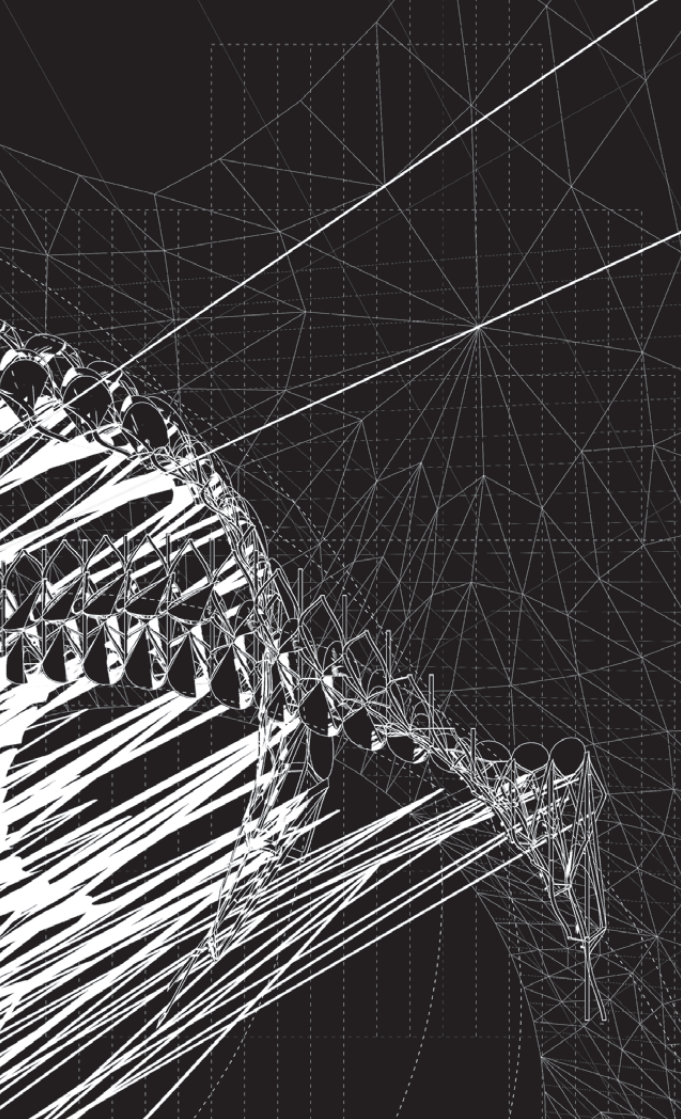


1:1 RESEARCH BY DESIGN

ROYAL DANISH ACADEMY OF FINE ARTS
SCHOOL OF ARCHITECTURE

INSTITUTE OF DESIGN AND COMMUNICATION
CITA - CENTER FOR IT AND ARCHITECTURE

Exhibition open March 12 - April 10 2011

Weekdays 11h-20h / Weekends 12h-18h

1:1 RESEARCH BY DESIGN - EXHIBITION AT THE ROYAL DANISH ACADEMY OF FINE ARTS, SCHOOL OF ARCHITECTURE

One of the most important purposes of architectural research is to develop new models for the way we build and design the world in a time characterised by new technological possibilities and great challenges. It is our task to comply with the requirements and methods of research but also, as architects, to include the artistic experiment, the intuitive and the concrete proposition. And it is our task to make the results available to the building practice and the public – for inspiration and discussion.

Exhibition 1:1 - research by design shows results from research at the Institute of Design and Communication and the Center for Information Technology and Architecture, CITA, at the Royal Danish Academy of Fine Arts, School of Architecture

Through drawings, models and experiments in 1:1 (full scale), the exhibition shows how digital media and new materials which are on their way or already available to construction can create new possibilities for design and tectonics in architecture. The exhibition shows architecture in an interdisciplinary context with collaborating fields such as computer science and computer graphics, robotics and interface design, construction technology and construction, as well as design, textiles and film.

Through concrete examples and projects developed for the exhibition, focus is placed on how the transfer of technology between the field of architecture and innovative industries within the development of new digitalised tools for design and production can create synergy between the field's current reality and its future perspective. The exhibition will therefore show examples of investigation into 3D modelling and parametric design, Rapid Prototyping and CAD-CAM, new furniture and graphic design, colour analysis as well as studies of morphology and topology.

For architecture, the idea of an expressive element in research is important. The expressive, the possibility to express qualities about the world and contribute something new to what already exists through experiment and proposition is characteristic for the field and what architects are best at. The most important way for the architect to achieve new recognition is through work with the plastically spatial – drawings, models and realized works.

The institute endeavours to incorporate and develop the working method of architects – the searching spatial sketching in a specific material - in the environment of academic research and development. Through *research by design* concordance is sought between the methods of research and a form-giving, experimental design practice.

The *exhibition 1:1 - research by design* is built up around a number of large models, mock-ups and demonstrators, which provide an impression of how ideas and new technology can contribute specifically to our future surroundings. This is emphasized by the exhibition space: the large, high-ceilinged exhibition space in Meldahls Smedje at the School of Architecture, Holmen.

Jørgen Hauberg
Head of Institute

Mette Ramsgaard Thomsen
Professor, Head of CITA

PERSISTENT MODEL #1

Phil Ayres & Anders Holden Deleuran

Persistent Model #1 investigates a design strategy that couples representation and artefact in a circular relationship in order to manage indeterminacy in design and fabrication.

Free-form metal inflation is employed as a procedure in which outcomes deviate from initialising representations with greater or lesser degrees of predictability – a result of a sensitive dependency established between material behaviour, and steering through imposed geometry.

Through mechanisms of feedback, the artefact can re-inform the digital representation providing the ground for further transforms that are informed by the 'as-built' rather than the idealised.

Unlike many results of architectural fabrication, the final outcome is unanticipated.

FRAGMENTS OF TWO POSSIBLE SPACES

Peter Bertram

The first space is a ceiling for a memory theatre in the shape of a drop. It is constructed of a limited number of small elements, less than would be needed to build the form directly. The elements are manipulated through a fixed set of rules in such a way that they approximate the curvature and turn the concavity inside out.

The second is a series of plaster casts. They represent a sectioning of a larger element to be made in concrete. The ripples of the surface and the inverted form suggest a suspended cloth. The joining of several elements will blend the distinction thus resemble a textile.

PROJECT DISTORTION 2.0

CITA & Krydsrum Arkitekter

The Distortion 2.0 project is the result of collaboration between researchers, architects and industrial partners. The endeavour is to create new interfaces between acoustical science and the build environment by integrating sound performance, design and production.

The combination of customized design solutions, computer-based acoustic simulation, parametric modelling techniques and the experience in high end materials and digital production technology allowed the creation of two spaces with specifically tuned acoustic performance. Their sonic and aesthetic sensations can be directly experienced.

The project challenges the way acoustics are generally thought. Where this is often either a narrow performance solution or even afterthought the project showcases a way to think and create sound and architecture at the same time.

Design & Production System:
Martin Tamke, Brady Peters, Stig Anton Nielsen, Lisa Uhlmann

Exhibition Design:
Krydsrum Arkitekter - Niels Jakubiak Andersen, Hasse Selvig Sandell, Dave Stasiukw

Production:
Akustikmiljö - Patric Gustafson, Magnus Gustafsson

REEF

Aurélie Mossé

Reef is the design of a self-actuated ceiling questioning how adaptive minimum energy structures can contribute re-establishing home in a synergic relationship with nature. Composed by an archipelago of electro-active modules, Reef constantly re-designs its own landscape as its modules change shape according to the exterior. Like a sail, they open and close gradually following the pulse of the wind, materializing the invisible flow of energy that connects the inside with the outside. Like corals, Reef is calcifying over time as the supporting technology is becoming obsolete, transferring its actuation back to the inhabitant as natural airflow is invited to come in.

Sponsors:
MetOne.

Collaborators:
Research scientist Guggi Kofod (University of Potsdam)
Interaction designer David Gauthier (CIID),

DERMOID

CITA & SIAL, RMIT Melbourne, Australia

Dermoid presents two years of research into the structural exploitation of material. Working with digital tools and crafts technologies we examine the harnessing of material performance to increase structural performance reducing material use and leading to a more intelligent and sustainable building practice.

Dermoid looks at reciprocal frame systems aiming to develop large span from short members. Designed as aggregates of double beams, the material flex is designed into individual element creating a complex layered weave.
Dermoid extends the abstract space of geometrical representation into a rich computational design space that incorporates an understanding of material behaviour, informed through physical testing.

Sponsors:
Dermoid is supported by the VELUX Visiting Professor Programme 2009-2010 of the Villum Foundation

Collaborators:
Mark Burry, Mette Ramsgaard Thomsen, Martin Tamke, Phil Ayres, Anders Holden Deleuran, Alexander Pena, Daniel Davis, Stig Nielsen, Aaron Fidjeland, Morten Winther, Jane Burry, Jacob Riiber, Tore Banke, Michael Wilson and students from Department 2 and 10.

THICKET

Mette Ramsgaard Thomsen & Karin Bech

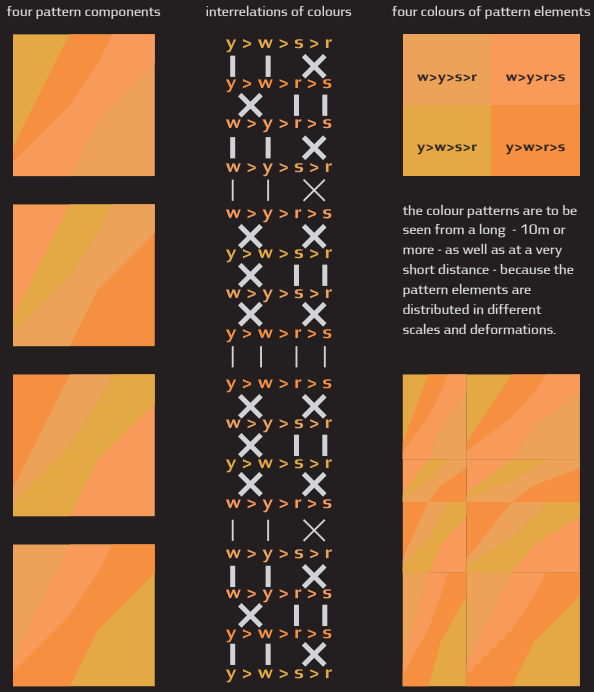
- How would it be to live in a soft space...

The project asks how architecture could be imagined through an idea of the soft and the pliable. By engaging material through computation, the idea of the soft is a tectonic inquiry into the adaptable, the crafted and the motile as well as a cultural question into what habitation could be. The project is made in two parts: the installation asks how textile principles of weaving and pleating can define a flexible and breathing architecture while the drawing ask what the consequences of such a space could be.

Sponsors:
Lisbon Architectural Triennale
Realdania
Kunstakademiets Arkitektskole

Collaborators:
North Carolina State University, College of Textiles.

Participants:
Kristine Agergaard Jensen, Anders Christiansen, Aron Fidjeland, Anders Deleuran, Lisa Uhlmann



PATTERN FORMATION IN FOUR COLOURS

Per Møldrup

Any visually perceived colour can be described through four out of six possible basic colour perceptions, i.e. whiteness(w) and blackness(s) combined with two hues, (c), which can only be yellowness(y) +redness(r), redness(r)+blueness(b), blueness(b) +greenness(g) or greenness(g) +yellowness(y) - the principle for NCS, in which the colour order system is 'natural' according to mutually greatest similarities and smallest differencies - visually estimated.

My alternative descriptive principle, where the four colour perceptions are 'arranged in ranks' according to their visual weighing, emphasizes the 'minor differencies'. How these contribute to the pattern formation in colour combinations is the issue to the interaction of colours, which experimentally can be investigated by the present 'combinatorial board'.

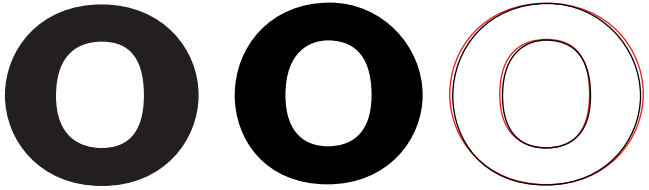
OUTTAKE

Morten Meldgaard

Outtake is a visual installation negotiating the virtuality and actualization of a given material. It is based on footage from the feature length documentary “KIM” (2009)

The moving Image is a system of understanding the unfolding of time in space, but it does not in itself poses spatial quality: “The screen, as the frame of frames, gives a common standard of measurement to things which do not have one – long shots of countryside and close-ups of the face, an astronomical system and a single drop of water – parts which do not have the same denominator of distance, relief or light. The image itself is the system of the relationships between its elements, that is, a set of relationships of time from which the variable present only flows”.

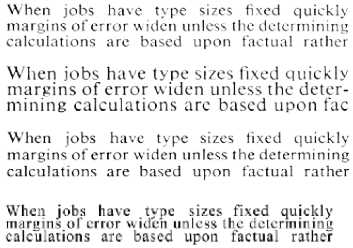
Collaborators:
The Danish Film Institute, DR, Barok Film, Danish Ministry of Education.



Det geometriske (til venstre) og det håndtegnede O (i midten). Rød kontur, det geometriske O.

3 udgaver af Times New Roman skriftstørrelse "nonpareille" (6 pkt), blysats samt computersats (OpenType) Times New Roman 6 pkt nederst.

Formgivning efter størrelsen. 6 pkt, 12 pkt, 18 pkt, 72 pkt og længst til højre alle størrelser i computersats.



THE FORGOTTEN DETAILS

Lars Klint

Font design in the age of lead type is often designed with inaccuracies in relation to the mathematical form. There can be a top and a bottom on an O just as the right and left side can be of different thickness.

Why aren't the characters shaped precisely?

There are three obvious possibilities: It may be an expression of the technological/financial possibilities. It may be lack of care or it could be an expression of a conscious design.

In reality, it is a sublime design ability that we have "forgotten" because the work has been passed from specialists to computer operators without a professional understanding of fonts. The feature of the exhibition points out some of these "forgotten" details and their significance for our perception of the combined form.

INSTITUTE OF DESIGN AND COMMUNICATION

The institute's area of study encompasses architectural design, architectural tools and methods for description and visualisation, and communication and information technology and its possible uses in the design process.

The design process is the institute's common overall subject area. It includes the study of design as architectural work, as a part of systems and processes, and as a methodical process ranging from sensing and reflection to the creation of practical objects, supported by analysis, description, visualisation, and communication in various media

Design deals with the development of types and widely useable systems. The area is to contribute to the study of building types and supplementary systems, furniture and inventory systems together with signs, symbols, and text and information systems. Studies that are not site-specific and that focus on general research problems are characteristic of this subject area. Design includes such subjects as Designing Building Components, Industrial Design, Furniture and Room Design and Industrial Graphic Design.

Information and Communication Technology involves a relatively new social factor that not alone has changed both the processes and products of design but has also influenced our understanding of architecture as a concept. This subject area is to contribute to the study of IT in design products, as a tool in the design process and as a media. It includes subjects such as CAD/CAM and Digital Visualisation.

Visual Communication deals with the relationship between the representations of architectural projecting and concrete architectural products. The area is to contribute to the development of architectural tools and approaches to visualisation in relation to architectural proposals and communication, as well as the development of a theoretical and practical basis for teaching in this area. Visual Communication includes subject areas such as Architectural Visualisation, Descriptive Geometry and Morphology, Colour, Photography and Model-Making.

CITA: CENTER FOR IT AND ARCHITECTURE

CITA is an innovative research environment exploring the emergent intersections between architecture and digital technologies. Identifying core research questions into how space and technology can be probed, CITA seeks to investigate how the current forming of a digital culture impacts on architectural thinking and practice.

CITA examines how architecture is influenced by new digital design- and production tools as well as the digital practices that are informing our societies culturally, socially and technologically. Using design and practice based research methods; the aim is to explore the conceptualisation, design and realisation of working prototypes. CITA consolidates new collaborations with interdisciplinary partners from the fields of computer graphics, human computer interaction, robotics, artificial intelligence as well as the practice based fields of furniture design, fashion and textiles, industrial design, film, dance and interactive arts.

By examining technology transfers between high-innovative industries, that stand on front edge in the development of new digitalised designs- and production tools, it's our goal to create synergy between the subject's contemporary reality and its future perspective.

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www.karch.dk/inst4 | cita.karch.dk

The Royal Danish Academy of Fine Arts
School of Architecture

Collaborators and Funding:

Realdania

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Grontmij | Carl Bro

SENNHEISER

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