

## SIMPLE SYSTEMS – COMPLEX CAPACITIES

### Participation

Open and unlimited Competition

### The task

The design of a material system that is in exchange with its context-specific environment and that, in doing so, can fulfil functional and performative requirements.

### Description

Materials can display varied characteristics without change to their chemical makeup. The difference then emanates from its structure. Nature demonstrates masterfully how one and the same material can be structured differently due to changing conditions and requirements. The performance of natural systems is based on such structural differentiation. The key question of the competition is therefore how the immense potential of material structural differentiation can be instrumentalised for architecture and the built environment.

A first premise lies in the question of the right scale that enables accomplishing spatial organisation, material self-organisation, as well as load-bearing and microclimatic modulation capacities to be developed from structural differentiation. When considering the scalar spectrum, ranging from the macro-scale of a building to the micro-scale of the molecular composition of a material, it becomes clear that material systems constitute an intermediary or meso-scale.

A second premise lays in the development of a systematic approach. What is at stake here are not only materials per se, but rather the material and the constructive, as well as material and structural characteristics that arise from an exchange with a specific environment.

A third premise lays in the choice of tools, which allow for the differentiation of structures in the design process and also deliver a link to manufacturing, is crucial.

The task is to rethink architecture as a systemic exchange and feedback between form, material, structure, its production (fabrication and assembly) and its effects (performance).

### Requirements

The design and development of a proto-architectural material system should be based on the following questions:

#### • 1. *What makes up the system?*

The assembly is to be composed of individual elements, the differentiation of which is sought to enable a varied system that must be specific in its materiality. The material is not specified by the competition brief and can therefore be freely chosen.

#### • 2. *How does the system evolve?*

System-variables or parameters must be identified and instrumentalised. These variables must be explicitly defined with regards to the differentiation of the system, and must arise from the characteristics of the chosen materials, as well as their fabrication, manufacturing and assembly.

#### • 3. *How does the system interact with its specific environment?*

Environmental conditions and stimuli that act upon the material system are context-specific. These must be identified and their basic principles must be elaborated. They may be climatic, luminous, acoustic, etc. A minimum of two environmental inputs must be selected and instrumentalised.

#### • 4. *What are the performative capacities of the system?*

The notion of performative capacity pertains to the way in which material systems interact with their environment and, in doing so, yield the specific spatial qualities, which emanate from the interaction of form, material, load bearing, climate, light, sound, etc. The performative capacities must be developed through digital and/or empirical test of prototypical portions of the system.

#### • 5. *For which purpose can the system be eventually used?*

From the specific performative capacities of the developed material system emerge potential for use. An exemplary use of the system must be elaborated.

#### • 6. *How is the system made?*

The logic of the fabrication of the system is part and parcel of the design process and must be elaborated on the basis of prototypical models.

The competition entries should demonstrate that a performative architecture is not necessarily based on complicated high-tech systems, but rather that material systems made from simple and feasible materials and elements with a certain degree of differentiation can accomplish complex performative capacities.

### Deliveries

#### • 1 *Panel A1 Portrait-format*

The panel must contain the development and detailing of the material system and answer to the detailed questions of the brief. All illustrations are to be shown in an appropriate scale. The illustrations should reflect the design method (digital collages are not appropriate). Entries must be unanimous and contain a 6-digit code (numbers and letters) in the top right hand corner.

#### • 1 *Sheet A4 - Author Identification*

Name, address, telephone number, Email and CV and a photo of the author must be included on an A4 sheet. This sheet is to be placed in a sealed envelope that should be identified by the same 6-digit code as on the panel. Design teams must identify a main contact person.

### Online-Colloquium

The homepage of Arch+ is available for questions regarding the competition and for discussion of the topic at hand. In the period from 1. September to 15 November questions will be answered frequently. The blog will remain online on the Arch+ homepage until the submission date of the competition. [www.archplus.net](http://www.archplus.net)

### Competitions entries are to be sent to

Redaktion ARCH+, Charlottenstraße 14, 52070 Aachen

### Submission Deadline

31. Januar 2009, Postmarked

### Pre-jury

Michael Hensel  
Sabine Kraft  
Achim Menges

### Competition Jury

Michael Hensel – AA & OCEAN, London  
Christoph Ingenhoven – Ingenhoven Architekten, Düsseldorf  
Hanif Kara – akt, Adams Kara Taylor, London  
Sabine Kraft – Redaktion ARCH+, Aachen  
Achim Menges – AA, Uni Stuttgart & OCEAN, Frankfurt  
Amandus Sattler – für das Architekturbüro Deutschland  
Representatives of the sponsoring firms

### Prices

12.000 €

The jury will decide on the distribution of the prices.

In addition it is intended to cooperate with Material-specific companies in the realisation of 1/1 scale prototypes.

### Announcement of Results

28.2.2009

ARCH+ Homepage

### Publication and Exhibition

It is planned to publish the best entries in Arch+ and to organise a travelling exhibition showings the best projects including models and prototypes.