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Nature Friendly

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RESEARCH IDEO Chapter 3

SKETCH TO REAL
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We are striving for a form of architecture that is equal to the challenges of our time. A form of architecture that is mindful of the way it reflects our responsibility towards our children. Such architecture must have a positive relationship with the natural world, its users and new technologies. The question is not 'how have we lived and worked in the past?', but 'how can we and how do we want to live and work in the future?' Faced with the imperative for sustainable construction, however, we need also ask: 'how must we build in the years to come?'

nature-friendly
sustainable architecture...

We are striving for a form of architecture that is equal to the challenges of our time. A form of architecture that is mindful of the way it reflects our responsibility towards our children. Such architecture must have a positive relationship with the natural world, its users and new technologies. Backward thinking – be it ecological, aesthetic or technological – can and should no longer be justified by a need for continuity or the legitimacy of falling back on tried-and-tested methods. Instead, we must draw a distinction between that which can be deemed adequate, reliable, even 'correct' in a wider temporal context, and that comfortable convenience which allows many design concepts, construction techniques and materials to see continued use long after they have become obsolete and no longer suitable for the present day. A form of architecture which can claim to have developed an approach that befits both the present and the future age must arise from a foundation of integral planning and organisational processes and the radical application of ecological considerations. The question is not 'how have we lived and worked in the past?', but 'how can we and how do we want to live and work in the future?' Faced with the imperative for sustainable construction, however, we need also ask: 'how must we build in the years to come?'

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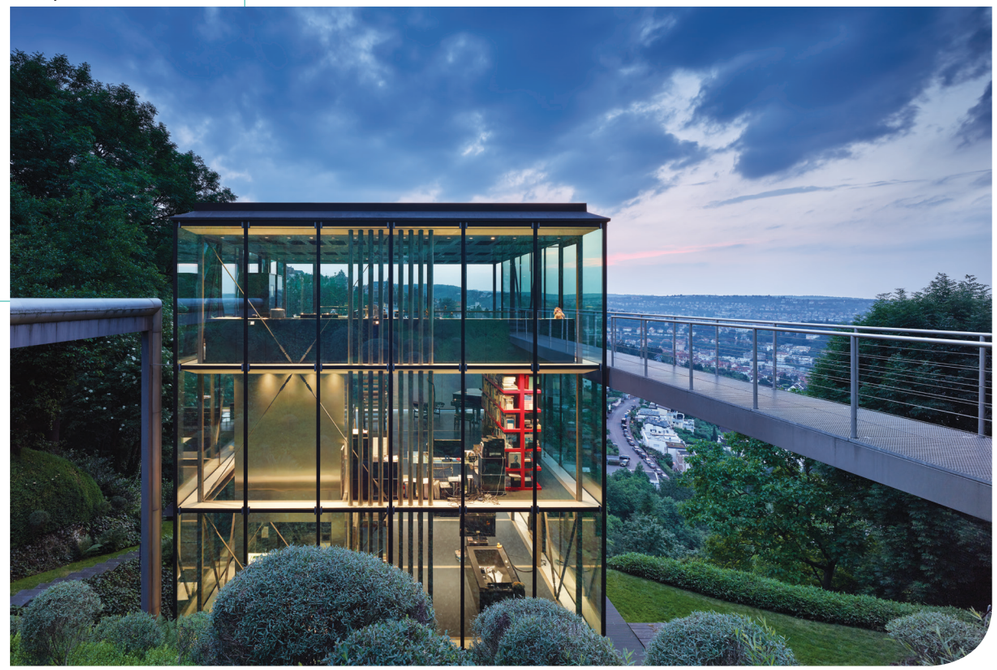

architecture

Werner SOBEK

greatest challenges of sustainable design...

To date, the construction industry has displayed far too little awareness and engaged in far too little discussion of the questions surrounding this topic. There is currently no mandatory recycling quota for the building industry. Some operators point to quotas of between 10 and 90 percent – but they often include filling coal mines and constructing noise barriers in their definition of "recycling". This is one way of getting rid of demolition waste, of course, but not a sensible one in my opinion. These methods keep resources outside of the material cycle instead of feeding them back in.

The increasingly tangible consequences of global population trends, major migratory movements and the exhaustion of material flows pose stark challenges to every single one of us. Handling our limited resources with care is a global problem. Never have we had a greater need for sustainable architecture that encompasses more fields of enquiry and achieves wider geographical adoption than ever before. As well as striving to create the lightest possible structures, the future of nature-friendly architecture must also be guided by the need to develop recycling-friendly building methods and to minimize the production of grey energy from fossil fuels.

A few reflections can give us the first rough (but entirely adequate) estimates of what the global construction industry will have to achieve in the near future. Around two billion of the 7.7 billion humans alive on our planet today are children and young people (that is, individuals under the age of sixteen). Over the next few years, these children will grow up and will demand their own places to live, their own places to work, and the entire infrastructure that goes with it.

If two billion children move away from home over the next 16 years, it follows that we will need to produce a built environment for 125 million people each year. That is equivalent to 1.5 times the entire stock of buildings that currently exist in Germany today. Each German citizen owns approximately 490 tons of building materials. If we take this value as a benchmark – and on what grounds should we deny anyone this standard of living?! – we will need to come up with approximately 60 billion tons of additional (!) construction materials around the world every single year. These materials will have to be created, transported and used (and disposed of again sooner or later). Sixty billion tons of building materials is a figure which is hard to visualize, so let us illustrate it with a more memorable example: This quantity of material (which, if you recall, is only the amount required per annum!) would be enough to build a 30 cm-thick wall around the equator that would stand at a height of over 2,000 meters.

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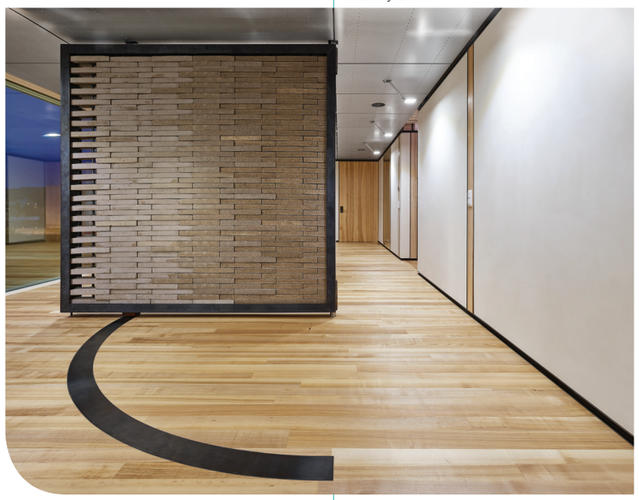

These figures are unbelievably vast. They provide vivid demonstrations of the scale of the challenges that lie before us. But how can the construction industry help to solve these problems? The answer might be summarized in a single, overarching headline: natura mensura. According to this motto, it is not man (homo mensura), but nature that is the measure of all things. Taking this concept as a guide allows us to sketch out the following goals:

1. We need to expand the built environment while using less material.
2. All construction materials must be incorporated into a recycling process.
3. We have to stop emitting gaseous waste into the atmosphere with immediate effect.

Saving energy is deliberately not listed as an objective here, and for good reason: Humanity does not have an energy problem. It is much more important to put a decisive stop to using power from fossil or nuclear sources.

An examination of the relevant material flows has shown that the rocketing demand for an expanded built environment can only be satisfied if we succeed in drastically reducing the amounts of materials we employ. As well as minimizing our resource consumption, we also need to make the materials we do use available for reuse at a later date. This means that a "Design for Disassembly" – the production of recycling-friendly constructions and designs – is imperative for two reasons. Firstly, it reduces the volume of new building materials that need to be created. And secondly, it minimizes or even eliminates the production of waste that cannot be fed back into the biological or technical material cycles.

main advances & future developments in sustainable design...

How can our built environment consume fewer fossil fuels and other resources? How can it produce less waste? It is vital that these questions be answered as a matter of urgency if we want to shape our world in a way that meets the needs of the future. We have dedicated ourselves to these questions in our own work for nearly 20 years. In doing so, our search for what should and could exist the day after tomorrow has developed a much greater scope. It not only includes research into the minimal, but also the intangible, the temporary, and the ephemeral. It enquires into forms of living and working in the metropolis (the ultimate density environment), in movement, underwater and in the extraterrestrial realm. It features our own research and development surrounding such issues as recyclable construction, self-learning home automation systems, and the development of smart grids. It involves both visual and non-visual architecture – that is the architecture of the unseen, the architectural experience that emerges through tactile perception, the sense of smell, acoustic awareness, and the consciousness of currents of heat and air. We are constantly 'fathoming the depths' and seeking out the boundaries – after all, only those who know where the boundaries are can overstep them in search of other forms of living and working, other building technologies and other methods of managing our habitats. Recyclability, zero emissions and the reduction of resource consumption have all formed cornerstones of our work from the beginning. The continual progress made in our projects has set the bar increasingly high for new work while always retaining the same basic principles. Our handling of the energy efficiency of buildings has certainly changed in time and again as the years have passed, however. On the one hand, we have oscillated between minimizing energy consumption and maximizing in-house energy generation. On the other, we have striven to meet the requirement of creating a Zero- or Plus-Energy house based not on annual results but on ever-shorter reporting periods. Experimental buildings such as R128, F87, B10, and NEST have allowed us to codify design approaches, construction methods and technologies on the basis of which further structures – multi-story residences, houses in other climate zones, homes for low-salary groups, etc. – can now be produced. With all of these buildings, we will continually strive to answer the questions that drive us: 'how can we create an architecture that befits both the present and the future?', and 'how shall we live tomorrow?'

F87, Berlin
© Matthias Koslik

the future of nature-friendly architecture...

In my eyes, there is not much of a choice. The future of architecture has to be nature-friendly and sustainable. Otherwise, there will soon be no point in designing any kind of architecture anymore since we will finally have ruined our beautiful blue planet.

The Classical Language of Architecture

John SUMMERSON
Chapter 2

Kenan ÖZCAN

CONCEPT FOCUS

Jewel Changi Airport
Odunpazarı Modern Museum

FORE FRONT

BLACKS VISUAL

Outlier SEBASTIAN HERKNER

Comfort's Equation of Three Unknown Variables
x: acoustics