



The ORB - Burning Man Art Installation (2018) by Jakob Lange and Bjarke Ingels, Engineered by BIG Engineering



Tokyo 2020, IASS Design Competition (2016): Pierluigi D'Acunto, Lukas Ingold, Patrick Ole Ohlbrock

# DESIGNING FORM AND FORCES

Structural Design signifies the idea, to foster the rapprochement between engineering and architecture through the interaction between the architectural concept and the load-bearing behaviour of a building. In this presentation and workshop, some of the latest research findings in the field of graphic statics are presented, along with the presentation of both realised and proposed structural design projects that utilise the reciprocity between form and forces.

Graphic statics is a vector-geometric illustration of the distribution of forces in a structure. The illustration of force constellations in the form of strut-and-tie models in equilibrium through a visual language that is easily understood by architects and engineers potentially fosters creativity. One of the most peculiar features of graphic statics is the geometric reciprocity between form and force diagrams. Thanks to this property, it is possible to manipulate the form of a given loaded structure and directly evaluate the consequences on the distribution of the inner forces within the structure. Conversely, it is possible to „find the form“ through a modification of the state, the magnitude as well as the direction of the inner forces.

THE PRESENTATION of two former TUM students will discuss and present new developments of this relationship between form and force with examples from research- as well as built practice projects.

THE WORKSHOP that will take place the days after will allow interested students to get more insights into the topic and learn to apply digital graphic statics tools for a small design brief.

## PUBLIC PRESENTATION

TU MÜNCHEN: **08.11.2018 | 18:45 - 19:45 | N1090**

Dipl. Ing. (TUM) Patrick Ole Ohlbrock  
(ETH Zürich, Chair of Structural Design)

Dipl. Ing. Timo Harboe Nielsen  
(Bjarke Ingels Group, Copenhagen)

## WORKSHOP

OSKAR-VON-MILLER FORUM: **09. & 10.11.2018 | 7TH FLOOR**  
(registration required - mail to: [i.krier@ovmf.de](mailto:i.krier@ovmf.de) )

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