

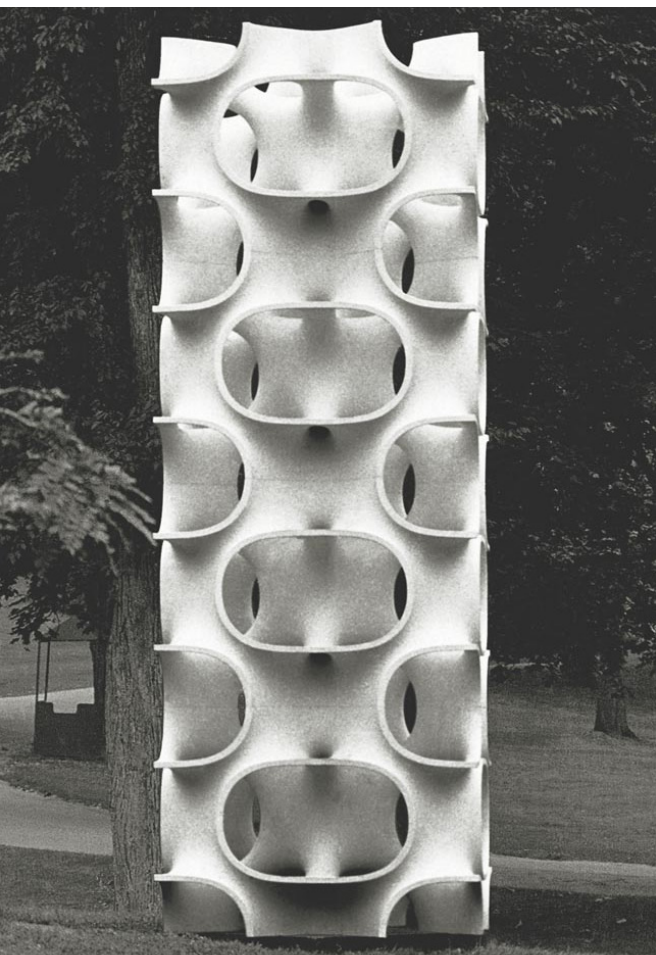
Multispecies Design: Design and Digital Fabrication of a Bird Refuge Wall



Animal Wall by Gitta Gschwendtner.



Pigeon tower



Erwin Hauer's perforated surfaces.

ARCH 571 | Design: Detail and Architectonics | M/W 1:00 to 5:50

ARCH 593 | Special Problems in Detail and Fabrication | F 1:00 to 3:50 (online)

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Course Overview

While people-centered design focuses on human needs, multispecies design expands to include all living beings. Ecological degradation has led to the loss of ecosystems that serve as habitats for various species. In particular, habitat loss is the greatest threat to birds. American Bird Conservancy (ABC) is helping to conserve millions of acres of habitats for birds by protecting forests, restoring grasslands, cleaning up beaches for coastal birds, and preventing bird collisions with glass in big cities.

This studio challenges students to design a Bird Refuge Wall for migratory birds along the Chicago lakefront. This wall will assist wildlife in the area and encourage further habitation. From the tectonics standpoint, the wall will consist of discrete interlocking parts for easy assembly, while students are tasked with digitally fabricating several modules. The digital fabrication method involves designing reusable 3D printed formwork (3DPF) to create curved geometries suitable for various bird nesting needs. The project installations will serve as proof-of-concept for using 3DPF for the repeated casting of precast modules assembled into a wall.

-Fabrication

Primary to the studio will be the understanding and implementation of fabrication techniques and production methods in the development of the precast elements. One of the intriguing potentials of the studio is the fact that precast touches upon a breadth of technologies and fabrication methods. The technique that we will focus on is using 3D printing to fabricate formworks.

All required 3D printing will be done at Digital Technologies in Architecture (DiTA) Research lab at no cost. The majority of the materials that are needed for fabrication will be funded.

-Computation

With the advancement of computational design technologies such as Computer Aided Design (CAD), parametric, and simulation tools in the architectural design field, design is taking new forms. New tools affect the way that architects think and design. The design-thinking scope constantly shifts from “designing the outcome” to “designing and defining the relationship between the design components” to implement an iterative computational practice. Interdisciplinary design and simulation-based practices heavily rely on computational design workflows. Computational geometry will be understood along with geometric principles for creating complex freeform surfaces in order to create geometries for precast.

-Prerequisite

The studio and seminar are packaged and complementary. Students who are enrolled in the studio will be asked to enroll in the seminar. Please check the meeting days of the seminar for any potential conflicts. The seminar focuses on exploring computational design and simulation methods, having in class discussions about readings, and having invited guest talks on the related topics.

Any Questions? email me at nemami@illinois.edu