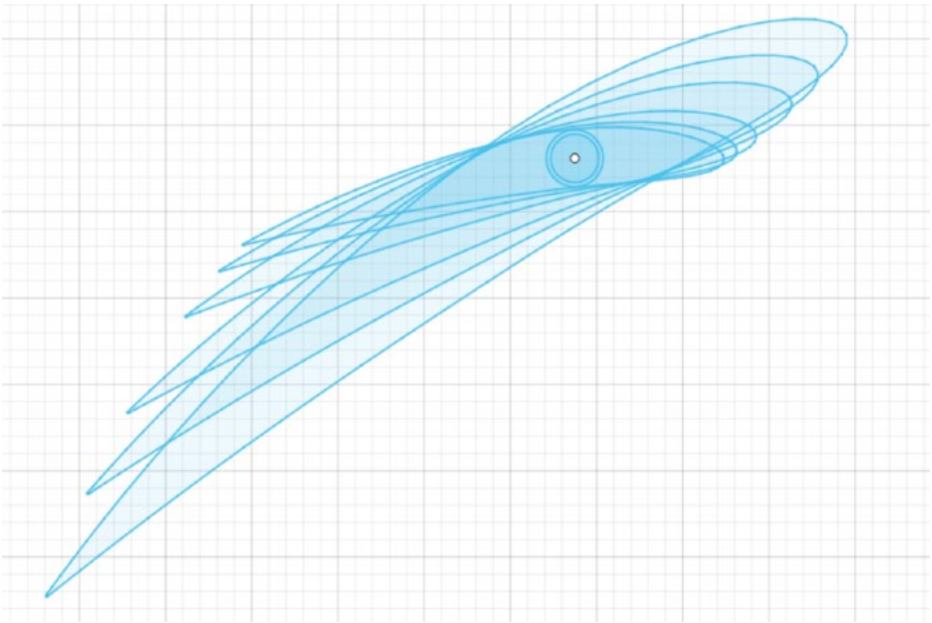

Nick Raffel airfoil

September 6 – October 16, 2022 Ezra and Cecile Zilkha Gallery

Nick Raffel
airfoil

Only upon entering the glass hallway approaching the gallery is the "work" visible. Nick Raffel's sculpture, a custom-made high-volume, low-speed (HVLS) fan, is suspended from the ceiling of the gallery space. Viewed from underneath, even while it rotates, it's possible to see that each fan blade has an aerodynamic profile that twists and tapers over its length.[1] The blade design, developed by the artist in collaboration with aeronautical engineer, Mark Drela, and the relative lightness of the materials (balsa wood and carbon fiber), make the fan incredibly energy efficient. It requires ⅓ of the horsepower of similarly classed, commercially available fans. It is also bi-directional, able to pull air up from the floor or push air down from the ceiling, depending on the season. Within a typical HVAC system that delivers conditioned air on an as-needed basis, a ceiling fan can reduce energy load by mixing stratified air (hot air trapped at the ceiling with cooler air towards the floor). In the Ezra and Cecile Zilkha Gallery, the blower that supplies conditioned air runs constantly. By placing this installation within the existing climate control of the gallery, Raffel's fan is perpetually keeping up with the uncalibrated delivery of conditioned air. While the fan can be turned on and off and its speed can be adjusted, its energy savings potential cannot be realized without a complete overhaul of the HVAC system of the Zilkha Gallery. The perpetual motion of the HVLS fan reflects some of the architectural and mechanical deficiencies of the gallery's building.

In designing Wesleyan University's Center for the Arts, architect Kevin Roche cited the influence of surrounding period architecture as well as his own colonial-era home. In these vernacular architectural references, "there is no spatial transition from inside to outside."[2] Roche's priority for this visual continuity is evident in, for instance, the Zilkha Gallery's large-scale single-pane windows that not only minimize the barrier between interior and exterior, creating vast apertures for sunlight to suffuse the gallery space, but are paired with a layout in which the architects sought to minimize the visual presence of utilities, creating long clean sight lines in the interior. The design also deprioritized addressing the potential profound climactic transition across the buildings' envelope—the buildings' lack of insulation is symptomatic of the cheap energy costs in the era predating the 1973 oil crisis. The ideals of the Roche-Dinkaloo design, in fact, make it difficult to pursue renovations for increased energy efficiency without radically altering the aesthetics of the Center for the Art's architectural space. These historic design decisions express understandings about aesthetics but also demonstrate ideas of how space was rationalized and how material itself was defined.

Raffel's sculpture draws our attention to the material presence of that which we thought of as not (in space). Which is, put simply, air. Dorit Aviv, scholar and architect, shared in a recent lecture, "Interior volume for modern architecture is the inverse of matter...voided space defined by the material around it...homogeneous and static..." "But in fact this interior volume is not a void. It is full of matter and this matter is perpetually moving through space." [3]

Installation view of Nick Raffel, *fan,* 2021, Pied-à-terre, San Francisco, 2022. Photography by McIntyre Parker.

In a recent solo presentation at Pied-à-Terre, San Francisco, Raffel added passive airflow into the gallery space (and the first-floor drycleaner beneath it) by installing a passive ventilator (whirlybird) on the outside of the building. Pressure differentials between inside and outside caused air to flow through the building and into the gallery. This activated a wind dial Raffel had installed into a window which opened to an internal air shaft in the building. Prior to the exhibition, there was no ventilation in the building, no operable windows, and no exhaust. Curator Jordan Stein reflected that "given the show's site-specificity, air flow is a prerequisite not just for art, but (of course) for life, and the proof of its circulation is what we do with life, whether it's work or play or art or whatever." [4] As with his exhibition in Zilkha, Raffel makes present the invisible materials of air and thermal exchange and the systems which attempt to manage them, leading us towards an understanding of the building as a "convective mechanism." [5]

Forty years ago the artist Michael Asher's 1992 installation at the Kunsthalle Bern addressed the building's mechanisms. For *Kunsthalle Bern, Bern, Switzerland, October 16 – November 29, 1992,* Asher situated the Kunsthalle's radiators "in the entrance gallery in accordance with their original positions and orientations in the rooms from which they were removed." [6] He worked with an architect to re-route each radiator's piping from their original locations through the galleries. Birgitte Pelzer, who wrote for the exhibition's catalog, focused on how the work relied on circulation and paths of energy and yet existed outside of market value, posing a different form of objecthood for sculpture. [7]

Building on Asher's refiguring of the medium, Raffel conceives of sculpture as "sensor/indicator rather than as a discrete object." [8] Its presence is evidential, pointing to or referring viewers towards the systems it is acting within. While Asher's installation highlighted the systems and context which support the presentation of art, Raffel's also *does* something with them. To better imagine what it is doing, please look down at the gallery floor. Along the northern limestone wall of the gallery there are two small vents which deliver cooled or warmed air depending upon the season. The system's return vents, which draw circulated air from the gallery back down to the blower, are situated approximately 75' away along the eastern walls of the Main Gallery space. After being drawn to the blower in the basement, a thermometer reads the return air and determines how much chilled or warmed air to mix in with it to achieve the set temperature. In the design of its HVAC system, the gallery depends on passive thermal and humidity exchange to achieve balanced heating and cooling in the two different spaces. The North Gallery, where Raffel's fan is installed, has empirically been cooler. A thermal mapping of the space over the summer months revealed variations across this gallery's vertical space—as much as a ten degree and 6% relative humidity difference between the air at the ceiling and along the floor. Raffel's fan redistributes the warm air from its ceiling, encouraging it to recirculate along the corridor and merge with other air towards the return.

As art, the fan operates as a sign, pointing to the conditions of the gallery space and the current administration of its systems. The fan also contributes something to aid those systems, and though adding to the energy costs of the building, it also intends to make the internal climactic space more balanced and comfortable. In *airfoil,* Raffel merges a consideration of context with content, bringing utility to sculpture without foregoing its aesthetic qualities. His treatment of air and thermal exchange lends them a material presence while reminding us of the limitations of their visuality and the importance of shifting out of inherited modes of systems thinking. Lisa Heschong, practicing architect and author of Thermal Delight in Architecture, suggests that in our past, building science was focused on the physical world and its measurements and that our current building science is concentrated on virtual modeling.

Installation of ductwork and whirlybird turbine ventilator on the exterior of Pied-à-terre, San Francisco, 2022. Photography by McIntyre Parker.

In the future Heschong suggests, we'll think and plan through a building's ecology, its interconnectivity with our psychological experience of it and its broader relationship to, and impact on, the living world.[9]

NOTES

1 For more information, see https://asmedigitalcollection.asme.org/memagazineselect/article/123/08/42/368315/From-Helios-to-Our-HouseLooking-at-Fan-Blades.

2 Joseph M. Siry. “Roche and Dinkeloo’s Center for the Arts at Wesleyan University: Classical, Vernacular, and Modernist Architecture in the 1960s.” Journal of the Society of Architectural Historians, Vol. 75, no. 3, September 2016, p. 344.

3 Aviv, Dorit. “Thermal Architecture.” *YouTube,* uploaded by MIT Architecture, 6 April 2022, https://youtu.be/xEaKqeaz2yc.

4 Stein, Jordan [@cushion_works_and_friends]. *Instagram,* 17 April 2022, https://www.instagram.com/p/Ccd7SJ1Pok7/.

5 Conversation with the artist, December 8, 2021.

6 Rorimer, Anne. *Michael Asher: Kunsthalle Bern,* 1992. Afterall Books, 2012, p. 1.

7 For elaboration, see Birgit Pelzer, ‘Entropy,’ in Ulrich Loock (ed.), *Michael Asher, 16 October – 29 November 1992* (exh. cat.), Bern: Kunsthalle Bern, 1995.

8 Conversation with the artist, December 8, 2021.

9 Heschong, Lisa. “Lisa Heschong: Visual and Thermal Delight in Architecture.” *YouTube,* uploaded by WaterlooArchitecture, 25 June 2021.

Nick Raffel

(Portland, Maine, 1982)

Nick Raffel's work in sculpture, installation, and digital modeling considers architectural and infrastructural systems which facilitate the flow of air, water, and gas. Recent works intervene in pre-existing mechanical systems, questioning their efficiency, sustainability, adaptability, and healthfulness. Raffel considers passive solutions to energy production and the ways designed objects, including his sculptures, are situated within and relative to natural forms of energy. Recent exhibitions include Pied-à-Terre, San Francisco; Regards, Chicago; Kunstverein Nürnberg, Germany; Colgate University, Hamilton, New York; and JOAN, Los Angeles.

RELATED EVENTS

Opening Reception
Tuesday, September 13, 2022 at 4:30pm
Curator talk at 5pm
Ezra and Cecile Zilkha Gallery

Artist Talk by Nick Raffel
Wednesday, October 5, 2022 at 4:30pm
Ezra and Cecile Zilkha Gallery

Cover image:
Detail of a CAD drawing of the fan blade profile. Technical consulting by Mark Drela, MIT.

Curated by Benjamin Chaffee. Art installation by Paul Theriault and exhibition management by Rosemary Lennox. Special thanks to Nick Raffel, Rani Arbo, Andrew Chatfield, Michael Conte, John Elmore, Joshua Lubin-Levy, Peter McGurgan, and Joseph Siry.