

THE UNIVERSITY OF OKLAHOMA
GRADUATE COLLEGE

Pop Up Playscape

A PROFESSIONAL PROJECT

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

MASTER OF URBAN DESIGN

By
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Tulsa, Oklahoma
2020

Pop Up Playscape

A PROFESSIONAL PROJECT APPROVED FOR THE
URBAN DESIGN STUDIO
CHRISTOPHER C. GIBBS
COLLEGE OF ARCHITECTURE

BY

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TO DMH, FOR MAKING ME BETTER

AND TO THE CABAL, FOR ALL OF IT

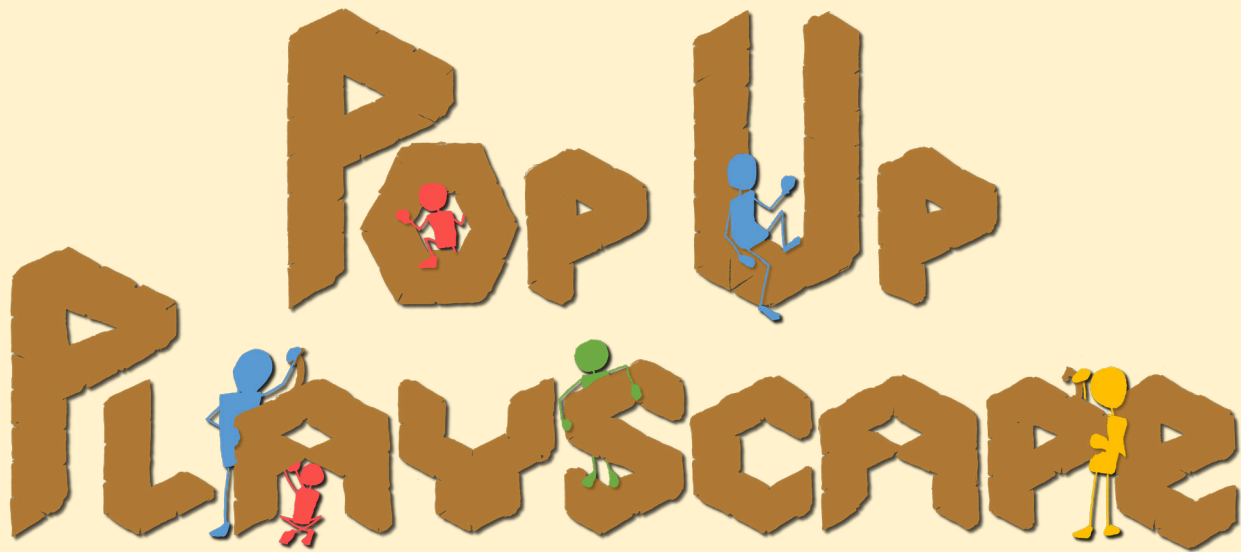


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INTRODUCTION

PROBLEM STATEMENT

Throughout Tulsa and cities like it, there are public spaces with no public in them. Sidewalks, squares, plazas and parks, going unused. Citizens have a right to these spaces, they are part of our community fabric, they hold us together, yet many of us have no sense of ownership over these spaces, no feeling of belonging outside of our private spheres. My project is one possible intervention that will encourage citizens to engage in a tactile action of building the public environment and taking ownership of that environment.

Richard Dattner, noted playground designer and architect, wrote in his book, *Design for Play*, “Play can occur only in a condition of freedom, because it is above all doing what you want to do, when and where you want to do it.”¹ If a sidewalk, parking lot, or plaza is public, it is ours to choose what to do with it. We could choose to make it into a commercial space, we could decide to demolish it and build a wider road. But to choose to play in it, that is the highest use a free society can put to our public environment. When that play takes the form of creation, however ephemeral that creation, it not only creates a feeling of ownership over the space, but actual ownership. Dattner says, of the child creating a sand castle on the edge of the sea, “He knows something that we have forgotten to remember: the sea, or time, will always take his castles away from him, but the acts of building, destroying, or walking away from them will always be his.”² When people use this playscape, they will be playing, but they will also be shaping their built environment in a way usually reserved for city planners, developers, and architects. Though it may be temporary, the power of creation, and the ownership of the public space, will remain.

PROJECT DEFINITION

The Pop Up Playscape is a placemaking design intervention using large scale, geometric components temporarily installed in public spaces.

Its purpose is to 1) encourage users to engage creatively with the public aspects of the built environment, 2) create sense of ownership in users for the public environment, and 3) create positive connections between different users.

GOALS

Increase intentional use of public space

An intentional use of a space is planned, the space is valued as a destination. The playscape will give previously transitional spaces a purpose and give users of the space a goal. I will measure this by an increase in time spent and in engagement between users.

Let intentions of users guide the future of the space

Intentional uses revealed during the playscape’s installation should be considered in any permanent design choices made for the space. This may not be measurable within the scope of this project, but the revealed uses will be documented and presented to those making long term decisions.

Make intervention repeatable

The playscape design should be replicable for other sites and be able to be customized for differing environments and partner goals.

RESEARCH AND INSPIRATION

LOOSE PARTS PLAY THEORY

Loose parts play spaces were first described in play theorist Simon Nicholson's essay, "How Not to Cheat Children: The Theory of Loose Parts." In this essay, Nicholson states, "In any environment, both the degree of inventiveness and creativity, and the possibilities of discovery, are directly proportional to the number and kind of variables in it."³ He references adventure playgrounds, a form of play space full of raw materials and tools. Created in the 1940s and still operating today, adventure playgrounds allow children to build and create to their fullest ability. They encourage innovation, cooperation, and communication among children, creating "society in miniature."

IMAGINATION PLAYGROUND

David Rockwell's Imagination Playground is a well-known example of the loose parts play theory in action. In an op-ed for the New York Times, Rockwell said, "We realized that many of the elements with the greatest value to children were inexpensive and portable . . . There are a lot of ways to build a playground, and a lot of communities in need of one. Let a thousand portable playgrounds bloom."⁴

RICHARD DATTNER

Richard Dattner believed in play. He wrote in his book, *Design For Play*, "Work can be forced but play, like love, is a supremely voluntary undertaking . . . It is impossible to 'do' play—it is an end in itself and, like virtue, it is its own reward."⁵ Dattner was the first to use the term "playscape" to describe the innovative spaces he designed. He designed the playscapes at Central Park, among others, as well as creating many modular and loose parts play systems.

ISAMU NOGUCHI

Japanese sculptor Isamu Noguchi attempted many times to get his playground designs built in various American communities during the mid-20th century. Though he had limited success, Noguchi's designs were vastly influential. Said Noguchi, "I think of playgrounds as a primer of shapes and functions; simple, mysterious, and evocative."⁶ Many of his designs have been realized after his death, and they remain as exciting, attractive and unique as they were in 1950.

CARDBOARD CONSTRUCTION

Cardboard construction is a well-established tradition in architecture and design. From Frank Gehry's "Wiggle Chair" to any model built from matboard, it is a material that our field has put to good use. More specific influences on this project will be cited in later sections.



AN ADVENTURE PLAYGROUND IN USE



IMAGINATION PLAYGROUND



DATTNER'S PLAY PANELS



NOGUCHI'S WORK IN MOERENUMA PARK IN SAPPORO, JAPAN



FRANK GEHRY'S WIGGLE CHAIR
AND WIGGLE STOOL

PARTNERS

AHHA TULSA

ahha Tulsa is an art community and gallery space in Tulsa Arts District. It hosts visual art exhibits, houses studios and classrooms, serves as an incubator for arts-based businesses and organizations, and much more. Their physical space is located at the corner of Archer Street and Boston Avenue in the Tulsa Arts District. A four-story structure designed by local architecture firm Selser Schaefer, it is a striking building with concrete construction and a Corten steel exterior. Both visually and economically, it is the anchor of the neighborhood.



AHHA TULSA BUILDING AT ARCHER ST. AND
BOSTON AVE.

When initially approached, ahha leadership shared that one of their strategic goals is to make better use of their outdoor spaces. As well as an enclosed grassy garden, they have broad, well maintained sidewalks outside their building that they hoped to activate. They were also preparing to open the next iteration of one of their signature attractions, The Experience: Imagine, an immersive art exhibit created by a team of creators that covers an entire floor the building. The first Experience would be being dismantled and rebuilt from January to May of 2020. We quickly determined that an outdoor oriented, smaller scale immersive art activity like the playscape would perfectly align with their goals and schedule. In addition, the insight into the user experience of the neighborhood and immediate environs would be valuable.

To support the playscape, ahha offered access to their traffic and user data, and to allow me to share that information with nearby institutions. They also provided access to a variety of tools such as a panel cutter and a spray booth, and to other makers with experience in various relevant fields. But the most valuable contribution was their offer of a workspace. They provided me with a private studio space with round the clock access and plenty of storage for materials. They also allowed me the use of their shared outdoor studio spaces, woodshop, and event spaces, all at no cost.

TULSA SCHOOL OF ARTS AND SCIENCES

Tulsa School of Arts and Sciences (TSAS) is a charter middle and high school in Owen Park, Tulsa's first public park, located northwest of downtown. The school supports student achievement via real world education experiences such as apprenticeships and capstone projects, and students are often involved in service-learning projects. The park itself is surrounded by historic homes, and contains a duck



TSAS BUILDING IN OWEN PARK

pond, picnic structures, walking and running trails, and the Discovery Lab children's museum.

The playscape aligns with TSAS' goals of service-learning by involving students in the planning and construction of the playscape, as well as providing an activity for students after it's installation. TSAS supported the playscape effort by offering access to their partners in the neighborhood and park, including both traffic and user data as well as volunteers and assistance.

In the end, TSAS was not able to participate in the project at the level they originally hoped, due to the demands of adding a sixth grade to their student body. However, the partnership remains in good standing, and the playscape may still be installed there, in the fall of 2020.

TYPROS FOUNDATION

The TYPROS Foundation is the charitable giving arm of TYPROS, Tulsa's young professionals' group. The foundation funds projects in community development, placemaking and innovation for young Tulsans. Every summer they select projects for their "Make Tulsa Awesome" grant. Past grantees have included the Art Alley, The Outsiders House Museum, and the designers of the Tulsa Flag.

The Pop Up Playscape was a recipient of a grant from the TYPROS Foundation, with \$4,100 donated to make the project a reality. In addition to the funds, TYPROS supported the project through promotions and name recognition, as well as providing volunteers and expert guidance.

TYPROS
FOUNDATION



SCHEDULE

PLANNING				EXECUTION			
SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL
RESEARCH	DESIGN		PROTOTYPES	TESTING	MANUFACTURE		DEPLOYMENT
Materials research	Sketching		Model completed	Focus groups	Fabricate components		Set up at location
Site research	3D modeling and printing				Field test		Host launch event

INITIAL SCHEDULE

PLANNING				EXECUTION			
SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL
RESEARCH	DESIGN		PROTOTYPES	TESTING	MANUFACTURE	DEPLOYMENT	DOCUMENT
Safety research	Sketching		Model completed	Focus groups	Fabricate components	Set up at location	Write up findings
Site research	3D modeling and printing			Field test		Host launch event	

REVISED SCHEDULE



The first schedule is the one I envisioned when I began the project, and I was able to keep to it, with one deviation. Deployment was moved up at the request of ahha leadership, so that the playscape could be rolled out during spring break. By the time of the request, TSAS was no longer participating, which made it easier to accomodate the schedule change. In the end, the schedule looked more like second one.

The playscape was scheduled to be installed on Wednesday, March 18, and remain through Sunday, April 5. However, on March 15, Mayor Bynum banned all gatherings of 50 people or more to attempt to control the spread of COVID-19, and ahha was forced to close, postponing the installation of the playscape indefinitely.

SITE ANALYSIS

ARCHER AND BOSTON

RESEARCH AND OBSERVATION

Ahha Tulsa is located at Archer Street and Boston Avenue in the Tulsa Arts District. The building is attractive and distinct, with its Corten steel exterior, concrete construction, and broad windows looking out from the gallery onto Archer Street. The steel and concrete create a drawing surface, and ahha provides chalk to visitors, giving them the opportunity to interact directly with the structure. It is uniquely situated on its site, creating wider than average sidewalks that have a sense of spatial containment. The sidewalks are well-maintained, with trees and parking along both, and a bike lane along Archer Street. There is some sidewalk level lighting in front of the south entrance to the building.

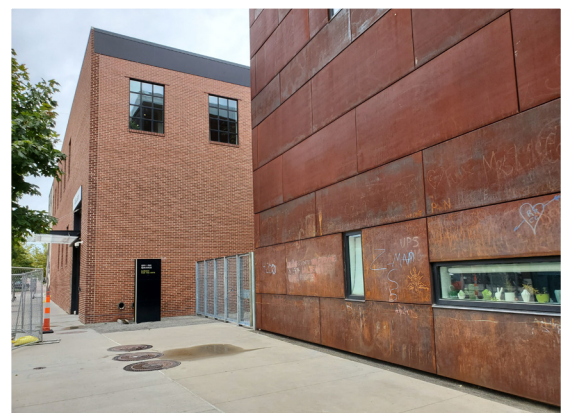
The building is situated between two of downtown's most well-known pedestrian destinations, Guthrie Green is one block north and another attraction, the Center of the



AHHA VIEWED FROM SOUTH



ARCHER SIDEWALK ALONG AHHA GALLERY WINDOWS

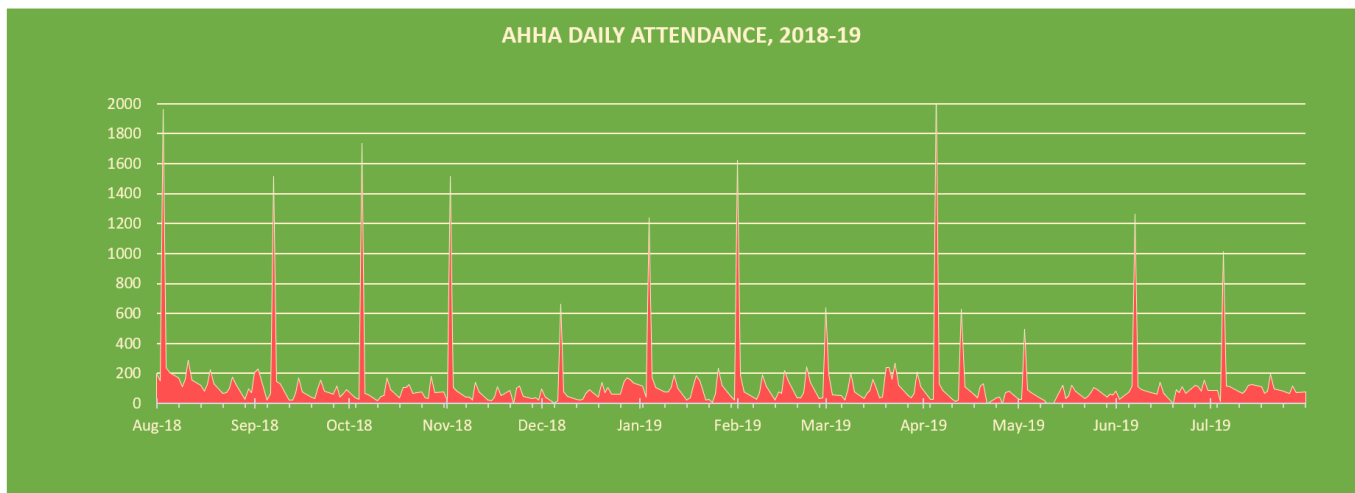
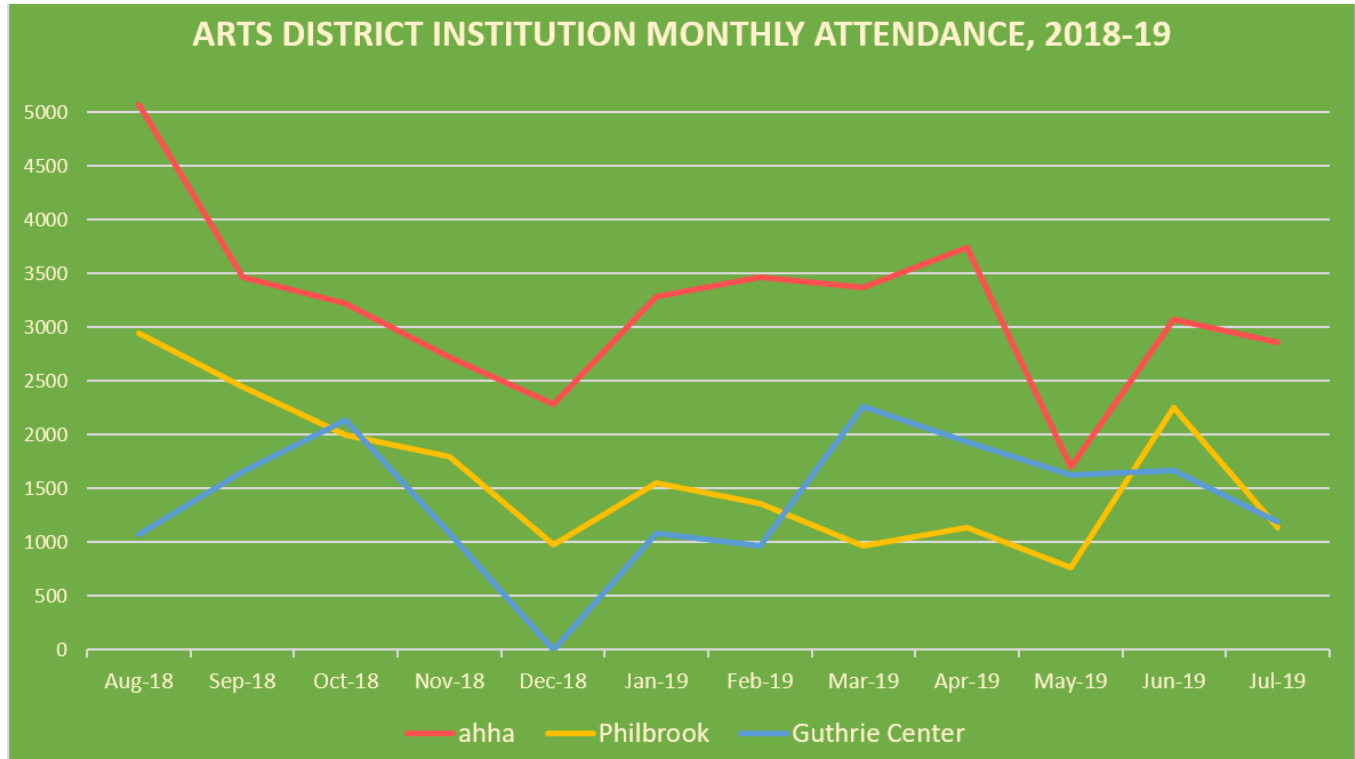


AHHA SIDEWALK ALONG BOSTON



MAP OF AREA SURROUNDING AHHA

Universe is directly across the street. The entire neighborhood is highly walkable, and one of the most popular entertainment districts in the area.



METHODOLOGY

The goal of my research was to obtain baseline data describing the use of the spaces before my intervention so as to accurately measure my outcomes. I also hoped to gain inspiration and insight for my designs from the ways the current users of the space interact with it.

At Archer Street and Boston Avenue, I interviewed pedestrians at various times of day and on different days of the week for a two-week period, from September 9 - 22, 2019. All information was managed through the Qualtrics Research Platform.

A note on the Archer Street and Boston Avenue



CONSTRUCTION ALONG BOSTON

location: during this time, street construction was underway along Boston Avenue north of Archer Street. Though it did not impede pedestrian traffic, it certainly had some effect, which will be discussed.

RESULTS

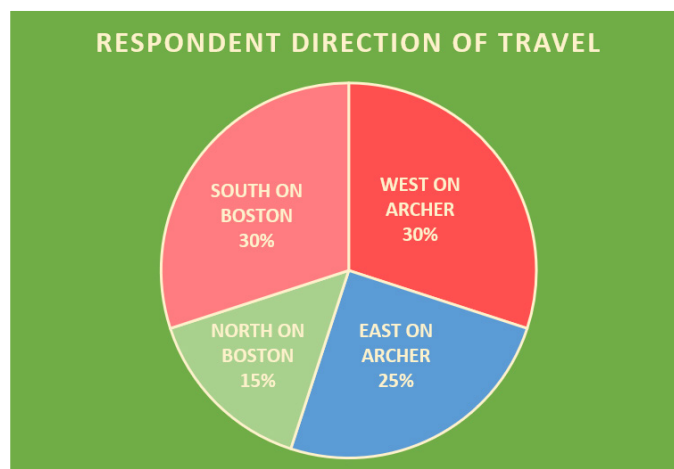
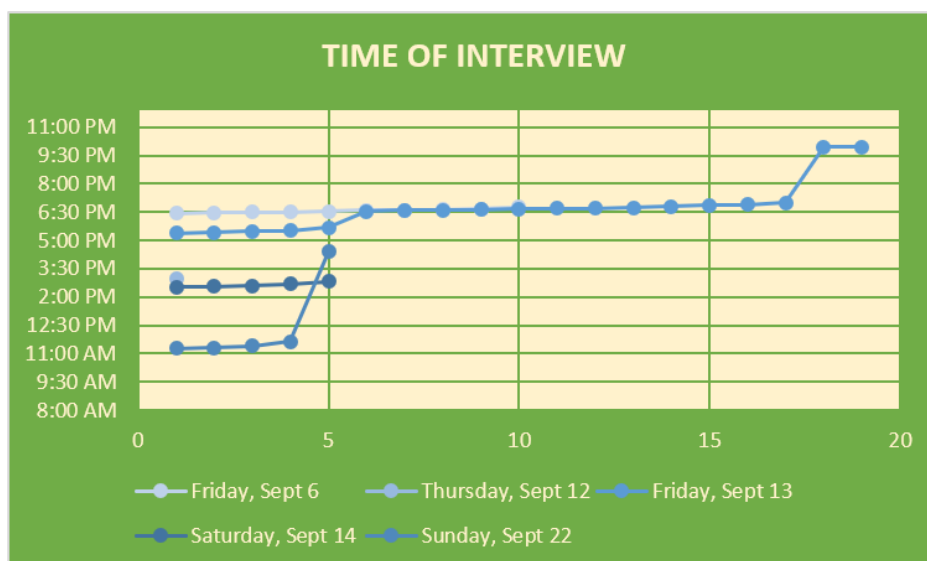
See the graph labeled Time of Interview for the dates and times of my 49 pedestrian interviews. I attempted to stratify the days and times of my interviews, but it is worth noting that not all the times that I attempted interviews was I able to obtain them.

For example, though I spent several weekday lunch hours on the sidewalk, I was only able to interview pedestrians on a Sunday. This was due either to unwilling subjects, or a simple lack thereof. I

approached every pedestrian who walked across the sidewalk in front of the building unless I was already engaged in interviewing another subject. I approached with variations on the phrase, "May I ask you a few questions about your pedestrian experience in the Arts District?" I was frequently rebuffed, being told more than once that the subject was not, in fact, a pedestrian, despite the indisputable fact of their current situation as someone walking down a sidewalk. In the end, I had my greatest luck interviewing pedestrians on Friday evenings. I believe this to be due to the success of the First Friday concept and the accompanying recreational, festive nature of the Arts District on Friday evenings.

Once a subject agreed to participate, I recorded their direction of travel. I will revisit this question momentarily but note in the graph titled "Respondent Direction of Travel" that the smallest section was travelling north on Boston Avenue. This direction put pedestrians walking directly into the construction. This I believe is the primary impact that the construction had on this survey, and if it had not been underway, there would have been a higher volume of traffic coming from the south, resulting in a more even distribution of traffic from all directions.

The first question I asked my subjects once they agreed to participate was "Did you plan to visit ahha before arriving in the Arts District?" See graph labeled same. The options were "Yes, we planned to visit ahha before arriving in the Arts District," "No, we decided to visit ahha after arriving in the Arts District," and "No, we are not visiting ahha." I asked this to determine the extent of ahha as an attraction, both for vehicle trips from origins to the district, and for pedestrian trips within the district. Differentiating between intent formed from without the district and intent formed from within gave me that information, as well as gave insight into ahha's ability to capture the interest of passersby. Tracking



the amount of pedestrian traffic unrelated to ahha was valuable information as well.

From these results, I concluded that ahha is indeed a major attraction, with the majority of those responding planning to visit (58%), either in a premediated or spontaneous way. I confess I was pleasantly surprised at the number of those spontaneously choosing to visit (20%), and though I did not ask why, I observed many pause at the building, arrested by the unique structure and the way it evocatively displays the contents of the building. It was also enlightening to see that a healthy minority of pedestrians were not attending ahha, as there is a perception that most pedestrians in a certain location must be very close to their goal, due to an assumed desire to park as close as possible. The fact that 42% of those I surveyed were not bound for the destination in which we stood spoke to the walkability of the neighborhood, and the willingness of visitors to do the walking.

The next question I asked respondents was, “Where did you park?” In fact, the question was, “Where did you begin your evening in the Arts District?” attempting to encompass the possibility of mass transit, ride sharing, or bicycling, but only two respondents utilized any method of transportation other than a personal vehicle, and both were dropped off by personal relations in parking lots. And so, to simplify, I inquired as to where they had parked their personal vehicle.

I recorded these answers via a heat map. The red shaded areas are the public parking lots available in the district, and the green shaded area is ahha. The major hotspot you see directly south of ahha is representative of the number of people who gestured in a general, southern direction. Though there is a parking lot there, it belongs to the BOK Tower and is only sometimes and partially open to the public, and could not have accommodated the number of people who said vaguely “that way” and could not give more detail. I assume that many parked in the large parking structure on the other side of the train tracks, given that it is the nearest, and cheapest, parking option in the area. The important data is that the parked to the south, and we will assume a more diffuse reality than that represented here.

The other major hotspot represented is the public parking lot at Archer Street and Boulder, followed by a cluster of street parking on Archer Street between MLK Jr Boulevard and Detroit Avenue. With this information in mind, we can return to the graph representing respondent direction of travel and see that the majority of traffic through the intersection was flowing along Archer Street, 30% moving west, i.e. towards the Boulder Avenue lot and 25% moving east, i.e. towards the street parking. These facts taken together lead me to the conclusion that most entrants into the district come from the south, with a slight majority coming from the southwest. Also, that Archer Street is not only the

DID YOU PLAN TO VISIT AHHA BEFORE ARRIVING IN THE ARTS DISTRICT?

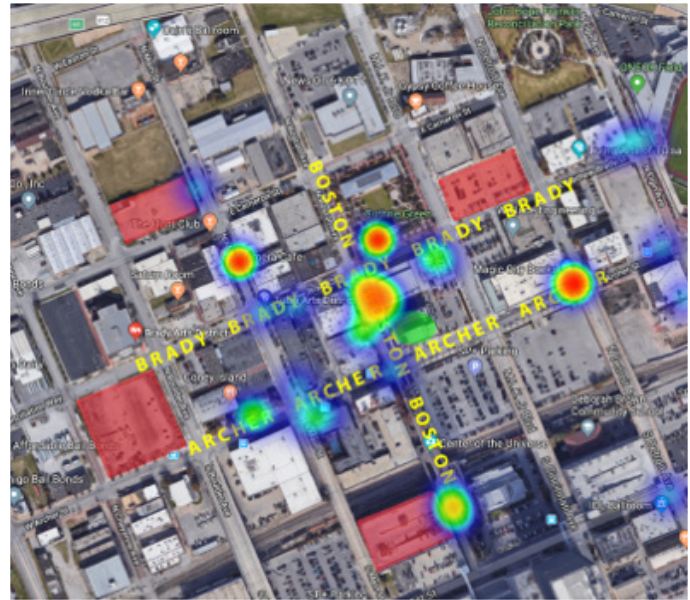


“WHERE DID YOU PARK?” HEAT MAP

perceived boundary of the neighborhood, but the measurable beginning point of most visitors' Arts District experience.

Returning to the "Where did you park?" heat map, we can note that there is an even scattering of street parking utilization, including the outermost reaches of my survey area. This again points to the willingness of pedestrians to park far away from their destination, and the walkability of the neighborhood.

The next question I asked respondents was "Where did you walk before this?" I clarified, if needed, that I did not want to know previous vehicle trips, but other locations they had visited or paused at during the pedestrian leg of their current transportation trip. Respondents could name up to three locations. For many respondents, especially during weekdays, there was only one previous stop, and it was often the FlyLoft building to the north of ahha. The FlyLoft building houses offices for several local non-profits as well as classrooms for dance and other performance arts lessons. A great deal of weekday pedestrian traffic along Boston Avenue is between FlyLoft and a personal vehicle.



"WHERE DID YOU WALK BEFORE THIS?" HEAT MAP

Of respondents, 41% had not stopped anywhere yet, they were coming directly from where they had parked. It is worth noting here that even if one assumed that every single person coming directly from their car was heading for ahha, that would still leave 17% of ahha visitors who had spent time in the district on foot before coming to the building.

The remaining traffic is well-distributed among a variety of Arts District attractions, including Guthrie Green, restaurants along Main Street, retail along Archer Street, and the Center of the Universe. This broad distribution of traffic also lends me to believe that if the construction had not been underway, traffic would have approached the intersection equally from all four directions. It also supports the point I continue to make, that the Arts District is highly walkable, and that visitors there are not only unafraid to engage in pedestrian activity but consider it an enjoyable part of the experience of visiting the neighborhood.

The last question I asked was "Where will you walk after this?" The answers resulted in the most focused map thus far. An overwhelming number were traveling along Archer Street towards the retail along Archer Street between Detroit Avenue and MLK Jr Boulevard. The number of respondents who parked along Archer Street to the west with the ultimate destination of the retail shops along Archer Street to the east revealed the strength of Archer Street as a major pedestrian thoroughfare. In my early conversations with ahha staff and others regarding this intersection, many assumed that my observations would reveal scant traffic along Archer Street, that my challenge would be to pull pedestrian interest down from Reconciliation Boulevard (formerly known as Brady Street), a narrower, more visually interesting street. However, the sidewalks along Reconciliation Boulevard are narrow and uneven, whereas those along Archer Street are wide and well-maintained. While Reconciliation Boulevard holds greater visual interest, Archer Street is a more practical path for those seeking to get where they are going in an efficient manner. This is true not only for Arts District visitors, but for anyone seeking to get from one side of downtown to another via a bicycle or pedestrian mode of transit.

Returning to the "Where will you walk after this?" map, two other destinations strongly represented are the 808 Contemporary Gallery/Woody Guthrie Center (both located at the corner

of Reconciliation/Brady and Boston) and Living Arts Gallery, all major participants in First Friday festivities. Taken with the fact that 41% of respondents were beginning their evening at ahha, one can extrapolate a clockwise path through the Arts District for those hitting all the galleries, starting at 6 o'clock. This aligns with previous conclusions, pinpointing the southern edge of the Arts District as the entry point. This is further supported by the other popular post-survey destination, the Center of the Universe, a piece of public art located directly south of ahha, and in the direction of most respondents' parking spot. Finally, 23% of respondents had no mappable response, as they were either ending their evening or "wandering" with no destination in mind. These responses support both of the points I have made, that the travel patterns of the arts district begin from the south and move clockwise, with ahha/Archer Street and Boston Avenue as both entry and exit point to the district, and that the Arts District is highly walkable.

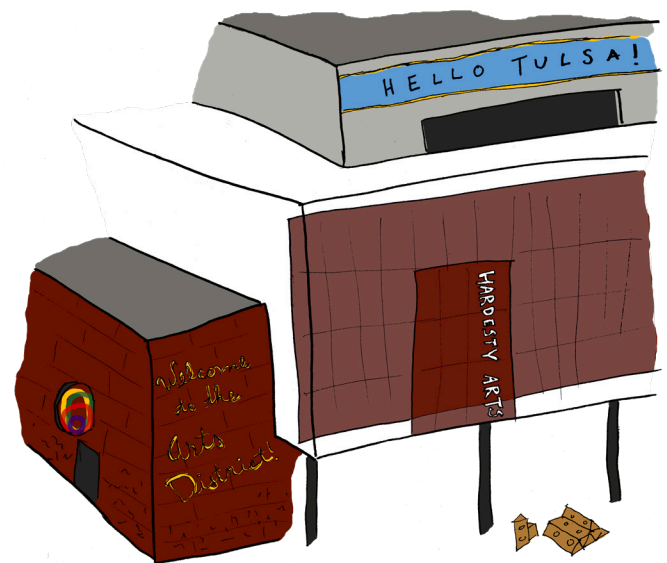


"WHERE WILL YOU WALK AFTER THIS?" HEAT MAP

CONCLUSIONS

The fact that Archer Street is a broad, well-trafficked thoroughfare and serves as a boundary to the Arts District led me to conclude the Pop Up Playscape could capture the greatest amount of interaction if placed there. Utilizing the connection between inside and outside provided by the large gallery windows would form strong connections between those passing and playing on the street and those inside the building, as well as create connections between what was being built and the existing structures. The spatial containment provided by the building overhang and the street trees would help to contain the components in the area, as well as give users permanent structures to interact with. The broad nature of the sidewalk would also ensure that the playscape would not become an impediment to pedestrian traffic.

Further, I concluded that the intersection of Archer Street and Boston Avenue should be established as the official "front door" of the Arts District. The striking, interactive exterior of ahha and the popular Center of the Universe serve to define the playful, arts-based nature of the community, the playscape's installation will amplify this relationship. A distinct piece of signage or permanent public art, along with comprehensive wayfinding materials, benches and increased lighting will transform this informal definition into a formal gateway. These measures would need to be undertaken by the Downtown Coordinating Council in partnership with ahha and other Arts District residents. Ahha could take steps towards this goal with signage on their building. The Corten steel provides an opportunity for a "Welcome to the Arts District" chalk mural, and the I-beam columns



CONCEPT SKETCH FOR ARTS DISTRICT "FRONT DOOR"

could also host dramatic signage. No better opportunity exists than the black canvas that is the fourth story of the building, simply begging for artwork or signage that announces the boundaries of the Arts District.

Finally, in the wake of the coronavirus crisis, this research may provide a valuable to urban designers to observe how many of these patterns remain, both during periods of social distancing and after the spread of the disease has been halted. How durable are these habits? How much are they formed by the built environment, which is unlikely to change drastically during these coming months, and how much by social and economic factors? This record may be a useful yardstick by which to measure the impact of the coronavirus on the Tulsa Arts District's pedestrian experience.

OWEN PARK

RESEARCH AND OBSERVATION

TSAS is located in the former Roosevelt Elementary School building in the southwestern section of Owen Park. This land is technically owned by Tulsa Public Schools but is treated as park land by visitors and neighbors. The area of focus is a shaded area to the northwest of the building, directly south of the pond. The shaded area is ringed by benches and tree stumps and kept cool by being in a hollow and the cover from mature trees. These factors also provide a sense of spatial definition, and the stumps and trees can provide play elements to incorporate into the playscape.

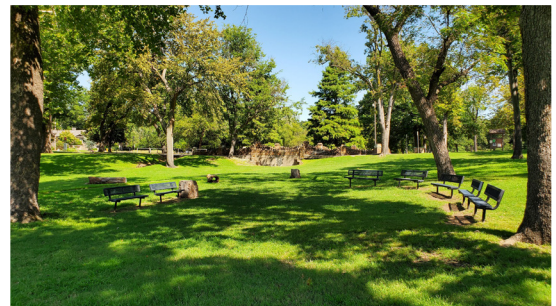
The nearest edge of the park is bounded by Quanah Avenue, which contains single-family residences that face the park. The pond to the north is heavily populated with waterfowl, to the point that the waters are polluted. The ducks and geese are considered a nuisance by residents and the Parks Department, and efforts are constantly underway to control their population. The Children's Museum and Discovery Lab and a splash pad are on the other side of the park.

The neighborhood surrounding the park, also known as Owen Park, is full of historic homes that are now well-maintained. It is quite near downtown, which accounts for some of its desirability. This results in Owen Park being at a nexus for a variety of populations, and the park itself being a site that contains a broad variety of pedestrian types, including both those who use its resources for recreation, and those who use them for shelter during periods of homelessness.

METHODOLOGY

As previously stated about ahha, the goal of my research was to obtain baseline data describing the use of the spaces before my intervention so as to accurately measure my outcomes. I also hoped to gain inspiration and insight for my designs from the ways the current users of the space interact with it.

I observed Owen Park for a two-week period from September 9 – 22, 2019. In addition to my observations, I recruited and trained volunteer observers from the TSAS student body. Observers were assigned a range of random times between 6am and 10pm during which to observe the area for 15 minutes and record what we saw. The area observed in Owen Park was divided into two areas; the



SHADED AREA NORTHWEST OF TSAS
BUILDING

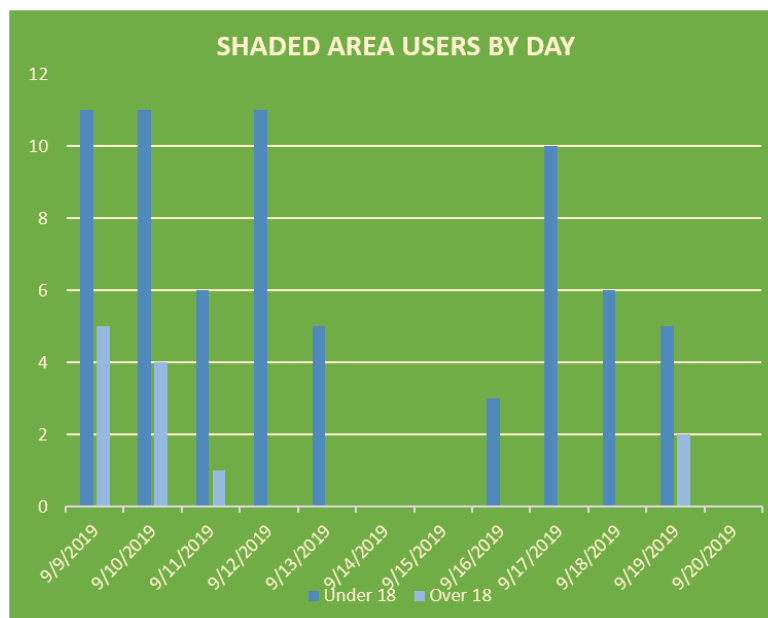
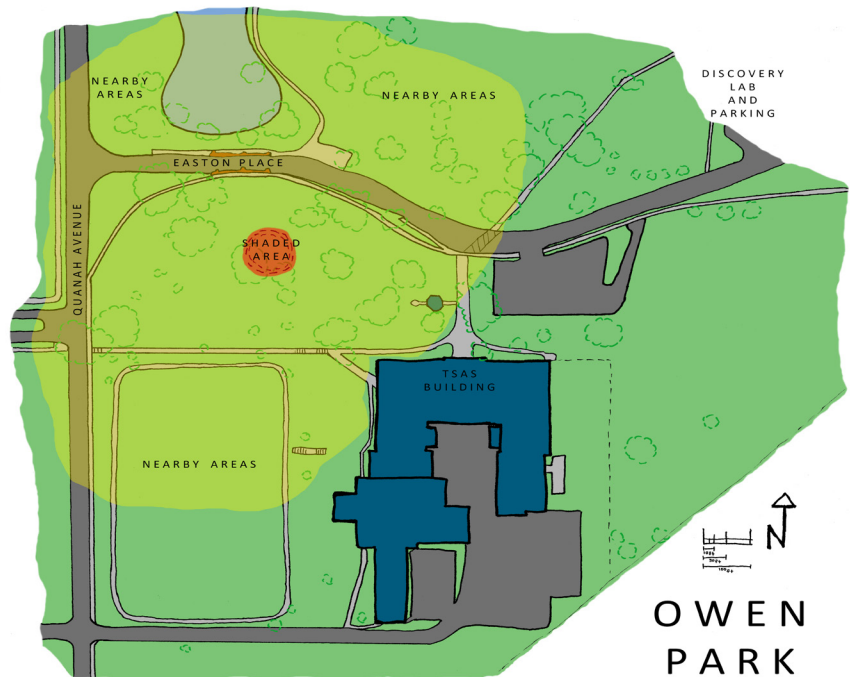


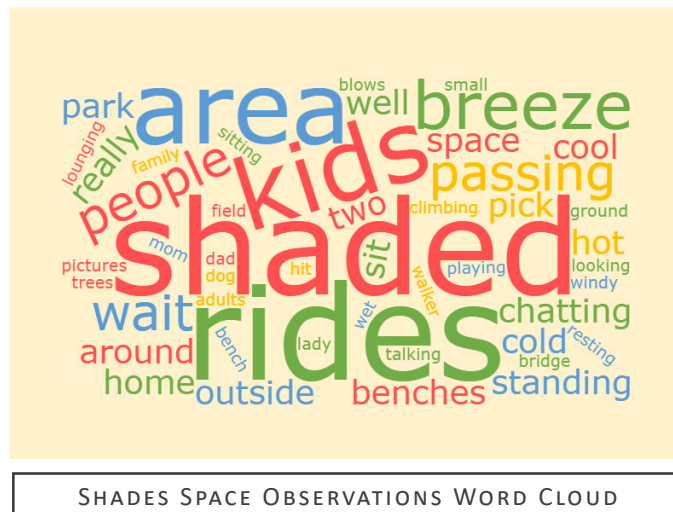
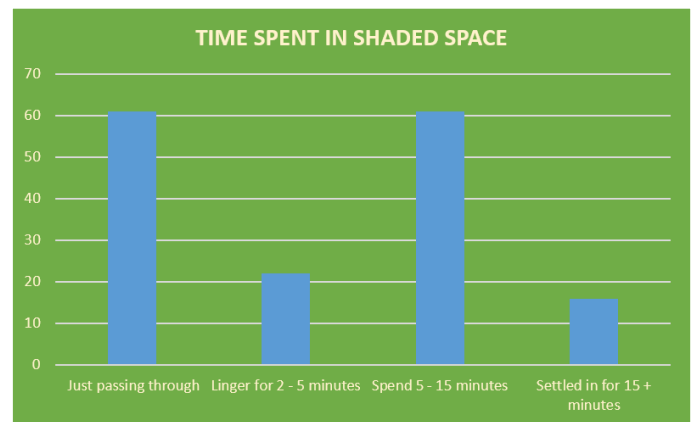
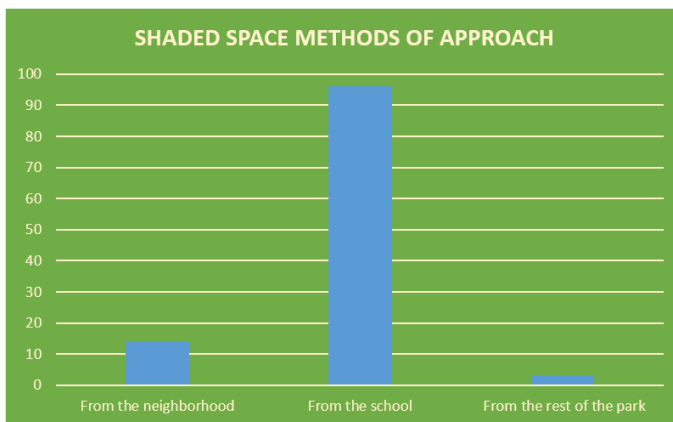
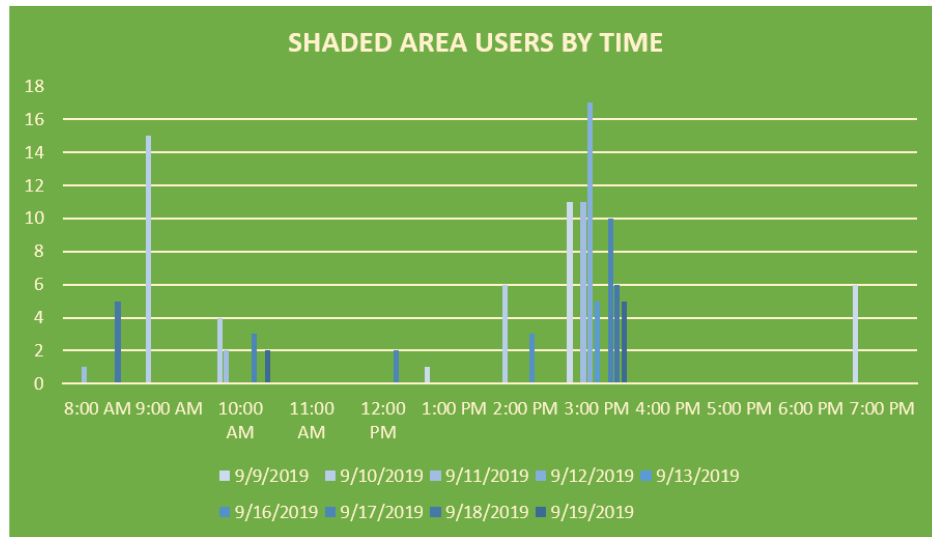
HOUSES ALONG QUANAH AVENUE

shaded area represented in red on the map, and the nearby space. Observers were asked to place themselves in a location outside the shaded area, but with a clear line of sight, and nearby space was defined as whatever parts of the park they could see from that vantage point. Due to the school building, topography, and tree line, that mostly consists of the area shaded in yellow on the map. All information was managed through the Qualtrics Research Platform.

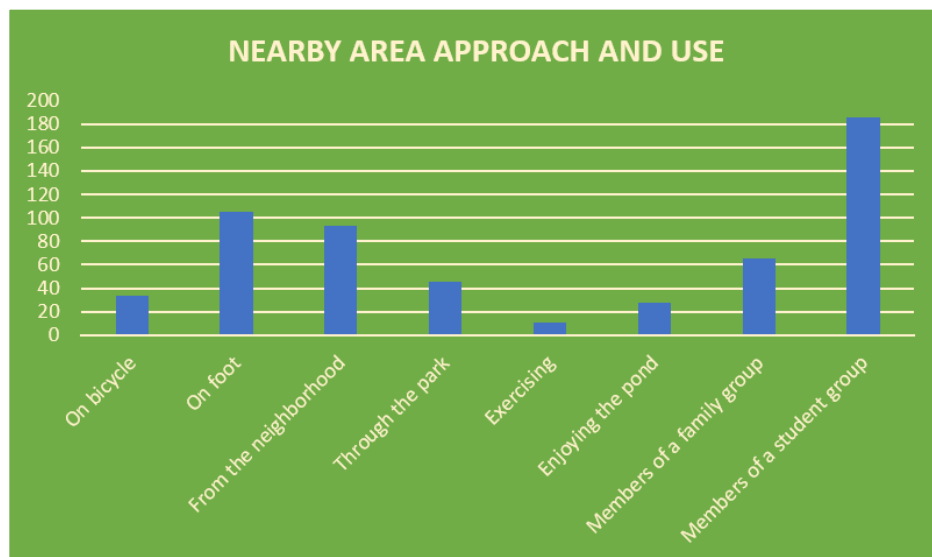
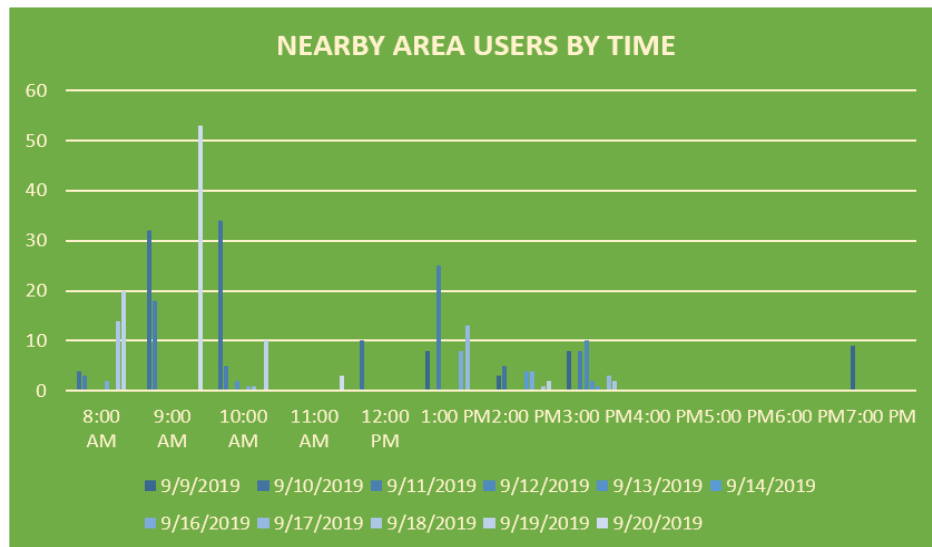
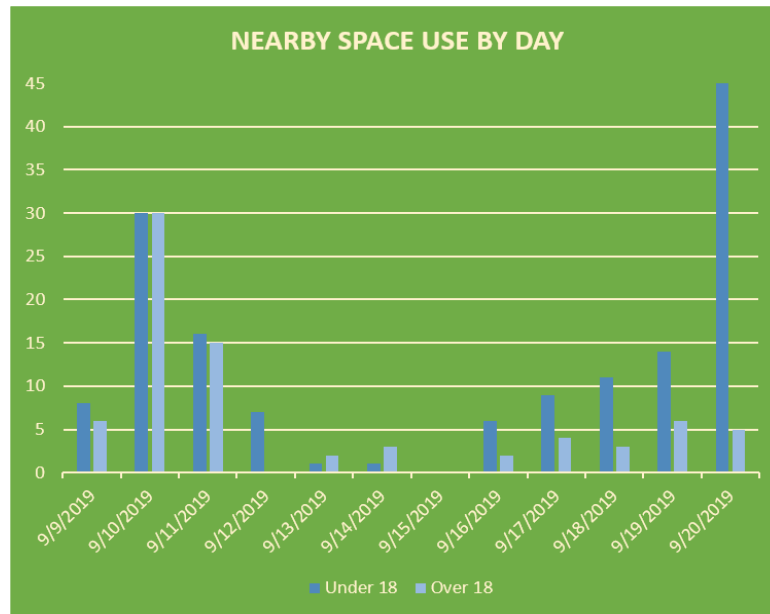
RESULTS

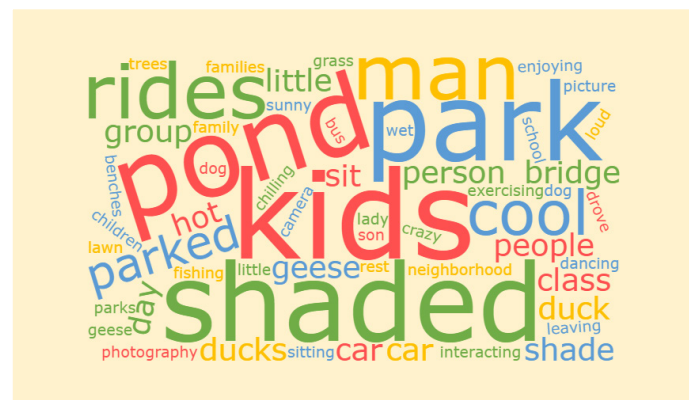
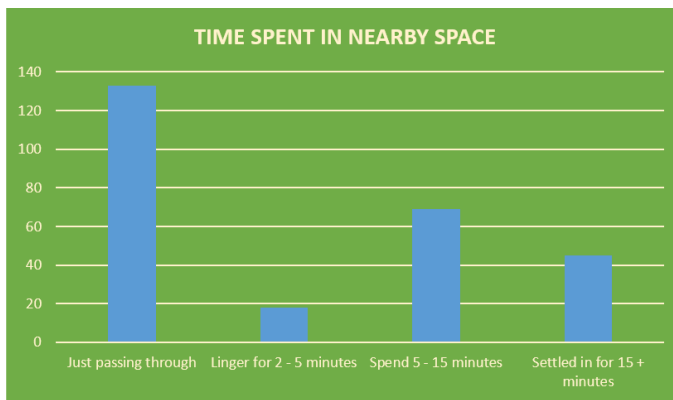
Observers recorded the amount of shaded space users by day, divided by age group, which is recorded in the graph titled “Shaded Space Users by Day”. You can see that the use is much higher on weekdays and by those under 18, and in the following graph, “Shaded Space Users by Time,” you can see use peaks around three to four o’clock. There is scattered other use during different times, but no other clustering that could describe a pattern. In the graph “Shaded Space Methods of Approach,” you see that the approach to the space was largely from the school. In the graph “Time Spent in Shade Space,” that users were either just passing through, or only stopping for five to 15 minutes. One can hypothesize that most of the users of the shaded area are students, waiting to be picked up after school. And in this word cloud, generated from the comments written by observers, you can see that “rides” is very large, confirming that conclusion. It is also notable how many observers made temperature related observations, describing the space as cool, or mentioning the breeze. The area is in fact markedly cooler due to its topography and proximity to the water.





The next set of graphs records the use of the nearby space. First, in the graph labeled “Nearby Space Use by Day,” we see that usage of that space is a bit more equitably broken down by age, especially during the first few days of observation. It is worth mentioning that use of the western side of the park is still low on the weekends, even focusing on areas beyond the school. A note on the numbers for September 20, one of my observers explained the spike there as a large group of students taking yearbook photos in the park. On the graph labeled “Nearby Area Users by Time,” you can see a more typical distribution of usage that you might expect for a park. Scattered use throughout the morning, dropping down around lunch, jumping up a bit after school, and then returning to zero as the sun sets.





NEARBY SPACE OBSERVATIONS WORD CLOUD

The approach to the western side of the park was largely on foot, as recorded in the “Nearby Space Approach and Use” graph, and through the neighborhood, as opposed to from the rest of the park. We see again the spike for students from the yearbook photos group, but also a healthy representation of families. And assuming much of the “just passing through” numbers belong to that student group, the time spent is well distributed, as recorded in the “Time Spent in Nearby Space” graph.

The word cloud from the observers displays a broad range of park-typical behaviors, including a lot more activity surrounding the pond than I had expected. Due to the infestation of the waterfowl and the pollution caused by their droppings, I had been told that most people avoided the pond as much as possible. That may be true, and may account for the lower numbers on weekends, when more families and groups might be using the park but avoiding the western side. But many people still fed the ducks and geese, sat near the pond, and even fished in it.

CONCLUSIONS

The shaded area is well used by students. It is a pleasant area to socialize and interact, with ample seating and cooling breezes. Despite those appealing characteristics, it is not an attraction for park users. The pond, polluted though it may be, is the primary draw to that side of the park, but much of the traffic comes from the neighborhood rather than the rest of the park. The primary parking area and attractions for Owen Park are on the eastern side, and it is likely that much of the neighborhood traffic is heading there, and most of the outside visitors enter there and do not cross into the western side of the park.

The playscape, when it can be installed, would be the primary play area for the park. There is no playground beyond a splash pad, and so few families linger in any one area. Adding an attraction like this might increase park usage significantly. More specifically, it could serve as an attraction to draw visitors into the west side of the park. The landscape and environment are pleasant, it lacks only something to draw visitors to it now that the pond has a bad reputation. Increased traffic to the western side of the park could also draw attention to the state of the pond, and potentially increase the pressure on the parks department to find a solution.




DESIGN TAKEAWAYS


GOALS FIRST, THEN DESIGN

The major lesson I learned from the design process was the importance of having goals in front of you before you put pen to paper. Have both the project goals, and specific design goals, kept me on task when I could have gone down aesthetic and technical rabbit holes. Being goal oriented also allowed me to explore a broad variety of design forms, as long as they were in service of the goals.

URBAN DESIGN VS PRODUCT DESIGN




Having done both urban and now a kind of product design, it was interesting to compare them. First, I learned that research is vital to both kinds of design. In urban design, we must know the capabilities of landscape architecture, the language of planning. In product design, at least in this case, I had to learn about structural engineering, chemistry, computer numerical controlled machines and more. Prototyping is much easier in product design, you can build a model of a product and you can build a model of a street, but one of those is going to get much more accurate feedback from your testers. Finally, though product design doesn't require public feedback in the way that urban design does, I found outside input to be extremely helpful.



GOALS

I had three goals for my playscape designs.

LIGHT, BIG, AND DIFFERENT




Any good building play system needs some variety of sizes and types of components to pique interest and encourage creativity. In addition, the playscape components needed to be lightweight enough for everyone from a toddler to a senior to lift and manipulate, while still large enough to encourage cooperative building.


CHEAP AND EASY

Once it became clear the playscape would cross from theoretical to reality, I knew I would have to rely on affordable materials and volunteer assistance. Thus, the process of building it would need to be simple and easy to explain and require minimal supplementary materials or tools. Another important consideration was the size of cardboard pieces that would be required. As I wanted as much of the cardboard as possible to be reclaimed from donated boxes, that limited the size of pieces available.

INTERLOCK FOR SAFETY



Finally, if I wanted the playscape to be truly interactive, the pieces must interlock somehow, so that large structures could be built. Ideally, the resulting structures would be safe enough to climb on.



MATERIALS

FOAM

Early designs called for the playscape to be built from foam. I researched the cost and characteristics of various types. Large pieces would be made from a combination of castable rigid urethane foam and EVA (ethylene vinyl acetate) foam. The castable foam comes in a liquid form which can then be mixed and poured into molds. The resulting foam shapes, though having good tensile strength and resilience, are rigid and slightly porous. These then would then be covered with a 3-inch veneer of EVA foam, which is much softer while still having a tensile strength that will provide support, ensuring the safety of play participants. Other components would be cut from 4-inch sheets of either EPP (expanded polypropylene) foam or cross-linked polyethylene foam. Cross-linked foam is more rigid and has a higher tensile strength than EVA, thus some components can be constructed entirely of it. These components would not be load bearing, but smaller, connecting pieces. EPP is the strongest foam available, very smooth, and could be used to provide sliding surfaces, either in components cut entirely from it or as a veneer over more affordable castable foam. All pieces would be secured with DAP Weldwood Original Contact Cement.



CASTABLE URETHANE FOAM



ETHYLENE VINYL ACETATE (EVA) FOAM SHEETS

CARDBOARD

Clearly, using foam was a highly complicated process that would require a lot of specialized materials and equipment. As I applied for the TYPROS grant and realized the project had a strong chance of becoming a reality, I began searching for ways to simplify manufacturing. While helping my sister clean out an attic, I found a pile of cardboard building blocks, which sparked the inspiration for my materials switch.

Cardboard is lightweight, easy to manipulate, and readily available. It is also well-established as a design material, with a great deal of precedence for temporary or mobile installations. The only downside was its lack of weather resistance.



CARDBOARD BUILDING BLOCKS

RUBBERIZED COATING

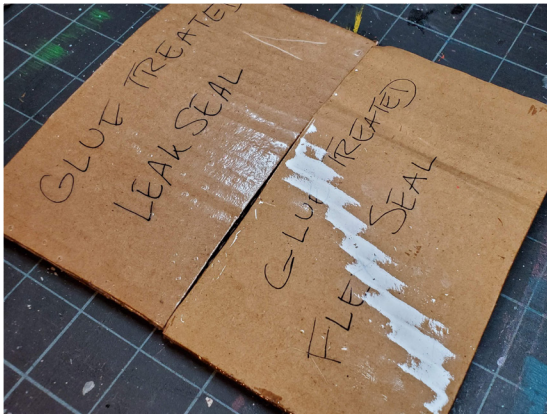
To address that issue, I researched options for rubberized coatings available commercially. There are not a lot of options, and in the end, I only tested two, Flex Seal, a product famous from infomercials, and Leak Seal, a Rustoleum product. Both are widely available, though Flex Seal is far more likely to be on store shelves and Leak Seal needing to be special ordered. They are roughly the same price. Leak Seal has a much stronger odor and requires clean up with mineral spirits while Flex Seal has almost no odor and cleans up with soap and water. Upon application, I felt sure that Flex Seal would be the winner. It is smooth, easy to apply, and dries to a glossy shine. Leak Seal was thick and gloppy, could not be applied with a bristle or foam brush. In the end I could only get it on by dunking pieces of cardboard into the can. It dried to a satin matte.



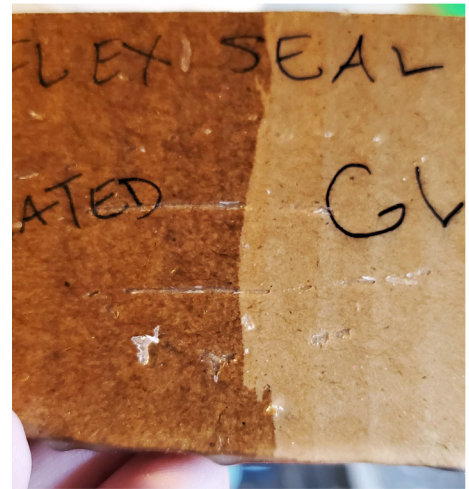
FLEX SEAL AND LEAK SEAL

However, when I went to test the durability of the coating, there was simply no contest. Flex Seal can be punctured by a fingernail, it peels off easier than Elmer's Glue. Even one coat Leak Seal

maintained its integrity after bending, scraping, and being scratched with a screwdriver. It also added a good deal of support to the corrugation, making any cardboard structures coated with it even more durable.



TEST BEDS OF FLEX SEAL AND LEAK SEAL



SCRATCHES IN FLEX SEAL COATING

EARLY DESIGNS

FOAM

My earliest designs were all assumed to be rendered in foam. One can see that the pieces were all large scale, between 6 and 24 inches. I envisioned using recesses and protrusions in the foam to create a press fit system, similar to Legos. I also used a variety of shapes, square and rectangles, but also triangles, and a kind of waffle grid. The pieces were supplemented by strips of thermoplastic elastomer, (exercise bands) that could be used to tie components together or add a dynamic element. The foam, of course, did not meet my goal of cheap and easy, and so was not pursued.

LAYERING

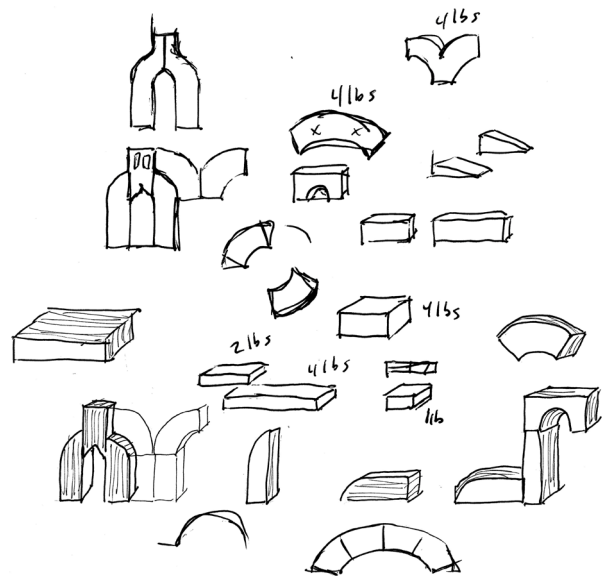
My first cardboard designs all focused on a layered construction method. The press fit model carried over into this iteration. I also toyed with the idea of nesting the pieces, designing components with a staggered rise. I dove into the history of toys and play, tracing the geometry of early educational toys like Froebel Gifts as it morphed into enduring playthings like unit blocks. I attempted to render a set of human scale unit blocks in cardboard, while also finding a way to make them interlock.



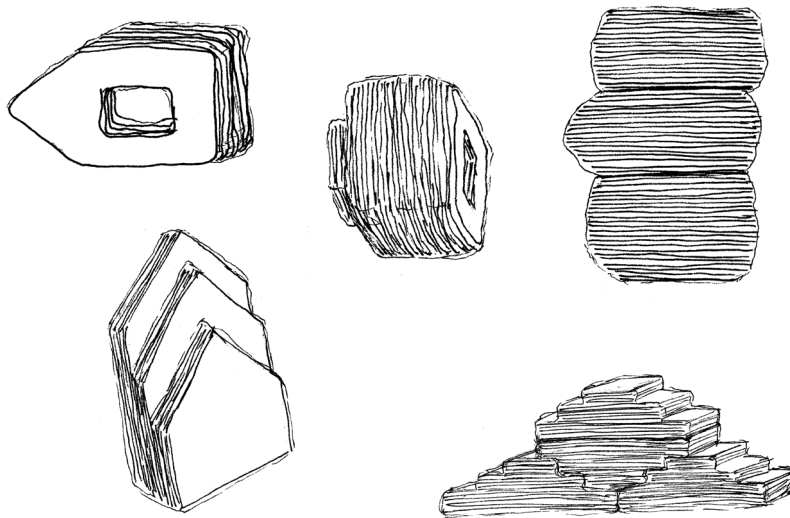
WATERCOLOR RENDERINGS OF FOAM PLAYScape

The layered method had much to recommend it. It is simple and can make use of any size or shape of cardboard. It is very versatile, only requiring that ideas be thought out as layers, similar to designing a 3D printed item. However, though cardboard is a lightweight material, like most things it becomes heavier the more densely you pack it. A basic 2'x1'x.5' block (the standard ratio for a unit block) of solid layered cardboard weighs roughly 2 lbs. That would quickly add up to a weight impossible for children or elderly to safely manipulate.

In addition to the weight issue, though layering cardboard is a relatively simple building process, it is time-consuming and uses a great deal of material. I did build a few small layered cardboard prototypes, but that building method was eliminated early on.



SKETCH OF LAYERED UNIT BLOCK DESIGN WITH WEIGHTS CALCULATED



LAYERED CARDBOARD SKETCHES: PRESS FIT (ABOVE) AND NESTING (BELOW) VERSIONS



PAPER MODEL OF LAYERED UNIT BLOCK DESIGN

MATRIX

Next, I attempted a popular structure for cardboard design, an inner matrix. These sorts of cardboard structures are lightweight and strong. There is a French group of designers, Les Cartonnistes, who have developed and popularized a method of building unique cardboard furniture with an inner matrix. I attempted to design some featuring a triangle pattern, mimicking cardboard corrugation, but it quickly became too complicated for volunteers to assemble. I built paper models of a more straightforward grid but



FURNITURE BY MEMBERS OF LES CARTONNISTES

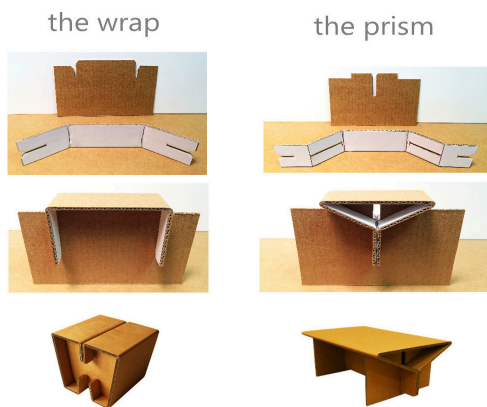
attempts to create more interesting or interlocking shapes rapidly ran into the same issues.

The building method seems simple, and could create strong, light components. It does not require any expensive supplementary materials and could make use of smaller pieces of cardboard. But once the components became complicated enough to be interesting, or to interlock, the process would have become too complicated to teach to volunteers.

THE WRAP

One of the most commercially successful cardboard design groups, Chairigami, uses two primary design principles, the wrap and the prism. I attempted to employ the wrap in a playscape component design. I ran into similar issues with the wrap as I did with an inner matrix. Once it becomes complex enough to be interesting, it becomes too involved for untrained help to build.

Both the matrix and the wrap methods are worth revisiting in later iterations of the playscape when the community involvement aspect of construction is not as integral to the project.

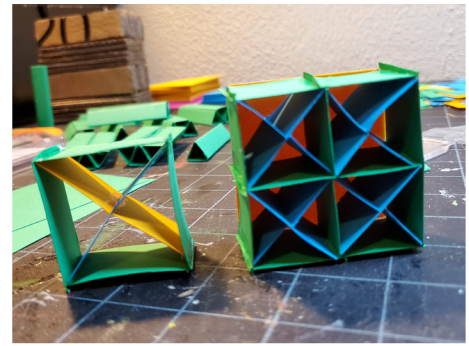


CHAIRIGAMI DESIGN PRINCIPLES

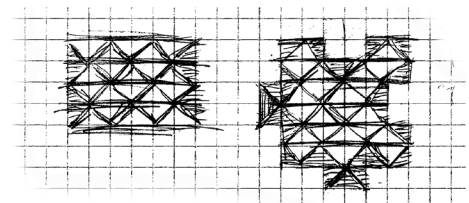
BLOXES

Bloxes were designed by Jef Raskin, a computer interface expert and designer of early Macintosh computers, as an art project in the 1970s, and later marketed as office furniture by his son, Aza Raskin. Photos of the original installation seem like the project was very similar to mine, but I have been thus far unable to find any records beyond the photos. The installation was clearly a side project for Raskin, as his primary discipline was computer and software engineering, though he had a well-documented interest in toy design and play.

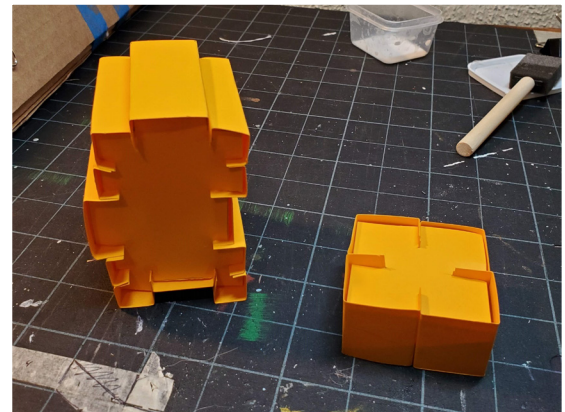
They were reimaged into Troxes, a triangular version, by MIT student Jonathan Bobrow in 2017. Both designs are formed from a flat cardboard piece that is then folded into the component, which can then be joined via



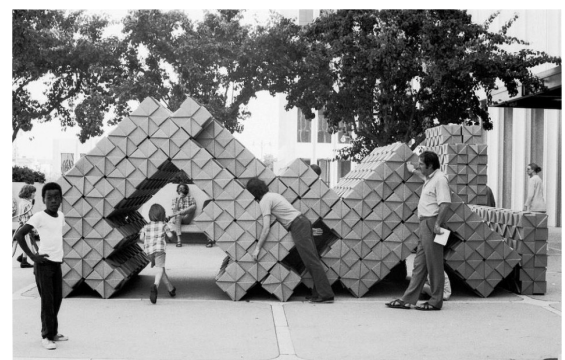
PAPER MODELS OF MATRIX DESIGNS



SKETCHES OF MATRIX DESIGNS



PAPER MODELS OF WRAP DESIGN



BLOXES INSTALLED ON SIDEWALK, LATE 1970s

press fit with others to form large, sturdy structures. They are easy to scale up or down, are lightweight, easy to build, and durable.

I stumbled upon Troxes and their predecessor when beginning to transition from a primarily rectangular design model to a triangular one. At first, they were a very intriguing solution. I reverse engineered the Bloxes design from images online and corresponded with Bobrow and confirmed that my project would not violate any copyrights.

However, though the design fit all my requirements, it did not excite my stakeholders. They, like me, found the idea of simply adapting another's designs to our needs unappealing. And so, the Blo/Troxes were shelved while I continued to explore other ideas.

TRIANGLES

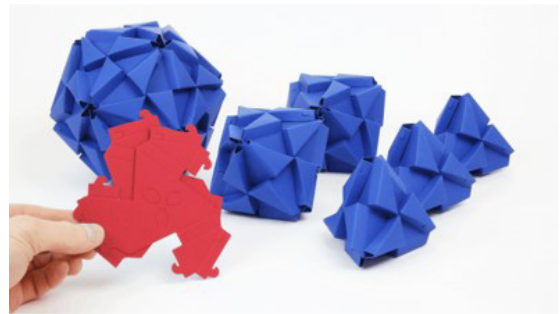
As mentioned above, I began shifting my thinking from rectangular to triangular, inspired by the realization that cardboard corrugation is essentially a series of triangular channels. Triangles are a basic shape that can form very complex and strong structures. I began my exploration of this idea by simply making some triangles. This was a departure from the other design explorations I had tried, as most of them began with sketches. But paper triangles are extremely simple to construct, and once I had them in my hands, it was clear that this was the right direction.

Triangles are not only easy to make, but easy to scale up and down in size and length without compromising structural integrity. They do not require any kind of inner matrix to remain strong, and so can remain lightweight. And, as later play testing and focus groups would demonstrate, a triangle sparks more creativity and engagement than a simple square.

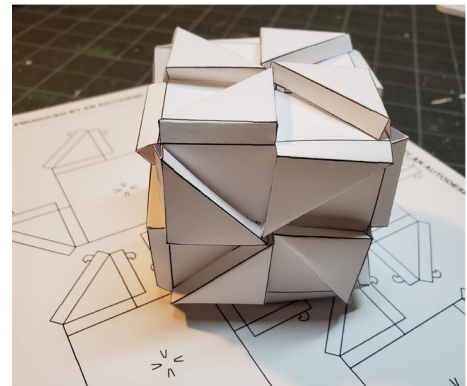
Some casual playtesting with instructors and colleagues supported my decision to pursue the triangles, but I still needed a way to securely connect the triangles.

CONNECTORS

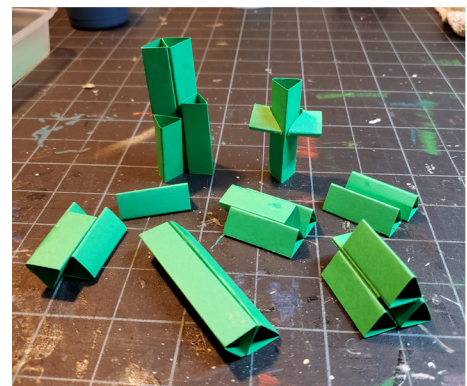
The idea for a form of connectors came from the Society of Urban Design Students' participation in Tulsa's Park(ing) Day in September 2019 in downtown Tulsa. As president of SUDS, I encouraged my fellow students to turn our park into playscape. Though I did not have any components designed, let alone built at that point, I was excited for the opportunity to observe play behaviors on the street. We borrowed some play objects from partner organizations ahha and Mayfest, among them a set of human scale Lego bricks and pick up sticks. The bricks had holes in them, to facilitate air flow so that the pieces would not get stuck together. And many of our players felt inclined to insert the pickup sticks into the holes, as if for reinforcement, like rebar in concrete.



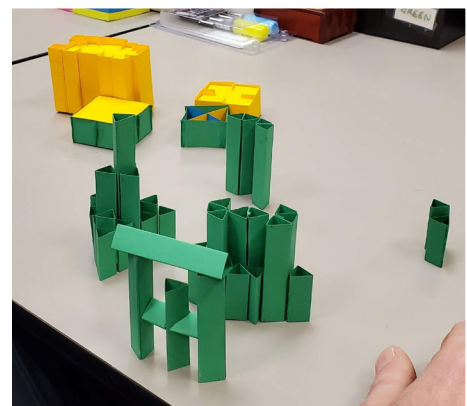
TROXES PROMOTIONAL IMAGE



A REVERSE ENGINEERED BLOX



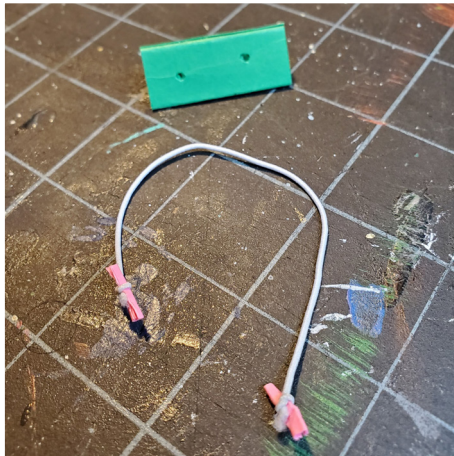
PAPER MODELS OF TRIANGLE DESIGN



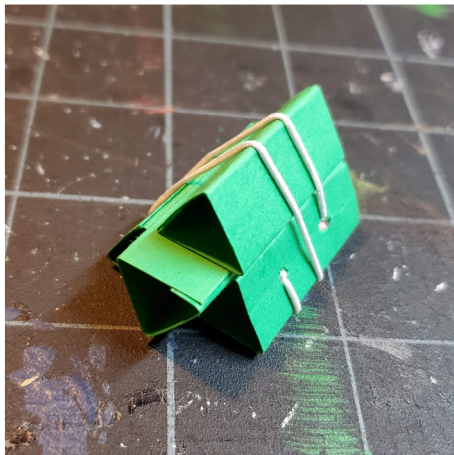
CASUAL PLAY TESTING

This concept led me to think about a connection method for my earlier idea of unit blocks. I thought I might be able to drill holes in the layered pieces, then use sticks, or lengths of stretchy material with stoppers, to secure them together. I rapidly realized this concept could apply to any of my designs, including the triangles. I quickly prototyped the idea with elastic string and paper and met with success.

And with that, I had my basic design.



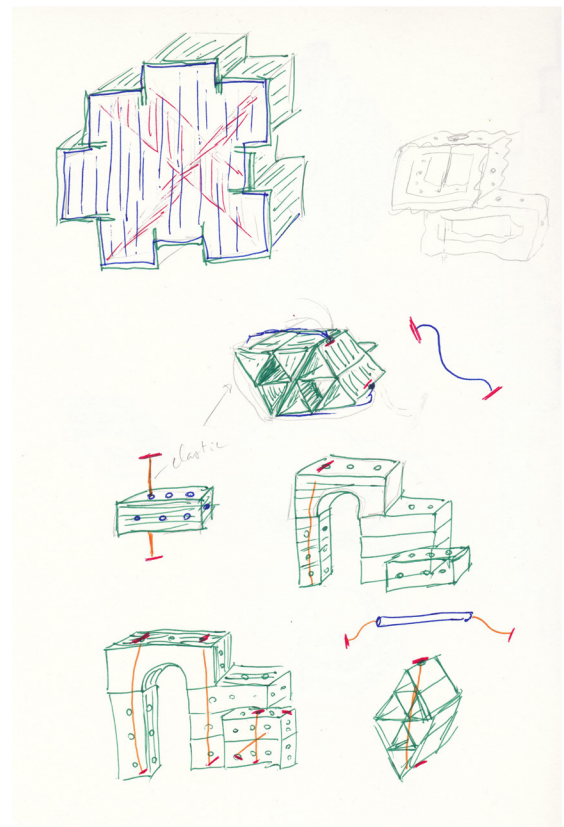
PAPER MODEL OF CONNECTOR



PAPER MODEL OF TRIANGLE AND CONNECTOR DESIGN



SUDS PLAYScape AT PARK(ING) DAY 2019



SKETCH OF CONNECTOR DESIGN

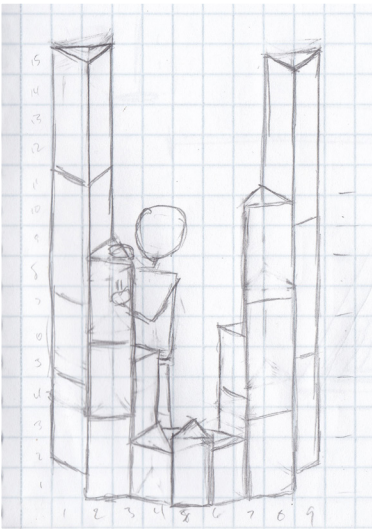
REFINING

SKETCHES

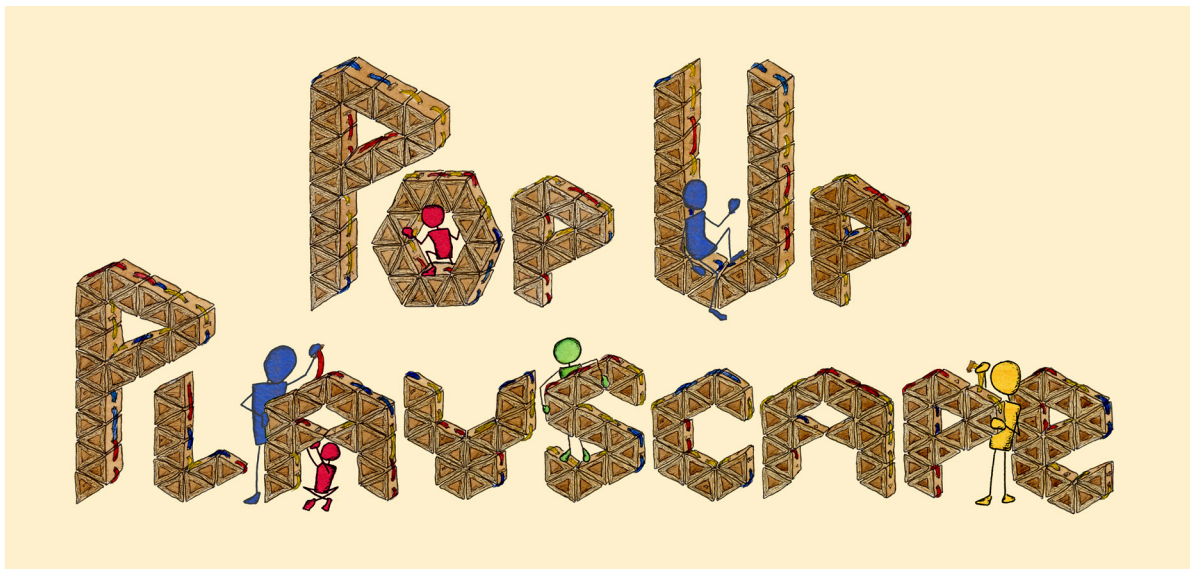
Before I began building a prototype, I did some digital and pencil sketches to see how the pieces might interact. These sketches revealed the need for the pieces to come in multiple lengths to create interesting shapes. Using graph paper and computer modeling, I was able to figure out the right scale for the components, planning for pieces that would be at least a foot square, with the variety in size coming from variations in length. Finally, the sketches also led to a logo design.



SKETCHES EXPLORING PLAYScape DESIGN AND SCALE

SKETCH EXPLORING
PLAYScape SCALE

SKETCHUP MODEL OF PLAYScape IN USE



POP UP PLAYScape ILLUSTRATED LOGO

PROTOTYPE ONE

My goal for my first prototype was simply to discover if the design worked and confirm there were not any major flaws when rendered in cardboard. These components were built by hand, using a basic craft blade, folded with a bone folder and glued with school glue. Cut from old moving boxes, the pieces were all equilateral triangles measuring four inches to a side. They were all one size, five inches long. I considered putting the holes for the connector along the spine, but after consulting with colleagues with greater engineering knowledge than I, I chose to put them in the center of the side of the triangle.

The holes were spaced evenly along the length of component, with each hole being .5" long, with 1.5" between the edge and the whole and between the two holes. The holes were triangle shaped, because it was easiest to cut by hand, but also to continue the motif. However, once I began to build with them, I realized that where the triangles were mismatched, it created a much smaller opening which made moving the connector through more difficult.

I also quickly realized the importance of corrugation grain direction. The corrugation would need to run up the sides of the triangle, rather than along the length of the component. Corrugation running lengthwise dramatically weakened the overall structure and made components easy to flatten.

The connectors were made with rubber bands, and the general concept worked well. However, the stopper construction was not very durable. I constructed the stoppers by cutting a square of cardboard, poking a hole through it, adding a dab of glue, rolling the whole thing up and securing it until it dried. The rubber band came loose with minimal pressure, making it clear that I would need to find a more secure method of construction.

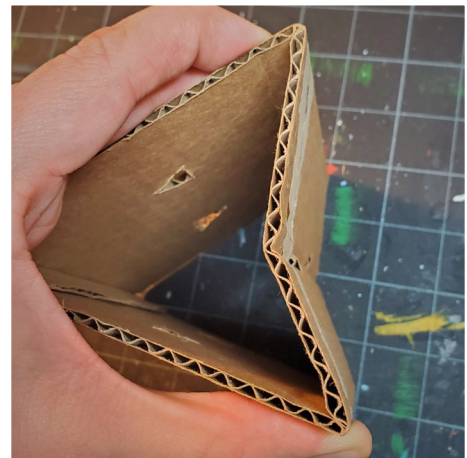
PROTOTYPE TWO

My second prototype refined the ideas of the design and learned from the lessons of the first. This design was laid out in AutoCAD and cut with a laser cutter. The proportions are marked in the diagram labeled "Prototype Two Component Dimensions," but they were designed to be at a quarter scale to the final product.

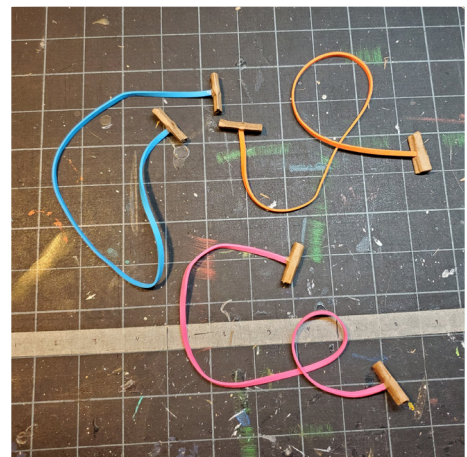
Like their previous iteration, they were folded and glued by hand. The stoppers were made up of three cardboard pieces, layered in alternating corrugation grains for strength. These stoppers were a much more successful design, and much simpler, requiring only a quick threading through the hole and a knot at the end of the band.



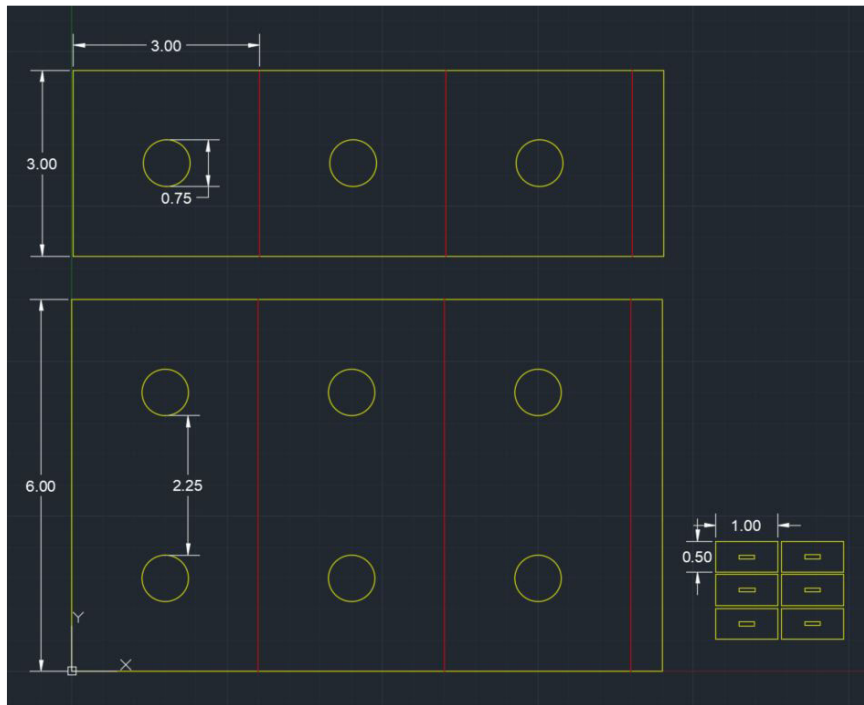
PROTOTYPE ONE COMPONENTS



THE IMPORTANCE OF CORRUGATION GRAIN



PROTOTYPE ONE CONNECTORS



PROTOTYPE TWO COMPONENTS DIMENSIONS

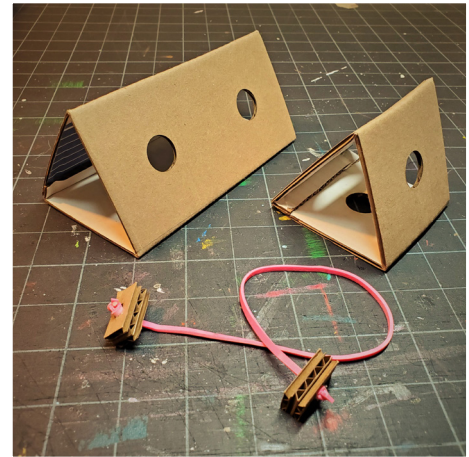
PLAY TESTING

The first play tests were done with friends and colleagues. I invited a few groups of adults and one child to play with the quarter scale prototype. The adults all engaged immediately, quickly becoming absorbed in building a variety of structures. The child was at first hesitant to play, but soon dove in and dubbed the playscape “Pretty cool.”

Observing the players, I noticed that building with the playscape evoked a level of concentration and planning that I had not anticipated, but that was enjoyable. I believe the simple difference of three sides rather than four gives the brain a slight challenge that separates the playscape from other building systems. The act of connecting the pieces via the bands also required forethought, as the threading of the stoppers through the holes required trial and error, to figure out which direction to take to build the structure you had in mind. This also resulted in a lot of improvisation, with new designs emerging from a failed attempt. Though many architectural structures were created, players also anthropomorphized the pieces, making human and animal figures, one player even built a working puppet.

Feedback mostly surrounded the connectors. Some felt there were not enough, some felt there were more than necessary. All agreed they would be better with a variety of lengths. Some also suggested that the stoppers be rounded, or at least have rounded corners, for safety.

It was pointed out that the holes could be used for climbing, and so it was good that they were rounded rather than with angles that could more easily tear. Some interest was expressed in even



PROTOTYPE TWO COMPONENTS



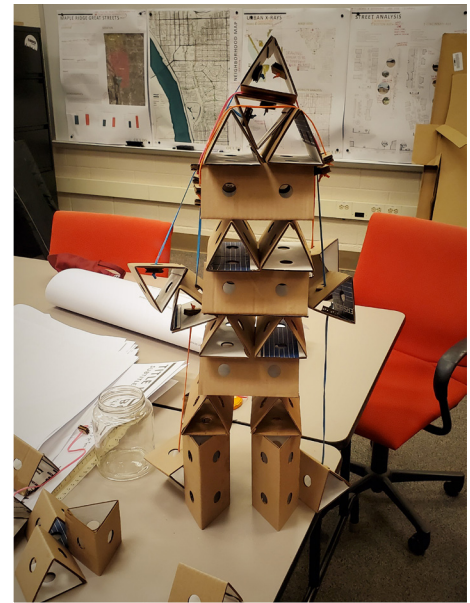
PLAY TEST ARCHITECTURAL STRUCTURES



PLAY TEST ANTHROPOMORPHIZED STRUCTURE

longer pieces.

Another interesting element was the way players engaged with senses beyond sight and touch. Many commented on the smell of the laser cut cardboard, likening it to woodsmoke, and asked if there was a way to keep that smell in the final product. In addition, the sound of the components against one another, a soft clatter of stiff hollow cardboard, was very musical and pleasant.



PLAY TEST ANTHROPOMORPHIZED
STRUCTURE

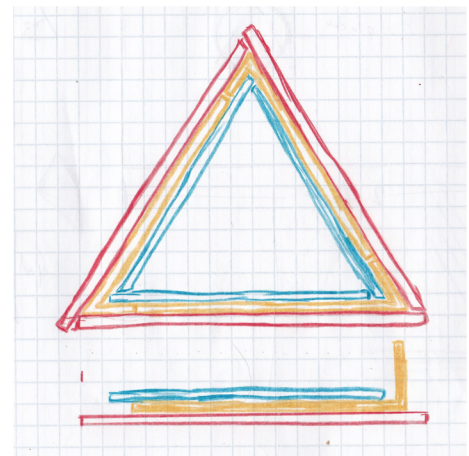
FULL-SCALE DESIGN

ASSEMBLY METHOD

The first challenge to a full-scale design was how to strengthen the cardboard panels that would make up the sides of the triangles. I chose to layer three sheets of cardboard to make up the sides. The smaller scale models had all been made up of one long piece of cardboard, folded into three sides and glued. It required significantly larger pieces of cardboard for a full-size version, so I knew I would need build each side individually, and then figure out how to connect them.

I chose a slotting method. Each panel would have an offset middle layer that would form a flap on one end and a slot on the other. The flap of one panel would fit into the slot on the next, and then connect to form the triangle. This resulted in each layer having slightly different dimensions. See diagram labeled "Oneie Layer Dimensions." The outside layer was the full size of the component exterior, for example 1' x 1', with the connector hole precisely in the center. The middle layer was the same size, but had the hole to one side, so that it would line up when the layers were stacked together. And the inside layer was slightly smaller, about .5" smaller across, to accommodate the angle of the assembled pieces.

I explored alternate methods of cutting out the pieces, since I had access to a full woodshop through ahha. Layered cardboard can act much like wood once it is firmly glued. I experimented with hole saw drill bits as a potential method for cutting out the holes. It does not work very well. In addition, a member of the jury audience in my second presentation pointed out, circular holes were problematic. A rectangular stopper, even one wider than the hole, could easily slip out of a circular hole. The stopper and hole designs were changed to use ovals for both, the hole being slightly bigger oval than the stopper, and so for precision, I was committed to using the laser cutter rather than



ROUGH SKETCH OF SLOTTING
METHOD

woodworking tools.

Once I had successfully assembled a full-scale component, I tested its strength. I used weight plates attached to twine, hung from the peak of the component, with only the opposite corners supported. I started with 2.5 pounds of weight on either side, and went up to 17 pounds per side, for a total of 34 pounds of weight being supported, with no appearance of buckling or damage whatsoever.



WEIGHT TEST IN PROGRESS

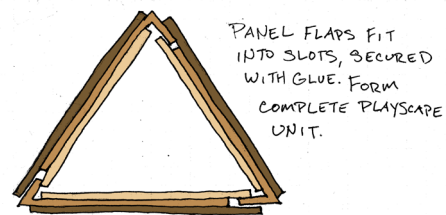
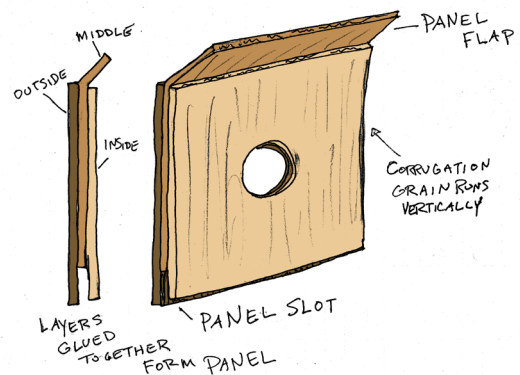
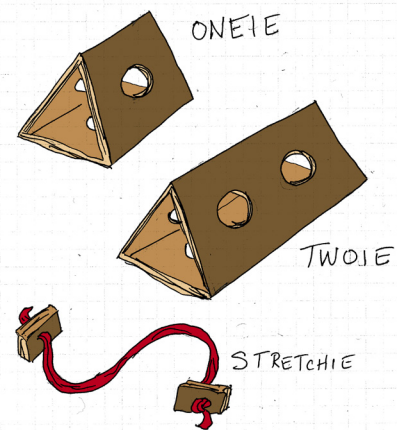


DIAGRAM DISPLAYING SLOTTING METHOD

FINAL DESIGN

In the end, I had designs for three types of components. And like any good building system, all three component types have names: the Oneie, the Twoie, and the Stretchie.

Both the Oneie and the Twoie are ten inches high, with each panel of the triangle being one foot in wide. The Oneie is one foot long, with one connector hole, and the Twoie is two feet wide with two holes. The holes are 2" x 4" ovals, oriented with the grain of the cardboard. The Stretchies are made up of cardboard stoppers and a thermoplastic elastomer strip (exercise band). The stoppers are 4" x 6" ovals, made up of four layers of cardboard glued together in alternating grain, with a .5" diameter hole in the center, through which the exercise band is threaded and knotted.



SKETCH OF EARLIER ITERATION OF ALL COMPONENTS



ONEIE



TWOIE



STRETCHIE

MANUFACTURE

TAKEAWAYS

ANYTHING CAN LOOK GOOD ON PAPER

Determining and refining the manufacturing process was the longest single phase of the project. Creating a design is one thing but figuring out how to make on a larger scale, on a budget, and with unskilled labor is entirely another. This phase of the project gave me a deeper understanding of the importance of implementation when it comes to designs. Anything can look good on paper, but once you put it into practice, that is when the real work begins.

COMMUNICATION IS KEY

It was just as complicated and challenging to determine how I was going to communicate the process as it was to create it. In this situation, I was figuring out how to explain it to volunteers, but designers have to be able to communicate with manufacturers, community members, architects, who all need you to speak to them in their language. The skills I built designing the instructions for my volunteers will be extremely valuable in the long term.

PREPARATION

MATERIALS AND SUPPLIES

My first task was to figure out my cardboard source. I needed someplace with larger scale boxes, that ideally would be willing to hold them for me. I called around to furniture and appliance stores, but they were unable to hold them. They told me the times that they typically unload trucks and invited me to come wait there during those times, but they were all in conflict with my work schedule. I spent a few afternoons driving around to big box stores, asking for cardboard and being directed to a dumpster, which I was not too proud to scavenge in.

Finally, I hit paydirt with frame shops. Frame boxes are large, but usually narrow, and easier to store for a day or so until I could pick them up, so I had much better luck. I was able to get a few loads from a variety of locations, but my best partner was the Michaels Arts and Crafts store at 41st and Yale. Their staff was very supportive and accommodating, calling me regularly when they had boxes set aside for me. A third of the cardboard used in the playscape came from there. Another third from ahha, generated from the teardown and rebuilding of The Experience, and a final third from other sources.

To source the exercise bands, I consulted Ken Randall, PT, PhD, MHR, Assistant Dean in the University of Oklahoma's College of Allied Health and Associate Professor in its Department of Rehabilitation Sciences. He gave me a sample of bands in various lengths and resistances, as well as providing useful guidance on human movement.

For the Leak Seal, I sought a bulk supplier but found that Home Depot had a better price than a wholesaler, and so purchased it as needed through them. Other supplies and tools were purchased at Home Depot or through Amazon. My grant did not provide a lump sum, but rather reimbursement as the money was spent, and so the ability to purchase materials and tools as I went along rather than all



CARDBOARD BOXES FROM
MICHAELS

at once was more financially feasible.

INSTRUCTIONAL SUPPORT

As I determined my manufacturing process, I needed to be sure it was simple enough for a layman to understand, and that I could explain it to them. Teaching and instruction are not my strongest skillset, but was an important part of this project, thus something I needed to take the time to improve on. To that end, I invited friends and family to join me in the process, to be instructional test subjects. As I figured out new processes, I attempted to explain it to them, thus testing if it was easy to understand, and figure out what vocabulary and explanatory techniques to use. And in return, my friends and family helped refine the process, coming up with ideas that would never have occurred to me without their collaboration. A big debt is owed to many of my nearest and dearest for giving up their free time to listen to me poorly narrate my process while covered in glue and Leak Seal.



A FRIEND'S DAUGHTER LISTENS WHILE I EXPLAIN THE GLUING PROCESS

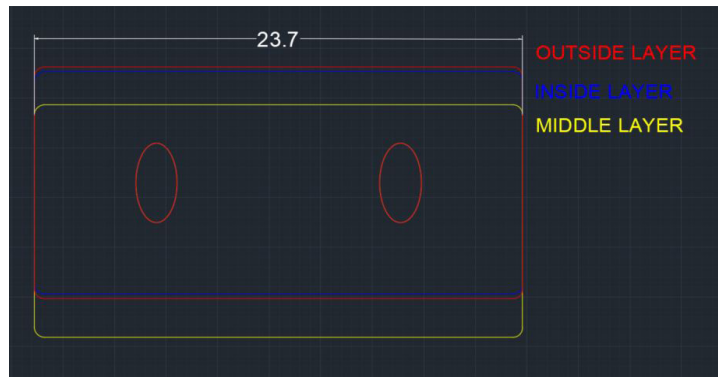
CUTTING

EARLY VERSIONS

All the cutting patterns were laid out in AutoCAD, to be cut on the Universal Laser Systems cutter we have at the Urban Design Studio. The first versions required that the entire piece be cut out via the laser, both the hole and the outline. This required that the Twoie pieces be slightly less than two feet long, as the cutting platen could not accommodate the full 24 inches. The original version also had squared off corners, which eventually changed to rounded.

My process at this point involved cutting the cardboard boxes down to large sheets by hand, then using the panel cutter at the Design Studio or at ahha to cut the sheets down to roughly 13"x13" or 13"x25", then placed those sheets into the laser cutter.

I spent a great deal of time fiddling with the laser cutter speed and power settings. Cardboard presents a variety of issues for laser cutting, as it is not dense, nor is it uniform. The laser must cut through 3 thin sheets of paper, with air between them, and the placement of those thin sheets varies as it goes along. Often, a layer would come out of the cutter needed some if not all of the cut lines to be gone over with a blade. Not to mention the fact that the scavenged cardboard presented a range of thicknesses, and often the settings that had to be adjusted between sheets. In the end, I determined that a high-power setting and a low speed setting



EARLY VERSION OF TWOIE CUTTING PATTERN



PANELS CUT DOWN TO SIZE BEFORE CUTTING ON THE LASER

worked best for cardboard. The thicker the board, the slower the speed needed. But I had to be careful, as too slow a speed on a high-power setting could create flames.

Most of my cardboard was basic one-ply, but I had a few scattered pieces of two-ply. The two-ply required different measurements, to accommodate its thickness at the corner angles. I did generate the appropriate patterns, but not only did the laser struggle to cut the two-ply, the resulting components did not fit well with the one-ply ones. In the end, much of the two-ply board was used for stoppers, as they are made up of four layers, or rather two two-ply layers, which saved a good deal of time.

TECHNICAL DIFFICULTIES

Almost from the very beginning, the laser cutter on campus presented some glitches. It started with a jitter that was easily addressed with a quick reboot, but got continually worse, with error messages, orientation problems, battery issues, and more. Parts were replaced, disassembled, reset, technicians of all skill levels were scratching their heads over the issues. There were periods of functionality in between the breakdowns, but I was also forced to explore other cutting options.

There are a few maker spaces in Tulsa, the most well-known and well-equipped being Fab Lab. However, their prominence means their machines are very tightly booked and in high demand. The next option was the Tulsa City-County Library's space at their Central location, and as that happens to be my employer, that was my best bet. I was able to get a fair amount of time on the Central Library laser; however, their machine was not as sophisticated as the one at the design studio. The first issue was that the calibration of the speed and power was less precise, and I set several sheets of cardboard aflame trying to get it right. The second was that the cutting platen was slightly tilted, meaning that cuts that penetrated fully on one end, would barely scratch the surface on the other.

FINAL VERSION

All the technical difficulties combined led me to make a major change to my process. Between the limited access to a laser, and difficulty cutting the outlines when I did have access, I decided to cut the sheets down to exact size using a panel cutter. So instead of cutting the boxes down to the approximate size before cutting them on the laser, I cut the sheets to the exact measurements required for the final product, then cut out only the holes on the laser cutter, and rounded the corners by hand with scissors.

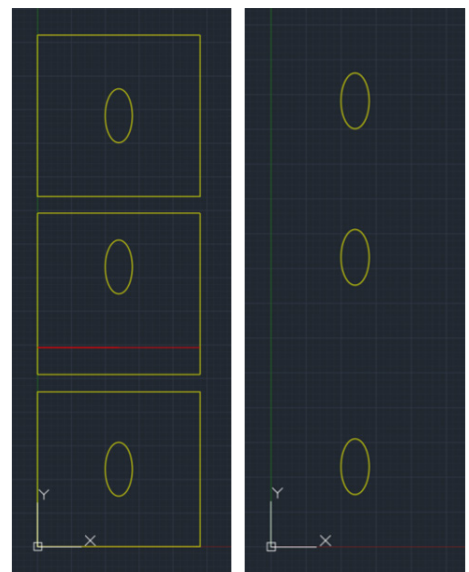
This not only avoided most of the glitches with both my available machines, it also drastically cut down on time. It added a bit more time on the panel cutter, as it takes more precision to cut exactly than approximately, but it was only a slight expansion of an existing step. And at the same time, removed a great deal of time for the laser, as it eliminated not only the cutting time, but much of the laser adjusting and any extra hand cutting needed for the outline after the fact.



CARDBOARD SET AFLAME AT THE LIBRARY



LASER CUTTER JITTER



ONEIE PATTERN WITH AND WITHOUT OUTLINES

GLUING

TYPE AND TOOLS

I explored a few different types of polyvinyl acetate (PVA) glue. Previous experience has taught me that PVA is the best type to use with paper-based projects, especially when the glue would be sealed after curing. I investigated using wood glues, especially Tite Bond brand, but in the end, went with basic Elmer's Glue-All. I decided to use it rather than simple wood glue, and to use the name brand, to ensure the quality. I thinned it at about a 2:3 water to glue ratio and applied it with foam brushes. I applied glue to both sides of whatever I was gluing whenever possible, leaving it exposed for a few moments to become tacky, before adhering and securing the material to cure.

PROCESS

To layer the three pieces together, I laid the outside and middle pieces alongside each other on a broad, covered workspace. I laid them in such a way that the holes lined up, and then applied glue across both pieces where the overlapped, leaving the areas at the top or bottom that did not overlap unglued, as these would be the slot and flap areas once the piece was complete. After applying the glue, I adhered the middle layer to the outside, and continued the process with the inside layer. After the three sheets were adhered, I made sure all the edges and the holes lined up properly, and then set the completed panel under weights to dry. Dry time to safely handle was about four hours, though I left them undisturbed for 24 hours whenever possible.

I discovered early on the need to place shims in the slots before I left the panels to dry. The glue often caused the cardboard layers to bow a bit, and without shims, the slots often closed or warped. I typically used the scrap bits from the hole cutting process as shims and left them in place until it came time to assemble. They not only stopped the slots from warping during drying, but generally protected it from getting damaged during transport and handling, as well as forming a kind of handle.

Throughout the project, the gluing step changed the least. Though it took a decent amount of work hours, and had the longest dry time of any step, it was the simplest and most straightforward part of the process.



GLUING IN PROGRESS



PLACING SHIMS IN SLOTS

ASSEMBLY

ISSUES

The assembly process also seemed straightforward, and it was, for two thirds of it. To insert the first flap, you simply remove the shims from one panel's slot, apply glue to both sides of the flap of another panel, and insert it. The fit is snug, and the glue will hold almost immediately, so it was important to be sure you were carefully lined up before putting the two panels together, but it is a fairly simple process. The second step is the same, you simply repeat the process with another panel.

The final step, however, where you join all three panels together at the top, presented a challenge. Attempting to insert that final flap into the slot was a difficult endeavor. The first lesson I

learned was to not apply the glue until the flap had been inserted, as having glue on the flap limited how easily it could be handled, and after a minute or two of maneuvering, the glue began to soften the cardboard. After the flap was safely inserted part way, glue could be applied, and the flap could be slid in the rest of the way.

But the real issue with inserting the final flap was that the squared edges of the cardboard would catch on one another, if you could get one edge in, the other would get caught, then the underside would come loose, and you'd have to start all over again. A Oneie presented less difficulty than a Twoie, as it had less length to attempt to corral. I had expected some of this and obtained flat tools like putty knives to help lever the edges apart, but that was simply not enough.

SOLUTIONS

After much trial and error, two solutions were found to that consistently addressed the issue. The first became known as the Mandy Protocol, as it was invented by my friend Mandy Durham. It calls for using a rubber brayer to flatten the edge of the flap, giving it a bevel that allows it to slide into the slot more easily. This worked so well, and is so easy, that I began to do it for all the flaps, not only the one for the final insertion.

On some particularly warped panels, the Mandy Protocol is not enough. For those challenges, I began putting a hat on the flap, or placing long, narrow strip of paper, folded into a V over the flap. This eliminated the edges all together and helped the cardboard slide in smoothly. It was important that the paper be thin, and smooth, to not alter the fit and or create friction.

Even with these tools, assembling a Twoie component was often a two-person job.



ONEIE ASSEMBLY IN PROGRESS



THE MANDY PROTOCOL



PUTTING THE HAT ON THE FLAP

SEALING

WATERPROOF TEST

Before I began to refine the Leak Seal application process in earnest, I wanted to be sure it could in fact do what I needed it to. Using an assortment of application processes, I sealed one complete component. I did not do a perfect job, which was part of the plan, as many of the final product would

not be perfect. Then, I set it out in the pouring rain for several hours.

The moisture did penetrate to a degree. A few spots near the hole were visibly sodden, and the less robustly sealed edges did wrinkle. But the overall structure remained sound and secure, not noticeably weakened by the wetting. And after drying, the impact of the rain was imperceptible.

CHALLENGES

Despite Leak Seal's success as a waterproofing agent, it still presented many challenges as a material. First, it is a volatile organic compound or VOC, and thus emits a strong and irritating odor. Though not as bad as some solvents, it is still strong enough that using it indoors, even with a door or windows open, is not feasible. Even mostly dry, it is still unpleasant if contained indoors.

Luckily, ahha has experience with these sorts of compounds and had two parts of their facility designed for it. They have a wide range of outdoor workspaces, both covered and uncovered. On the fourth floor, just outside my studio, was a spacious private balcony, and on the second floor was a smaller, enclosed private balcony. In addition, they have a spray booth with a ventilation hood on the third floor. The spray booth is small, without much workspace, but for early experimentation and days with poor weather, it was a valuable tool.

The other major challenge presented by Leak Seal was what tools to use to apply it. It could not be brushed or rolled on, it was too thick for bristle brushes or nap rollers and it dissolves foam. After some trial and error, I relied on a mixture of putty and palette knives, and rubber brayers. The knives were useful for depositing sealant onto surfaces, or detail application, and the rollers helped to spread it across the panel faces with an even finish.

HAND APPLICATION

After familiarizing myself with the basic challenges and behavior of Leak Seal, I formed my initial plan for application. First, in my initial application on the test component, it was clear that applying the seal to the interior of the assembled component was far too awkward, as so I should apply the seal before assembly, at least to the sides that would form the interior. In addition to that observation, I learned that sealing the edges required far more time and effort than sealing the flats, both in manpower and dry time. The flats were easily covered with a few dollops of sealant and a quick roll of the brayer, whereas the edges required careful, deliberate application with a palette knife. And so, this was the initial order and method in which I coated the various parts of each panel.

First, using a palette knife, the interior edges of the holes were coated, then the left-hand edge, the interior flat was coated using a brayer. Then allow the panel to dry. Leak Seal's dry time is remarkably short, 20 to 40 minutes to handling, depending on humidity, and about an hour to full cure.



A ONEIE IN THE RAIN



IMPACT OF RAIN ON THE ONEIE



LEAK SEAL BEING STIRRED WITH A PALETTE KNIFE

After drying, the panels would be assembled, which then required a full day for the glue to dry, before the next phase of sealant could be applied. Assembled, one full edge would be sealed as well as the interior, which allowed the component to be stood up on that edge. This however did leave the inside corners to be coated, which was the first step of that second phase. This was done very messily with a palette knife and was followed by sealing the opposite edge with the same tool. Then the outside flats were sealed with a brayer. Once all that was dry, touch ups could be made. Luckily, the Leak Seal only required one coat, as you can see this was an enormously time intensive and complicated process.

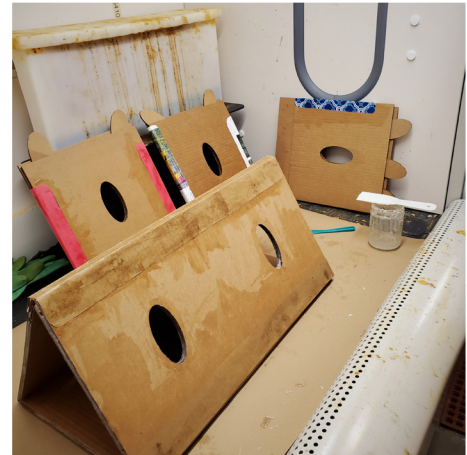
SPRAY FORMULA

At this point, one might ask why I was not using the spray formula that Leak Seal offered. First, in my initial product research review, other makers in forums and blogs claimed it was an inferior formulation to the liquid product. I did buy a few cans, and though it performed better for me than for some users, it required several coats to equal the same waterproofing as one coat of the liquid, with none of the reinforcing aspects that the liquid provided. And though a single coat of the spray goes on in moments, between dry time and the many coats needed, it did not save any time. Spray application is of course much simpler, though it requires more space. The spray form is also much more expensive. And finally, it leaves a rough, unappealing texture as opposed to the smooth, slightly rubberized matte of the liquid. So, though I did keep a few cans of the spray Leak Seal available for touch ups and other possible needs, it was not a product I wanted to rely on.

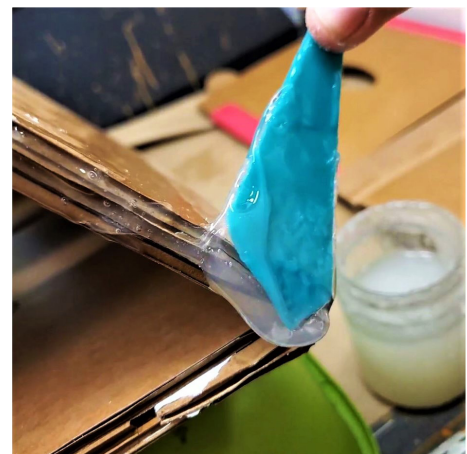
PAPER EDGES

As mentioned above, the edges of the panels were the most time-consuming part of the sealing process. This was not only because of the more constrained area I was applying sealant to, but also the cavities created by the corrugation meant the sealant dripped down inside the board, making it difficult to know what parts were still needing to be covered. The first solution I tried was to apply the Leak Seal and then cover the edge with a strip of paper, then apply a thin layer on top, effectively using decoupage techniques to cover the edges. This process was quicker than straightforward application and resulted in an evenly coated edge.

However, the paper itself was difficult to keep secure. I tried a variety of types of paper—wrapping paper, printer paper, construction paper and kraft paper. In the end, the kraft paper worked best, but all of them peeled at the edges, wrinkled or warped, and were easily torn anywhere they were not secure. In addition, cutting the paper strips out used up all the time saved.



COMPONENTS AND PANELS IN THE
SPRAY BOOTH AT AHHA



APPLYING SEALANT TO EDGE OF
ASSEMBLED COMPONENT



SPREADING SEALANT WITH A
BRAYER

POURING

Many people asked why I did not try to dip the panels, or even a completed component, in the Leak Seal and then realized why that was implausible once they saw the can of the substance. It comes in small, expensive quantities, is very thick, and you would need a small barrel of it to dunk even a Oneie panel. But eventually, I let myself think about how to practically make it happen. The first two obstacles were quantity of sealant, and a sizeable vessel.

For quantity of sealant, I thought I might be able to stretch my supply by thinning it. Leak Seal cleans up with mineral spirits, so that is what I used. After several attempts with different ratios, I found an 8:1 ratio of sealant to solvent produced a liquid that was more workable, while still giving a decent coating.

Encouraged by that success, I went in search of a vessel. I had decided that I would go wide rather than deep and looked for a trough or a tray that would accommodate my two-foot-wide Twoie panels. I ended up with a 28-inch diameter hot water heater drip pan, with a convenient drain spout. However, once I got it back to my studio and realized how much Leak Seal, even stretched with mineral spirits, would be needed to fill it, I knew this would not work. I briefly attempted to narrow the pan with cardboard and a tarp and was on the verge of pouring sealant into the contraption when I realized what a bad idea it was. But the thinned Leak Seal and the large pan were not too far off the mark.

I decided to try pouring the thinned sealant over the panels. I had a vision of laying the panels in the pan and dumping a bucket of Leak Seal on them, letting it coat them, and then hanging them up to dry. That was not feasible. Instead, I followed much the same pattern as I'd done when applying the full strength Leak Seal with palette knives, but instead pouring it along the inside of the holes, the edges, and along the flats, except this time I did the whole panel all at once, and in an eighth of the time. I still used the brayer to smooth it out on the sides, and the palette and putty knives for touching up. The pan caught the extra sealant which could be reused for the next panel.

I used a clothesline to dry the sealed panels, clipping them to it from the flap, which remained unsealed. The sealant did drip down to the slot end, and if possible, I attempted to curb drips while they dried, but trimming them off afterwards was the work of a moment. After assembly, the components still needed their corners sealed, which was three quick pours at one end, let it dry, then do the other end. Also, due to the minimal handling after assembly, I did not have to wait for the glue to dry before doing the final seal.



VARIOUS PAPER TYPES ON THE
EDGE OF A ONEIE



EXPERIMENTS WITH THINNED
SEALANT



A BAD IDEA



POURING THE LEAK SEAL



PANELS DRYING ON A LINE

DIVERSIONS

Due to supply hold ups and technical difficulties, I found myself with some short stretches of downtime during the manufacture design process. I used these periods to explore somewhat less successful ideas.

I still very much liked the look of layered cardboard, and wanted to explore other shapes, so I designed a layered press fit block. It was hollow, so that it would not only be lightweight and use less material, but it could also use smaller scraps of cardboard. I designed it to interact with the Oneies and Twoies, giving it the same connector holes on top, which also served to facilitate airflow. I also made a Oneie and Twoie size, to continue the pattern.

I abandoned the idea when it became clear how time consuming the gluing of the layers would be. I did not even get to the phase of needing to figure out how to seal it. But the design did work, both component styles fit with each other and with the triangle versions.

I also wanted to find a way to use all the little ovals being generated by the holes cut in the components. Another artist at ahha suggested I glue them onto the outside of a panel. This would also save having to cut out the hole and avoid use of the laser cutter, while hopefully creating a press fit connection. However, being the same exact size protrusion as the hole meant it would not fit. It did give some interest to the pieces, but it disrupted the fit. If I had had enough laser time to cut slightly smaller ovals, perhaps it could have been pursued.

Finally, I experimented with tinting the Leak Seal. I tried acrylic paint and India ink. I had previously had success using India ink to tint polyurethane, so I was unsurprised that it worked well. The color was vibrant and the seal translucent. I would love to experiment with color more, possibly attempting to swirl or overlay



UNFINISHED LAYERED PRESS FIT BLOCKS



PROTRUSIONS ON PANELS

various colors. The acrylic paint was less successful. It made the sealant opaque, which was an interesting look, but also severely slowed the drying process, from minutes to hours.



TINTED LEAK SEAL

FINAL MANUFACTURING PROCESS

EFFICIENCY

I have discussed all the ways I made the process more efficient, both in simplicity and time spent. Before I conclude this section, I would like to demonstrate exactly how much of a difference there is between the initial process and the final version.

	INITIAL	
1	PANEL CUT SHEETS	5 MIN
2	LASER CUT OUTLINE	7 MIN
3	LASER CUT HOLES	7 MIN
4	GLUE	15 MIN
5	DRY 24 HOURS	
6	SEAL HOLES	15 MIN
7	SEAL EDGE	10 MIN
8	SEAL INSIDE FLATS	15 MIN
9	DRY 1.5 HOURS	
10	ASSEMBLE	15 MIN
11	DRY 24 HOURS	
12	SEAL INSIDE CORNERS	10 MIN
13	SEAL EDGE	15 MIN
14	SEAL OUTSIDE FLATS	15 MIN
15	TOUCH UPS	15 MIN
	LABOR TIME	144 MIN
	DRY TIME	49.5 HRS
	TOTAL TIME	51.9 HRS

	FINAL	
1	PANEL CUT SHEETS	5 MIN
2	LASER CUT HOLES	7 MIN
3	ROUND CORNERS	2 MIN
4	GLUE	15 MIN
5	DRY 24 HOURS	
6	SEAL PANEL	15 MIN
7	DRY 1.5 HOURS	
8	ASSEMBLE	15 MIN
9	SEAL CORNERS	10 MIN
	LABOR TIME	69 MIN
	DRY TIME	25.5 HRS
	TOTAL TIME	26.7 HRS

With all the changes I was able to make, I saved 75 minutes of labor and a full day's drying time, a total difference of 25.2 hours between my initial and final processes to complete one component.

PROCESS ILLUSTRATION

On the next page, you can see my entire process laid out, with the visuals and instructions I gave my volunteers.

STEP 1 CUT

NOTE: PROCESS FOR ALL COMPONENT TYPES, INCLUDING STRETCHIES, IS SIMILAR

PANEL CUTTER



USE PANEL CUTTER
TO CUT CARDBOARD
SHEETS TO SIZE

LASER CUTTER



USE SCISSORS TO ROUND
CORNERS

ROUND CORNERS

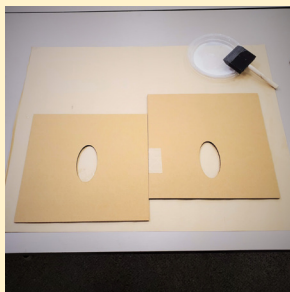


JAMIE WILL USE
LASER CUTTER
TO CUT HOLES IN
SHEETS

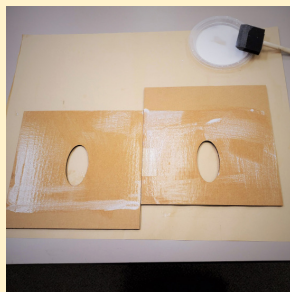
STEP 2 GLUE

GLUE

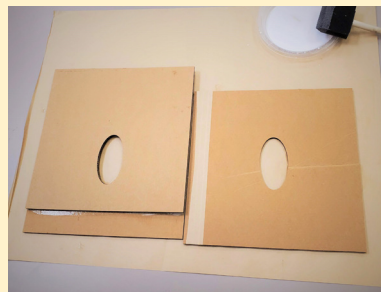
ONE



TWO



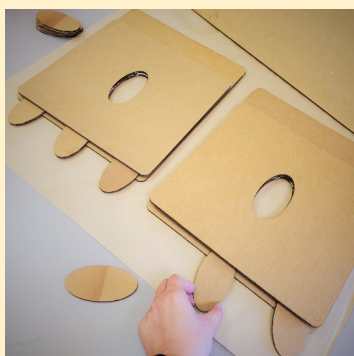
THREE



FOUR



SHIMS

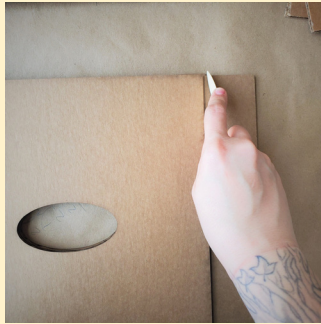


PROP OPEN SLOT WITH
SHIM

WEIGHT



CAREFULLY PLACE WEIGHT ON
TOP OF STACK

STEP 3 SEAL**CREASE**

USE BONE FOLDER TO CREASE FLAP
AND BEND TOWARDS THE INSIDE

**FLATTEN**

USE BRAYER TO FLATTEN
EDGE OF FLAP

POUR

POUR LEAK SEAL OVER THREE EDGES,
USE BRAYER TO SPREAD ACROSS FLAT

**HANG**

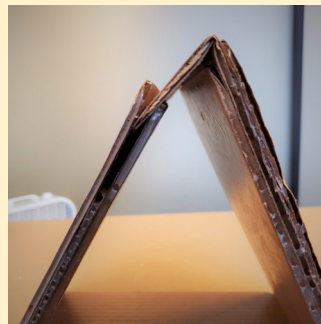
HANG PANEL TO DRY

STEP 4 ASSEMBLY**GLUE AND INSERT**

SPREAD GLUE ALONG FLAP,
INSERT IN NEXT PANEL'S
SLOT, REPEAT
GLUE AGAIN



BEFORE FULLY INSERTING,
APPLY GLUE

FINAL INSERT

GUIDE FINAL FLAP INTO SLOT. IF
NEEDED, USE FOLDED PAPER "HAT"
TO SMOOTH INSERTION

**SEAL AGAIN**

APPLY SEALANT TO NEWLY
FORMED CORNERS



FOCUS GROUPS

TAKEAWAYS

PROVEN DURABILITY

If I had one goal for the focus groups, it would be that no one got hurt. If I had another, it would be that the components could make it through with minimal wear and tear. I had high hopes for the first one, but I expected there to be considerable damage to the components that I would need to learn from. However, despite the intensity of some of my users' play, not a single component or player was damaged in the course of the evening.

THE DEATH OF THE DESIGNER

The biggest surprise of the evening was how little players seemed to care about how the playscape was "supposed" to work. Few built the way I had designed it. Which was illuminating, not only because it promised lots of innovation for the final installation, but in the way it taught me how little a designer's intent matters once the thing is built and in the hands of a user.

PREPARATION

IRB

As a focus group is considered research with human subjects, the first phase of planning required seeking Internal Review Board (IRB) approval. The IRB application process is comprehensive, and though it was onerous at times, it ended up being incredibly constructive. First, my initial proposal included both the focus group and observation protocols. I quickly realized I needed to take my time and create separate applications, as protocols for each phase of the project would be vastly different. Second, the IRB application process required me to go through my protocols with a fine-toothed comb, catching inconsistencies and redundancies. It created a set of protocols that was streamlined, uncomplicated, and effective.

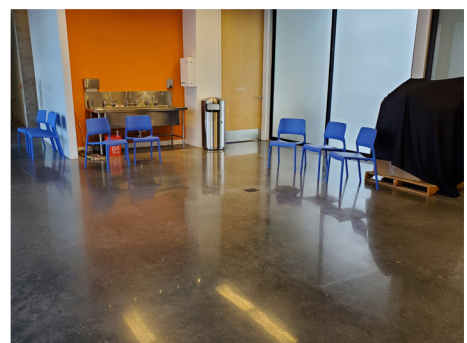
PROTOCOLS

The focus groups were held at ahha, on February 7, 2020, during the First Friday Arts District event. All participants were given a coupon for free admission to ahha, that they could use immediately or at any other time. I stood at the corner of Archer and Boston and approached any pedestrians who were not clearly engaged in some other task. I approached both groups and individuals and attempted to approach a broad range of ages and ethnicities. All were approached with the same basic script, "Hello, I am a student at the OU Urban Design school and I would like to invite you to participate in a focus group regarding a playscape to be installed here in the Arts District. Participation will take about half an hour. All participants will be given free admission to ahha."

A note on the nature of my final participants. You will notice they skew young and female. I noticed this as I went through my



COMPONENTS PREPARED FOR PARTICIPANTS



AHHA 4TH FLOOR STUDIO PREPARED FOR PARTICIPANTS

evening and did everything I could to mitigate this. The streets were very full, and I had my choice of who to approach, and I made very effort to approach older groups, mixed gender groups, and groups of males. For whatever reason, these groups were uninterested in participating, and at some points members of these groups were outwardly hostile to my approach.

Once someone accepted my invitation, I took them into the building and we went to the fourth floor, where the private studios are. The room was arranged so that the components were out of view when you first entered. I had all participants fill out an assent form and a media release before we began.

I brought participants the rest of the way into the room, where they could see the components. The room was largely bare, except the sink in the corner and large stack of materials that I could not

<p>What did you build? How did you build it? How many iterations did you build? What other ideas did you have? What challenges did you have in building?</p> <p>Bridge fort vision messy / function +</p>	<p>How did you work with others? Did you need extra hands or ask for help? Did you negotiate with others for pieces? How did you communicate?</p> <p>team work "stack, interlock" "feed through"</p>
<p>What would you change? More ones? More twos? Smaller pieces? Which color connectors worked best? Are the holes the right size?</p> <p>like off two ones shorter better more pieces as more connectors is more challenging +</p>	<p>How did this process make you feel? Was it challenging? Fun? Frustrating? Easy? Would you do it again? Encourage others to join you?</p> <p>bigger scale could be frustrating children ^{might} have trouble cooperation but encouraged to do it</p>
<p>INVESTIGATOR USE ONLY SESSION # 2 TIME: 6:15</p>	<p>GROUP DESCRIP: high school couple, design interest</p>

FILLED OUT INTERVIEW FORM

Stoppers way attractive, smooth

Rigidity +
holes ^{tiny} too small

edging feels safer but
no impact on user experience

every piece connected
used in way designed

BACK OF INTERVIEW FORM WITH AESTHETIC OBSERVATIONS

move and so covered with a cloth. I placed some chairs around the perimeter, mostly to give the space a stronger sense of containment and to dissuade anyone from attempting to enter the other private studios, but also as a possible piece of the environment for players to interact with. I gave no direction beyond, "Please play and explore." If asked a direct question about the components I did answer but offered no guidance or suggestions.

After 15 minutes of play, I planned to ask a series of questions.

- What did you build?
- How did you work with others?
- What would you change?
- How did this process make you feel?

I had these questions, along with a few other fields for tracking which group was which, on a form ready to be filled out. As I would discover, many of the questions were answered without prompting as the play was happening, and so the question period at the end of the session was often shortened in favor of more play time.

At the last minute, I decided to add a question about aesthetics. My design process had produced a range of component styles, some had the paper edges, some did not, some were sealed with hand application, some with the pour over method, some had only a spray seal, and I included one completely unsealed. I asked, "Which components were more or less appealing to you?"

I also created an inventory of the different components, including details about their construction methods and pictures of their condition, to track which methods held up better under use. I would not end up needing that inventory, as you will see in my results.

SESSIONS

GROUP ONE

The first group of the evening was made up of two young women and one older. The two younger women knew each other, and the older woman did not know either of them. When they first began to build, they built separately, the two acquaintances building in one area of the room and the solo woman building in another. But soon, one of them "discovered" that the Stretchies could bridge the divide between their two structures. After that, they proceeded to drape the stretches across from one stack of components to the other and began to explore and build collaboratively. They were the first to use the Stretchies in this way, it was obviously not something I had envisioned. But they were far from the last. Nearly every group after used the Stretchies similarly. If the focus group experience provided no other insights, this was a lesson worth learning; that sometimes a creator has no idea what their creation is for.

They were also the first, but not the last, to put the components on their heads like a hat. The innate wearability of the components was another aspect that had not occurred to me. All the structures built by group one used the stacking design. They built by arranging Oneies and Twoies with open ends oriented vertically, and then stacking more components on top of that base. Though they did not explore the lateral connectivity of the components, they did find interesting uses for the Stretchies. One has already been mentioned, draping them between structures with the stoppers resting inside a Oneie or Twoie, though they also used the stoppers to wrap around one another and extend the reach of the band. They also used a Stretchie to connect two Twoies end to end, something no other group even attempted.



GROUP 1 BUILDING SEPARATELY

This group was the only one that included parties unknown to one another, which is unfortunate because I wanted to explore how the playscape might build new relationships. But from this one interaction, several interesting uses of the components were generated, so I tentatively conclude that other groups of strangers might also have similar success.

During the questionnaire, when they were asked what they would change, group one expressed a desire for even bigger or longer pieces, and more connectors. They briefly brainstormed amongst themselves the idea of cutting notches in one of the points of some components so they could be stacked like Lincoln Logs. The playscape building process made them frustrated, but “in a good way.” Aesthetically, they liked the ones with papered edges, and enjoyed the “crazy quilt” character of them. They thought it would be nice if they were all brightly colored. When I asked about the different sealant methods, they liked the ones that were hand sealed best, both because they looked nicer, but also felt nicer for being both glossier than the sprayed ones and smoother than the poured ones.

GROUP TWO

Group two was made up of two teens, one male and one female, who were known to each other. I did not hear the nature of their relationship, but it was clearly a close one, as they worked together to build a complicated structure quickly and with minimal verbal communication. They were the only group that immediately and exclusively built the “right” way, that is, the way I had envisioned. They expressed to me before beginning that they were both interested in art and design, and architecture specifically. They also were, ironically, students at the Tulsa School of Arts and Sciences.

This group was the outlier for the evening, in that they “got” the design. Though I thoroughly welcomed all the experimentation and out of the box play, it was also encouraging to see that my initial designs weren’t too complicated or too simplistic, and that the connecting mechanism worked for someone I didn’t explain it to.

When asked what they would change, they had what would prove to be an unpopular opinion, saying there were too many Stretchies. When pressed, they said it would be more challenging and therefore more fun to try and build with a limited connecting ability. They also pointed out that the Stretchies should all be relatively short, as the longer ones became cumbersome to thread through. Group two echoed the previous group’s sentiment about it being a good kind of frustrating, and thought it would be a good classroom activity, forcing students to communicate with one another. They expressed appreciation for the look and feel of the Leak Seal coated corrugated edges of the components, especially the stopper edges, saying the way it added rigidity without being heavy or hard was interesting and attractive.



GROUP 1 BUILDING TOGETHER



DRAPING STRETCHIES BETWEEN STRUCTURES



WEARING A ONEIE AS A HAT

GROUP THREE

The next group was a group of 4 boys between the ages of seven and 11 years old, and one adult man who was the father of one of the boys. They were by far my most active group, as you might imagine. They started out somewhat restrained, beginning by stacking, as group one had, but quickly began to build a fence, placing the Stretchie stoppers in one component hole and draping it across to another, forming an enclosed space. They were the first to use the chairs I had set out, as step stools to stack components higher. And soon enough, those towers fell, and the fact that it didn't damage the components, and that no grownups disapproved of the big crash and mess, seemed to free the participants and they began what seemed an almost systematic attempt to maim and destroy themselves, the components, and one another.

Before I continue, let me be clear that they did not succeed at any of these goals. No child was injured, and despite their best efforts, no component was damaged. At all. This was the second most valuable takeaway from the night, after realizing how little I knew about my own creation, that the components were as durable as could be hoped.

In their rampage, group three participants found dozens of ways to play and build. Beyond the fencing and stacking designs, they also pushed the wearability of the components to new heights, climbing inside of Twoies, from both horizontal and vertical orientations, putting Oneies on their feet and then kicking them off like too large boots, and tying each other up with the Stretchies. They also explored the potential of the playscape as weaponry, putting a Oneie on the end of a Stretchie and swinging it around, then letting go like David after Goliath. They used Stretchies like a bola and threw them at one another, attempting to ensnare each other's legs. They went through several iterations of a slingshot design, which held their attention for perhaps the longest time. And of course, they used Twoies as swords to simply beat on one another. They did, also, build and connect laterally, if only to then crash through it.

Beyond the lesson of durability, group three provided many more insights. First, the kinetic nature of



GROUP TWO BUILDING QUICKLY



ATTACKING WITH COMPONENTS



GROUP 3 BEFORE THE TOWER FELL



SLINGSHOT FINAL DESIGN



GROUP 2 BEGINS TO CUT LOOSE

the playscape components. Often building toys are static, you build, then it sits there. But the Stretchies provide an excellent opportunity for the playscape to be more dynamic, and the triangles add to it. A triangle is more innately throwable than a square, and it tumbles more satisfyingly when it falls. Group three also introduced the idea of not only structures, but tools, with the playscape. Often smaller scale building systems can be used to create functioning machines as well as representational models, so why not the playscape?

Very little interviewing was able to take place in all the chaos, but I did get a bit of feedback, mostly from the father, who turned out to be an architect himself. He expressed appreciation for the blankness of the cardboard, saying “Plain cardboard doesn’t have much of a connotation, beyond play.” Cardboard boxes of course being a standard medium for imaginative play in childhood. One of the kids did pause in their chaos to tell me it would be cool if there was a way to make a door. He was in the process of building a fort at the time, and the idea of making hinges from Stretchies did intrigue me.

GROUP FOUR

Group four was two women in their mid-30s, who were close friends. They began by making two individual structures. Interestingly, they each took one kind of component, one took all the Oneies, the other all the Twoies. They did this without a word about it, and I did not even notice until looking at the photos later. They also proceeded to build very different structures. The woman with the Oneies built a straightforward pyramid, whereas the woman with the Twoies built something more complicated, crisscrossing the pieces in a way that group one and their Lincoln Logs idea would have liked. After they finished those, they started piling the components up as high as they can, and then asked sweetly if it would be alright to knock it down. When I said of course, they gleefully did so.

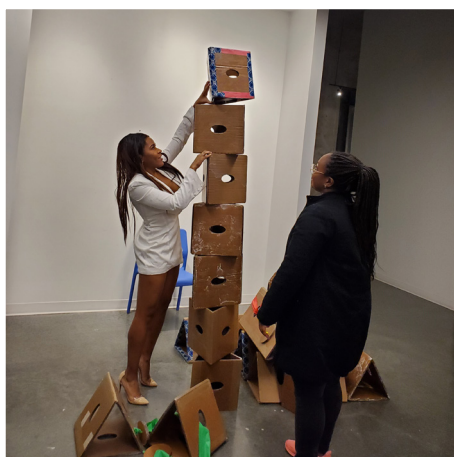
Group Four gave me a lot of verbal feedback during the questionnaire period and were very helpfully specific. They told me that as they were building, they were imagining filling up the whole room with structures, “like an obstacle course for a dog” but then ran out of pieces. They suggested



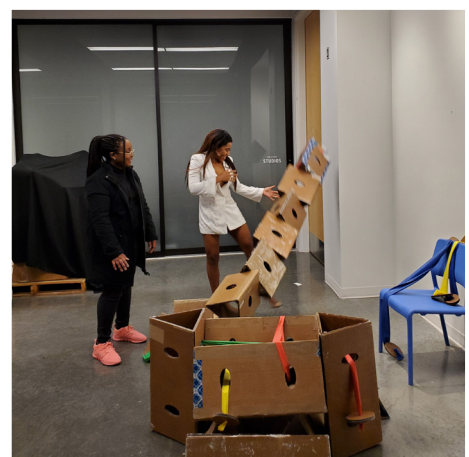
WEARING THE COMPONENTS



SWINGING COMPONENTS AROUND



BUILDING A TOWER



KNOCKING IT DOWN

making the Stretchie stoppers into spheres. They also liked the idea of a variety of sizes of components, but they especially wanted smaller ones, saying it might be less overwhelming for some users, and that you could make more detailed structures. They described the process of building as calming, and therapeutic, “like a fidget spinner.” They also said it was creative and “gets your brain going.” Aesthetically, they liked the variety of colors and textures, though they liked the poured over sealant ones best. The white dappled color reminded them of frosted oatmeal cookies.

GROUP FIVE

Group five was made up of three young women in their late teens or early 20s. They were an extremely vocal group, verbalizing their thought process throughout the session, which was incredibly valuable. They started out building with two of them collaborating and the other working independently. The two working together actually asked her to collaborate, but she wanted to try building on the chairs, which was a first for the night. It also did not work very well, since the chairs were not level, so she abandoned that and began to work with the others.

Working together, they built using both the stacking design and the fencing design, with some extra draped Stretchies for good measure. As they worked, they communicated in the rapid half sentences of people who work together well and often. “You hand me . . . yeah and then I’ll do like . . . ok then give . . . a little to the . . . nice!” They created and verbalized rules for themselves, like “Every piece must be connected to at least one other piece.” And “It has to be secure before we make it pretty.” They called it a fort, a castle, and “a straight up empire.” Before calling it finished, they insisted that at least one of them be able to get inside. Within ten minutes they had built an elaborate structure using every single component, spanning more area than any other structure yet built. When I told them this, they were very proud, and decided to build another to top themselves.

Before starting their second build, they took time to plan. The goal they set themselves was to build as least as wide as they had but build as high as possible as well. They measured out appropriate distances, using the Stretchies, to set out their columns. They were careful to start with Twoies at the bottom and Oneies at the top. They chose to offset their stacking instead of lining up the sides of the triangles for stability. Once the columns were constructed, they then realized they should have inserted the Stretchies before they built too high, but rather than deconstruct, they took the challenge of carefully adding the connecting swags without toppling the columns as a Jenga-like game. With a final decorative flourish of a topping each column with a Oneie set on its side, they were done. They cheered and hugged.

Truly, this was the best moment of the night, if not of the whole project, given the lack of installation. Seeing a group of



GROUP 4 BUILDING SEPARATELY



GROUP 5 USING CHAIRS



AN ELABORATE STRUCTURE

friends build and collaborate with such enjoyment and success, that's what the project was all about. I could have only wished it had happened on the sidewalk, that the moment of creativity had been captured in the public sphere.

Before they left, I got a few bits of feedback about the aesthetics, mostly the texture of the sealant. They were not fans of the spray sealant or the one unsealed one, finding the texture "gross." The hand sealed ones were agreed to be very pleasant, but the uneven surface of the poured ones gave a nice grippy texture that they liked best.



GROUP 5'S SECOND BUILD



A FINISHING TOUCH

CONCLUSIONS

The focus groups helped me to draw two major conclusions about my designs. First, the design is safe and durable. Second, the lateral connection system did not drive engagement, instead shape, among other factors, was the primary attraction.

The durability and safety of the playscape was much higher than I had expected. As mentioned above, not a single component was damaged, not even the ones without any sealant. Though I would still seal all components for weatherproofing, I could rest assured all the components would hold up for a significant amount of time.

The functionality of the system is not what drives engagement. The lateral connection method I had envisioned was not the only way to build, not even the primary way. I was surprised at all the different ways people interacted with the playscape components. I realized that user engagement in the playscape would not be driven by the cleverness of the building system, but by the shape, color, texture, perception of safety, and the way their peers interacted.

The shape of the components was especially important for driving engagement. Most building systems use cubes and rectangles, the triangle is unique and therefore attractive. The three sides require users to access a kind of spatial cognition than a typical four-sided object would. It lacks perfect symmetry, and therefore to build with it is a more complicated process.

Almost all focus group participants described the play processes as challenging in a good way. The human brain likes an interesting but achievable goal. The simple subtraction of one side turned a simple process like stacking blocks into a more complex activity. As in most constructive play, users set their own goals when playing, for some it was simply build a tower, for others it was to construct a machine, but for all users, accomplishing that goal was extremely satisfying, and made more so by the challenge of using an unfamiliar shape.

The shape, size and limited number also encouraged collaboration, which added another layer of complexity to the goal. Users influenced one another, even when they worked independently. The children of Group Three moved in and out of collaboration within moments, swapping ideas and methods back and forth. For the adults, communicating about their goals was made easier by the simplicity of the system, there were only three parts with limited features, therefore it was easy to see and understand your collaborator's motives.

The simplicity of the system also encouraged adults to feel comfortable. Though some adults expressed a desire for brighter colors, I believe that the minimalist aesthetic of the playscape allowed it to escape a childish character that might otherwise be assigned to a play object. Colors could add another layer of complexity, which is something I could explore in a later iteration.



DIFFERENT WAYS OF CONNECTING



GROUP 5 CELEBRATING A GOAL ACHIEVED

VOLUNTEERS

PREPARATION

WHY VOLUNTEERS

From the earliest stages of this project, I wanted to engage the public as much as possible. The Pop Up Playscape is about bringing play and creativity into the shared public space, it is only right that the public should be involved in its creation. Though it also made economic sense to rely on volunteers, with my grant I could have pursued a contract with a manufacturer. But the goal was not only to involve the public but make this replicable. If I could build it using untrained volunteers, then anyone could build it, and it could be built anywhere.

PROMOTION

Back in January, I began posting on Instagram as the Pop Up Playscape. I shared images of the early prototypes, the design process, and progress updates. I did not gather an enormous following, but slowly but surely, I built an audience of people interested in play, design, and the Tulsa Arts District. My Instagram page would be a major tool for promoting the volunteer opportunity.

I also worked with Lauren Collins, ahha's director of communications, and Andrea Pemberton, interim director of TYPROS, to coordinate promotion through their networks. I created a Facebook page as well, that sponsored an event page, which ahha and TYPROS also co-sponsored.

The volunteering opportunity was structured around a kick-off event, where volunteers could learn about the project and its goals, see the entire building process, and become comfortable with the building techniques. Since the building process requires several drying breaks, all the construction could not be done in one big event, so I scheduled several follow-up gatherings to do the remaining work.

SPONSORS

I promoted the volunteer events as a fun activity, something friends and families could come to as a part of a night out. To support the party atmosphere, I sought some sponsors who could provide food and drink. Through both TYPROS and OUUDS connections, I was able to secure a discount on food from Elote Café and Catering. TYPROS also helped me secure an entire case of beer donated by NEFF Brewing. I also purchased some non-alcoholic beverages with my grant money. Both sponsors were recognized in all promotional materials and with signage at the event itself.



EVENT

KICK-OFF EVENT SET UP

The Kick-off Event took place in the evening of Monday February 17, which is a day ahha is closed to the public. This allowed me free access to the open studio floor, including the outdoor studio spaces. It was also Presidents Day, which gave me the day off work to prepare the space.

I set up the room with stations. There was an introduction station, with signage explaining the project, its inspirations and origins. There was a station describing all the partners, including the Urban

Design Studio, ahha, and TYPROS. Most of the stations explained the various steps of the construction. First was a station with an overview of the construction of a component, complete with diagrams and schematics. Then there was the cutting station, which included pre-cut component layers and rolls of uncut exercise bands, where people could round layer edges and cut strips of the bands. Next was the gluing station, where cut layers could be glued into panels. After that, people went to the sealant prep station, where they folded down the flaps of panels I had already glued and rolled flat the edges of the flaps using the Mandy Protocol. The next station was outside on the balcony, where the sealant was being applied. And then there was the assembly station, where panels I'd previously sealed could be put together. Finally, there was the post assembly seal station, where the final edge seal was done.

The set up of all this took me several hours, and there were quite a few hiccups along the way. First, the discovery that the exterior lights were not working properly, and there was no way to know how poorly lit the balcony would be until it got dark. Second, the owner of NEFF Brewing had a skateboarding accident the morning of the event, and no one else was aware of our agreement that he would drop off the beer that afternoon. Third, around 4:30, Lauren Collins got a call from a local news station, asking if they could come to the event. This last was very welcome and exciting, but not planned for and so somewhat stress-inducing.

But the issues were dealt with, one by one. A friend brought me flood lights. Other friends put the finishing touches on set up so that I was able to pick up the beer. Lauren handled the news, who in the end did not actually come. It was, as many events are, a right up to the minute scramble to get everything done, but in the end, I pulled it off. I'll take this moment to thank my mother, Delia Pierson, who managed the door for the entire event, and my friends Jenifer Aguirre, Mandy, Pema and Linda Durham, and Matt and Laura Hammond who helped set up and tear down the event, and especially Matt and Laura who stayed until the very last brush was cleaned.

KICK-OFF EVENT ATTENDANCE

The Kick-off Event was well-attended, with a total of 25 people of all ages participating throughout the evening. Many were friends, but about half were those who had heard about it through TYPROS or Instagram. To my surprise, everyone came ready to work. I expected most people to pop in, have a beer, and go on with their night, planning to come back another time. I had prepped a large stack of materials for each station, expecting to demonstrate with them and have extras for people to experiment with. But every single person who sat down to work took extreme care and attention to the instructions and created usable elements. And every single piece of material was glued, cut, sealed or



AHHA STUDIO PREPARED FOR
EVENT



GIVING INSTRUCTIONS TO
VOLUNTEERS



VOLUNTEERS AT CUTTING STATION



VOLUNTEERS AT GLUING STATION

otherwise completed to the fullest extent that it could be. My only regret is that I did not prep more.

The evening progressed in stages. About half the attendees showed up right on time, and I gave them some time to mingle and snack before I began. I had expected more come and go, as I mentioned, so I had not planned on giving a big public speech. But it was clear that was what was needed, so I began. I walked the group through all the stations, taking questions as I went. This took about 20 minutes, and a few more people had showed up by the end of it. I cut the first group loose to begin building, while I ran another group through the process. As I went along, I answered questions and gave advice.

I was pleasantly surprised to see how quickly some took to the building process, and how well strangers worked together. One of the best moments of the evening was watching those who had just met swap tips on gluing technique and catch each other's mistakes when they got lost. I was also surprised by how popular the Leak Seal work was. I expected that to be the least desirable station, but it was greatly the opposite. Adults and children both were delighted by the goopy, messy process. Another delightful moment of the evening was watching a child ignore all the tools and gleefully spreading Leak Seal on a component with both (gloved) hands.

I encouraged everyone who came to sign up for another session, and nearly everyone did, some for several sessions.

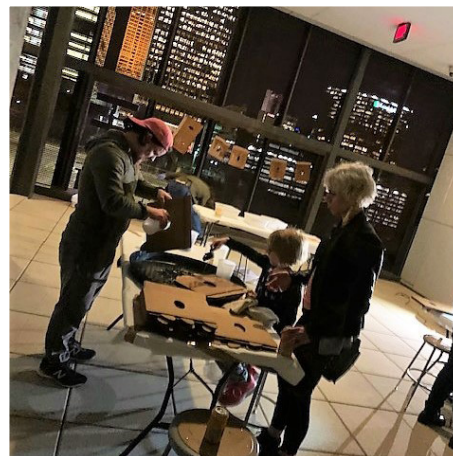
FOLLOW UP SESSIONS

The surprising successes from the Kick-off Event led to some drawbacks for the follow up events. As I said, I did not expect people to engage quite so fully in that first event and assumed the more intense volunteer activity would occur at the follow up events. This turned out to be the opposite. Though many people did sign up for follow up sessions, most of those did not actually attend the events they committed to.

I did attempt, with moderate success, to recruit new volunteers, through word of mouth and social media. But the follow up workdays were almost entirely one-on-one events with me and one other volunteer, and at least half of those follow up volunteers were personal friends. Special thanks go out to Floyd Hinman, a volunteer with no connection to me or the project who came to multiple follow up workdays.

These sessions were not without their hiccups as well. The laser cutter issues continued, and there were days when I feared I would have nothing for my volunteers to work on. We also ran into problems with the panel cutter in the ahha workshop and had to borrow parts from the studio cutter. In the end, things still moved along at a steady pace. I could have wished for a larger final count, but by the end, I had 20 Oneies, 18 Twoies and 23 Stretchies.

Below are the names of all my volunteers. Thanks and appreciation go out to all of them!



VOLUNTEERS AT SEALING STATION



VOLUNTEERS AT ASSEMBLY STATION

**POP UP PLAYSCAPE
VOLUNTEER BUILDING
SESSIONS**

COME PUT YOUR MARK ON THE POP UP
PLAYSCAPE AT ONE OF THESE BUILDING SESSIONS.
EACH SLOT CAN ACCOMMODATE UP TO 8
VOLUNTEERS. ALL SESSIONS AT AHHA TULSA.

RSVP TO JAMIE.PIERSON@GMAIL.COM

WED FEB 19, 5:30-8:30 PM

SAT FEB 22, 10 AM-2 PM

TUES FEB 25, 5:30-8:30 PM

FULL SUN MARCH 1, 2-6 PM

TUES MARCH 3, 5:30-8:30 PM

NEW SAT MARCH 7, 10 AM - 2PM

SPONSORED BY

*NOTE THAT THIS PROJECT MAY BRING VOLUNTEERS INTO CONTACT WITH FUNNELS, RESPIRATORS AND OUTDOOR SPACES WILL BE PROVIDED.

VOLUNTEER EVENT PROMOTIONAL
POST FOR INSTAGRAM

JENIFER AGUIRRE
ALISA BROOKS
JODI DEAN
LINDA DURHAM
MANDY DURHAM
PEMA DURHAM
BART FORD
ELEANOR FORD
KATIE FORD
MADDOX FORD
JACKIE GONZALEZ
MATTHEW HAMMOND

LAURA HAMMOND
CLAY HARRIS
FLOYD HINMAN
STACY JOHNSON
KATIE KELLER
CHELSEA KESTER
ASHLEY KNOX
ANDREA PEMBERTON
BECKY PIERSON
DELIA PIERSON
JESSI STRINGER
MICHELLE STYVE

DILLON HAWKINS



VOLUNTEERS WORKING AT FOLLOW-UP EVENTS

INSTALLATION PREPARATION

Coordinating with ahha staff, installation was scheduled to open during Spring Break. Though ahha was sponsoring a day camp the entire week, we decided not to install until Wednesday, when the building opened to the public. We planned to do a dry run installation the Friday before, when Flaming Lips front man and creator the King's Mouth installation, Wayne Coyne, would be making an appearance at the gallery. The opening on Wednesday would be a soft opening, so that I could observe players without fanfare. The press would be invited that Saturday. I would give an artist talk in the gallery during April's First Friday event, and the installation would conclude April 5.

During the installation, a time lapse camera would be installed in a position to capture as much playscape use as possible. The front desk staff of ahha would place the components on the street upon opening and bring them in at night. They were welcome to interact with and observe the players as much as the liked, and share any insights with me, but were under no obligation to do so. Many of them had been involved as volunteers, and all were invested in the project, so I anticipated that many would provide data and insights. I would come once a day to check on things and observe.



INSTALLATION PROMOTIONAL POST
FOR INSTAGRAM



INSTALLATION PROMOTIONAL POST
FOR INSTAGRAM

CANCELLATION

Of course, none of this happened. I had written the press release, tested the time lapse camera, trained the front desk staff, and begun to promote the installation. Then, the Friday event with Wayne Coyne was canceled due to coronavirus precautions. By the following Monday, ahha announced it would be closing for the time being. On Tuesday, the day before installation, I announced the Pop Up Playscape installation would be postponed indefinitely.

Both ahha and TYPROS were in full support of this decision. A few attempts at alternate forms of installation were considered but discarded as full shelter-in-place orders came from Mayor Bynum. At the time of this writing, no concrete plans are in place for when and where the playscape will be installed. TYPROS and ahha are still fully invested in the project once shelter-in-place orders are lifted and it is once more safe to gather as a community.

FUTURE PLANS

Though the installation at ahha has been postponed, other developments have arisen. I was asked to apply and accepted to Artist Inc, a program run via partnership between ahha and the Mid-American Arts Alliance. Artist Inc is a series of workshops that address the specific business needs and challenges faced by artists and designers. The workshops are currently planned to continue, though they have been postponed until October 2020.

When I regain access to my studio and other resources, I intend to explore the design modifications I have discussed in this document. I will use the workshops and resources of Artist Inc to pursue manufacturing contracts for larger scale production. I also plan to redesign my quarter scale prototype based on the findings of the full-scale version, to create a tabletop playscape product that could be used in classrooms and offices while public gatherings are limited.

It is impossible to predict when restrictions to public gatherings will be lifted enough to allow a playscape installation to proceed safely. But in the meantime, I will continue to support and nurture the partnerships I have built during this project.



POSTPONEMENT POST FOR
INSTAGRAM

THE FUTURE OF SHARED URBAN SPACES

WHY DO MORE WORK?

As my project sputtered to a halt, I felt there were relevant questions worth exploring regarding public spaces during a pandemic. It was clear even in the earliest days that the novel coronavirus and its illness COVID-19 would leave a lasting impact on our cities and public spaces. I have committed to seeing this project through with my partners, despite how the world may have changed around us. I needed to figure out how and if the Pop Up Playscape could remain relevant and safe in our new normal.

I began a literature review and conducted a series of interviews. The interviews were open-ended discussions with a range of public space managers and leaders, listed here. Also listed are the publications I reviewed. Full citations can be found in the endnotes.

INTERVIEW SUBJECTS

Anna America, Tulsa Parks and Recreation
Paulina Baeza, Tulsa Planning Office
Jack Becker, Forecast Public Art
Mick Cornett, former mayor OKC
Elena Madison, Project for Public Spaces
Rodger Randle, former mayor Tulsa

PUBLICATIONS

Architectural Digest
Citylab
The Conversation
Curbed
Monument Lab
New Cities
New York Times
Project for Public Spaces
Slate
Washington Post
Wired

I set out to answer three questions: What are the experts saying about how the pandemic will affect our cities and public spaces? How will the ways we use public spaces change? What should we as urban designers and managers of public space do now?

A note on this research: The pandemic situation changed and is changing rapidly. Over the course of my research new ideas were put forward, proven wrong, retooled, and attempted again with success. No one really knows what will happen and what is the right way to proceed. I have attempted to include the ideas and projects that have been consistently appearing in a variety of situations.

WHAT ARE THE EXPERTS SAYING?

REPORTS OF THE DEATH OF CITIES HAVE BEEN GREATLY EXAGGERATED.

In mid-March, an article in the *New York Times* claimed that “Pandemics are anti-urban.”⁷ This sentiment has been repeated by many in the media, both news and social, including a study claiming that the New York City Subway system was a primary vector for the disease. However, an overwhelmingly larger number of well-researched claims have been made to the opposite. In an article for *Curbed*, Kate Wagner argues that, “blaming dense apartment buildings, which are inanimate objects, for what are social, human problems,” is a logical fallacy.⁸ In fact, the first outbreaks in the New York Metropolitan area were in the New Jersey suburbs, and rates there remain higher than in the city itself. “You expect to see it spread more rapidly in densely populated areas like cities, but it does that anywhere the virus is introduced and where people are in contact with other people,” said Dr. Stephen Morse, professor of epidemiology at Columbia University Mailman School of Public Health in New York. “All it needs is fertile soil because it spreads quite well, unfortunately.”⁹ Most conclude that it is not the density that creates COVID-19 hotspots in cities, but rather a complicated tangle of causes, often traced back to infrastructure issues or the personal responsibility of individuals for maintaining appropriate hygiene.

One aspect of city life that may in fact be facing an existential threat is public transit. Not only are the risks very real, transit workers have some of the highest infection rates among essential workers, but public transit was already struggling with an image problem.¹⁰ With the added perception of being a disease vector, some transportation managers may have to make some difficult choices and major changes to their public transit systems.¹¹

THE OUTDOORS IS NOT CANCELED.

Droves of fresh pedestrians have taken to the streets since shelter-in-place orders have spread across the globe. People who would otherwise never bother are being forced to take walks, visit parks, and enjoy public spaces if they want to go anywhere except the grocery store.¹² Also, the restrictions on public transit have sent more riders to the street to walk or bike. Many cities have closed roads to cars entirely, and some hope to make the changes permanent.¹³

The front yard has become important again. People are using them in ways the Council on New Urbanism has dreamt of for years—neighborhood social hours with lawn chairs on driveways, front porch parties, sidewalk parades. The outdoors has become a vital part of a quarantine sanity plan.

And it is not just a safe way to socialize from a distance. People are carving out personal spaces in public places, finding their special spot. Maybe their favorite bench in the neighborhood park, or a favorite house on the block they like the look of, or as Neysa Page-Lieberman, a curator from Kansas City, describes in her response to a *Monument Lab* questionnaire, a piece of impromptu participatory public art.

An unmarked statue of a Greek goddess in my new adopted home of Kansas City is the site beckoning me. With streets deserted and so much distance between the few passersby, I look at her and see care. A mysterious offering of ceramic birds surrounds her and continues to be moved around by invisible hands. I visit her often during my escape-jogs but I’ve yet to see anyone near her. One day last week, she had a new protective mask, this week the mask was gone and a scarf replaced it. Others are caring for her during a health and economic crisis, paralleling what’s happening throughout the city every day. How many others are living for this like me, coming to see the birds appear, disappear, and change formation.¹⁴

She further describes the impact of these spaces, “Parks, squares and walkways are serving

a new essential purpose, beckoning us as potential safe spaces beyond the isolation of home. We're forming bonds with open spaces and objects where human contact is absent."¹⁵ Shared public spaces are a symbol of the connection we miss with our communities, and by spending more time in them, people can maintain a bit of that absent connection.

DESIGN FOR LIVING THROUGH A PANDEMIC

There are many predictions being made about how design can be used as we move forward in a post-pandemic world. Most are speculative, though some are in the tactical early phases. But much work and time will need to pass before we know which of these elements will be effective.

Easily updatable communication and signage has become vital during this time. Circumstances and regulations change rapidly, and the public must be kept informed. Social media has done much of the heavy lifting in this area, but physical signage and onsite communication is still needed. Most solutions are analog at this point; handwritten signs, paper banners and the like. Some park systems are reassigning or hiring staff to be stationed at parks to answer questions and enforce rules. But as we move forward, more permanent solutions will be needed. New types of wayfinding signage with computer displays, more prominent info kiosks, and other means to keep the public updated on changes will be needed.¹⁶

Public spaces will seek to use easier to clean surfaces, less wood or sand, more plastic, ideally with an antimicrobial surface treatment.¹⁷ Automated or touchless devices and fixtures will become more prominent. Automatic bathroom doors, water fountains operated by a foot pedal, and other means to prevent hand manipulation are being explored. One of the most touted examples of this on a city planning level would be to incorporate pedestrian crossing signals into the standard traffic light cycle, thus eliminating the need for "beg buttons" at crosswalks.¹⁸

Spatial layouts will need to adjust from a central gathering place to a more nook-based arrangement. The image below is a pre-pandemic design for a cancer ward waiting room, a location where immunocompromised people are forced to gather, and social distancing has long been the norm. The arrangement of separate small seating areas around the perimeter, and a center broken up by smaller nodes of fixtures, can serve as a model for arranging our public spaces in the future.¹⁹

Lastly, many believe this will signal a return to modernist design, with its focuses on "light, air, and openness." Many others believe that though many aspects of modernism, the pale colors, smooth lines and connection to the outdoors, will be useful in future designs, much of the rest of modernism's influence such as a tendency towards isolationism, rigidity, and sprawl can be left in the past.²⁰



ICRAVE'S DESIGN FOR THE DAVID H. KOCH CENTER FOR CANCER CARE AT MEMORIAL SLOAN KETTERING CANCER CENTER

HOW WILL PUBLIC SPACE USE CHANGE?

Public spaces will soon become our culture's primary source of community and connectedness. Not only will many rush back to our parks, streets and squares as soon as they are able, they will likely be their only option for entertainment for some time. Evidence is mounting that transmission rates drop drastically in open air, many are discussing moving restaurant dining rooms into parking lots,²¹ meetings and classes onto a building's grounds, movie theaters consider showing new releases in parks. Our outdoor lives are going to become much more full, and managers of public spaces and urban designers need to be ready to meet the demand and maintain safety.

Part of that accomplishing that goal will be mitigating the very real dangers, but more than that, to address the fear many will have towards public gatherings. It will be extremely important that public spaces clearly and visibly adhere to all safety guidelines, while at the same time creating an atmosphere of wellness and safety. This will be important not only to prevent disease, but to rebuild a sense of trust in our communities.

WHAT SHOULD WE DO?

ENCOURAGE CUSTOMIZATION AND PERSONALIZATION OF PUBLIC SPACES

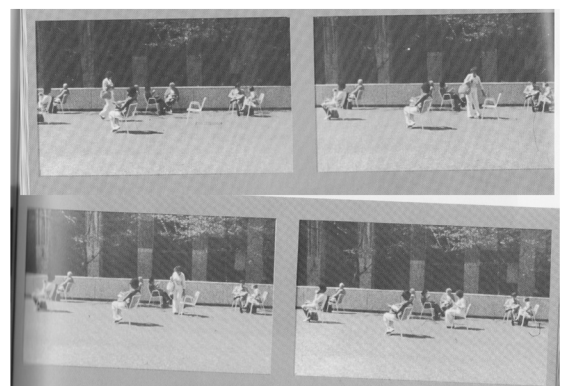
Think back to Neysa Page-Lieberman's story about the statue. She found connection in the evidence of others as they left their mark. This phenomenon has already been used to great effect in projects like Candy Chang's "Before I Die."²² Public spaces can use this to give people a feeling of gathering, even when visitors are staying six feet apart. Art installations and park improvements that allow users to decorate or personalize the public spaces will build connection, and a sense of comfort, safety and ownership. It makes a shared space into a shared home. Projects could be as simple as a chalk wall, a Little Free Library, or a memorial fence. Simply something to allow people to leave a trace as they pass.

Along the same lines, providing unmoored objects can accomplish much of the same goals. As William H. Whyte demonstrated,²³ if a chair is not bolted down, users will move it, even slightly, simply to make it their own. Chairs, benches, toys, umbrellas, all could be provided in parks and squares. Unmoored objects also make it easier to socially distance in household groups, and they are often easier to clean and replace. There are logistics of transportation, storage, and potential theft or vandalism, but with the existing shift to greater onsite personnel in public spaces, these concerns can be easily managed.

These measures would build that sense of ownership that I believe is vital for public spaces. It will make people feel at home in our shared environment. This sense of belonging and ownership will make people feel safer, but it can also make them behave more safely. If they think of a park or sidewalk as theirs, they'll care for it, and follow the rules in the same way they would if it were only their family they were putting at risk.



CANDY CHANG'S "BEFORE I DIE"
INSTALLATION IN NEW ORLEANS, 2011



MOVING UNMOORED CHAIRS AS CAPTURED
BY WILLIAM H. WHYTE

DECENTRALIZE PUBLIC SPACES

The age of mega parks and central business districts is, if not over, on hold, as is the age of huge yearly festivals and concerts. Cities, non-profits and parks systems need to shift their thinking from big, celebratory, occasional public space use to daily, newly necessary public space use. That can mean shifting resources like staffing and programming to neighborhood level spaces. Organizations must find a way to shift all the money and time they planned to spend, and earn, at that big annual arts festival downtown, to support regular, consistent traffic to local businesses. If the elaborate playgrounds at the biggest park in town cannot be safely maintained, deploy the staff usually working there to create steady programming and activation in neighborhood parks. It can also mean shifting transportation resources, like sidewalks, to the spaces where they're actively needed. Instead of cities forcing a road diet on a bloated commercial district, they can serve up a sidewalk feast to a starving residential neighborhood.

Managers and designers can take this opportunity to see the city as it is truly used, or as people wish it could be used. This is a chance for citizens to guide the future of their spaces, if leaders will only listen to them.

CONCLUSION

If these points sound familiar, its because my research has led me to conclude that the Pop Up Playscape can not only be relevant and safe for a post-pandemic city, but it and tools like it will be vital to the future of public spaces. The needs of public and shared spaces align even more closely with the goals of the Pop Up Playscape: create a sense of ownership, increase connection between users, create intentionality, and let users guide the future of the space.

I am grateful that this project has given me the opportunity to learn such a broad range of skills, from analysis, communication and design, to AutoCAD and how to use a hole saw. This year, and my entire graduate school experience, has left me confident and ready to use my skills to strengthen our communities and protect our public health throughout the uncertain times ahead of us. And I look forward to designing, building, and playing safe in our cities and public spaces.

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