research network 2009 - 2011

DIGITAL CRAFTING

Workshop / Seminar

PARAMETRIC DESIGN: ENCODED BEHAVIOUR

Copenhagen - School of Architecture
The Red House
8.-10.02.2010

A research network supported by
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Independent Research, Humanities.

Organisers:
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Participants:
Centre for IT and Architecture
Aarhus School of Architecture
Kolding School of Design
Technical University of Denmark
Danish Technological Institute
The Spatial Information Architecture Laboratory

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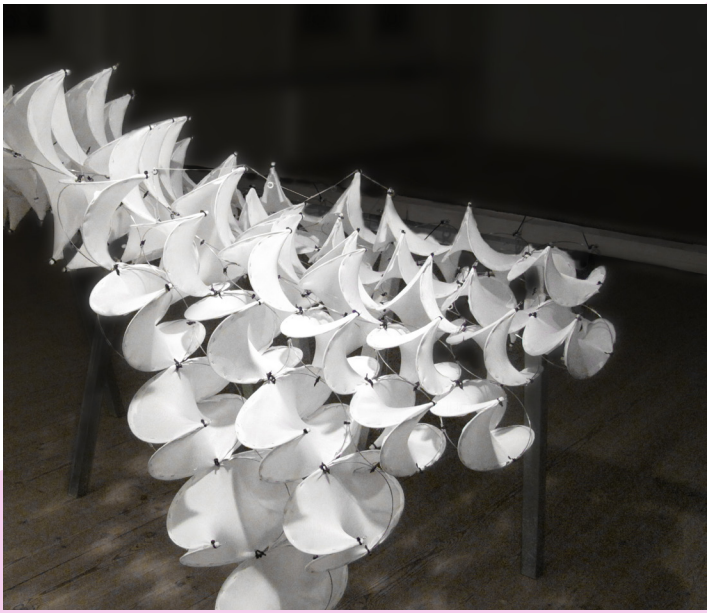
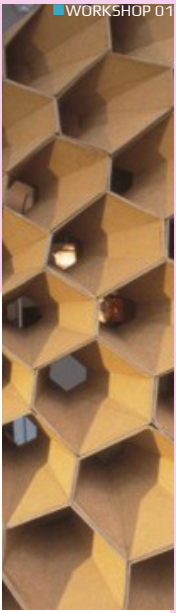


WORKSHOP 1
PARAMETRIC DESIGN :
ENCODED BEHAVIOUR

Date: 8- 9. February 2010

Parametric design introduces a new depth into architectural design. Where architectural design traditionally takes place within the absolute extensions of a projective geometry, parametric design tools enables the construction of variable geometries. Here, design is fundamentally understood as relational, and geometry defined through relative measures that have the potential to change asdesign information is altered. This shift allows the thinking of performative models, where the design can be continually tested, evaluated and changed within a structure of constraints, variables and parameters.



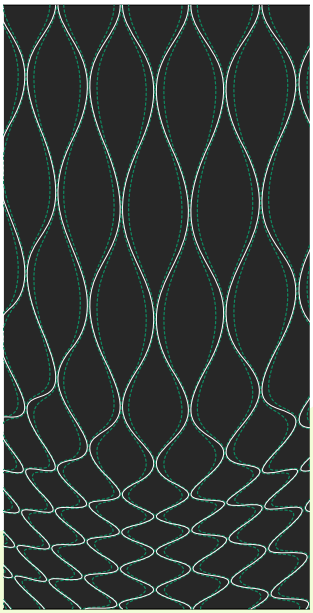
Within the workshop we will measure and then encode material behaviour within a parametric model as a means to explore the interrelationship between different kinds of performance in the design of a component system. Here properties of material and the complex behaviour of composite elements can be taken into account and engaged in the design.

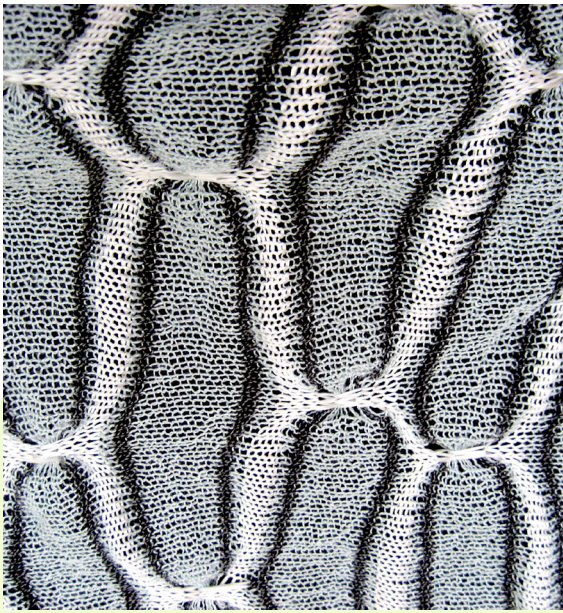
The workshop asks:
-How can the variable and the modifiable be incorporated into architectural design?
-What are means to include complex behaviour of composite elements and structures in an early design phase?
-What are the consequences for the way we develop spatial, structural and material solutions?

Workshopguest: Paul Nicholas

Paul Nicholas holds a PhD in Architecture from the RMITUniversity, MelbourneAustralia. Paul's research interest is in the potential for computational tools to intersect architectural and engineering design thinking, facilitating new and otherwise unavailable modes of interaction and collaboration. His academic and practice-based work explores this topic in the areas of generative performance-based design, fabrication-based design and the development of low-resolution tools for transdisciplinary design collaboration. Paul co-founded mesne in 2005 with Tim Schork, and has exhibited in recent Beijing and Venice Biennales. He currently lives and works in London

www.mesne.net



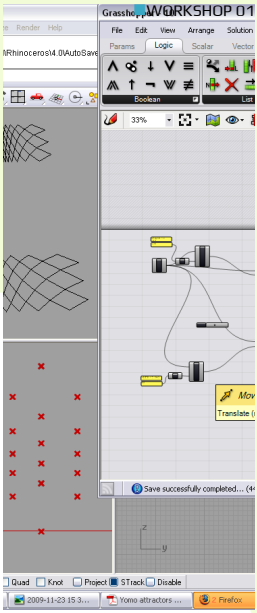


SEMINAR 3
THE AWARE MODEL

Trajectory I : The materially aware model as a means for design, material specification and fabrication

Date: 10. February 2010
Presenters:
Paul Nicholas, Mette Ramsgard Thomsen, CITA

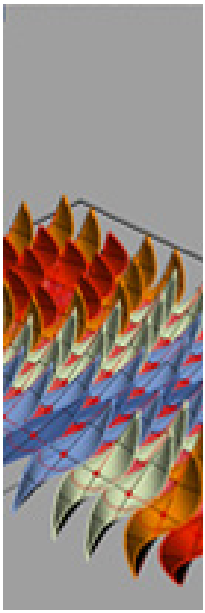
Parametric design tools allow the integration and constant reconsideration of inherent material information (material specification, structural performance, fabrication process) within the ongoing design process. This information often concerns 'downstream' means and methods, the rational logics through which design is materialised and fabricated. Parametric tools, being performatively rather



than formally driven, allow us to integrate these requirements within an evolving design, deploy them for particular affect and to anticipate their consequence. The versatility of these tools, and the ability to work with dynamic rather than static sets of data, proposes a new understanding of design.

The seminar seeks to develop a critical understanding of:

- How are these parameters accessed and then declared?
- What are the means to cross disciplinary boundaries?
- What happens when multiple parameters of material, environmental, spatial data and structural data are integrated and what happens to spatial design, program and architectural quality in a paradigm like that?
- How can parametric design tools challenge the material cultures of design thinking and production?



VENUE

The Red House - Royal Academy of Fine Arts School of Architecture

The workshop introduces key concepts in performance driven design and allows hand on practice with parametric tools. The aim is to develop a shared experience of how material performance can be integrated into design strategies. The workshop is structured around 5 steps which demonstrate specific design stages going from design to production.

DAY 1
WORKSHOP - 8.02.2010

11.00h Introduction

11.30h Step 1: Measuring behaviour
We are going to test and measure aspects of material behaviour and bring our findings into a parametric model.

12.30h Presentation and Discussion

13.00h Lunch

14.00h Step 2: The performative component
We will design and make physical components that create different effects with light through bend, stretch and friction.

14.45h Presentation and Discussion

15.15h Step 3: Exploring parametric performance
We will inform the design space of the parametric component.

16.30h Presentation and Discussion interrelationship between an

17.00 Further exploratory work

18.30 Drinks and optional dinner (self paid)

DAY 2
WORKSHOP - 9.02.2010

9.00h Step 4: The clustered component
We will explore design and its performance through our materially aware digital model.

10.15h Presentation and Discussion

10.45h Coffee Break

11.00h Step 5: Digital Fabrication Design
Information from the model will lead to different strategies of digital fabrication.

12.30 Lunch

13.30h Digital Fabrication Making of the Artefact

17.00h Further exploratory work and production

Day3
WORKSHOP / SEMINAR - THE AWARE MODEL

9.00h Final workshop review and reflection

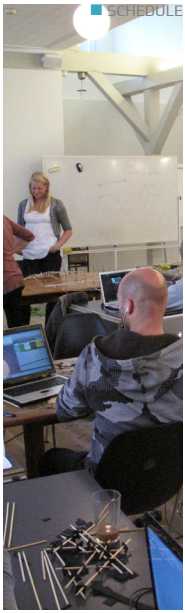
10.30h Coffee Break

11.00h Seminar presentations:
Paul Nicolas: performance driven design as a means for design and fabrication
Mette Ramsgard Thomsen: performance driven design as a method for material specification

13.00h Lunch

14.00h Preperation and discussion of further Workshop in according groups

15.30h Presentation of workshop preparation:
themes, invitees, structure, seminar theme, invited presenters



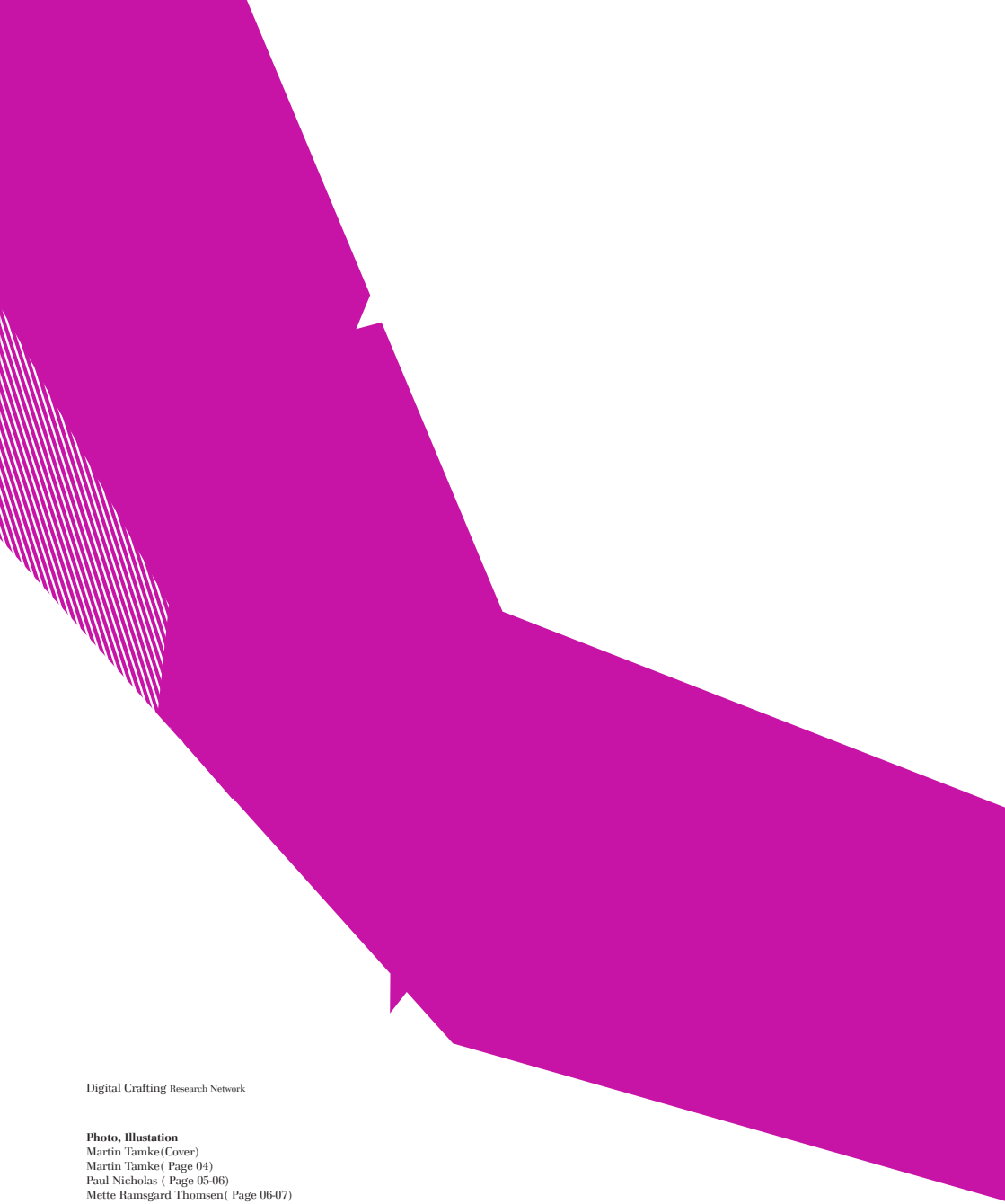
PREREQUISITES

All material and tools for the workshop will be provided. Special skills in CAD or scripting programs are not required.
Participants are asked to bring their laptops with installed Rhinoceros 4.0 along.
The workshop will make use of the parametric platform Grasshopper. Grasshopper is a plugin for Rhinoceros 4.0. If you have the possibility to have these programs installed on your laptop from sides of your work environment please do this before the workshop. In order to have a smooth start we ask you to check that everything is running perfectly.

We can organise a limited amount laptops for those who can't bring the program along. Please tell us if necessary.

Rhinoceros 4.0 can be obtained here: http://www.rhino3d.com/

Grasshopper can be downloaded free of charge here. Please us the latest work-in-progress version. http://www.grasshopper3d.com/page/next-build



Digital Crafting Research Network

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