IL RESPIRO DELLA TERRA

ATTI DEL 4° BIO-INCONTRO

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Qualities of the Inbetween

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ABSTRACT

Questo contributo indaga sul termine "inbetween (fra)", utilizzando come modelli di studio alcuni dei progetti e delle ricerche affrontate dall'Autore. Poiché la vita di ciascuno è basata su una serie di relazioni, senza le quali un individuo si sente privo di vitalità, ogni relazione necessità di almeno due entità che si relazionano l'una con l'altra. Questo contributo analizza la relazione fra la dimensione spirituale degli esseri umani e la qualità immateriale dell'architettura. Nell'ambito della percezione umana, un edificio non correlato al mondo circostante, appare come una oggetto senza vita. Questa riflessione contribuisce a supportare la tesi che l'architettura è l'arte olistica di mettere in relazione fra loro i materiali per fornire uno spazio qualitativo, per sostenere la vitalità e per indagare sull'emergere delle relazioni e per verificare come queste vengono stabilite. Proprio come nelle relazioni umane, la qualità del "non-costruito" -il 'inbetween'- non viene prodotta volontariamente, ma attraverso una sorta di processo di auto-formazione come risultato del trattare e lavorare sui confini. Il designer non si concentra sulla forma in sé, ma sulle condizioni del suo emergere.

This paper discusses the term "inbetween" and uses some of the case studies carried out by Walter Klasz. Since our lives are based on a series of relations, without which a person feels lifeless, any relation needs at least two parts which relate to each other. Here the relation between the spiritual dimension of human beings and the immaterial quality of architecture is analysed. In a human perception, a building not related to the surrounding world appears as a lifeless thing. This study draws on the thesis that architecture is the holistic art of relating materials to provide qualitative space and to support liveliness, and investigates the emergence of relations and how relations are established. Just like in human relations, the quality of the "non-built" -the inbetween- cannot be voluntarily produced but occurs in a kind of self-forming process, as a result of dealing with and working on the boundaries. The designer focuses not on the form itself, but on the conditions of its emergence.

Between Tension and Relaxation - The example of the bow represents a basic aspect of relation: Between tension and relaxation. The designer decides the lengths and the thickness of the stick, and in the case of the violin bow (Fig. 1) also the detail for tensioning the hair is specified. The elastic curvature of the wood laths emerges following the material inherent properties. In the relation between the tensioning element to the elastic element, the flexural behaviour of wood becomes visible. The hidden identities of two contrasting materials turn out to be useful, when they interact with each other. The resulting construction is useful for hunting and in the case of the violin bow to play music.

The structure for the "Neuschneelabor Obergurgl"[1] was inspired by the principle of the bow. The bending behaviour of wood is used to simplify the assembling of the membranes, which themselves keep the bent bows in the form of a spherical tetrahedron. The structure is lifted off the ground with the help of steel tubes, which penetrate the membranes creating high points (Fig. 1 image left hand side). The hybrid bent timber-membrane structure is connected to the steel-core with only four cables following the principle of tensegrity. The image on the right hand side in Figure 1 shows the light-weight timber construction "Self-formed Lounge". Both case studies are formed and assembled following the principle of tension and relaxation. The bending force of timber is used to find the form and to simplify the assembling process without making necessary any scaffold or template. The form emerges as the logical result of the selected boundary conditions. The form has an inner order, which bases on self-formation processes of the interacting materials. Trained eyes of structural designers can see this logic immediately. Lay people may perceive a kind of tension, an inner order of the structure and probably liveliness.

The first full scale built prototype of the "Neuschneewolke Lüsens"[2] proves the concept, that using the principal of tension and relaxation is successful to simplify the realisation of complex curved structures out of plane material. Every curvature emerges out of the selected boundary conditions. As a result, there is no arc of a circle and no surface of a sphere. The synclastically bent tetrahedron consist exclusively of elastic curvatures. It is a complex form, symmetrical in space and easy to assemble.

The dynamic form reflects the elastic behaviour of timber. The structure seems to be in tension and in relaxation simultaneously. The geometry and the self-formed double T-profiles allow creeping of the wood, without loosing form-stability. The flexural stress is important during the form-finding and the assembling process, but there is no relevance of it for the long term load bearing capacity of the structure. The specific relation between the bent elements allow relaxation.

Another aspect of tension and relaxation is the way structures relate to the earth. "Touch the earth lightly" is one of the main phrases of Richard Horden[3]. Figure 3 shows the concept, the digital simulation and the realization of the Neuschneewolke Lüsens. The 8,5m huge structure is fixed to three local rocks by small steel connectors. When the structure is out of use in some years, it may be taken away and only four screws on every rock will remain back in nature. The iconic form uses local resources to be installed. The

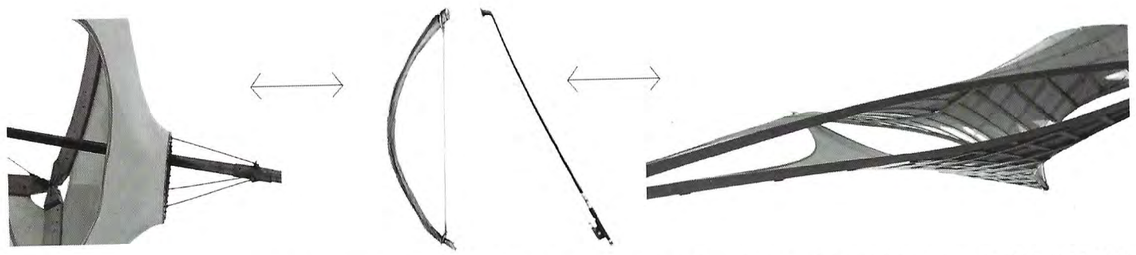
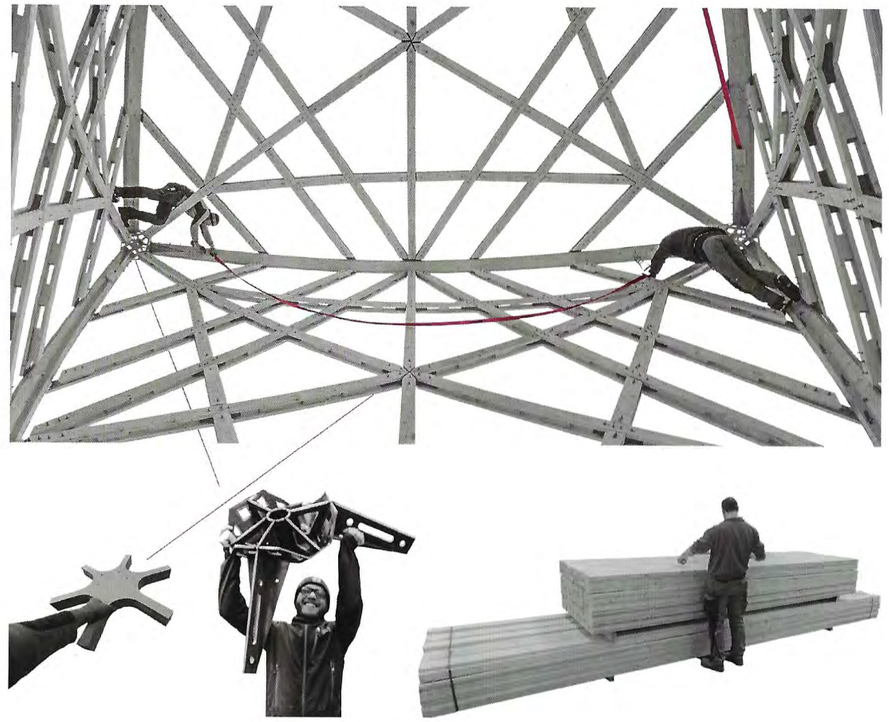
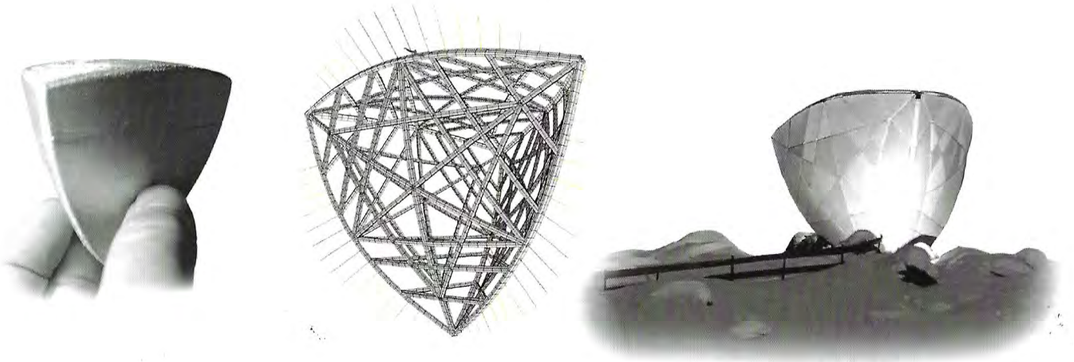


Fig.1 *Structures based on the principal of the classical bow and the violin bow; left: Detail of the Neuschneelabor Obergurgl 2015, Right: Physical model of the "Self-formed Lounge" 2016, Auckland, New Zealand (credit Walter Klasz, 2018).*



Above: **Fig. 2** *"Neuschneewolke Lüsens", Prototype for the shell construction to produce nature-like powder-snow (see Fig. 5 right hand side - upper image). Fresh cut wood is bent with the help of six cables (pink) and four edge knots into the emerging form. The large photo shows two workers releasing the cables of the bent edge beams in the final configuration.*
Below: **Fig. 3** *"Neuschneewolke Lüsens" (credit Walter Klasz, 2018); left: 3D-print model hold with three fingers to show the concept of lifting the structure off the ground; middle: Digital simulation of the flexural stress in the bent edge beams; right: Photo of the realized structure in Lüsens, Tirol 2018 (credit Walter Klasz, 2018).*



functional sculpture provides an attractive space between the cantilevering object and the surrounded nature. Humans like to be in this space between nature and architecture. The structure, which serves as a shell to produce snow for sustainable winter-tourism[4], creates at the same time an outdoor space of unique identity. When putting the structure on one of the surfaces to the ground, the spatial quality would not emerge. The way an object relates to the land, creates different qualities of tension in an emotional sense. The solution shown in Figure 3 lead to a high sociocultural acceptance during the test-period in the first winter 2017/18. Tension and relaxation are contrastive pairs belonging to each other in a creative way as explained by the philosopher Romano Guardini[5]. The expressive structure is visually floating above the rocks. On the one hand, the temporary architecture scares some visitors, who are the first time there and on the other hand, the emerging identity in pure nature attracts sportsmen using the fresh snow.

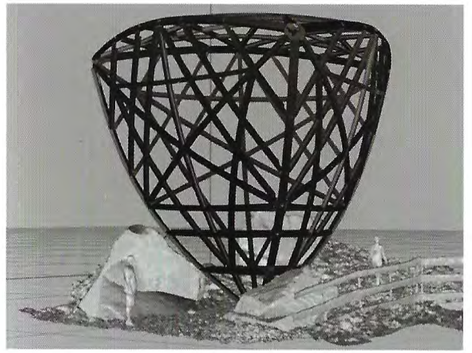
Between Nature, Geofact & Artefact - A second aspect of relation and as such of the term *Inbetween* is the question of taking something as it is or changing it. To introduce to this aspect, the first focus is set on the human body. Human scale and human form is the most relevant starting point to create architecture, which is the reason why holistically orientated architectural schools still offer nude drawing in the first semesters of the curriculum. In the best case product design as well as urban design serves humans to lead a better life.

The holistic design method of self-formation starts with perception[6]. Similar to a meeting between people it is not useful to start with changing someone or something, before having understood the situation and probably before having discovered hidden potentialities or aesthetical qualities. Historical cities like the centre of Innsbruck offer arcades. This *Inbetween* zones are maybe the most attractive areas in the city (Figure 4 - right hand side). As a visitor, you are neither at the open place nor inside a shop or a restaurant. In addition, arcades protect people from the sun or rain. The shop-owner invites the visitor with a not built place, providing freedom to choose either to look quietly into the window or to enter the interior to get in close contact. Such urban places are not designed in terms of a special pavement or an interesting sculpture in the middle. They are successful because of proportion and the quality of the boundaries between private and public.

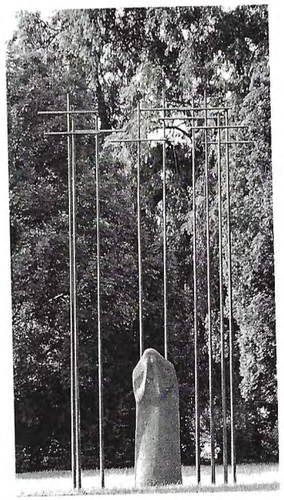
Boundaries in nature are of high spatial quality for humans. In holidays, people prefer most the area between the sea and the land. The boundary to a forest also attracts people to lie in the shadow, to feel protected and free at the same time. Everything has a form. One main reason, humans generally like or dislike being in nature, may be the fact that forms created by nature have an inner order of balanced relations and of the principle of emergence and passing away. Snowflakes emerge and melt within a few seconds, whereas rocks are formed by geology in a process of millions of years. The building material timber grows within some decades and it becomes humus again, when the live-time circle is over. Snowflakes, rocks and wood emerge in nature. A specific atmosphere allows the crystallisation of snowflakes out of H20, whereas rocks "are made" by geology - they are so called "geofacts". Humans are guests on earth interacting with this circle of becoming and passing by. «The purpose of architecture is to shelter and enhance man's life on earth and to fulfil his belief in the nobility of his existence». This phrase by Eero Saarinen[7] implicates the term "artefact".

The etymological meaning of the Latin word artefact is "made by human skills"[8]. In the meaning of Saarinen the artist uses his skills to fulfil his believe in the nobility of his existence. The mountain region Sellraintal next to Innsbruck is mainly determined by farmers and by White Canons cultivating the high altitude land since the 11th century. On the cultic places of the three churches in the valley, also Celtic findings have been discovered. Today the region attracts people mainly because of ecological tourism. Instead of large skiing areas with snow-guns and lifts, the region becomes famous for calmness and natural purity.

Figure 5 shows two recently realised architectural projects in this region. The first one, the Neuschneewolke belongs to the context of sustainable tourism and the second one takes place at a cultic place, re-



Above: **Fig. 4** *Collage of three sketches: left: An urban place between flat closed facades; middle: Nude drawing of a person sitting in an upright position at the floor; right: Section of an arcade providing a semi-public zone between the building and the urban place (credit Walter Klasz, 2018).* Below: **Fig. 5** *Comparison of two different ways to get into relation with a foundling. Upper images: The construction of the Neuschneewolke Lüsens ist fixed to three foundlings without changing their form and position; Below: One foundling of Lüsens was taken from nature and put into the middle of the church Gris im Sellrain as an altar. A sculptor worked on three sides keeping the geofact-form on top and at the front. The architect situates the rock carefully in the appropriate position (credit Walter Klasz, 2018).*



Above: **Fig. 6** *Photo during the interdisciplinary PhD-Seminar lead by Univ. Prof. Christian Bauer and Architect Walter Klasz, Church Gries in Sellrain, Tirol, June 2018 (credit Walter Klasz, 2018).* On the left: **Fig. 7** *Memorial Rosenheim in the context of the Second World War, Josef Hamberger 1963; from the book "Josef Hamberger, Ein Bildhauerleben" by Ludwig Gruber (2001), p. 44.*

spectively in the main church in the valley. Both projects have a foundling as a core element of the design. In the first case study, three foundlings serve as geofact-foundations for the wooden light-weight structure. Photogrammetry allows a precise 3D-scan of the landscape and the digital planning of the connection-points, whereas the foundlings are not changed in position or form. The project presents a respectful attitude to nature. The functional snow-making sculpture touches the earth lightly. The foundlings are strongly related to the object without being changed.

In the church project, the foundling is changed in position and form. The rock is taken out of the natural place and put into the centre of the religious space in the function of an altar. The sculptor has worked on three sides keeping the top and the front side as a pure geofact. The result can be described as an object designed partly by geology and partly by the sculptor. The altar is something between a geofact and an artefact. The position of the altar is offside of the geometrical centre of the two main axis of the church. The central space is left free. Nevertheless, due to human perception the space is full of tension in an emotional sense, as experienced during an interdisciplinary dialogue of doctoral students of the University of Innsbruck (Figure 6). The design supports the emergence of a not built focus in the middle between the benches on three sides and the foundling. This empty area provides the quality of quietness and openness. The quality of this inbetween-area is discovered by visitors probably more intensively while being in the church in a group, which is open to perceive this quality[9]. People less trained in perception, may judge the obvious emptiness as a planning mistake.

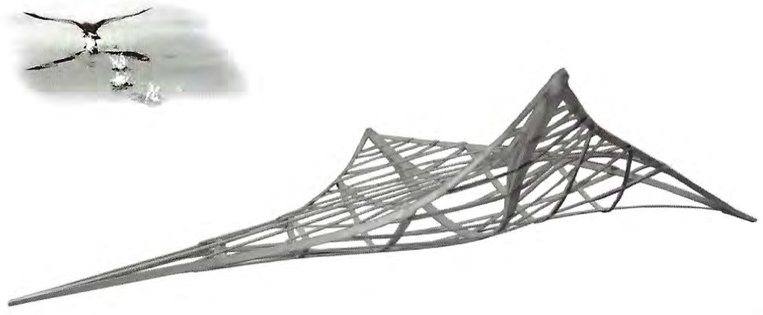
Qualities of the Inbetween - Whereas architecture mainly works with structures and surfaces to let emerge qualities between them, sculptors create spatial qualities starting from the object. Both approaches may interact in some projects. The memorial about killed soldiers in the second world war in Rosenheim is a masterpiece of the sculptor Josef Hamberger (Fig. 7). He has created a very intense spatial atmosphere with very reduced design elements. The form of the figurative sculptor in the centre of the installation was inspired by a found rock - by a geofact from the river side. Hamberger used the found rock to develop the installation in a scaled model. He changed very little to achieve the strong expression of the female figure. Hamberger doesn´t focus on the soldiers but on the suffering of the women thinking of the killed men. The figure is surrounded by high crosses building a circle around her. The woman, representing many widows, appears embraced by the crosses but not touched. She is alone but somehow also hold by the circle. The feelings of deep sorrow and a sense of consolation may oscillate while perceiving the work. This art piece has a strong critical message without talking. The 'sound' of the sculpture emerging in the *Inbetween* invites the observer to work for peace.

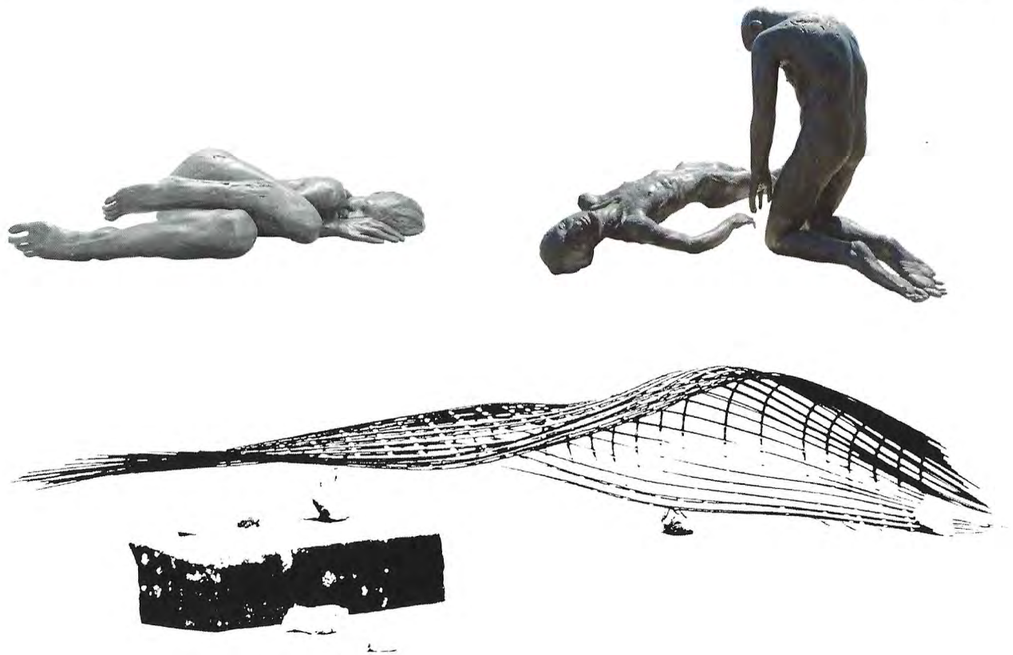
Objects or sculptures can get spatial qualities, when they are related to the surrounding or to each other. Relation is the starting point of liveliness – even in deep misery. Heaviness and lightness belong to each other. Figure 8 shows a photo of a bird starting to fly out of the water. The space between the bird and the water has spatial qualities. The wooden structure in the same Figure 8 is found be bending intuitively planar wooden laths into a structural configuration. The resulting artefact is an object with sculptural character but it is not architecture. It could become architecture although there is the danger that it is semantically too close to a bird. «Architecture asks for openness and for an inner order simultaneously. A unique sound of a space may emerge as a gift at the end of the design-process»[10].

The sculptor Lois Anfidalfarei from South Tirol[11] works mainly with the human body. He investigates human live and human loneliness for so many years in such a deep and consequent way, that the resulting sculptures tell something about the inner secrets. The sculptures in Figure 9 are shown without the platforms, how they are presented in the outside area of the artist´s studio. The left person is orientated to the earth. The right sculpture consists of two persons in a strong relation to each other. The architectural study model for a contemporary chapel deals with tension and relaxation as well as with the fluent relation

between nature, geofact and artefact. It is less a final design, but more a physical expression of a deep desire to create a space of strong identity and wide openness simultaneously. The planned collaboration with Lois Anfidalfarei, with a client and a location, which are still to be found, will let emerge something, which already could be described by 'Inbetween'.

Conclusion - Qualities of the *Inbetween* can be described best with the words of the composer Gustav Mahler: «What is best in music is not to be found in the notes»[12]. Explorative research by working in scaled models and full-scale projects have shown, that the *Inbetween* emerges like a gift, when focusing during the process on the boundary conditions, keeping the form-finding in suspense. An inter-woven collaboration between engineering, architecture and sculpting enrich both discipline in the sense of achieving an intense atmosphere for the observer or user.





On the left: **Fig. 8** *Photo of a bird starting to fly out of the water, New Zealand; photo of an intuitively bent structure out of planar wood inspired by the bird (W. Klasz, Researcher in Residence, Auckland 2016 - credit Walter Klasz, 2018).*

Below: **Fig. 9** *Above, Sculptures by Lois Anfidalfarei (Ita est; Pieta); below, a physical model emerging in an ongoing dialogue between the architect Klasz with the sculptor Anfidalfarei (credit Walter Klasz, 2018).*

NOTE/REFERENCES

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12) Gustav Mahler: *https://beruhmte-zitate.de/zitate/984462-gustav-mahler-what-is-best-in-music-is-not-to-be-found-in-the-no/*.

***Walter Klasz** *is a researcher, international lecturer and practicing architect leading his office since 2005. He combines the high-tech-background (Univ. Ass. of Richard Horden / TU-Munich 2002-2008) with bionics (University of Innsbruck | Structure & Design – PHD 2014-2018). In the summer-term 2017 Klasz focused as a lecturer at the Institute of Art and Design at the TU-Vienna on the sculptural qualities of self-formation using the principal of Active-bending in wooden light-weight structures for the form-finding and the assembling process. Contemporarily he leads the ongoing Research & Development Project "Neuschneewolke" (Cloud for fresh snow). His expertise is the method of Self-formation as a constructional form-finding tool as well as in complex transdisciplinary design-processes with a special interest in art related projects.*

***Walter Klasz** è un ricercatore, docente internazionale e architetto libero professionista, con studio proprio innaugurato nel 2005. Nei suoi progetti, Klasz combina uno sfondo Hi-Tech (Assistente universitario di Richard Horden presso l'Universita Tecnica di Monaco dal 2002 al 2008) con la scienza bionica (Università di Innsbruck, Istituto di Strutture e Design – Dottorato di Ricerca dal 2014 al 2018). A partire dall'estate 2017, nel ruolo di docente presso l'Università Tecnica di Vienna, e più precisamente presso l'Istituto di Arte e Design, Klasz si concentra sullo studio delle qualità sculturali derivanti da processi di auto-generazione di forma e (per quanto possibile) auto-assemblaggio di strutture lignee leggere, basandosi sul principio dell'Active Bending. Contemporaneamente, lavora ad un altro progetto di ricerca e sviluppo: la "Neuschneewolke" (Cloud for fresh snow). Nel suo ambito di competenza rientra l'utilizzo del metodo di auto-generazione, sia nella ricerca della forma più adeguata dal punto di vista costruttivo, sia nel complesso processo interdisciplinare del design, con un interesse particolare per tutti quei progetti che si relazionano con l'arte.