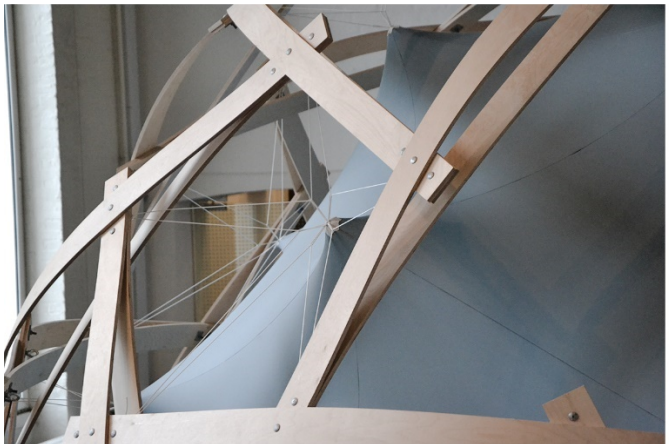
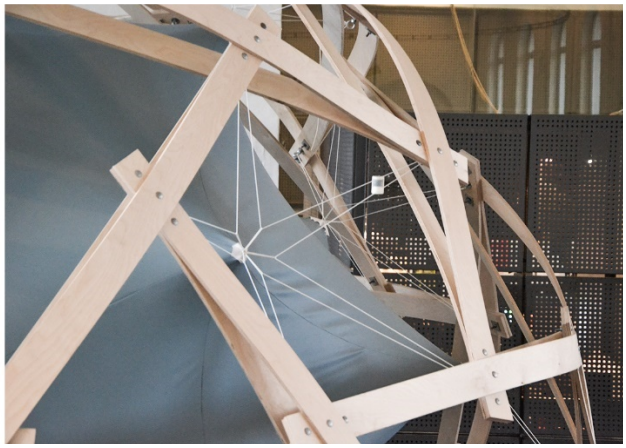



detail

DOMES OF TRANSITION

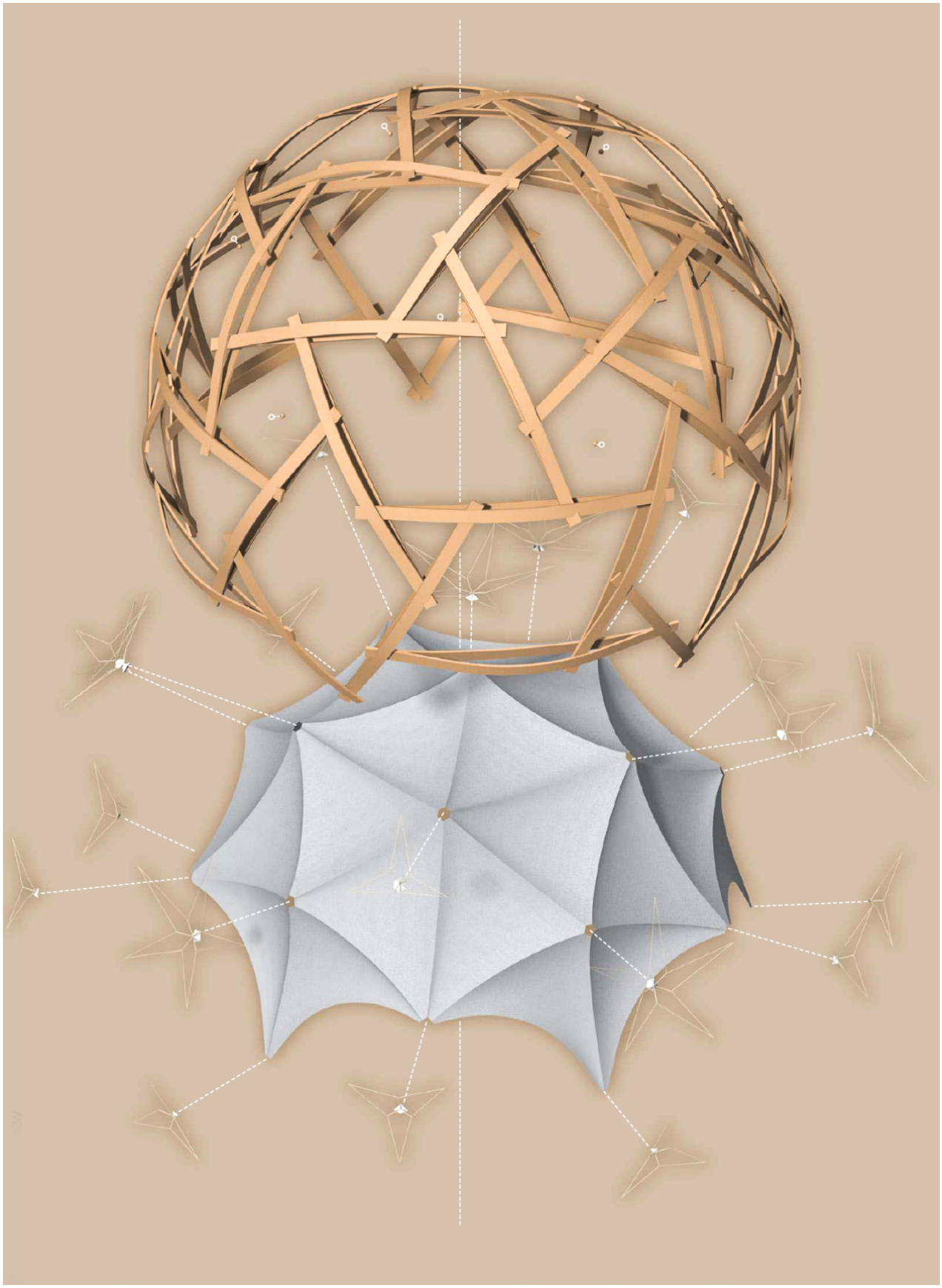
Description

Natural disasters, alone, displace more than 14 million people every year [1]. Political crises add to the numbers of people who are on the move, in transition and without a home. The *Dome of transition* is an architectural project that creates a transition from being homeless to a new beginning, one that allows for healing, defining a new normality and building of hope. The symbolic of building a future is inherent in building a home. Having a possibility to attaining a home gives hope for a newly defined normality, one that gives space *to be in* and a space *to grow in*. The space is physical and real; it is a newly found place of safety, a self-made miniature of a home, one that can change, become bigger or part of something new and different; one that can grow, or be altered - from being in a *state of transition*, to being in a *space to be*.

However, the *Dome of transition,* is also a place for thought and meditative space. It is a space and time to reflect, to accept and deal with loss, to search for new meanings and find hope. The *Dome of transition*, beyond its material existence, physical appearance with form, aesthetics, stability, materiality, detailing and functionality, is also a process that enables a new future. It is rooted in three main aspects:

- United Nation goals: (3- Good Health and well-being; 8- Decent work and Economic growth; 10- Reduced Inequalities; 11- Sustainable Cities and Communities; 12- Responsible Consumption and Production; 13-Climate Action; 15-Life and Land) [2]
- The writings of architect Ian Davies, especially “Recovery from Disaster”, [3]
- ReciplyDome, ideas, principles, details and materiality [4,5,6].

The project grows out of the idea of Reciprocal Frame (RF) Architecture [7]. RFs are three-dimensional grid structures consisting of mutually supporting beams, where no more than two beams are connected at a time, adding to simplicity of assembly and construction. The ReciPlyDome is a novel structural system based on utilizing bending-active principles and combining them with RF polyhedral morphologies and simple connections. The result is a lightweight plywood kit-of-parts dome, fabricated from flat plywood panels, cut and pre-bent to form the actively-bent dome structure designed for disassembly. ReciPlySkin is a step further in the development and is a partially enclosed shelter structure clad with a membrane attached internally to the plywood beams of the ReciPlyDome.



vision

Reflection on finished work

Clarity

fabrication

Most of what we design and build is temporary. Sometimes building structures last longer and at other times, only few years after they had been constructed, they are taken down and replaced. This burdens the environment, as often, very little can be reused. Building with kit-of-parts systems that allow for easy production, assembly, reconfigurability and assembly is a more resource-saving way to think. It is an approach to be adopted whenever possible, and, one often seen in vernacular architecture, where many of the building elements have been reused and built into new buildings, many times over.

A case of a disaster is an especially vulnerable time, where the ability to use, re-use, configure and re-configure is more important than ever. A system that can offer functional and aesthetic complexity out of uniformity is the essence of the *domes of transition* project.

Based on the idea of using building blocks – plywood pre-bent beams, material saving due to their bending-active redefined bearing capacity, simple to produce by laypersons in a workshop; also, easy to arrange and assemble, gives empowerment of being in control, being in charge of the disrupted disaster affected lives. Writings [3] suggest that after loss, the most powerful healing is achieved by actively taking part in rebuilding one's future. It asserts that *there is a future*. The *domes of transition* offer, both symbolically and practically, a home as a turning point for starting a fresh, where one can be actively involved in the rebuilding of the new future.

Domes of transition are not instead of a tent, but are there to shorten the time people stay in tents, which instead of weeks is often years and decades. *Domes of transition* are a home, albeit one in transition.

assembly

Density

Domes of transition are a beyond the physical solution and concrete appearance. They offer an enclosure that suggests an aesthetic, with a form based on getting the most out of the material performance. A dome is a stable form, also, by pre-bending the elements and using reciprocal joints one can *do more with less.*

The configurations are created following polyhedral geometric rules. They, however, are not to be seen as perfect or permanent. They can be:

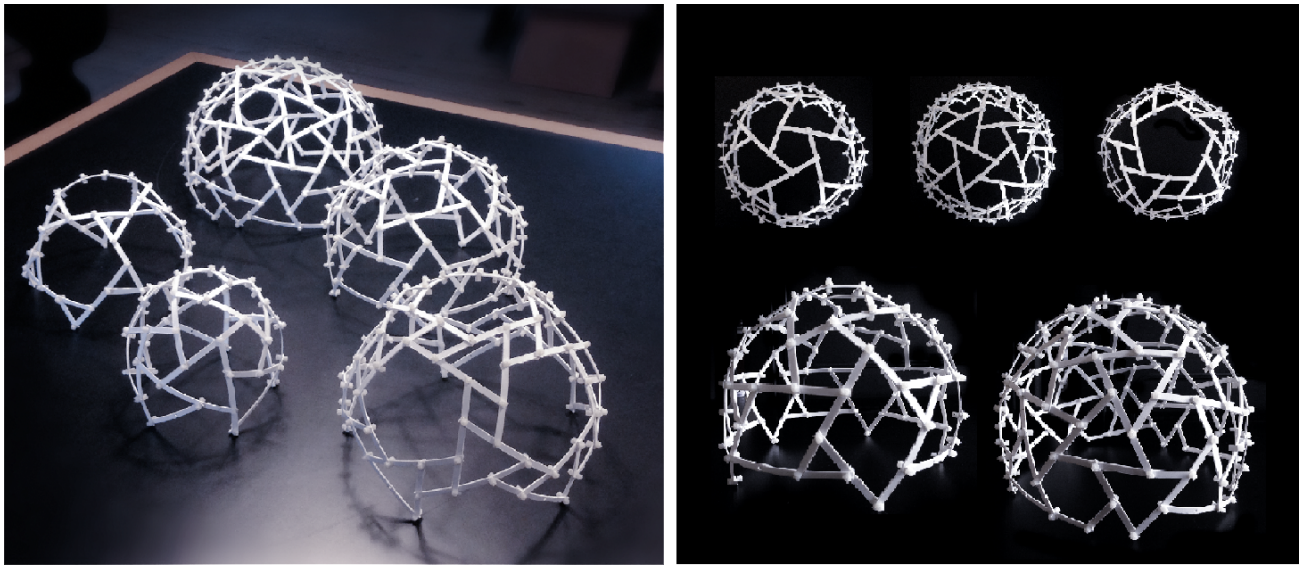
- Clad and re-clad using from very simple-temporary, to highly insulated panels,
- Taken apart and re-used, keeping the beams curved configuration,
- Made to be flat again and re-used into completely new forms.

Also, different materials could be investigated forming panels that overlap, or linear elements from more durable laminated wood types instead of plywood; or even building with leftover materials, found and built-in giving them a new lease of life.

disassembly

The combination of workshop production and hand-crafting makes each and every example unique and personal. The self-altering ability gives the empowerment of being in control. The *domes of transition* may find uses in everyday conditions, not only after a disaster, creating temporary architecture that can empower and open-up for new opportunities.

Depth



morphologies

We live in a digital society where over 90% of the world data today, has been created over the last two years alone [8]. Digital tools, undoubtedly, offer new opportunities and as such are integrated in all walks of life and parts of society. In building design digitalization, more than ever, enables dealing with complexity to the extent that (nearly) anything imagined can be constructed, although at a price.

We often see architecture that, without the huge power of computation could not be described, modelled and constructed. At times, critical reflection about what to build and what not, is overtaken by the simple fact that huge complexity is possible. It may be that decisions lead to wasteful, unsustainable solutions or to solutions that will not last the test of time both aesthetically, morally or performance-wise.

Domes of transition offer a new way of dealing with complexity. They advocate for creating complexity out of uniformity. It may be that an approach like this, can put forward new ways of looking at architecture and building design. The new, critical approaches may make us think harder about how to be more resource-saving, how to involve users in more meaningful ways, and how to employ powerful digital tools in novel ways when dealing with complexity. It may be that our powerful digital tools will be used to support huge data-bases about materials that can be re-used offering information about their availability, physical dimensions, quantity and quality. Also, offering user-friendly tool-kits that enable for an optimized combining of materials to be built into new buildings and structures. One can pose the question about the new type of aesthetic arising, or perhaps it is a forgotten one? It is an aesthetic that, once again builds on the existing, just like in the roman buildings, where every stone worth using was re-used over and over again.

Domes of transition, may be a small step forward giving hope not only to disaster affected, but also, to architecture and society in transition.

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Scientific area//My research is cross-disciplinary and closely connected to practice, with projects exploring the crossover between aesthetics and structural/material efficiency. I have a strong interest in innovative use of traditional and new materials; also, technologies, seeking ways of how the artistic and technological can inform each other to create new objects, products, structures and buildings. My research is deeply rooted in sustainable approaches as design for disassembly, transformability, adaptability and reuse.

Research Supervision// have supervised 14 PhD students, examined 30, broad area of Arch. Technology.

International Networks DK representative//COST FP 1004 – Enhance mechanical properties of timber, engineered wood products and timber structures – European Cooperation in Science and Tech. Prog. www.cost.esf.org/domains_actions/fps/Actions/FP1004 (2011/15)

COST 25- Sustainability of constructions: Integrated approach to life-time structural engineering action network, European Cooperation in Science and Technology Program (2006/10) (http://w3.cost.eu/index.php?id=240&action_number=C25)

Practice projects – selection//

ReciPlyDome_1 Plywood bending active dome, Circular Economy Exhibition, KADK 2017

ReciPlySkin Plywood bending active dome with cladding, Circular Economy Exhibition, KADK 2017

ReciPlySkin Plywood bending active dome with cladding, Student Innovation House 2017/2018

ReciPlyDome_2 Roskilde Festival pavilion, 2017

ReciPlyDome_3 Student Innovation House, 2018

Kongens Have competition buildability consultant 2017

Kongens Have competition buildability consultant 2015

Reciprocal Frame timber structure, concept design, Glæno, 2014/16

Tensegrity Structure design/Construction with 3XN, Copenhagen Bella Sky Hotel, 2011

Hickings Ltd., Nottingham, Restoration/alteration work on listed building, 1993/96

Consultancy Work in RM, 1987/93

Poysala & Sanberg OY, Oulu, Finland, June- October 1986

Research projects – selection//Development of Green Shelters for Emergency Evacuation from Extreme Conditions by Deployable Systems – funded by S. Korean Research Ministry 2012/16

Intersections in built environment: promoting interdisciplinary in higher education in the Baltic Sea Region (BeInterBaltic), EU Erasmus + project 2015/18

Emergency Shelter Design International Network – funded by Danish Agency for Science, Technology and Innovation Denmark (KADK, Tokyo University, Semyung University)

Research in Design of Spatial Adaptable Rapidly Erectable Building Systems - funded by Danish Agency for Science Technology and Innovation Denmark (KADK, DTU, Semyung Univ., Princeton, RPI) 2012/14

Publications - selection (over 60 refereed published)//Books:

Larsen, O.P et all (Editor), 2017, Extreme conditions emergency evacuation shelters based on deployable scissor structures, KADK, Royal Danish Academy of Fine Arts School of Arch, ISBN-978-87-7830-950-1

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