

Unfamiliar Construction: Material Programming and Deployable Form

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Consumer-oriented construction is shaped by a collection of plug and play products: dimension lumber, CMUs, appliances, window assemblies, premade vanities, and so forth—an extension of Reyner Banham’s poignant mid-century analysis of the American fascination with gizmos.¹ This lingering post-war vision is delivered not as a ready-made kit in the vein of Sears, Roebuck & Co.’s early prefab homes but as individual parts nonetheless intended to go together, furnished by Home Depot, Lowes, Menards, and others.²

Unfamiliar Construction addresses the portability and consumption of architectural products through the creation of a compact, rapidly deployable installation. Completed for the

Home Planet exhibition at the *Oslo Architecture Triennale 2019*, *Enough: The Architecture of Degrowth*, the project provides an alternative to the high-cost, disposable pavilion architecture that has become synonymous with biennials, triennials, and similar venues of architectural discourse from nineteenth-century world expos through today. Instead of complicity in this culture of disposable pavilions, the project takes form as a space easily transported and adapted to new sites, capable of having a life beyond its brief exhibition window.

CARRY-ON ARCHITECTURE

The great 21st Century American pastime of “carry-on chicken”—in which an individual attempts to sneak as large



Figure 1. Carry-on architecture. Image by authors.



Figure 2. Deployment from a suitcase. Image by authors.

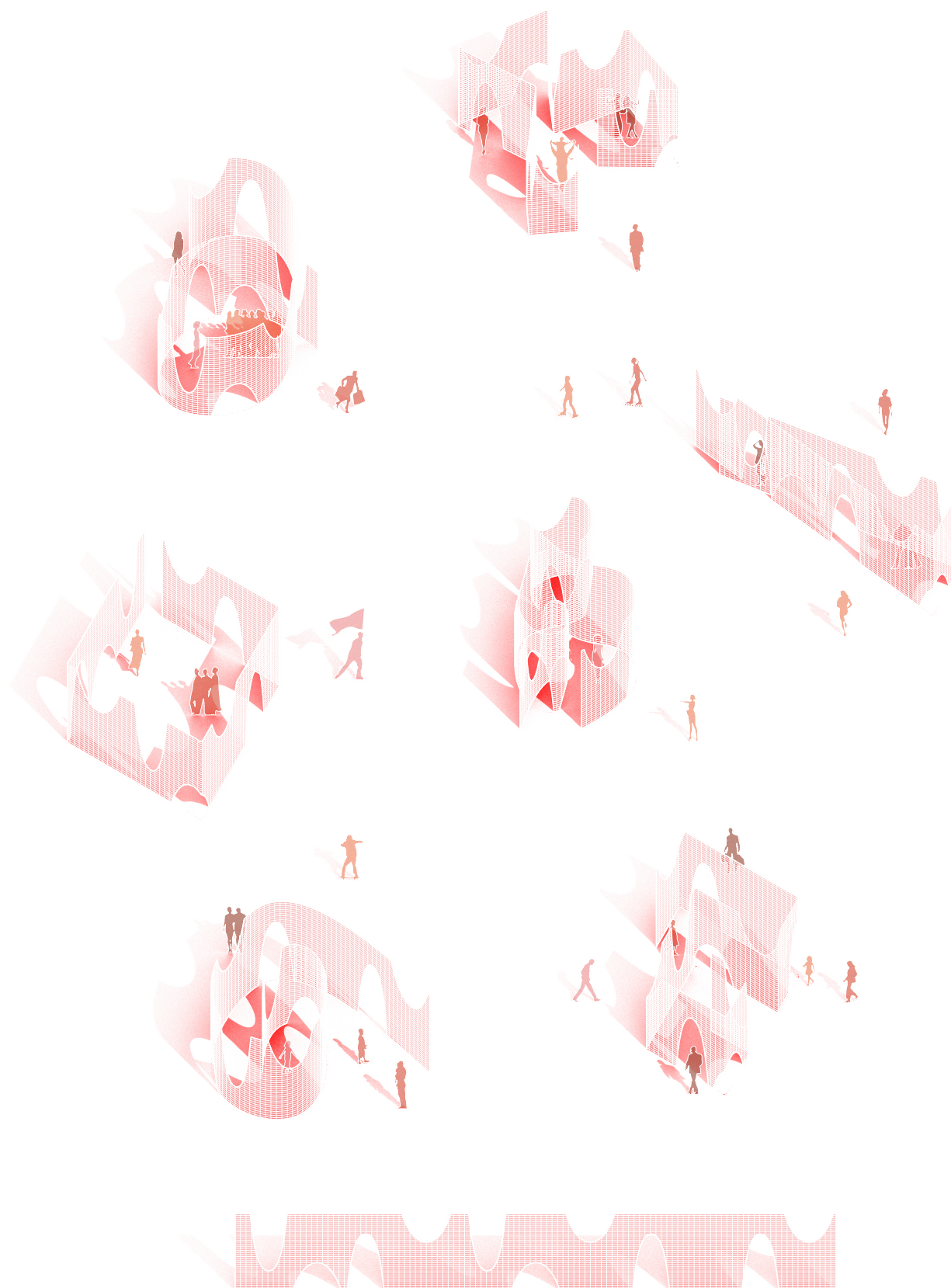


Figure 3. Possible formal deployments can adapt to local contexts. Image by authors.



Figure 4. Surface appears as ghosted masonry. Image by authors.

a carry-on suitcase as possible past the airline's vigilant gate clerk or be forced to pay exorbitant checked baggage fees—is a cultural phenomenon reflective of mass consumerism on a personal level. Unfamiliar Construction draws attention to this situation with a clear suitcase well within carry-on limits and very lightweight, which openly displays its contents. The traveling of the installation to its site becomes performance as much as the deployment itself. The project builds on a lineage of deployable projects including those by Ant Farm, whose *Inflatocookbook* proposed a democratized DIY approach to lightweight structures, and Haus-Rucker-Co, who extended the confines of traditional construction through interventions in a staggering array of materials including novel plastics, food, and inflatable armatures.³

DEPLOYABLE FORM

Once deployed, the project recalls typical brick masonry construction, forming a single continuous wall with arched passages and thresholds. Rather than a permanent opaque mass, the wall is made of translucent red fabric, thermoset with a geometry of bricks and cut and draped to form a series of arches. The imprint of bricks gives structure to the fabric, while also transforming the masonry technique from one of mass and permanence to one of collapsible temporality.

The transparent nature of the fabric surfaces recalls the work of sculptor Do Ho Suh, but in this case the fabric's texture is structured not by a rigid frame but by its material programming.⁴ Taking on different forms in different sites, the surface is allowed to hang, drape, bend, and sag, embracing its textile nature. The public is welcomed and encouraged to enter and manipulate the installation, which ripples in the wake of passersby—a new ephemeral masonry.

The project as realized relies on an existing structure from which it can be suspended. The parasitic nature of such a structure forces a close relationship between permanent construction and deployable form, but in some cases this requirement severely limits deployment opportunities. Future iterations of the project will explore a lightweight and collapsible structure, not unlike the folding fiberglass or carbon fiber tubes of camping tents, that can likewise be packed in and deployed from the suitcase. Such a development would free the project from deployment site restrictions, such that it could be erected anywhere as an independent structure.

MATERIAL PROGRAMMING

The project was fabricated using an adapted Japanese technique of 3D shibori, in which heat is applied to polyester fabric

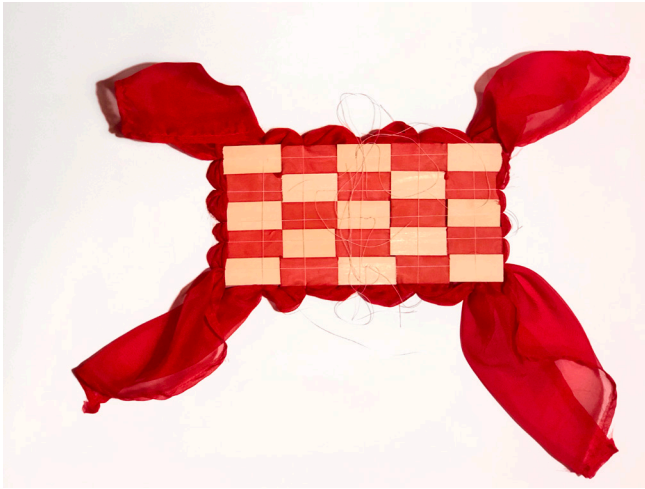


Figure 5. Small scale prototype forming. Image by authors.



Figure 6. Small scale prototype. Image by authors.

to fix a three-dimensional geometry into its surface.⁵ Such techniques have been limited to applications in fashion; in mass markets, this technique can be recognized in late nineties' popcorn shirts, characterized by spherical imprints that allowed the fabric to expand and contract, as well as the couture of Japanese fashion designer Issey Miyake, whose *Pleats Please* line uses the related art of thermosetting pleating to achieve expansion and contraction in his garments.⁶

Large sheets of polyester sheer voile fabric were pressed between two relief molds of plywood blocks on a flexible mesh backing. Once the fabric was pressed within the mold, it was heated using a wallpaper steamer. The applied heat thermoset the geometry into the polyester fabric, materially programming it with the creases and forms of the bricks, while selective stitching reinforced these geometries. Once all the panels were thermoset, they were sewn together to form the single surface of the installation.

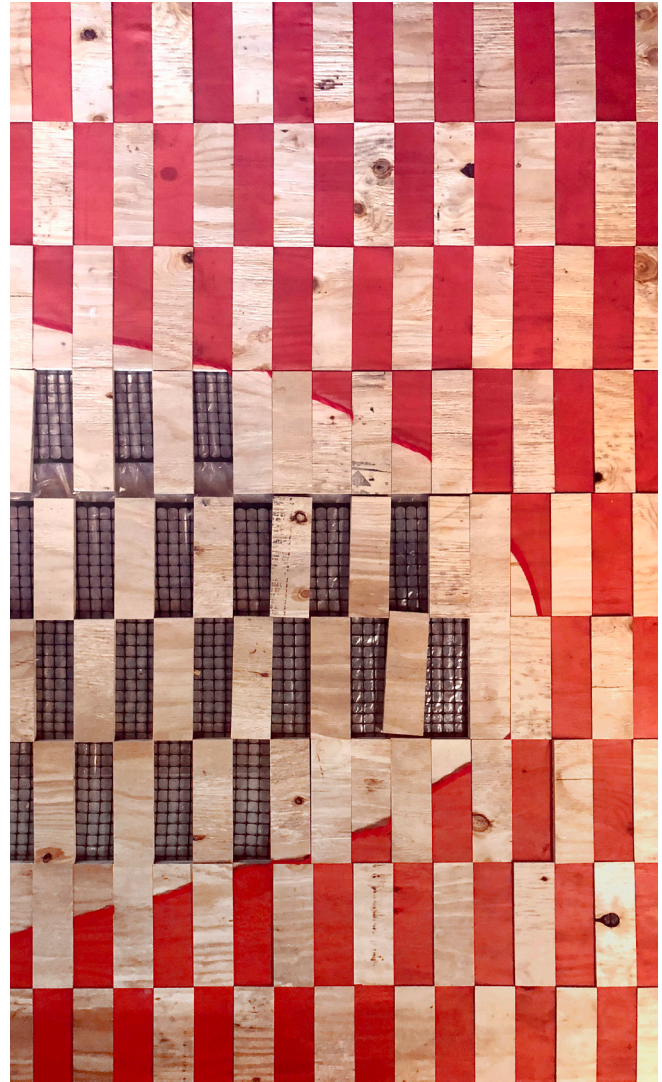


Figure 7. Full scale fabrication: fabric in mold ready to be thermoset with steam. Image by authors.

Easily deployed within multiple contexts, the red brick fabric scrunches neatly into a clear carry-on suitcase and unfurls quickly and in different configurations in various sites. The material programming embedded the form within the fabric, such that it could be compressed into a suitcase, flown across the globe, and later unpacked while retaining its geometry, resisting wrinkles, and giving the fabric shape when installed.

Skylar Tibbits's concept of self-assembling architecture proposed programming geometry into matter in order to facilitate its eventual deployment, using 3D printed plastic geometries to demonstrate the concept.⁷ Unfamiliar Construction extends ideas of self-assembly to include fabric; the translation of the 3D shibori technique from clothing to spatial wrapper demonstrates the potential of programming geometry into fabric to achieve three dimensionality and define space.



Figure 8. Fabric forms catenary arches. Image by authors.



Figure 9. Layered arches. Image by authors.

ACKNOWLEDGEMENTS

Unfamiliar Construction was exhibited as part of the *Oslo Architecture Triennale 2019, Enough: the Architecture of Degrowth*, where it was installed at Garmanngården, one of Oslo's oldest surviving buildings, built of brick in 1622. The authors would like to thank the University of Tennessee for supporting Unfamiliar Construction with travel funding.

ENDNOTES

1. Reyner Banham, "The Great Gizmo" in *Design By Choice* (London: Academy Editions, 1981), 108-114.
2. Sears, Roebuck and Company, *Sears, Roebuck Catalog of Houses, 1926: An Unabridged Reprint* (Philadelphia: Athenaeum of Philadelphia & Dover Publications, 1991).
3. Ant Farm, *Inflatocookbook* (San Francisco, 1973); Haus-Rucker-Co, Dieter Bogner, Kunsthalle Wien and Architekturmuseum Basel, *Haus-Rucker-Co: Denkräume--Stadträume, 1967-1992* (Klagenfurt: Ritter Verlag, 1992).
4. Jennifer Johung, *Replacing Home: From Primordial Hut to Digital Network in Contemporary Art* (Minneapolis: University of Minnesota Press, 2011), 165-171.
5. Maria Cybulska and Tomasz Drózd, "Traditional Japanese Shibori and Contemporary Textile Design," in *Textiles of the Silk Road, Design and decorative techniques: from Far East to Europe*, ed. Beata Biedronska-Sfota and Aleksandra Gorlich (Warsaw: Polish Institute of World Art Studies, 2016), 33-44.
6. The popcorn shirt fad endures through chain drugstore bargain bins and nostalgia-fueled websites such as <http://www.magicbubbleshirts.com/>; Issey Miyake and Midori Kitamura, *Pleats Please: Issey Miyake* (Cologne: Taschen, 2012).
7. Skylar Tibbits, "The Self-Assembly Line," in *ACADIA 12: Synthetic Digital Ecologies [Proceedings of the 32nd Annual Conference of the Association for Computer Aided Design in Architecture (ACADIA)]*, San Francisco, California, (2012), 365-372.



Figure 10. Draped masonry. Image by authors.