c u r r i c u l u m v i t a e

PERSONAL INFORMATION

Surname	**Hillner**
Name	**Bergit**
Address	**Imbisbühlstrasse 122, CH-8049 Zürich, Switzerland**
Telephone	**+49 77 428 46 77**
Nationality	German
Date of birth	11.11.1974

education and training

• Date	2010 - 2012
• Name and type of organisation providing education and training	ZHDK - Zurich University of the Arts
Duration of the program of study	6 semester part time
• Principal subjects/occupational skills covered	The MAS-program “design culture” at the chair Design2context under the direction of Prof. Dr. hc Ruedi Bauer was committed to undertake critical research in arts and design and into the cultural studies and technological issues intimately related to such an endeavour. Design Culture - launched in 2006 as a transdisciplinary postgraduate research program that promotes a socially responsible stance in design - enabled unbound critical reflection within an international forum, accompanied by intensive workshops, talks and seminars. The research asked fundamental questions about today’s design practice and the way of doing research in design. The designer - seen as deeply involved in social and political processes - is in the position to give a form to change as a visual public voice … “No design without the process of transformation.” – Ruedi Bauer. Design Culture sought to evolve the discipline and practice of design research beyond linguistic and conceptual aspects, to expand the space for reflection to encompass all possible forms of representation.
• Title of qualification awarded	Master of Advanced Studies ZFH
Final mark obtained	Grade: B very good (min. F- max. A) ECTS credit points 65
• Date	2004 - 2005
• Name and type of organisation providing education and training	ETH Zurich - Swiss Federal Institute of Technology Zurich
Duration of the program of study	2 semester full time

• Principal subjects/occupational skills covered	The main focus of the MAS program is computer aided architectural design and its automated production. Parameterized CAAD enables an adaptable client based architecture through individual and quickly modifiable drawing. The use of multimedia based interaction systems, which use programmed behaviours, to extend digital designs beyond purely paper-based presentations and internet based interaction enable new forms of product development and marketing. The concept of Object Oriented Programming – which defines organization structures in software development and the application of this concept to architectural design and production of physical buildings – is the basis for computer generated architecture. The CNC machines enable the physical production of individual architectural items using cutting, milling and printing machines at the department and with partners in the private sector.
• Title of qualification awarded	Master of Advanced Studies ETH in architecture, specialization in Computer Aided Architectural Design
Final mark obtained	Grade 5.5 very good (min.1 – max. 6) ECTS credit points 75
• Date	1997 - 2001
• Name and type of organisation providing education and training	HTWK – Leipzig University of Applied Sciences
Duration of the program of study	8 semester full time
• Principal subjects/occupational skills covered	Academic programmes at the Faculty of Architecture and Sciences are designed to address the diverse needs of individuals, groups and communities in terms of architectural processes from the first idea to the physical building. In the undergraduate programmes the main focus lies on giving an all-round knowledge for the professional architect. The education was partitioned in a basic study and an advanced study period. During the second part my personal main focus was on building construction and interior.
• Title of qualification awarded	Diplom-Ingenieur (FH)
Final mark obtained	1.3 very good (min. 5 - max. 1) ECTS credit points ≈ 200 - 210

graduation thesis

Title	Gestaltung zwischen Chaos und Komplexität (Designing between Chaos and Complexity)
Language	german
Supervisor	Prof. Dr. hc Ruedi Bauer, Clemens Bellut, André Vladimir Heiz
Thesis Summary	Undergoing the process of designing, the designer / architect is facing moments of high complexity close to the sensation of chaos. Our embodied self-regulation processes are tempted to reduce the data as fast as possible until we feel secure again, to give us the ability of decision-making. But how to be sure not to lose imported aspects while doing so? In the first part my thesis is analysing the increases and decreases of complexity during designing processes of three different projects with one to three participants and identifying the moments and instruments of change. Out of this data I've developed in the second part some ideas for toolkits to repeatedly reduce and increase the complexity of data structure during the design process. I brought these toolkits to test in three seminars together with my fellow students and their very own research projects. The outcome is part of the third chapter, together with a conclusion and a small guide through the intricacies of the creation of complexity.
Title	Der Strukturelle Zusammenhang von Geometrie, Material, Konstruktion und Produktion (The Structural Correlation Between Geometry, Material, Construction and Production)
Language	german
Supervisor	Prof. Dr. Ludger Hovestadt, Philipp Schaerer
Thesis Summary	The first part of this thesis is my research for the group thesis. Within a three months period, the participants designed, programmed, and fabricated an irregular spatial structure, showing the potential of the entirely digital process from design through to production. The concept of the design was based on cellular automata. It created a self-organised growing mesh. A computer simulation model was programmed. Intertwined with the design process, construction studies and fabrication systems were developed for production using the CNC machines located at ETH. During this process I was

responsible for the research and evaluation of the material in context of detailing / construction and the parameters of our available CNC machines.
The second part of my thesis gave me the chance to have a closer look to a rejected geometry of my first research. I developed four production chains for this geometry, depending on chosen material, detailing and CNC technics documented during the processing of four prototypes.
In the conclusion I was able to show the direct correlation and reflect the influences of decisions in early stage of process on producibility and sustainability.

Title	Olympisches Dorf Leipzig 2012 (Olympic Village for Leipzig 2012)
Language	german
Supervisor	Prof. Henning Rambow, Prof.
Thesis Summary	In 1999 the City Government of Leipzig bid to host the 2012 Summer Olympics and Paralympics. One part of the early process was to evaluate areas for functional structures like the Olympic Village. One of the defined areas was an unfinished inland port with a never used wharf and two huge, abandoned, landmark-like warehouses, giving this area a certain atmosphere. The task was to develop a concept for an Olympic Village under consideration of the different needs of a shrinking city with industrial fallow areas all around the city centre and empty residential buildings. Based on this kind of urban development and unequal needs of housing for major events compared to family housing, my thesis suggested a temporary, hotel like housing structure in form of “sleeping capsules” – small private spaces, combined with a solid main structure for the public spaces, like shopping, food-centres, medical facilities and media centre. I recommended to reuse the main structure and parts of the “capsule hotel” for the National Landscape Fair 2014. This would give the opportunity to reconstruct the landscape and to open the areal to the public use for bigger events as well as an area of local recreation.

publications and articles submitted

Author(s) and title	Bergit Hillner - „Schaum“ (Foam) MAS CAAD ETHZ 2004/05 International Detail Price 2007 First Price Students
Language	German / English
Publication place	DETAIL Symposium 2007 – BAU 2007 Munich (Trade Fair for Architecture, Materials and Systems) Detail 03/2001, diverse international online http://www.detail.de/artikel/detail-preis-2007-die-preistraeger-stehen-fest-27127/
Date of publication	01/2007

Author(s) and title	Bergit Hillner – scholarship DAAD (German Academic Exchange Service)
Language	German
Publication place	DAAD
Date of publication	01/2004

Author(s) and title	Bergit Hillner, Hartmut Liebster - „The Library “ (from Jorge Luis Borges’ short story “Library of Babel”) Grafisoft Price 2001 First Price
Language	English
Publication place	Detail 01/2007, diverse international online http://www.graphisoft.com/info/news/press_releases/gsprize2001ann.html
Date of publication	12/2001

work experience, stages,
studies abroad

• Date	Dez 2016 - today
• Name and address of firm	b e r g i t • b a u t design to art & vice versa FabLab Zurich Zimmerlistrasse 6 CH-8005 Zürich
• Type of business or sector	interior design, art
• Type of employment	self employed
• Main activities and responsibilities	chief operating officer, project management,

• Date	2008 - today
• Name and address of firm	architektur | hillner | partner – studio for design, architecture and project management FabLab Zurich Zimmerlistrasse 6 CH-8005 Zürich
• Type of business or sector	urban planning / architecture / interior: project management, competitions, conceptual planning, detailed engineering, site management, consulting
• Type of employment	self employed
• Main activities and responsibilities	chief operating officer, project management,

• Date	2009 – 2010
• Name and address of firm	Archobau AG; Zürich | Chur Eichstrasse 27 CH-8045 Zürich
• Type of business or sector	architecture / interior: project management, site management, consulting
• Type of employment	freelancer
• Main activities and responsibilities	senior project management

• Date	2005 - 2008
• Name and address of firm	Architektur Husistein & Partner AG Schachenallee 29 CH-5000 Aarau
• Type of business or sector	architecture / interior: project management, competitions, conceptual planning, detailed engineering, consulting
• Type of employment	employee
• Main activities and responsibilities	senior project management

• Date	2005 - 2006
• Name and address of firm	Fische Architekten AG Binzstrasse 23 CH-8045 Zürich
• Type of business or sector	architecture / interior: project management, competitions, conceptual planning, consulting
• Type of employment	employee
• Main activities and responsibilities	senior project management

• Date	2005

• Name and address of university	ETH Zürich Departement Architektur Gebäude HIL Stefano-Franscini-Platz 5 CH-8093 Zürich Hönggerberg
• Type of business or sector	assistance
• Type of employment	employee
• Main activities and responsibilities	Assistant

• Date	2002 - 2005
• Name and address of firm	tagebau architekten + designer Kochstraße 64 DE-04275 Leipzig
• Type of business or sector	urban planning / architecture / interior: project management, competitions, conceptual planning, detailed engineering
• Type of employment	employee
• Main activities and responsibilities	senior project management

• Date	2002 - 2005
• Name and address of firm	tagebau architekten + designer Kochstraße 64 DE-04275 Leipzig
• Type of business or sector	urban planning / architecture / interior: competitions, conceptual planning, detailed engineering
• Type of employment	student-employee
• Main activities and responsibilities	project management

Personal skills and competences

Mother tongue **german**

Other language(s)

english

- reading: excellent
- writing: good
- speaking: good

Social skills and competences

First I should probably mention, I'm a single mom since 1995. My son Florian – meanwhile 22 years old - is still living with me and asking him … we are a great team.
Since 2004 we are living in Zurich - a very international City in Switzerland. For nearly half of this time we lived in multicultural shared flat.
My circle of friends is typical for Zurich, very international and so are the teams I'm working with. Not only on planning and construction site, as well in our workspace.
Our workspace is situated in the studios of FabLab Zürich (zurich.fablab.ch). This is a non-profit organisation for the use of CNC machines and craft space. I'm part time teaching and managing the workspace.

Organisational skills and competences

Since I'm self-employed the management skills are more important than ever. Not only because of the responsibility on projects, construction sites and co-workers – as well towards customers and their representatives. My assignments usually include not only the architectural design, but also cover the observance of time limits and costs. Towards partners in the voluntary work at FabLab and my family promptitude is a matter of course.

Technical skills and competences

After my post gradual studies at ETH CAAD and ZHDK Design Culture I developed these skills further. I'm using the computer on a high level for my work in different 3D-modeling software and management software for scheduling timelines, costs and contracting.
For example:

- Rhino / Grashopper and equivalent software
- ArchiCAD and equivalent software
- BauPlus / Messerli
- MS Project
- Photoshop and equivalent software
- Illustrator
- InDesign
- Premiere and equivalent software
- Excel
- Word
- PowerPoint
- etc.

At FabLab we use the following machines at the moment:

- CNC Mill: PA1260 Portalfräse VK Technik
- 3D-Printer: Ultimaker Original 3D Drucker
- Lasercutter: Epilog Legend 36EXT

It is a natural habit for me to be curious about everything new and being always open to learn the latest technics and processing methods.

Artistic skills and competences

Back in school I imagined myself as an artist. Very early in childhood I started sculpting with all materials available and took part in diverse courses for drawing and sculpture. At 16 years old I took the first lessons on evening school of our art academy in Leipzig and continued lessons in nature studies and sculpting for 9 years. This was very helpful during my academic education – not only because of the drawing skills, this early training gave me a deep understanding of nature and causality's as well.
I'm still realising art projects like sculptures, installations and photography.

Other skills and competences

I love dancing – because everybody needs a hobby.

Translation original paper
Detail Prize 2007

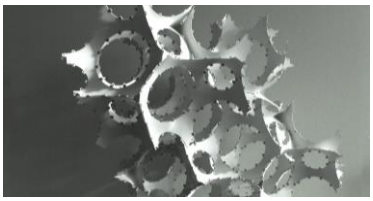
Author and title
Bergit Hillner - „Schaum“ (Foam) MAS CAAD ETHZ 2004/05
International Detail Price 2007
First Price Students

Language
German

Publication place
DETAIL Symposium 2007 – BAU 2007 Munich (Trade Fair for Architecture, Materials and Systems)
Detail 03/2001, diverse international
online http://www.detail.de/artikel/detail-preis-2007-die-preistraeger-stehen-fest-27127/

Summary

Within a three months period, the participants of the ETHZ MAS program Computer Aided Architectural Design (CAAD) 2004-05 designed, programmed, and fabricated an irregular spatial structure. The concept of the design was based on cellular automata. It created a self-organised growing mesh. A computer simulation model was programmed.
Intertwined with the design process, construction studies and fabrication systems were developed for production using the CNC machines located at ETH. During this process I was responsible for the research and evaluation of the material in context of detailing / construction and the parameters of our available CNC machines.



The second part of my thesis gave me the chance to have a closer look to a rejected geometry of my first research. I developed four production chains for this geometry, depending on chosen material, detailing and CNC technics documented during the processing of four prototypes.
In the conclusion I was able to show the direct correlation and reflect the influences of decisions in early stage of process on producibility and sustainability.

Group Thesis

An experimental construction chronicles the research, experimentation, and development undertaken by the postgraduate students in Computer Aided Architectural Design (CAAD) 2004-05 showing the potential of the „digital chain“ - the entirely digital process from design through to production.
The cellular automata creates a self-organised growing mesh where the designer is able to directly interfere with the running design by changing parameters and positions of the structural nodes. A computer simulation model was programmed in Java, using 3D API to visualize the design state in three dimensions. The resulting mesh is flexible and manipulable, allowing it to adapt not only to the user defined parameters but also to contextual elements.
Using construction data directly derived from the 3D-model, m.any variations can be generated and easily put out.
The final fabricated result should be regarded as a structure and proof of concept, showing the potential for using current information technologies in architectural design and construction.

Postgraduate Students: Tobias Bonwetsch, Sebastian Gmelin, Bergit Hillner, Bart Mermans, Jan Przerwa, Arno Schlüter, Rafael Schmidt
Master of Advanced Studies in Architecture, Specialization in Computer Aided Architectural Design
Supervision: Prof. Dr. Ludger Hovestadt, Philipp Schaerer
Chair of CAAD, ETH Zurich, Switzerland | www.caad.arch,ethz,ch

http://wiki.arch.ethz.ch/twiki/bin/view/Front/CaadArticleEvent2005X09X15X16X06X49.html

The Idea

To translate foam as a geometry in a conventional, architectural form, with the support of CNC manufacturing.
Foam is a three-dimensional complex structure and through this geometrical complexity a statically interesting system. According to Frei Otto the „pneu“ is the basis of all live.
The expected shape language of this construction is in the broadest sense to be described as organic.

The forms that we had so fare created on the machines of ETH Zurich gave me hope to get really close to this goal. Nonetheless considering economic reasons I was certain not to use the CNC mill for spark machining of three-dimensional parts.

Geometric analysis

"In the beginning was the pneu." Frei Otto

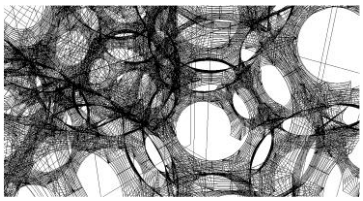
The pneu – a membrane strained by internal pressure – is the main basis of nature's language of forms.

In living nature soft, non-harden parts stay as a bubble till their decay.

Other parts harden after shaping, forming smart, bending resistant spatial structures still maintaining the history of their finalization – foam like open- or closed-cell systems.

open- and closed-cell foam

Rubberlike, viscous, ropy and net forming foaming agents are the base to form membranes and net structures. In the beginning emerge membrane formations with the typical framework of knots and racks. Ropy substances tend to flux in direction racks and thicken meanwhile the membranes thin. During the process of hardening the membranes tend to open up, leaving framework like systems. Like in soap foam in this structure every individual bubble is unique in its shape and size. The form with the minimal surface / length occurs based on surface tension.



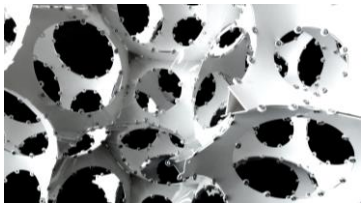
The ideal partitioning of one space in smaller parts of the same size and minimal surface is a truncated cube octahedron with four-arm-knots and three-edge-arms.
Due to varying pressure ratio while during formation result diverse density in the structure.

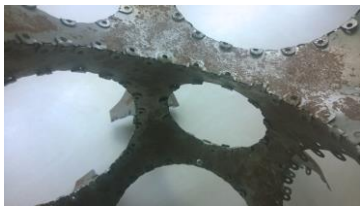
Definition

The open-cell foam is the geometric basis of the resulting construction, with four-arm-knots and three-edge-arms. The partitioning based on minimal surfaces is still shape giving.

Geometry / Detail

Central design issues are the joining of the edges and surfaces.





The design solution is strongly effected by the chosen material and production technic:

1. PET foil 1mm > cutting plotter
2. PVC foam sheet 1mm > cutting plotter
3. Mild steel sheet 1mm > laser cutter

Possibilities of joining edges and surfaces:

1. plucking
2. riveting
3. jamming

attachment-systems:

1. nose like system inspired by zippers
2. ear like system mirror symmetric
3. ear like system non mirror symmetric

The first and the third solution are creating a positioning dependence. A coding system is nessesary. The unfolding process has to be programed.
Resulting are three samples 30cm x 30cm x 20cm.

First stresstest

The samples underwent a first small stress test:

1. PET foil 1mm; plucked (self-weight 120g) withstands 14kg
2. PVC foam sheet 1mm; riveted (self-weight 120g) withstands 23kg
3. Mild steel sheet 1mm; jammed (self-weight 220g) withstands min 60kg

The construction is supporting more than hundred times its one weight.
Compared to the structure we realised during the group work, witch barely was able to hold themselves, this structure would create an additional value beyond being pretty.

results

The automation of production of the parts is possible. The mounting process has to be done manually and takes even more time as the structure is becoming more complex.
In a next step it would be necessary to include the parameters of the design and details in to the computer modelling process.
Additional to the new design parameters, the cellular automata should be extended to react to distribution of forces, to create an aligned structure and to optimise the structures ability to transfer the force along certain trajectories.