acknowledgements
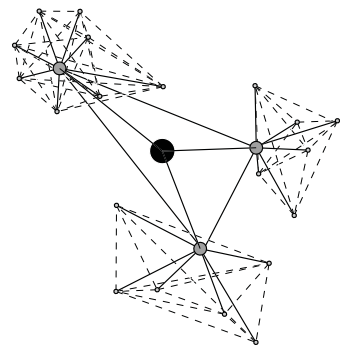
Common Ground on the Grounded Commons

Mark Lavin on the Power-plant as Playground

Acknowledgements

Issue #1, Spring 2007
The Powerplant as Playground

Powergrid 2.0

A world gone green

This thesis starts with the assumption that human beings have in the near future have successfully transitioned to sustainable, renewable sources of energy. All methods of energy production investigated are rapidly renewable, though they may involve rehabilitation of already existing power infrastructure. This thesis will also work at the urban scale and all proposals considered will cohesively power much if not all of the city.

The power net

Also of critical importance to this thesis is the impact the transformation of the existing grid from a top-down unidirectional distribution system of power conduits to a bidirectional and even networked one with the advent of solar, wind and wearable technologies will have on the relevant matrices of power points. This will be taken fully into consideration during the mapping process.

acknowledgements

A Few Choice Words from the Editor

Aesthetic Residual

n. a moment of unintended and unexpected beauty found in an element of the urban environment designed for purely functional purposes.

Feedback

n. the return to the input of a part of the output of a machine, system, or process

Game

n. a physical or mental competition conducted according to rules with the participants in direct opposition to each other.

French sociologist Roger Caillois, in his 1957 book *Games and Men*, defined a game as an activity that must be:

Fun: chosen for its light-hearted character
Separate: circumscribed in time and place
Uncertain: the outcome is unforeseeable
Non-productive
Governed by rules different from everyday life
Fictitious: accompanied by the awareness of a different reality

Input

n. 1. a component of production, as in land, labor, or raw materials. 2. Information fed into a data processing system or computer.
v. 1 to enter (as data) into a computer or data processing system

Interactive

adj. mutually or reciprocally active

Language

A systematic means of communicating ideas or feelings by the use of conventionalized signs, sounds, gestures or marks having understood meanings
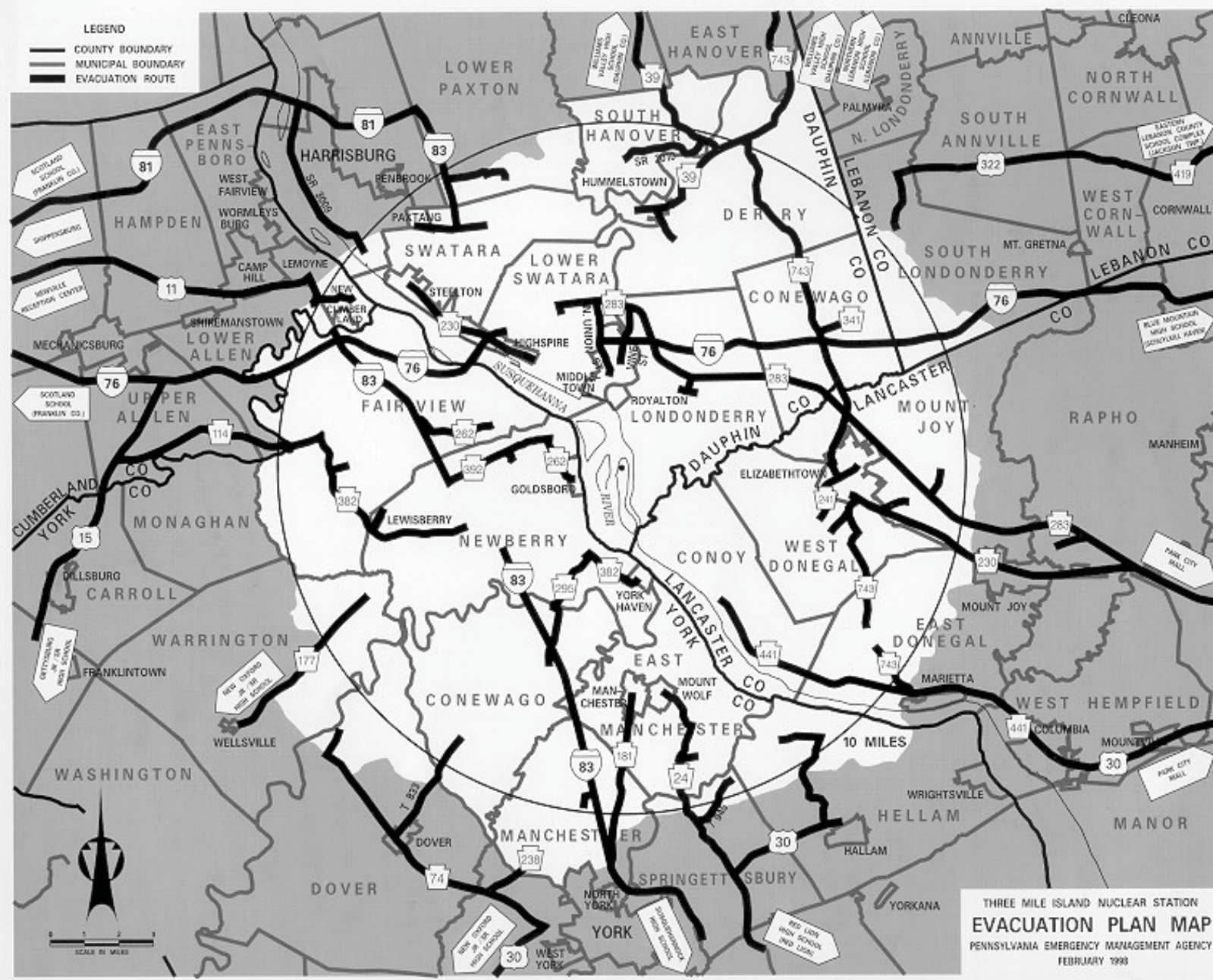
Output

n. Something produced as a: mineral, agricultural, or industrial production b: mental or artistic production c: the amount produced by a person in a given time d: power or energy produced or delivered by a machine or system e: the terminal for the output on an electrical device f: the information fed out by a computer or accounting machine 2. the act, process, or an instance of producing

Power Point

n. a physical urban site, situation or context that grants its content unusual power to shape the collective experience of an urban whole. Power points may sometimes work individually, or may sometimes only become power points when they operate as members of a matrix of such points throughout an area.

Randomizer

n. an analog or digital source of unpredictable, unbiased, and usually independent bits. Randomizers use a seed variable to generate their numbers.

THREE MILE ISLAND NUCLEAR STATION
EVACUATION PLAN MAP
PENNSYLVANIA EMERGENCY MANAGEMENT AGENCY
FEBRUARY 1998

Traditionally the power plant has been surrounded by a fence. It is off limits, hazardous, to be relegated to places people never want to go. In fact its very presence makes the site and perhaps a mile radius around it a place people just don't want to go; cold, barren, lonely and even dangerous. Standing however in a future scenario where human beings have transitioned to renewable energy and sustainable practices, it's conceivable that power infrastructure, whether monolithic or finely distributed, can become an interactive centerpiece of the future city, a celebration and acknowledgement of humanity whose purpose is not only to power but to empower all people in shaping their environment.

Common Ground on the Grounded Commons
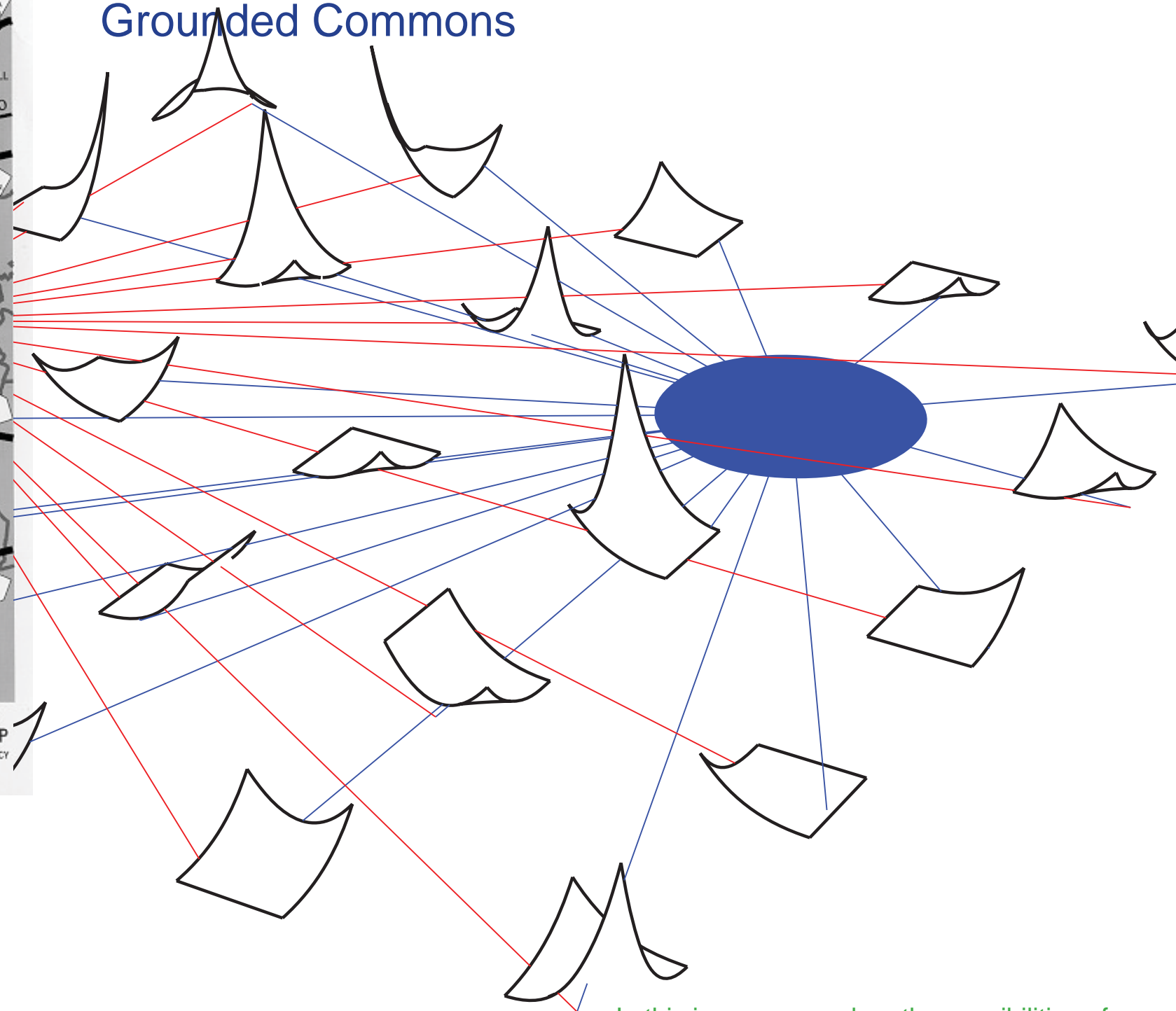
In this issue, we explore the possibilities of creating and inviting back into the heart of the city, a new green-power infrastructural typology that will become an instrument and vehicle for public interaction, play and self-expression without sacrificing reliability.
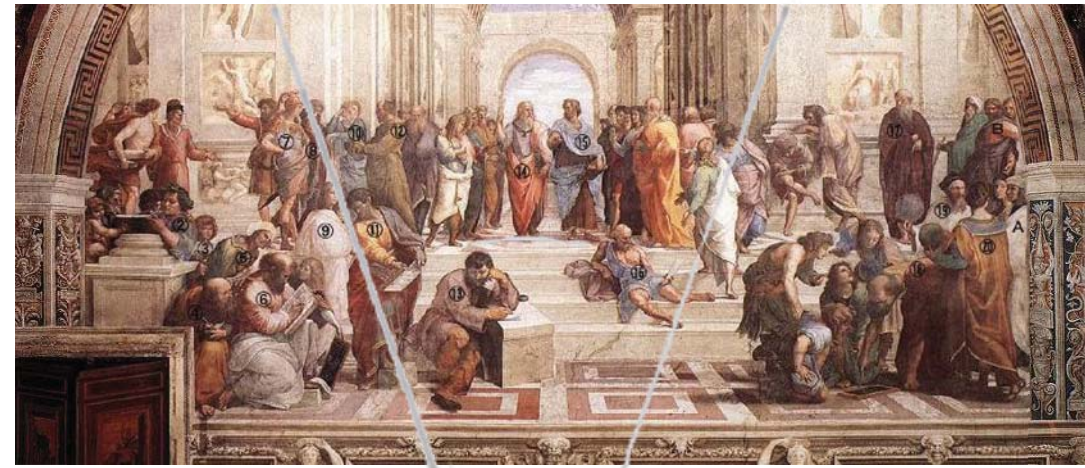
YouCity vs. TheyCity

Last century, theorist Paul Virilio characterized the future as a place of interminable confinement, facilitated at least in part by architecture. The "architecture/urbanism of the future" was a cocoon within which we would live a fully-insured, sanitized cradle-to-grave experience. Inside, we would become individualized, pacified and even enfeebled consumer-visitors, comforted out of that human ability to leave a profound and lasting mark on a truly responsive physical world, while what lay outside had become something feared.

Some might argue that such a future might be the only logical conclusion to the interiorizing trend that began with the rediscovery of perspectival representation at the beginning of the Renaissance. Believing that the human eye generated and emanated light rather than received and sorted it, the renaissance painters who discovered perspective believed that they had discovered not only a representational tool but a power to be considered blasphemous in some circles. In the 1500's they set about "emanating" ideal worlds with their new found power, ideal worlds commissioned of course by the powers that be, perfectly choreographed worlds where there was nary a thing astray and all of it was made to make a story true, worlds that we might call "imaginary rooms."

As method became more sophisticated and nuanced in the ages and movements that followed, the line between imaginary and real blurred; the two dimensional imitated the three and the three the two, painting became the sculpture became the architecture; inhabited space became narrative space. Centuries later, the advent of cinema and television added a fourth dimension to the imaginary room, and color was soon to follow.

From there it wasn't surprising that we'd want to inhabit the ideal worlds envisioned in the imaginary rooms, to clothe and enclose ourselves in them, to build the Disneylands and the Ocean Domes with their clockwork plastic paradises and chlorinated 86 degree seas inside. We'd train ride through rainforests lush without rain and shop with wrist-tags color-coded by price, while the real beach would lie empty ¼ of a mile away.

And when that wasn't enough, we'd crack the cocoon wide and unleash its contents on the city at large. We'd build the Groves and the Victoria Gardens, and swallow urbanity whole. The city itself would become the cocoon, the storyteller controlling the temperature and character from the high tower, well, maybe not so high, but behind locked doors nevertheless.

But it isn't really going that way. Ocean Dome went bankrupt in 1999, the very same year that record numbers of people drove out to the wilds of Nevada to light a wooden man on fire at the heart of a temporary techno paradise. The very same instruments that we could allow to confine us, are also freeing us. A mere flip in context renders the power in "their" hands into in yours and mine as well. Witness phenomena such as YouTube and Wikipedia.

Thinking from making the city a cocoon, and in the wake of precedents such as Three Mile Island, power infrastructure is to be banished from the livable city, out of sight and fenced away. We can only see it as we have in the past, as dangerous, single-minded in function and aesthetic by only by luck. Thinking of the physical city, however as wiki's next frontier, power infrastructure becomes a profound opportunity. This thesis will invite it back into the heart of an open city, and invite people to make it a vehicle of transformation, of reclaiming the city as their own.

Here and Now: The Fine art of Establishing the Power Points of 21st Century LA

What are power points?

"Power points" are here defined as physical urban sites, situations or contexts that grant their content unusual power to shape the collective experience of an urban whole. Power points may sometimes work individually, or may sometimes only become power points when they operate as members of a matrix of such points throughout an area.

I will site this thesis by first defining what constitutes the power points of a multi-centered 21st century Los Angeles region consistent with a polemic of open-source unpredictability, and second mapping where they might lie. Several map-

pings will be considered, including aerial, cultural, economic, paranoid-schizophrenic explorations, existing power conduits (from the assumption that these have in the future become bi-directional as opposed to unidirectional with the advent of solar, wind and wearable technologies at user ends), and media "Star maps." I anticipate also that other mappings may be discovered and conducted, and only those that forward the polemic of this thesis will be engaged.

What makes a power point a power point?

Power point status for a particular urban site, situation or context is itself entirely situational.

It depends upon the commitment you're building from

One determining factor for power point status is the commitment you're building from. In designing from a polemic of open-source unpredictability, the power points yielded by the investigations of this thesis will be utterly distinct from the power points an authoritarian or monolithic ideological establishment seeking to architecturally legitimize itself would find in the very same city. For the polemic of this thesis, it won't be so easy as it was for Johann Fischer von Erlach when he designed the Karlskirche (Church of Saint Charles) on Vienna's Ringstrasse in the 18th century. All he had to do was grant reality to an artificial sociopolitical condition. So he placed the church on the iconic ringstrasse with a line of sight to the Imperial Palace.

It depends upon the nature of the city itself.

The ancient city was often laid out as a symmetrical system expressing a fixed cosmol-

Johann Fischer von Erlach's Karlskirche (completed 1737) originally had a direct line of sight to the Hofburg Imperial Palace which housed the Habsburg dynasty, rulers of the Austro-Hungarian empire in Fischer's time. The columns display scenes from the life of St. Charles Borromeo, but also recall the Pillars of Hercules and act as symbols of imperial power. Strategically placed on Vienna's Ringstrasse, the Karlskirche's narrative is intended not only as an architectural but as an urban instrument
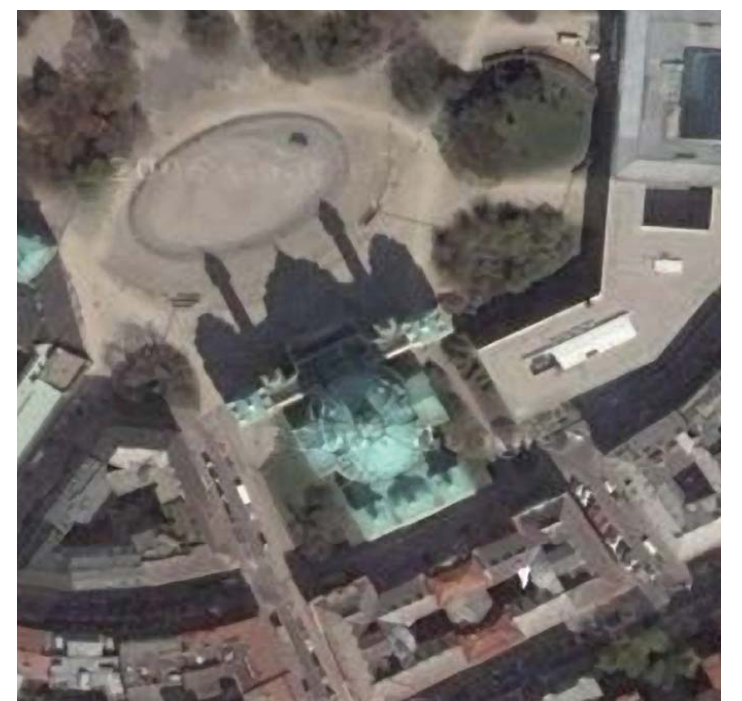
ogy. The modern city such as Los Angeles is a multi-centered region, and can be mapped using multiple criteria in the physical, infrastructural, cultural, and even virtual fields. There are many ways to perceive and experience the modern city, and you cannot see the whole city at once while on Earth. Cosmologically-based hierarchies have given way to multilayered networks; even which particular network you experience as the city itself right now depends on specific factors such as your mode of transportation, occupation, the communities you participate in, the technologies you're proficient in, the language you speak and whether your current destination in a place of work, worship, residence or leisure.

In this multi-centric city even the scale of the power point is no longer obvious; it is now variable. Once the structure that defined the city experience was the highest on the hill or the tallest, but today the power point can be small. What will capture the most attention of residents and tourists in Los Angeles today? The Library Tower, or Madonna walking down the street in front of it?

This thesis will take scale into consideration since new technologies such as solar fabrics and batteries chargeable by human body function are making it possible for incredibly fine distribution of power generation sites and distribution conduits. It's possible we could be wearing them soon.

Successful location of power points in the modern urban condition may not be without precedent. McDonalds may be a fine example given that Ray Kroc has acknowledged that the company's "real" business is real estate. Mappings will be made of McDonald's locations in Los Angeles as an explo-

ration of how power points might work in a distributed and chaotic condition.

It will depend upon the shape of the power grid to come: Powergrid 2.0 or the power net.

Also of critical importance to this thesis is the impact the transformation of the existing grid from a top-down uni-directional distribution system of power conduits to a bi-directional and even networked one with the advent of solar, wind and wearable technologies will have on the relevant matrices of power points. This will be taken fully into consideration during the mapping process.

The ultimate determinant: the creative agent... You

Following its polemic to its logical conclusion, this thesis may even give up locking down fixed sites in favor of establishing a set of "favorable siting criteria," that would instead guide creative-minded souls in fixing sites consistent with the games they invent. Whether this approach is feasible or

desirable will largely depend on the level of dispersion possible and determined as appropriate throughout the city, as well as the nature of the final design product.

Maximizing Exposure

Maximum exposure will be achieved through power point generated siting of the new typology, and through several other strategies as well, including immersive hyper-integration, creating an element of surprise, and creating a sense of immediacy and urgency for the urban inhabitant and visitor.

### Choosing the most effective power points

One of the criteria for power points/sites/contexts for this thesis will be that the chosen power points must generate and sustain maximum exposure to the maximum number of people for the greatest lengths of time, that corroborate having the

celebratory power infrastructure become the backdrop to the urban milieu.

Immersive hyper-integration

For the intended celebratory and communicative aspects of the new typology to become an immediate and immersive backdrop to the urban experience for millions, the new typology must be finely and immersively integrated into the urban milieu. This thesis will investigate how green power infrastructure can be integrated as a welcome and essential component of urban space and specific architectural programs. Selections of generative, distributive and user-end technologies will be derived from experiments in pushing urban and architectural integration to failure. The limits of power infrastructure's ability to be safely,
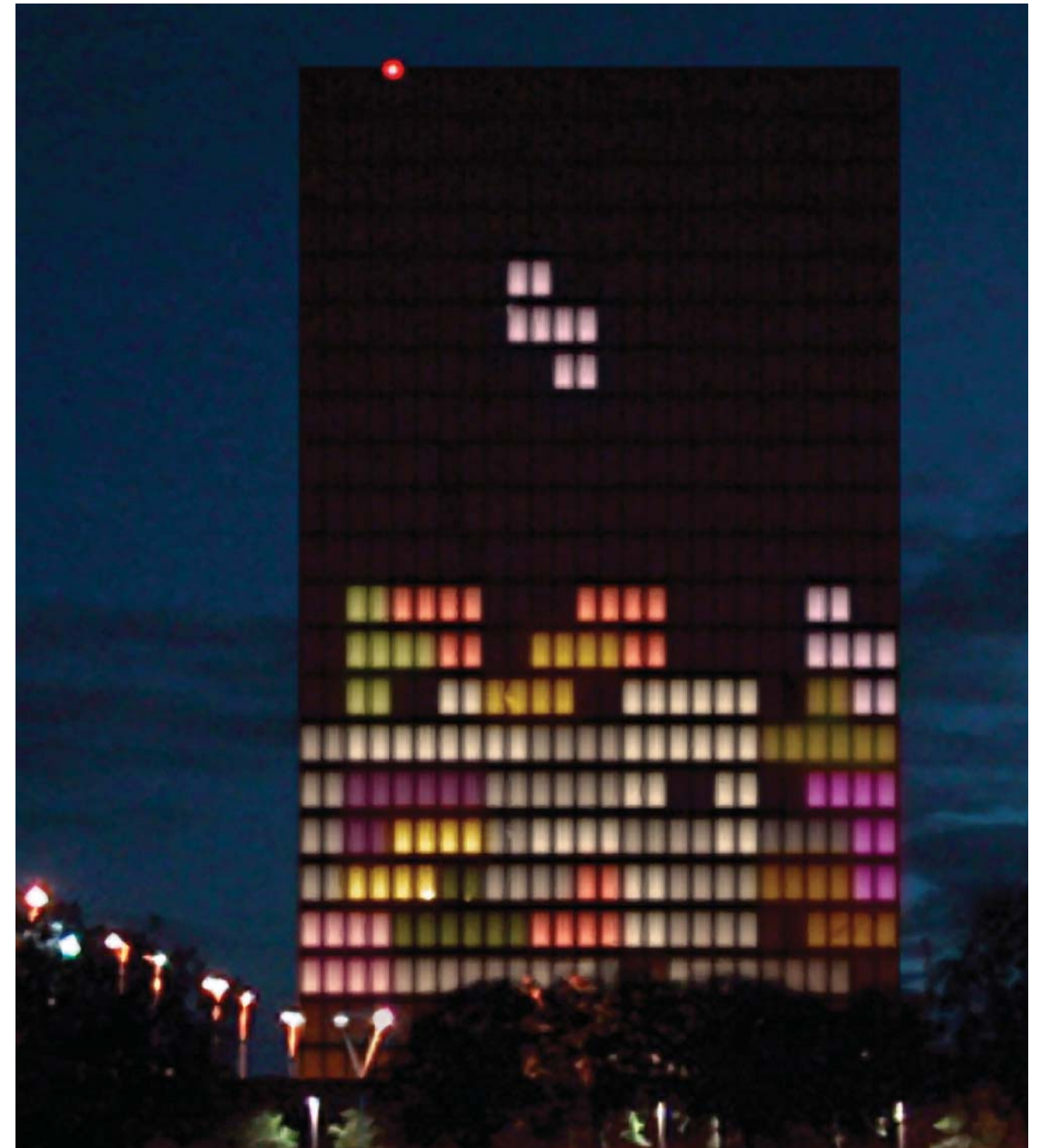
responsibly and artfully integrated with program and the urban milieu will be tested. One strategy will include making generative and/or distributive elements of the new infrastructure typology themselves simultaneously inhabitable, multi-programmatic, and functional as service-providing infrastructure. The Panopticon, a precedent of inhabitable, programmed infrastructure that can today be wired for even greater integration and efficacy will be taken as a test case and transformed and "reversed" to see what social outcomes can be produced (More on that later in this essay).

Creating an element of surprise for the urban inhabitant

Variations in scale, distribution and context throughout the urban milieu will be explored as opportunities to continually create an element of surprise. A system by which standards can develop, be violated, incorporate the violations and be violated again will be developed. Methods for creating surprise will also be achieved by exploring how infrastructure's "aesthetic residuals," moments of unexpected, beauty can be orchestrated without losing the accidentalism that lies at the heart of their beauty.

Immediacy and urgency

The experience of immediacy and urgency will be created by determining the safety rules relevant to the types of power generation and distribution chosen and violating these rules just slightly. Multiple parameters of danger and safety will be defined and honored… most of the time.

Every modern form of infrastructure offers its fine lines between safety and danger. At Germany's cathedral-esque Heimbach Hydroelectric Plant, generators run at full blast inches from mahogany floors and visitors look on from behind banisters. The visitor can get within inches of the running technology, but wouldn't dare touch a fan-belt. Slum-dwellers of Mumbai build shanty walls within inches of the space sometimes occupied by passing trains. Roller-coaster enthusiasts throw their arms up, ignoring the warnings to

keep hands and arms inside the cars.

I will establish to a fine degree the parameters of safety for several relevant forms of green power genesis and delivery infrastructure. From there I will develop a series of diagrams investigating how potentials for contamination change with proximity; how are our bodies and senses are effected depending on proximity, exposure and protection from exposure; the type of accidents that can occur, and the impact, likelihood and possible protective measures in regard to possible accidents. In the design process, I will then develop a series of designs that strategically honor the safety parameters – and sometimes violate them just enough to infuse the urban environment with a sense of aliveness and thrill.

Creating urban-scale impact

To have the new infrastructural typology be an instrument and vehicle for public interaction, play and self-expression that people actually care to use and experience, it's operations will be designed to create relevant and shifting perturbations in the urban milieu. These might look like actual physical movement; study will be done of urban elements that might transform as the infrastructure works. The city's existing aesthetic residuals will be capitalized on as one set of opportunities for both defining a cohesive power aesthetic and developing transformable, expressive moments that intimately alter the experience of the city.

Seeking to define and walk the line between accidental and intentional aesthetics, this thesis will include an investigation of Los Angeles' aesthetic residuals. After photographically surveying Los Angeles's urban landscape - itself thought of as infrastructure - for moments of accidental beauty, commonalities between distinct aesthetic residuals will be distinguished. Through investigative drawings, diagrams or models, I intend to arrive at a class of elements or effects that can be manipulated, and from there devise forms of game play or improvisation that allow people to sit at the controls of this class of elements or effects in a way that has them keep their element of surprise, spontaneity and apparent intelligence.

The cathedral-like Heimbach Hydroelectric Plant, built in 1905, bespeaks a strong celebratory tradition of power infrastructure. Currently operating as both power plant and museum, courageous visitors can get right up to running generators, testing the boundaries between safety and danger.

thesis will seek to create an environment where such grids evoke, capture, express and produce feedback loops of communication, "language," and "intelligence," reminiscent of installations such as the Lightning Field, L2K, and Sky Ear, rather than eliminate such possibilities entirely, by applying formal, situational and programmatic transformations to the generic Panopticon design – and thereby to its experiential, psychological and behavioral consequences. The intention of this set of experiments will be to render a specifically inhabitable space into an infrastructure that expands the possibilities of the society beyond its walls as the Panopticon was meant to sustain the survival of that society against perceived threat. These grids themselves might become the inputs that control the power grid; hence inhab-

ants indirectly control what happens through how they behave and interact in the structure as they inhabit and use it.
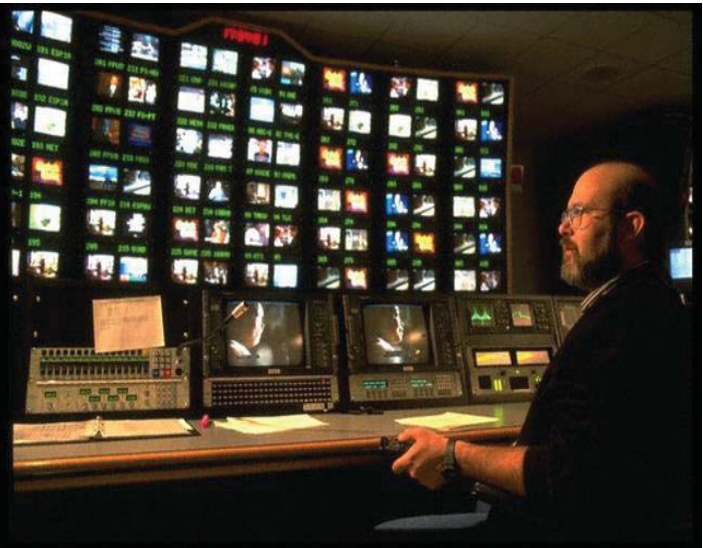
Considering that the modern Panopticon is not a building at all but rather a surveilled field, these inputs might themselves become dispersed; the very systems that give us the surveillance society might, properly rigged, give the dispersed population incredibly aggregated power to create in a single location.

Putting the Control Room within Reach: Maximizing Access

Particular attention will be paid to having the "control room" not only be open to an educated public, but reachable by it. In a city as dispersed, as diverse, and as challenging to cross as Los Angeles, not one but several interacting "control rooms" will suffice.

Who's party is this anyway: Putting the controls in the public domain

You're invited to the control room; you're invited to shape the city. Where and how is it already done?

Ordinary infrastructure of a different sort suggests an educated public might safely be granted access to the control room without sacrificing systemic reliability. The freeway has been called a "River of Goodwill" where despite exceptions, hundreds of thousands of people behave with ex-

ceptional respect for one another, whether or not there is an obvious law-enforcement presence. I will distinguish and replicate the particular situation of the freeway such that the power infrastructure controls can be public.

Creating the conditions for the emergence of an "Intelligent Tapestry"

A literally transformed or "reversed" Panopticon may simultaneously allow the behavioral, spatial and technical conditions needed for public control of the power infrastructure to be realized, and may produce the conditions for an "intelligent tapestry." The circle of stacked Panopticon cells as seen by the watchman in the middle becomes a grid of isolated squares or pixels when it's unrolled onto a plane, and a literal grid of television screens with modern surveillance systems. This

Whittier Narrows Dam, Southern California. From control rooms, engineers are able to manipulate complex gate systems that direct the flow of water to a variety of destinations throughout the San Gabriel and Rio Hondo watershed.

The Gift that Keeps on Giving: Engaging the Public Forever

Create opportunities for intelligence, language and communication.

Intelligence will expand to fill the space afforded it. An "intelligent tapestry" complex enough and

wisely designed could become a medium within which language and communication emerge and engage public interest for years, generations or even centuries.

Human controls or inputs for the new infrastructural typology might be set up like a game. To begin developing a system of human inputs capable of allowing compelling urban scale artistry, three existing precedents that involve real-time human inputs shaping building or urban scale outcomes will be diagrammed. These three have been se-

lected specifically because they were created for very different intentions, from very different materials and at very different scales. They each have particular technical and expressive limitations, yet hint at extraordinary possibilities for underactivity in their own ways. The combined possibilities hinted at by all three expand by orders of magnitude when the spectre of synthesis is raised.

The three precedents, Whittier Narrows Dam, Tim Black's L2K installation at the 1999 Burning Man Festival and Usman Haque's 2004 Sky Ear installation use different technologies to create their real-time human inputs. Part of the Los Angeles flood control and water conservation system, Whittier-Narrows Dam was built by the US Army Corps of Engineers in 1957. The control mecha-
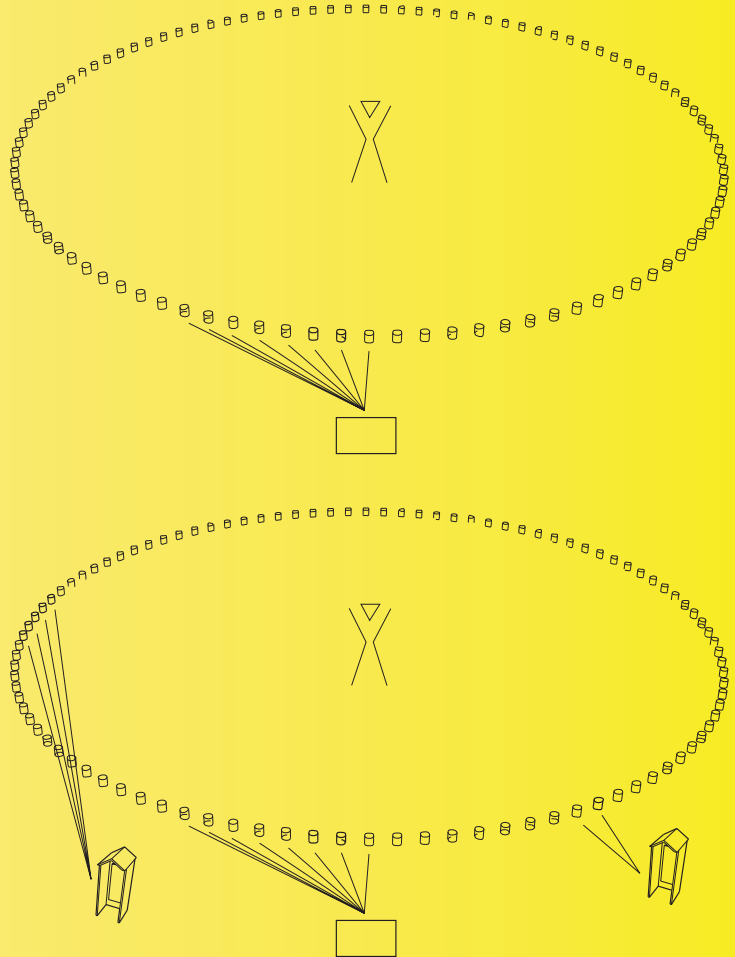
nisms are mechanical; the "medium" is water. Because the dam's system is built of one-off parts, there's no possibility of a language; there's no "alphabet." Its aesthetics are accidental and hardly designed with communication or communion in mind, yet this dam and others like it operate like railroad switching stations directing billions of gallons of water daily to various destinations depending on capacity and need, and are run by
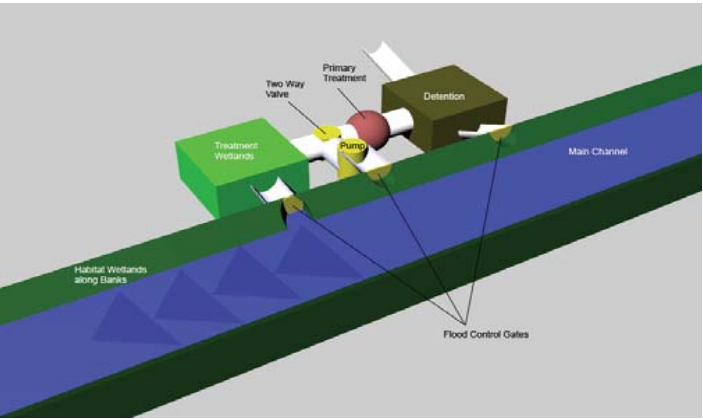
Tim Black, *L2K Installation,* Burning Man Festival, Nevada (above): 2,000 lights placed on the ground in a 600-foot diameter surrounding the wooden Burning Man statue. Patterns are defined by a computer called a pattern buffer. Visitors then directly modify pulse patterns and speed in real time via 200 interactive control panels distributed in eight shacks holding a total of 2,000 push buttons. People push the buttons then look out on the ring and see the effects of their actions written across the horizon.

Usman Haque, *Sky Ear* (Facing Page): People can call into the "cloud" of sensor, cell phone, and LED embedded helium balloons from their own cell phones on the ground, and set off chaotic feedback loops that are both audible as "thunder" and visible as "lightning."

engineers operating complex gate systems from control rooms. L2K, consisting of 2,000 Light Emitting Diodes (LEDs) set around a 600-foot circle and flashing in computer-driven sequences is electronically controlled and its medium is light rather than concrete. Panels in four shacks enable people to create new patterns, modify their speed in real time, and see their actions written across the horizon. While L2K's expressive possibilities are constrained to one dimension and don't impact the impartial observer much, the organizing principle can be extrapolated to more dimensions, or to the movement of floodgates, electricity or elements of the built environment. Sky Ear, created by artist Usman Haque in 2004, is a 100-foot carbon-fiber "cloud", embedded

with 1,000 helium balloons and several dozen cell-phones. The balloons contain networked electromagnetic field sensors connected to colored LEDs. When activated, the sensors turn on the LEDs and the floating cloud glows and flickers. People calling into the cloud 300 feet above hear distant natural electromagnetic sounds and change the electromagnetic topography, creating new patterns within the cloud. Sensor feedback creates ripples of light and sound reminiscent of thunder and lightning. The technology is electronic and electromagnetic. The media are light, electromagnetism and sound. Sky Ear offers a more complex interactivity than L2k and indicates that natural forces themselves can be rendered visible in "captivity." The first set of diagrams will
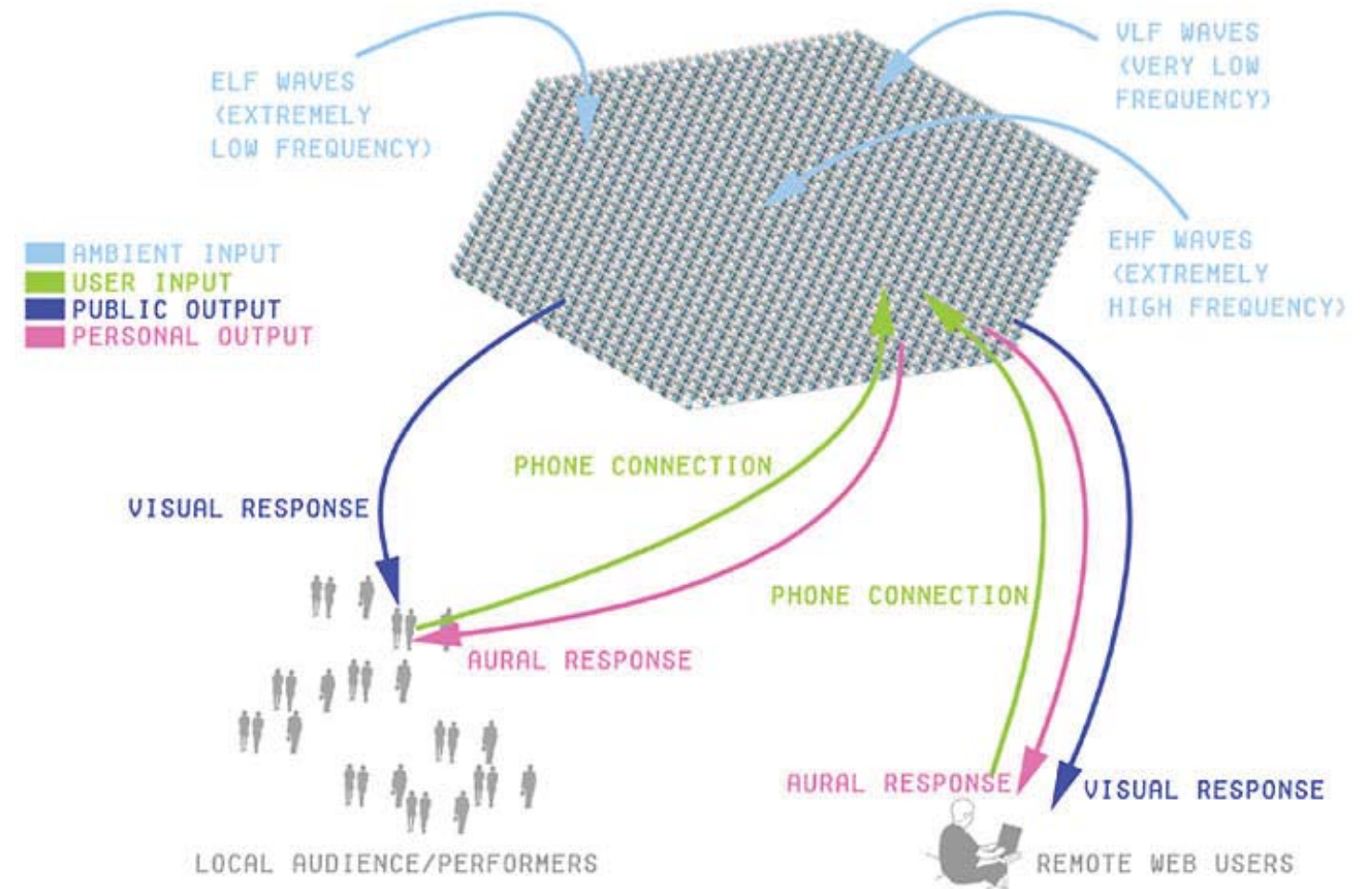
arrive at a common diagrammatic language – perhaps to be thought of as a kind of alphabet, vocabulary, and grammar - capable of rendering all three systems as comparable, contrastable, and synthesizable. This language might be thought of as the skeleton upon which the muscle and skin of materiality, scale, intentionality are built. The second set of diagrams will use this language to derive a new matrix of real-time human inputs capable of being rigged to shape the urban experience. A third set of diagrams will look at the materiality and scale of the three systems for what each expresses or does not express.
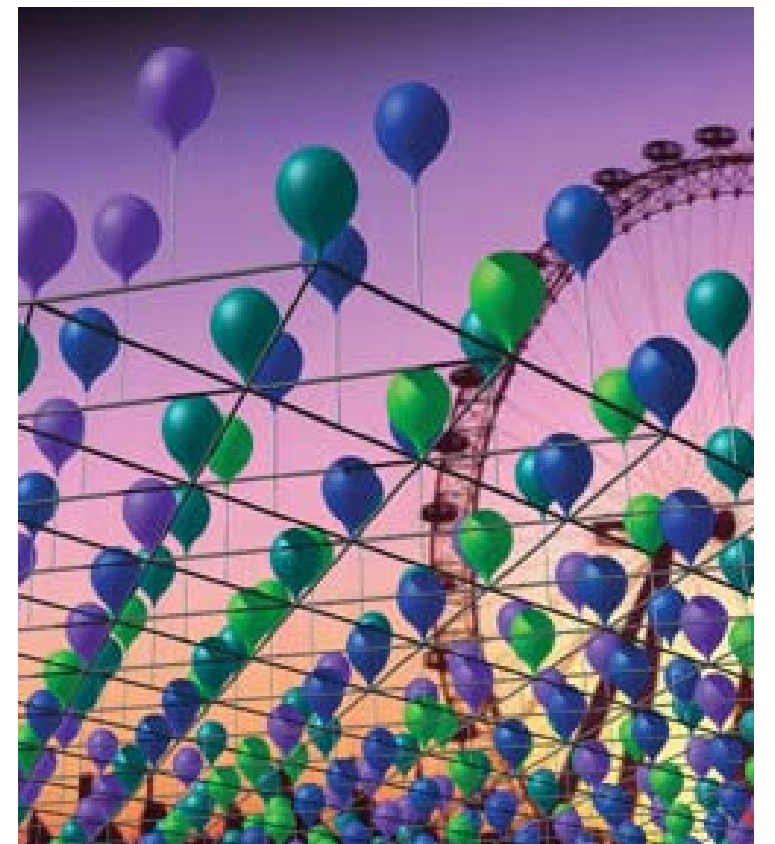
# Invoking the Genius of Chance

Adding a natural/chance randomizer to the game, i.e., natural inputs alongside the human controlled ones equals a liberation and transformation of Nature

Organizing principles such as those behind L2k and Sky Ear offer opportunities for communication. Adding natural randomizers expand these opportunities to include the possibility of communion. L2K's four pattern buffers wrestle for control of the loop when multiple participants are working the system at the same time. There's an algorithm that chooses which wins, yet exciting possibilities arise when we consider that the algorithm could be replaced by a "natural" input, such as temperature, electromagnetism, or lightning.
If the human inputs driving the functioning of the new typology are set up like a game, it becomes possible to engage a chosen natural force or set of forces as a person, a player among players in the game.

In a once-nondescript New Mexico field, artist Walter de Maria arranged 400 stainless steel poles averaging 20"7.5" in a grid 1 mile long and 1 kilometer wide. The tops of the poles, spaced 220 feet apart, form a plane. Sunrises and sunsets illuminate them in fleeting sequences and thunderstorms turn them into lightning rods. The Lightning Field is a technological intervention that meets human beings and the forces of nature as powerful, free, responsible and creative entities. It harnesses the forces of nature without containing them, casting them out, or making them "consumer safe." Drawing and registering lightning strikes on a matrix, the Field transforms the chaotic and unpredictable into language, leaving the viewer to commune with nature in new and unpredictable ways.

Such potentials will be taken into account in the design of the new typology; not only will human behavior impact shape, form and behavior; nature will have its fingers on a few keys of the
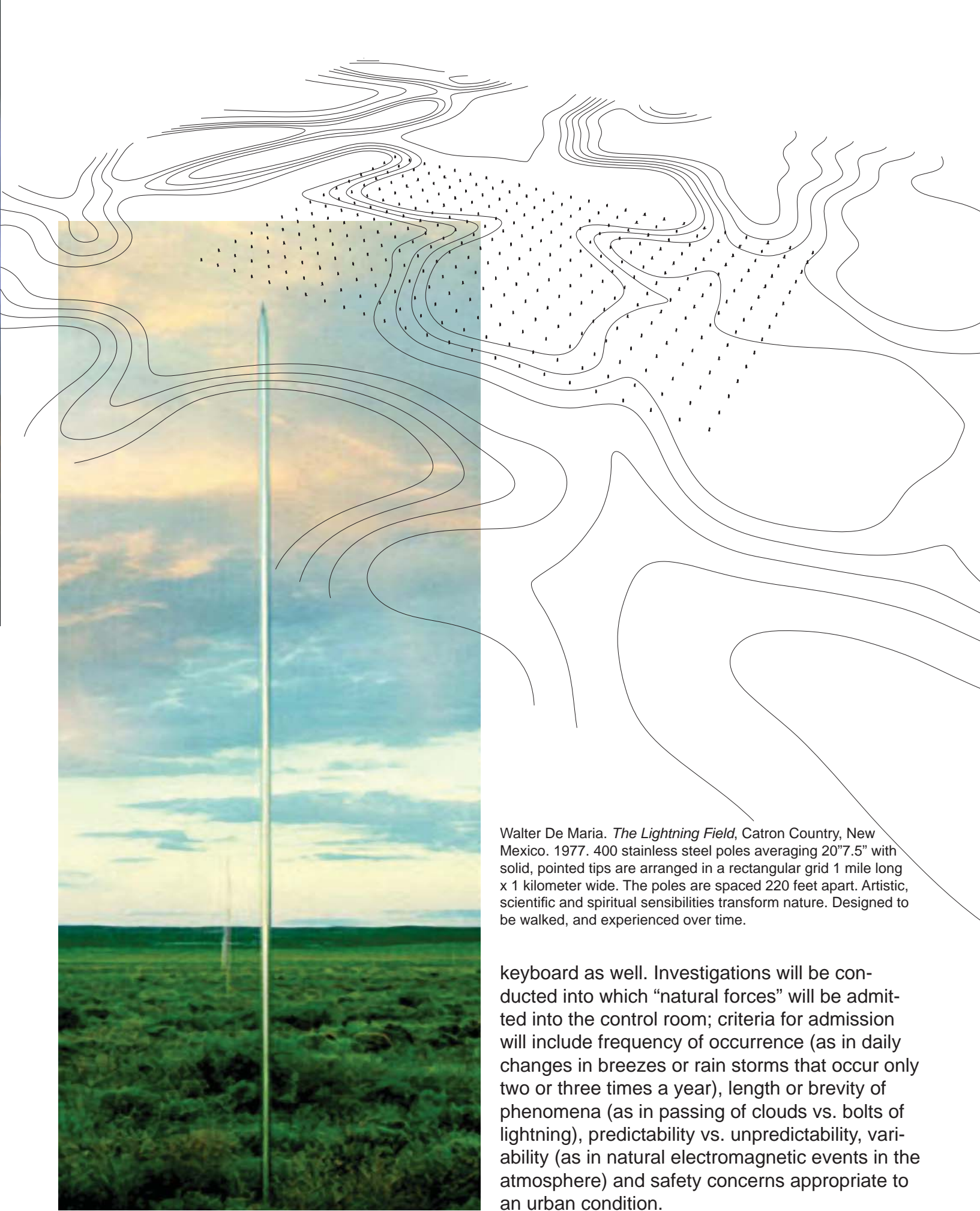
Walter De Maria. *The Lightning Field*, Catron Country, New Mexico. 1977. 400 stainless steel poles averaging 20"7.5" with solid, pointed tips are arranged in a rectangular grid 1 mile long x 1 kilometer wide. The poles are spaced 220 feet apart. Artistic, scientific and spiritual sensibilities transform nature. Designed to be walked, and experienced over time.

keyboard as well. Investigations will be conducted into which "natural forces" will be admitted into the control room; criteria for admission will include frequency of occurrence (as in daily changes in breezes or rain storms that occur only two or three times a year), length or brevity of phenomena (as in passing of clouds vs. bolts of lightning), predictability vs. unpredictability, variability (as in natural electromagnetic events in the atmosphere) and safety concerns appropriate to an urban condition.

Build It and They Will Come

In this section we begin to speculate on possible avenues for the development of the new power infrastructure typology.

While several contemporary projects in the art world such as those mentioned above grant us a glimpse of the possibilities expressed here, the challenges of developing analogous infrastructural and usably architectural systems are many.

Taken into consideration here:

What could the "input" and "output" be and how will they translate from one to the other.

How might the input points and output points be distributed?

What's proposed here is by no means meant to be an end product; the investigation has only begun. What is presented here is a cross-section of possibilities to be explored further.

Possible Input Systems

... and an assumption on output. Concentrated Solar Stations such as Nevada Solar One focus sunlight onto tanks of liquid sodium using parabolic mirrors. The tanks are heated up to thousands of degrees, and the sodium can retain heat for long periods. The sodium is then used to produce steam both day and night, which then turns traditional turbines to generate electricity.

The parabolic mirrors used are large enough to conceivably double as architectural elements such as rooftop structures on parking garages or high rises, or as bus or train platform covers.

One concept considered here is the use of such mirrors with "on/off" positions that could be toggled via control panels, user inputs or sensors. In the "on" position, the mirror focuses on the tank, in the "off" position it focuses upward, operating
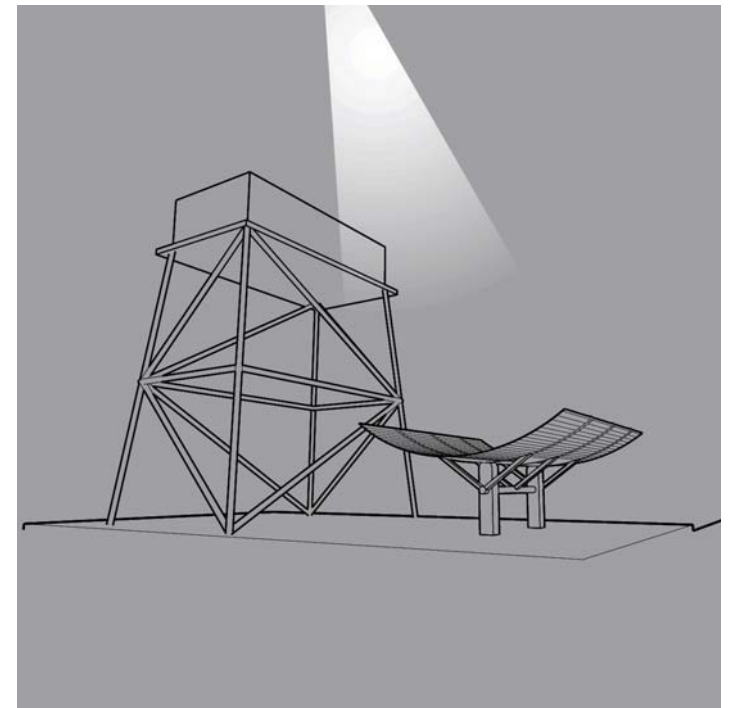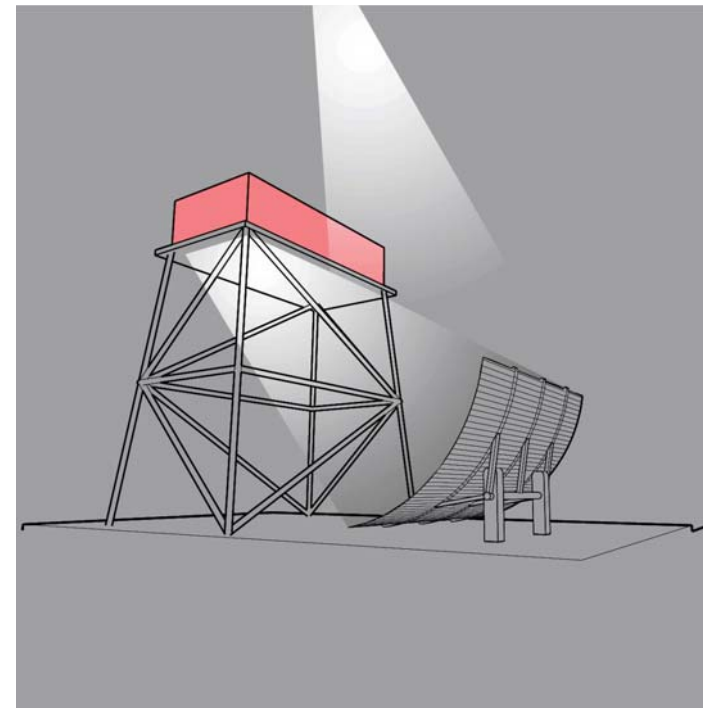
in some other beneficial capacity, as well as potentially providing considerable aesthetic residuals.

Excess power generated by the power stations could be used to create aesthetic experiences by evening.

Concentrated Solar Stations will not necessarily be the power infrastructural elements of choice, as they have advantages and disadvantages in general and in relation to this thesis, and further investigation will be conducted regarding what will be the best single or combined portfolio of power sources for the polemic of this thesis. They were chosen here because their ability to be turned "on/off" and their potential for scalability allowed the investigations on the following pages to be taken on in earnest.
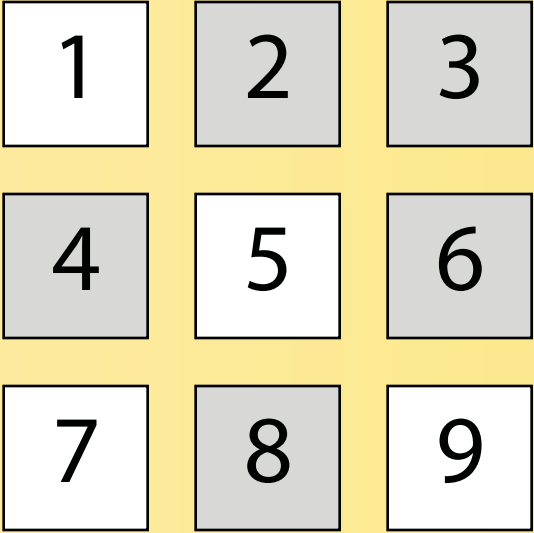
Control Panel Input: Single User

One user controls the system directly, here pressing a button that returns a value of 0 or 1, on or off.

This is the simplest scenario; the control panel could be an ordinary cell-phone, however this is probably the least interesting of the scenarios presented.

X	O	X
O	X	
X		O
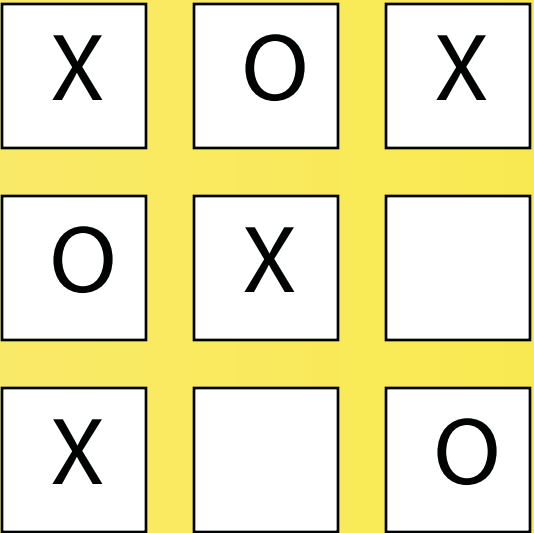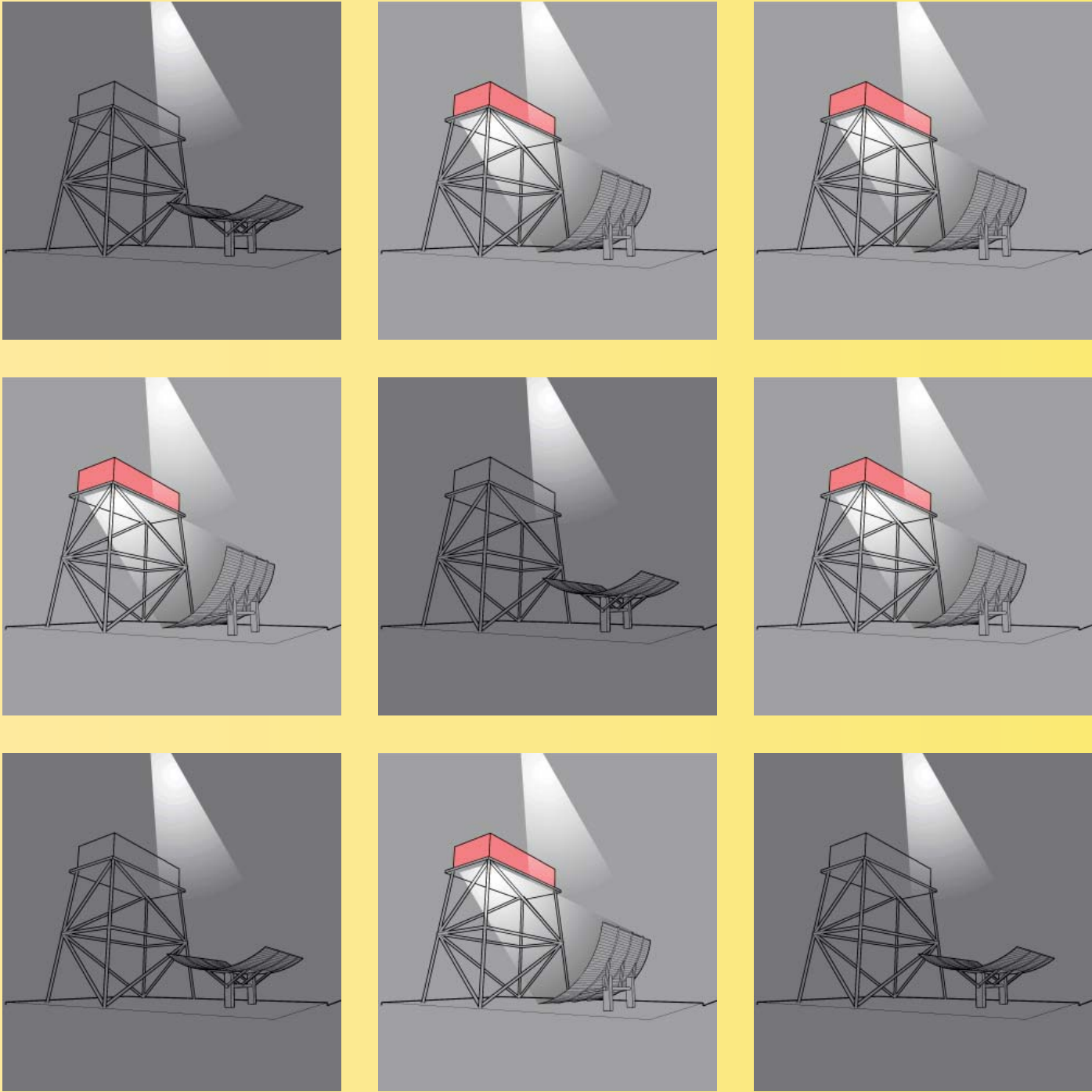
Control Panel Input: A Game

Multiple users play a game, the outcome of which directly controls generates the output of the system. The users may be within a building together, or may be across town, depending on how the system is wired.

Here, the game being tic-tac-toe, three states are needed to represent the outcome, the third representing the unused buttons.

X | O | X

O | X | (green)

X | | O

Control Panel Input: A Randomized Game (Below)

This scenario is the same as the ordinary Game scenario, except here, natural forces are algorithmically allowed to activate some of the sensors as the human users play. They add an element of chance, surprise and randomization that's reflected in the output.

Control Panel Input: A Game with Interference Pattern (Next Page)
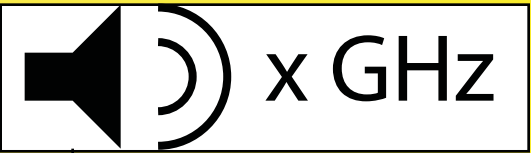
Input points operated by human players here

X | O | X

O | X |

X | | O

🔊 x GHz

meet with an interference pattern generated by variable forces such as electromagnetism. The combined signal generates the result.

Finally, feedback is defined as the return to the input of a part of the output of a machine, system, or process. Adding a feedback component to the system may open up radical possibilities for expression and play.

? | ?

? | ?

?

Surveillance Input

Here it's not human beings at control panels manipulating the system and thereby infrastructure and architecture but a system of surveillance. Motion sensors might detect frequency of movement and manipulate the system; a structure might change to accommodate more people or close down when people leave. In addition the randomizations and variations possible with control panels, such as sensors de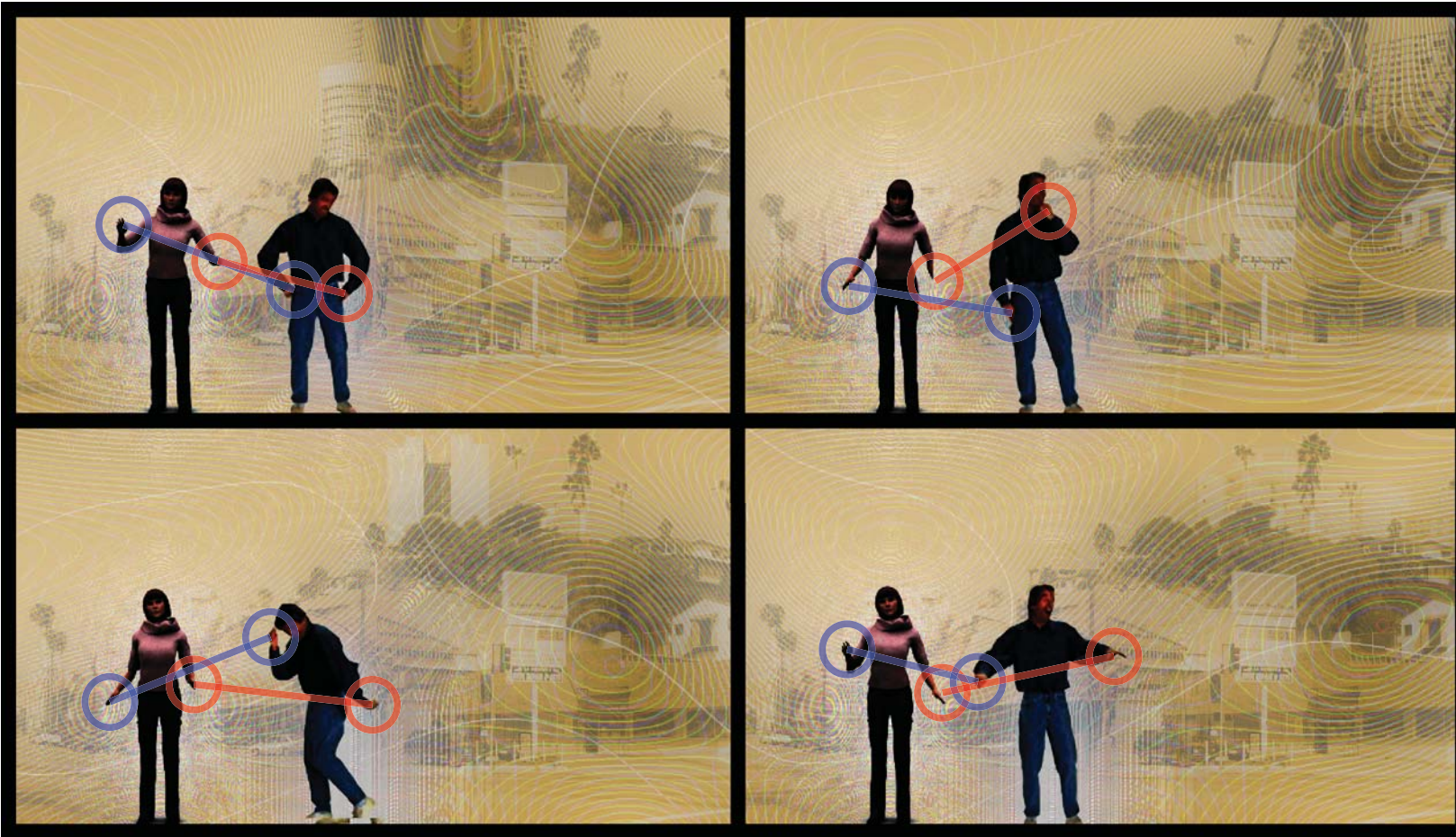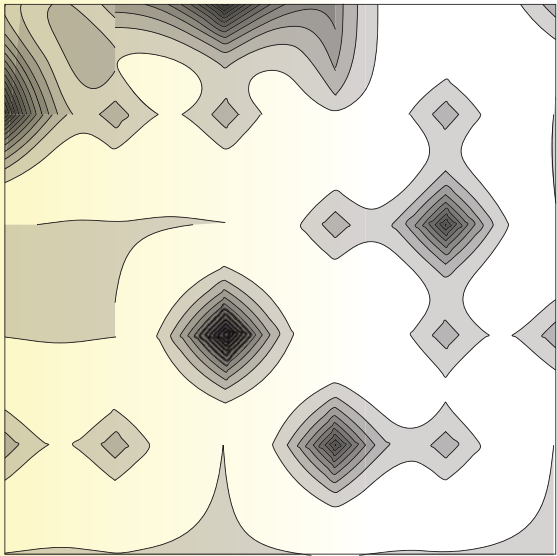tecting natural forces at times instead of movement and feedb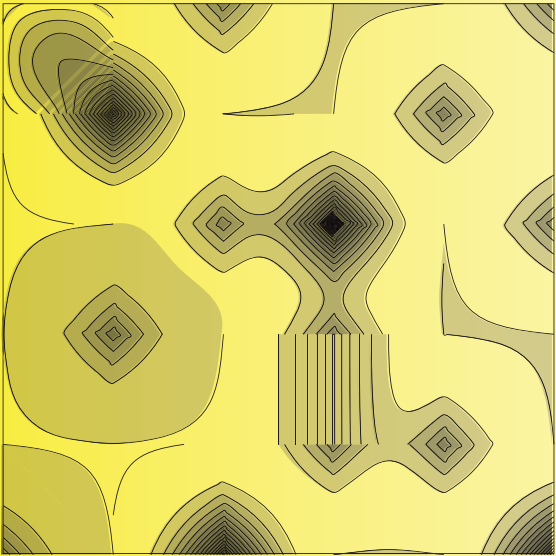ack loops, could work here too, creating kinetic architectural/infrastructural systems that "play" with people and that people can play with in return. Members of a flash mob on scene might move or "dance" a collective physical experiences into being.
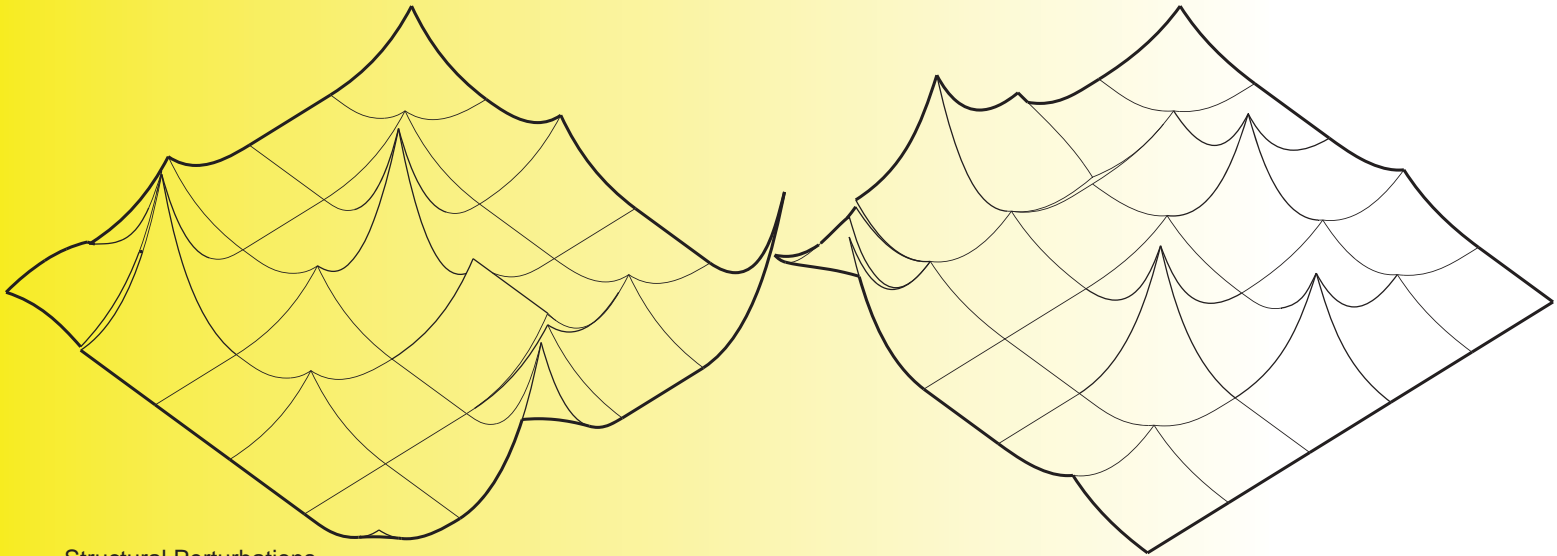
Structural Perturbations

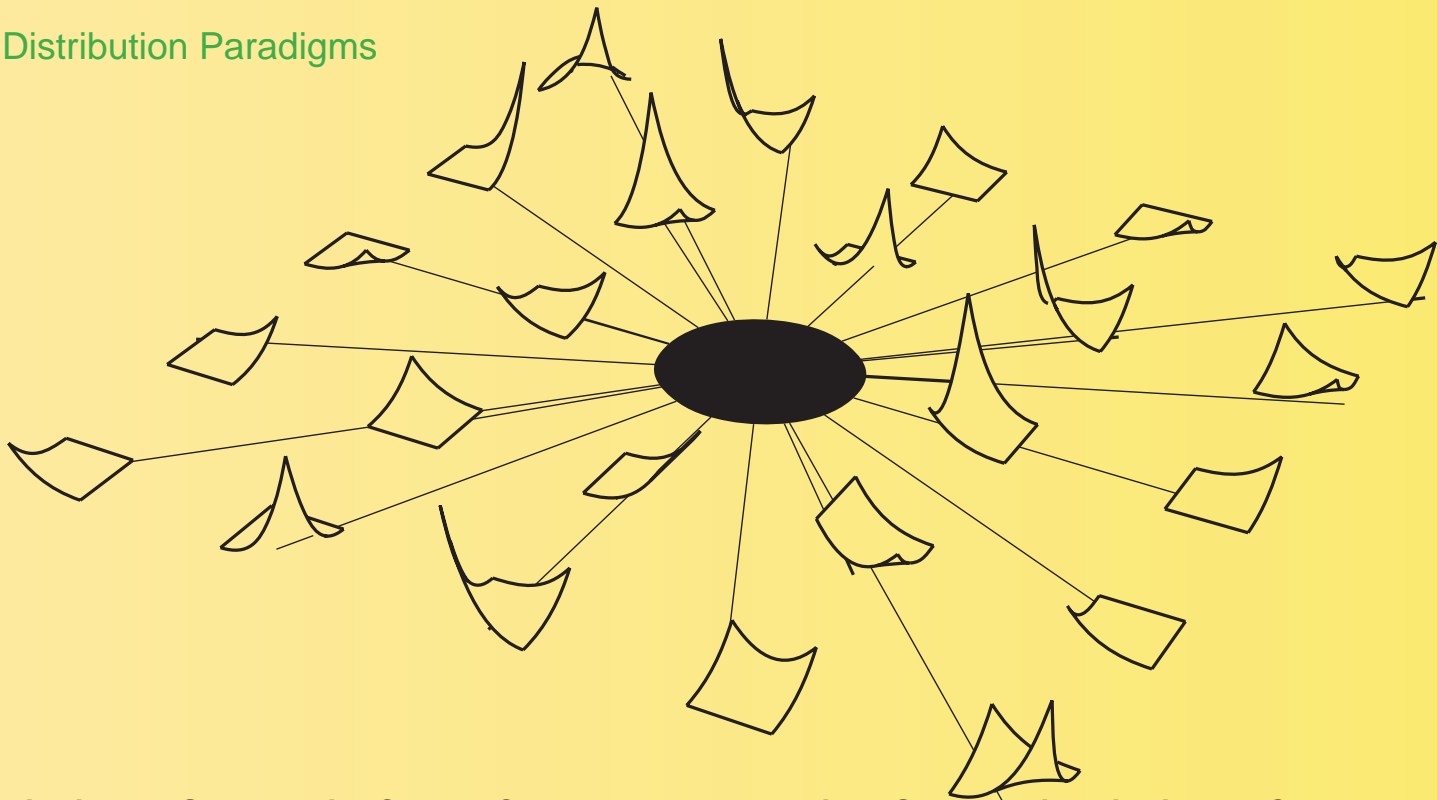Concentration of People
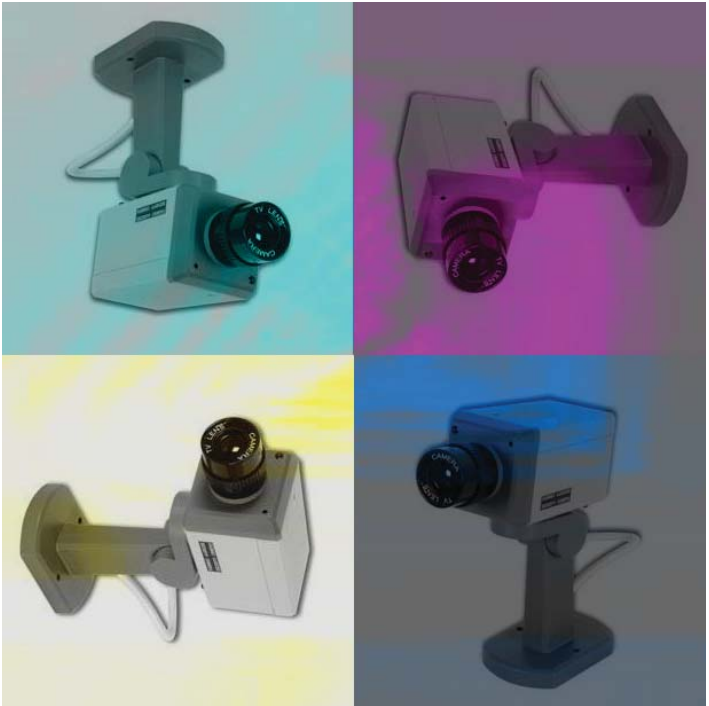
Possible "Outputs"

Some of what might be considered "outputs" of the proposed typology will be objective, some will be subjective.

In the realm of the objective, there is, obviously, usable electricity. There will also likely be secondary benefits, for instance in the case of using Concentrated Solar Stations, usable structural elements that function as such at least part of the time.

Outputs resulting from the user interfaces and interactions will include subjective elements such as aesthetic residuals, and may include objectively observable movement or other transformations of architectural/infrastructural elements.

Further determination and clarification of what the "outputs" will look like will come as exploration continues.
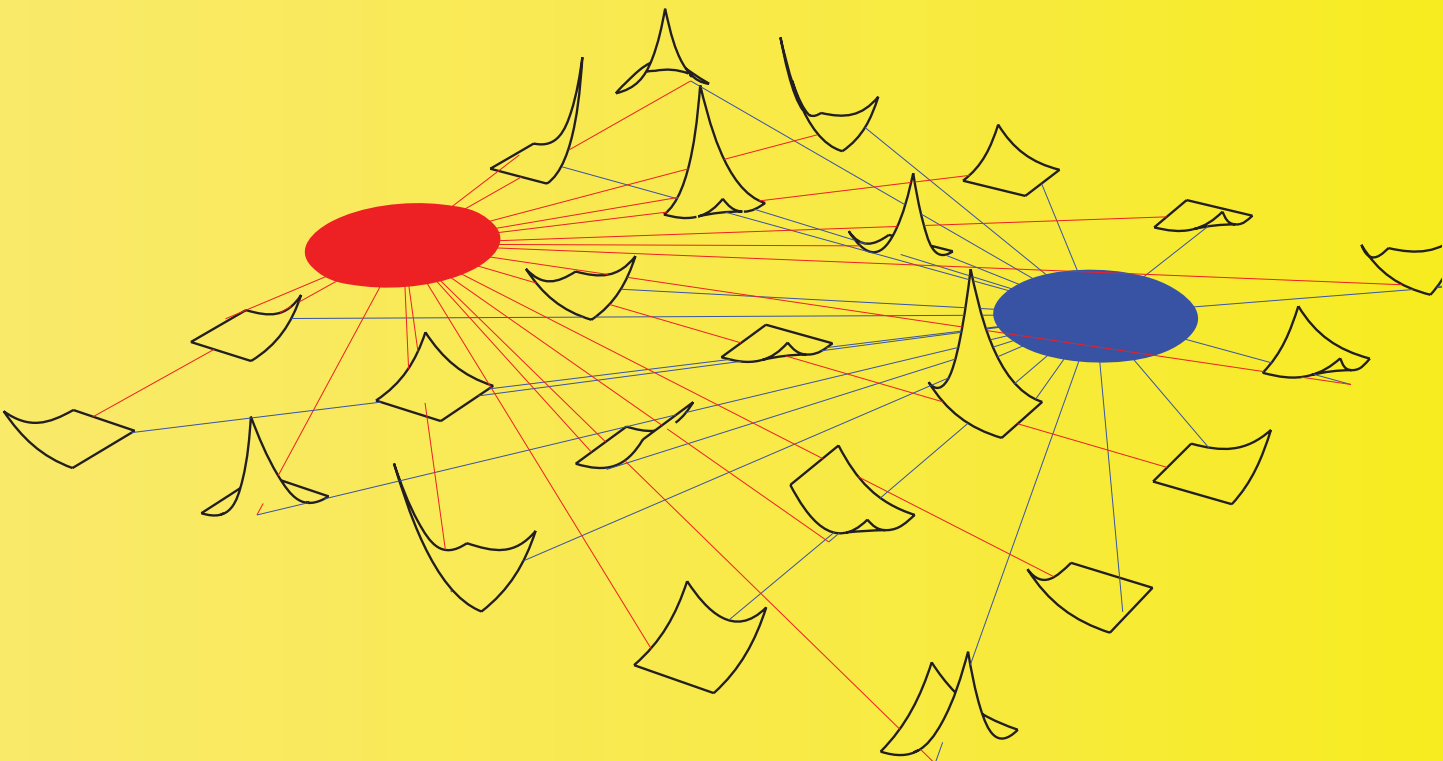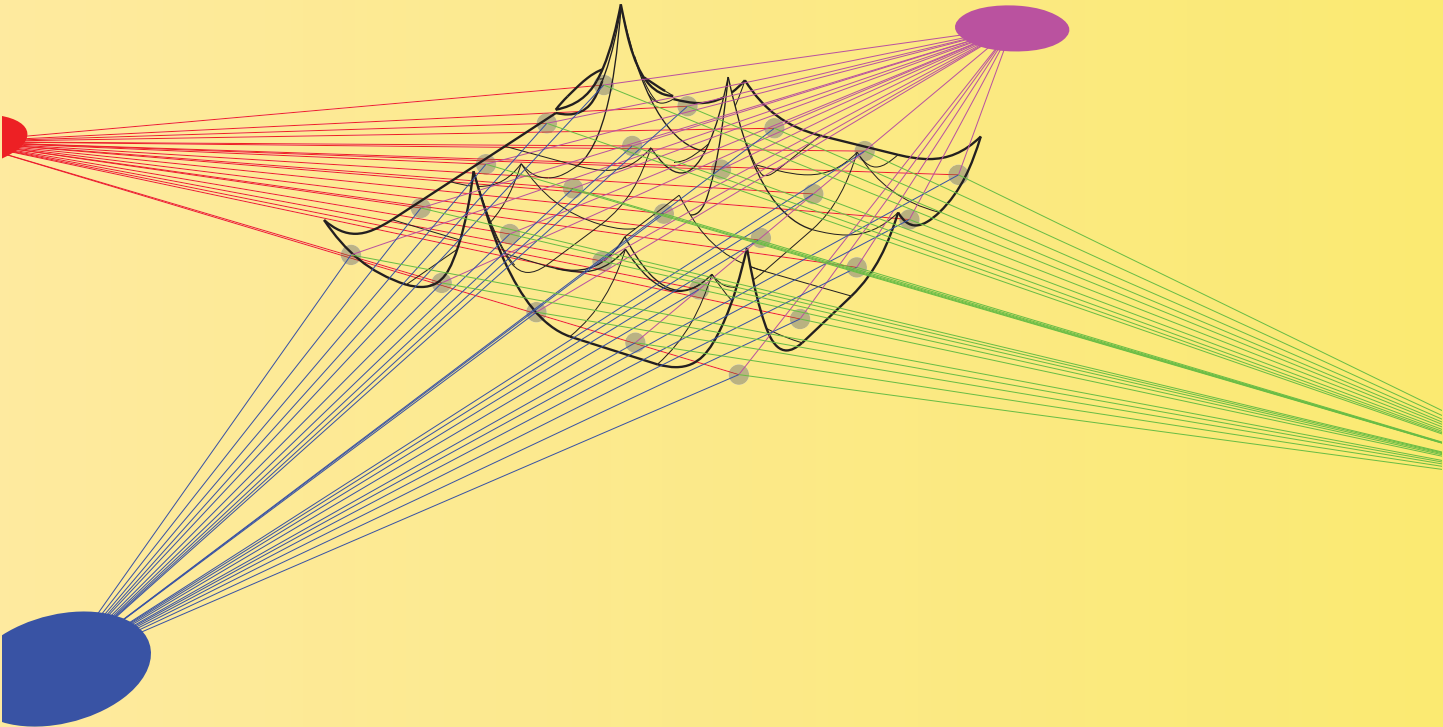
Distributed System with Central Control Pylon (above)

One person or group of people at one site can control/impact the operation of a distributed system throughout a large area. This is the least desirable setup, since if the infrastructure is distributed throughout the city but can only be manipulated from one site, there is no true accessibility for most people. As immersive experience, for most people the system would default to spectacle of waning interest.

Localized System with Distributed Control Pylons (below)

People or groups of people can control/impact the experience at one site from any of several widely distributed nodes, all of which may enable manipulation of any part of the construction at the site. The control pylons may compete or interplay with one another according to any number of possible sets of rules.

Distributed System with Control Pylons Interspersed Throughout (above)

People or groups of people can control/impact the parts of a distributed system from several control pylons also distributed throughout the area, all of which may enable manipulation of any part of the system. Pylons may compete or interplay according to many possible sets of rules.

Localized or Distributed System with total interweave (below)

Anyone can potentially manipulate the operation of the entire system from anywhere within it. Every part of the system has an embedded "control pylon" imbued with an image of the whole. The parts manipulated and the "control pylons" become indistinguishable.
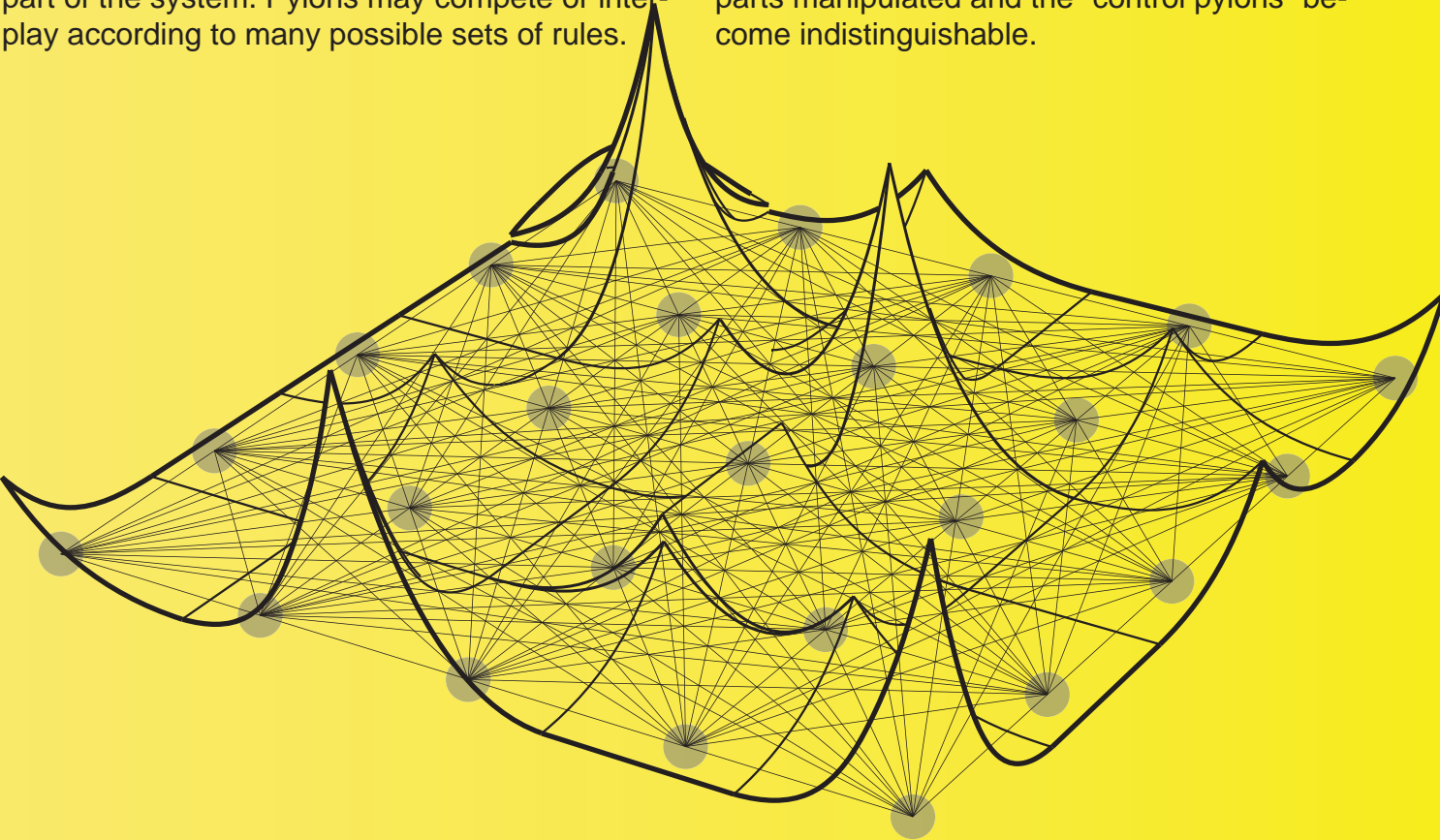
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Wired Magazine, May 2007 issue. For certainty that the technology of freedom is the technology of surveillance, and that the technology of surveillance is the technology of freedom. Also for the inspiration for the design and layout of *Acknowledgements* Issue 1

Proposed reading: