Constructing Alternatives
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Constucting Alternatives

As urban populations grow so does the demand for materials and resources to support them. Where such resource demands were once satisfied by local and regional hinterlands, they are increasingly global in scale and reach. This phenomenon has generated material flows that are trans-continental and planetary in scope, and has profound consequences for the sustainability, functioning, sense of ownership and identity of future cities. But the monopolization of the construction industry puts high pressure on our natural resources. Today, aquatic sand used as an aggregate in concrete mixes is a scarce resource. In Southeast Asia, islands disappear due to landslides caused by ocean sand mining to satisfy the industries hunger. North-African countries are loosing their beaches due to illegal scrape practices, Florida tests to use recycled glass as a sand replacement not to loose their image of a beach tourist destination. If we talk about the future city, it is clear that it can not be build with the same resources as we built or existing ones. Seen from this perspective, the project for urban sustainability cannot be a matter of applying a universal set of rules, as we see it happening in the moment around the globe. Rather, sustainability requires a decentralized approach that both acknowledges the global dimension and is sensitive to the climatic, social, cultural, aesthetic, economic, and ecological capacities of particular places to thrive and endure.

The Assistant Professorship of Architecture and Construction Dirk E. Hebel tries to adapt such thinking in the areas of urban development and construction in various scales. Sustainability is an open system that must be capable of being positioned. If we want to build sustainable cities, we have to understand them as being open as well as located. Therefore, the team has concentrated its research over the past years in Singapore and Zürich on alternative construction materials and their application in specific contextual settings, taking into account the availability of materials, human resource capacities, and skills. The 'alternative' aspect of this focus emerges from an exploration of innovative and entrepreneurial thinking. This approach has informed and continuous to inform a laboratory to test new ideas and how to combine already existing materials and knowledge. It is the declared aim of the group to widen the pallet of available building materials and therefore question monopolized settings.

Can a grass replace structural elements made out of steel or timber? Can building materials made out of desert sand or soil and their application be a wide spread alternative building technology? Could waste be a future resource for the building sector? Next to empirical research, meaning gaining knowledge through observation, the Assistant Professorship of Architecture and Construction Dirk E. Hebel has quantified these hypotheses through scientific engineering and the establishment of new and specialized laboratories. Including other partners, test scenarios and standards have been developed to compare the results to already established building substances. The research has focused on full-scale material applications based on workshop environments, including students and other researchers from various fields and backgrounds. Using the method of re-engineering the group has also extracted and enhanced certain material characteristics and properties.

The special issue of the FCL Magazine at hand tries to give an overview of the group`s research on how to activate so far underused or forgotten substances such as bamboo, sand substitutes, and waste, for the construction process. Furthermore the issue shows how this thinking and philosophy can unfold new architectural and urban design strategies on the example of the ongoing research platform ADDIS 2050. The overall aim of the research has been to activate alternative design strategies, building methods, construction technologies, and material use and with it coming to an informed understanding of "Constructing Alternatives".

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