

EXPLORATIONS

Teaching, Design, Research

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Padiglione Svizzero

La Biennale di Venezia, XI. Mostra Internazionale di Architettura

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Commissioner: Urs Staub

Curator: Reto Geiser

STUDIO DESCRIPTION

Gramazio & Kohler, Eidgenössische Technische Hochschule Zürich (ETHZ)

Research Studio	Gramazio & Kohler, Architecture and Digital Fabrication
Team	Professors Fabio Gramazio and Matthias Kohler Tobias Bonwetsch, Ralph Baertschi, Michael Hanak, Nadine Jerchau, Michael Knauß, Daniel Kobel, Michael Lyrenmann, Silvan Oesterle
Institution	Swiss Federal Institute of Technology, ETH, Zurich
Website	http://www.dfab.arch.ethz.ch

The research unit Gramazio & Kohler for Architecture and Digital Fabrication, located at the Department of Architecture at ETH Zurich, was established in October 2005. The unit is headed by Prof. Fabio Gramazio and Prof. Matthias Kohler, who also operate an architectural office in Zurich. The research team consists of individuals with varying backgrounds, combining the different expertise of architects, craftsmen, physicists and computer programmers.

The unit explores the concept of “digital materiality”, the interconnection of data and material and the resulting implications on architectural design. The possibility of directly and mechanically producing building components described on the computer through the use of digital manufacturing techniques not only expands the spectrum of possible construction products, but, by directly informing the design process with the logics of the material and construction system, validates a unique architectural expression and a new aesthetic.

In order to examine these new production conditions, Gramazio & Kohler installed a flexible construction facility based on an industrial robot, which is directly controlled by the design data and able to fabricate building elements at a real world scale. In addition, the robot being a generic machine, it can work with different tools depending on the specificity of the performed task. This indeterminacy allows to implement novel construction techniques as well as to rethink traditional ones.

The particular interest of Gramazio & Kohler involves researching additive production techniques used for the construction of non-standardized architectural components. Additive production can be described simply as a three-dimensional printing process. By depositing material precisely where it is required, functional and aesthetic qualities can be interwoven with the structure. This possibility to “inform” architecture down to the level of the material extends the reach of the architect into the production process and thus his creative freedom. The aim is to develop criteria for new structural and constructive systems that are intrinsic to digital logics and can be applied to architectural design and production.

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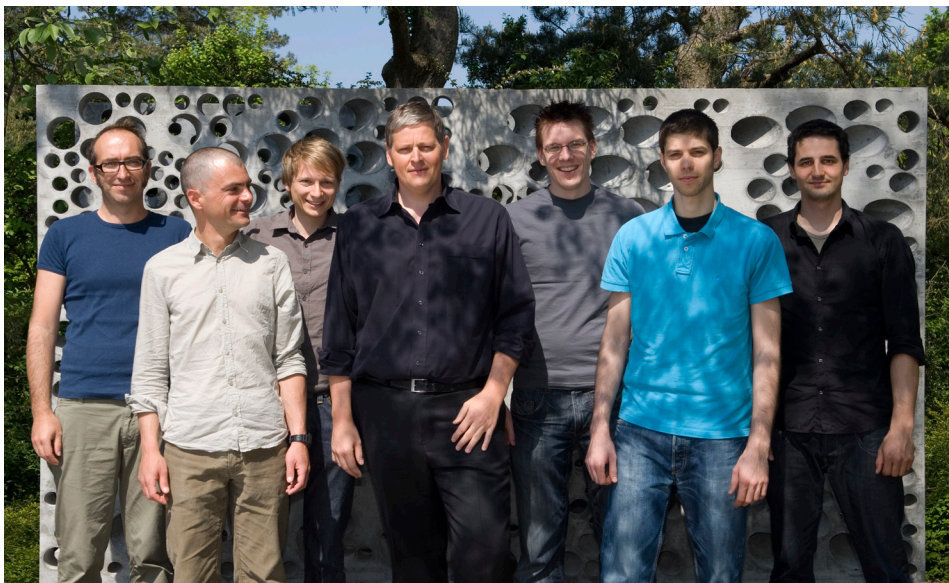
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VISUAL RESOURCES

Gramazio & Kohler, Eidgenössische Technische Hochschule Zürich (ETHZ)

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1. Gramazio & Kohler, Architecture and Digital Fabrication, Research Unit, 2008
Ralph Baertschi, Fabio Gramazio, Tobias Bonwetsch, Matthias Kohler, Michael Lyrenmann, Silvan Oesterle, Michael Knauß (from left to right).

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2. Gramazio & Kohler, ETH Zurich, *Foam*, Research Studio, 2007 (Students: Kathrin Hasler, Christoph Junk, Hannes Oswald, Christian Blasimann, Barbara Zwicky), 90 × 90 × 15 cm (Photograph: Michael Lyrenmann).

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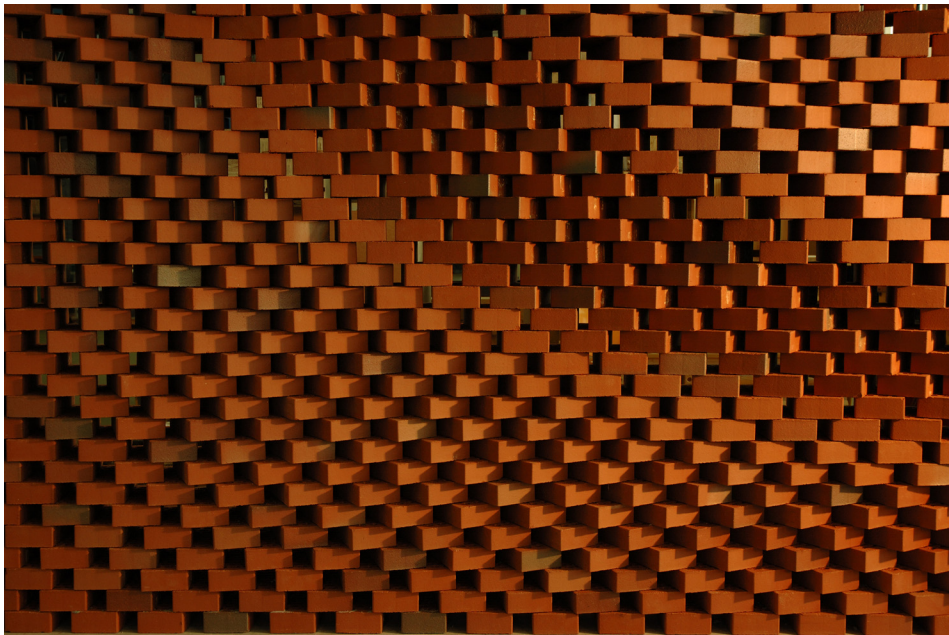
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3. Gramazio & Kohler, ETH Zurich, *The Programmed Wall*, Research Studio, 2005 (Students: Michael Knauß, Silvan Oesterle), 300 × 70 × 180 cm (Photograph: Michael Lyrenmann).

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PRINCIPAL

Gramazio & Kohler, Eidgenössische Technische Hochschule Zürich (ETHZ)

Name	Fabio
Surname	Gramazio
Born in	Langenthal, Switzerland
Year	1970
Lives and works in	Zurich, Switzerland
Website	http://www.dfab.arch.ethz.ch

Fabio Gramazio received his degree in architecture at the Swiss Federal Institute of Technology (ETH Zurich) in 1996. From 1996 to 2000 he was a scientific collaborator of Professor Gerhard Schmitt at ETH Zurich. He is a co-founder of the award-winning artist collective “etoy”, which has been active since 1994.

Since 2000, Fabio Gramazio and Matthias Kohler have been joint partners in the office for architecture and urbanism Gramazio & Kohler in Zurich. Their works include the contemporary dance institution Tanzhaus and the Christmas illumination for the prestigious Bahnhofstrasse in Zurich as well as the sWISH* Pavilion at the Swiss National Exposition “Expo.02”.

Since 2005 Fabio Gramazio and Matthias Kohler have been assistant professors for Architecture and Digital Fabrication at the Department of Architecture of ETH Zurich. Their research and teaching focuses on architectural design strategies for full scale robotic fabrication. Highly informed architectural elements are explored for their sensual, constructive and economic potential. They develop additive fabrication processes in a unique research setup which features a 3m robotic arm on a 7m linear track.

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PRINCIPAL

Gramazio & Kohler, D-ARCH, Eidgenössische Technische Hochschule Zürich

Name	Matthias
Surname	Kohler
Born in	Uster, Switzerland
Year	1968
Lives and works in	Zurich, Switzerland
Website	http://www.dfab.arch.ethz.ch

Matthias Kohler studied architecture at the Swiss Federal Institute of Architecture and Technology (ETH Zurich) and received his degree in 1996. He was a scientific collaborator of professor Marc Angélil from 1997 to 1998 and of professor Greg Lynn from 1999 to 2000.

Since 2000, Matthias Kohler and Fabio Gramazio have been joint partners in the office for architecture and urbanism Gramazio & Kohler in Zurich. Their works include the contemporary dance institution Tanzhaus and the Christmas illumination for the prestigious Bahnhofstrasse in Zurich as well as the sWISH* Pavilion at the Swiss National Exposition "Expo.02".

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