

ABSTRACT

This workshop takes a research-based approach. In it, we will experiment with the spatial implications of material organizations, that is, the basic organizations of matter found in nature and man-made assemblages. We will be studying both the form and spatial properties these organizations exhibit as well as their underlying generative rules and operations.

Advances in contemporary architectural tools are enabling the field to challenge conventional design and construction methodologies, allowing for a streamlined process where construction methods are integrated within the design process and more interesting and complex spaces can be realized. Students will be introduced to this way of thinking by studying historic examples of pioneering architects and engineers experimenting with geometry such as Antonio Gaudi, Frei Otto and Buckminster Fuller.

The studio will then move on to analyse specific material organizations such as branching, clustering, and folding to understand each organisation's inherent properties. These findings will be transformed into 3-dimensional architectural applications that are unconventional, challenging and exciting. The primary tool used in the studio will be physical model-making culminating in an installation.

BIOGRAPHIES

Sarah Manning

Sarah Manning is an architectural and urban designer with 10 years post-graduate experience. Her education in architecture and urbanism comprises a Master's Degree in Architecture and Urbanism from the Design Research Laboratory at the Architectural Association and previous masters' coursework at the University of Pennsylvania. Her undergraduate degree from Duke University focused on international studies.

Sarah jointly runs an architectural practice in London, Space Agency, and is currently working on projects in London and Milan. She was previously an Associate Director for the international strategic design consultancy Space Syntax, where she led a team of urban designers focusing on public spaces with sites ranging from London to Jeddah, Saudi Arabia.

Sarah's international focus and political interests led her to become a founding Trustee of the charity Architecture for Humanity UK. Within Architecture for Humanity she has jointly established a humanitarian lecture series aimed at publicizing architects' and designers' efforts to use their ingenuity to promote humanitarian relief and development.

Sarah has given lectures at the XIV Quito Architectural Bienal in Ecuador, London Biennale events, the RIBA's young architects group People in Space, at the Bartlett School of Architecture and the AA Summer School. She has also served as a guest critic and tutor at the University of California at Berkeley, University of East London and Syracuse University School of Architecture. She is an Honorary Senior Research Fellow at the Bartlett School of Architecture.

Sarah's work has been exhibited and published at the New London Architecture "Public City" Exhibition, in GQ Style magazine's "Blueprint for London" edition and as part of the Space Syntax 6th International Symposium in Istanbul.

Peter Feldmann

Peter Feldmann is an Architect and urban designer with 8 years' post graduation experience. His architectural education is of an international character, including Germany, the United Kingdom and the Netherlands. He graduated from the University of Karlsruhe in 2001, studied in the Bachelor's degree program at Oxford Brookes University and Master Classes, "Building with Steel", "Building with Water" and the urban design laboratory "Fascination Istanbul", at the Berlage Institute in Rotterdam, the Netherlands.

He has collaborated with some highly regarded architects, including UNStudio, Auer&Weber, WilkinsonEyre and Future Systems. Peter lectured and participated in various lecture series, debating concepts and techniques in architecture and urbanism. He has been successful in a number of International Architectural and urban Design Awards, including a honorable mention in the Arch+ Award in 2001, an honorable mention at the 2001 ArchiPrix International, European 7 in 2004, in Las Palmas, Spain, and European 8 in Reggio Calabria, Italy and a honorable mention for his European 8 project for Chateauroux, France.

Peter has a keen interest in the possibilities of computational geometries and digital manufacturing. He is a frequent guest critic at the Bartlett School of Architecture and has taught advanced 3D modeling and generative scripting at the University of East London. He has given numerous presentations and lectures including at the ArchiPrix International Forum in Genoa, Italy, the European Conferences in Dordrecht, the Netherlands, in Athens, Barcelona and Berlin. Peter's private and professional work has been published in several books and magazines.

CONTACT DETAILS

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VERTICAL STUDIO, WSA 2009

TRANSFORMATIVE ORGANIZATIONS

Sarah Manning & Peter Feldmann

"Structure is about organization – loose and relaxed, or rigid and fixed in hard symmetries. A structural element is not just a beam or a column ... Whatever the reference, the outcome of a work is governed by pattern – a base structure for order and primary equilibrium, and the finer markings of ornament for richer dynamics."
Cecil Balmond, *Informal 2005*.

BRIEF

This workshop takes a research-based approach. In it, we will experiment with the spatial implications of material organizations, that is, the basic organizations of matter found in nature and man-made assemblages. We will focus on the transformative potential of the material world and the concept of material organization. We will be studying both the form and spatial properties these organizations exhibit as well as their underlying generative rules and operations.

Basic generative operations such as branching, clustering or folding are fundamental to the emergence of organization throughout all scales and types of material systems. These operations, and the rules that govern them, are embedded in how systems are produced and have a large effect on a system's form as well as on its performance. Through a rigorous investigation these operations, the designer increases their capability to actively transform their environment in innovative ways. Advances in contemporary architectural tools are enabling the field to challenge conventional design and construction methodologies, allowing for a streamlined process where construction methods are integrated within the design process and more geometrically interesting and complex spaces can be realized.

Students will be introduced to this way of thinking by studying historic examples of pioneering architects and engineers experimenting with geometry such as Antonio Gaudi, Frei Otto and Buckminster Fuller. Students will then develop their understanding of this approach by analyzing the inherent properties within a specific material organization. These findings will be transformed into 3-dimensional architectural applications that are unconventional, challenging and exciting. The primary tool used in the studio will be physical model-making culminating in a large-scale installation.

PRIMARY AIMS AND OBJECTIVES

- Develop an understanding of an organizational logic, such as folding, bifurcation, wrapping, branching, etc.
- Make informed judgments about the appropriateness and scale of material
- Develop a coherent spatial strategy through the understanding of organizational and geometric principles, limitations and potentials
- Expand students' awareness of non-standard geometries: their intrinsic properties and the complexity of their application to built form

DELIVERABLES

- In the first stage of the program, students will be asked to develop a physical module, illustrating the key principles of the form of the organization. An important component of this first stage is choosing a suitable material for the specific form of organization.
- The second stage will culminate in a prototype which aggregates the module developed in the first stage into an installation.

PROGRAMME

Each tutorial will begin with a brief slide show presenting inspirational precedents.

Week 1

The first week will focus on the transformative potential of the material world and the concept of material organization. Basic material organizations will be introduced to the students providing existing examples found in our natural and artificial environments.

Students will select one organizational principle and explore it in a small group. Students will be encouraged to experiment with form, space and geometry using physical and digital models. Possible organizational principles include: bifurcation, hinging, packing/clustering, branching, looping, lamination, subtraction, addition, and bundling.

For the following tutorial students will be asked to identify and analyze the basic properties and inherent rules of these organizations. This could take the form of a series of physical study models, diagrams, drawings or digital explorations.

Week 2

Students will present the outcome of the first week's work to the unit.

Following the initial analysis, Students will investigate potentials and limitations of their chosen organizational principle; the forms and spaces they can produce and the materials in which they can be realized.

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Students will be asked to develop a module that will form the basic building block for a subsequent prototype. Therefore Students will need to start thinking about how the module can be aggregated into a larger assembly.

The objective of the first two weeks is for the students to develop an understanding of non standard geometries and to develop an overview of material organizations, their inherent rules and logic, potentials and limitations.

Week 3

Students will present the outcome of the second week's work to the unit.

In the third week, students will focus on aggregating the previously developed module into a larger assembly. This Assembly should adhere to the same logic as the module and can take the shape of an installation, furniture, building detail or inhabitable space. These Installations will be the basis of the final review.

LINKS AND RESOURCES

UN Studio Design Models, Ben van Berkel, C Bos, Thames&Hudson, 2006

Notes on the Synthesis of Form, Christopher Alexander, 1964

Constructing Architecture: Materials, Processes, Structures a Handbook, Andrea Deplazes, Birkhauser Verlag AG, 2005

Architecture in the Digital Age, Design and Manufacturing, Branko Kolarevic, Grafos SA, 2003

Atlas of Novel Tectonics, Reiser + Umemoto, New York, 2006

On Growth and Form, D'Arcy Thompson, Cambridge, 1961

The Practice of Everyday Life, Michel de Certeau, California, 1984

Finding Form, Frei Otto & Bodo Rasch, Deutscher Werkbund, 1995

Cecil Balmond, A+U, Japan 2006

Structure in Nature is a Strategy for Design, Peter Pearce, MIT press, 1978

Practice architecture, technique and representation. Stan Allen, GB Art, 2000

Architectural Philosophy. Andrew Benjamin, New Jersey, 2000

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