

Imaginarium—Architectural Form at Play

In response to the Annual Playhouse Design Competition sponsored by the regional AIA chapter an interdisciplinary team of faculty and students designed and built a playhouse structure. Housed in a large off-campus industrial environment, the team questioned definitions of play, mechanisms of perception, methods of research, pedagogy, building conventions, technology and materials. What does it mean to play: in design, in making, in experiencing? How does one design a playhouse?

I belong to the vast majority of educators who believe that deep down in ourselves we each carry the genius of innovation. When faced with new design endeavors we seek ways to channel the creative beginnings of something original, to set off the next wave of invention. Especially in architecture school, we continually study precedents and consider the question:

Did you find that (in the world) or did you make it up?

We tend to think that technology and invention are in a binary opposition to nature. Critical culture demands a choice by which to categorize the means and ends of procedural activity.² Both of the usual simple choices, however, shy away from engaging such a heavily contested dualism as nature vs. technology. After considering either of the options, when would an answer to the above question have to be “both”?

The idea of play has been widely theorized in every possible meaning and application. From sociology to engineering, play is fundamental to the acquisition of knowledge while challenging it at the same time. To play is a complex endeavor with paradoxical quality of plying the boundaries between subject and object, between the self and the world. We as makers and re-arrangers of the material world owe our design processes to the writings of psychoanalyst Donald Winnicott, who saw play as a state of simultaneously experiencing desire and reality.² Considering play as a question invites us to an altogether different kind of process whose product has little to do with the objects, forms and proclamations that arise from “making”, but rather with the invention of an alternative reference system that eludes verification from rational argumentation and external economic necessity. In working on this project, play was to engage things both made and found.

BACKGROUND THOUGHT

Most theories of play in the context of artistic education are concerned in varying degrees with the reflective state of mind or with social behavior. For instance, the

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romantic tradition of art and architecture reflecting nature's lawful and rhythmic order have had a long lasting influence. Friedrich Von Schiller saw art as an impulsive reaction, purely aesthetic and devoid of any claim to reality³; while for Gottfried Semper play was humanity's mechanism of mediating its contact with the world outside⁴. Regardless, prominent modern-day views of play see it as *frivolous*⁵ and *unproductive*⁶. Our affluent society sees virtue in work as an active effort of the ego – to seek and get from the world whatever is needed to persevere. It is recognized that civilization had its start though work in connective social structure and the continuous evolution of tools. Play, on the other hand, does not suggest a model of progress or survival.

In more recent times it was not until the modern revisionism of the 60's that *architectural play* was seen as a potent alternative for investigation. Most of the adventurous "players", like Banham, Superstudio, Archigram, the Smithson's, the Eames', used architecture as the "playing field" where the technological, the natural, and the psycho-social met. Domes, bubbles, endless grids, mass production and nomadism, etc., sought the liberatory potential of architecture between the self and the world. Like Banham's and Archigram's adherents, many saw architecture's preoccupation with monumentality and endurance as inhibiting the astonishing progress that technology promised.

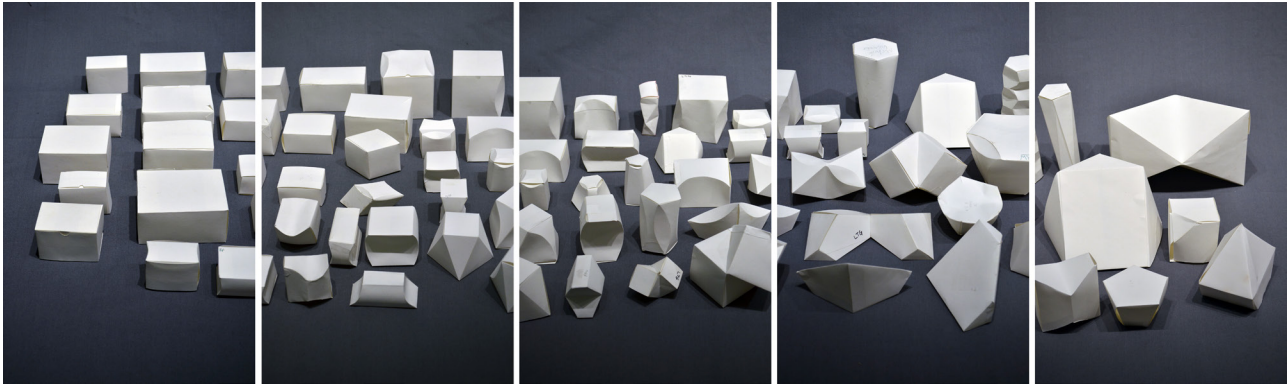
On one hand, *Theory and Design in the First Machine Age*⁷ still reads true for we in the field of architecture have embraced its call for running in the "fast company" of other disciplines. Although much of Banham's optimism may seem belonging to its time, there has always been a reverse correlation between technology and play: the more evolved the tools (the more productive human activity is), the lesser the degree of play. The bias of the project herein was that by disassociating technology from its usual application one could enable its use as an accessory to play.

PROGRAM BRIEF

Imaginarium was a child-size building made in response to the 2013 Annual Playhouse Design Competition organized by the Eastern Pennsylvania chapter of the American Institute of Architects. The competition aimed to promote design and architecture in the Lehigh Valley and the entries were open to the public to use with the start of Christkindlmarkt, the traditional 40 day holiday in Bethlehem, PA. In late December of 2013 the entries were auctioned to raise funds for the Pediatric Cancer Foundation of the Lehigh Valley. The brief called for structures no larger than 6'x6'x8' and large enough for a child to play in. They were to be constructed creatively with a focus on design and materials. The competition required durable designs for outdoor use that withstand setup, transport, and wear-and-tear of display. It would not require insulation or glass windows. The design was to be transported in a standard-size pickup truck or equipment trailer.

DESIGN

In one of Plato's earliest dialogues, *Meno*, Socrates is able to extract complex definitions from an uneducated and unassuming servant's recollections and observations. The preexistence of knowledge (and what truth is) is one of the most influential of the Platonic themes. It attributes the process of learning to recalling what we have forgotten: to learn is to remember. From the beginning the collaborative team was interested in expanding the idea of play beyond something that is either learnt or unlearnt. Insofar as a structure was to stand up and create enclosure, we saw it is an object that can be rationally modeled. However, we were interested in keeping away from structural or stylistic archetypes. While we pursued proto-architectural



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form, we were keen on avoiding iconographic referencing - we resisted the common strategy applied to children-bound creations to create small versions of big things (princess castle), or big versions of small things (mushroom house).

By utilizing digital-modeling programs we challenged traditional formal idiom, which is associated with the constraints of period tools and technologies. In 3d computer modeling form was easy to define by its properties and, in turn, those properties are combined or taken apart. In the flexible context of the digital model, where sizes, scales, and materiality are easily assigned and reassigned, our play was similarly easy to define by its properties. We were able to “playfully” manifest relations, adapt and foster response. In play, modeling and experiencing were a resonant pair. We were reminded of Michelangelo’s claims that in working with a mute block of Carrara stone he was liberating the statue that had been buried in the stone since the beginning of time, he was merely uncovering an underlying pattern.

We often produced complexity in our acts of play – through play we created patterns so complex that we got the illusion of randomness. Play was always a matter of context⁸.

Our design process followed a 4-step agenda that strategically aimed at establishing formal concepts and opportunities to either depart from them when the design became too familiar, or to reintroduce them when the design concept became too complex to rationalize.

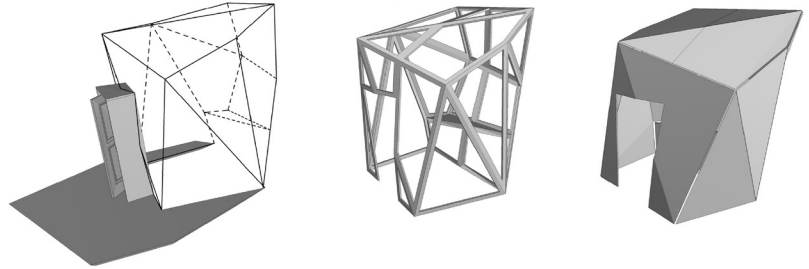
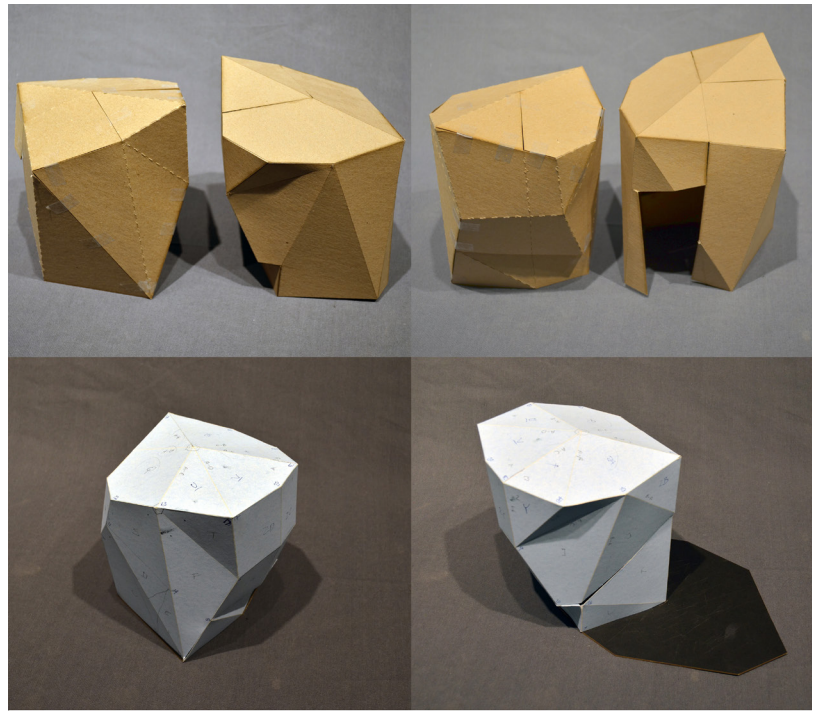
The first step started with *genoforming* – a process which systematically alters the defining parameters of an original form. A 6 x 6 x 6 feet cuboid, based on the program brief, served as the genetic model for the design – it consisted of geometric relationships that captured desired qualities, such as edges with a preferred length, polygons, and differentiation between adjacent planes. We translated visual judgment into numerical criteria in instances when form with a high degree of variability could not be evaluated numerically.

Next, the initial set of differentiated cuboids was culled with respect to a preferred range of edge lengths, a maximum number of polygon sides, and a range of angles between adjacent planes.

In the third step we generated a composite form. Of special importance to the team was the idea of novelty – evolved form need not refer to a pre-existing condition neither does it need to signify an external entity. To what degree can an object be in and of itself, its own signifier and signified?

The fourth step was to generate of a structural system. We analyzed the components

Figure 1: Playtime illustration by Gabriella Barouch



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of the generated form for structural stability and adaptability to design changes. We treated edges as structural frames, planes as panels, and we applied the structural joinery linearly along the frame edges. A parametric model constructed in *Rhinoceros* automatically recalculated all components and prepared shop drawings for fabrication on-the-fly.

FABRICATION

Far from having a unified workflow for digital design and fabrication, the process relied on continuous switching between digital and physical model making, discussion, and numerical and qualitative analyses for decision-making.

The form of the final design was generated in 3d computer modeling software which allowed for iterative simulations, quick modifications in the design, and prototyping. Components were then moved to various software applications so they could be laser-cut and CNC-routed by local commercial fabricators. All the final assembly was done by hand. Materials used were $\frac{3}{4}$ " plywood, $\frac{1}{4}$ " two-way mirrored acrylic, laser-cut 18ga steel joining plates, and wood screws.

SPATIAL EFFECTS

The effect produced by the two-way mirrored acrylic is such that during the day you can see out, but no one can see inside. At night a photo sensor turns on a light inside and the effect is inverted - the house is completely transparent to the outside

Figure 2: Form at various stages of development and exploded view of frame and skin.



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observer and completely mirrored to the inhabitant. The playhouse turns into a place where a kid can see everyone but no one can see them, only to have that same idea flip directions at night. New games and ways to play with this effect are easy to imagine.

We were surprised to find just how interactive the final design was. As the resulting reflective-transparent effect started to materialize during construction, it became a psychological game of perception. Standing inside at night the user has no idea if anyone is looking at them from the outside and yet they are seeing an infinite space of reflections.

Ideas of public/private space were of particular interest - how privacy is cultivated, inhibitions and self-awareness are imposed and assimilated. Can architecture simultaneously provide prospect and refuge? While asking these questions the team drew parallels between the initial designs and a variety of cinematic and literary sources.

THE PLAY CONDITION

In this project we used play mostly as an analytical tool for discovery and transformation. We generated and developed ideas in the course of their realization.

In architecture, play is often seen as an expression of process rather than a fully realized form. Play is assumed to be a state of flux, and as such incomplete in resolution. While a lot of value has been placed on fragmentation, incomplete-ness as

Figure 3: Day-time and night-time interior views.



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an attribute of form addresses the issue of an infinite joinery system, the end result of which is at least unpredictable. In contrast, fragmented form addresses issues of unity and parts-to-whole relationships and aims at a prescribed aggregate end. Incomplete form is organic – its parts emerge from internal interactions, rather than mere assembly⁹. Being incomplete, a work will continually provide the basis for its renewed interpretation and understanding.

In incomplete-ness lied the fundamental design opportunity: to learn each time from a new condition, permitting one to approach each task with the attitude of a “beginner”¹⁰. Herein lies our critique: if we define play as inherently iterative, how do we resist the accumulation of expertise that inevitably develops in the process of play? The essence of enclosure, after all, is that it is discrete and... complete. By *housing* play, we concretized the design process; we monumentalized play. At the end, play was hard to manifest in the resulting permanent construction; it is mostly through tactics of use, manipulation and through different and interfering design approaches that play clashed with architecture. Play is subversive by being easy on the world: in play we did not oppress, did not judge, did not endure. Regardless of the outcome, play was fun.

Figure 4: Exterior views.



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ACKNOWLEDGEMENTS

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Figure 5: Exterior views

ENDNOTES

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