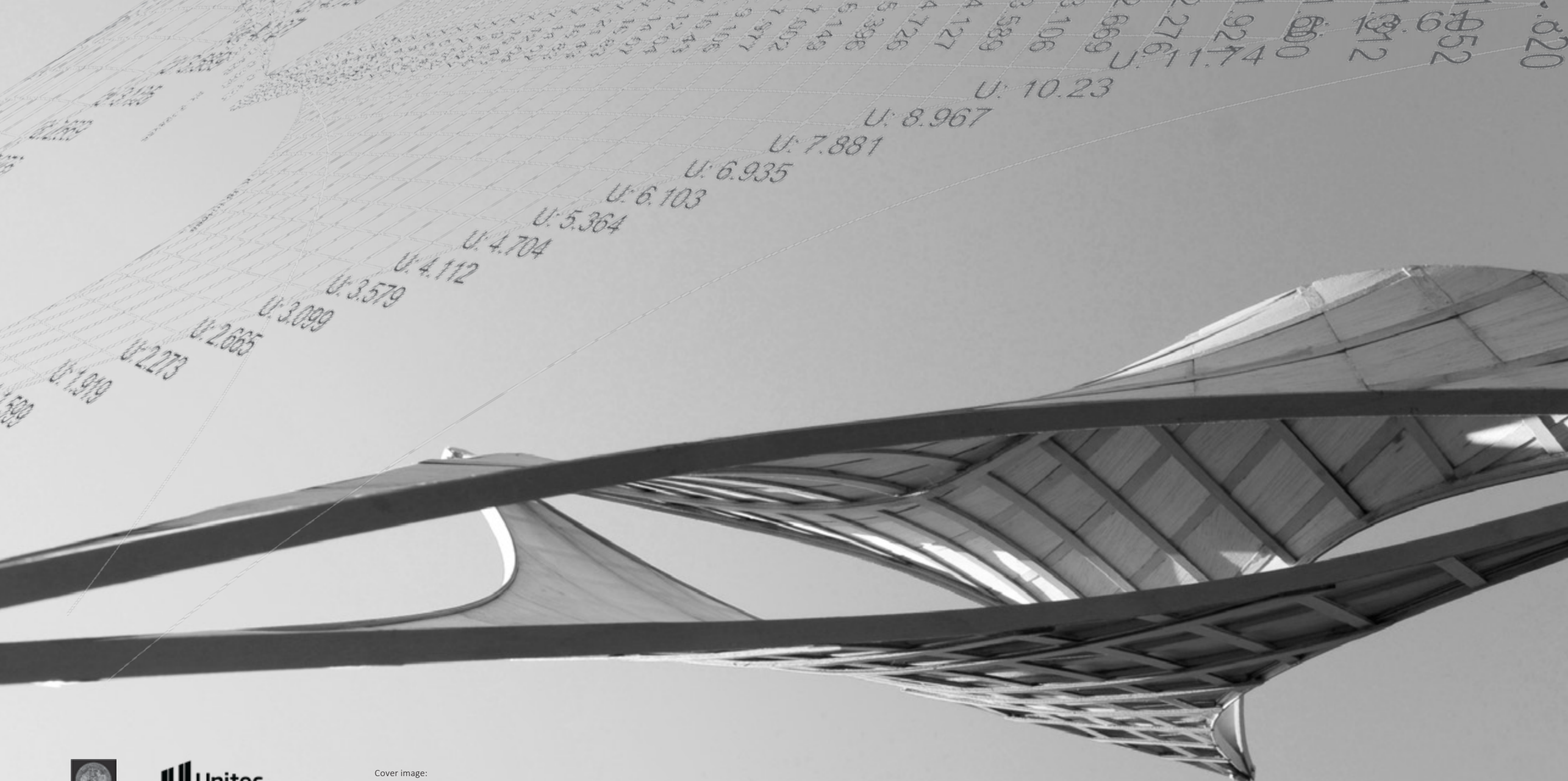




SNOWWHITE

Cover image:
Photo of the case study *Bird 04* by W. Klasz
Finalist in the international conceptual design award:
www.s-arch.net | May 2016
Screenshot of a baked Rhino Grasshopper file, a
collaboration with the parametric design expert
Alexander Grasser

How far can design be reduced to let form emerge on its own? A review on the research of Architect Walter Klasz in Auckland – A booklet from the exhibition at Snowwhite Gallery:
Inbetween art and research. Inbetween physical experiments and parametric digital control.

Walter Klasz inbetween



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Design by Walter Klasz

Review section designed and edited by ePress

This work is a scholarly open review of ‘How far can design be reduced to let form emerge on its own? A review on the research of Architect Walter Klasz in Auckland’ – a booklet from the exhibition at Snowwhite Gallery: *Inbetween art and research. Inbetween physical experiments and parametric digital control*. (Copyright: Walter Klasz, proofreading: Joe Streibl, Austria)

A propos of an introduction: A discussion of Walter Klasz’s work, by his peers

Ass. Prof.Dr. Wittfrida Mitterer
Editor, Bio-Architettura
magazine, Italy

In a wider sense Walter Klasz took the time during his residency in New Zealand to research form-finding processes in a socio-cultural context. He had a closer look at a kind of self-formed emergence of spatial quality while minimising the consumption of material and energy. In fact, Klasz is not primarily interested in form itself, nor in material itself. His main interest lies in the dialogue between humans and space and between humans and nature. Nevertheless, the architect makes use of materials to contribute to these relationships. The concrete experimental medium of Klasz is straight wood, which is bent into sustainable configurations. Klasz thinks and works in physical models. His thesis is that nowadays contemporary digital tools could give a new relevance to the heritage of Frei Otto (see the exhibition *Denken in Modellen* [English: ‘Thinking in models’] in Karlsruhe, Germany), because of the new efficiency in the drawing- and realisation-process. The architectural history is influenced by technical achievements of neighbouring disciplines, which were

euphorically ‘embraced’ by architects in every era from ancient times until today (see Rem Koolhaas, Venice Biennale 2014). Every architect is a child of one’s time. Walter Klasz is one of these, who tries to reflect his influences critically. He looks for his personal answer to our architectural world, which is more and more determined by ongoing digitalisation – in a globalised world, where the same 3D printer and the same software exists in Innsbruck, New York and Auckland. During his residency in New Zealand, the practising architect Walter Klasz takes the opportunity for a timeout. He gains a distance from his home university as well as from the activities in his office. The change of perspective obviously helps him to face essential topics. The word ‘dissertation’ has the Latin origin ‘dissertatio’ / ‘dissere’ which means to discuss or to examine. The following publication is Klasz’s extensive self-examination in the context of international architectural discourse.

The following work can be seen in between three schools of thought that Klasz has come into intensive contact with throughout his career. Firstly Light-Tech and High-Tech (Richard Horden/Norman Foster), secondly Bionic (unit koge/Frei

“In fact, Klasz is not primarily interested in form itself, nor in material itself. His main interest lies in the dialogue between humans and space and between humans and nature.”

Otto) and thirdly the age of parametrical design. Klasz looks for lightness in a physical and in a holistic sense. His research vehicle is the tensioned bow. A straight wooden member is brought to its bent form by using a cable in tension. Additional forces can temporarily be brought into this new configuration (e.g. drawing an arrow). Klasz doesn't shoot arrows but he works with form-giving forces of elastic bending. The practical advantage of this principle is that many curved constructions can be built without a scaffold, reducing material and energy consumption throughout the process. The experimental studies lead to concrete constructional typologies. Some of those examples are presented at the last pages of this book. Parametric digital design is used to create these typologies as 'files to factory', enabling effective CNC-cutting and realisation of the projects.

Unitec Auckland's concept of hosting international scientists in residence and artists in residence in one house was obviously successful in creating a creative environment, which is reflected in the multi-layered work of Walter Klasz. Living together with Yu-Ting Wang und Yoroe Lin, Klasz addressed the topic of perception. Outside of this, Klasz contacted other artists in New Zealand whose work is closely related to his own: artist Jeff Thomson works with bent metal, and designer David Trubridge with bent wood. Both make use of the idea of self-formation processes. Klasz was inspired more by a strong relationship to these artists than by architects, which fits with his desire to change perspectives. His final exhibition shows mainly abstract

sculptures and no architecture. At the same time, the sculptures are installed in the exhibition space in such a way that the visitor of the gallery is presented with a strong experience of space. Continuing his basic themes, Klasz realises this spatial installation with minimum use of materials, which reflects the principle of ecological building. Klasz uses 3mm thin plywood fixed by thin cables to existing points in the gallery. These boards – which include a presentation about the development of the installed sculptures – are bent by their own weight into interesting, fluid forms. The visitor to the gallery is guided by this installation through a kind of labyrinth inside the space.

'Weaving ancient knowledge with contemporary facilities' is the title of one chapter in the booklet. Klasz uses what is probably mankind's oldest hunting device – the bow – as a constructional principle for shells, bridges and for the prototype development of *A Cloud for Fresh Snow*. Klasz's own website tells us that the innovative Low-High-tech scientist was asked by the company Neuschnee (winners of a State award for best patent in 2016) to develop a prototype for a new lightweight product for the market. This and other examples prove the relevance of Klasz's studies, attractive not only because of their bionic efficiency but also because of their aesthetic qualities. This book documents the field and the growing process of a plant, which will continue to grow in form and structure in the ongoing dissertation of Klasz.

(German)

Walter Klasz setzt sich im Rahmen seines Forschungsaufenthaltes in Neuseeland im weiteren Sinne mit Formfindungsprozessen im soziokulturellen Kontext auseinander. Im engeren Sinn geht es ihm um die weitgehend selbstbildende Entstehung von räumlicher Qualität unter Minimierung von Material- und Energieaufwand. Im Grunde geht es Klasz also nicht um die Form an sich und auch nicht um das Material an sich, sondern um den Dialog zwischen Menschen im Raum und zwischen Mensch und Natur. Der Architekt bedient sich aber dennoch der Materialität, um in dieser Beziehung einen Beitrag zu leisten. Das konkrete Experimentiermedium von Klasz ist geradliniges Holz, das durch Biegung in formstabile Konfigurationen gebracht wird. Klasz denkt und arbeitet in physischen Modellen. Seine These ist, dass die zeitgenössischen digitalen Tools diesem Erbe von Frei Otto (vgl. aktuelle Ausstellung *Denken in Modellen* in Karlsruhe, Deutschland) neue Aktualität verleihen, da die bauliche Umsetzung effizient möglich wird. Die Architekturgeschichte ist mitunter dadurch geprägt, dass technische Neuerungen aus benachbarten Disziplinen von Architekten in der jeweiligen Epoche vom Altertum bis heute euphorisch 'umarmt' wurden (vgl. Rem Koolhaas, Biennale 2014 Venedig), was in der Entwicklung der Baukulturen unterschiedlich ausgeprägt ablesbar ist. Jeder Architekt ist ein Kind seiner Zeit. Walter Klasz ist einer von jenen, der versucht, sich mit seiner Zeit kritisch auseinanderzusetzen. Er sucht seine ganz persönliche Antwort in einer zunehmend digital determinierten Architekturwelt – in einer globalisierten Welt, in der in Innsbruck,

New York und Auckland der gleiche 3D Drucker und die gleiche Software angeboten werden, um nur ein aktuelles Beispiel zu nennen. Der bauende Architekt Walter Klasz nutzt während des Forschungsaufenthaltes in Neuseeland die Chance einer Auszeit aus der Dynamik der heimatlichen Universität und eine Auszeit seiner Bürotätigkeit. Der Perspektivenwechsel hilft ihm offensichtlich, sich mit den für ihn wesentlichen Fragen auseinanderzusetzen. Das Wort Dissertation bedeutet Auseinandersetzung. Die vorliegende Publikation ist eine tiefsinnige Auseinandersetzung mit sich selbst im Kontext des zeitgenössischen Architekturdiskurses.

Die vorliegende Arbeit kann architekturhistorisch an der Schnittstelle dreier Denkschulen angesiedelt werden, mit denen Klasz durch seine Biographie intensiv in Berührung kam. Erstens Light-Tech bzw. High-Tech Design (Richard Horden/ Norman Foster), zweitens Bionik (Unit Kogge/Frei Otto) und drittens das Zeitalter des parametrischen Designs. Klasz bedient sich in seinem Ringen um 'ganzheitliche Leichtigkeit' dem Prinzip des gespannten Bogens. Ein gerades Stabelement wird durch ein gespanntes Seil in die gebogene Form (Biegelinie) gebracht. In diese neue Konfiguration können zusätzliche externe Kräfte (Pfeilspannen) eingebacht werden, die wiederum für die Stabilität nutzbar gemacht werden können. Klasz schießt keine Pfeile, sondern er arbeitet mit den formgebenden Kräften der Biegeelastizität. Der praktische Vorteil in diesem Prinzip besteht darin, dass eine Vielzahl gekrümmter Flächen effizient ohne Gerüst hergestellt werden können und gleichzeitig der Material-

und Energieverbrauch auf ein Minimum reduziert werden kann. Die abstrakten experimentellen Studien münden in konkrete Konstruktionstypologien, die ansatzweise auf den letzten Seiten des Buches gezeigt werden. Parametrisch generierte digitale Modelle ermöglichen es, diese Typologien in 'files to factory' darzustellen, wodurch die Bearbeitung der Stabelemente und somit auch die bauliche Umsetzung effektiv möglich werden.

Das Konzept der Unitec in Auckland internationale 'Scientists in Residence' gemeinsam mit 'Artists in Residence' in einem Haus unterzubringen, scheint im Fall von Walter Klasz insofern fruchtbringend gewesen zu sein, dass ein kreatives Umfeld geschaffen wurde, was durch die Vielschichtigkeit der Arbeit ersichtlich ist. Durch das Zusammenleben mit Yu-Ting Wang und Yoroe Lin hat sich Klasz intensiver mit dem Thema Wahrnehmung auseinandergesetzt. Gleichzeitig hat Klasz auch jene Künstler in Neuseeland aufgesucht, die enge Schnittstellen zu seiner Arbeit aufweisen. Der Künstler Jeff Thomson arbeitet mit gebogenem Metall und der Designer David Trubridge mit gebogenem Holz. Beide bedienen sich des Phänomens des Selbstformungsprozesses. Offensichtlich wurde Klasz durch die intensive Beziehung zu Künstlern mehr in seiner Arbeit inspiriert, als durch Architekten. Dies wiederum passt sehr gut in den von ihm angestrebten Perspektivenwechsel. Seine abschließende Ausstellung zeigt vorwiegend abstrakte Skulpturen und keine Architekturen. Gleichzeitig sind diese Skulpturen intuitiv gezielt im Raum situiert, dass der Besucher der Galerie eine eindruckliche

Raumerfahrung machen kann. Konsequenterweise ist Klasz auch dahingehend, dass diese Architekterfahrung mit einem Minimum an Materialaufwand erreicht und somit dem Prinzip des ökologischen Bauens gerecht wird. Die Dokumentation des Entstehungsprozesses der installierten Skulpturen präsentiert Klasz auf 3mm starken Furnierschichtplatten, die an wenigen Punkten zu bestehenden Schrauben und Leitungen im Raum verspannt sind und die sich allein durch ihr Eigengewicht formschön biegen. Die Anordnung dieser Bänder lenkt die Besucher in Form eines Labyrinths selbsterklärend durch den Raum.

Wie der Titel eines Kapitels im Buch besagt (Seite 64), verbindet Klasz altes Wissen mit zeitgenössischen Möglichkeiten. Das womöglich älteste Jagdgerät der Menschheit – der Bogen – wird als Konstruktionsprinzip für Dachschaalen, Brücken und für die Prototypentwicklung der *Wolke für Neuschnee* verwendet. Wie der Homepage von Klasz zu entnehmen ist, wurde der innovative Low-Hightech Forscher vor kurzem beauftragt für das mit dem österreichischen Staatspreis gekürte Patent für Pulverschnee eine Leichtbaukonstruktion für die Serienproduktion zu entwerfen. Dieses und andere Beispiele bezeugen die gesellschaftliche Relevanz der Studien von Klasz, die nicht nur wegen der bionischen Effizienz gefragt sind, sondern auch wegen der ästhetischen Qualität. Dieses Buch dokumentiert somit den Acker und das Wachsen einer Pflanze, die in der fortlaufenden Dissertation von Klasz nun zunehmend konkrete Gestalt annehmen möge.

Dr. Thomas Michl, Lecturer in art didactics at the Academy of Fine Arts in Nuremberg, Germany

In the following report, I reflect on the basic thoughts of Walter Klasz from art-pedagogical perspectives.

In art, and respectively in sculptural art, the term 'inbetween' is used in the context of a negative form. This negative form is surrounded and enclosed by the positive form. Such a form works as a kind of 'inbetween-space'. The 'inbetween-form' functions in the background, but provides a framework at the same time. In contrast to the positive form, which works actively, the negative form is about to be formed by the circumstances. Concerning this observation there are several parallels between the work of Walter Klasz and pedagogical aspects. These aspects are often determined by 'inbetween-constellations'.

In a chronological-biographical sense, learning is marked as an interim phase, where a specific stage of development is finished, whereas a new one has not started yet. Bigger steps of learning often start from a secure plateau of experience, from which the learner takes a risk to jump into something new – especially when the framing is appropriate. The time of academic study – as my students are currently experiencing at the Academy of Fine Arts, Nürnberg – is an 'inbetween-phase' in their lives. This time is determined by insecurity but also by openness, curiosity and emergence into something new. As art

studies are characterized by a certain liberty in form, the pedagogical influence on the development of this mostly young students cannot be done with the help of active forming, but it needs the thinking of the 'self-organised form' as Walter calls it. It's about providing the appropriate framing for the individual development, where students can experiment in a completely free way, trying to organise themselves at the same time. Similar to the thin wooden pieces of the abstract architectural models of Walter Klasz, the young students are experimenting with their different borders in extreme situations in their personal lives as well as in their individual approach to art. Walter Klasz's residency in Auckland is probably a kind of second or third 'inbetween-phase' in his life. I have the impression that Walter has found a positive frame during his time as a research artist at Unitec to experiment with his personal borders in a similar way to the boundaries and limits of the wooden pieces of his sculptures. After some lonely weeks in the wooden barn, only sometimes surrounded by local artists, he felt more and more secure to follow his instinct – to work confidently with self-organised forms in a constructional and sculptural way.

Completeness is another basic principle that can be observed thorough the whole publication. Walter Klasz is not satisfied by just designing good looking and working architecture, nor by researching solely material behaviour or geometric forms. He looks at architecture in its entirety – having the impact, the past and the future in mind. Where does the material come from, to realise or to provide space? Is materiality necessary at all to provide spatial quality –

“Walter Klasz is not satisfied by just designing good looking and working architecture, nor by researching solely material behaviour or geometric forms. He looks at architecture in its entirety – having the impact, the past and the future in mind.”

considering the aspect of the 'inbetween'? What happens with the material, when the life of the building is over? How far can the consumption of material and energy be reduced? His endeavour is to minimise intervention in the natural circular flow of nature. In a pedagogical sense this could be translated into the attitude to perceive a person from a holistic point of view – including already existing (de-)formations, without trying to bend existing curves into directions that they don't want to go. It's about a respectful way to present and to take people as they are.

A further feature of this publication and of the person Walter Klasz is enthusiasm. Every sentence in Walter's text, as well as most of the imagery, reflects enjoyment of life in all of its up and downs. He is enthusiastic for the new country, and the people, he gets to know. He accepts the circumstances like the wooden barn as the appropriate surrounding for his residency at the other end of the world. This enthusiasm is never intrusive, but modest and at the same time infectious – in the sense of 'self-organised forms'.

Walter Klasz has developed during his career an incomparable convincing concept, which is not only relevant in the context of architecture but also pioneering in the context of pedagogy. The essence of Walter Klasz acquires a special persuasiveness through the uncompromisingly conclusiveness of his personality.

Univ. Prof. Arch. Christian Kern, Institute of Three-Dimensional Design, Technical University of Vienna, Austria

Reading Walter Klasz's booklet about his work as a researcher in Auckland, I was moved by the aesthetics of the abstract three-dimensional wooden lightweight sculptures. Five years ago, Walter Klasz gave a lecture at my Institute of Three-Dimensional Design at the Technical University of Vienna about his innovative building projects as a self-employed architect. Walter Klasz is a practising architect and a unique type of academic researcher. His interest lies between research and practice. Walter wants to find a closer link between both fields in his life and focused his residency in Auckland on this topic: The inbetween. What does that mean? What is this field, which Walter is becoming more and more an expert on?

In the following review, I try to discuss Walter's approach to three-dimensional form-finding. Walter is driven by aesthetics but he is not looking for them in a primary sense. He uses his own hands and works with the inherent nature of wood as a material. Whereas a musician tries to get an acoustic sound and a melody out of an instrument, Walter listens to the material inherent behaviour, trying to find a sort of melody in the continuously changing form, while bending wood into spatial configurations. His research vehicle is the scaled physical model. His first-phase 'method' is using his experimental instinct. In a second step, he looks carefully at his intuitively developed structures and

tries to digitally control them, analysing the outcome carefully. Depending on the type of structure, he collaborates with international experts, who support him in this process. His expertise is not primarily the digitalisation but the development of new form-finding processes, while using his hands – feeling real physical forces and limits in the material. Obviously, he has a strong feeling for structure, which is proven, for example, by his 1:1 built research lab *A Cloud for Fresh Snow*.

This work is reviewed by international scientific experts in active bending as well as by experts in structural membranes. Walter knows about the coherencies of materials and forces by a kind of intuition. This leads him to serious research. The results are convincing from an aesthetic point of view as well as in the uniqueness of the type of form-finding-process – as reported in some of his peer reviewed papers and in his recent publication in *Bio-Architettura* (December, 2016).

From 2002 to 2004 – ten years ago – I shared time with Walter in Richard Horden's team at the Technical University of Munich. Looking now at Walter's recent work, I see, on the one hand, the strong influence of this time in Munich in terms of passion for lightness and micro-architecture, and on the other hand, I observe Walter's subsequent searching for his very personal architectural attitude and language. Instead of increasing his office, he reduces it, to have the right limiting conditions for serious PhD-research. Walter takes his extensive search impressively seriously. He leaves his studio and his university

"Whereas a musician tries to get an acoustic sound and a melody out of an instrument, Walter listens to the material inherent behaviour, trying to find a sort of melody in the continuously changing form, while bending wood into spatial configurations."

to confront himself with the question “What am I looking for?” By now, Walter knows the area that he is researching. It’s the ‘inbetween’. Walter is internationally well connected and he has an overview of currently available computational tools. Nevertheless, his expertise is not improving one specific digital tool nor developing one specific geometrical field. Walter is a researching architect in bent wooden lightweight structures. Up to a certain scale, his structures don’t need a scaffold to be assembled. The scale of his patented diploma as well as *A Cloud for Fresh Snow* or the self-formed lounge, developed in New Zealand, fit into the term micro-architecture. We could probably call Walter’s work ‘self-formed micro-architecture’. In summary, his research is first of all not aiming at being published in papers for an academic career, but to open a new niche in our contemporary international building culture. It’s a tough path but to make sure that his work will lead to a unique result he collaborates with experienced engineers like Switbert Greiner from Germany as well as with artists like David Trubridge from New Zealand, or digital experts in parametric design. Walter’s exhibition in Auckland is probably a milestone in his very specific PhD research as well as in his personal search for his unique design language.

Peter McPherson
Head of Architecture, Unitec
Institute of Technology,
Auckland, New Zealand

This work by Walter Klasz, *Inbetween*, is predicated on his question, “How far can I reduce the active design work in order to let form emerge on its own?” We are presented throughout by the interactions of the author with people, places, ideas and motivations, each part related in order to present the reader with a coherent understanding of his motivations; to develop a system by which a design solution can emerge.

The issue of relationships is pivotal in this work. The way people relate to a material, place, nature and with each other runs consistently through *Inbetween*. Klasz is clear that he considers architecture not to be a purely formalistic pursuit but one that is to be informed by more nuanced and interconnected ideas. Relation of parts is a critical component of the system that Klasz is developing. At a functional level the timber members work together to define the whole. Working directly with a material, the inherent properties of that material contribute to guiding the solution.

Dr Renata Jadresin Milic notes in her discussion that architecture has a contemporary desire to search for ‘appropriate form’, born out of the endless possibilities digital design techniques afford us. Dr Chris Luebke has noted that it is usual to search for the appropriate application of a new

technology after periods of ‘imitation’ and ‘outrageous or injudicious exploration’. Sulan Kolatan warns against a reliance on ‘technology to create a perfect solution on its own’. Klasz’s research fits precisely within this agenda to develop a way of working that places material, people, and nature at the centre of the design process. The outcomes are not driven by a single idea but by a series of connected relationships.

The idea of a material craft connects the various parts of Klasz’s journey. A material selection is established and the relationship of place and nature is considered with regards to the capabilities and needs of the people making and inhabiting the structure. The desire for lightness strengthens the commitment towards evolving an environmentally sustainable approach to design that again reinforces the connection of people to nature. The concept of lightness extends beyond the physical weight of the structure and underlies the overall approach that Klasz is designing.

Klasz is designing a system, as opposed to a form, from which a variety of design options and typologies can emerge. This approach sets parameters by establishing the material and a series of boundary conditions. From here highly complex shapes emerge with little further description from the designer. This is a shift in approach to design where rather than focus on the outcome, Klasz is motivated toward setting limits to what might emerge from his system. This enables Klasz to appropriate the system

“The desire for lightness strengthens the commitment towards evolving an environmentally sustainable approach to design that again reinforces the connection of people to nature.”

for any number of design problems while reducing the 'active design work'.

Klasz's work sits across a number of architectural conditions. On one level the work continues in the tradition of the like of Gaudi, Candela, Nervi, Otto, Foster, and Gehry; working with natural properties of materials to generate forms of minimal surface and structure. At a further level Klasz shows concerns with the impact of building on the environment as demonstrated by his selection of chosen material and drive for lightness. Further still the work seeks to establish a closeness to the users of these structures by creating an identity to nature and place. These interconnected relationships ensure that this work has an important place in current architectural research.

The residency has enabled Klasz to explore the nature of relationships. Exposure to different, and sometimes similar, places, people, and thinking has shown to be a critical component of shaping Klasz's design system. What are the things shared? What are the things different? How can these be understood, defined and given their own space to evolve? In these moments we glimpse the inbetween and it is these occasions where we witness powerful opportunities for architecture.

Art has the power to translate the language of nature into the language of mankind, and architecture is capable of creating a bridge between the unconscious and the conscious.

Walter Klasz works within these spaces, and in a way where the nature of a material is encouraged to show itself through the designer's hand. Walter creates forms that have deep roots within human necessity: to provide shelter, social space and a connection to place, but, most importantly, these forms impart a sense of wonder, and demonstrate a respect for the natural world.

Paul Woodruffe, 2016



*From a bird's eye view, design is about working with materials
to be related to ourselves, to each other and to nature.
After all, it's the space inbetween we are looking for.*

Walter Klasz, Little Bay, New Zealand, 2016



Being related

What are we really looking for in life? I think we want to be related. At first, probably, with ourselves. It's a mystery how a relationship needs both being together and giving liberty at the same time. Thank you Elisabeth for enabling me this time here in New Zealand.

Design is about contributing to a better related world. "We don't need a lot to be happy," said Norman Foster when I was sitting with him and his family in the micro-compact home in Silvaplana in 2006. As Research Assistant of Richard Horden I was in charge of the development of the 1:1 Mockup (i-home) of the probably smallest living unit (also exhibited in the MOMA New York). Later I designed the Carbon Fibre Boat Backyak and my family tested the prototypes during our holidays at lake Garda in Italy.

At the moment we are living in a 300-year-old house in the mountains close to Innsbruck. My studio is in the attic and my hobby is chopping wood for the long winter. One day we will hopefully move to the far better insulated habitable structure *Bird 04*.



Left page:
Elisabeth with our children
Tamara and Ida at Lake Garda

Living and working place
in the Austrian Alps:
6184 St. Sigmund No. 12,
Design Studio in the attic



Our children Ida and Tamara exploring
the prototype 02 of the Backyak
during our holidays at Lake Garda



Being motivated

There are very few people who not only speak about their dreams, but who really live them. When I entered the studio of David Trubridge, I immediately felt this spirit of creating things which are truly touching people deep inside – both the sympathetic team of the creators themselves and the people buying and using the designs. There is a flow of relation from nature to the designer and to the people.

It is by no coincidence that his famous book about his work and his life is titled *So far*. But David is very young inside, he is burning for beauty and he keeps on learning from nature and from people of the Pacific. He designs with his pencil in his sketchbook, works with experimental models and uses *rhino* to get it under

control and to produce the designs with the CNC cutting machines for the worldwide market.

We have agreed that he will give his lecture 'Beauty matters' in 2018, when I will present my built case study *Bird 04* at the University of Innsbruck. Thank you David for our very motivational meeting!



Left page:
Discussing the model *Bird 03* with
David in his studio in Hastings

David Trubridge showing me
his modern production hall,
A self-designed timber construction
(in background)



David Trubridge with his recently
developed LED-lighting: *Navicula*
First time presented at the
Light + Building in Frankfurt;
Exhibited in New York *Wanted Design*
Hui Tour: 19 May 2016, Trigram, Raleigh NC



Being inspired

Jeff Thomson is an outstanding New Zealand artist working and exhibiting internationally. And he is – like David Trubridge, Jeff’s studio neighbour in Taradale in the early ‘90s – a modest and very friendly person. Gina Ferguson took me to the opening of the Harbourview Sculpture Trail and, along with Gina’s work, I was really inspired by a work called *Sway*. Having asked about the artists, I was introduced to, and got to know, Jeff Thomson and Bev Goodwin, who collaborated on this sculpture (photo right).

The next weekend we visited *White Night* together and I was invited to sleep in the guest bed in the middle of his studio in Helensville. On Sunday morning I interviewed Jeff, which then ended with an inspiring lunch and discussion with Bev. Later Jeff’s lovely partner came back and we all had dinner together. I’m sure it’s not the last time we’ll see each other.



Photo of *Art New Zealand* 2001, No. 100

Cover by Jeff Thomson

Other artists in this publication:

Len Lye, Colin McCahon, etc.



Bev Goodwin & Jeff Thomson, *Sway*

Wire, steel, swivels, polystyrene, paint

Site specific installation at the

Harbourview Sculpture Trail 2016



At the entrance to the studio:

left to right: Walter Klasz,

Shona Cameron, Jeff Thomson &

Bev Goodwin

Left page:

Jeff with a new model of a large-scale abstract sculpture, soon to be realised in an architectural context



Based at *Woodruffe*

On my arrival in Auckland after a 20-hour flight Paul picked me up at the airport in the early morning. At his house close to Mount Eden I took my first photo (see left page). In the Woodruffe family, life is art and art is life. I stayed the first week there until the house for artists and researchers at the faculty was free. In my bedroom there was a painting of Paul's (see photo right) showing four boats... somehow like the Woodruffe brothers, linked together but driven by the different and challenging streams of the gulf. Brother Emil is working on films and animations and Evan is currently painting *Wet Maps*, as the article in the recent issue of *Art New Zealand* was titled. The cover shows Evan laying in his huge work. The Woodruffe brothers are very different but they have a uniquely sensitive perception of space in common.



Photo of *Art New Zealand* 2016, No. 157
Cover by Evan Woodruffe



Painting by Paul Woodruffe
Motuihe Channel, pen on paper



Photo of Paul (left) and Evan (right)
Woodruffe at Galbraith's Alehouse
celebrating Paul's birthday

Left page:
Photo of the entrance to Paul and Sabrina
Woodruffe's house with a ceramic leaf
made by multidisciplinary visual designer
Paul Woodruffe



Auckland Art Gallery,
Woven Into Nature

Architecture FJMT with Auckland-based Archimedia; Installation by John Ward Knox: *Hardly Held Lightly*, 2015



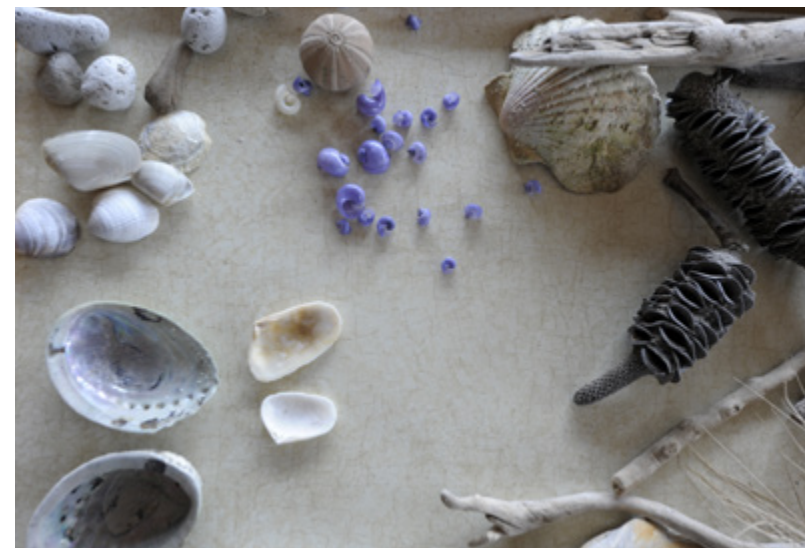
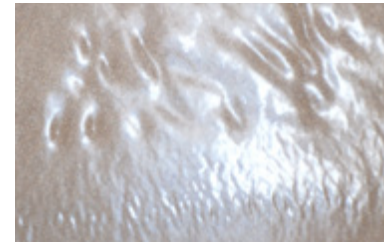
Auckland
One of the youngest cities in the world, located on volcanos



Auckland
View from the Harbourview Sculpture Trail



Auckland
View from Waiheke Island at night



Everything has a form and every form has an evolution, which is driven by any kind of relationship. In nature there is nothing arbitrary and at the same time there is a huge freedom and variety of forms. Sensitive people are deeply moved by the beauty of many of these forms. This observation was the main reason for me to dig deeper and to try to understand self-organised forms as a design tool for micro-architecture. As the topic is wide, I focus my (PHD) research primarily on self-forming processes in self-interlocking, bent timber structures.

These photos are taken at Little Bay in Coromandel, where Paul Woodruffe invited me for the first weekend. I have collected driftwood, mussel shells, volcanic stones, fruits from trees and other amazing naturally-generated forms. These objects are always on my table at our house for researchers and artists in residence.

All photos taken at
Little Bay, Coromandel,
New Zealand, February 2016

Photo of the original photo by
 Len Casbolt
Flight C1947
 in the exhibition
From Soft Focus to Sharp Vision
 Auckland Art Gallery 2016



Photo of a digital presentation
 on the Walsh Flying School,
 Museum of Transport and Technology
 Auckland

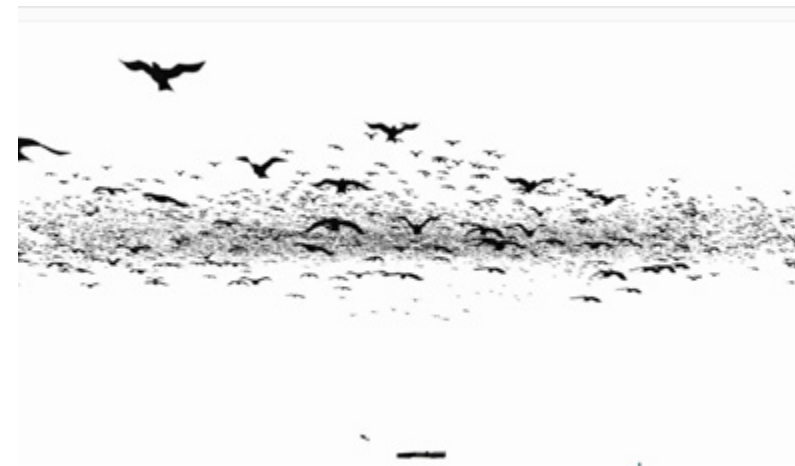


Perception

Birds play an important role in New Zealand, and can be observed in the mythology of the Maori culture as well as in many artworks created in this country. For me even the first aeroplanes in Manurewa look like birds at the beach.

When I asked my colleague, the Taiwanese Artist Yu-Ting Wang, to show me some of her work, I was instantly moved by one slow-

motion digital film: There is a man playing with his toy helicopter. A point cloud in the background slowly increases and hundreds of birds fly in the observer's view until the man with his little toy helicopter is left alone again. Yu-Ting Wang: "When we're seeing something, these objects we look at aren't just themselves. It's concern about place, space, time ... , and how you look at it."



Screenshot from an art movie
 by Yu-Ting Wang,
 Artist in Residence at Unitec

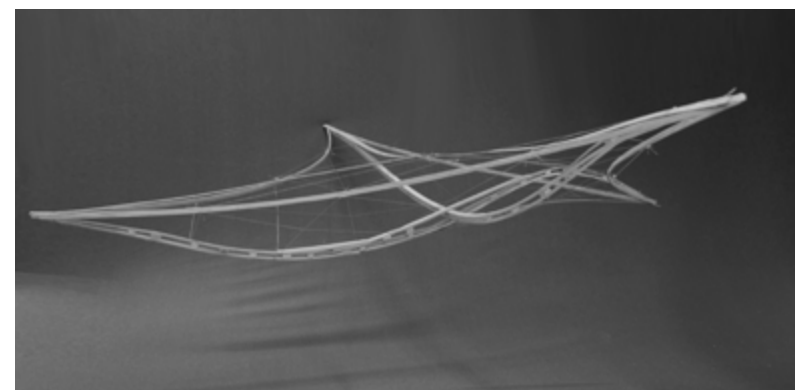
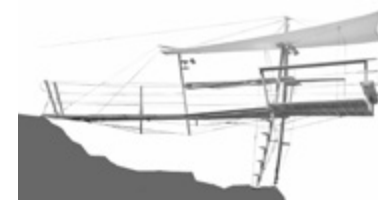


Left: Photo of a painting by
 John Bevan Ford
Te Kura a Taunihii II 1993
 ink, pencil
 Auckland Art Gallery

Right: Photo of an installation by
 Michael Parekowhai
Bill Jarvis 2000
 aluminium, sparrow
 Auckland Art Gallery



Passion for Lightness



After having realised the patented lightweight construction *Air-base* as my masterwork at the Technical University of Vienna in 2002, I worked for Delugan Meissl Associated Architects for their project *Ray 01*. Then I was invited by Richard Horden to work for six years in his team at the Technical University Munich, where light and lightness have been the major topics. After having realised several small- and big- scale buildings with my own office (www.klaszkleeberger.com), I am refocusing on lightness – but this time based on self-organised, bent-only wooden structures, which can be produced with the help of parametric design and easily assembled by hand.

Left page:

Photo (taken by Elisabeth Klasz)
of Walter Klasz jumping from a cliff
into the sea

Rendering of the digital drawing
of the roof of the *Air-base*
(Patented thesis of W. Klasz)

Photo of Walter Klasz
installing the *Air-base* in the
Austrian Mountains

Collage: W. Klasz (for an art postcard):
Photo of the realised *Air-base*
presented on an abstract cliff

Photo of *Bird 01*

The first concept model of W. Klasz
made at Unitec in February 2016
using fishing lines



Passion for Innovation



Having seen the incredibly intelligent construction of historical Polynesian boats in the Maritime Museum in Auckland in recent months I have a huge respect for the holistic knowledge of the ancient cultures travelling hundreds of miles on the dangerous sea. The most interesting issue for our contemporary culture is that those boats were not only optimised for the users but that they were 100% sustainable (see p. 48). When I looked for companies to produce the Backyak based on my design, I found that organic fibers haven't been developed yet that can produce lightweight, hard shell constructions. That's why the prototypes are made out of carbon fiber. My passion was to invent one product which can be transported as a back bag and which can be used in different ways – as seen in these images. At the end of my research residency in New Zealand I am even more convinced that we can, especially nowadays, learn a lot from the origins of our cultures – from the Polynesian boat builders as well as from the alpine farmers; not to fight nature but to innovate contemporary solutions that allow us to live with nature.

Digital renderings of the Backyak
made by my office, klaszkleeberger

Photo of the Backyak
in winter mode as a steerable sledge
during the shooting for
www.backyak.com

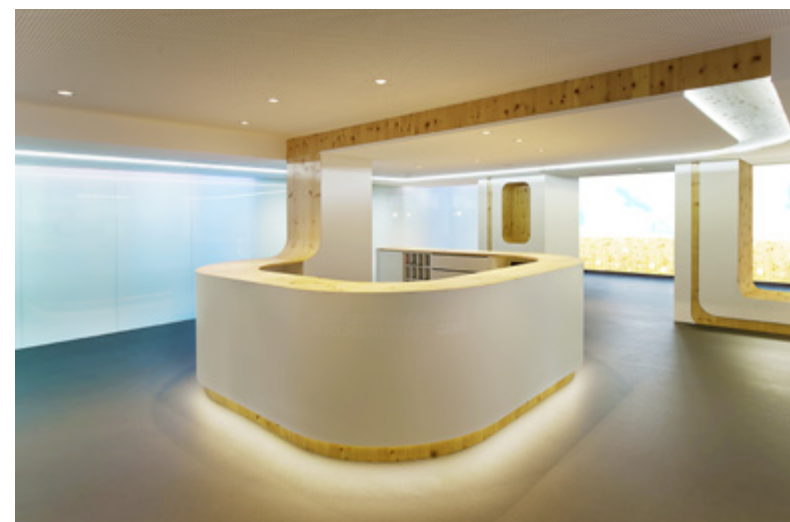
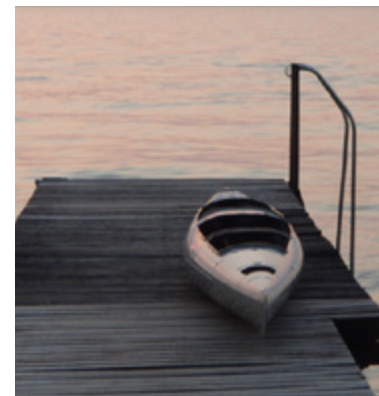
Photo by Markus Tretter of the Backyak
assembled as a sailing catamaran
shooting at Lake Constance, Germany

Photo by Markus Tretter of the Backyak
used as a canoe for a couple with child
(Elisabeth and Walter Klasz with Ida)
shooting at Lake Constance, Germany

Left page:
Photo of Walter Klasz assembling the
Backyak at Lake Garda to present the
innovation on the website:
www.backyak.com



Passion for Beauty



My grandmother, an alpine country-woman, used to say “True beauty comes from the inside”. As explained in the book *Designtheorie und Designforschung*¹, beauty is an important but not the only category of aesthetic. My research interest in this category lies in the beauty of nature, which can be seen in many different design decisions I made: The silver Backyak reflecting the changing colours of nature; the transmissible facade of the chapel in Fraxern playing with the changing daylight; or the aroma of the alpine pine contributing to a positive atmosphere inside the tourism school in Innsbruck. I focus on the relationships of objects and spaces to nature, and beauty sometimes arrives as a gift.

¹Uta Brandes, Michael Erlhoff,
Nadine Schemmann:
Designtheorie und Designforschung
(Designtheory and Research on Design)
Wilhelm Fink GmbH & Co
Verlags-KG, 2009 Paderborn
ISBN 978-3-7705-4664-0,
Page 28

Elisabeth Klasz using the top part
of the Backyak as a pillow to
read a map during a journey

The Backyak reflecting daylight
at the landing stage at Lake Garda, Italy

Tourism school, Innsbruck:
multifunctional reception hall;
Local alpine pinewood + MDF

Left page:
Chapel Fraxern, Vorarlberg
View from inside to the entrance

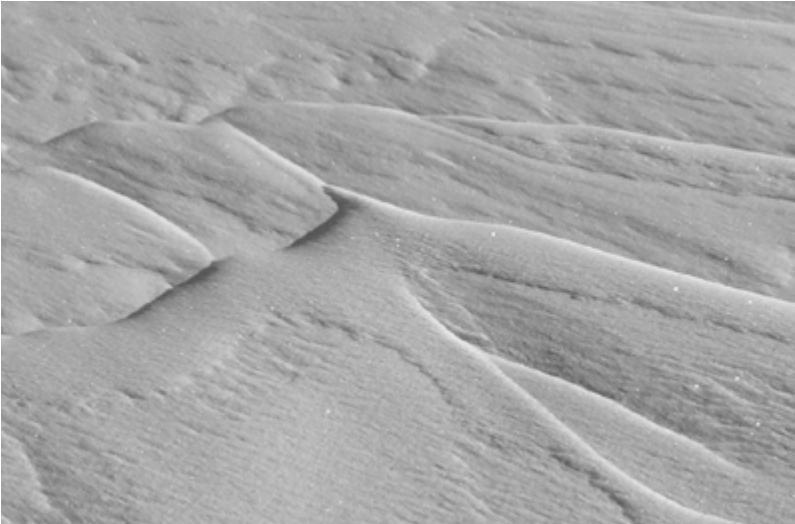
Self-organised forms

In the European Alps: Wind/Snow

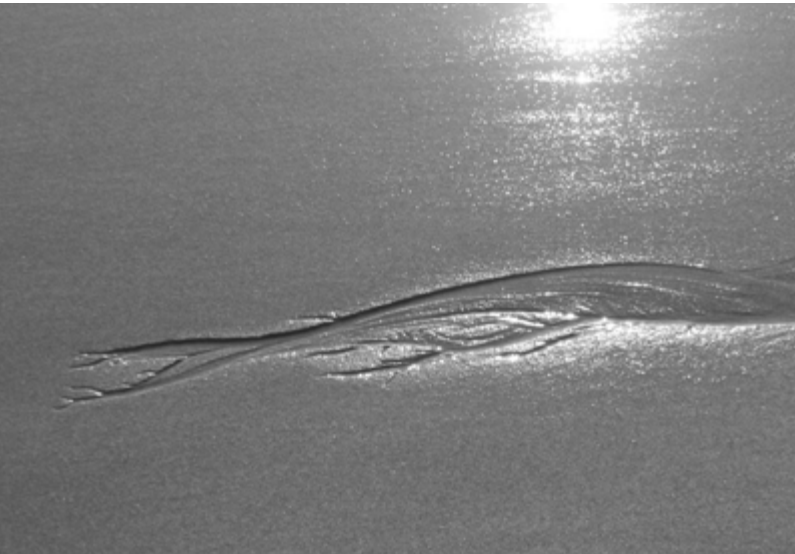
Snowdrift against the wind
on the frozen lake:
Lago de Rèsia, South Tyrol, Italy



Flat snowdrift
in Kühtai, North Tyrol, Austria



In nature in New Zealand: Water/Sand



Rapidly changing forms
in the sand on the beach,
Photo at Little Bay, Coromandel

Meandering 'river' to the sea
at Cox's Bay, Auckland
(see also the scientific paper
about self-formed meanders:
Christian A. Braudricka, William E.
Dietricha, Glen T. Leverich and Leonard
S. Sklarb: Experimental evidence for
the conditions necessary to sustain
meandering in coarse-bedded rivers;
Department of Earth and Planetary
Science, University of California
Berkeley, Berkeley, CA 94720)

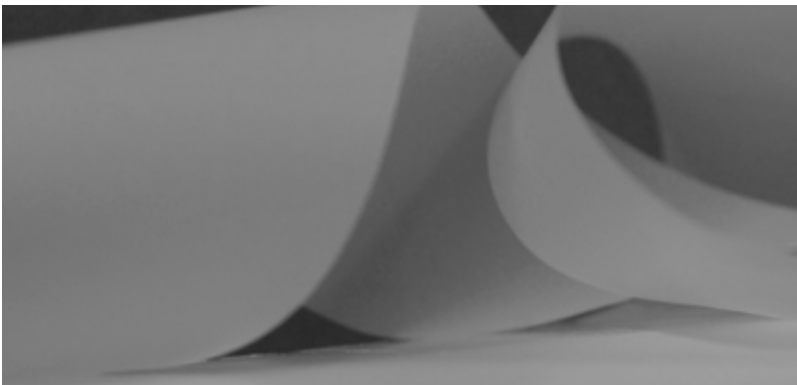
Volcanic rock formed/smoothed
by the surge of waves,
Photos at Long Bay, Auckland



Detail photo of the very same rock
as seen above



Students of Walter Klasz
during a design seminar
at the University of Innsbruck in 2015,
experimenting with changing
boundary conditions effecting
the emerging forms
of elastic material



Concept model by
New Zealand student Tracey Ellin
during an interior design seminar
with Walter Klasz
at Unitec, Auckland



Walter Klasz
... ongoing research



A sociocultural self-organised form



I know Walter Klasz from our collaboration for a competition for public art in Europe. We won the Vienna site, and so realised our concept of a 'Baetsch in the city' in 2012. The concept was a kind of self-organised identity for the Nietzscheplatz in the suburbs of Vienna. Over one week, inhabitants of the area brought their unused materials to the site, and we spontaneously built, together, a temporary shelter. It was a fascinating social and constructional formation process. There was no plan, but just a collective attitude of listening to each other, this allowed the form to emerge within the set boundary conditions.

In 2014 I had the chance to participate and to contribute to the summer workshop at the unit koge, organised by Walter. Being a designer and visual artist, I was impressed by the form-finding processes that started with an intuitive sketch and lead to highly sophisticated, self-forming built structures, like *A Cloud for Fresh Snow*, in almost one semester.

'Self-formation' obviously has very practical applications like the self-found equilibrium of bent wood and membranes, but on the other hand this phenomenon also seems to be a philosophy that touches art and sociocultural issues, there are even pedagogical aspects that can be applied to the process.

Paul Woodruffe. MLA
Artist and Landscape Architect
Department of Design & Contemporary Art
Unitec, New Zealand

Left page:

Photo by Vojtěch Vlček of the built

Baetsch in the city

in Vienna at night

Photo of the primary timber frame
reinforced at the corners with skis
contributed by local inhabitants

Photo by Vojtěch Vlček
of the interior of
the finished *Baetsch* in use

Photo by Vojtěch Vlček
of the local people enjoying
the outside space created by
the *Baetsch*



A structural self-organised form



In March 2014 I got a phone call from Michael Bacher, CEO of Neuschnee GmbH asking if I can design him an elevated research lab of 150m³ by November. After the first successful workshops in my office in Innsbruck, I suggested taking the topic to the university and to involve public and private partners. The cloud is a self-formed structure of actively bending wood and minimal surface membranes. Structurally, the main innovation of the project is that material fatigue of wood plays no relevant role in this hybrid configuration. This was appreciated by international experts when I presented a scientific paper about the cloud in August 2015 at the IASS Congress in Amsterdam and later after a further development in Barcelona. In 2015 I organised an excursion for my students from the University of Innsbruck; we visited the company Koch Membranen in Rimsting next to Lake Chiemsee. Sebastian Koch gave us a very interesting overview of the realised projects of his company. He also expressed his interest in working with me and the unit koge on further projects. But the main reason I mention Sebastian Koch is the fact that he was moved by another self-interlocking concept model I developed with my students. The conversation I had with him about the importance of simplifying the assembly process in tensile lightweight architecture encouraged me to focus on this topic in my ongoing research in the field of structural self-organised forms.

Photo by Michael Bacher of
Walter Klasz assembling
the wooden parts

Photo by Koch Membranen:
production process of
the patterned membranes

Photo by Michael Bacher
during the assembly process:
fixing the membranes by hand to the
frame before stressing it to the core

Left page:
A Cloud for Fresh Snow
Photo of the assembled lab
in Obergurgl, Austria



Experimental Research in the wood barn, Unitec, Auckland

How far can *design* be reduced ...

As seen on the previous pages, I am a practising architect. It's a fundamental sensation to watch forms emerge and to actively take part in this process. Whether it's a multifunctional boat, a public art project in Vienna or a sustainable church in Salzburg, there is always one question that I am most interested in: How far can I reduce the active design work in order to let form emerge on its own?

Since a year ago, I have reduced my office work to focus on this research question. I will not, and I cannot, give an answer now in this article but I refer to the title of this booklet and my exhibition for an idea of where I am looking for an answer. It's the *Inbetween*.

In January 2016 I was invited to write a paper and to give a talk at the interdisciplinary conference in Vienna, *Da.zwischen* (English: in-between) from the point of view of an architect, to contribute to a dialogue with psychologists, pedagogues, theologians and artists.

In October 2015 I presented the formfinding process of my largest built project, *Church and Municipal Center Rif*, at the Advanced Building Skins Conference in Bern. This year I have been invited back to report on my ongoing research on the case study I am working on now, here in New Zealand. Having mentioned my doubts about whether my *Bird 04* (see p.60) fits into the conference in Bern, the Chair answered that they are looking for people exactly like me.

In April 2016 I was invited by Univ. Prof. Dr. Christian Bauer in Innsbruck to write an article for the online feuilleton *feinschwarz*

about self-organised form-finding and the inbetween. won't go into details concerning all these activities mentioned, but they are representative examples of the obvious wider relevance of my research.

My ongoing PHD is based at the Institute of Gestaltung (English: Design) at the Faculty of Architecture in Innsbruck – specifically in the Structure and Design working group. I do go into detail in the research field of self-interlocking actively bent wooden structures. In my research I focus on the simplification of the assembling process. So I chose this very specific field to dig deeper – and to find inherent natural laws which obviously have also a relevance in other disciplines – see the paper *Self-formation and Innovation*¹. The first commissioned case study in my specific field of construction was *A Cloud for Fresh Snow* (see p.36). The relationships between bent wood in a membrane-like configuration are now further investigated in a second case study with the nickname *Bird 04*. On pp.52–53 the evolution of the four different experimental research models is documented in photos taken during the assembly processes.

I worked for six weeks in the wood barn without any distractions, just listening to the material inherent properties of wood (... and sometimes to Harry's ukelele). Whereas I used fishing lines at the beginning to bend the wood and to create a wooden surface close to a membrane surface I ended up with a bent-only version, represented in the model *Bird 04* (see below and p.60 onwards).

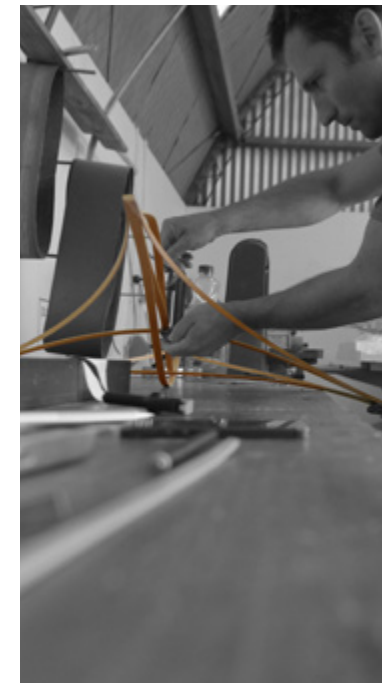
... to let form emerge on its own?

Besides being inspired by New Zealand's pioneers in aviation and by the highly sophisticated Polynesian boats, I have had two inspiring architectural projects in my mind: Firstly the timber ribbed shell roof of the Solemar in Bad Dürrenheim². Having seen this amazing construction I had the following idea: Why not using the bending character of wood to build a similar tensile form in a self-organised process – statically self-interlocking without expensive curved laminated wood, and without heavy foundations?

Secondly, I was thinking about the Rolex Center in Lausanne. Sitting in the University

building during an excursion with my students we were wondering why we all love the landscape-like floor so much. Obviously, humans like curved surfaces if the context is appropriate.

But actually my students and I have been most moved by the autochthonous mountain village Alpenzu (see p.46) which was built without any architect. Taking these perceptions seriously, I can summarise that largely self-organised spatial forms most meet our emotional desires. So far to the background of my experimental studies on the aforementioned research question.



All curves emerge from
material inherent properties.
The architect reduces his
work on the design of the boundaries.



²see p.42 and see also:

Wenzel, F., Frese, B., Barthel, R.
(1989). The timber ribbed shell roof in
Bad Dürrenheim. *Structural Engineering
Review*, 1/1989, 75–81.

Left: Photo of Walter Klasz
working on the primary
structure of the model *Bird 04*

Top right: Photo of the 2mm plywood
panel before sawing it into strips

Bottom right: Photo of the fourth
finished model *Bird 04* with Walter
Klasz in the improvised photo lab in
the wood barn (to enable taking
photos of every important step
of the assembly process).



Curved laminated timber ribbed shell roof
Solemar, Bad Dürreim by Geier Völlger Architekten, Germany, Foto Klasz Excurs. 2015
See: Wenzel, F., Frese, B., Barthel, R. (1989). The timber ribbed shell roof in Bad Dürreim. *Structural Engineering Revie*, 1989(1), 75–81.



Concept Drawing by SANAA

Reinforced concrete shell with a wooden 'offset' roof layer
Rolex Center by SANAA, Lausanne, Foto Klasz Excursion 2015
2010 Pritzker Prize – see also 2010 <http://www.archdaily.com/50235/rolex-learning-center-sanaa>



Autochthonous Architecture in the Alps – Alpenzu, Aosta, Italy
Photo Klasz Excursion 2015



Autochthonous Polynesian Boat Design
Vaka Kiato-toro, sailing canoe from the Solomon Islands in the Maritime Museum, Auckland
Photos: Walter Klasz 2016



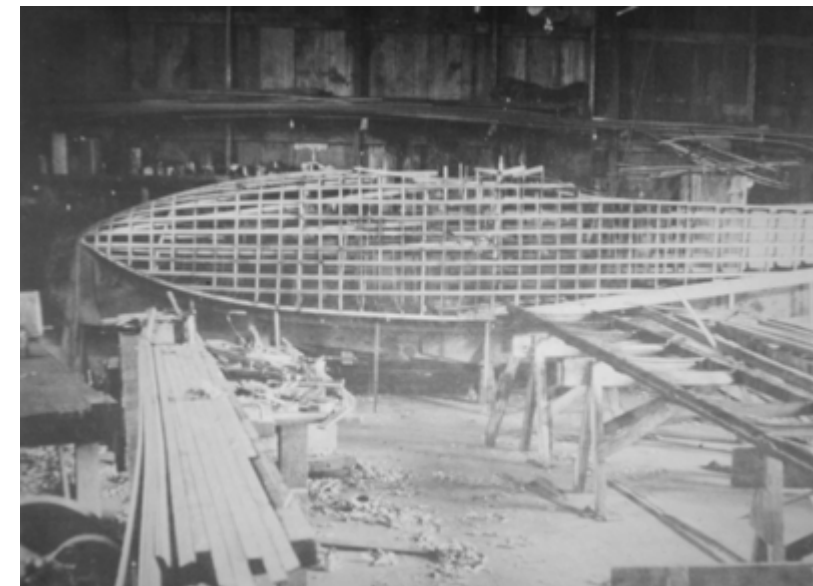
Pioneers in the wood barn

Learning from the Walsh Brothers:
 “Hull (...) The method evolved after failure of the imported boat’s underwater structure and was based on the principle of light spruce cross members with ash pieces screwed to the bottom edges only. As designed, the Curtis flying boat would not stand up to the heavy landing stresses



resulting in fastenings pulling out of the spruce members, and the bottom of the boat coming apart. The modified all-ash floors were a great success and no further trouble was encountered.

The newly constructed hull was then removed from the temporary keel plank and turned upside-down so that the planking on the bottom could be worked on. The work required two skins. First, a diagonal skin of cedar was fitted with joints and all edges sealed with plastic marine glue. Then a coating of thin marine glue was applied, and linen stuck on. A second skin of planking using Queensland Maple was then added. The topsides were then worked on, comprising one skin only.”¹



All photos taken by Walter Klasz
 in the Museum of Transport and
 Technology, Auckland
 Walsh-designed flying boats (1911–18)

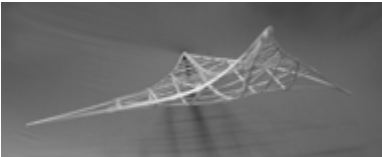
¹Ewing, R., Williams, R. (2011).
Walsh, New Zealand Aviation Pioneers.
 NZ: Old Sausage Publishers Limited.
 ISBN 978-0-9582993-9-8
 p.24 'Construction Methods'

Iterative experimental form-finding



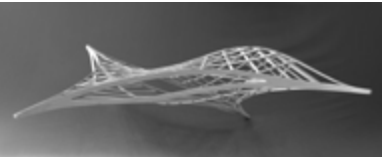
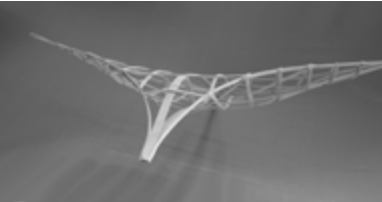
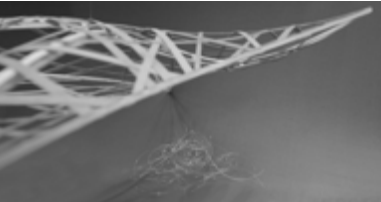
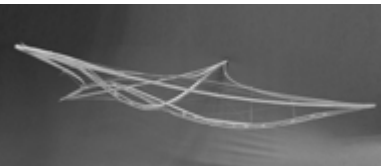
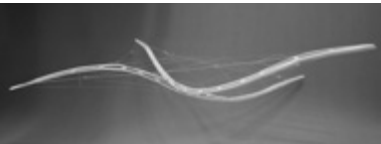
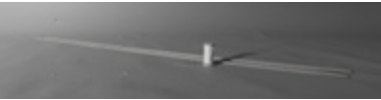
Bird 01

temporary use of cables
positive + negative Gaussian curvatures



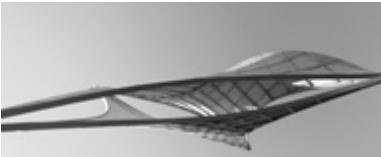
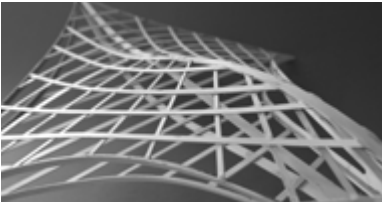
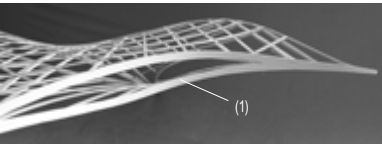
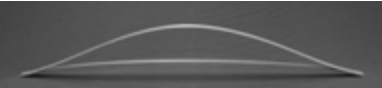
Bird 02

bent only
positive + negative Gaussian curvatures



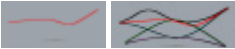
Bird 03

bent only
negative Gaussian curvatures only
human-formed openings (1)

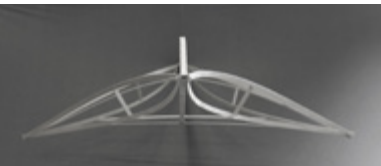
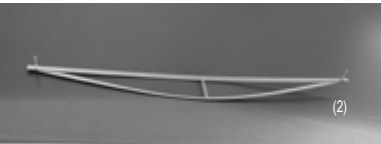
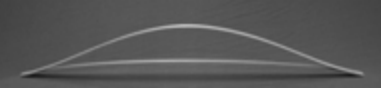


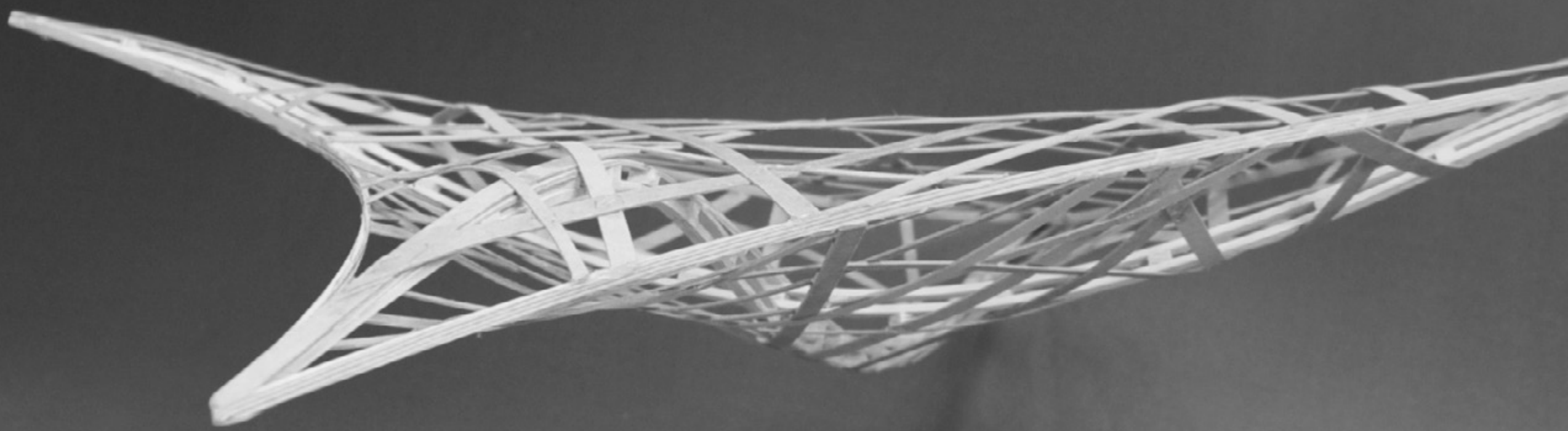
Bird 04

bent only
negative Gaussian curvatures only
self-formed openings (2) + 3D-milled ridge (3)

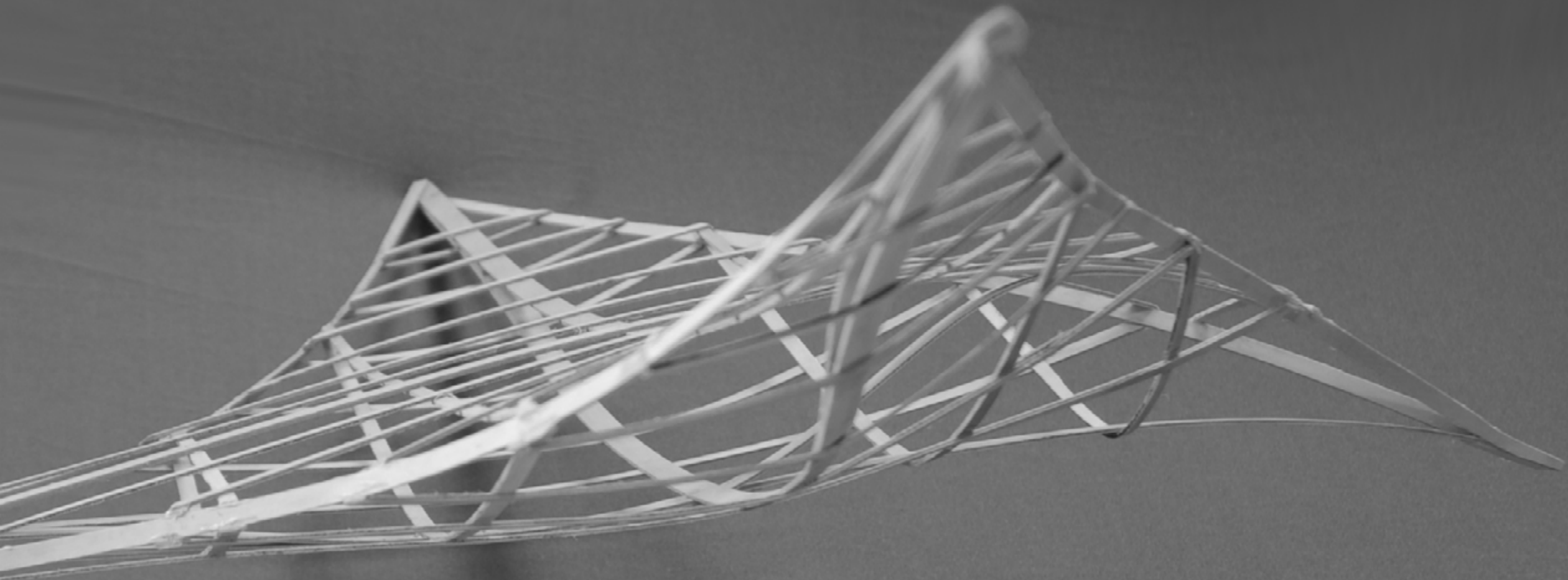


... maximum reduction

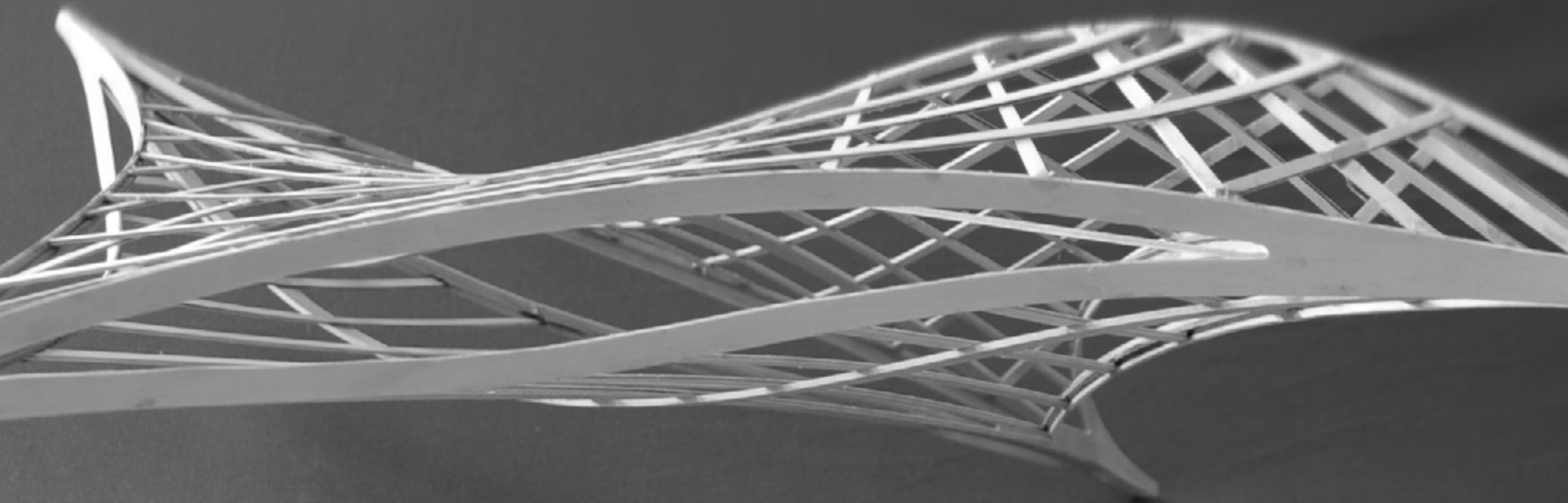




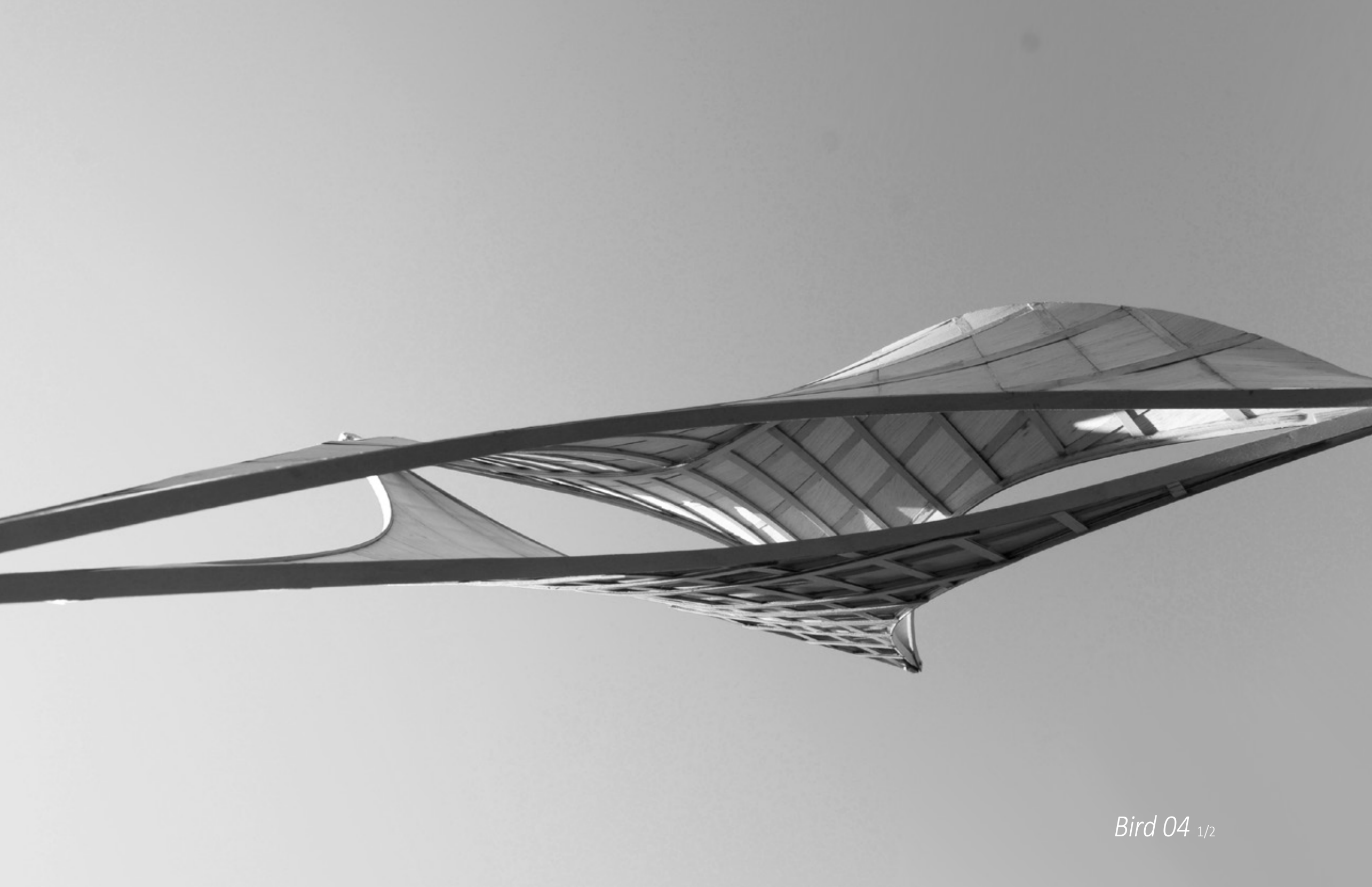
Bird 01



Bird 02



Bird 03



Bird 04 _{1/2}



... After all it's the space inbetween we are looking for.

Bird 04 _{2/2}

Weaving ancient knowledge with contemporary facilities

¹Buckminster Fuller:
Don't fight forces, use them

A bird takes advantage of the wind. A seagull can hover in an almost fixed position in the air with very little movement. The bird knows very well how to use forces and not to fight them¹. That's the reason I picked the nickname 'bird' for this experimental research. Some Kiwis² said to me that the structure looks like a bird or a stingray or an aircraft from a certain perspective – maybe? I keep on focusing on my research question: *How far can design be reduced to let form emerge on its own?*

Bird 04 is a research vehicle, and it was worth the trouble of digging deeper in order to achieve the simplest assembly process possible in a 1:1 scale. *Bird 04* is the third and probably most important case study of my PHD, after the *Baetsch* (p.34) and *A Cloud for Fresh Snow* (p.36).

While teaching at the Technical University in Munich in the field of Architecture and Product Design, my main interest was to learn from very advanced companies such as BMW, Eurocopter and Doppelmayr, to develop advanced architecture. I am still very interested in the rich knowledge and the design strategies of those companies but, at the same time, I see a widening gap between, mainly, two ancient values which contribute to a more sustainable culture:

- Using local materials only
- High identification of the user with the design

The alpine hay barn and the Polynesian boats

have, amongst other things, the following in common:

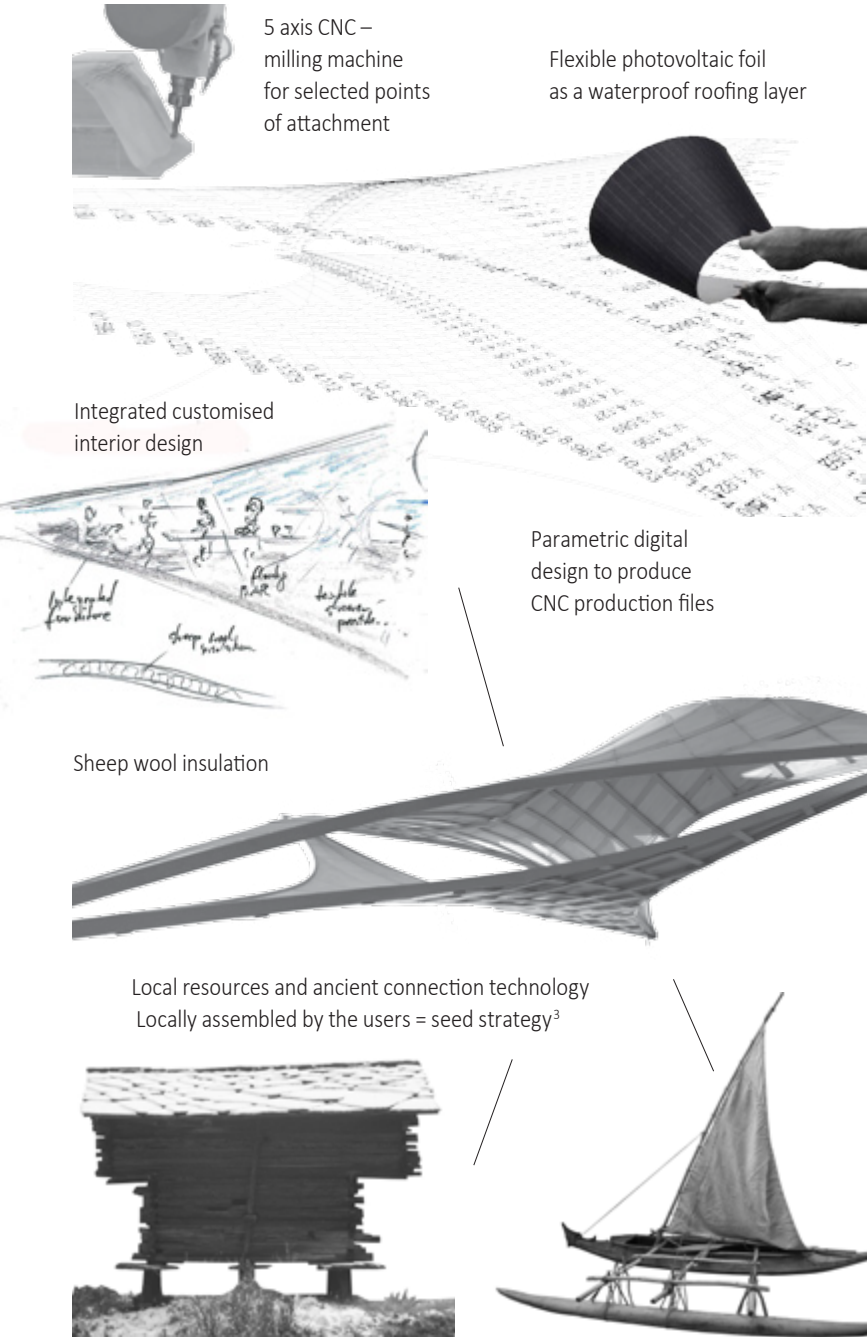
- Using local materials only
- High identification of the user with the design

Both the hay barn and the boat can be given up to nature when they don't work anymore. Concerning a sustainable lifetime cycle there is no better building and no better boat on the world market. This is reason enough for me to take my interest in this autochthonous design seriously. I try to weave ancient knowledge with contemporary facilities. Contemporary digital design methods and production tools allow us to apply ancient knowledge. Due to increasingly expensive labour, industry changed strategies. But now we can make complex forms and *wood to wood connections* again and now people want to assemble their products and habitats themselves again. There is a huge emotional desire in our society to have a closer relationship to our environment again.

Because of BMW one average modern car door consists of components produced in and delivered from more than 30 different countries. I am interested in producing *Bird 04* out of local renewable resources only.



Remains of an old unused Hay Barn
in Tyrol, Austria



Right: Image from
Andreas Zimmermann (Austria)
CEO of www.sunplugged.at

Screenshot of a baked Rhino
Grasshopper file, collaboration with
the PD expert Alexander Grasser

sketch of possible integrated
interior design

Bird 04
Photo of the physical concept model

³See: Trubridge, D. (2013). *So Far*.
Nelson, NZ: Craig Potton Publishing.
ISBN 9781877517884

Left:
Swiss storage barn
Right:
Vaka Kiato-toro, sailing canoe from
the Solomon Islands in the Maritime
Museum, Auckland.
Photo: Walter Klasz 2016





WELL DONE, WAVER!

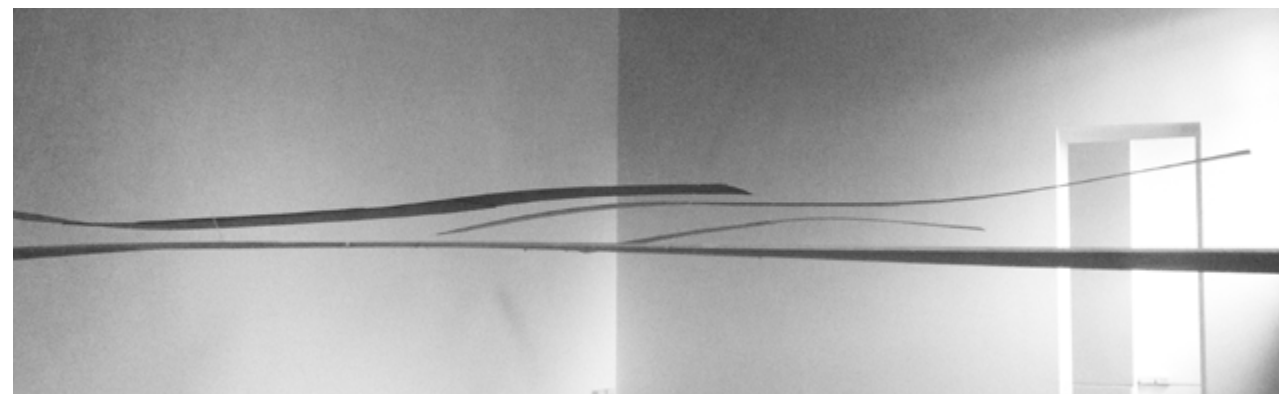
YOUR MODEL REMIND ME
OF ONE ~~THE~~ FUNDAMENTAL
PRINCIPLES OF SUSTAINABLE
DESIGN — LIGHTNESS.

SOME YEARS AGO, I FIGURED
OUT THAT VIRUVIUS WAS RIGHT
ABOUT HIS THREE PRINCIPLES
(FIRMITAS; UTILITAS; VENUSTAS),
BUT 'FORGOT' THE FOURTH
ONE: LEVITAS!

DUSHKO 6/4/2016

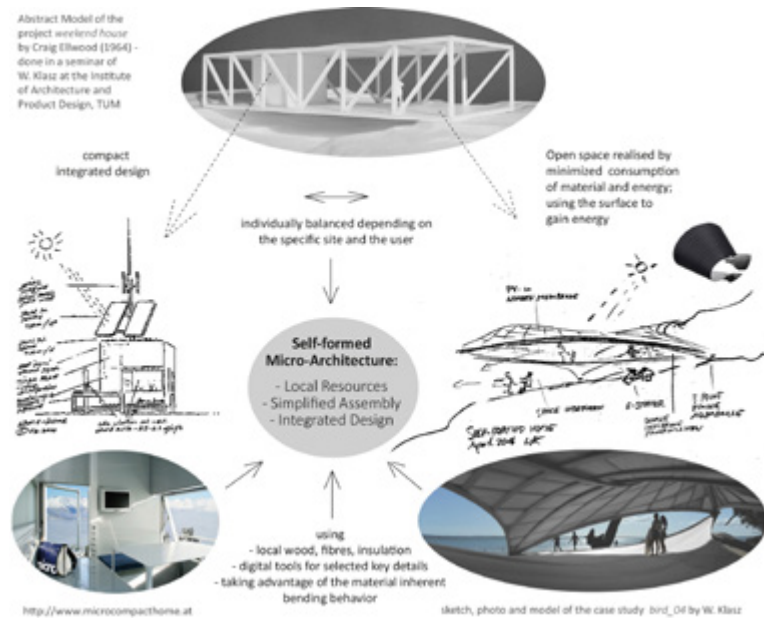


Dan, thank you for the great iPhone movie of the opening.



Thank you all for the notes in the guest book of the exhibition.
On the page on the left you will see an example, from Arch. Prof. Dr. Dushko.
Jeff Thomson and Paul Woodruffe – thank you both for your words at the opening.

‘Self-formed Spaces’ – a feedback ...



Clearly, contemporary architecture is continuously searching for different forms. The pursuit of innovative geometry has become an interesting subject in recent decades. The 21st century has brought about a new era of architectural design, where different computer tools have been developed, strongly influencing ‘form-finding’ processes. Increased interaction between the architect and the computer means it’s easier to search for the appropriate form for any project. With the programming languages and the interface that every contemporary modelling environment offers, processes can be automated to help the user achieve

solutions faster and more efficiently. The different possibilities allowed by this development are growing as 3D modelling packages – widely used by architects – are constantly adding more features to create forms.

A newly found architectural language is being developed based on these tools and it almost seems that the era of hand drawing has come to an end. Still, despite all current excitement about digital media, the idea that a form can be generated by merely using mathematical modelling and computers have not found a fertile ground in the work of Walter Kiasz. Striving to integrate his research, teaching and

to the exhibition and the public talk¹

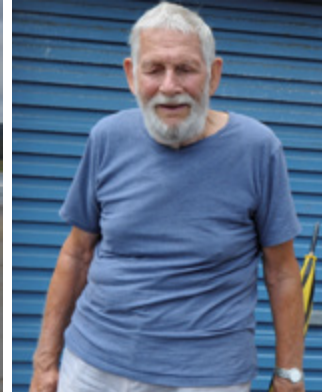
architectural practice, Walter connects traditional knowledge and contemporary facilities. He treats contemporary digital design methods and tools as a source that allows architects to apply traditional knowledge, and to relate it to our environment again.

Walter is a practising architect and an artist, who believes that architecture is art with its own tradition. Among the main principles on which he bases his work can be found: using natural rules, simplicity, human scale, continuity of tradition, local and vernacular context, culture before technology. By working silently with natural materials, listening to their inherent properties, as well as following his own inner instinct, Walter is trying to reduce active design work in order to let the form emerge on its own, believing strongly in self-organised form-finding and the value of the very subtle and serene ‘in-between’. In doing that, Walter opens up and raises many different questions, very honestly and deeply. He is passionate and eager to talk about his approach to architecture and to listen to other people’s opinions, craving to hear what colleagues think of his work – decently, modestly, curiously, without any vanity or ego. Deeply in love with nature, his family and his profession, Walter teaches us how in contemporary architectural theory and practice we can be related, motivated, inspired, and – with a strong passion for beauty – how to make pictures of joy or belief, entertainment or privacy, with which most human beings can

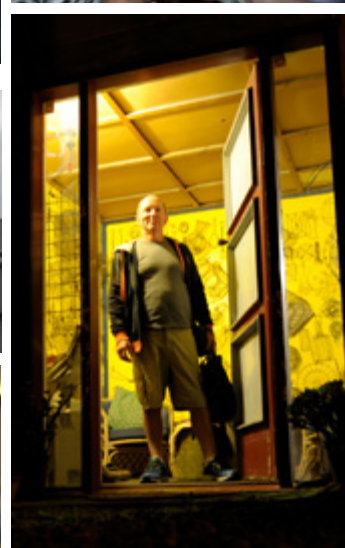
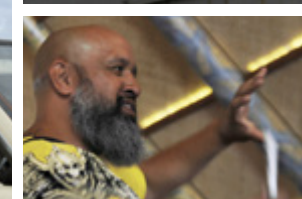
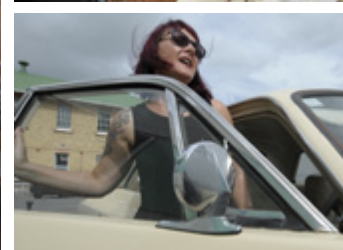
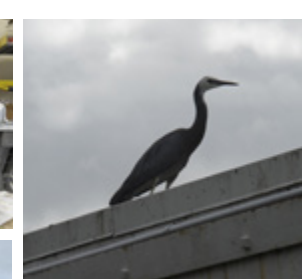
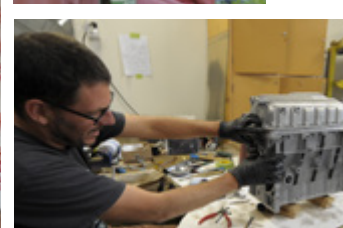
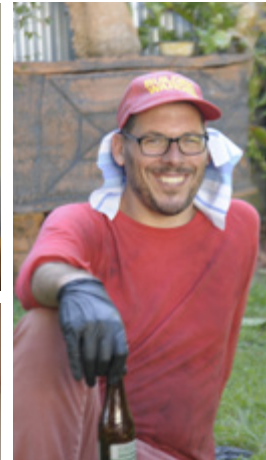
identify. The attitude that as a result of the capabilities of the contemporary design process, the procedure of architectural design has become semi-automated so that the architect can just try out different combinations, does not work for Walter. The directions in which our discipline moves change with each new generation of architects and architectural historians who discuss the importance of modern and traditional principles and ideals in architecture. In order to heal the conflict we might try to understand the natural connections between opposites. We might learn to search for that ‘specific something’ that different fields can unify – which is exactly what Walter reminds us of.

Dr Renata Jadresin-Milic,
Senior Lecturer
Department of Architecture, Unitec

¹Walter Kiasz, public talk
Unitec, 7 April 2016,
Scala Seminar Series, Auckland



Kiwis
Friends
Colleagues





Interviews and Dialogues



Dr. Christian de Groot

Interview 17.2.2016; Long Black Café at Unitec, Auckland

Born in Pisa, 1971

Working in Auckland as Senior Academic Leader of Business and Innovation at Unitec
Department of Design and Contemporary Arts

Qualifications: BSc (Hons) South Bank University, MA I.D Central St. Martins,

PhD University of Central England; Research field: Experience Design

Most important project: Interactive Exhibition in Auckland Museum

Main Passion: Collaboration cross cultures

Favorite landscape / spots: Volcanos

Next Aim / Dream to be realised: Transition to Industry

Quote from the Dialogue:

“New Zealand has an ongoing pioneering spirit. Being the last island discovered by the Europeans our country is attracting people – probably like you, Walter – who are more looking into the future than for investigations of the past. ... On the one hand, there is the feeling of the lonely man in the middle of nowhere fixing machines to beat nature and, on the other hand, we have the positive influence of the Maori culture to live in a coherent balance with nature. Your approach to architecture seems to combine both. Good luck!”

Self-formation – A Philosophy?

As far as I have seen you working here at Unitec, self-formation seems to be a method for arriving at a coherent form. It is a kind of self-organising system, where you as an architect are interacting intuitively responding to the behaviour of the used material while keeping spatial qualities in mind.

How would you describe the aesthetical approach?

I have got the feeling that you have had fun while experimenting in the wood barn. The emerging forms release a smile in our face. There is a difference between just being attracted by a shape and being moved by an aesthetical form in a deeper way. Your approach has something to do with the work of our internationally well-known NZ artist, David Trubridge, but on a different scale and with a different focus. I am not sure if this kind of aesthetics is trend resistant or if you are setting a new trend.

Which relevant fields do you see from your point of view?

I consider your approach highly relevant in various fields. As the assembling of this emerging architecture seems to be so easy, you could customise your structures to different sites and users and sell just the CNC-cutting files. People will produce it with local materials and will assemble it themselves. In product design, self-formation may have a relevance combined with 3D-printed components or joints in hybrid configurations.



Nick Gill

Interview 23.2.2016; Long Black Café at Unitec, Auckland

Born in Whangarei, 1978

After graduating with a Bachelor degree in Product Design, Nick has worked for a niche manufacturer producing bespoke architectural door hardware, all by lean CNC production, and as the design director for a similar high-end outdoor LED lighting company – LuxR (www.luxrled.com).

In 2016, Nick was Academic Leader for Product Design at Unitec.

Main passion: Leading designs from the initial concept into serial production.

Favourite landscape: Whatipu beach at the entrance to the Manakau harbour

Next aim: To successfully become a manufacturer in his own company.

Quote from the Dialogue:

“At the famous Bauhaus school in Germany, students learned all-important basic design disciplines in the first instance. We try to offer a wide range here at Unitec also. We invite students to work with all kinds of materials here at our workshops and to study their inherent qualities to gain a true understanding of what is possible, and to foster innovation. This has traditionally been an important foundation-building practice Walter, the design concept you are working on looks promising. Go for it and make sure to finish it.”

Self-formation – A Philosophy?

Your approach is a specific part of biomimicry (bionics). As far as I have seen, you try to understand the material inherent behaviour of wood focusing on bended self-interlocking structures. No curve is designed by hand or with any computer programm in advance but by tensile self-interlocking forces. Your toolbox consists of the material properties of wood and your intuition for spatial structures and qualities.

How would you describe the aesthetical approach?

In contrast to applicated designs you are looking for a coherence of materiality and form. And obviously you are driven by a desire for innovative simplified assembling and lightness. Aesthetics is the logical result, if you work honestly.

Which relevant fields do you see from your point of view?

As you are working with bent wood and bionic forms, your approach somehow asks for using exclusively sustainable materials for the realisations. Both the legacy and future building materials palette is overly toxic. Heavy metals and noxious compounds are being used to preserve certain finishes and create enduring attributes that our default design language requires. We could negate these products with a new eco-sympathetic design language in both products, and the built environment. Your method avoids the use of glue while you are achieving complex forms. That's obviously a really interesting field to research in.



Jasmine Te Hira

Interview 2.3.2016; Unitec Campus, Auckland

Born in Tāmaki Makaurau/Auckland, 1990

Jasmine Te Hira is an installation-based and experience-focused practitioner currently working around the boundaries of object, video, sound, atmosphere, senses and constructed space. She has studied Design & Contemporary Arts at Unitec Institute of Technology, majoring in Contemporary Craft. Jasmine's whakapapa connects her to Te Rarawa, Ngāpuhi, the Cook Islands and Devon, England. She currently resides in Auckland while at the beginning of a 6-month Creative New Zealand Pasifica Internship with partnering organisations Toi O Tāmaki/Auckland Art Gallery and Ngā Taonga Sound & Vision.

Main passion: Connecting with people and ideas

Favourite landscape/place: Hokianga-nui-a-Kupe & Te Noho Kotahitanga Marae

Next aim: To uncover social and cultural archaeologies, practices and procedures around the ways communities interact with Design and Visual Art content, while framing a contemporary discussion in re-embedding accurate histories and connecting differing knowledge sets in our experience of Design and Visual Art works.

Quotes from the Dialogue:

"Beauty is always matched in my work with the concept of pain or loss. Beauty and pain somehow belong to each other. I am not primarily looking for aesthetics, but people responding to my work, speak about it."

"What I have seen in your work, Walter – the wood in tension ... the materials kind of inform each other ... they are talking to each other somehow as we do as people. It's about being related and interconnected."

"It's really important for all people to learn more about where they come from. If they did, we would have more respect, more understanding for nature, the way we live and the individual experience of life we have as a whole."

Fragments from our self-formed conversation

W: What is your family background? It looks like it plays a role in your work.

J: My mother came from England to New Zealand in the 1970s to travel and work. While living here she met my father, who is of both Māori and Cook Islands descent. They married and I am the youngest of four children. I have grown up in Auckland but accommodation is becoming so expensive that the increasing costs may possibly push me out of this city one day. I myself don't own property in Auckland. So, yes, "Where is my home?" is an interesting question. A little bit in my art, perhaps. The question "Where do I come from?" accompanies me all the time. It also plays a role in the two works you have seen on my website, *Lost Content* and *The Weight of Skin* (2015) which talk about dislocation, recognition and that notion of "Where I come from".

W: Yes, I appreciate the link you achieve between the richness of the Māori culture and contemporary art. You have explained to me the Māori cosmology of the tree – materiality of rākau wood, Tāne, where his roots and the leaves form the separation of the two parents Ranginui and Papatūānuku, who are somehow separated but connected at the same time in order to provide space for the children to exist in the 'inbetween'. So humans are living in this space inbetween. This is very interesting for me as an architect as the quality of space is the 'inbetween' and not the material itself. In my work, I transform a sheet of plywood into space – not into a box but into an organic self-formed space.

J: Having seen your physical models, I can see the conversation between tension and balance. It's a transformational process, which occurs between opposites and both become apparently necessary through the self-formational process

and in our experience of that space. It becomes a conversation, each expression, talk and movement molding, edging, casting and fashioning the other as it forms the next – allowing for negative and positive space to exist.

W: Because of climate change there is an increasing consciousness in our civilisation that we cannot continue like this. Where are you situated in this context?

J: For me one important question is how can we honor the past but also continue to move into the future. In my work, I try to discuss this link between the traditional and contemporary space and I believe that the link is 'us'. Being related to our history also changes our attitude towards life, towards people, actions, towards nature and towards the knowledge our ancestors had about the whenua, about the land. We are able to be those bridges of knowledge sets, connectors of ideas and spaces through the challenges found in our creative practices.

W: What is your next goal?

J: In April I will be starting a six-month paid internship through the support of Creative New Zealand and Tautai Pacific Arts Trust. I will be working alongside the teams at the Auckland Art Gallery and Ngā Taonga Sound & Vision – learning skills in the management of the Arts and institutional processes involved. I will be de-installing a show I curated at RAMP Gallery in Hamilton soon and I also have four shows in 2016 where my artwork will be installed later on in the year.

W: Could you imagine living in a self-formed space I am working on at the moment?

J: Yes I do. The beauty in the process is a treasure. For me, for it to be accessible as a housing option, it must also be affordable and the importance of this is due to NZ's developing socio-economic position. So if you can achieve this, it would be great. That could be your next endeavour, Walter.



Danny Rowlandson

Interview 26.2.2016; Atomic Café, Auckland

Born in London, 1971

At the age of three, Danny was taken by his parents to Auckland, looking for a better life. Danny studied contemporary music and art and later shifted to design and sculpture at Unitec. Since then he has run the workshops for ceramic, glass, wood, metal and jewellery and teaches the students material knowledge and form-finding processes. One field of his own work is developing new acoustic and electronic musical instruments.

Main passion: Making

Favourite landscape: The beach at Te Henga

Next aim: To develop a deeper engagement with making processes

Quotes from the Dialogue:

"I am interested in the thinking which is intrinsically involved in making. ... As a maker, you inevitably create problems for yourself and you have to find a solution for them. You become a problem maker and problem solver. In the words of the philosopher Richard Sennett: Making is thinking!" ...

"You cannot force a material to do what it doesn't want to do. You need to experience the material and you have to listen to it when working with it. Once you have an intrinsic understanding of a material and a level of technical proficiency with it you have a real freedom to create. Then you can allow the material the opportunity to qualitatively express itself."

"I prefer working on my own or within a crew to working within the contemporary idea of a 'team'. In a crew everybody has a clearly defined role and clearly defined personal responsibility. Every contributor can recognise and measure the objective qualities of each other's individual work, in the service of a greater common goal."

Self-formation – A Philosophy?

... It's making the most out of the material you use. Understanding the possibilities inherent in it. The musician has to know their instrument, to be proficient in its use, and know the theory of musical practice. You need to be deeply engaged with the materials and tools you use, if you are to make the most of their inherent possibilities. East Asian cultures traditionally have less of a distinction between art and craft than in the west, viewing the practice and the theory as inseparable elements (see the Japanese philosopher Sōetsu Yanagi). There is much more of a recognition of what Heidegger described as 'performative knowledge', that knowledge which cannot be expressed as theory and can only be understood through experience.

How would you describe the aesthetical approach of Self-formation?

Beauty is the harmonious relationship between the parts. You don't see it in CAD very well. Zooming in and out is an impediment to appreciating the totality of your work – you have to touch it and walk around it. I use CAD a lot – but as a limited tool for particular problems. It does not provide a conducive environment for a holistic approach.

Which relevant fields do you see from your point of view?

You can use the new technologies like 3D printing to avoid engaging with both materials and techniques. The same with CNC machines. The people who have done really interesting work on these machines are the people who do really interesting hand work, who proceed from an experiential understanding of the materials and techniques of forming. And the people who do poor, uninspiring work on these machines are the people who have not engaged with either. The people who understand the materials and understand the techniques through experience with them, understand the possibilities inherent.

So your approach of self-forming wooden structures strengthens the importance of both: the creative form-finding process done by hand on the physical model and the full-scale effective prefabrication with the new digital techniques available.

THANK YOU Danny

... for the positive atmosphere you are providing in the workshops. Your way of being engaged with your work and our short conversations about the developments of my research studies helped me to stay focused in my work.



Paula Buckley

Talk 7.3.2016 at the wood barn, Unitec, Auckland

Born in Hamilton, living in Auckland

Paula studied sculpture and spatial design at Auckland University of Technology. She is a practising product designer and works in the field of ergonomics. She also collaborates with her husband – who comes from marine science – on innovative research-based product design to simplify the investigation of the environment. At Unitec Paula is responsible for project and event management.

Main passion: Developing objects that interface with us

Favourite landscape: The top of North Head

Next aim: To succeed with the new product she is working on

Quotations from the Dialogue:

“We had a huge earthquake in Christchurch in 2011 and there were a large number of people who were trapped under buildings who unfortunately needed an amputation. As a result, crutches specifically designed for amputees’ long-term use were needed; to provide a more advanced ergonomic support during prolonged periods of rehabilitation. So I designed ‘the springback crutch’ which has a shock absorbing feature and reduces the effects of ‘crutch paralysis’ (nerve damage from jarring). I am interested in ‘designing for society’s needs’ not necessarily ‘society’s wants’, but to produce products which have a real positive impact and enhance quality of life. I have also designed rehabilitation objects for arthritis and stroke patients and the elderly.”

Fragments from our conversation:

Walter:

So you are interested in designing objects that are really solving problems of society?

Paula:

Yes – why spend so much energy in making things which are mainly decorative, when there are really important issues to be faced.

Walter:

What is your impression of the structures I am building in the wood barn? What associations do you have?

Paula:

The organic form reminds me of the treehouse, which was built here in New Zealand (www.redwoodtreehouse.co.nz). It’s a beautiful place. ... When I first saw your models, I also thought they are for an aerodynamic reason. ... I like the idea of creating forms using tensile forces. It’s a natural-based aesthetic and it’s an engineering construction.

Walter:

Yes – It’s in nature that we can learn from the most sophisticated engineering. The background of the institute where I am working now in Innsbruck is the philosophy of Frei Otto. He pushed this thinking a lot.

Paula:

In New Zealand it’s David Trubridge, who has a real deep understanding for the natural structures and the beauty of nature.

Walter:

Yes, he is one of those who are contributing to a unique identity of New Zealand’s culture. And having talked with him, my motivation is even stronger to research on this language in the field of architecture with the focus on simplified assembly of complex structures in wood.

Paula:

It’s very interesting to push materials to the limits and to investigate what is possible. ... We are getting now to the point that we can 3D-print flax. Printed in a light flexible structure it can be used for ecological insulation for sleeping bags. And it is a sweat-absorbing material too. It was used a lot in the Maori culture. There is a great potential for product design and perhaps also for architecture.

Walter:

Yes there is – probably also for the insulation of my habitable ‘bird’. Which other applications in the field of product design do you associate with my work?

Paula:

... Probably baby rockers. ... To me the forms are also looking very leaf-like. [Taking a leaf from a nearby tree]. Look at this double curved surface. It would be really interesting to zoom in and have a look what is happening here as a reference for your construction.

Walter:

Yes it’s this ‘inbetween’, which interests me a lot: The primary structure merging with a kind of skin/membrane. Thank you for the interesting conversation.

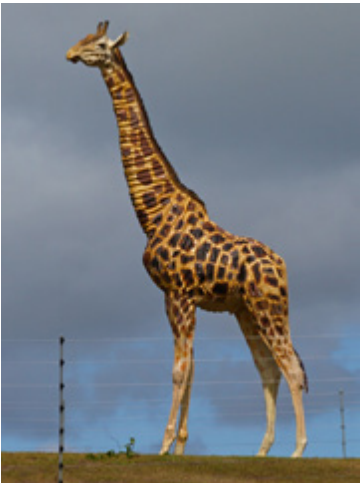
Jeff Thomson
during the opening speech
at the exhibition of W. Klasz
in the Snowwhite Gallery
6 April 2016



Jeff Thomson
Meetings and dialogues in his studio and elsewhere

Sculptures say more than words ...

Jeff Thomson: *Giraffe*
Gibbs Farm, New Zealand, 2012
6m x 3m x 1m
corrugated iron



Jeff Thomson: *Boat*
corrugated iron



Jeff Thomson
Land art installation
corrugated iron



Bev Goodwin
Meetings and dialogues in her studio and elsewhere

“Money and art is like oil and water” quote from Glen Hansard at a private concert given for a few friends.



Bev Goodwin
in her living room in Auckland
March 2016

Quoted by Walter Klasz

Bev Goodwin & Jeff Thomson:
Sway
Wire, steel, swivels, polystyrene, paint
Site specific installation at the
Harbourview Sculpture Trail 2016
(Photo by the artists, Bev and Jeff)



Hazel Redpath

Talk 24.3.2016 at the Pumphouse, Unitec, Auckland

A link to Education

When I heard you speak to the students, it made me reflect on how the work you are doing, in the space 'in between' architecture and product design, also links to education, and – if this is the case – we are perhaps in a position where this shared thinking will allow us to explore many other spaces 'between' under the wider umbrella of complex thinking.

Inspired by patterns in nature, I am exploring the idea of a class or group of learners as a complex, adaptive system and I am also asking questions about 'design' – in particular, how differing amounts of design interact with learning.

I noticed that the beauty of your structures emerges when you set boundaries and then give freedom to the material; I would like to suggest that this might also be possible in an education setting, where the students interact with their environment – and the focus shifts, through 'enabling constraints' to creating the conditions for emergence rather than managing for outcomes.

Metaphors are important in complex thinking, as they help to convey shared knowledge – and your structures provided a helpful visual metaphor for me.

I am interested in how we can develop this to form a shared vocabulary for complex thinking across disciplines.

Hazel Redpath



Photo W. Klasz
Detail of the Auckland Art Gallery

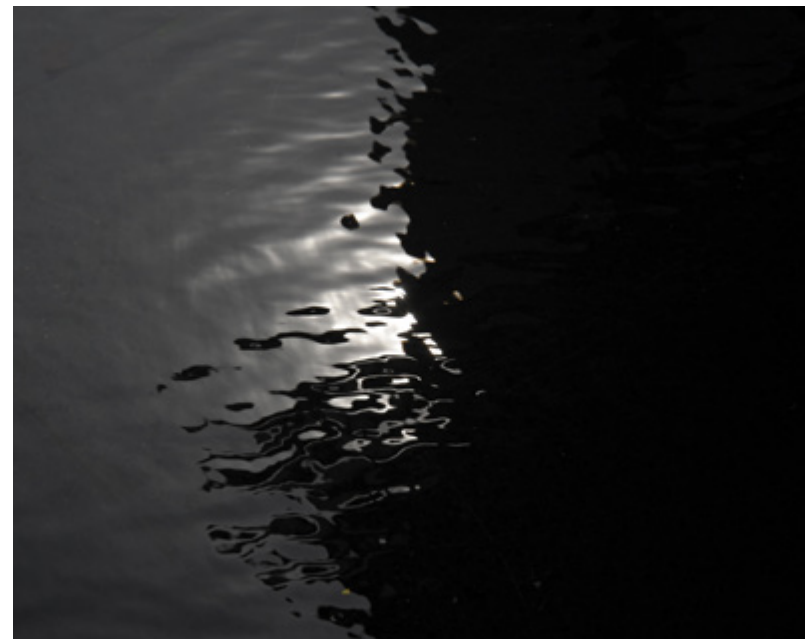
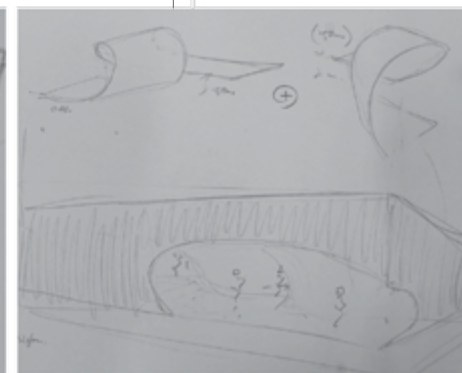
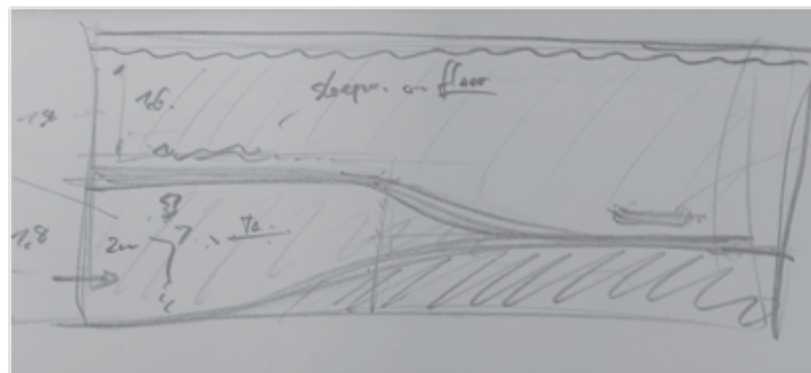
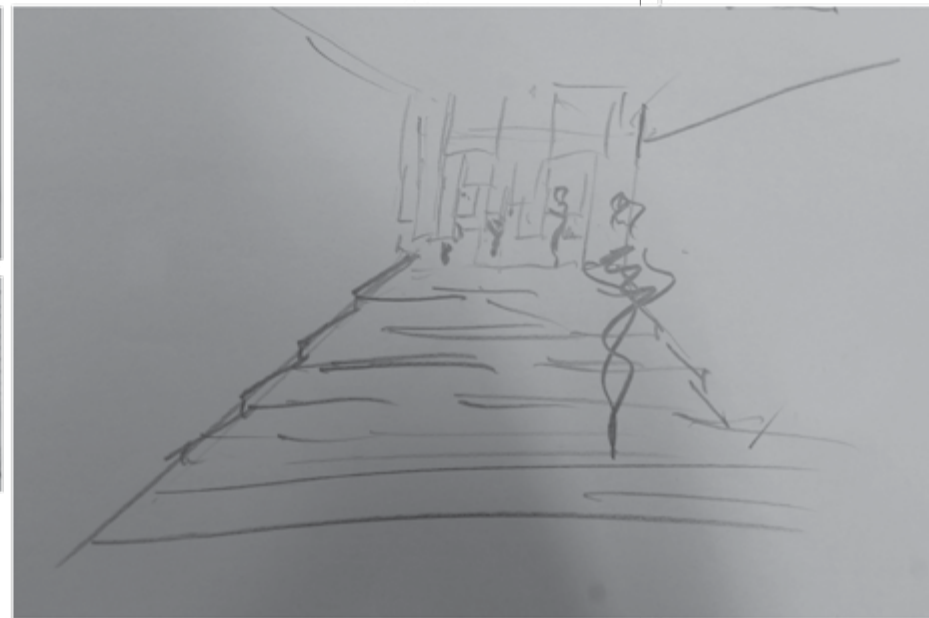
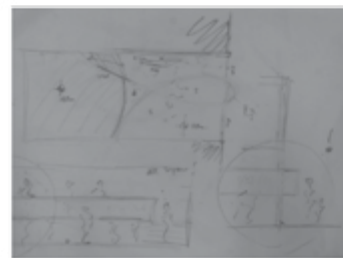
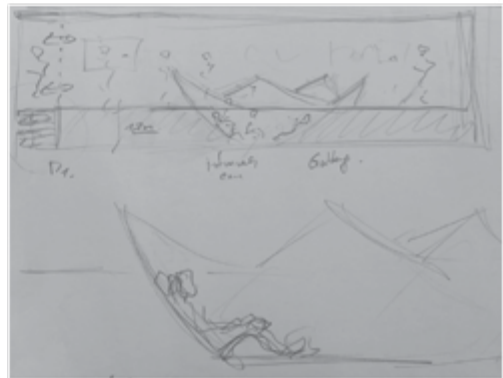
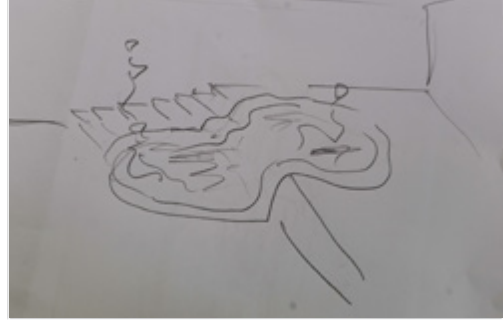
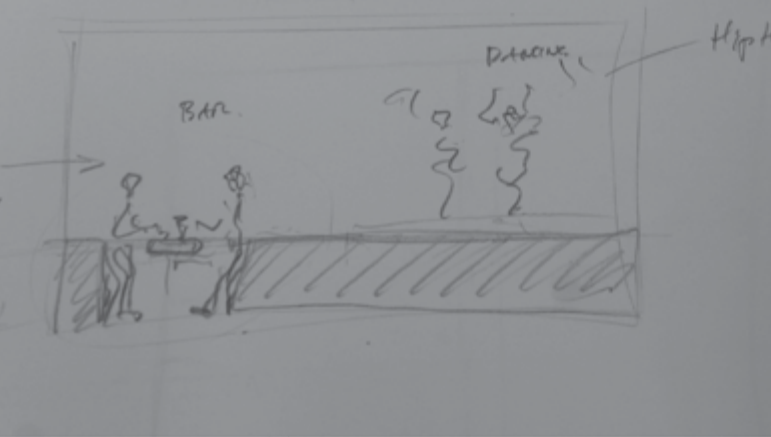


Photo W. Klasz
Detail of the Auckland Art Gallery
mirrored in the water



Concept sketches while teaching Interior Design at Unitec, Auckland



Teaching at Unitec

It has been a joy and a privilege to spend time with Walter during his 2016 Research Residency here at Unitec. While I lead the Interior Design Programmes here at Unitec, my current research practice towards a Master of Landscape Architecture is concerned with Biophilic Design and the innate human connection with ‘Nature’. In Walter I found a kindred spirit, in tune with the beauty of the natural world. Serendipity is a wonderful thing, and when the opportunity to expose my students to a new way of thinking and new approaches from a European Architect whose practice spans the three disciplines of Architecture, Interior Design and Product design arose, it was too good to pass by. I approached Walter to inquire if he would be open to the idea of teaching a three-week block in two of my first year Drawing and Modelling courses. One group were Interior Design students, the other group, a mixed class of Product Design and Spatial Design students .

He gladly accepted, and I remember in the first studio session, he asked if he could just sit in on the class for an hour to get a ‘feel’ for the way we ran our Studio, and ended up staying all day! Walter was very taken with the design brief and fully immersed himself into the class from day one. The brief asked

students to choose a two-dimensional work by a contemporary artist, then deconstruct the work through analysis and finally translate this work through exploration into a three dimensional space.

His approach was to quickly sketch his thoughts as individual students talked through their ideas, and then give these sketches to the students as a record. I believe this ‘modelling’ of the power of a sketch to communicate abstract ideas really helped students to overcome their fears of the blank page.

Walter’s design philosophy and aesthetic influence can be clearly seen in the body of student work. He encouraged students to consider the given interior space as a topographical landscape where structure, form and functional elements seamlessly integrate. I have no doubt that his inspirational teaching will have a profound influence on these students’ thinking as they develop their own design philosophies in their future practice.

Sandra Arnet

Academic Leader, Undergraduate,
Interior Design / Architecture / Landscape
Architecture
Unitec

Photos left page:
Sandra Arnet and Walter Klasz
during a workshop with the
students of Interior Design



Welcome and goodbye

The public art project on the left, on Mount Eden Road, was my first face-to-face contact with contemporary art in New Zealand.

It asks the question: Why do we have so many cables and pipes in our streets and why didn't so called modern civilisation find a better solution? Art changes perspective and makes people think. It makes issues visible without talking.

Architecture is applied art – it has to work and it has to fulfil functions.

I felt welcome, as guest of the Department of Design and Contemporary Art, to also change my perspective. Next to 'my' wood barn there were other workshops. In one of them, Gina Ferguson was weaving with

insulation material for pipes. She took me with her to the opening ceremony of the Harbourview Sculpture Trail, which happened at 6:30 in the morning to enjoy the sunrise. Her work was a huge carpet at the beginning of the trail. The letters are made with sheep wool. Over time, grass grew through the gaps. That's a good metaphor for my time here in Auckland.

Kia ora, Walter



Left page:
Public art project in
Mount Eden Road, Auckland

Gina Ferguson
Installation at the
Harbourview Sculpture Trail 2016 –
one week after the opening

Gina Ferguson
Installation at the
Harbourview Sculpture Trail 2016 –
on opening day



ART and RESEARCH

The 2016 visit of Austrian architect and designer Walter Klasz to Auckland, New Zealand, is the second attempt over four years by Academic Leader Paul Woodruffe, of the Design and Contemporary Arts Department, to host him here at Unitec. Meeting Walter and watching the work emerge has been a real pleasure and I can see why Paul persevered with such determination.

Walter is a guest at the Unitec Researcher in Residence House, run by Tūāpapa Rangahau – Research and Enterprise, and is sharing the house with two Taiwanese artists sponsored by the Asia New Zealand Foundation, Yu-Ting Wang and Yoroe Lin, pictured here with Walter and myself. His connection with the work of Yu-Ting is typical of the kind of synergies that happen when guests get to know each other and this is true also of the impact that researchers from all over the world have in the departments that they visit.

The work that Walter has made while here is a fine example of creative research, where iterative experimentation and

critical analysis lead to an art or design solution. This catalogue demonstrates Walter's design process beautifully and is an excellent testimony to his work here. I congratulate Walter on his productivity and the connections he has made in his time with us.

Marcus Williams, 2016

Associate Professor
Dean of Research and Enterprise
Tūāpapa Rangahau,
partnering Research and Enterprise

Photo, from left to right:
Marcus Williams, Walter Klasz,
Yu-Ting Wang, Yoroe Lin
on the terrace of Residence House
Photo credit: Kath Bridges

... back in Innsbruck: Reducing complexity

See also :

Scientific paper of Klasz W.
as invited speaker for the

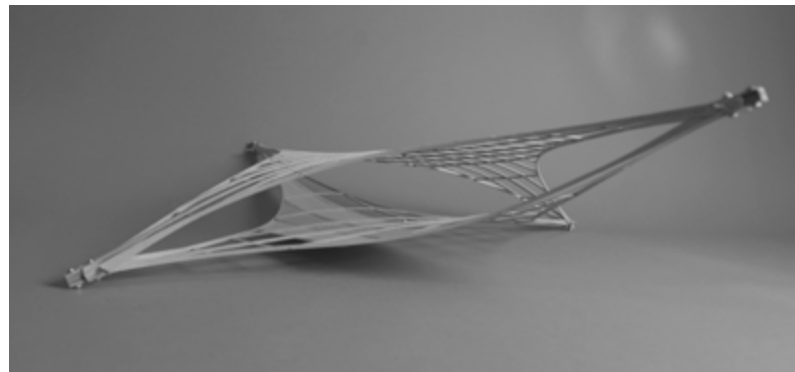
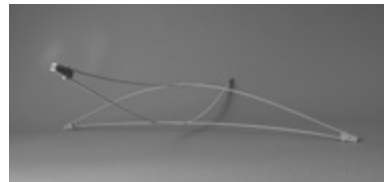
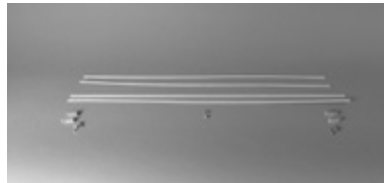
Conference of Advanced Building Skins

Bern 2016, Session A7

Co-authors:

Univ. Prof. Michael Flach

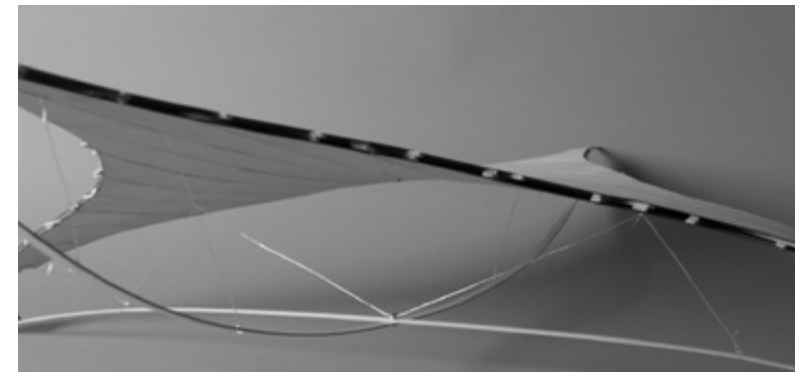
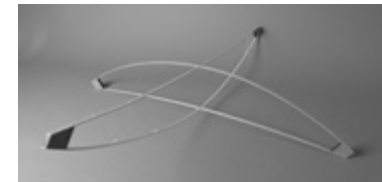
Pavel Sevela, Alexander Grasser



The concept of simplifying the assembly of double curved wooden structures is based on the idea of installing the architecture without a scaffold and without ribs by providing a self-formed primary framing, which merges with the final structure visually and statically fully integrated. The optimised form-finding is done experimentally with the help of this scaled physical model of reduced complexity – compared to the more complex form of *Bird 04* done for the art exhibition.

The resulting form works in some areas statically like a (grid) shell and in others like a membrane – depending on the load cases. This has relevance in terms of wanted redundant constructions providing the necessary security for users.

... and using parametric design



Using the software Rhino Grasshopper these forms are defined and controlled digitally in a second step trying to come as close as possible to the physical studies. The unrolled surfaces can be laser cut and they are bent continuously directly onto the primary framing. The offset layer in a 90 degree turned direction turns the construction into a composit shell of very high load bearing capacity.



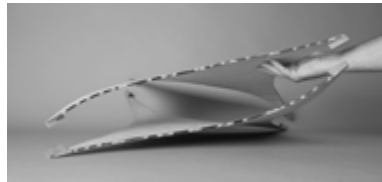
Meeting with Dr. Switbert Greiner
Ulm, 15.05.2016

Walter Klasz discussing
the model with
Univ. Prof. Michael Flach
Unit of Timber Constructions
Innsbruck, 30.06.2016

Photo of the
unfinished model with the second
offset wooden layer

Separation of the self-formed shell

Photo of the finished model
and photo-documentation of
the separation of the shell

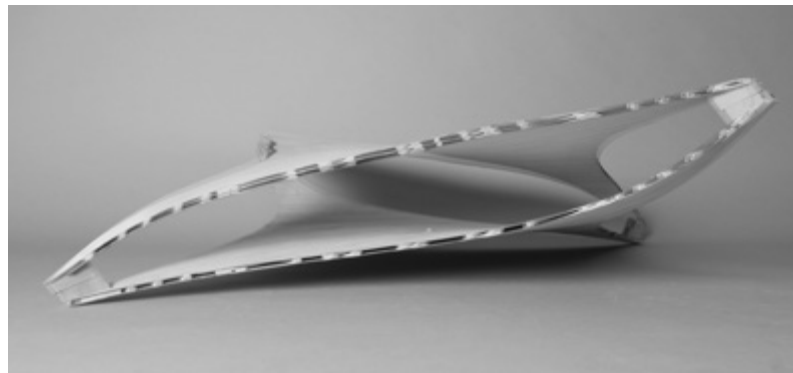


The photos on these two pages present the benefits of this new self-formed assembly method. Two symmetrical anticlastic shells can be assembled without a scaffold and without foundations statically self-interlocking each other. As soon as the composites are finished, each shell works statically on its own. This two parts can be used separately as a carport or any kind of shelter or they can be arranged in different configurations to each other (see right page).

Ongoing research will investigate the influence and the limits in scaling up this model. Another goal is to optimise the structure in terms of maximum reduction of materiality, while providing load-bearing capacity.

Photo-collage of the shell
before the cut through
and after the cut through;

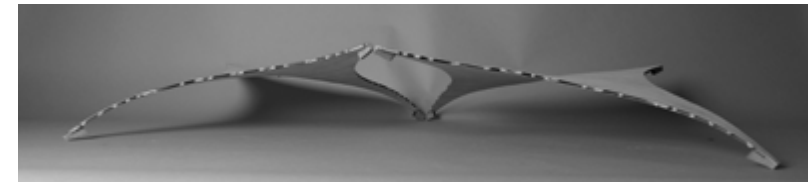
A deformation of 5mm in the vertical
and 10mm in the horizontal direction



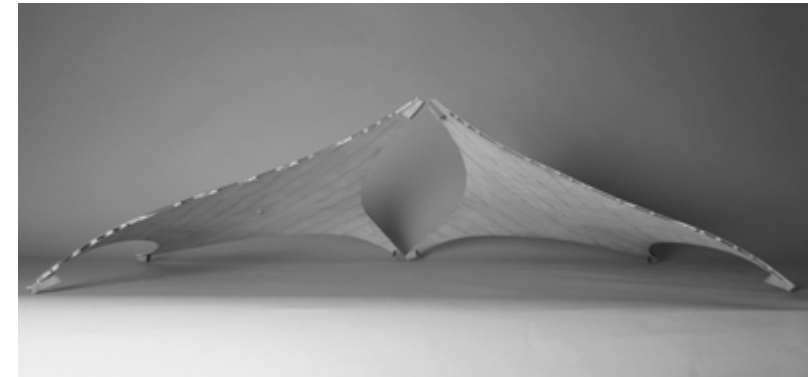
... and possible arrangements



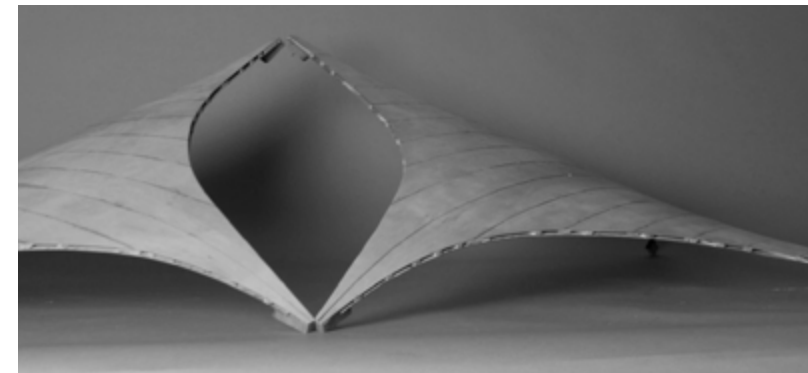
Horizontal linear arrangement



Horizontal turned arrangement –
two endpoints are touching each other
two other endpoints are in the air



Inclined turned arrangement –
two endpoints are touching each
other;
The other endpoints touch the ground
Photo from inside

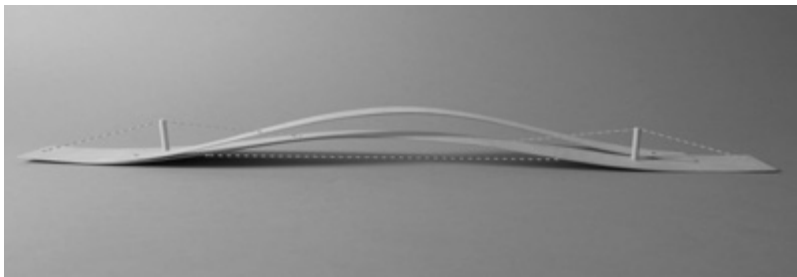
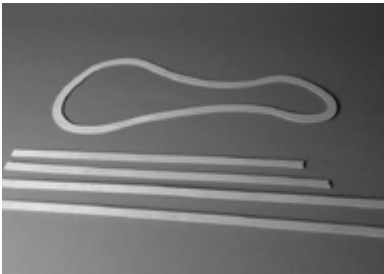
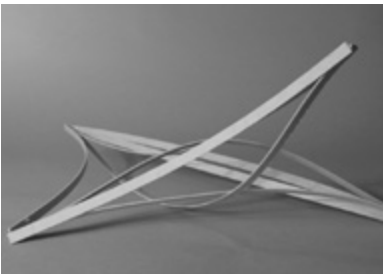


Inclined turned arrangement –
two endpoints are touching each
other;
Photo from outside

Variations and applications

The concept of simplifying the assembly of statically self-interlocking wooden structures by self-forming processes opens new avenues in the design of sustainable architecture: Materiality and energy can be reduced while achieving a high quality of aesthetics simultaneously.

After having returned from my research ‘retreat’ at Unitec in New Zealand, I have led a design seminar at the University of Innsbruck for the first year students. I show three of the twelve emerged design solutions as examples, to give an idea of the variety of applications.



Left: Walter Klasz, lecturer
Right: Fabian Tomba, student
Presenting the model
of the self-formed wooden bridge

30.6.2016 at the unit koge Innsbruck:

Five experts in five linked disciplines
A kick-off meeting organised by ...



Walter Klasz

inbetween