

Sven Pfeiffer (ed.)

# INTERLOCKING DIGITAL AND MATERIAL CULTURES

Sven Pfeiffer (ed.)

# INTERLOCKING DIGITAL AND MATERIAL CULTURES

Sven Pfeiffer (ed.)

# INTERLOCKING DIGITAL AND MATERIAL CULTURES

Sven Pfeiffer (ed.)

# INTERLOCKING DIGITAL AND MATERIAL CULTURES

Sven Pfeiffer (ed.)

# INTERLOCKING DIGITAL AND MATERIAL CULTURES

## Impressum/Colophon

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.dnb.de>.

Cover Image:

*Timberfabric* – Applying Textile Assembly Principles for Wood Construction in Architecture, Markus Hudert, IBOIS EPFL, 2014, © Markus Hudert

Sven Pfeiffer (ed.)

Interlocking Digital and Material Cultures

© Copyright 2015 by Sven Pfeiffer and Spurbuchverlag

Graphic Design: Dennis Stratmann, Wiebke Genzmer

Publication © by Spurbuchverlag 1. print run 2015  
Am Eichenhügel 4, 96148 Baunach, Germany  
All rights reserved.

No part of the work must in any mode (print, photocopy, microfilm, CD or any other process) be reproduced nor – by application of electronic systems – processed, manifolded nor broadcast without approval of the copyright holder.

AADR – Art, Architecture and Design Research publishes research with an emphasis on the relationship between critical theory and creative practice.  
AADR Curatorial Editor: Rochus Urban Hinkel, Stockholm  
Production: pth-mediaberatung GmbH, Würzburg

Interlocking Digital and Material Cultures” brings together a collection of recent research projects and theoretical perspectives on architectural design and fabrication, showing the potential of digital tools by developing their spatial and constructive potential.  
The publication is part research and design project, which took place from 2012 to 2014 at the DEK (Department for Digital Design and Construction) at the msa | münster school of architecture, headed by Sven Pfeiffer.

ISBN 978-3-88778-418-8

For further information on Spurbuchverlag and AADR visit our websites  
[www.aadr.info](http://www.aadr.info)/[www.spurbuch.de](http://www.spurbuch.de).

Sven Pfeiffer (ed.)

# INTERLOCKING DIGITAL AND MATERIAL CULTURES

# TABLE OF CONTENTS

<b>FOREWORD</b> <i>Sven Pfeiffer</i>	<b>6</b>
<b>INTERLOCKING DIGITAL AND MATERIAL STRUCTURES</b> <i>Sven Pfeiffer</i>	<b>10</b>
<b>1   MYOPIC NUMERICITY AND THE AESTHETICS OF COMPUTATION</b> <i>Damjan Jovanovic, Johan Bettum</i>	<b>16</b>
<b>2   PROCESSING BRANCHES</b> <i>Christoph Schindler, Martin Tamke, Ali Tabatabai, Martin Bereuter, Hironori Yoshida</i>	<b>26</b>
<b>3   LANDESGARTENSCHAU EXHIBITION HALL</b> <i>Achim Menges, Tobias Schwinn, Oliver David Krieg</i>	<b>42</b>
<b>4   TIMBERFARBRIC STRUCTURES</b> <i>Markus Hudert</i>	<b>56</b>
<b>5   BEYOND MINIMUM</b> <i>Asbjørn Søndergaard</i>	<b>72</b>
<b>6   THE NATURAL COLUMN PROJECT</b> <i>Daniel Büning</i>	<b>90</b>
<b>7   STRAIGHT ON – GEOMETRY AND MATERIALS</b> <i>Mirco Becker</i>	<b>106</b>
<b>8   HISTORICAL AND CONTEMPORARY APPROACHES TO MODEL-DRIVEN STRUCTURAL DESIGN</b> <i>Clemens Preisinger, Moritz Heimrath</i>	<b>120</b>
<b>AUTHORS</b>	<b>134</b>



# FOREWORD

The publication *Interlocking Digital and Material Cultures* brings together a collection of recent research projects and theoretical perspectives which explore possibilities for a rethinking of architecture as a material practice in the context of the contemporary discourse on digital design and fabrication methods.

The publication is the final roundup of a research and teaching project which took place from 2012 to 2014 at the *msa / münster school of architecture's* departments for digital design and constructive design, and also incorporates doctoral research into the convergence of representation and building in architecture. The project consisted of several workshops, lectures and design seminars for students as well as an international symposium held in November 2012, which featured many of the presented authors.

I would like to express my sincere gratitude to the colleagues and the many talented students who supported the project and to the administrative and public relations team of the *msa / münster school of architecture* for their organisational and communicative skills in making the individual events of the research project successful. My specific thanks go to the team of the department for digital design and construction, to Prof. Jürgen Reichardt and Prof. Joachim Schultz-Granberg, for their initial support of the project as well as to the then dean, Prof. Julia Bolles-Wilson, for her kind advice.

The project was made possible with the financial support of the Fachhochschule Münster. The symposium *scaleless-seamless?* that formed an integral part of the project was organised and conducted in close collaboration with Prof. Constantin Spiridonidis and Maria Voyatzaki of ENHSA – *European Network of Heads of Schools of Architecture*, whose valuable experiences in organising the symposium were specifically helpful. The symposium was kindly supported by the *European Association for Architectural Education* | EAAE.

Sven Pfeiffer



1



2



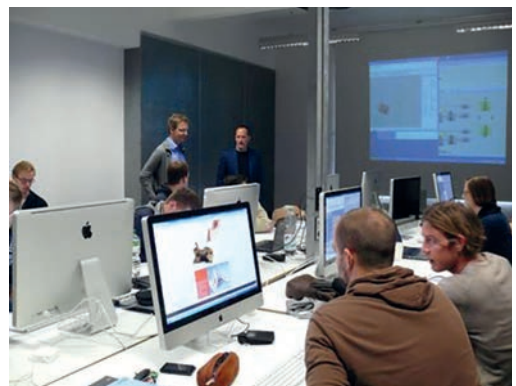
3



4

Fig. 1–4: Images from the Symposium  
scalelessseamless? at the msa | münster school of  
architecture

Fig. 5: Parametric Structural Design Workshop with  
Clemens Preisinger



5

Topology Optimization Workshop with Daniel Büning at the msa. The workshop explored additive manufactured architectural components based on topology optimization.

Fig. 6-7: Small scale working models of the simulation results, were materialized using 3D-printing technology.

Fig.8-12: Buildup Process of two designs which were realized as prototypes from lasercut cardboard slices.



6



7

10



8

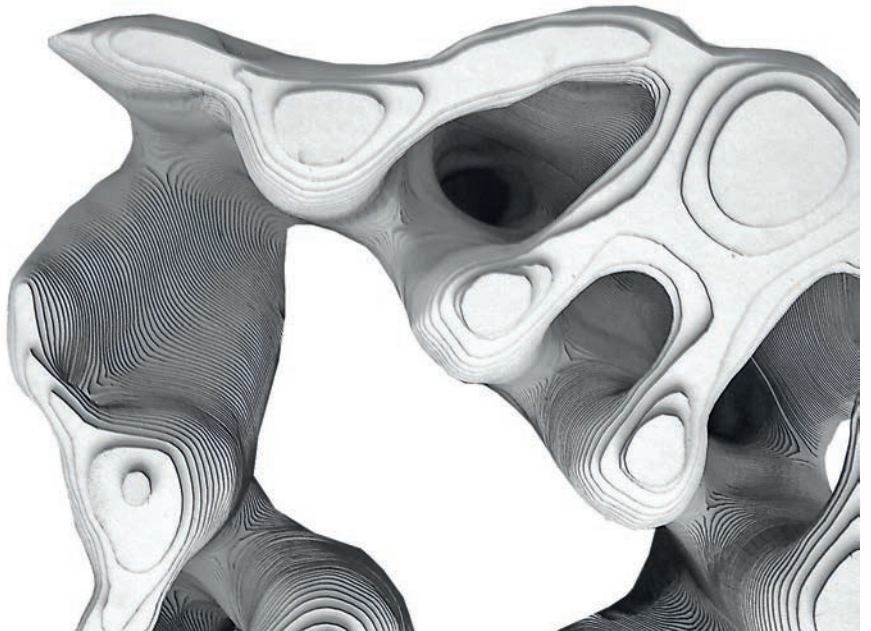


9





12



11