



*Questions of Public/Private
Interior/Exterior
Domestic/Metropolis*

*Evan Broske
Masters of Architecture Thesis
University of Detroit Mercy
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Advisor: Wladek Fuchs
ARCH 5100/5200
4.25.2015*

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A Quick Introduction

I was initially intrigued by the dichotomy between public and private space when I began to compare my life in the suburbs of Detroit and my experiences abroad living within a large city. I have become accustomed to the freedom and privacy provided by my neighborhood but I have also found many freedoms in the city. I have come to miss the accessibility provided by an urban environment as well the interactions it facilitates. These differences led me to study how people experience the public and the private and the way in which we have separated the two.

I have imagined people surrounded by their own personal privacies, removing themselves from the public environment. I wonder if the privacy of our own dwelling has permeated the rest of our lives, strengthening the boundaries that surround us.

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Abstract

Unlike early European cities made up of interconnected courtyard buildings, traditional American cities are filled with independent forms, no longer creating space but occupying it. As buildings began to contract and move away from one another the small spaces in between are forgotten about only to be used for garbage collection and occasional parking. The city of Detroit has gone through an extreme contraction where large spaces do not only exist between buildings but also in place of them. The spotted landscape of Detroit has presented an interesting platform to raise questions regarding the public and the private, the distinctions made between these spaces, and how humans experience them.

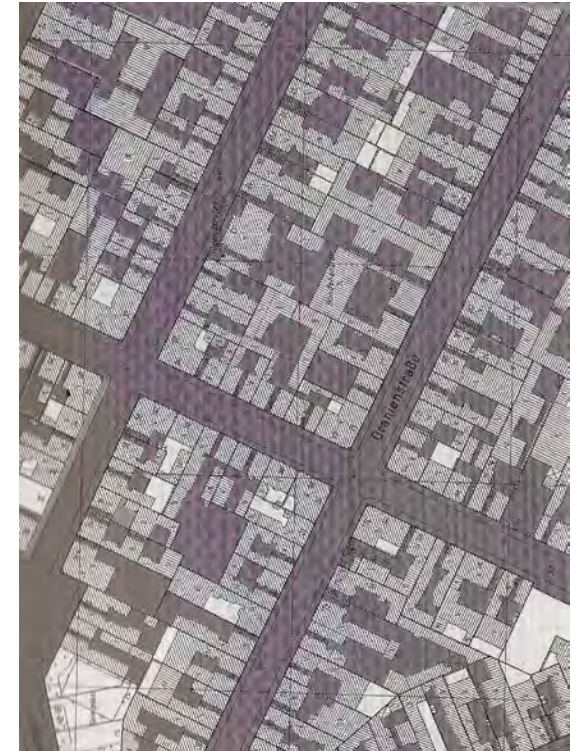
The sense of what is public and what is private can be influenced and experienced at different scales, a city's built environment dictates the physical boundaries between inside and out while its inhabitants influence the public realm through their interactions with one another.

This proposal asks the inhabitants of Detroit to influence the architecture of their neighborhood and to bring new use to the city's leftover spaces using flexible building systems, such as geodesic domes, tensegrity structures, and space frames, able to transport themselves throughout the city while transforming their identity to accommodate the current use and location.



The 19th Century Courtyard

In 1863 the city of Berlin was expanding rapidly as different towns and municipalities were being gathered under a single name (Borsig). The plan of this young city drawn in 1862 by John Hobrecht reads as a solid building with spaces carved out for movement and circulation. Dominated by the courtyard buildings, these interconnected spaces contributed to the porosity of the city's ground floor. This building form made little distinction between the public and the private creating connections between the courtyards, buildings, and streets. The facades of these buildings shift back and forth between the interior and exterior of the courtyard, challenging what is inside and what is outside. These housing blocks made up the urban fabric of Berlin, built to accommodate a variety of ever-changing inhabitants and uses from light industry to office and living spaces (Borsig).



above / Courtyards in the south-east, Map of Berlin
Jonas Geist and Klaus Küvers, *Das Berliner Mietshaus*, Vol. 2 (Munich: Prestel Verlag, 1980-89), p. 279

opposite / Plan von Berlin und Umgebung bis
Charlottenburg, 1865
Jonas Geist and Klaus Küvers, *Das Berliner Mietshaus*, Vol. 2 (Munich: Prestel Verlag, 1980-89), pp. 498-9

During this time Gustav Assman produced a series of drawings called "Plans for Urban Dwelling". These drawings depict the varying floor plates of the Berlin block. His initial plans show a series of undifferentiated rooms to be used for living, working, and dwelling simultaneously. The flexible nature of the interior boundaries begins to blur the distinction between interior and exterior. Assman advocated for this type of construction, provision of a solid building shell with a flexible core and partitions. This type of building allowed the Berlin block to function as a space able to accommodate the fluctuating populations of the city. The lines drawn by Assman do not represent individual rooms but rather the possibility for separations as well as connections between different spaces and functions (Borsi).



above / Bavarian Quarter, Segment of the Plan of
Schöneberg

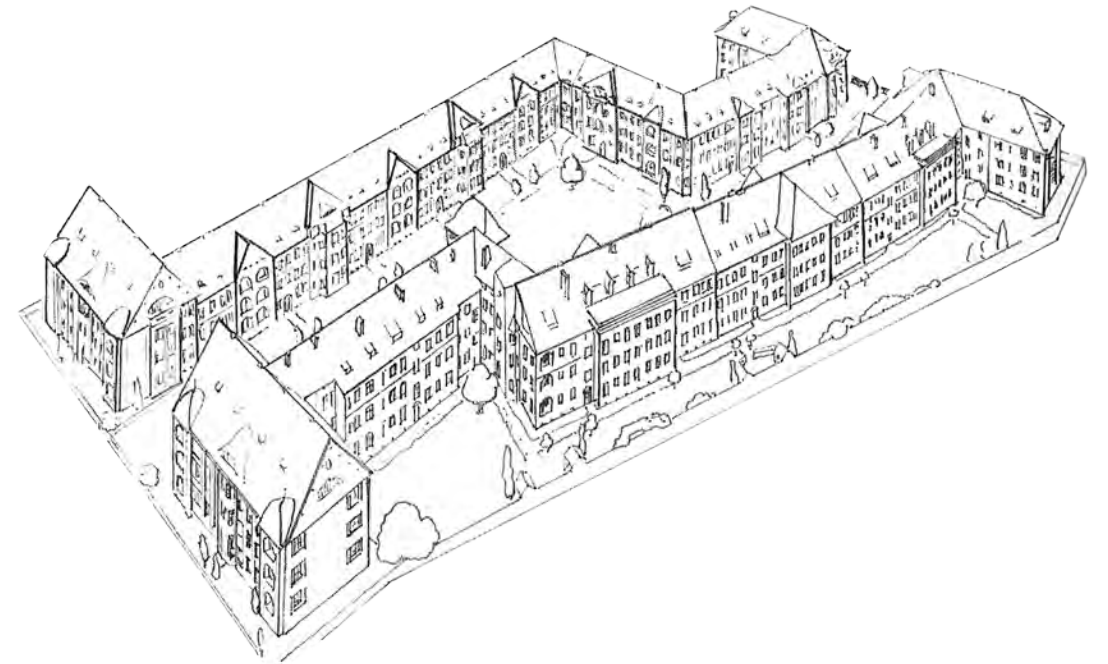
Jonas Geist and Klaus Küvers, *Das Berliner Mietshaus*, Vol. 2 (Munich: Prestel Verlag, 1980-89), p. 279

opposite / Paul Mebes, *Wohnstrasse für den Beamten-
Wohnungsbau-Verein Fritschweg*, 1907

Julius Posener, *Berlin auf dem Weg zu einer neuen Architektur* (Munich: Prestel, 1995) p. 354

Unfortunately the diversity and flexibility of this city drew the attention of a variety of disciplines that identified a number of different issues ranging from overcrowding and health concerns, to the immorality of its inhabitants and their taxation. Every detail of Berlin's built environment was subject to discussion and criticism from the cities health experts, councillors, and police (Borsi). The questions raised by this group marked the shift from external, unspecialized courtyard to internal, private block. Starting in the late 19th century the lines of Assman's drawings began to read very differently. A hierarchical relationship begins to develop as primary and secondary spaces become apparent. Unspecialized

rectangular rooms start to change in size and orientation transforming into kitchens, bedrooms, and living rooms. These shifting boundaries created distinctly public and private spaces contained within a single unit. The boundary of the internal rooms and spaces now have a strong influence on the shape of the connected courtyard, building forms are now dictated by the internal units. The personal home now takes precedent over this space. Because of this shift the courtyard no longer acts as a space designated for human interactions but a private outdoor space belonging to the individual dwellings. The connections between courtyards and streets have vanished creating a powerful boundary between what is inside and out.

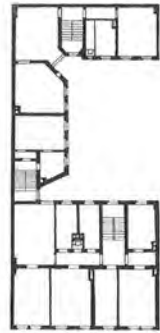


Plan Sequence
 Birkenstrasse 17
 Bandelstrasse 25
 Rathenowerstrasse 22
 Thomasiusstrasse 25

1874



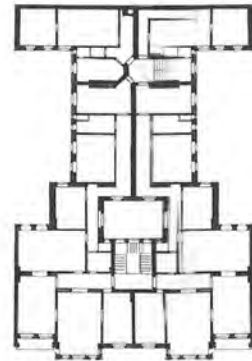
1878



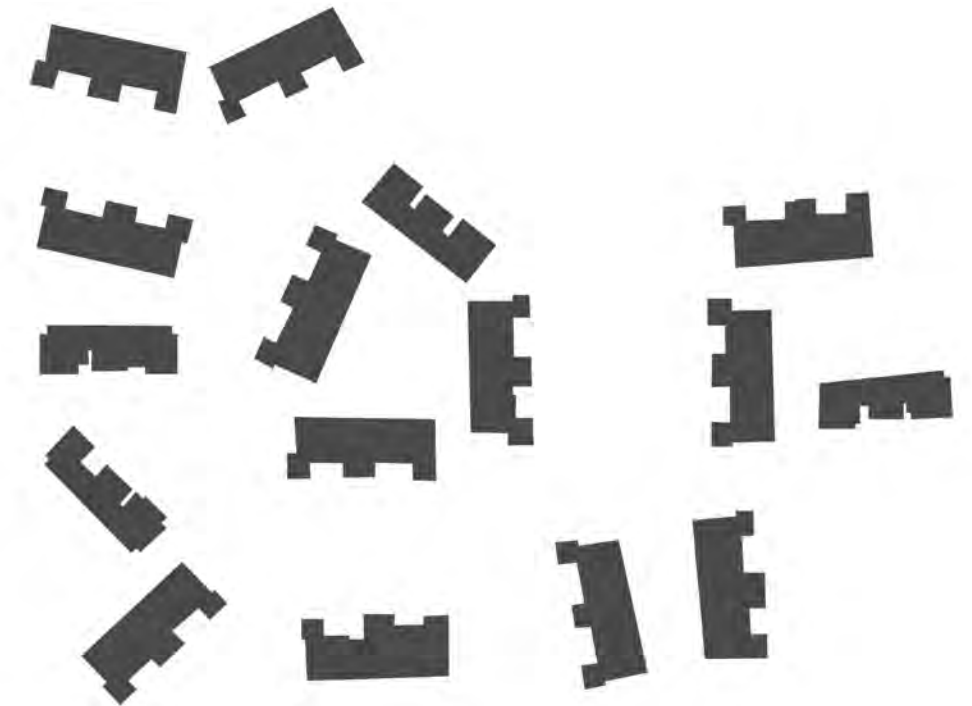
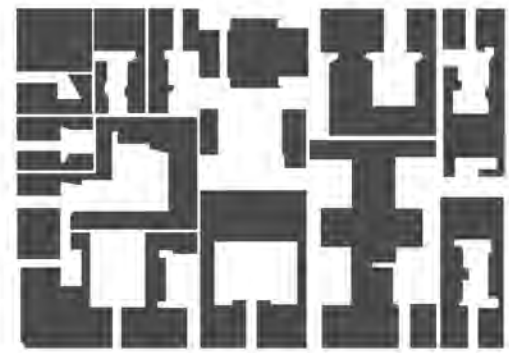
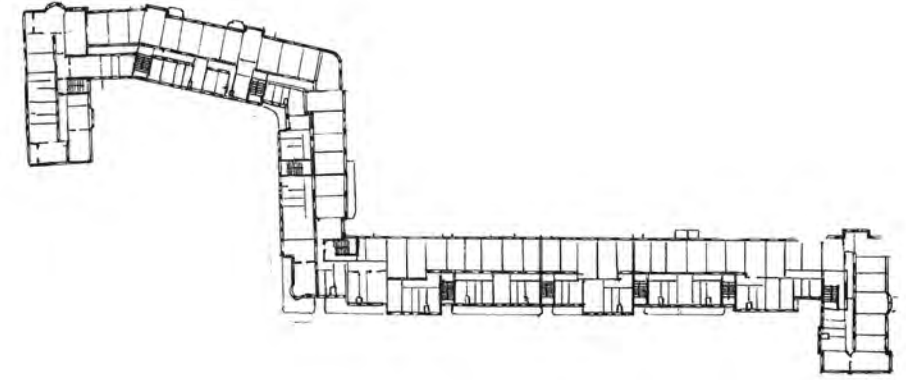
1884



1901



1907



above / Fritz Monke, *Grundrissentwicklung und Aussehen des Berliner Mietchauses von 1850 bis 1914 dargestellt an Beispielen aus dem Stadtteil Berlin Moabit* (unpublished dissertation, Technical University Berlin, 1968).

opposite / Paul Mebes, *Wohnstrasse für den Beamten-Wohnungsbau-Verein Fritschweg, 1907*
 Julius Posener, *Berlin auf dem Weg zu einer neuen Architektur* (Munich: Prestel, 1995) p. 354



DUTCH STRUCTURALISM

Piet Blom and Aldo van Eyck

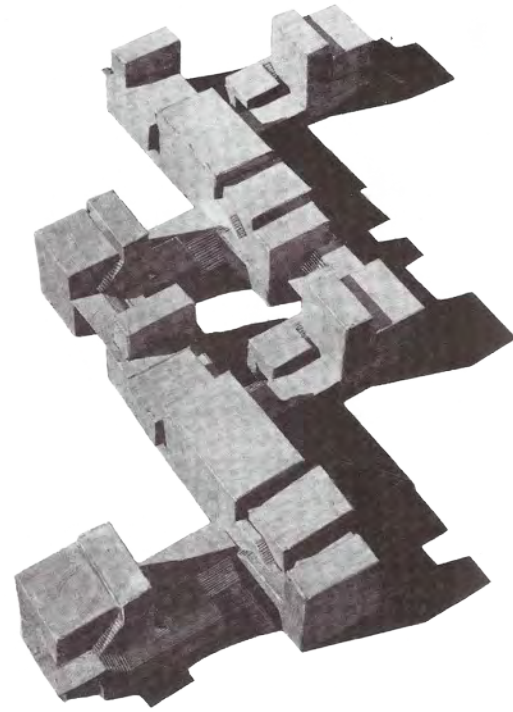
Sixty years after the transformation of the Berlin block, a small group of Dutch architects were questioning the boundaries created between “domestic” and “metropolis”. Aldo van Eyck did not believe these two space would be connected by “spacial continuity” or “visual transparencies” but instead this boundary would be overcome through “meaningful, psychologically effective transitions”. His notion of threshold referred to the relationship of different spaces and scales within the city (Jaschke).

opposite / *Kubuswoningen (Cube Houses)*
Piet Blom, Rotterdam (roof plan).
Image © Het Nieuwe Instituut

“We are not only breathing in, nor are we exclusively breathing out. This is why it would be so beneficial if the relation interior space and exterior space, between individual and common space inside and outside, between open and closed could be the built mirror of human nature, so that man can identify with it. These are formal realities because they are mental realities. Moreover they are not polar but ambivalent realities. The dwelling and its extension into the exterior, the city and its extension into the interior, that’s what we need to achieve!”

– Aldo van Eyck

Not only an architect, van Eyck was a professor at the Amsterdam Academy of Architecture where he met his future protege Piet Blom. In 1959 Aldo van Eyck became the editor of *Forum*, an architectural journal, where he published a project of Blom's, "The Cities will be inhabited like Villages" (Jaschke). This was residential project located on the outskirts of Amsterdam containing units for 800 inhabitants. Blom designed 24 dwellings of different sizes and layouts in contrast with traditional modernist housing blocks found in Amsterdam. These homes were gathered in clusters to form shared courtyards adding up to larger neighborhoods. Blom describes it as,



"A communal dwelling in which the dividing walls could be torn down so that men would be more complete in number and association. Forcibly, in order to bring home the fact that there is no dualism between individual and collective existence. It means striving towards giving life a greater chance to express itself fully."

With this project Blom wanted to force people to live together, to encourage encounters and interactions by blurring the distinction between public and private.

right / 'The Cities will be Inhabited like Villages'
Study Project 1958, Published in *Forum*,
vol.14, no. 7.



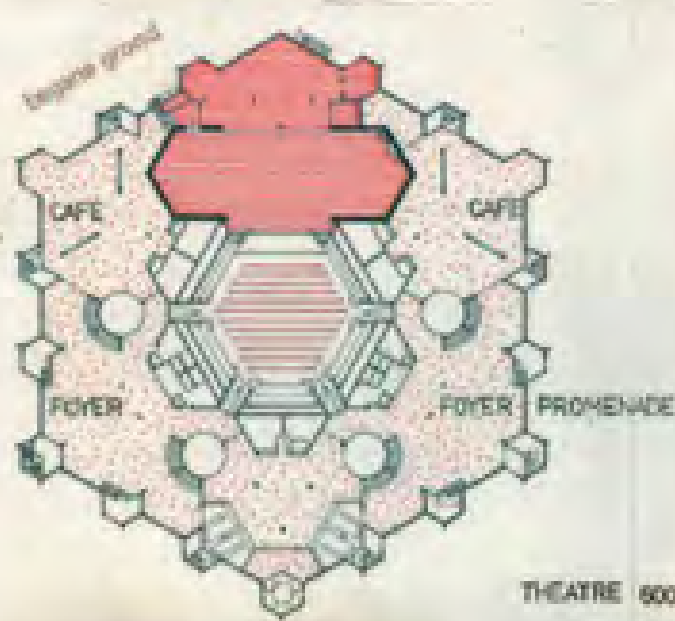
Blom went on to design the Cube House in 1977 once again investigating the relationships between public and private spaces. He was interested in dissolving the idea that a building must be recognizable as house to qualify as a house. The repeated elevated cubes are described by Blom as a collective forest, like living in a tree. Unlike the undifferentiated Berlin Block, the cubes make up a group of differentiated domestic spaces, however they contain additional flexible spaces to be used as studios, office space, and a youth hostel in order to accommodate an ever-changing population (Pascucci).

left / Kubuswoningen (Cube Houses)
Piet Blom, Rotterdam (roof plan).
Image © Het Nieuwe Instituut

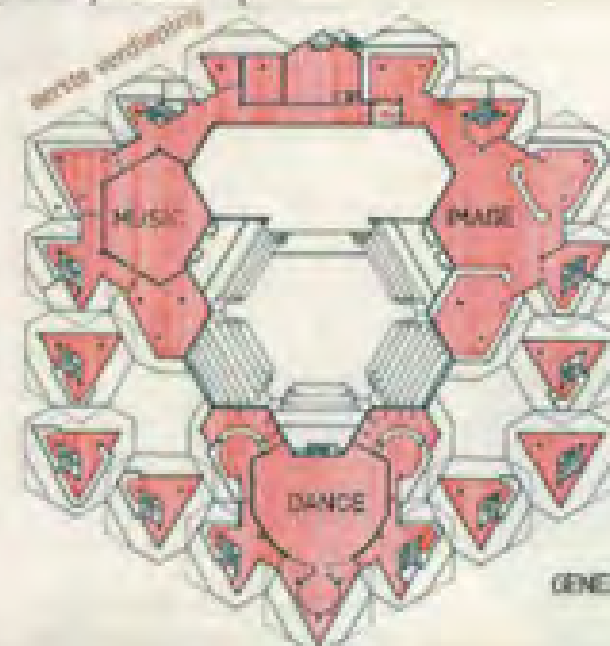
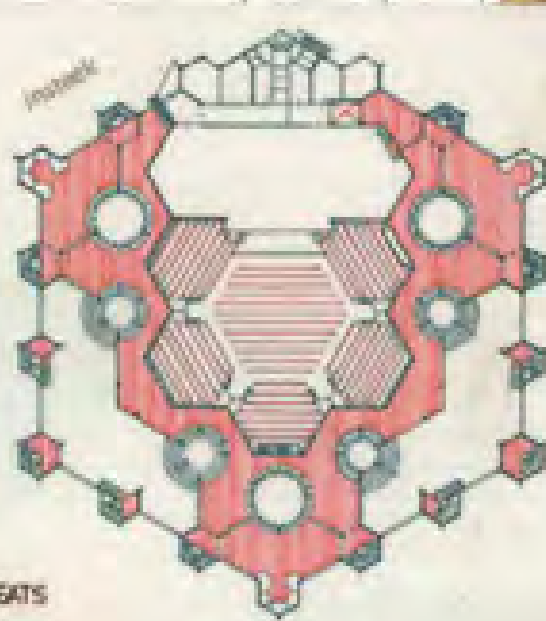
chapter Kubuswoningen (Cube Houses)
title/ Piet Blom, Rotterdam (roof plan).
Image © Het Nieuwe Instituut

"I hate the word dwelling, because it is directly associated with the idea of a roof over your head. Dwelling is also the neighborhood, the street, the communal facilities, the atmosphere of the quarter"

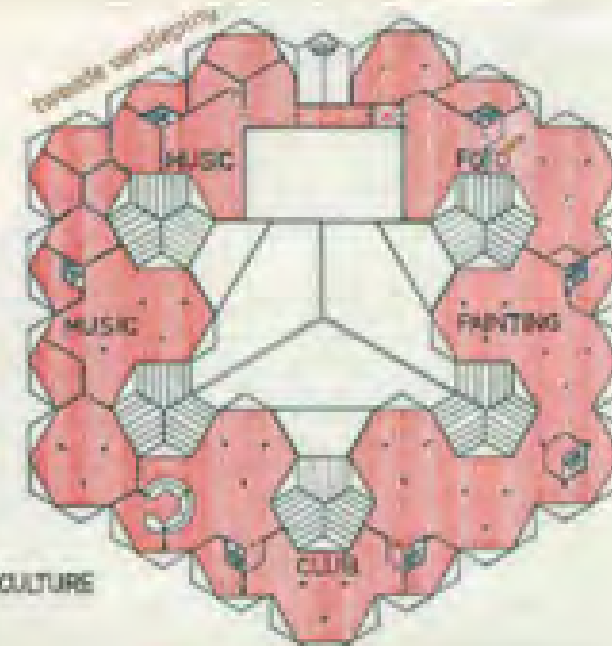
– Piet Blom



THEATRE 600 SEATS



GENERAL CULTURE



above / Kubuswoningen (Cube Houses)
Piet Blom, Cultureel centrum 'Het Speelhuis'.
Presentatiecollage, 1977. Collectie NAI, BLOM 91

THE PUBLIC AND PRIVATE REALM



Flexibility and Adaptability

It is not only our built environment that determines the publicness or privateness of a space, humans influence the public and private realm we exist in and interact with everyday. Each of us can claim a certain amount of ownership over this realm at any given moment and mixing of these personal realms constitutes the interactions we have with others. This interpersonal realm can be interpreted as both public and private depending on the situation, acting like a matrix that we are able to project our own feelings onto while feeling the forces of others. Madanipour says,

"...it seems that depending on what we define as private sphere, the public sphere is defined in relation to it. Put another way, when the private is personal, the public

can be interpersonal or impersonal. When the private is interpersonal, the public can be personal... If the mind is the private realm, the outside world is public. If the body is the private realm, the other bodies constitute the public. If private property is the private realm, what lies outside private possession and control is the public. If the household is the private realm, the larger organizations and the rest of society is the public." (Madanipour)

Our own influence on the public and private realm can grow quite large and shrink quite small depending on our surroundings. Think about the difference between sitting alone in your bedroom and sitting on a crowded bus. Your portion of this realm grows to cover your room but will shrink considerably on the bus.

*opposite / Interpersonal Realm
Warsaw, Poland
Image by author*

The interpersonal realm is constantly in flux, changing and adapting as your surroundings change. To mediate these changes humans have developed different masks, acting as a personal boundary between the internal mind and external world. These masks are able to transform in order to accommodate varying social situations. These transformations could include a change of clothes, the application of makeup, or the use of different vocabulary and body language. All of these changes make interactions more manageable by creating temporary similarities between self and the social environment. These masks are worn by all who are engaged in some sort of human interaction and because of this the spacial ambiguity of our cities is not only influenced by the built environment but also by the people who inhabit them.

However, the internal shift of European cities that have influence the independent forms that dominates American cities had a significant effect on these realms. Personal realms began to contract, interactions became much more internalized and private, contained within the home. Buildings also began to contract, creating distances and gaps between each other. They began to wear their own masks, however these mask rarely transform, creating solid boundaries between the personal and the collective. The buildings we inhabit no longer create space but simply occupy it. The leftover spaces that now exists between buildings is usually forgotten and neglected, no longer a space for interaction but instead parking and garbage collection.

below / Private Realm
Image by author



From Top / San Fransisco
Chicago
New York
Bing Maps.
Microsoft.

Detroit

Just like every other major city, Detroit contains a variety of different alley spaces, but unlike other cities Detroit is host to countless void spaces where buildings once existed. This condition creates an island effect where buildings stand alone within a sea of concrete and parking lots. However when inverted, the buildings of the city read as courtyards while the empty spaces appear as a surrounding structure, similar to the figure ground of Berlin. This inverted relationship between the two cities raises question of the division of space within Detroit. The amount of empty space around the city has an interesting effect on the boundary between public and private space. The spotted landscape of Detroit presents an interesting platform to test questions regarding traditional solid boundaries as well as the current use of leftover space found between buildings.

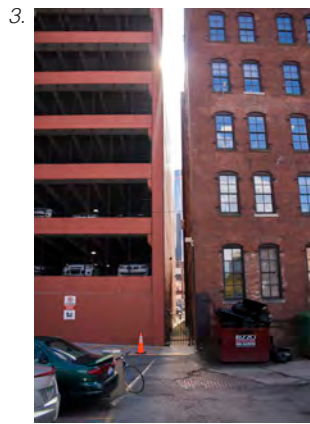
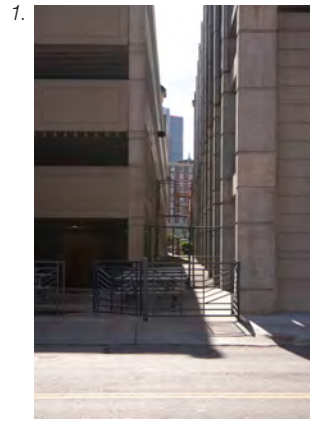


Top / Berlin
1 km²

bottom / Detroit
1 km²

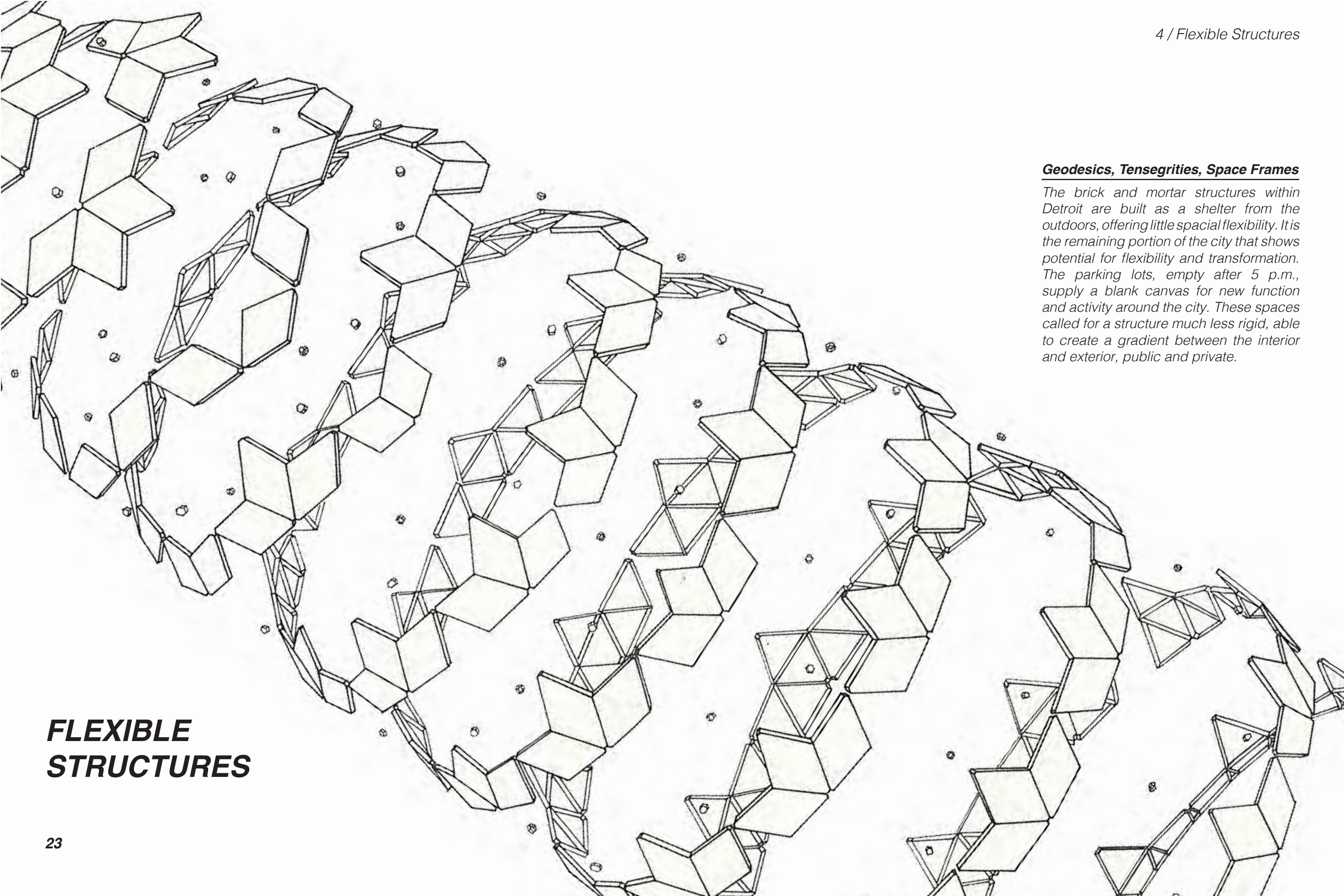
opposite / Aerial Images of Detroit
Bing Maps. Microsoft.





Void Spaces of Detroit

- 1. Adams
- 2. Beaubian
- 3. Beaubian
- 4. Congress
- 5. Congress
- 6. Beaubian
- 7. Park
- 8. Griswold
- 9. Montclm
- 10. Washington
- 11. Woodward
- 12. Fort
- 13. Mechanic
- 14. Capitol Park
- 15. Michigan
- 16. Centre
- 17. Farmer



Geodesics, Tensegrities, Space Frames

The brick and mortar structures within Detroit are built as a shelter from the outdoors, offering little spacial flexibility. It is the remaining portion of the city that shows potential for flexibility and transformation. The parking lots, empty after 5 p.m., supply a blank canvas for new function and activity around the city. These spaces called for a structure much less rigid, able to create a gradient between the interior and exterior, public and private.

**FLEXIBLE
STRUCTURES**

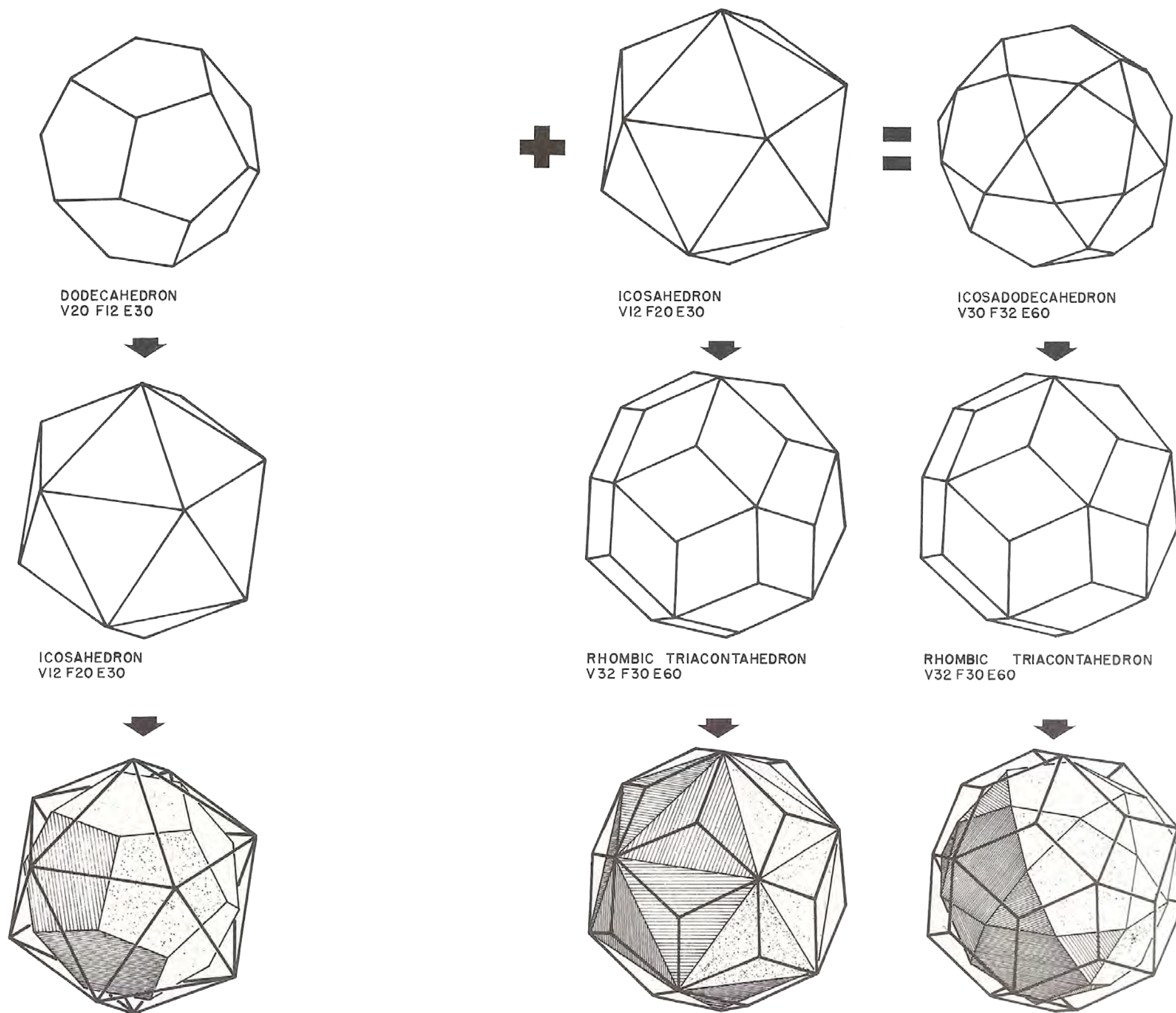
These criteria let to a study of geodesic structures. The ambiguous space created within in these spheres is neither public or private, the permeable outer skin blurs what is interior and what is exterior. However in dual polyhedra, geodesic forms circumscribed around one another, distinct spaces begin to form between the shapes (Popko). Studying the spacial



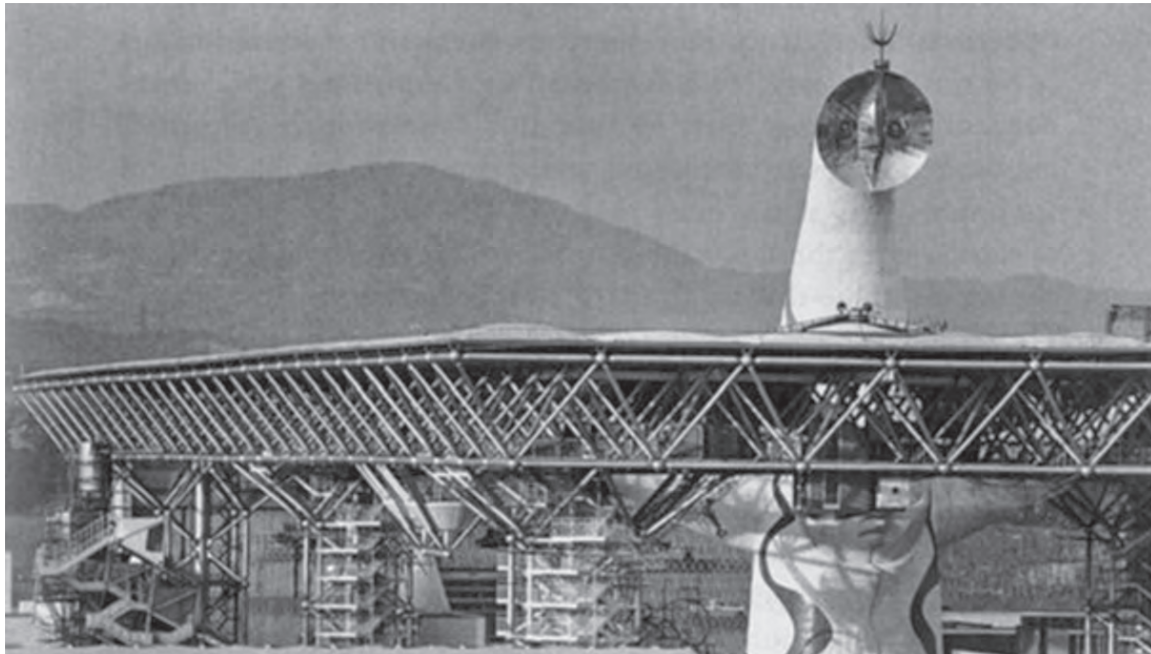
above / Montreal Biosphere
R. Buckminster Fuller

right / "Evolution of dual polyhedra through face addition"
Popko. Geodesics.
U of D Press

chapter title / Geodesic Incorporated Project
Popko. Geodesics.
U of D Press



qualities of this form led to research of similar flexible systems like space frames and tensegrity structures. These forms can be constructed of similar members used to build geodesics and produce varying spacial experiences. By removing members and carving out portions of a space frame you are able to create distinct spaces within ranging in size from very small and intimate to very large and public. These space frames can be used to create walls, platforms, and ceilings to be used for exhibition walls, performance stages, and pavilions. Tensegrity structures have the ability to create habitable space, creating a gradient from inside to out. A tensegrity icosahedron is made up of six members in compression and a length of cable in tension. By itself this creates a jungle gym you are able to traverse and dwell inside. When the compression members are replaced with planes, distinct levels and spaces appear. This type of icosahedron is easily repeatable and connectable, and



above / **Woods Hole Dome**
Popko. Geodesics. U of D Press.

opposite / **Big Roof**
Kenzo Tenge

below / **Underwood Pavilion**
Ball State University

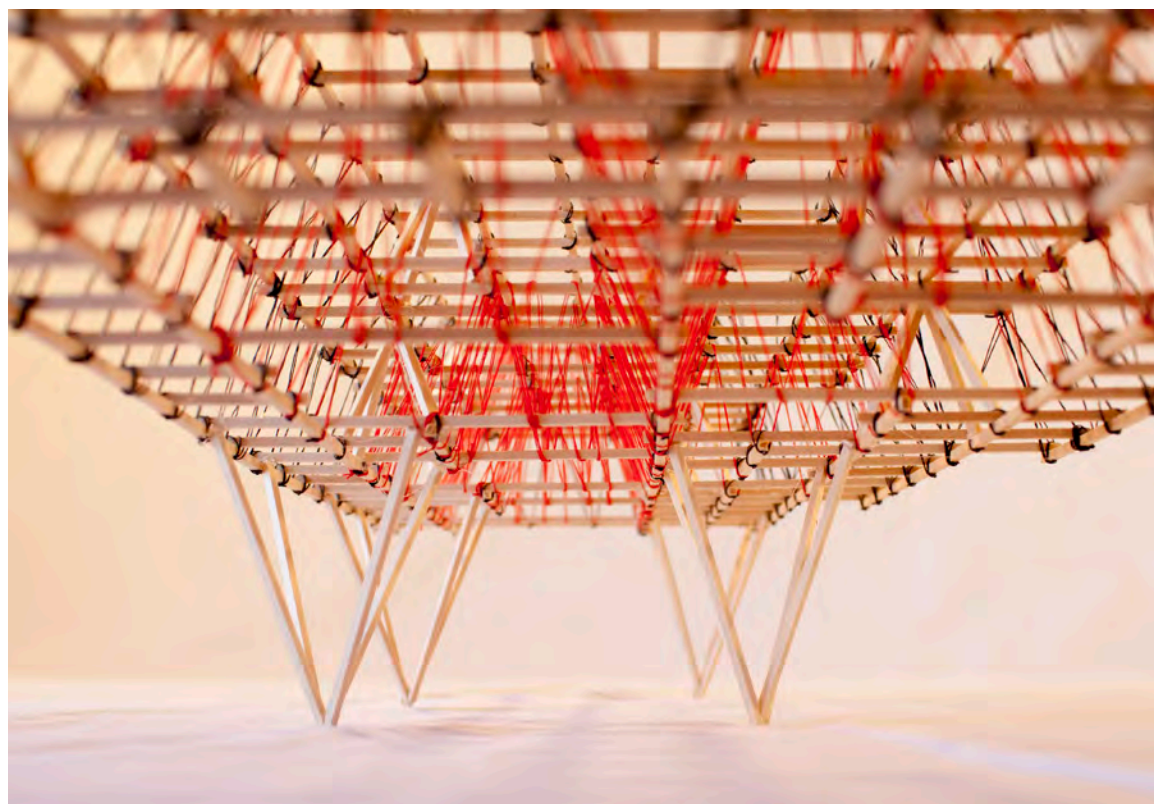


when combined, create a system of spaces that humans are able to inhabit. Since these structures use similar construction processes and materials, they are easily combined with one another, balancing the spacial advantages and disadvantages of each. For example, the members and planes of a tensegrity structure can be constructed of space frame members allowing for large structures that can be easily built by a small group of people, or a tensegrity icosahedron can be clad in geodesic planes to create sheltered space. The combination of these similar members and structures to create a larger whole mimics the dynamic of the public realm where many people come together to create a larger public space.



above / Double Icosahedron Tensegrity clad in Geodesic planes.

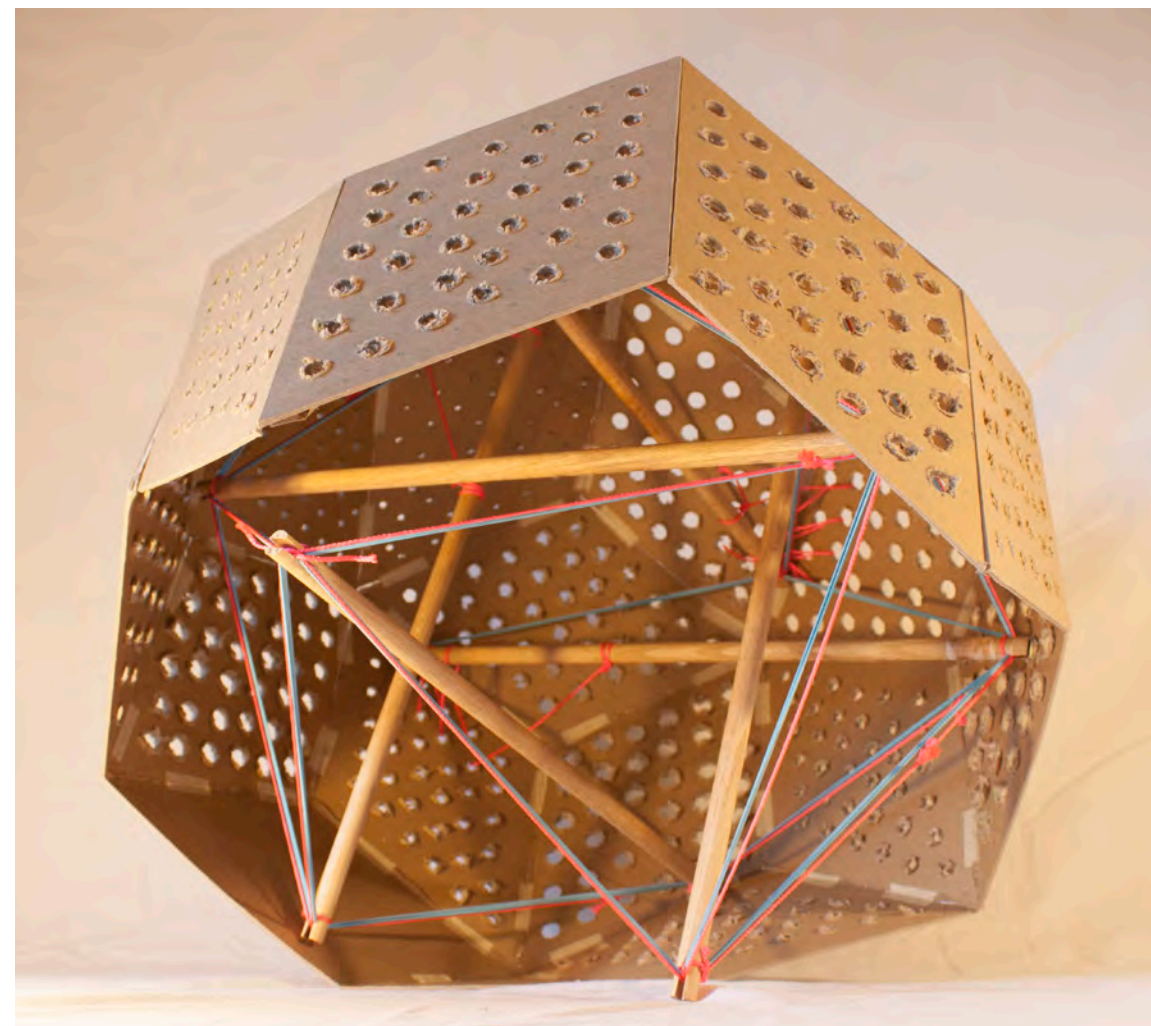
below / Space Frame with voids carved from below



These flexible structures, able to grow and shrink over time, easily constructed, and inexpensive, presented a system that would help reactivate certain underused spaces in the neighborhoods of Detroit. It would be inappropriate to simply construct courtyard forms and observe their effects. Instead these structures would be used to replicate the unspecialized and ever-changing quality of the courtyard with a form unique to each site.

above / Circular space frame

below / Rhombic triacontahedron circumscribed around a tensegrity icosahedron





THE PROGRAM

Architecture as Infrastructure

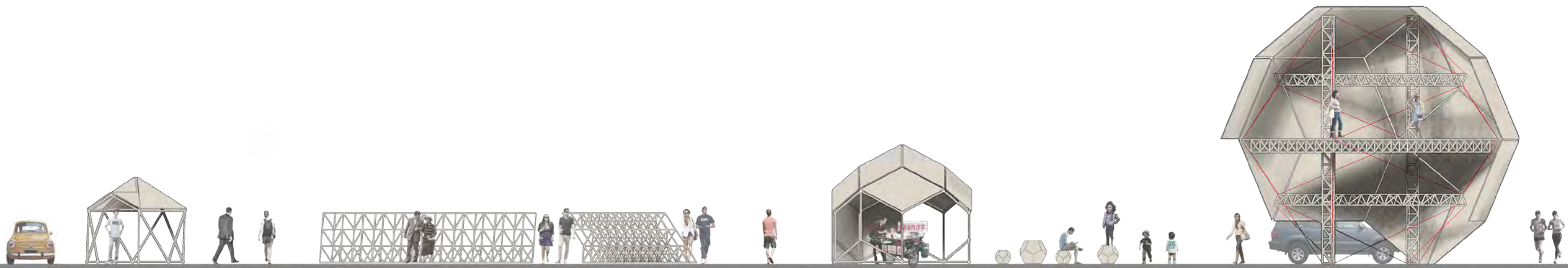
Three initial test sites were chosen to begin deploying these systems across the city and to reactivate its forgotten spaces. The first is located between Centre and Broadway, a void space that cuts directly through the block. The north side of this lot is used for private parking, serving the surrounding businesses while the south side is a public lot to be used by anybody. The site is surrounded by many restaurants, retail shops, but most importantly Harmonie Park. Located directly across the street, this void space could be reimagined as an extension of the park. The second is site near Capitol Park, unlike the Harmonie Park site this is a single void space dead ended by other buildings, also used for public parking.

Located on the boundaries of the park and flanked on both sides by vacant buildings, this site presents another opportunity to spread to the adjacent spaces. The third site is not a void space between buildings but a corner condition located near the Detroit YMCA. This is another parking lot serving the adjacent apartment buildings as well as the Detroit Puppet Theater. This space has the potential to act as a backyard for the buildings residents and a new front yard for the YMCA. All three of these sites are used for public or private parking but with the creative use of these flexible structures, these spaces could be transformed from private spaces with a single function to community spaces with an ever-changing program.

However each of these sites have owner who are not likely to give up the revenue they receive from parking in favor of a community space. To accomplish these transformation the owners and the city must work together. Participation in this program is a commitment to the city, to reinvigorate these forgotten spaces with an updated visual language. Since it is not possible to take control of these sites outright, this program would work with and assist the owners in turning their sites back over to the public. Instead of removing all parking spaces at once, they are able to use these flexible structures to offset their missing revenue and to create new interest and value for their lots. The material and a design guide would be

provided to the owner by the city and designer, respectively. The design guide would act as a set of instructions in order to help the site owners in constructing these different systems. With these resources the owner is able to control how much to build, growing their site quickly or slowly over time. These installations would help create new interest for these sites, raising the spacial capitol of these parking lots and attracting the attention of developers. In the mean time, these structures will create a sense of cohesiveness not only on the block but throughout the whole city. Since these standardized members can be easily reused and recycled, the structures can be quickly and easily manipulated by a small crew.

below / Possible structure configurations
Combination of geodesic, tensegrity,
and space frame structures

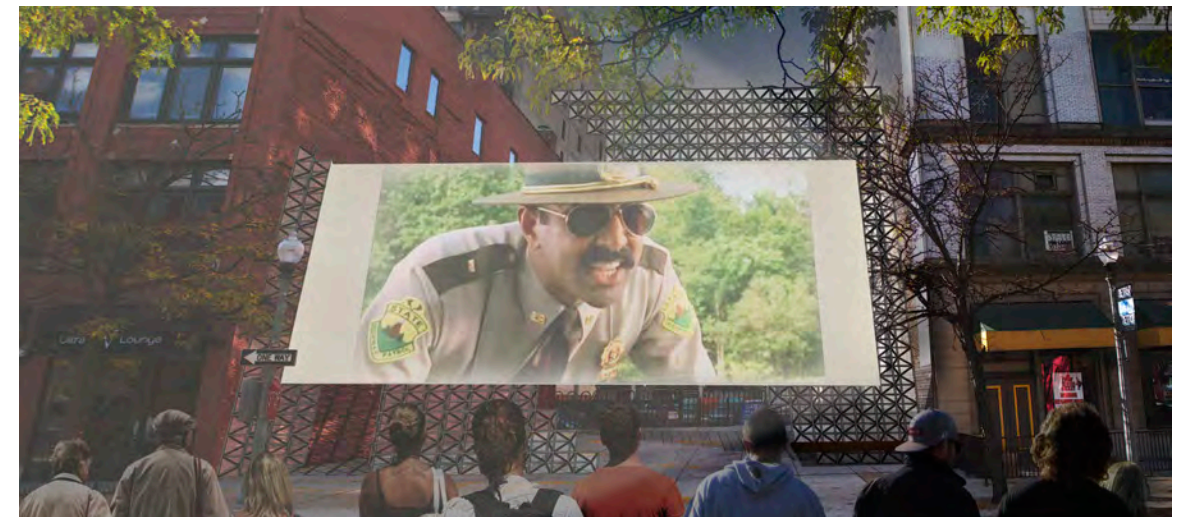


For example the fence surrounding the Harmonie Park site could be replaced with a space frame screen. This screen will not only create new visual interest in this site but will also allow people to move through this space to the other side of the block. In the evening when this lot is empty movies can be displayed on the screen for the public to view. A Geodesic play scape could be constructed across from the YMCA to be used by the kids in their daycare programs. A small cafe could be carved out of a space frame on the same site to provide coffee and snacks to those walking to work in the morning. The owner of the Capitol Park site can start with a space frames to be used as a basketball court or an exhibition space for the nearby music school and art residency program. This space could eventually grow to a much larger geodesic event space. Using the materials and design guide provided to the owners, they will be able to reinvent and reinvigorate their lots with little personal investment. These different structures will help inject an unspecialized cohesiveness that has been lost in the city of Detroit.



top / Space frame screen
Harmonie Park

bottom / Geodesic tensegrity hybrid
YMCA adjacent



Top / Lit space frame
Capitol Park

bottom / Movie screen pulled across space frame
Harmonie Park

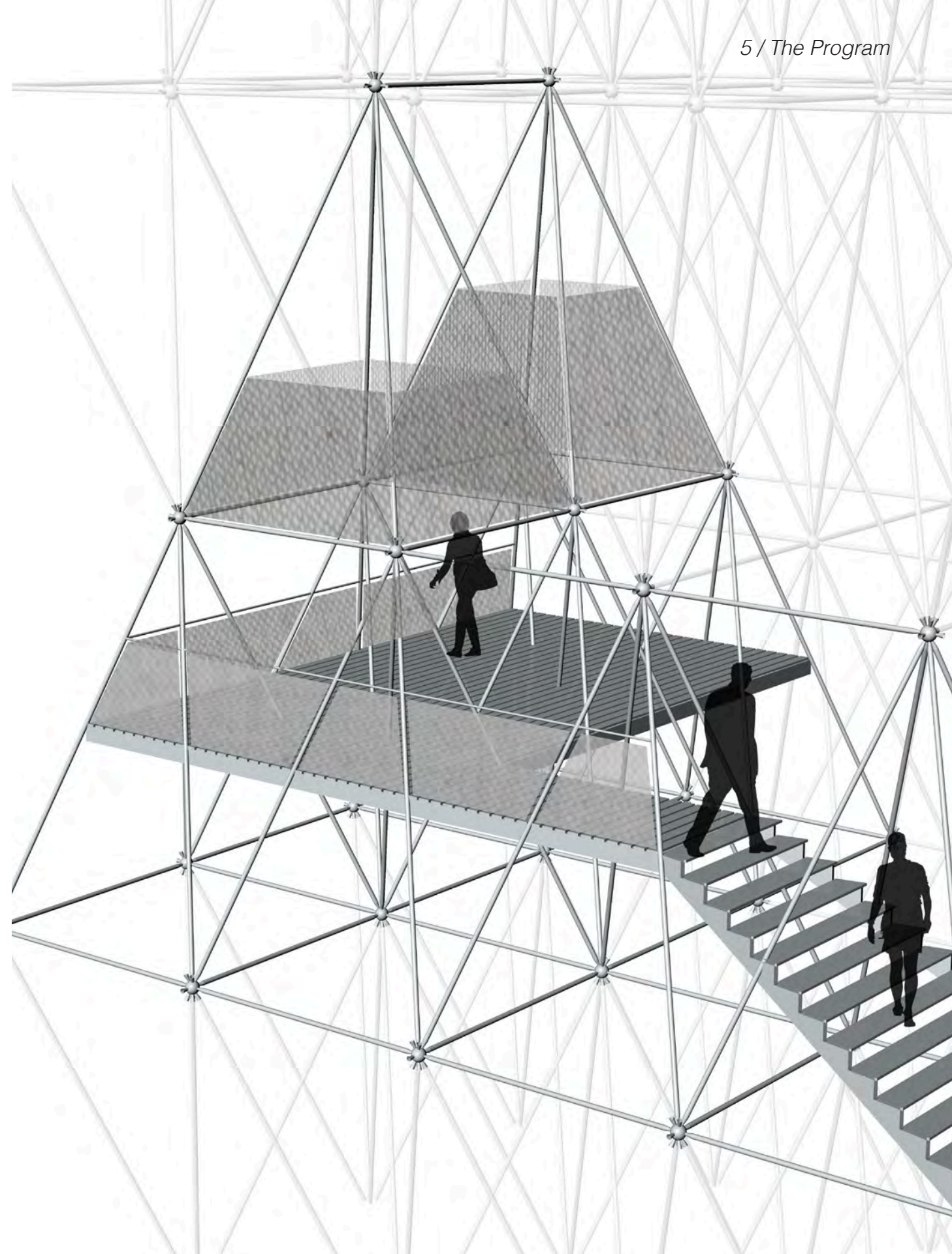
These installations were successful in updating the visual language of these lots however they remained islands on the site while creating little in the way of new spaces. In order for these pavilions to create space for interaction you must be able to inhabit and explore them. The following iteration of this program consisted of a large space frame structure nested into the void space in Capitol Park. Much of this study focused on how to move up and through these structures. Due to the nature of a space

frame each horizontal layer is offset from the next making vertical circulation very difficult. This scheme consisted of hanging stairways and platforms within the space frame. As you moved up and through the structure you are able to stop at different platforms intended as a flexible event and meeting space to watch a performance or grab a bite from a food vendor. This static structure allowed for constantly changing uses and users but the inherent flexibility of the space frame was lost.



above / Studying how to inhabit a space frame
Capitol Park

opposite / Detail showing hung circulation
Capitol Park

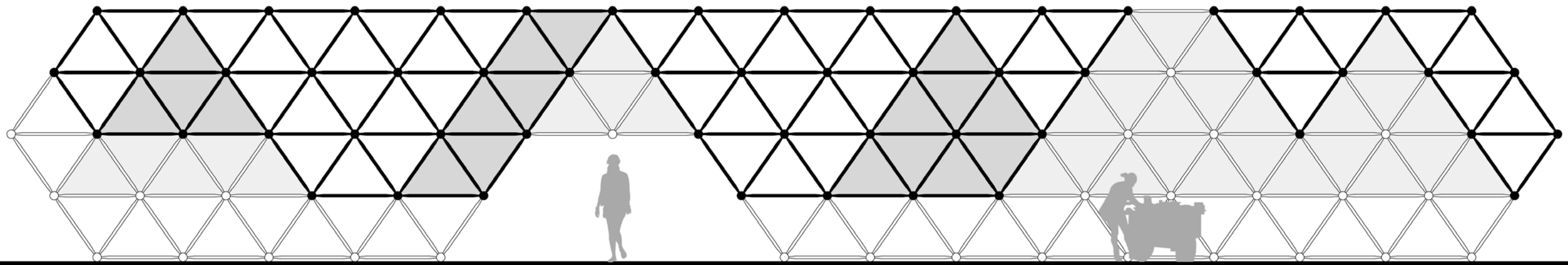
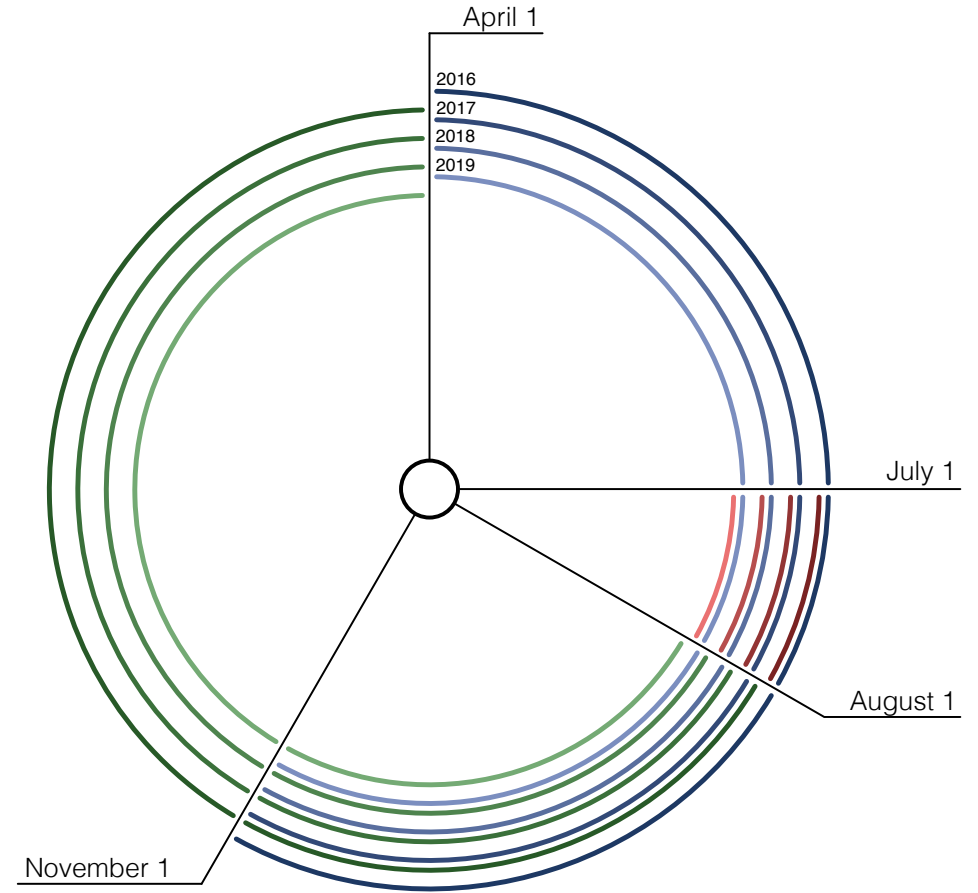


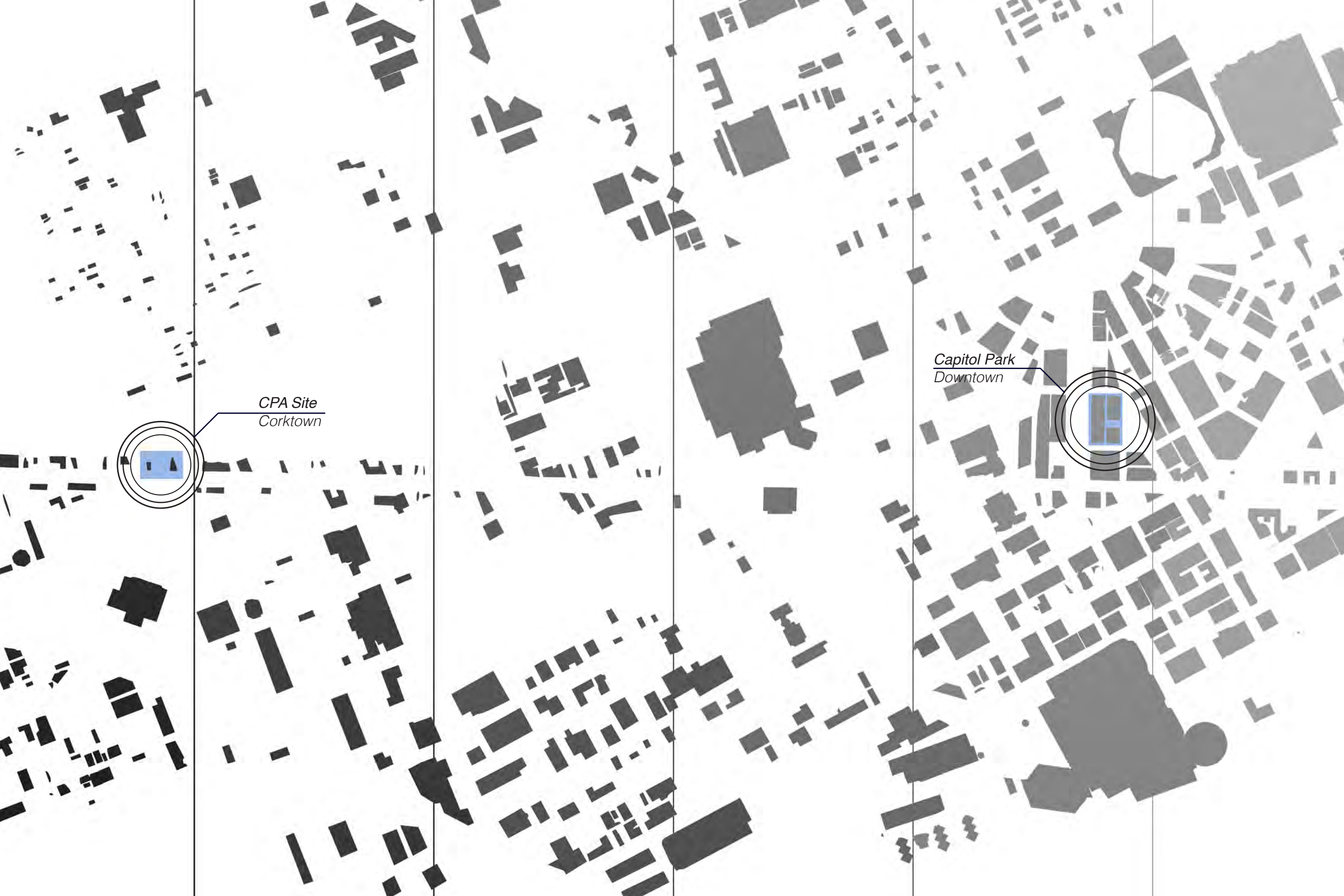
Influenced by these previous projects the final iteration of this system begins to take advantage of the space frame as a flexible, permeable structure that is able to change shape and transport itself in order to adapt to its current function. To utilize these characteristics, this structure operates on a cycle that would work with individuals or groups of individuals around the city to influence the location and use of these pavilions.

This program operates on a yearly cycle, asking Detroit's citizens to submit proposals to reinvigorate some of the cities leftover spaces with a new use. The structure would move to a different

neighborhood of the city each year, functioning as an event venue. The curated events would last from early April, when the new structure is up and functional, until to early November when the space frame is taken down for the winter months. During this time the inhabitants of the city would again be asked to submit proposals for the following years structure. The winning proposal would be announced in early August to allow time to design a new structure as well as finalize the schedule of events for the following year. This program uses architecture as infrastructure, a vessel to facilitate new events around the city as well as bring lasting and positive attention to Detroit's many leftover spaces.

below / Scale of proposed space frame structure
 opposite / Yearly cycle
 Blue - Structure is up and open for the years event schedule
 Red - Proposals are due July 1 and winner is announced August 1
 Green - Design and planning stages for the following years Structure





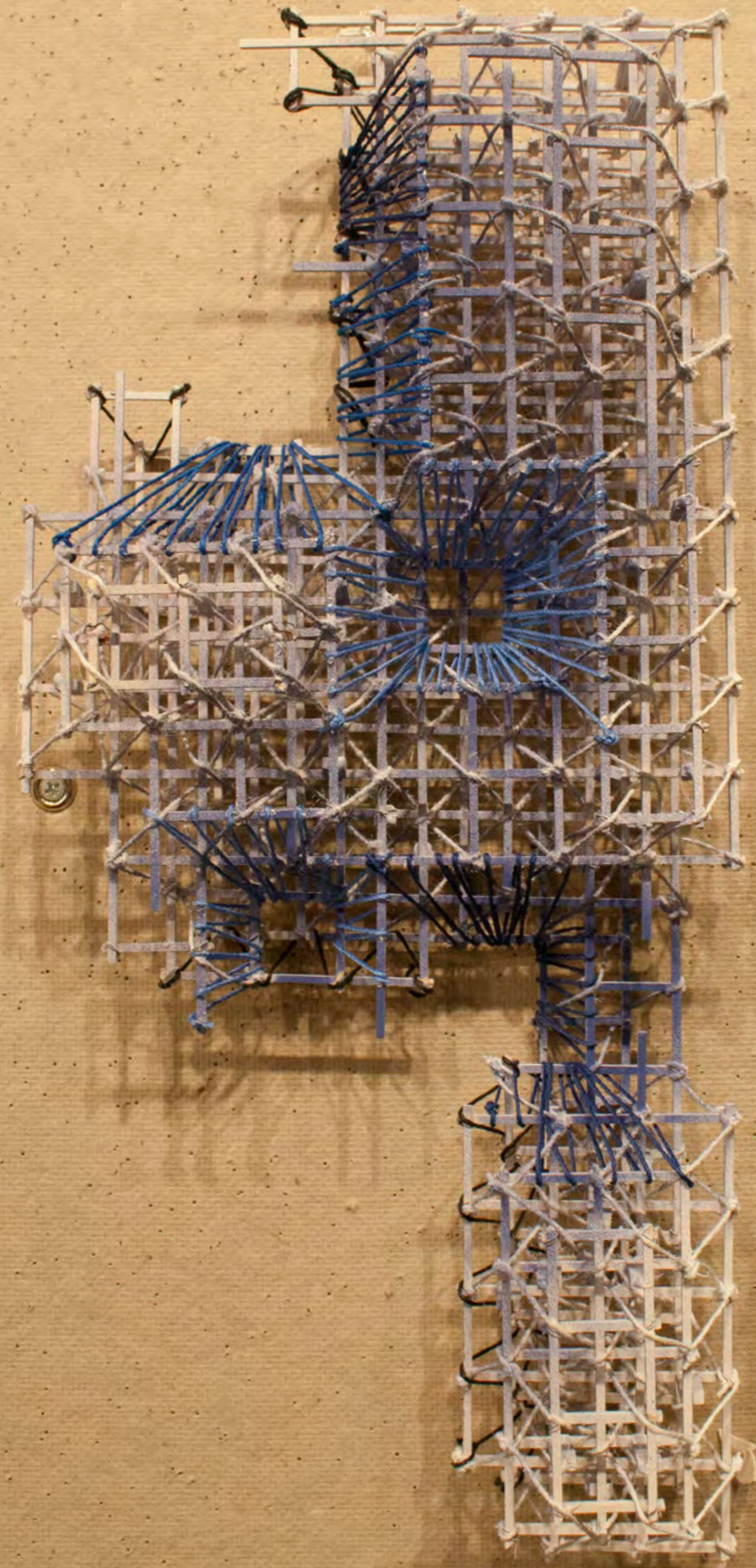
*CPA Site
Corktown*

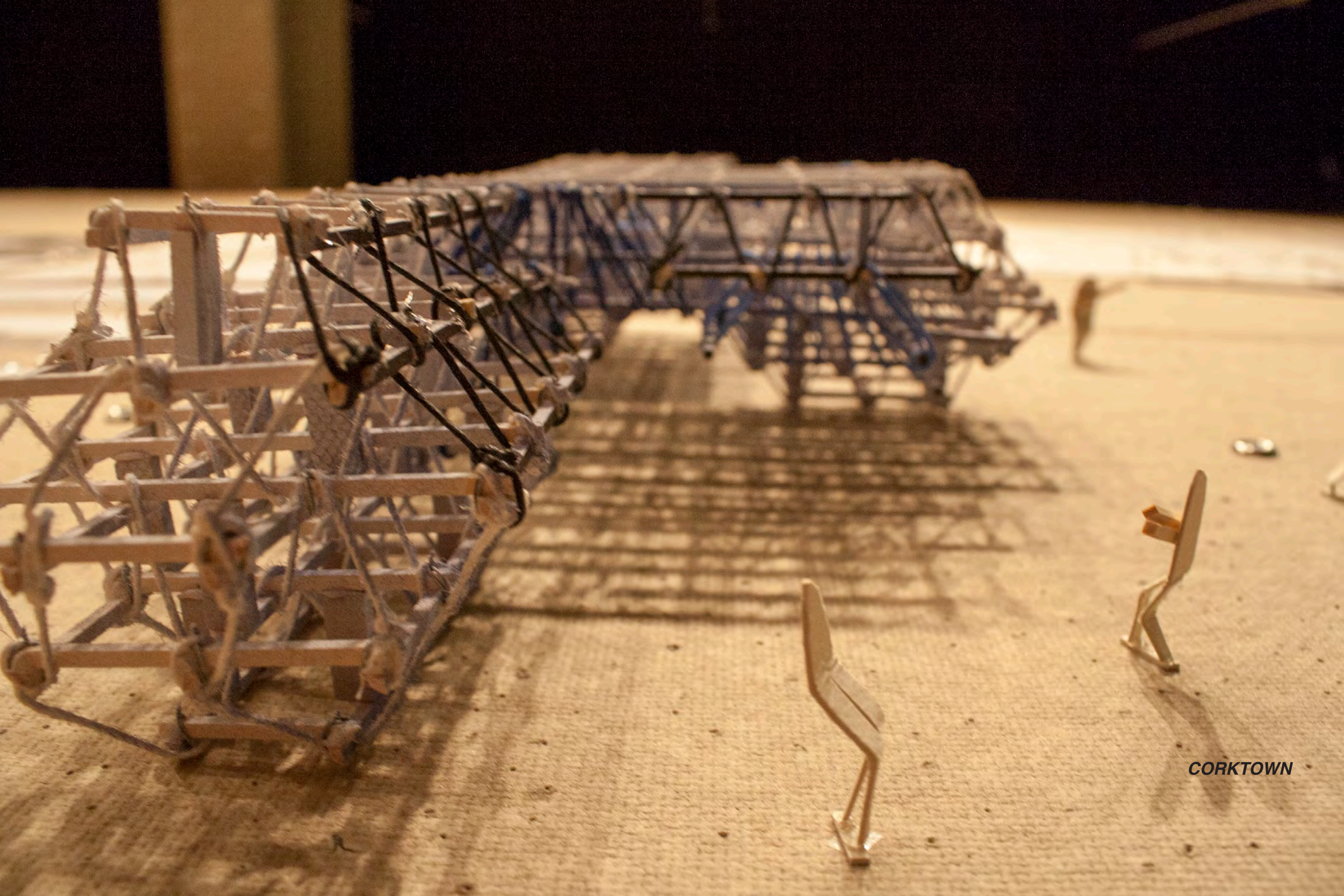
*Capitol Park
Downtown*

August 1, 2015

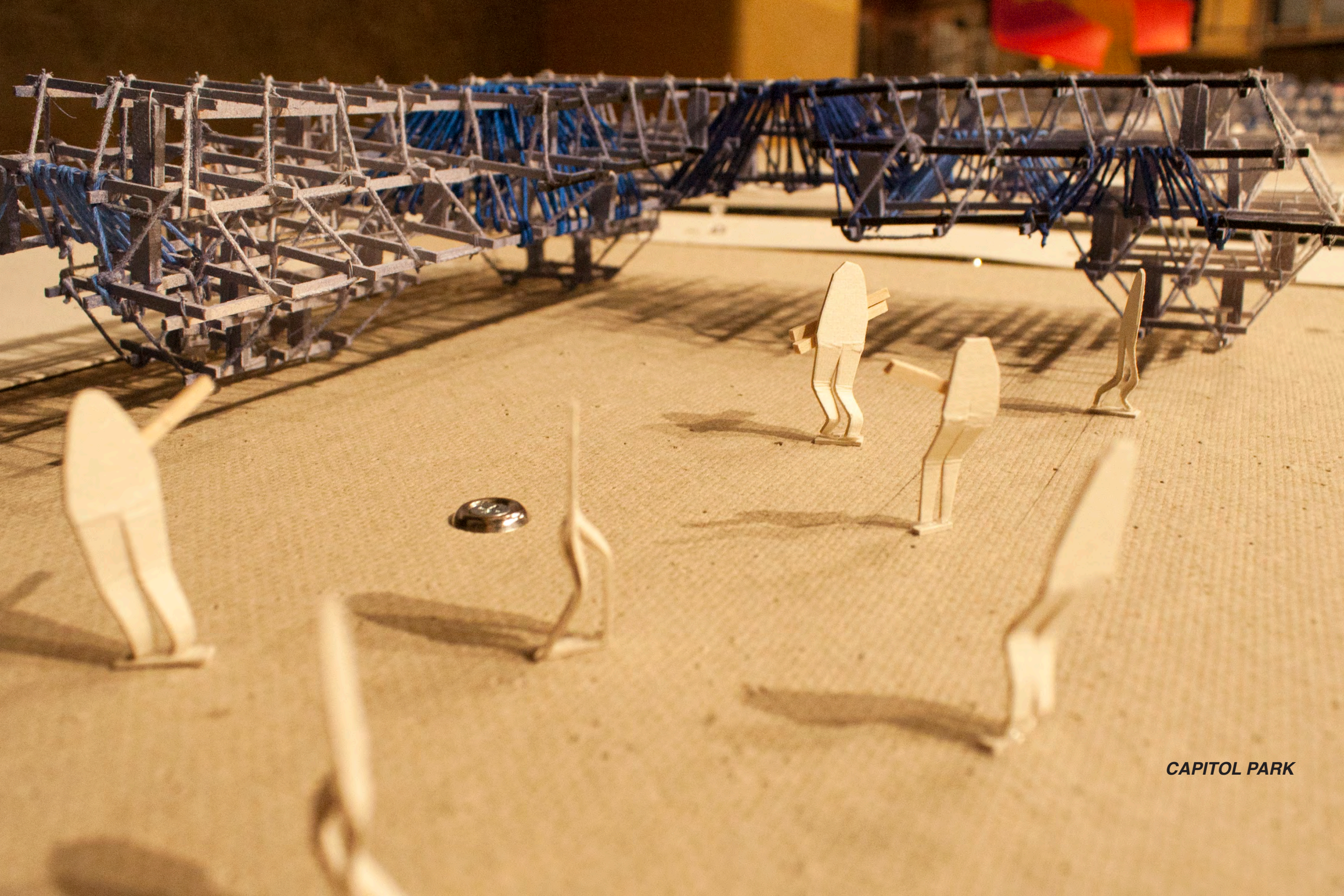
A neighborhood group from Corktown has submitted a proposal for the 2016 Structure along with other groups and individuals from around the city. The Corktown proposal consists of a public lecture series to be brought to a lot adjacent to the unused CPA building and has been chosen to be built. From this time until April 1st of 2016 this group is able to work with an organization (city, non-profit, corporation, or another group interested in funding this program) and a designer in order to tailor the space frame structure to fit its newest use and location. This time is also used to contact speakers and finalize the proposed lecture schedule. On April 1st the structure that has been designed

and built over the past months is open for the event season. During this time the citizens of Detroit are once again asked to submit proposals for the 2017 Structure. This year a group of restaurateurs from Downtown Detroit have proposed a venue for a series of pop-up restaurants between to unused buildings in Capitol Park. This proposal is selected and the cycle starts again. The Corktown site continues to function during this period until November 1st when the structure is taken down and the structure members are handed off to the group planning next years pavillion. The Downtown restaurateurs will design and construct a new space frame using these recycled members.

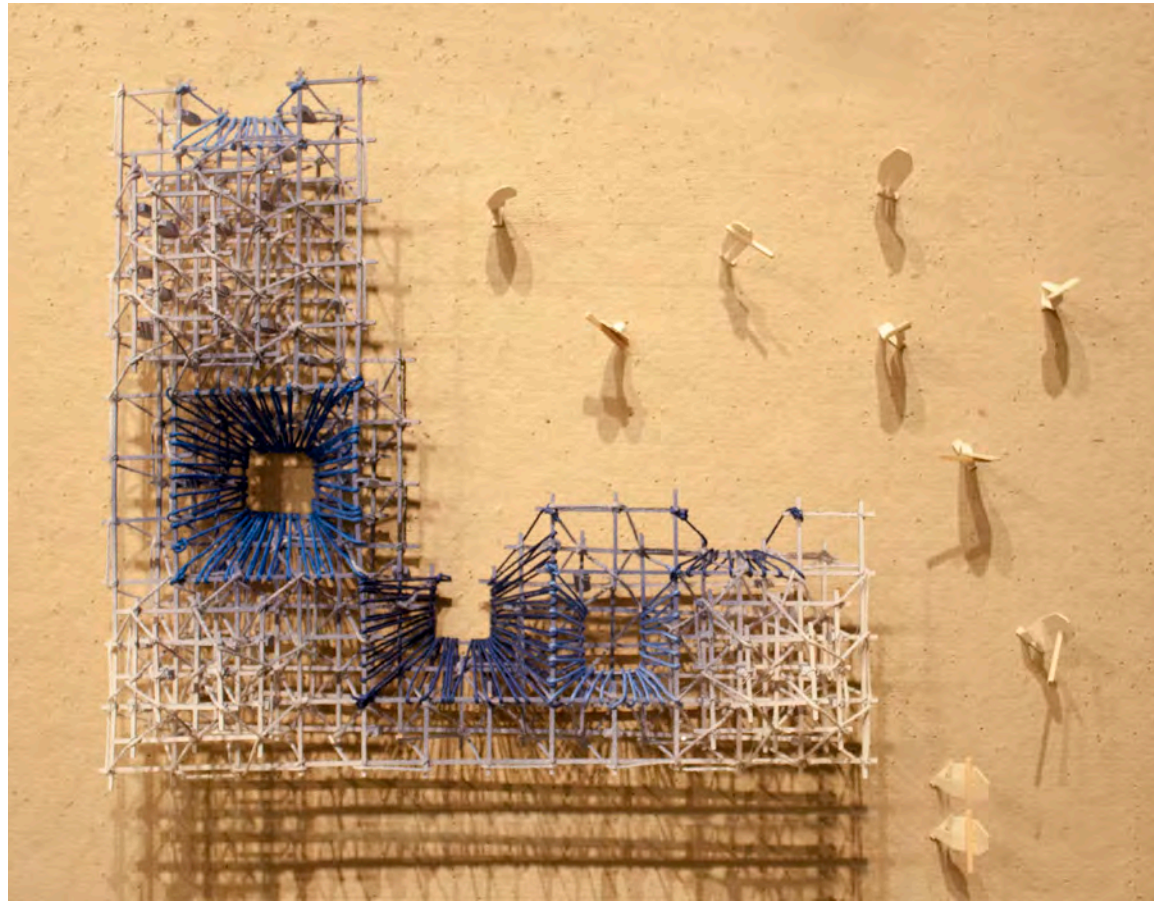




CORKTOWN



CAPITOL PARK



In this way a single structure is able to move through the city while transforming its shape in order to adapt to its surroundings, wearing a flexible and fluid mask that is always in a state of change. As the structure changes location it leaves nothing behind but a memory of its location and function in hopes that these sites will continue to be utilized as public spaces for the inhabitants of the city to use. ■

Sources

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