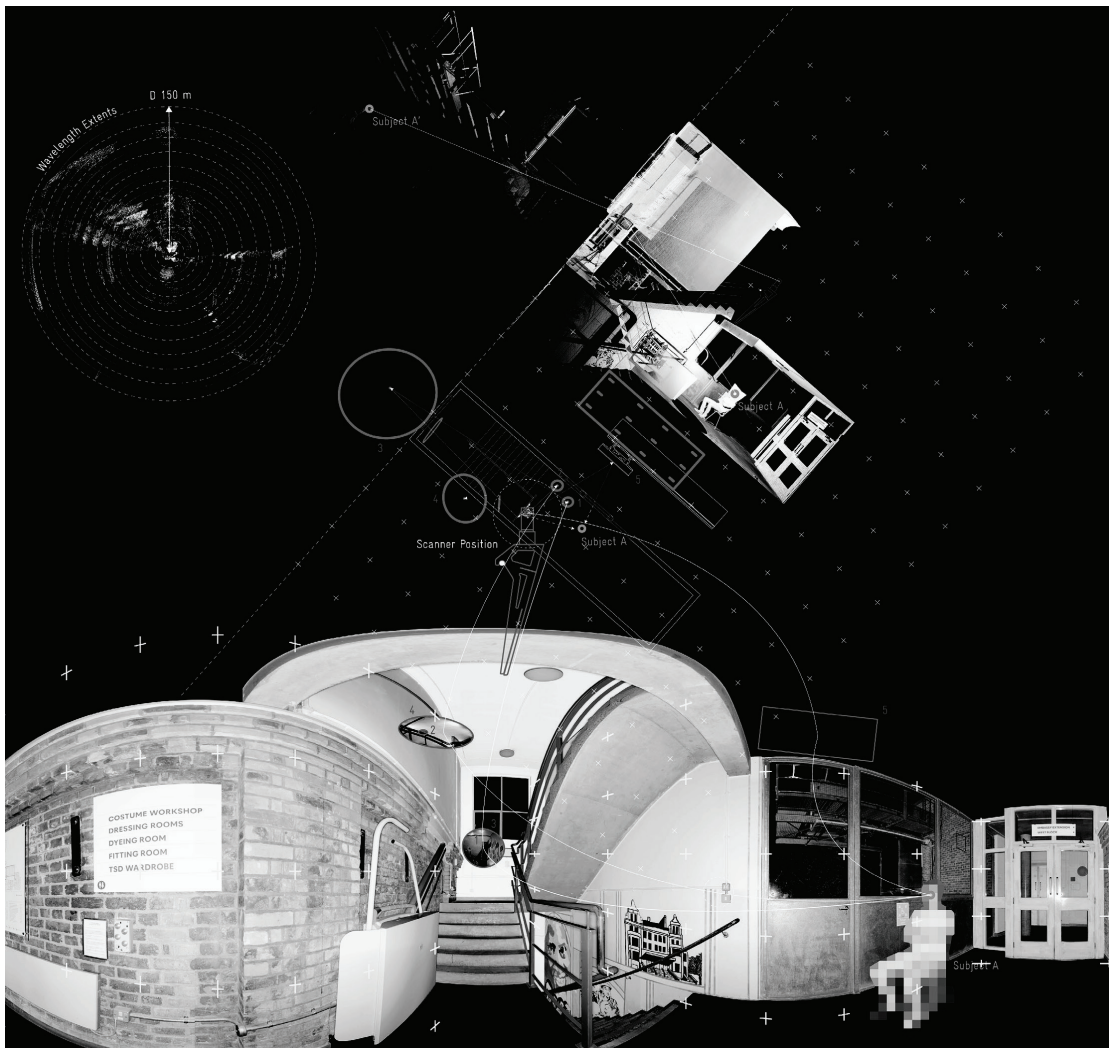
A series of positions within the RCSSD building were selected to receive the installation of paired bespoke instruments creating such digital performance spaces. Each of these paired instruments incorporates a 3D scanner head mounted on an armature that faces a second housing of programmable reflective panels. The orientation of the paired elements to one another is informed by results of the live survey and further develops the enactment of a performance in real space that is designed to be read and alternatively explored in a digital model. The installed instruments capture performances that are designed to “occupy” the hidden space in the presence of an audience who only sees the performance that is being reflected. All reflected digital spaces sample, copy and paste elements of indoor rehearsal and circulation spaces to converge in the (digital double of the) courtyard of the building, piercing the walls that surround it and colliding in suspension high above ground.

The resulting conglomerate of digital and physical performance spaces reminds of Katrina Varian's project, one of the 2008 students who imagined a series of external “parasite” spaces enveloping the RCSSD's courtyard to house experimental performance and audience locations. However, as opposed to her project— and more general to the first phase of the collaboration—it is not *The Scan's* physical insertions that form the actual scenographic space. The reflective panels, rather than being a scenography in their own right, are both signifiers of and triggers to the digitally extended scenography. Like in illusionist baroque painting, surfaces become a portal to a further three-dimensional space that supposedly/ digitally lies beyond them.

Around a first of these scanner positions, a scene is staged in a staircase on the north side

of the courtyard. Through three pairs of mirrors, a scanner on the upper floor captures a single performance, which is taking place on the lower floor, simultaneously from three different angles. These three different “views” are projected outwards (using the logic of the blind man's broken cane—which in this case is broken twice) and are digitally created as fictional spaces floating above the courtyard. This scenario is not only post-perspectival but also post-Cartesian as it explodes, multiplies and scatters the xyz-values of a single geometric entity into a digitally displaced, multi-perspectival point cloud.

A digitally displaced, multi-perspectival point cloud.





A second scene is developed for the ballet room, in which the two techniques described above—the scanner's rotational choreography and the reflective screens—are combined. An array of ten mirrors delicately balances from the ballet rail and against the wall, lined up like serially connected metallic ballerinas. As the scanner makes its rotational movement and sweeps across these mirrors, each mirror consecutively reflects its rays towards one and the same focal point for the duration of a couple of second. Hence, a performance, taking place on this “hot spot,” is reflected, scanned and digitally “created” ten times behind the mirrors. Hovering three stories above ground, a four-dimensional “film reel,” a spatialized Muybridge image sequence occupies the space beyond the wall, capturing the performance in ten consecutive “frames.”



**Post-Cartesian explosion:** three sets of bespoke fabricated mirrored instruments capturing a single performance simultaneously from three different angles.

The performers, by studying analytical drawings and through scanned rehearsals and explorations of the resulting digital point cloud mirages, become accustomed to inhabiting and interacting with this four-dimensional scanner-timed scenography. They become guides for the audience and their projected digital doppelgangers.

### RE-FRAGMENTING THE MIRROR STAGE

As time and gestures are exploded in space, the spatial and temporal realism of the point cloud is dismantled. Instead of the snapshot quality of a “unique” moment in time and space, a multiplicity and complex layering of both unfolds. With this spatio-temporal disruption, the notion of the autonomous performer/ audience/subject as a unique spatial and temporal individual is exploded, too. If in the classical Lacanian theory of the so called “mirror stage,” the child, by recognition of an image of the “self” in the mirror, develops an “imaginary wholeness” and self-consciousness, the mirrors in our case are used to quite the opposite end: they are devices that re-fragment notions of selfhood, identity and subjectivity.

This spatially scripted sense of fragmentation and displacement also becomes part of the spoken script of the piece, in which the role of the audience, which is led through the (digital and physical) spaces by the performers, is constantly obfuscated and ambiguated:

**A: This is a summary of events.**

**You are all here.**

**We are walking in a circle together.**

**B: You aren't here.**

**You're jumping through walls and looking at yourself in the mirrors.**

**In some you look fatter.**

**There is no circle.**

The audience's—partially uncomfortable—submission to the machine-timed and machine-recorded choreography destabilizes its usual centrality as the singular consuming perspectival “eye” to whom the piece is directed. As many scenes are acted out for the ominous post-perspectival eye of the scanner, the audience loses its privileged position—reflecting a post-anthropocentric reality in which a plethora of heterogeneous non-human eyes and agents have complemented or even replaced human vision.

The audience thus is confronted with its own inability to grasp the full “picture” of what is happening. This is not only due to the relative novelty of 3D laser scanning technology to most of the audience, but also due to the decision not to provide visual feedback (for example as a perspectival representation of the digitally created, partially fictional, point cloud) during this stage of the performance. This “reveal” will find place later in the piece and will be discussed below. For now, the absence of instantaneous representation is not only a technical issue,<sup>5</sup> but also a conscious curatorial decision: implementing visual feedback (be it through screens or more immersive technologies such as virtual reality goggles) would merely re-establish the perspectival centrality of the detached human observer and thus reinstate the “scopic regime” or “Cartesian perspectivalism.”<sup>6</sup>

5 —

The laser scanners we use don't allow for real-time visualization.

6 —

Cf. Jay (1988, 4).

Parallel to the displacement of the audience's privileged spectatorship, a shift takes place towards a sense of audience authorship—however unclear this authorship may be at the moment of the actual performance—and hence towards an erosion of the sole authorship of both scenographer and performer. The humanist notion of an active subject/author, acting upon a passive world of objects—matter in the case of the architect, the audience in the case of the performer—is dismantled in favor of a notion of co-authorship over unfolding events.

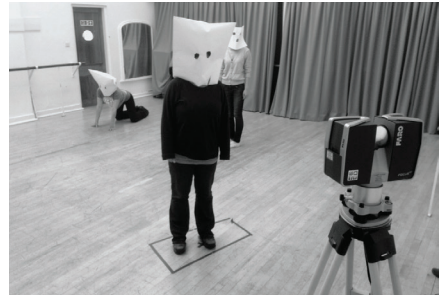
From the onset, a fertile friction arose between our scenographic intentions—the prescriptive clockwork choreography described above, assuming the magician's (all too) perfect control over the engineered surrealism of their test person's reflective fragmentation—the performer's associative interpretation, and the audience, unknowingly stepping in and out of a “hot spot,” a cross that marks their simultaneous vertiginous suspension fifteen meters above the courtyard behind the wall.

This notion of shared authorship however, goes beyond what would be commonly categorized under “public participation”—as it is not confined to the human actors involved but extends well beyond into a more ontological sense of participation that comprises human and non-human “actants” alike. The scanner, for example, becomes a central actor/performer in the piece. This is true in both a literal sense—the scanner being referred to in the text, being turned into an ominous and wondrous object, a spatial mediator around which the performance revolves—and in a more epistemological sense—the scanner not just being a passive *camera obscura* capturing the scene but an operative agent actively creating and augmenting the scene. As such, all human and non-human agents form a network that mutually creates the unfolding of the co-authored piece.

## NO APPLAUSE

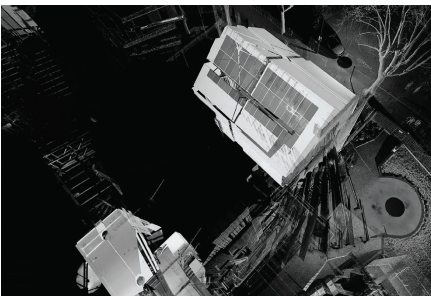
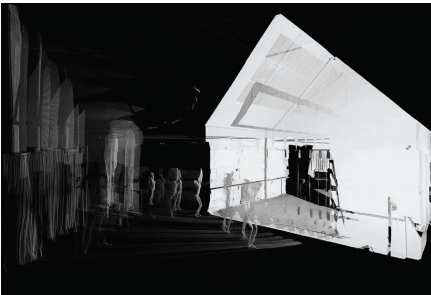
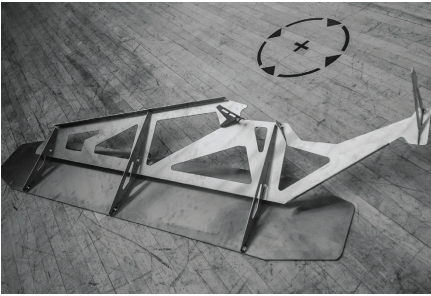
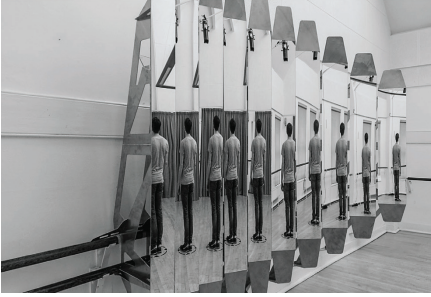
In the final act of the piece, after being guided through the building and along a series of scenes and scanner-timed choreographies, the audience is led through the backstage area and gathers onto the stage of the RCSSD's Embassy Theatre. The space is dark, the auditorium hidden behind the fire curtain. Projected onto the back of the fire curtain is a dense multimedia relay of point clouds, 3D models, animations, CCTV footage, infrared footage, photography, sound recordings and dialogue recorded during the piece. The performers sit lined up behind a long table full of computers and technical equipment and in front of the projections, facing away from the public. In hushed, barely understandable voices and using technical terms, they discuss the projected material. They react indifferently to the intrusion of the audience, suggesting a process that has started long before the audience arrived and will continue after they leave.

Again, the members of the audience no longer sit comfortably in their detached and privileged auditorium but instead become aware that they have been performers themselves, observed by a multitude of post-perspectival eyes. The choice of the backstage location is of course symbolic, displaying the system of pulleys, ropes and counterweights that normally provides the machinery and armatures for illusionistic scenographies. Now surrounded by this machinery, entangled in the inner workings of the performance, the audience is immersed in the unintelligible hyper-analysis of their own actions. Marking the end of the piece, the fire curtain rises. The projections disappear and actors, scenographers and audience face the auditorium. It is empty. There is no applause.



Masked performers inhabiting the focal point of the ballet room mirror array.





Hovering above the courtyard, a four-dimensional scan sequence captures the performance in ten consecutive frames.

## POLYSCENIC ASSEMBLAGES

The largest part of the multi-screen display is taken up by projections of point cloud models. The scans are composited, digitally stitched together as is normally done after a scanning survey—only that now, the digitally created, parallel performance spaces appear, imploding the building's spaces into the courtyard. Hovering above the courtyard, mirage spaces overlap; performers and members of the audience hang upside down, protrude through walls or intersect with the fire escape staircase. While some fly-through animations are made before the evening of the performance, stitching together scenes from the initial survey, juxtaposing them with point clouds created during rehearsals, other point cloud displays are shown “live” by an operator panning through a model, layering “fresh” material from the evening's scans onto previous point clouds, further destabilizing time-scales. The operator zooms into a person's face in the ballet room, the face dissolves into points as we come closer: was this a performer, a member of a previous audience, a mirage?

The process of digital grafting, not only deconstructs the spatial realism of the composited scenes but also undermines the temporal realism of the snapshot moment as it blends and layers time-scales into a non-linear narrative spatio-temporal assemblage, suggesting the progression of performers through the scenes, playing different roles, enacting different scenes simultaneously. The plausibility of this narrative is constructed through the “optical consistency” (Latour 1986, 8) of the point cloud—again reminding us of what Latour, in the case of perspective, called “reshuffling the cards of reality.” Indeed, the resulting scenes could be likened to so-called polyscenic paintings of the *quattrocento* renaissance, in which, using the then recently discovered (or re-discovered) unifying technique of perspective, multiple sequences of a story (e.g. Botticelli's *Three Miracles of Saint Zenobius*), were depicted within one single

perspectival scene, framed by an assemblage of existing and fictional architectural elements.

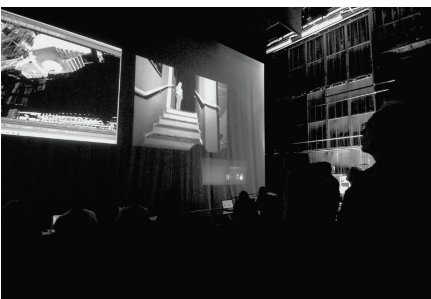
It would be oversimplifying, however, to consider these spatio-temporal point cloud assemblages as endpoints of the piece—as if describing a linear process of deception and revelation in which a “trick” played on the audience is resolved in a communal revelatory backstage aha moment. Such would not do justice to the complex and entangled notion of the digital (and its relation to fabrication) that was built up throughout the collaboration, and of which a brief discussion seems apposite at this point.

## DIGITAL SCENOGRAPHIES FOR A SATURATED SPACE

As with many practices, theatrical production has been revolutionized by digital technology. Performers such as Blast Theory, Me and the Machine (*When We Meet Again*), Rimini Protokoll (*Situation Rooms*) and Janet Cardiff (*Ghost Machine*), to name but a few, have successfully developed works that exploit the fluidity of contemporary life populated by digital media and technologies, where the audience experiences the event through devices such as phones, tablets and laptops. This is a novel route to open up new realms for performance in the context of environments that are increasingly digitally saturated and where audiences are literate and active in multiple spatial domains, such as receiving and transmitting location data, identities, information, contacts, media, et cetera.

In Janet Cardiff's *Ghost Machine* (2005), for example, the participants receive a camera with a pre-recorded tape and a set of headphones, which guide the participant through the theatre building. The videotape shows footage that was shot from the participants' location but at a different time so that “they find themselves in a confused jumble of overlapping realities” (Cardiff Miller 2011). This piece is characteristic of a theatrical practice that takes on the notion

**Reveal:** entangled in the inner workings of the performance, the audience is immersed in the unintelligible hyper-analysis of its own actions.



of what could be called a hybrid or “augmented” scenography, to which, in parallel to the physical set, digitally represented sets and narratives are added as layers of information and representation.

At the moment in which they are experienced by the audience, however, such digitally augmented scenographies are closed, one could say pre-fabricated, so that even if the participator might move freely through them, she/he is not actually involved in their creation. This means that, eventually, the creator-consumer relationship between scenographer/performer and audience—and its sense of closed authorship—remains unaltered. What our approach suggests is a notion of fabrication not as a finished or finite process but as the ongoing production of phenomena mutually created by all human and non-human agents involved.

### DIGITALLY FABRICATING / FABRICATING DIGITALITY

A crucial shift in the notion of digital fabrication has taken place since the first collaboration of Protoarchitecture Lab with the RCSSD. In the first phase (vaguely coincident with the PerFORM project discussed at the beginning of the article), digital fabrication was understood as a methodology which, through the aid of digital metrology (3D scanning), digital design tools (CAD), and digitally controlled manufacturing (CNC), allowed for a heightened accuracy, customization and complexity— but which eventually still culminated in the fabrication of physical artefacts or sets.

This phase could be called *mimetic*: each consecutive translation between the digital and the physical is measured by the accuracy of its replication—the digital point cloud model is valuable because it accurately and realistically measures and represents the captured physical scene; the physical artefact or insertion is in turn evaluated by the low tolerance

of its materialization of the digital design model. This mimetic, consecutive impetus also marks the nature of the collaboration between scenography and performance—the flipbook notion of a scenographic architecture being a mechanically unfolding spectacle emulating the movement of a performer; and vice versa the consecutive “re-enactment” of this movement by a dancer’s gestures.

In a second phase, a notion of translation and fabrication emerges that is *augmentative* rather than mimetic—all while retaining the pragmatic benefits of this mimesis. When the scenographic insertions, which are bespoke designed based on a “realist” scan and implemented into the site, are re-scanned, our digital point cloud mirages appear as elements that are additionally *created* by that very translation process. The role of the scanner as a tool of *verification* is ambiguated in that it both checks the truth (accuracy) of the insertions and *creates the truth* (from *verus facere*, to make true) of the mirages. A novel, extended sense of fabrication emerges, which comprises both the digital fabrication of the physical (using scans as a source of information) and the physical fabrication of the digital (using scans as a sources of fiction). The insertions, *digitally fabricated, fabricate digitality.*

## FABRICATING FOR AN ENTANGLED DIGITALITY

The reader might sense the danger however that, by adding a next, be it digital, stage (the fabrication of digitality) to a linear fabrication workflow, we might be merely stretching its teleology with yet a new, but equally *final* goal. Therefore it is important to note that also the digital point cloud assemblage cannot be read as the new definitive goal, the ultimate repository of our scenographic practice. During the process of our experimental collaboration, a practice emerged that is instead characterized by a constant feedback between physical and digital creation. The digital site, the point cloud

archive, becomes a parallel performance stage that is constantly fed by (i.e., being scanned), but also feeds back into the physical space.

This feedback of the digital back into the physical affects both the appearance and experience of the physical performance space. Visually calibrated by the mirror and scanner armatures and annotated with markers indicating origins, hot spots and movements, it constantly refers to the parallel digital spaces being created. Maybe even more important, however, is the performer's accumulation of technical and spatial literacy regarding the resulting point cloud models: after each rehearsal session, performers and scenographers would sit down to explore and navigate through the resulting point clouds, compare and composite them with older results and refine strategies for further rehearsals and performances.

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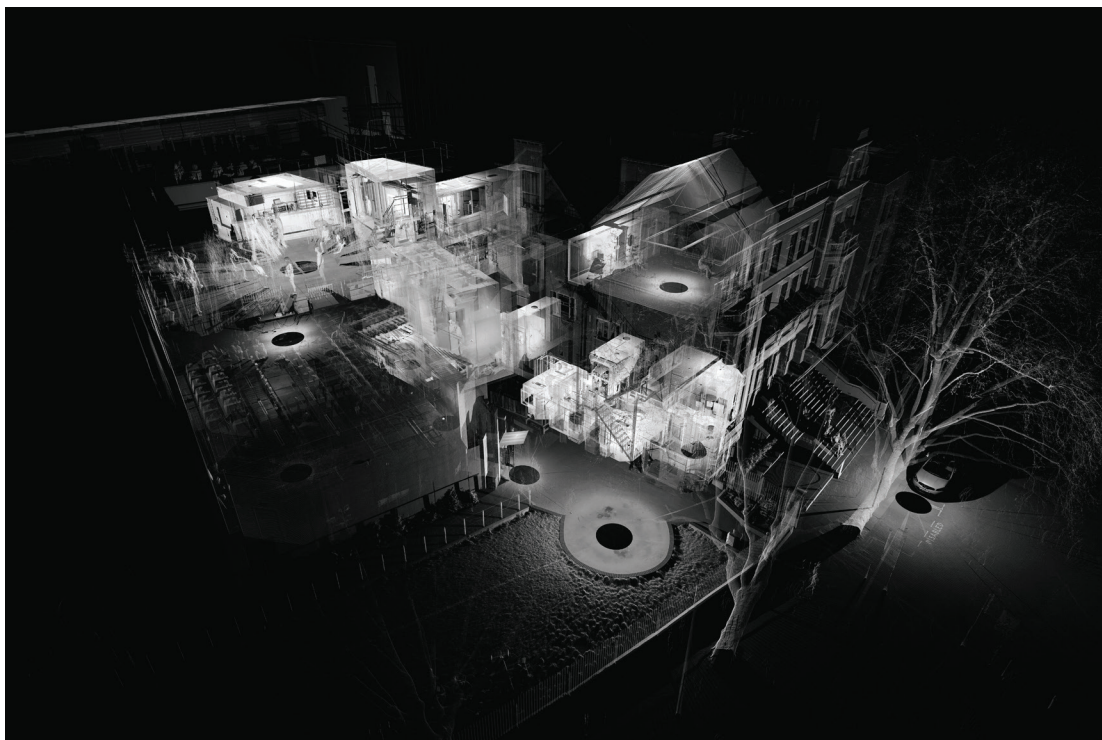
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This way, each consecutive rehearsal becomes more and more deeply saturated with both the imprint of a remembered digitally created space and the anticipation of the digital space being created at that very moment. As the performers develop a sense of simultaneously inhabiting this digital space, they become guides to these spaces, leading the audience through its digital pitfalls:

**A: We can see things you can't see // B: It's not always helpful // A: I can see through that wall // B: It's not very interesting.**

Also, they develop techniques that creatively exploit the point cloud space's own peculiar rules and laws, modes of mobility and observation. When one performer, during the piece, starts writing the opening lines of T. S. Elliot's *Four Quartets* on the exterior wall of a ground floor rehearsal space, she does this *backwards*—literally becoming more literate within the point cloud space, she knows that digitally standing within the rehearsal space, she will be able to read it through the wall as soon as it dissolves into points:



**Time present and time past  
Are both perhaps present in time future  
And time future contained in time passed.  
If all time is eternally present  
All time is unredeemable.  
What might have been is an abstraction  
Remaining a perpetual possibility  
Only in a world of speculation.**

Eventually, the physical space surrounding us dissolves into points, even without the mediation of its perspectival representation. As in Elliot's Quartet, scales of time and experience are now inextricably mingled, each performance taking place in its present physical space as well as interacting with the previously and presently recorded and soon to be represented space. In our digitally saturated age, digital fabrication becomes an ongoing reciprocal, non-teleological process, the digital and physical being both thoroughfares of an emergent digital-analog assemblage, an entangled continuum in which it is useless to attempt to distinguish what is represented or actual, recorded or created, fact or fiction.

**The elucidating scanner:** the complex spatial correlations of the labyrinthine RCSSD buildings are rendered transparent and become legible.







The other vocation is its materiality: writing, being independent of meaning, is its visual and tactile appearance on paper. The spatial display of time here is itself a visual semantic source: whereas the screen “contains” an infinite stack of layers, the paper shows only one. The sheet of paper reveals a simultaneity that was neglected before, when it was a mere tool for “transparent” words to be placed in ordered sequences. The more redundant the paper book (waste of paper, of time, of money), the more the act of writing becomes a matter of impressing the paper support and of testing its resistance, and the possibilities to play with it.

In the osmosis of video and paper pages, we discover in hindsight, how pleasant it has always been to touch them, to handle them, to move them and to turn them in our hands. A paper book does not need now to contain meanings, or store cultural patrimonies, but it simply survives within the technological horizon of artifacts: it unties that knot (renounces the rebinding), quite disregarded before digital culture, between page and meaning. The book releases its pages, lets them free from those fetters, in order to morph into a video, to be handled, or watched, as one’s eyes move on its surface.

In this convergence—or rather in this feedback loop—between digital and material, what gets lost is the totality of sense. In fact, if reading is just one of the possibilities given by the page, we browse and skim over it, well aware that what we are doing is allowed by its material left-over: the page is a relic holding back its ancient time in the space of the paper. It is not a matter of respecting an order of premises and conclusions. Touching the paper lets us enjoy the revelation of the non-necessity of that logic. Our eyes can have solace from that effort. It was Friedrich Nietzsche who in *The Gay Science* said that

*The course of logical ideas and inferences in our brains today corresponds to a process and a struggle between impulses that are, taken singly, very illogical and unjust; we generally experience only the result of this struggle: this primeval mechanism now runs its course so quickly and is so well concealed.*

Now our aged logic—making sense of the world through the transparency of language, namely writing and reading—has come to the point of its illogicality. The times are ripe to confirm Nietzsche’s suspicions; it is about time that an utter materiality preserves a surface where all that is necessary is out there, because what is necessary is always at hand. However, now that we know it, it is only just at hand; there is nowhere else, or if another place ever existed, it would be but a nuisance, a redundancy—of information, of non requested knowledge—unless that nuisance becomes itself part of the game, as sound waves (like glitch music which uses electronic errors as musical score). Like myths told on Etruscan vases, screens expand the reading to a tactile visual question and whatever is written appears as already read beforehand,



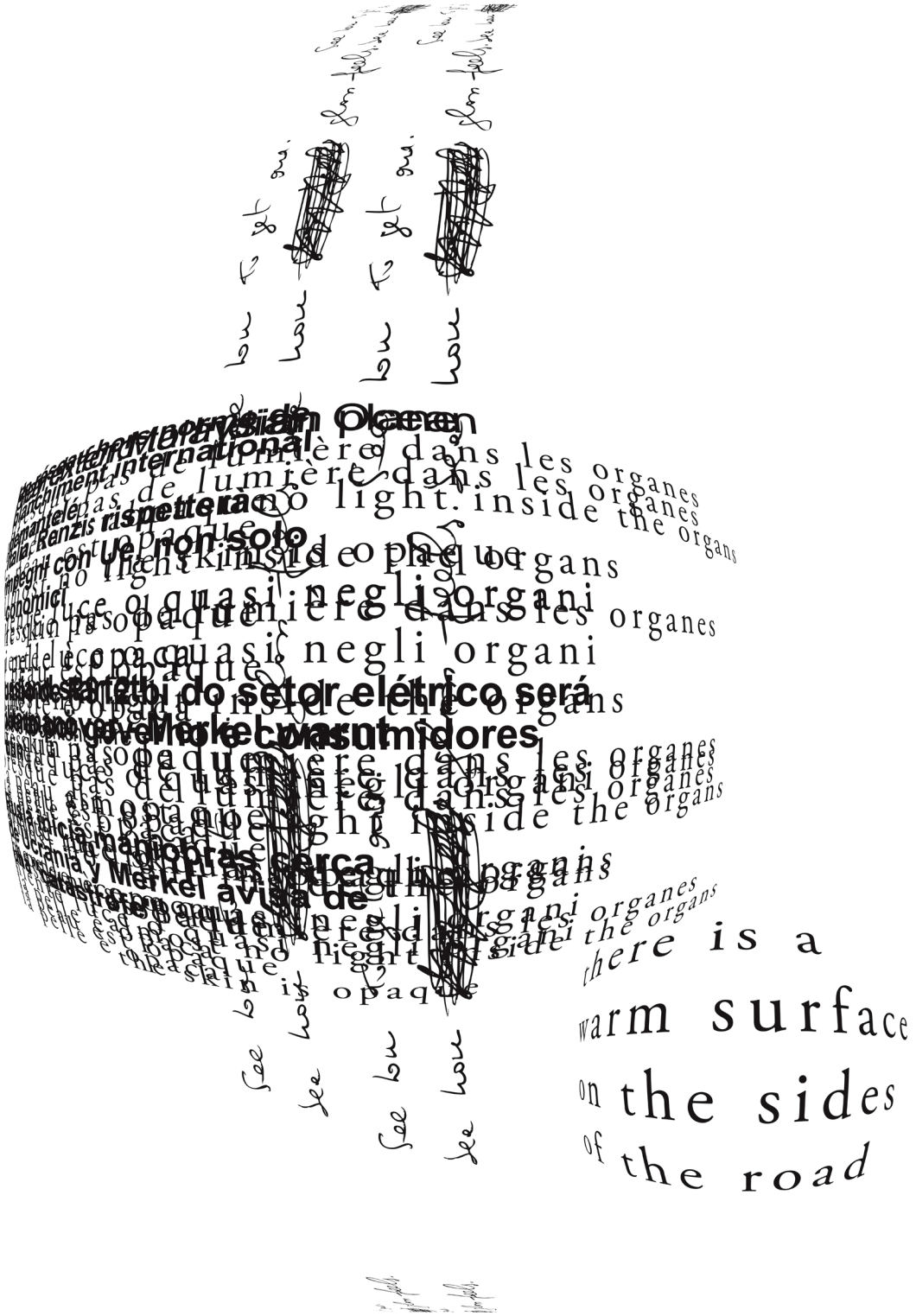
Alessandro De Francesco. AWO\_10.

it does not need to be read again, as what the text refers to arises from the text itself, endlessly read by the self-generating virtual surface. It is there to be shown, rehearsed, tested, forgotten, and protected by the invisible layers of the screen. Exactly as it happened in mythologies, in most cases we know what it's all about, and the text asks the spectator to be only another witness to its autonomous existence, or pre-existence (to facts).

And to the material sheet of paper an opportunity is given: to present and show in the empirical world what escapes control in the flowing world of the screens.







## So who's the writer in Alessandro De Francesco's work?

The writer takes ready-made words and inserts them in a space to construe self-organized texts that, whether they are interrupted narratives, or Facebook-like self-descriptions and self-promotions, or reminders of cultural fossils like *Kurosawa*, *Alma Mahler*, *Dickinson* or *Joyce*, are displayed on the paper surface, swirling in rotatory portholes, to be lost and retrieved at the next cyclical return. They sound like old myths, confirming what Walter Benjamin called the mere exhibition value of the arts. Using words like brushstrokes, placing them upside down or right-side left, or in a spherical perspective, the writer paints and types and handwrites, following in any case the visual rules of concave-convex space, and accompanying the surface's own swelling and fading away. If there is no order, there is not even a broken order (as it happened in the *avant-gardes*), as continuity is granted by the perspectival and tactile qualities of the text.

And Alessandro De Francesco's videos confirm and reinforce the idea of the double direction taken by writing: the text is literally set in motion, swollen first by the image, then by the fisheye lens, and lastly by the increasing invasion by the text-image of the whole screen, which overcomes its flatness and runs into the spectators like the arrival of the train by the Lumière brothers.

AW1\_4, a paper work of digitally printed augmented writing, is turned into a fisheye digital video in which the invasion of the visual scope triggers in our minds that "imaginary museum" that images contain and unleash on occasion (if we follow Aby Warburg's *pathos formulae* or Henri Focillon's inner life of forms), recalling and reinterpreting paintings such as those by Robert Motherwell, Cy Twombly, and Emilio Vedova—further "augmented" by the pervasive noise in the background, made up of both fragmented voices from YouTube videos and sounds recorded from real life. By occupying all space in quasi-anamorphic multiplication of its visual structure, the text-image claims for itself a total attention, and even becomes a kind of threatening entity for a few seconds, just black ink and white paper, hinting at the mirrored presence of the camera. After the *avant-gardes*, the writer takes a further step: instead of deconstructing meaning, or revealing its processes, challenging and frustrating the reader, he plays with the infinite possibilities of its self-organization and superimposition. He turns backward to the Renaissance representation of space and plunges forward to catch digital suggestions.

Now, who is the reader of these texts? Having been previously challenged by the *avant-gardes*, the reader is ready to indefinitely flow within spatial words, ready to survive the lack of those references that the previous generations of writers had already subtracted from him, a readiness enhanced on the web. He is more and more skilled in mastering the screen with pointers and touchpads, in finding unpredictable connections and in jumping from







one site to another, superimposing times and places. His multitasking ability allows him to be absorbed by the spinning whirls. He does not worry about his own vulnerability. But after all, when beforehand was he ever the master of his own reading or watching? A Renaissance painting was meant to invite a multitasking spectator to be absorbed by the simulated 3D, contemplating a world that he did not contribute to make or to make meaningful. According to the Renaissance canon, straight and curved lines form a closed totality, an isomorphic space in which nothing moves. The viewer of Renaissance art was treated as a mere witness of meaning, upon which he was requested, at best, to meditate.

Here we have a similar relationship between the reader-spectator and the curves, geometric figures and frames of this ‘augmented’ 3D simulation, and we are similarly asked only to witness and respect what appears on the surface. However, in Alessandro De Francesco’s work any possible totality or centripetal vanishing point is blurred: the sense of what we detect is exactly that swelling, waving and fading away of communication as such. Now the reader-spectator is in charge of becoming himself a user who actively decides to be turned into a used (passive) witness. This is a reader who finds plenty of languages on the web and breaks through the wall of incomprehension through images, music, and automatic translators. The reading elicits a distance, both semantic and physical (the rounded and swollen 3D text becomes unreadable in the convex sides and seems to continue in the back of the swollen form, betraying the “new line” rule).

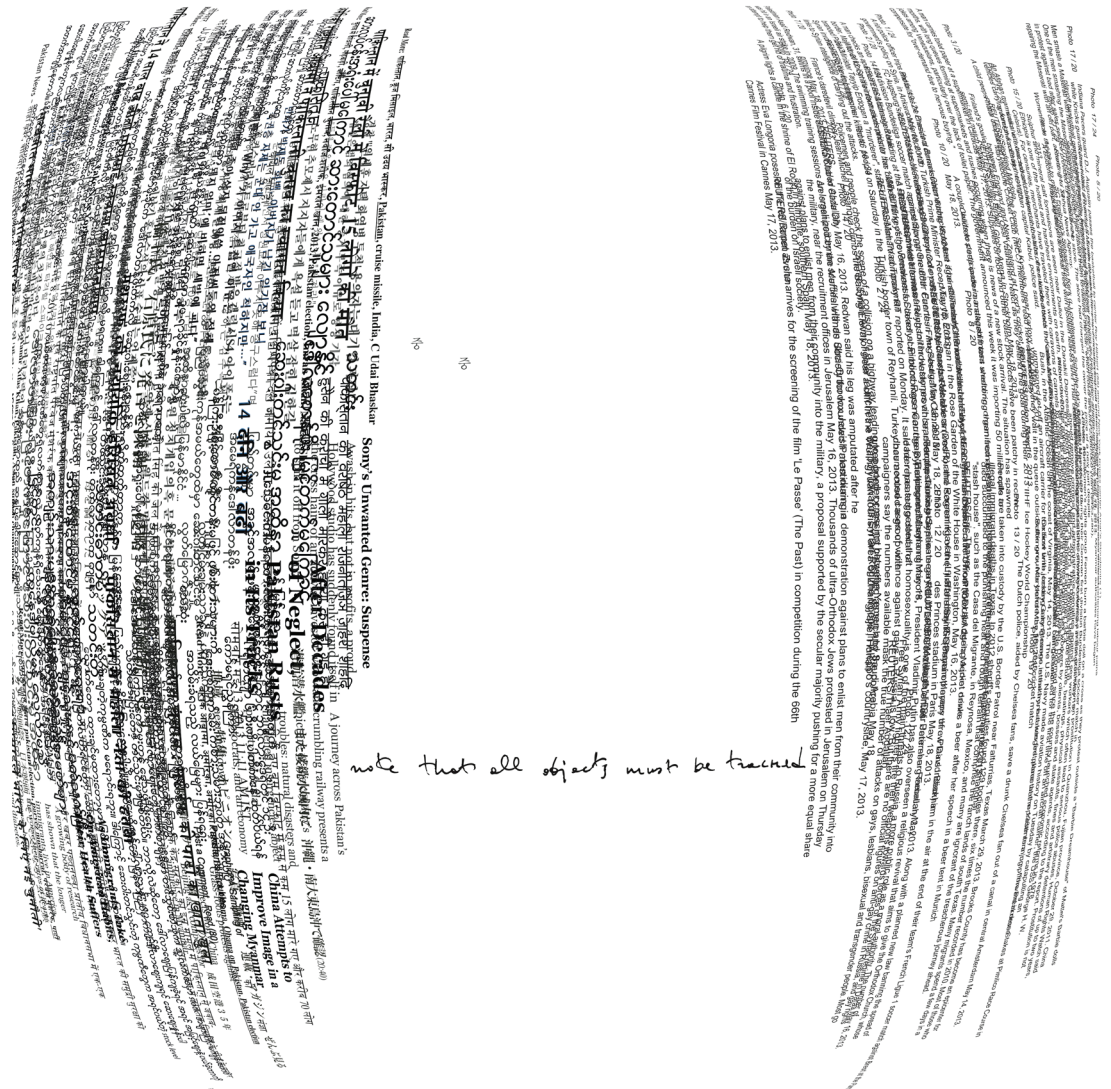
And conversely, from that extreme detachment some emotion is triggered, some tenderness for those half-sentences and extrapolated words that used to mean much and were the building blocks of a civilization, and now resound as traces of bygone illusions or myths, like *Childhood*, *Manhattan*, or *War II*—floating, swelling or raining like fleeing but tangible memories.

*Note that all objects must be tracked (AW1.7).*

What are these objects? They are us, tracked by the artifacts that exist out there and nonetheless enter our very bodies and minds, revealing themselves as instructors and masters of our actions (and wasn’t this always the case?).

A sense of transition, from one corner of the page to the other, from hand to digital, from screen to paper, is ingrained in our thoughts and becomes a stable condition, a constant translation where the source language is always missing and the target language never coincides with the final assignment of the information.

Where is matter in this structure of writing and thinking? Matter is what survives the transition: paper and ink. But, being what contains all the motion and all the suggestions, it is *living matter*, *materia signata*, or *force vive*, nothing inert and therefore nothing substantial. Rather, it is always impressed with another form, with another sense, always giving in to its constant morphing. Suggesting at the same time utter weight and utter weightlessness, being both persistent and floating, like Gian Lorenzo Bernini's marble folds, matter exerts the power of the surface, in its tireless yielding to the centrifugal energy of augmented writing.



Alessandro De Francesco. AW1\_7.





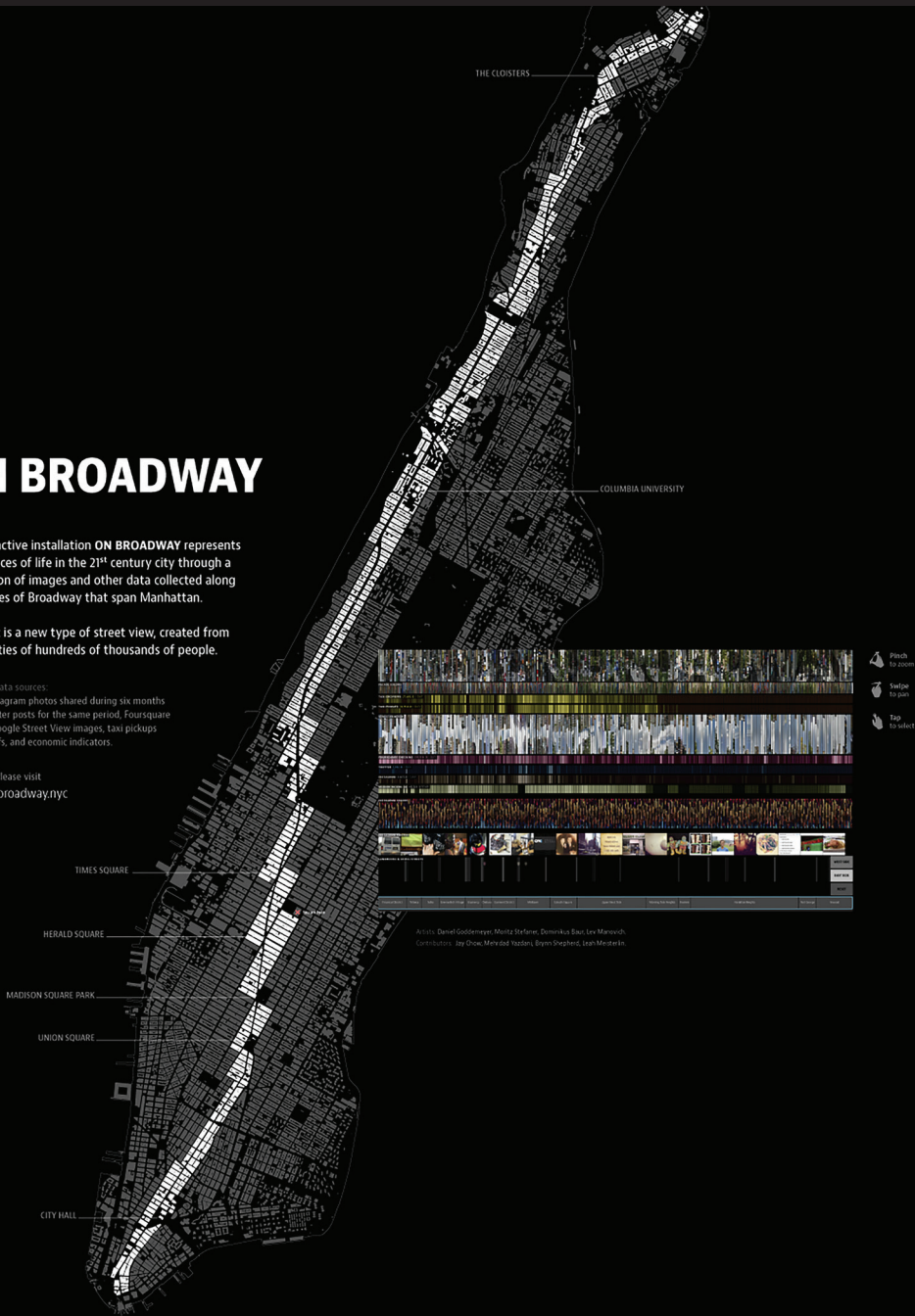
# ON BROADWAY

The interactive installation **ON BROADWAY** represents digital traces of life in the 21<sup>st</sup> century city through a compilation of images and other data collected along the 13 miles of Broadway that span Manhattan.

The result is a new type of street view, created from the activities of hundreds of thousands of people.

Image and data sources:  
660,000 Instagram photos shared during six months in 2014, Twitter posts for the same period, Foursquare check-ins, Google Street View images, taxi pickups and drop-offs, and economic indicators.

For details, please visit  
<http://on-broadway.nyc>



Artist: Daniel Goldsmidman, Meitz, Stefano, Sorenika, Bas, Leo Marasch  
Contributors: Jay Owe, May-dok, Jason, Bryan Shepherd, Leah Medeiros

# SOFTWARE IS THE MESSAGE

Lev Manovich

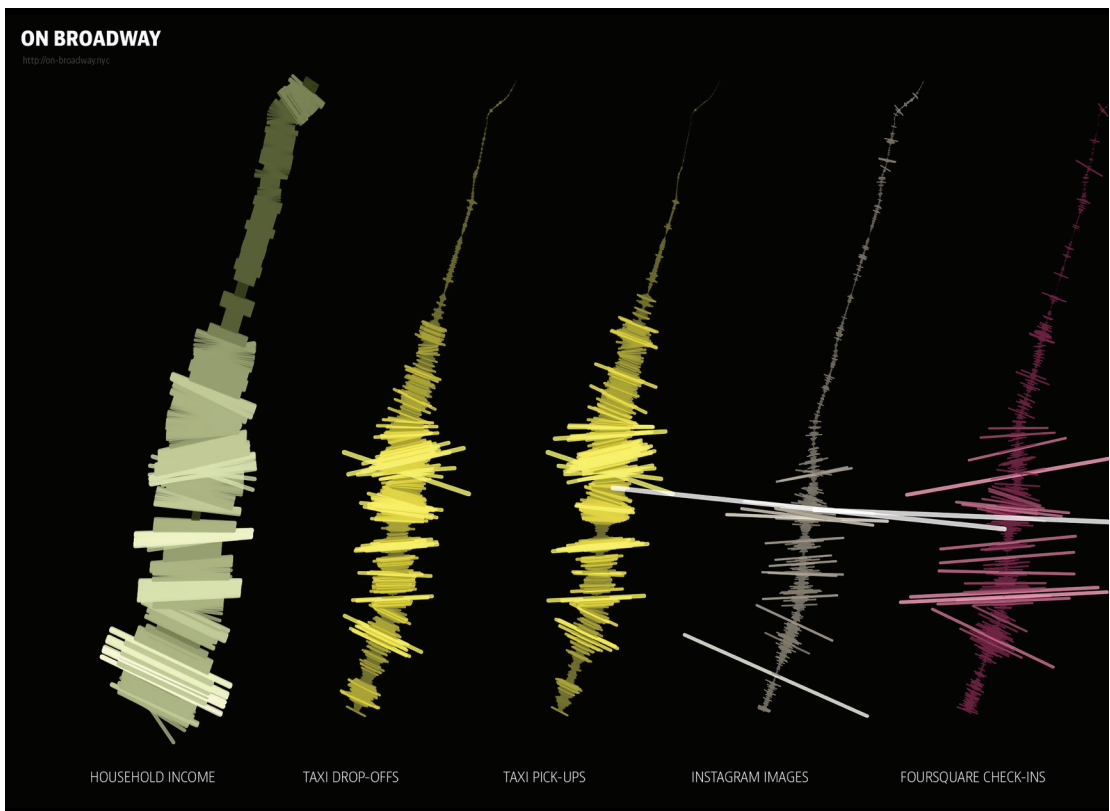
Did McLuhan “miss” computers? In his major work, *Understanding Media: The Extensions of Man* (1964) the word “computer” appears twenty-one times, and a few of those references are to “computer age.” However, despite these references, his awareness of computers did not have a significant effect on his thinking. The book contains two dozen chapters, each one devoted to a particular medium—which for McLuhan ranged from writing and roads to cars and television (the last chapter, “Automation,” addresses the role of computers for industrial control, but not its other roles).

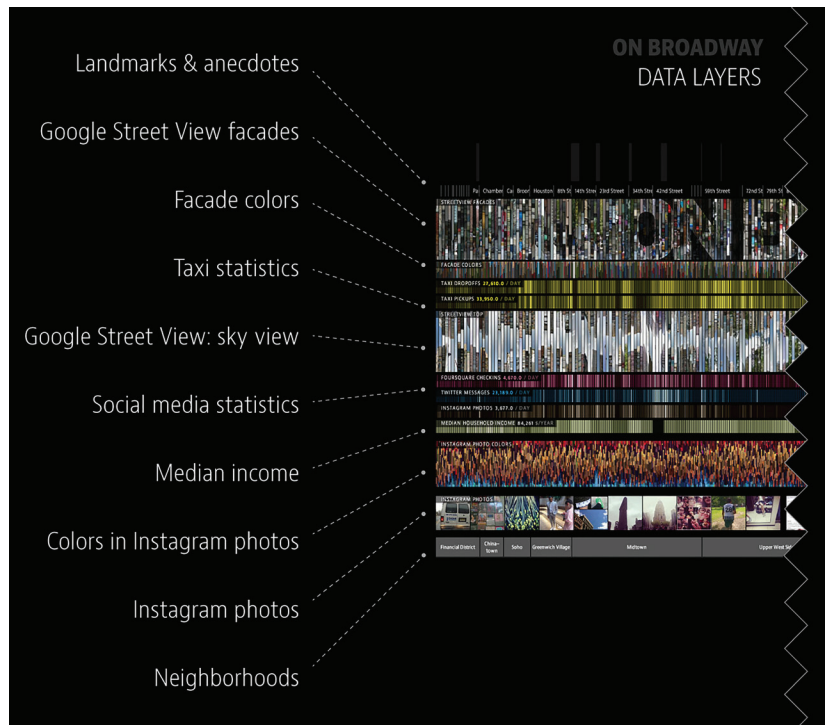
The reasons for this omission are not hard to understand. McLuhan's theories were focused on the media that were most widely employed by regular people during the course of human history. In 1964, the popular media for representation and communication did not yet include computers. Although by the end of the 1960s computer systems for design, drawing, animation and word processing were also developed (along with the first computer network that eventually became the Internet), these systems were only used by small communities of scientists and professionals. Only after the introduction of the PC in 1981, these inventions started to be disseminated to the masses.

As a result, *software* has emerged as the main new media form of our time (I write “software” rather than “digital computers” because the latter are used to do everything in our society, and often their use does not involve software visible to the ordinary users—like the systems inside a car). Outside of certain cultural areas such as crafts and fine art, software has replaced a diverse array of physical, mechanical, and electronic technologies used before the twenty-first century to create, store, distribute and access cultural artifacts, and communicate with other people. When you write an article in Word, you are using software. When you are composing a blog post in Blogger or WordPress, you are using software. When you tweet, post messages on Facebook, search through billions of videos on YouTube, or read texts on Scribd, you are using software (specifically, the category referred to as “web applications” or “webware”—software which is accessed via web browsers and which resides on servers).

McLuhan's theories covered the key “new media” of his time—television, newspapers and magazines with color photos, advertising, and cinema. Just as these mediums, software medium took decades to develop and mature to the point where it dominates our cultural landscape. How does the use of professional media authoring applications influence contemporary visual imagination? How does the software offered by social media services such as Instagram shape the images people capture and share? How do particular algorithms used by Facebook to decide what updates from our friends show up in our News Feed shape how we understand the world? More generally, what does it mean to live in a “software society”?

In 2002, I was in Cologne, Germany, and I went into the best arts & humanities bookstore in the city. Its new media section contained hundreds of titles. However, not a single book was devoted to the key driver of the “computer age”: software. I started going through the indexes of book after book: none of them included the word “software” either. How was that possible? Today, thanks to the efforts of my colleagues in the new academic field of “software studies,” the situation is gradually improving. However, when I looked at indexes of works of key contemporary media theorists published during the last year, I still did not find entries for “software.” Software as a theoretical category is still invisible to most academics, artists, and cultural professionals interested in IT and in its cultural and social effects.





Software is the interface to our imagination and the world—a universal language through which the world speaks, and a universal engine on which the world runs. Another term that we can use in thinking about software is that of a dimension (think of the three dimensions that we use to define space). We can say that at the end of the twentieth century humans have added a fundamentally new dimension to everything that counts as “culture” — that of software.

Why is this conceptualization useful? Because “cultural software” is not simply a new object—no matter how large and important—that has been dropped into the space which we call “culture.” And while we can certainly study “the culture of software”—programming practices, values and ideologies of programmers and software companies, the operations of Silicon Valley or Bangalore, etc.—if we stop there, we will miss the real significance of software. Like the alphabet, mathematics, the printing press, the combustion engine, electricity, and integrated circuits, software re-adjusts and re-shapes everything it is applied to—or at least, it has such a potential. Just as adding a new dimension adds a new coordinate to every point in space, “adding” software to culture changes the identity of everything that a culture is made of. In this respect, software is a perfect example of what McLuhan meant when he wrote that the “message of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs” (McLuhan 1964, 8).



# ON BROADWAY

23rd Street

34th Street

STREETVIEW FACADES



FACADE COLORS



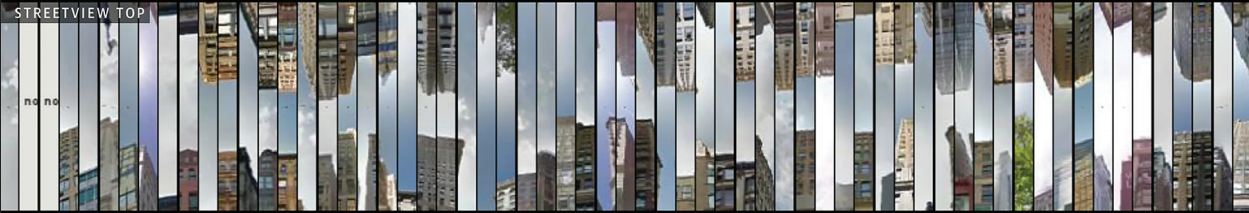
TAXI DROPOFFS 9,896.0 / DAY



TAXI PICKUPS 11,004.0 / DAY



STREETVIEW TOP



FOURSQUARE CHECKINS 2,382.0 / DAY



TWITTER MESSAGES 11,217.0 / DAY



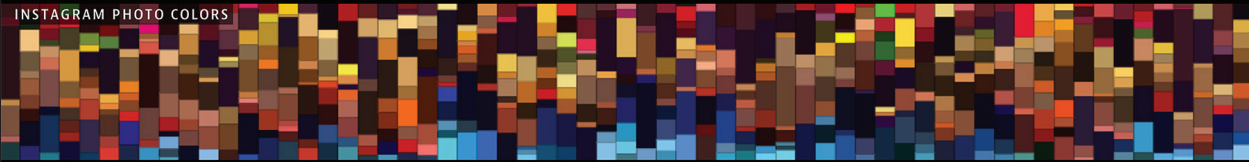
INSTAGRAM PHOTOS 2,036.0 / DAY



MEDIAN HOUSEHOLD INCOME 117,299 \$/YEAR



INSTAGRAM PHOTO COLORS



INSTAGRAM PHOTOS



Financial District

China-town

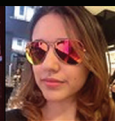
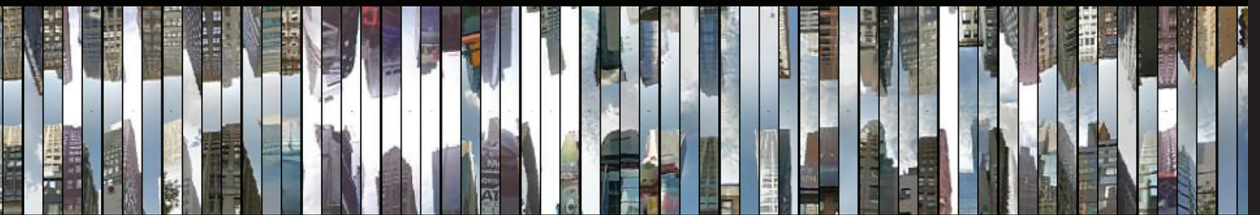
Soho

Greenwich Village

Midtown

Upper West Side

42nd Street



RESET

Morningside Heights

Harlem

Hamilton Heights

Washington Heights

Fort George

Inwood

However, the development and current hegemony of software does not simply illustrate the points McLuhan made fifty years ago. It also challenges these ideas. Here is how.

In the first few decades, writing new software was the domain of professionals. Nonetheless, already in the 1960s Ted Nelson and Alan Kay proposed that computers could become a new kind of cultural medium. In their paradigm, the designers would create programming tools, and the users would invent new media using these tools. Accordingly, Alan Kay and Adele Goldberg called computers the first *metamedium* whose content is “a wide range of already-existing and not-yet-invented media” (Kay and Goldberg 1977, 403).

This paradigm had far-reaching consequences for how software medium functions today. Once computers and programming were democratized enough, some of the most creative people of our time started to focus on creating these new structures and techniques rather than using the existing ones to make “content.” During the 2000s, extending the computer metamedium by writing new software, plugins, programming libraries and other tools became a new cutting-edge type of cultural activity.

For example, GitHub, a popular platform for sharing and developing open source tools, houses hundreds of thousands of software projects. Making new software tools is central for the fields of digital humanities and software art. And certainly, the key “media companies” of our time such as Google, Facebook, or Instagram do not create content. Instead, they constantly refine and expand their software tools, which are used by hundreds of millions of people to make content and to communicate.

Thus, it is time to update *Understanding Media*. It is no longer the medium that is the message today. Instead, “the software is the message.” And continuously expanding *what* humans can express and *how* they can communicate is now our “content.”

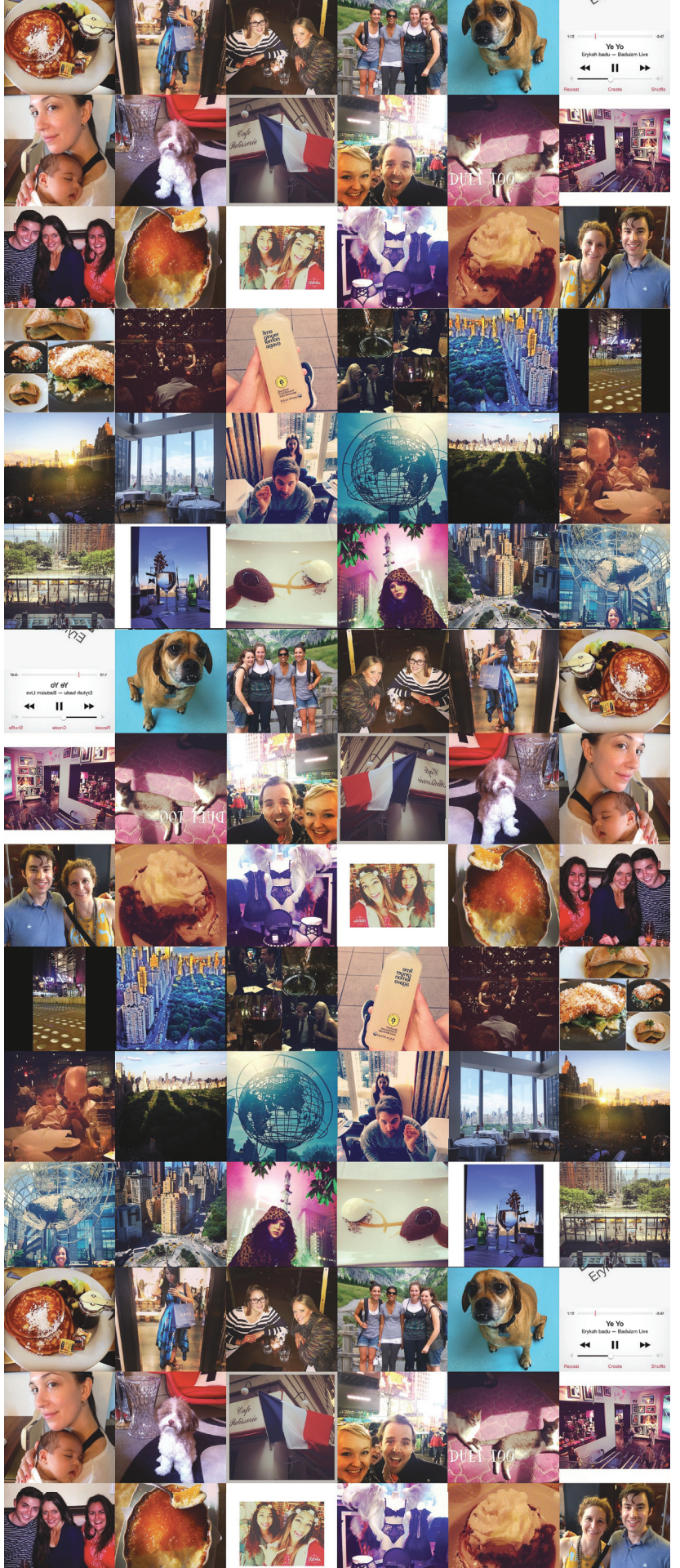
**Note: Some parts of this text come from Lev Manovich's book *Software Takes Command* (2013). All images from the interactive installation *On Broadway*, courtesy of Daniel Goddemeyer, Moritz Stefaner, Dominikus Baur, and Lev Manovich.**  
<http://on-broadway.nyc>

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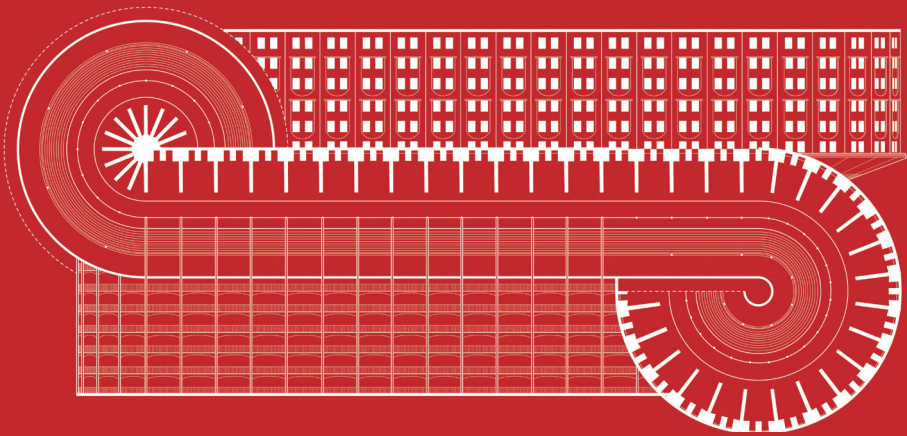
Manovich, Lev. 2013. *Software Takes Command*. New York; London: Bloomsbury.

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# KEEP CALM AND BE COUNTED

Electronic Monitoring's Evolving Effects  
across Scales of Time and Space



Jordan Geiger, text and a conversation  
with Raphael Sperry

*The following is a short description of some origins of “electronic monitoring” (EM) and its architectural and corporeal effects. It is followed by a discussion of EM’s uses and abuses, conducted over email with Raphael Sperry, President of Architects, Designers and Planners for Social Responsibility.*

### **Whither Calm?**

Among all things internet-of-things (IoT), one inveterate form of wearable technology stands out and multitasks in ways deserving of our attention. Electronic Monitoring (EM) ankle cuffs like the BI ExacuTrack perform architectural and corporeal feats that pre-date those of our most popular consumer electronics, and still gesture toward where our bodies’ relations to computing may be going. Increasingly worn by parolees and persons awaiting trial, these relate not only to the bodies of the accused, but to the spaces and people around them in ways that were both foreseen and unforeseen.

EM seems to be an insidious payback on computer scientist Mark Weiser’s anticipation and promise of ubiquitous computing: that it would grow invisible and fade into the background. Weiser’s 1991 article, “The Computer for the 21st Century,” related cases of innovation and shared creativity emerging at the Xerox Palo Alto Research Campus (PARC), so-called pads and tabs and badges that would free us to direct our attention to more important things than reporting our location or opening a door. Tellingly, Weiser and his colleague John Seely Brown also referred to this coming mode of computing as “calm” (Weiser and Seely Brown 1995). By this, they meant that the invisible proliferation of sensors and actuators, of code and data, in our buildings and cities would not tax our attention with visibility or a conscious interface. Instead, they would fade into the background. Calm, in a sense, was the alternative not to “nervous,” but

instead to “needy.” A world of calm computing, Weiser and Seely Brown seemed to suggest, was one that had some self-sufficient independence of us. As those wearing the ankle cuff learn, though, calm is neither passive nor neutral, and not without a subject: rather, calm technology effects what we might call “calm bodies moving within vigilant spaces and times.”

The ExacuTrack is the most widely deployed of GPS-enabled anklets, the basis of EM’s rapid growth in the US penal system. Its proponents have much to praise in its relation to incarceration. Architecturally, socially, financially, administratively, the small device purports to relieve our overfilled prisons and promises safe reintegration into society for parolees, meanwhile transferring the cost and responsibility for incarceration to the parolee and to private corporations respectively. The ankle seems to offer something for everyone, be they calling for prison reform or deregulation. What operations does EM effect on space, time and bodies? What role does it play in a neoliberal economic structure? Where might “calm” be leading?

**Facing Page - A continuous peel of interior and exterior surfaces, unrolling the enclosures of conditions for control and observation.**

### ***Architectural Inversion***

Alongside efforts to stem architects' complicity and contribution to the creation of spaces for execution and torture, all forms of prisons continue to expand in the United States.<sup>1</sup> Not despite but perhaps because of this, EM has grown as well. Although its proponents often describe its potentials for moving people out of prisons, EM instead can be understood as extending the space of prisons; outsourcing their program to urban space and private homes; and, by their punishing cost to probationers, as leveraging the continued full capacity of prisons.

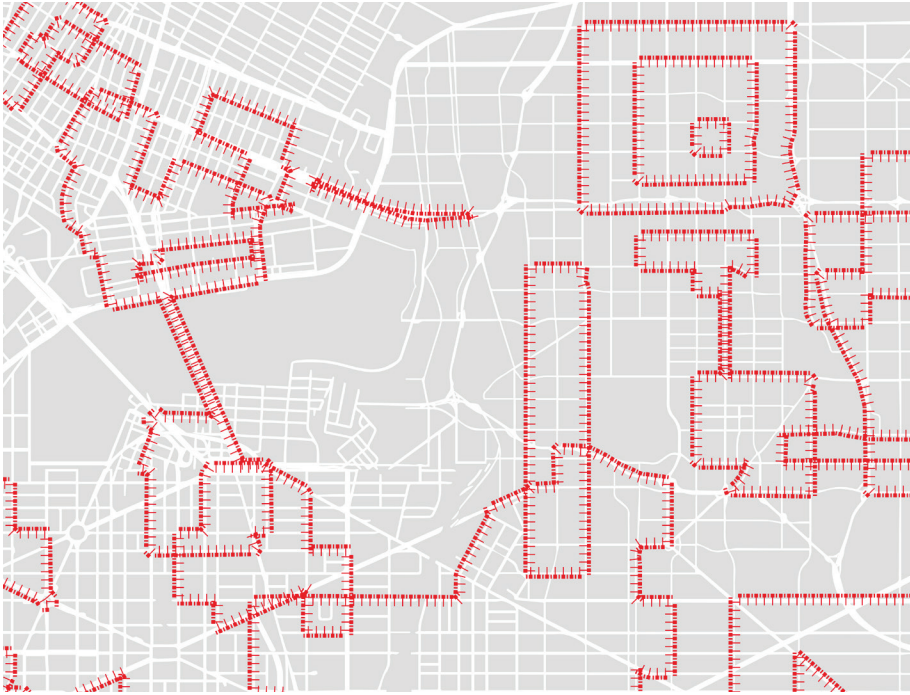
EM has been described as bringing about an "open air panopticon" (Wood 2010). Referring to Jeremy Bentham's prototypical prison design, and its familiar analysis by Michel Foucault as an instrument for placing the prison guard within a prisoner's very mind, this description of EM conceives it as a kind of anti-matter—or rather, a dark matter for the prison industrial complex.<sup>2</sup> As it proposes a dissolution of prison architecture, the object instead just turns incarceration inside out, inverts its space so that the city is a calm prison of sorts. Further, as it enables parolees to walk the streets amongst other citizens, it inspires the creation of crowdsourced maps of sex offenders and other ex-cons.<sup>3</sup> How to understand the complex spatial and temporal performance of the ExacuTrack in social and political terms? How does EM alter the prison type if not architecture's status more generally? How does it exact selective punishment on bodies and on spaces of the city, even if it appears as a placeless, decidedly anti-ergonomic device?

Incarceration outside of prison architecture has some history in "non-building" forms that skirt certain regulatory or financial constraints, such as vessels permanently moored on

an urban edge.<sup>4</sup> Yet electronic monitoring really alters the space and time of incarceration in ways that have not been achieved previously. To begin with, GPS-based anklets work on "inclusion zones" and "exclusion zones"—places where a parolee is perpetually monitored for leaving a safe area or entering a prohibited part of town (where, say, a restraining order is in place). But they also act temporally with "inclusion times" and "exclusion times" to enforce curfews and to prod wearers to do their jobs. As has been noted, these are not monitored in real time, because they can't be. "Case managers receive a stack of daily reports on convicts' movements, which they can scan for peculiarities—but they aren't constantly sitting in front of a computer screen, following dots on a GPS map" (Swan 2014). The reports yield maps, but uninterpreted and often unverifiable ones. Further, the mappings that they inspire now proliferate as traced by (and under the eyes of) the general public, similarly unverified. Setting aside the logistical challenge of processing a surfeit of incoming data, we may consider the ethical and teleological ones.

Here are the first shifts from Jeremy Bentham's Panopticon and its later Quaker cousin in Philadelphia's Eastern State Penitentiary. The latter is considered perhaps the first panopticon built in this country, steeped in ideologies of reform through hard labor: unlike the British original, the American debut had a tiny work yard for each cell outfitted with tools and a bible. Today, EM's role extends the country's contemporary logic of incarceration: not toward reform, but to constant spectacle, to financial sanction, to shaming and sometimes to the curious vanity of being worn.<sup>5,6</sup>

The anklet conditions things like the space and time of schools<sup>7</sup>—not for the protection of students from potentially



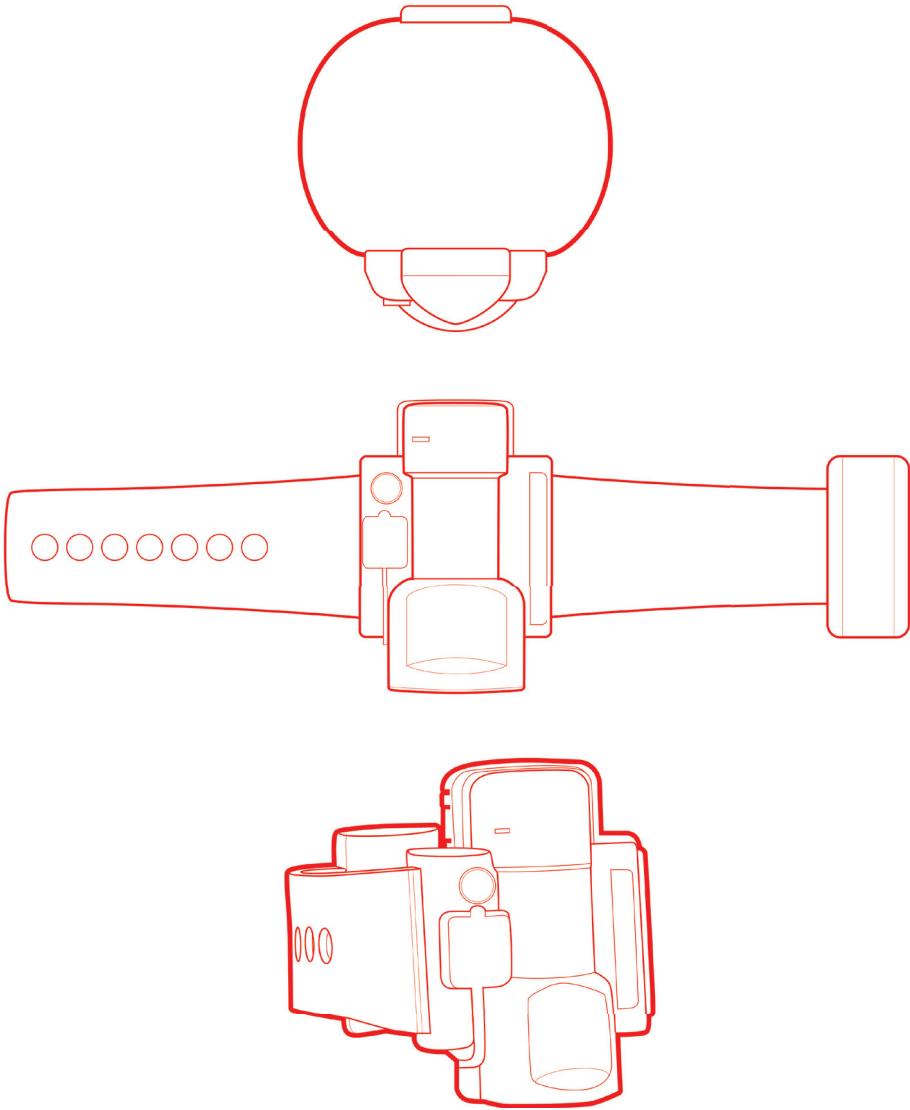
The surface of inscription at a larger scale: overlay of city street grids with multiple inclusion and exclusion zones, curfews and other time codes: the urban plan grows a choreography of personalized control routines.

predatory citizens at large, but from one another. Now, evidence suggests that the prison swells not merely beyond single authorities with transparent oversight, but to a web of geopolitically expanding participants and controls. In some instances (SFBG 2010), purview already extends beyond the city, to the entire planet, as immigration and deportation authorities turn to the device for assistance in determining compliance. Recently, EU committee ministers have adopted new principles (Voice of the Monitored 2014) to redress the lack of standards for administering EM and ensuring things like data privacy and public oversight—yet the implementation and further review of EM's effects remain to be seen.

EM's complex spatial performance is part of a vast and multi-scalar shift in which

the architecture of incarceration, whether panoptic or not, is more than merely inverted; the spaces and times of the city, if not the nation, are fundamentally mutated. Since tracking is based in part on GPS, and jurisdictions are increasingly subject to legal maneuvers like gerrymandering and migration policy,<sup>8</sup> this mutation has no specific dimension. Its reach is across scales, from the single body to the planet.





The ExacUtrack GPS monitoring ankle from BI Incorporated, the smallest scale at which EM's tangle of computational, legal, financial and spatial structures converge and encircle the human body.

## ***Bodies and Byproducts***

What unseen economics underlie the ankle, as various industries, technologies and administrations outsource incarceration to the domain, but not the shared oversight, of the polis? The adoption of GPS anklets represents an array of partners, beginning with the GEO Group and its subsidiary BI Incorporated, which manufactures the ankle in the US for over 200,000 people per year; GEO in turn, is also a major operator of private prisons in the United States. As a result, its profit structure ensures business whether it manages inmates before, during or after a prison term.

We might consider this arrangement a high-efficiency economic structure for the given circumstance, where EM offers a panoply of chances to monetize the incarcerated. Those released under the condition of wearing an EM device have already entered a loop of (literal, physical) pay structures: not only are many of the US's private prisons owned and operated by the GEO Corporation, but halfway houses that purport to reintegrate the incarcerated into society are as well. With BI as a subsidiary, GEO continues its earnings by collecting fees from those wearing an ExacuTrack. This is as much explainable by the logics of redundancy in the prison industrial complex as by the mores of punishment that prevail today.<sup>9</sup>

At the scale of a single subject, the bargain to exit prison with an ankle carries a daily charge paid by parolees themselves, thereby not merely decongesting prison beds but also offloading costs to the convicted. It goes further, as the accounting for this alternative to current prison administration costs get mobilized to elide and obviate larger ethical and societal questions (Saletan 2005). And so the ankle proves itself not merely spatially and temporally nimble,

but also lucrative and redundant in its profits. This chain of byproducts extends to data monetization, and also represents a recent sort of "technology transfer." By this we can understand how technologies for one market sector find new life in another. There are historical precedents to today's migration of carceral monitoring equipment into the recreational use of consumers. As Paul Virilio has recounted, the same metal detecting portals that found their way into French maximum security prisons by the 1980s had already been long in use in French airports (Virilio 1991, 12–14).

GEO practices aren't the focus of our concerns per se, and not only because the company faces new competitors.<sup>10</sup> Rather, IoT products tend to blossom wherever incarceration was formerly effected only through physical structures. This is due in part to the partnerships of private concerns and governments that yield each new carceral technology as an extension of the contemporary ethics of punishment. JPay, the self-proclaimed "home for corrections services," handles money transfers, consumer electronics, and information management to inmates in prisons around the country. Its recently introduced tablet computer, the JP5 mini, customizes an Android operating system to prevent other operating systems from being installed. This enables the device to be monitored by prison staff for reading and approval of all incoming and outgoing communications. The device is pitched by JPay as serving "inmate rehabilitation and education," but it also primes the inmate for their data monitoring on the outside. All this relies on lucrative participation of various state legislatures, satellite service providers, civic Departments of Corrections, and, last but not least, the individual subjects who wear these devices.

The growth of GPS ankle monitoring also sparks a kind of knowledge industry with the legal academic research published in the *Journal of Offender Monitoring* (CRI, n.d.). The tether that encircles a prisoner, in short, is now made of many strands. In print and online, one finds a growing body of literature, most of it from law (Voice of the Monitored, n.d.).

Consider the contemporary status of the body as a monitored and surrounded thing. In this context, what is to be made of the quantified self movement, which outfits bodies with health monitors of different stripes and stylings? What differences are to be perceived between the BI ankle and a Fitbit? Here, we confront a cultural question as the decision to trade biometric privacy grows decreasingly startling in everyday life (Lallanilla 2013). Is some Hudsuckerian delirium to be found or forecast in EM's grip on the body and in the diagram of a scaleless circle?

From the economic to legal, spatial and corporeal orders, we can now see a growing set of concentric circles widen outwards from the GPS ankle. Originating in the human body and extending around the globe at shifts in scale, the morphology of incarceration now leverages a pervasive computing technology to supplant Bentham's radiating arms with the endless loop of an encircling boundary.

**Jordan Geiger:** What spatial effects are to be anticipated now thanks to EM? I described a geography of concentric circles of information centered on the body and eventually reaching an international dimension, as with immigration and deportation proceedings. What's your take?

**Raphael Sperry:** EM will reinforce the already existing geography of

**urban ghettos (see Loïc Wacquant, the UC Berkeley sociologist, on the link between the ghetto and "hyperincarceration"). If one were able to map where EM "inclusion zones" most heavily overlap, the result would be unsurprising: it would be poor neighborhoods heavily populated by people of color where opportunities for employment and even decent housing are scarce, where violence and police activity are already heavily concentrated. Will the inclusion of EM technology—and the drain on individuals' financial resources to pay for it—do anything to address the already well-known problems of American ghetto communities? More likely, by rendering the rest of the city an "exclusion" zone, it will reinforce patterns of legalized discrimination and racial segregation that have yet to be dismantled.**

**JG:** I also think about the transnational question—the expansion of inclusion zones beyond cities and their ghettos, just as the technology and the reach of its corporate structure suggests. EM has also a strange relationship to a history of surveillance beginning with the panopticon. Some goals remain and others have changed and hardened.

**RS:** Surveillance was supposed to help discipline and reform offending people through forcing them to internalize a regime of self-control modeled on an exterior regime of control. Ironically, the actual design of the panopticon—to achieve direct human surveillance of prisoners at all times—did not become widely realized in prison design until the advent of "podular" prisons in the late 1970s in the U.S., the same time that CCTV began to promise an additional form of technologically-enabled constant supervision that might serve the same function. As many cases of abuse by prison guards

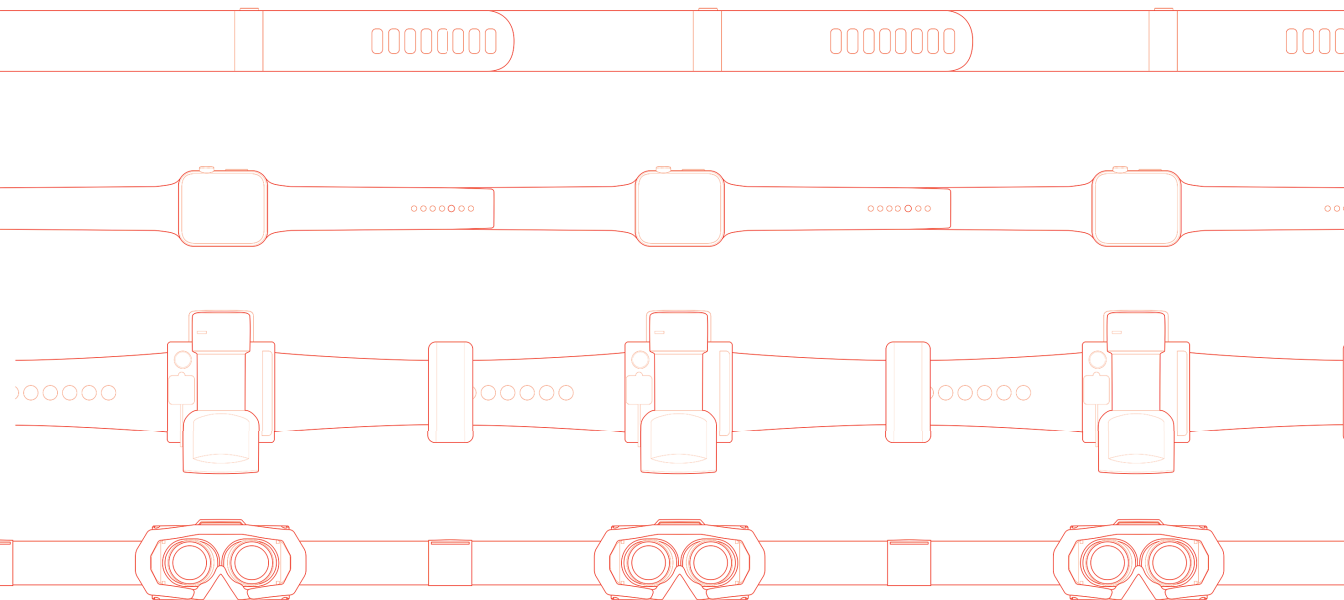
caught on videotape in prisons of all design types demonstrate, however, the prospect of surveillance does not do much to restrain people's actions. All too many video cameras have no one watching them, or at least no one who is prepared to do anything about what they see. So since surveillance by camera did little to fulfill the dream of the panopticon, there's good reason to doubt if EM will be more successful.

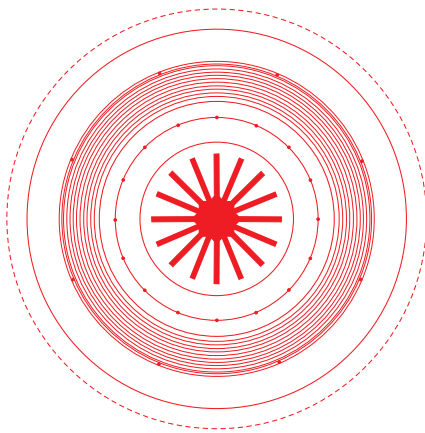
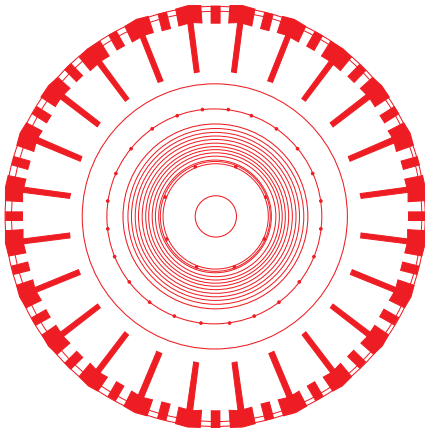
**In general, I think that these technologically mediated systems of control are still very subject to human intervention. The example you raised from Paul Virilio, of the use of metal detectors in prisons, has been frequently circumvented, as evidenced by the widespread presence of contraband in prisons. Very often, the smuggling is carried out by prison guards themselves: the collusion of the metal detector operator defeats any improvement in the technology. In the case of EM, the devices generate so much data that the question becomes who is responding to which parts of it, why, and how. Not only is data not**

**neutral, but in the American private for-profit implementation of EM, the corrupting aspects of the profit motive have moved from "informal" arrangements to a central feature of the program. Data will be pressed to flow, and control will be accumulated to further the profits of those in charge of the system, not directly for public safety or for the rehabilitation of those on the monitors.**

**JG:** This is but one of many cases in which the rhetorics of Big Data meet two logical challenges. On the one hand, there are the unresolved technical and ethical questions you raise around data ownership and interpretation. Virilio's point was more to raise the irony of the tech transfer, to address the fact that this particular technology had moved from spaces of motion (airports) to stasis (prisons), and not the other way around as one might presume. Obviously, both were marked by authoritarian control. Today, EM shows how surveillance has moved from detection to data collection and interpretation.

The quantified self and its varied instruments of measure.





Plan of Jeremy Bentham's archetypal Panopticon and its inversion, an orthographic diagram of EM's shift from centripetal to centrifugal orientation of the spaces of incarceration.

**RS:** This is also an interesting challenge to the widely-held notion that “information wants to be free”: what does that statement mean in this context? EM information isn't generally available to the person wearing the monitor, and the companies that own it aren't (or at least shouldn't be) free to use it any way they want either. This kind of forcibly collected personal data actually undermines freedom by its very existence—which is the point: to use information to replace prisons. I am often struck by the shallow libertarianism of the tech sector; EM seems to really showcase a lot of those problems.

**JG:** Will EM change the politics of invisibility of the carceral system?

**RS:** One of the central features of the current system we have of mass incarceration is how it is structured to render the incarcerated population invisible. The remote locations and high walls of prisons are perhaps the most obvious aspects of a much broader network of stigmas and restrictions that keep the incarcerated and the formerly incarcerated outside the bounds of mainstream social and civic life. (As one formerly incarcerated person remarked to me, it's obvious that this system is racially and class structured: no one talks about Martha Stewart as an “ex-convict.”)

In this context, EM seems to promise a reinclusion in civic life for those found guilty of crimes, but I'll believe that when I see it. One of the chief forms of exclusion has been the use of questions about criminal history to discriminate against people seeking jobs, housing, etc. EM has the potential to automate discrimination on the basis of criminal records. One of the most successful means of rolling back discrimination has been through

**“ban the box” campaigns, several of which have been won by organizations of formerly incarcerated people. It is not uncommon for parole restrictions associated with EM to include a prohibition on associating with other people with criminal histories; if widely implemented, this could criminalize organizing against criminalization itself.**

**JG:** Yes, there is the Miami case that Lisbet Portman recounts (Portman 2014)... The rules enforced by EM limited probationers to only living under a bridge. To intensify the absurdity, once word got out that parolees were living under the bridge, a small piece of land nearby was designated as park and even that space was no longer permissible. EM effectively leveraged expulsion of citizens who had been complying with restrictions and abiding by the conditions of their release after imprisonment. EM ensured continuous punishment and alienation.

**RS:** It seems like technology actually has the potential to take us into the past rather than the future. Banishment hasn't been a criminal sanction for centuries (if not longer), but that seems to be exactly what was achieved in Miami.

**JG:** What do you make of the quantified self question? The opt-in and opt-out is essential.

**RS:** This question seems so basic, but the simple fact that one has a choice of wearing a Fitbit or not sets it worlds apart from EM. This mirrors the distinction that sets prisons apart from other places: unlike a home, school, workplace, etc. you cannot choose to leave a prison. The liberal formulation of punishment is that the prison's restriction on liberty is the punishment itself, not the all-too-often degrading or dangerous conditions,

which are supposed to be unintended aberrations. Historically, however, the United States has not been able to operate prisons that come close to the liberal ideal. There are similar issues with EM and how it transcends the ostensible simplicity of its geofencing operations. You must opt-in to the geographical restrictions, but then you are also involuntarily opting in to contributing to the profits of the GEO Group. Or if the technology fails, you are treated like a criminal, not a consumer. A faulty battery can get you sent to jail, rather than on hold with customer service.

**JG:** But how does the quantified self render the future of EM? In one of James Kilgore's essays, he seems to predict that the IoT's birthing of the quantified self will render EM obsolete: we'll all be reporting, everything, already. Are we all, as the title of this article suggests, starting to “keep calm”?

**RS:** On the one hand, as we were just discussing, there is an essential difference between opt-in and opt-out scenarios, but over time those may fade away. Dave Egger's *The Circle* is only one recent vision of a coming world of total transparency that appears at first as an opt-in but rapidly becomes one that people cannot avoid opting out of due to social pressures. As quantified self technologies that are currently considered optional—think social media—become more essential and regulated (as happened, say, with electricity), their pervasiveness might approach the level of calm computing. Then perhaps future criminal sanctions would include restricting or even eliminating one's social media avatars. It is already acceptable in many states to inflict “civil death” as a criminal sanction through banning convicted criminals from voting or serving on juries (among other things); if

the virtual self became more legally incorporated into civic life, that might start to seem like a rational prospect.

**JG:** How about prospects for progress? Where might we hope to go now that the internet of things seems to be with us to stay?

**RS:** I'm not sure I like the idea I just came up with here: that criminal sanctions might take place in the virtual world. In some ways, I suppose it already happens and I'm OK with that. For instance, electronic monitoring of bank accounts might be a reasonable way to interdict fraud and simultaneously rein in the power of the financial sector. But the idea that social media becomes an essential part of civic life strikes me as potentially very destabilizing to human relations, governance, and trust. We've discussed how many within the technology sector seem to be fairly naïve when it comes to questions of liberty and privacy; this makes me nervous to accept the internet of things as it is currently advertised.

To the techno-optimist, perhaps a future where prisons are fully replaced by EM and people can reintegrate into their neighborhoods via social media would be the ideal, but from where I sit the possibilities seem far less bright. The communities most afflicted by crime and violence, and by violent policing, are already on the losing side of the "digital divide." For criminal justice, the most valuable progress I see being made is in the evolving practices of Restorative Justice and community empowerment. Human rights are of central importance here, for instance with the recent update of the *UN Minimum Standards for the Treatment of Prisoners* (PRI 2015): this kind of progress, which is powerful and essential, does not rely on the

internet of things. I can't speak for people who are sitting as victims in a Restorative Justice circle, but even with my imagination I can't see how if I were in that position, and I was faced with someone who had offended me who genuinely wanted to make it right, what use EM would be. After all, the person who offended has to opt in to make Restorative Justice work, so how much use would any technology structured so fully around coercion be?

*Drawings by Jordan Geiger with assistance by Pouyan Bizeh.*

## Endnotes:

1. For an account of the story around ADPSR's proposed rule 1,402 to the American Institute of Architects, see Zeiger (2015).

2. As Sperry points out, "dark matter is like regular matter, only it can't be seen except through its effects on other things."

3. These are plentiful now, drawing on publicly accessible big data sets from sources like Megan's Law in California (<http://www.meganslaw.ca.gov>), and feeding private concerns with names like Family Watchdog (<http://www.familywatchdog.us>) or Criminal Watchdog (<http://www.criminalwatchdog.com/neighborhood-watch/>). See also the gunfire detection site ShotSpotter (<http://www.shotspotter.com>), which represents reports of urban gunfire—seemingly innocuous, but possibly meaningless.

4. Jacob Reidel recounts for example the Vernon C. Bain Correctional Center at Hunts Point, New York (Reidel 2014).

5. This ambiguity was epitomized as Martha Stewart wore it—and got caught by it—defying house arrest after a conviction for insider trading. To this we can append a growing list of fame and infamy in public figures who have been fitted with the anklet, a sort of contemporary star map of our times. See Kilgore (2012a).

6. "While house arrest is no doubt preferable to a stay behind bars, many people upon release are being put on monitoring as an additional means of constraint. In such cases, the use of EM is extending the length and intensity of a sentence, rather than relieving it. Electronic monitoring is often conflated with prison reform, but in most cases, it is used to intensify punishment" (Portman 2014, 121).

7. See Kilgore (2012b).

8. In the Canadian context, see Tings Chak's *Undocumented: The Architecture of Migrant Detention* (2014), which has taken form as a graphic novel and exhibition.

9. "Proponents of electronic monitoring hew to a doctrine of personal responsibility; they believe restitution—even to a jailer or taxpayers—is the first step toward recognizing one's misdeeds [...] Progressive politicians roundly support the devices" (Swan 2014).

10. SuperCom, based in Israel since 1988, entered the US market in 2014. Its many product lines range from EM to secure payment, e-office, healthcare, and parking management. Some of their technologies are used across all of these uses, showing a sort of agnosticism to the "calm."

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Ling Tan, *Reality Mediators*, 2013.

# The Living Prosthesis: Limits of Human Bearability

Ling Tan

Technology enhances aspects of a user's life and mediates our perception of reality; changing the way we understand the world. The use of wireless networks in mobile devices, for instance, causes us to always carry around a piece of technology that enables us to have access to additional information and to engage in social networking while on the move. CCTVs and wireless location systems also ensure constant surveillance of users by tracking their location in real time (Manovich 2006). Sensing of bodily data in affordable consumer products like oximeters provides information about one's body in quantifiable measures. Embedded medical devices such as pacemakers, which use sensors to monitor the heart and trigger actuators that regulate its beat, have the purpose of life preservation. What is currently missing is a systemic combination and integration of the disparate technologies that are found attached to or embedded into the human body, one that could point towards the wearable and bearable technology that will fulfill our needs in the future.<sup>1</sup>

The limit to which human behavior can be altered with such implantable or body-borne devices during interaction with and inhabitation of the environment, is also changing. This raises questions about the infringement of a user's privacy and subjective perceptions, the merging of our virtual and physical spaces, and the ethical issue of implanting such technological devices into the body. When technology becomes invasive, who is in charge, the user or the prosthesis? In the circular exchange of information between human and machine, where both are driven by their own teleological mechanisms, there will be instances where machine dominance and human subservience occur.

1 —

The term "wearable prosthesis" refers to computers worn under or in the clothing, and can also indicate items of clothing. The term "bearable prosthesis" refers to implantable, portable or body-borne computers that are embedded on or in the body. See Mann (2013).

## Attachment to the Human Body

The relationship between a prosthesis and a user is primarily that of an attachment to the body, or of an extension of the body to supplement a deficiency (Wigley 1991). As the prosthesis is used to enhance or counter a weakness in the user's biological body, the technological side of the device could be said to imitate biology, and be seen as a form of substitution. One example might be a deaf man fitted with haptic prostheses to supplement his loss of hearing (Wiener 1951), or a patient with a prosthetic limb.

In a philosophical sense, the prosthesis is part of an extended mind. As discussed by Andy Clark and David Chalmers, cognition consists of both bodily movements and brain processes, and “does not limit itself within the physical brain or skull” (Clark and Chalmers 1998). Chalmers uses the term “active externalism” (1998, 7) to describe the use of external supplements, such as language or technological tools (for instance, a pocket calculator) that engage bodily movements. In this context, the prosthetic device and the body can act as an external coupling system integral to the cognitive process. As discussed by Mark Wigley, a similar view was held by Sigmund Freud, who had personally experienced wearing a prosthetic jaw for a period of time (Wigley 1991). Freud sees the body as deficient and defines the mind as the site where consciousness is constructed. In this perspective, the aim of the prosthesis—similar to the natural body and its senses—is to extend the boundaries of the mind and aid in the construction of consciousness.

In an architectural context, a prosthesis is an extension, “an auxiliary organ” that supplements a gap in the main body (Le Corbusier 1987, 72). Le Corbusier argues that humans are born with insufficient capabilities. We do not have the natural ability to fight predators, to withstand harsh weather, and hunt or fight for food (1987); we tend to forget things easily and we are ashamed of our appearance. Apart from physical limitations—notes Le Corbusier—humans are also not adequately motivated mentally, and are often more interested in leisure than in intellectual or productive work. We are frequently too lazy to carry out tasks that require attention and laborious concentration. Hence we acquire tools such as shelter, clothes, cabinets, food containers, computers and robots to carry out the actions that we are unwilling or incapable of attending to. All these, including architecture, become a form of prosthetic extension of our deficient body.

The notion of prosthesis discussed above describes a symbiotic relation between the technological device and its user. Mark Wigley argues that both supplement each other's deficiency. Relating it to the use of a computer mouse, he notes that both the mouse and the user employ the other as a prosthetic extension to access the digital system of the computer (Wigley 2010). Together, they form an interface to the virtual world. Doug Engelbart, who invented the mouse, indicates that the most functional interface is achieved when the user's central nervous system is able to match the outer environment through his senses (Engelbart 1962).

Therefore, the technological prosthesis evolves with the body, engendering a new form of behavior. Here, the effect of a prosthesis goes beyond the extension of bodies at a specific time; one begins to be affected by a prosthetic device before, during and after usage (Wigley 2010, 51). Andy Clark and David Chalmers discuss this with regards to the requirement of a reliable coupling system to enable a prosthesis to form part of an extended cognition system. "If the resource of my calculator or my Filofax are always there when I need them, then they are coupled with me as reliably as we need" (1998). In order for a prosthesis to form a seamless connection with our mind, that is, the memory of the effect and prosthetic experience matters more than the duration of its actual use. When we become accustomed to the presence of a prosthesis on us, its subsequent removal might incur more deficiency to our body than was experienced prior to its annexation. In the case of medical prostheses, removal might even result in the endangering of life itself (Clark and Chalmers 1998).

## The Role of Prosthetic Devices From the Past to the Future

Mark Wigley writes, with regards to the invention of the computer mouse, that “[a] history of 20th century prosthetics can be written in terms of the ever smaller movements of the fingers that have ever greater effects over ever larger domains” (Wigley 2010, 51). Human behavior can also be seen evolving as a result of the introduction of domesticated technological appliances in the 1960s. In the case of the mouse, movement across a horizontal surface is translated into visual motion across the virtual screen, augmenting the user’s gestures. Having become a reliable coupling system in the user’s perception, the prosthesis can be subconsciously interacted with on a daily basis.

Our engagement with the environment has become more personalized, portable and encapsulated within a non-physical layer that is seemingly attached to the body. This layer—the so-called virtual world—is accessed through computers and prosthetic devices such as mobile phones. Our experiences become mediated as we begin to understand the physical environment through the virtual information layered onto the body’s natural sense perceptions.

In order to further domesticate technological prostheses, the corresponding interfaces require progressively smaller movements and fading visibility. Because a user-computer interface is “at once technological and biological” (2010, 53), it involves the alteration of our behavior (expanding the human ecosystem) in order to communicate with the electrical circuitry and signals that create the digital world (expanding virtual environment). Through this, the user and machine can establish a common ground, enabling the user and the digital space to enter each other’s world. As a result, prosthetic technology has become more intrusive and pervasive. Intelligent agents that come in the form of technological appliances constantly track the health, mood and safety conditions of their owners, reminding and advising us when to take pills, what to wear or when to exercise— augmenting our private behaviors (Poslad 2009). The boundary between the user’s privacy and the sharing of information for his welfare continues to be blurred.

## Prosthesis as Reality Mediator

David Chalmers discusses the term “reality” as dependent on the act of being conscious—“I think, therefore I am conscious” (Chalmers 1995). From his viewpoint, reality is the construction of the environment on the basis of individual experiences. Following this account, consciousness is part of the cognitive process.<sup>2</sup> If we relate this to the formation of a reliable coupling system between a prosthetic device and a user as part of an extended mind (Clark and Chalmers 1998), it becomes clear that when a prosthesis is fitted onto the body it is granted the ability to affect the user’s perception of reality.

From a cybernetic point of view, Heinz Von Foerster defines the term “reality” in relation to the human discovery of things such as language, and claims that these discoveries comprise the user’s cognition (Von Foerster 2003). As he argues, “it is he [the observer] who invents it, and, likewise, when we perceive the environment, it is we [the observers] who invent it” (2003, 211). The term is broken down to become an “operation of recursive descriptions” in the user’s mind, made possible by continuous discoveries (2003, 216).

Doug Engelbart, who deals specifically with virtual reality as the simulated space displayed by computers, speculates on a future where computer-user interfaces can be established directly through the user’s brain, bypassing bodily senses (Engelbart 1962). This suggests that sense perceptions help the mind construct the environment, forming the individual’s reality.

If reality is constructed by an individual’s perception of the environment, why is it that most commodities produce similar sets of reactions in different individuals? Heinz Von Foerster argues that an individual’s reality is made up of a community of other individuals’ realities, as we interact with an environment that is comprised of other observers. This establishes a certain common ground, allowing us to have similar associations. He refers to the “reality = community” formula, suggesting that there are other individuals with their own perception of reality in the environment, and that these make up a certain set of similarities (Von Foerster 2003). “If you desire to see,” he writes, “learn how to act” (2003, 227). It can be therefore said that our individual reality is made up of the perceptions acquired while interacting with other individuals in the environment.

2 —

According to Clark and Chalmers, cognition consists of both bodily movements and brain processes (Clark and Chalmers 1998).

This perspective is supported by contemporary theorists such as Lev Manovich, who discusses the contemporary notion of reality as a database, where a user perceives the environment through the “world wide web filled with ever-changing data, images, texts” contributed by users around the globe who engage with the internet (Manovich 2002). Reality is then defined by the data that the internet provides to the user, which is information created through the realities of other individuals.

Reality can then be concluded to be a construct of the user, made up of sense perceptions and of observations, discoveries and interactions with many different entities. Therefore, our reality can be easily influenced and altered by external stimuli and has the potential to be mediated.

Steve Mann coined the phrase “Mediated Reality” to describe a type of reality experienced through technological devices attached to the body. Such prosthetic devices are used for “augmenting, deliberately diminishing, and more generally, for otherwise altering sensory input” (Mann 2010, 1). As Mediated Reality involves a wider spectrum of bodily senses, it has a greater impact on the user than Augmented Reality, which is commonly experienced only through the user’s visual field.<sup>3</sup>

The *Reality Mediators* project investigates the effects of Mediated Reality on the user and on his interactions with the environment. It consists of three sets of design experiments that seek to explore the degree of disruptiveness generated by active goal-based technological prostheses. The three sets of experiments employ three different types of sensors: muscle sensors, brainwave reading devices and Global Positioning Systems (GPS). These are paired separately with four types of actuators, such as muscle stimulators, sound actuators, heat pads and vibration motors, fitted onto different parts of the body. Their cumulative outputs produce an inherently unpleasant effect on the user, which is measured in terms of its disruptiveness to everyday activities.

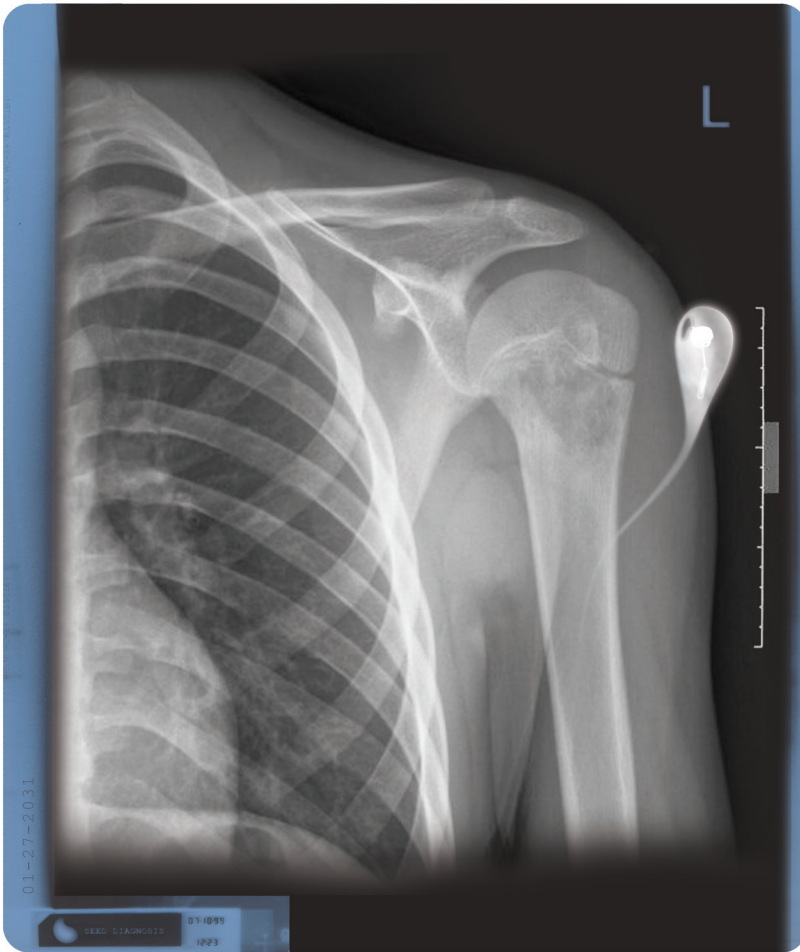
### 3 —

Augmented Reality refers to the overlaying of dynamically changing information in the form of multimedia, enhancing the user's visual field (Manovich 2006).



Ling Tan, *Reality Mediators*, 2013. Top: Mindwave device detecting brain wave activities. Middle Left: Microchip translating the biodata collected from the user's body. Middle Right: Muscle sensors detecting arm muscle activity. Bottom: Sound actuator fitted on back on ear.





Ling Tan, *SEED*, 2013. Have you considered the intake of new sets of nutrients to grow *SEED* according to your desired outcomes?

## Prosthesis as an Artificial Intelligence

In a technologically advanced society, surveillance and intervention must form a symbiotic relationship. Lev Manovich contextualized this argument with regards to the emergence of Augmented Space in the form of the internet, wireless location systems, mobile phones and digital displays (Manovich 2006). “By tracking the users—their moods, pattern of work, focus of attention, interests, and so on—these interfaces acquire information about the users, which they then use to automatically perform the tasks for them” (2006, 222).

The future of technological prostheses can then be hypothesized to be that of an artificial intelligence having its own understanding of the environment and of users. Through prolonged periods of coupling with the user, it is able to learn and adapt to their preferences, and starts to dictate the user’s reality (perception and autonomy) through the effects produced.

The *SEED* project surveys the possibility of bearable prostheses as commodities. It speculates on a future where embedded prostheses form a symbiotic relationship with the user’s body, taking on and modulating their genes through prolonged periods of growth and interaction.



Ling Tan, *SEED*, 2013. Sign of healthy growth has been detected.

## Limits of Human Bearability

Paola Antonelli defines the term elasticity as “the by-product of adaptability + acceleration” (Antonelli 2008, 14). Elasticity is characterized by our ability to embrace fast-changing advancements and to capitalize on them for our own purposes. Our brain develops in a way that adapts to external tools, enabling them to become part of an extended cognition. One example is the sensory prosthesis created by Norbert Wiener, designed to replace loss of hearing with the sense of touch through a device that sends electrical vibrations to the fingers (Wiener 1951). After wearing the prosthesis for a prolonged period of time, a deaf user is able to mentally translate the language of the electrical vibrations—its rhythm and intensity—and to understand what the speaker is saying.

It can be concluded that our mind is simultaneously elastic and sensitive, in order to reject or accommodate changes in the environment. In the case of a bearable prosthesis, if a reliable coupling is formed, the mind is elastic enough to adapt and make full use of the device, allowing it to become part of a system of extended cognition. If anything during the process causes the user to receive an unpleasant feedback, the mind is sensitive enough to reject the device. However, my experimental tests show that if the unpleasant feedback happens after a prolonged duration of bearing the device, the mind becomes uncertain as to whether it should reject or accept it, and chances are it will accept it. Hence, what makes a prosthesis more or less bearable for the user is not so much the extent of physical pain imposed by the device, but rather its effects in the long run.

While we can measure the degree to which technology transcends physical and physiological boundaries, we can only speculate about the ethical consequences of these developments and their effects on human self-perception. Although wearable and bearable devices are still at an exploratory stage, these debates are already on-going, highlighting problems like the infringement of privacy involved in sharing users’ biodata, the possibility (and consequences) of such symbiotic devices being hacked and stolen, and the potential addiction to the effects produced. As researchers and designers, we must address and investigate these topics before such invasive technologies are integrated into our everyday lives. As users, we must expand our understanding of the environment as comprising physical space as just one among many layers of reality.

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*Photography by fashion photographer Chiara Ceci.*

## *Prototypes for a Shifting Baseline*

Miriam Simun

The idea of “shifting baseline syndrome” emerged in the 1990s to describe the slipping definition of a “healthy” ecosystem. Daniel Pauly was the first among ecologists to describe the phenomenon. He observed that each generation of marine scientists tended to accept the biological stock size and species composition at the beginning of their career as the baseline for a healthy ecosystem, assuming inadequate data for previous periods. As subsequent generations of scientists used a diminished number of species to evaluate subsequent changes, a gradual shift of baseline perception in defining a “healthy” or “natural” ecosystem occurred.

This tendency only exacerbated as science adopted ever-more sophisticated modeling techniques that required ever-more detailed data. As our fellow species decline, our tools for finding and counting them improve.

How does one apply precise calculations to the sound of a sea full of turtles knocking so regularly against Columbus' ships that the sailors were kept awake all night? As we continue

to rely more heavily on data and model-calculated evidence in order to understand ecological realities, how do we account for what came before the model, for baselines from the past?

The phrase “shifting baseline syndrome” uses terminology reminiscent of illness in order to describe our consistent accommodation to the creeping disappearance of species on earth. The chief symptom associated with this condition is our propensity to develop what ecologists call “inappropriate reference points” for evaluating losses and identifying targets for rehabilitation measures. In other words, if we aren't able to determine how it all “once was,” how will we ever get back to it?

Shifting baseline syndrome throws a wrench in the works, making it difficult to return to the nostalgic “nature” we pine for. In truth, natural systems are always changing, and humans have been impacting ecosystems for millennia. The ability to pinpoint “natural” or “untouched” starting points for ecosystems is a romantic impossibility.



*Yamamayaa Petting Ring*

image courtesy of Miriam Simun

The *yamamayaa* (“the cat in the mountain”), also known as the Iriomote cat (*Prionailurus bengalensis iriomotensis*), is a subspecies of the leopard cat that lives exclusively on the Japanese island of Iriomotejima. There are fewer than 100 yamayaas left on earth. Key threats include habitat degradation, increased tourism, and traffic accidents.

A discarded clump of Yamamayaa is transformed into a petting ring.



### *GhostFood*

image courtesy of Miriam Simun and Miriam Songster

*GhostFood* serves simulated “taste experiences” of species threatened by climate change. Scents of threatened foods are delivered via the *Direct Olfactory Stimulation Device* (DOSD), paired with edible textural substitutes made from climate change-resilient foodstuffs. The scent–texture combination provides taste illusions of foods that may soon be no longer available to eat. *GhostFood* staff serve the public, guiding visitors through pre-nostalgic ephemeral experiences, and engaging dialogue.

# ST FOOD





And yet, the reality is documented and difficult: Species extinction continues to increase at alarming rates due to changing climates and human populations extending over every corner of our earth. Putting a numerical stake in the ground feels ever more necessary if we are to manage and slow down rates of extinction. Welcome to the Anthropocene, where humans are the dominant environmental force on earth. As one habitat ecologist told me, “We are god now, so we might as well get god at it.”

Even gods can forget across generations. How can we remember what is missing? And how do we engage with what is to come?

The *Prototypes for a Shifting Baseline* series seeks to secure ghostly traces of earthly species that may vanish during the Anthropocene. It captures what might soon be lost—not in terms of images, text or data points—but through sensory and embodied experience. These devices stage, in tangible fragments, versions of the human experience of threatened species. Through an array of sensory s(t)imulations that include smell, taste and touch, these devices appeal to our bodies in coping with, and responding to, this loss. Through tactile engagement we recall, reconnect and mourn; or perhaps we understand ourselves to be ready to forget, and move on, ever onwards.

*Direct Olfactory Stimulation Device (DOSD)*

image courtesy of Miriam Simun

The *Direct Olfactory Stimulation Device* (DOSD) adapts human physiology to enable the taste of unavailable species by creating flavor illusions through the use of scent. Inspired by insect physiology (insects use their antennae to smell and thus navigate their world) and long-standing human traditions of technological extension of the senses, the device integrates direct olfactory stimulation into the eating experience.



## ZOOLOGICAL LABORATORY: REDUX

Joyce Hwang

ONCE UPON A TIME, I developed a fictional narrative about the future of zoos, given the blurred boundary between “nature” and “artifice” already evident in fields such as biotechnology. This took shape in my graduate thesis project, titled *Zoological Laboratory: This Is Only a Test*, which explored speculative future “habitats” for animals that are bred—or created—in captivity.<sup>1</sup> These early ruminations have, in part, influenced the development of my current explorations in rethinking the spaces of animals as part of our constructed environment. Although I am not explicitly designing actual zoos in my practice today, many aspects of the *Zoological Laboratory* thesis continue to infiltrate and provoke my current research in co-species habitation, and the frictions that emerge from including alternate subjectivities in the making of our world.

If we consider zoos as a reflection of a society that identifies value in animals in terms of human use, whether it is for the entertainment value in viewing caged animals, or the selective breeding of animals

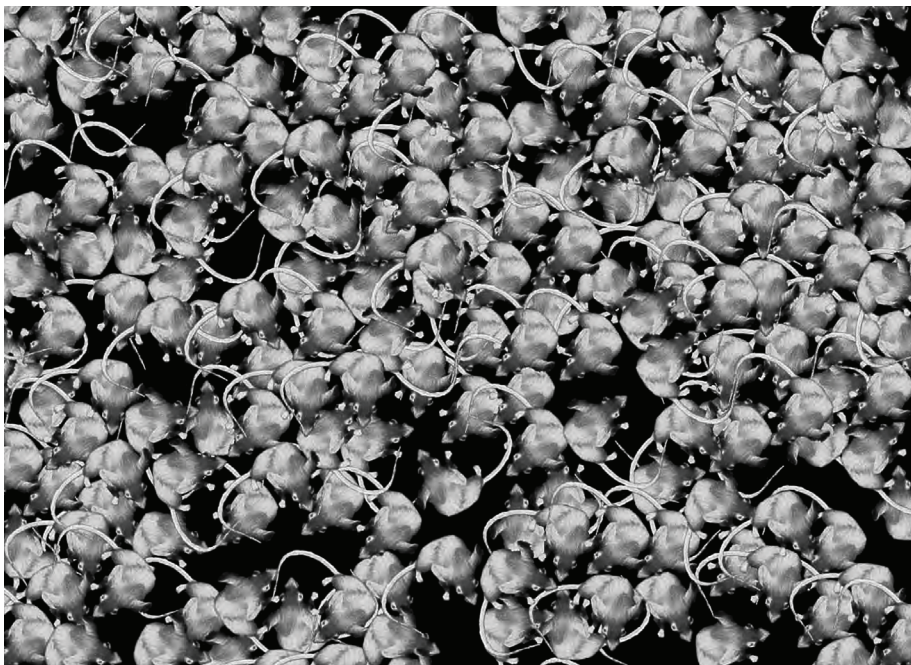
for the demands of science, one could imagine that the trajectory of scientific progress takes us to a time when zoos will house animals that have been “manufactured” in captivity. The lack of distinction between nature and artifice is ever more present in the field of biotechnology. In genetics and genomics labs, “model organisms”—such as rats, mice, and jellyfish—have been mutated, cloned, and in a sense “designed” by scientists. Dolly the Sheep was already cloned in 1996. It is not a long stretch of the imagination to suggest that the zoo’s future inhabitants will be creatures that do not currently exist in “nature.”

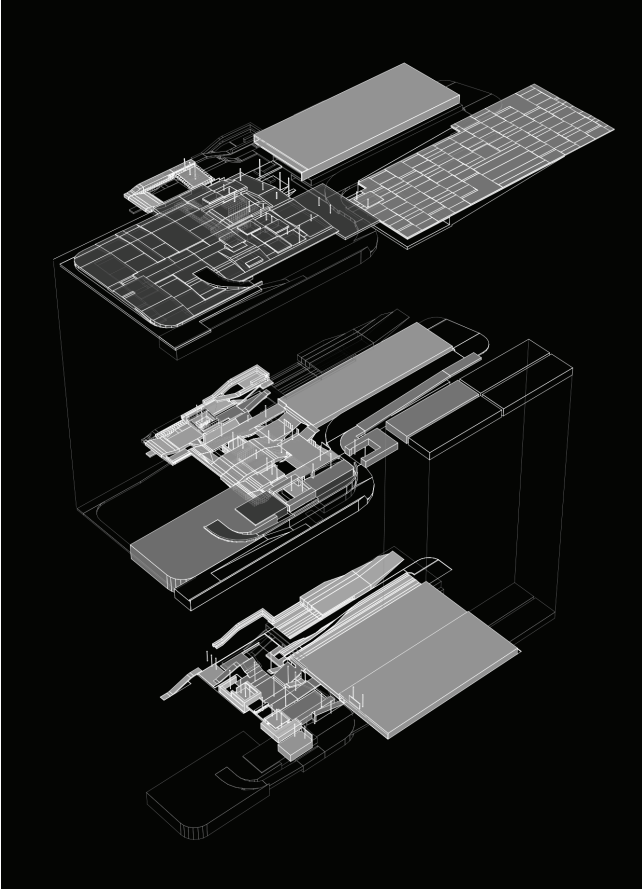
In recent years, it has become clear that this hypothetical scenario presented in *Zoological Laboratory* was not a far reach. The world’s first surviving clone of an endangered animal—a banteng, or a wild Southeast Asian cattle, which was created from the DNA of a banteng who died in 1980—went on display in the San Diego Zoo in 2004, after being born at a genetics farm in Iowa and raised in the San Diego Wild Animal Park (Moss 2004). Today it is

not infrequent to find discussions about the possibilities of cloning rare, endangered, and even extinct animals for parks and zoos (Ro 2018).

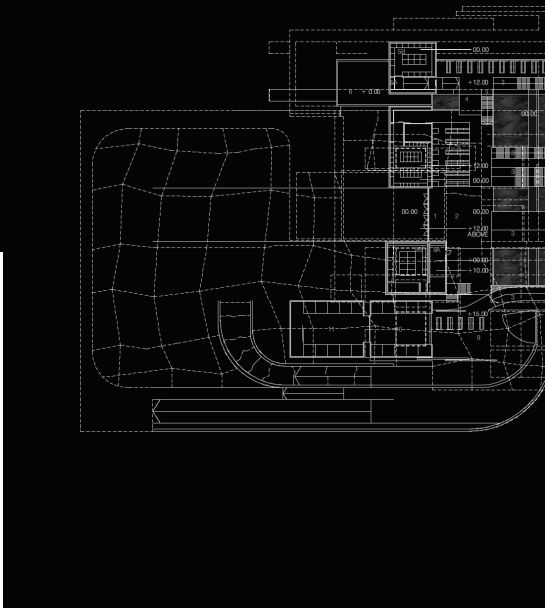
Genetic research, of course, has had—and continues to have—a profound influence beyond the environments of zoos and labs. At macro-scales, we see the impact of the production of transgenic species on larger ecologies. For well over a decade, animals have been bred systematically in the interest of industry, agriculture, and even the military. As one of many examples, in 2002 Nexia Biotechnologies Inc. and the U.S. Department of Defense partnered to make the world's first spider silk fibers, using transgenic goats that were bred with spider DNA (Lazaris et al. 2002; Service 2002; Osborne 2002). Trademarked as

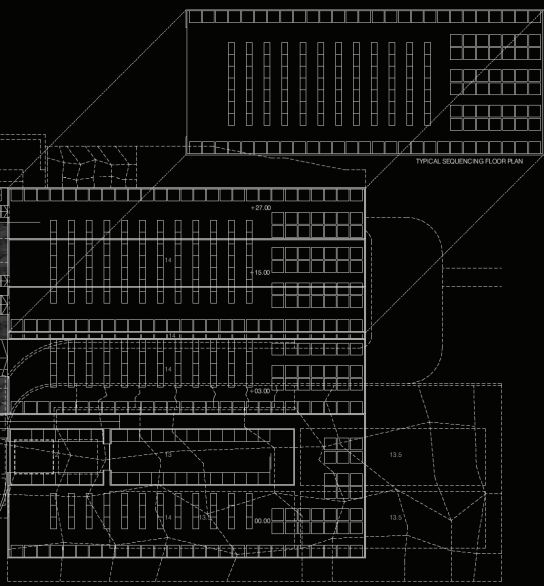
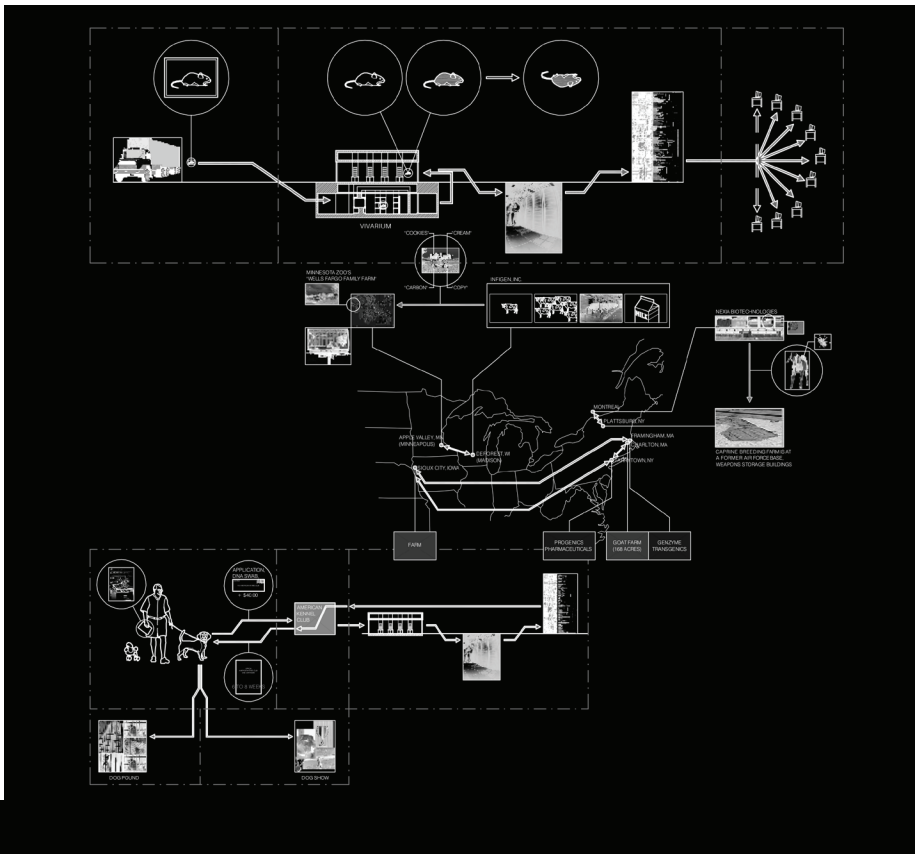
“BioSteel,” this bio-manufactured “silk” is a high-strength fiber-based material that bears similar strength and stretching capacity as spider silk, but at a much larger scale, with the output levels of a goat being much higher than those of a spider (Hirsch 2013). “An inch-thick rope of this material would be able to stop a jet fighter landing on an aircraft carrier” (Kettle 2000), stated Dr. Randy Lewis, whose lab at Utah State University would later acquire the “herd” of transgenic goats (Center for PostNatural History 2014). Today, debates on genetic alterations are hitting a fever pitch in the discussion around the gene-editing technique Crispr, and in particular the outcries due to Chinese researcher He Jiankui's claim to have created the world's first genetically edited human beings (Guardian 2018).





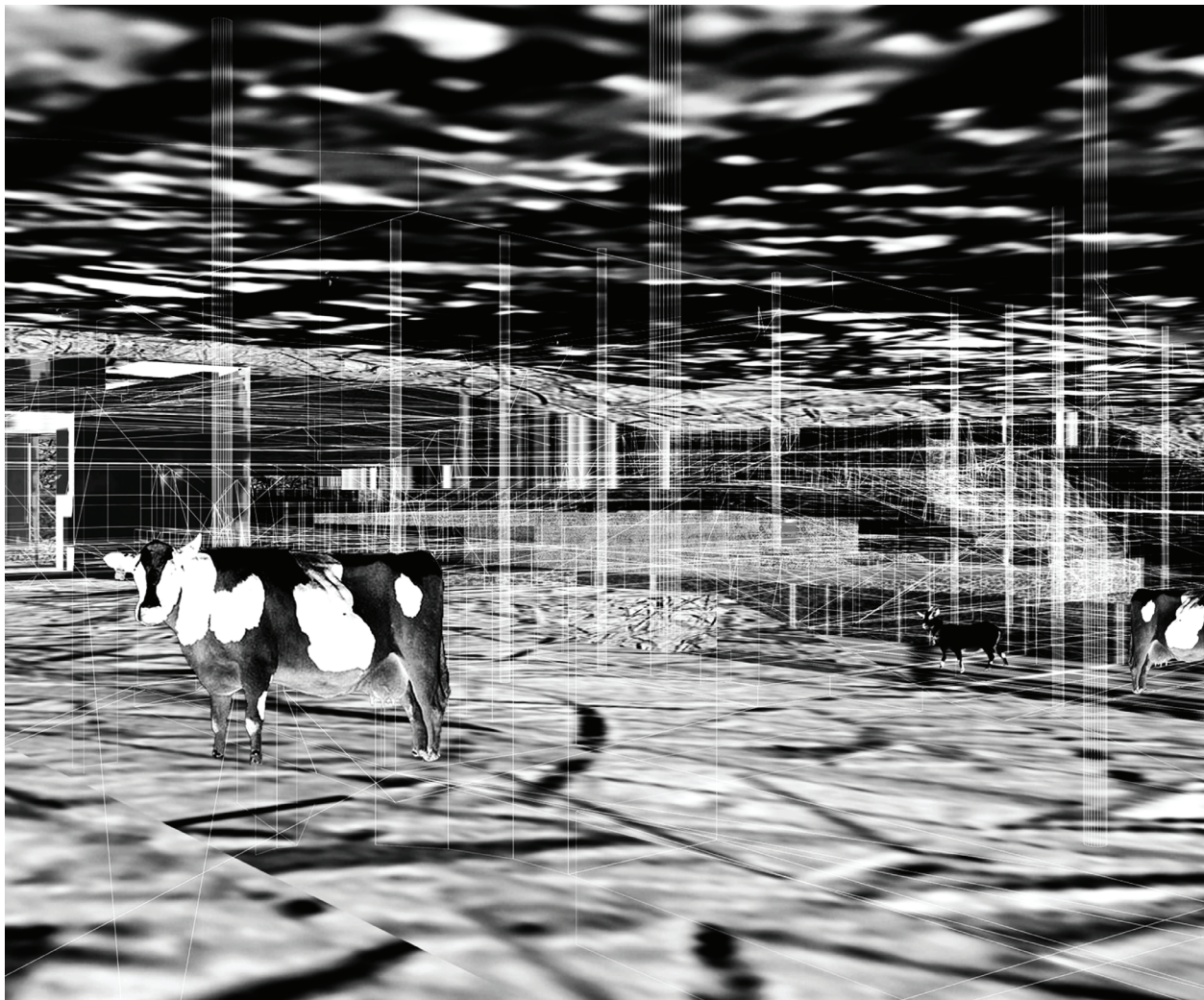
ORGANISM CLASSIFICATION





## SAMPLE ORGANISM LIFECYCLES

ZOOLOGICAL LABORATORY



BOS TAUROS





Yet, despite the high visibility of genetically “manufactured” species in the media and in public conversation, the actual processes of genomic research are rendered opaque. In science laboratories, these organisms and their by-products are typically hidden from view. The “model” mouse, for example, arrives by truck to the lab’s loading dock and lives its life in the sterilized confines of the Vivarium. After being utilized as a test subject, the mouse is “sacrificed” (Cartwright 2015; Cressey 2013)—in other words, killed—while its “data” continues to sequencing machines for analysis. Of course, there are obvious reasons to isolate these animals due to possible contamination, but isolating lab animals from public view is perhaps also a response to polarizing debates on the ethical questions of animal experimentation.

*Zoological Laboratory* is a fictional project that asks: what are the potential future trajectories; when will the industry of genetic experimentation move us beyond the science lab and into a more public realm of life? Indeed, we are familiar with examples of artists and other cultural producers who are working to bring visibility to transgenic species. As early as in 2000, artist Eduardo Kac introduced biofluorescent markers into animals such as rabbits,

to create a living creature that could emit a fluorescent “green glow.”<sup>2</sup> This “glowing” bunny became a sensation—not only in the world of art, but also in popular culture. Given the inherently spectacular nature of transgenic creatures, one of the aims of the *Zoological Laboratory* project was to conflate the products of genetic research with a materialization of visual culture. I would argue that it is the project’s insistence on the visual and sensorial potential of scientific practices that is central to defining its “charisma.” Here I am referring to the definition of “nonhuman charisma” by Geography Professor Jamie Lorimer, who draws from conservation biology’s use of the word “charismatic” to describe “flagship species,” or those that have popular appeal to the public. Charisma, according to Lorimer, is a significant factor in the human perception of organisms, and contributes to the politics of animal conservation (Lorimer 2015). In other words, this is why we see conservation efforts lavished on certain “charismatic” species, such as rhinos and pandas, while less charismatic species such as cockroaches are rarely recognized as desirable.

*Zoological Laboratory* asks: how can architecture tap into the charismatic effects of transgenic species—or our tendency to be fascinated with them? What if genetic breeding, farming, and

manufacturing were all part of an expanded laboratory setting, one that also doubled as a space for exhibition? How would this intensification of activities produce new adjacencies between humans, animals and machines? How can the notion of public spectatorship introduce the production of visual relationships and effects in a laboratory? How can the creation of model organisms cultivate the development of an aesthetic dimension in the design of animal spaces, which both reveals and normalizes the “strangeness” of the model organism’s life cycle?

By introducing these notions of the spectacle into the laboratory, *Zoological Laboratory* imagines the architectural implications of rendering “life” visible in a context where it becomes increasingly difficult to distinguish the differences between organism and machine, natural and artificial, life and death. The projected experience of these spaces—where the subjectivity of animals starts blending with materials, sensations, and other dispositional attributes of the space itself—points to the potential consequences of our desires to capture and manufacture animals, and what these implications may be in projecting an environment for our (future) selves.

#### Notes:

1. “Zoological Laboratory: This Is Only a Test” was developed as a Master of Architecture Thesis Project at Princeton University in 2003, with Laura Kurgan as my thesis advisor. Also thanks to Catherine Ingraham for introducing “Architecture and Biology” in her seminar at Princeton in 2001.

2. See “GFP BUNNY” in artist Eduardo Kac’s website for an accounting of “Alba,” the green fluorescent rabbit: <http://www.ekac.org/gfpbunny.html>.

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