Respect for context

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High Density Living, Kreuzberg, Berlin, Spring 2011. Student project by Bjarni Árnason.

Respect for context

Approaching sustainable architecture

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"Sustainability means – meeting the needs of the present without compromising the ability of future generations to meet their own needs."

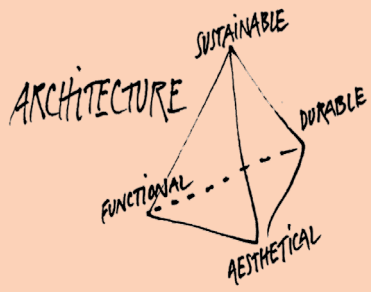
Brundtland, UN World Commission 1987

Where architecture is concerned, the sentence above from the Brundtland Report, "Our Common Future", means that sustainable architectonic form generation must take into account that the values and resources (materials and energy) used in the creation and practice of architecture *can either be recreated*, like solar and wind energy, or renewable, like wood, *or can be recycled*, like steel, glass and stone. Or, in other words: the characteristics of sustainable architecture are that the sustainable is experienced as attractive and appropriate in its context (climatic, cultural, social and economic) and must serve its purpose to the optimum, that it must be easy to maintain and renew and can partly or wholly be converted for other purposes or reused and that it does not use more natural resources than can be regained from it when its days are done. It could be claimed that most of these sustainability parameters have been virtues that have been connected with quality in architecture since the time of Vitruvius, but we have neglected to live up to others in modern times in our arrogance and apparent abundance of resources.

If Vitruvius had written his *De architectura*[1] today rather than a couple of thousand years ago, he would probably have made sustainability his central quality requirement which, coupled with usefulness, durability and beauty, constitutes the foundation for architecture.

While *usefulness, durability and beauty* might appear on the face of things to refer to properties of the work itself, i.e. properties that are independent of their surroundings, the addition of *sustainability* would emphasise that a precondition for architectonic quality is a broader overall perspective and more comprehensive and lasting responsibility. Responsibility that should be equally obvious ethically as it is challenging with regard to form generation.

When Vitruvius wrote his book on architectural theory, it would appear that sustainability was a perfectly natural, and therefore not particularly noteworthy, condition. In popular terms, people at the time lived "from hand to mouth". Even the most magnificent buildings, which contemporary architects were primarily occupied with, were created from and in harmony with the proximity context.



Firstly, both grand and more modest buildings were constructed with the help of local materials and sheer muscle power and were cooled or heated by wind, water, sun, wood or manure. That is, with the help of resources which could at all times be reused or recreated and which, after they had been used, broadly speaking left the planet just as rich in resources as it had been before. Any environmental consequences due to a lack of forethought in the use of natural resources, however serious they may have been, were limited to the local environment.

Secondly, only the most well-built constructions survived, just as in nature. For generations, local artisans and builders passed on and developed their experience of how form generation could be optimised in a geological, climatic, cultural and material context and in relation to the available opportunities for effective production and operation. Wisdom lay in the continuous handing down of the latest experience of what had proved to be most sustainable in terms of usefulness, durability and beauty. While pre-modern architecture can thus be characterised as architecture that was created in close interaction with the context out of sheer necessity, a view of architecture that ignored the importance of context grew out of the ideological showdown of the modern breakthrough with historical tradition and craftsmanship and the apparently limitless technical options. With an unshakeable belief in universal form, rational functionality and new technological possibilities as the answer to the great social and architectonic challenges of the time, the significance of creating a sustainable connection between vision and reality was overlooked. There appeared to be only one path forward throughout the world wars, reconstruction and the struggle for greater welfare in the 20th century: the growing consumption of irreplaceable natural resources, increased pollution and the subsequent environmental consequences.

Here, at the beginning of the 21st century, the consequences of these developments are so clear that the famous chaos theory analogy[2] - that the beating of a butterfly's wings in South America could cause a storm in North America – appears to have gained new topicality. It is now generally acknowledged that even apparently simple local form-generating decisions could lead to incalculable consequences for the global environment. Fortunately, technological research and development have reached a level at which we have a real opportunity to take a more sustainable stance in our dealings with the planet's resources without losing our basic quality of life. But this is on the condition that we also think in global

Sustainable Urban development, Carlsberg, Copenhagen, Spring 2010 – Student project by Sofia Kellari.

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terms when we act locally, and that we take our share of responsibility for the big picture individually, collectively and in everything we do.

The people who train architects must take responsibility for ensuring that the next generation of form generators are equipped with a solid foundation of knowledge, methods and skills so that they will be capable of making their contribution to sustainable development. Sustainable form generation is a complex entity, and it depends on interdisciplinary cooperation so that it can draw on the latest knowledge from many academic disciplines in an integrated form-generating process.

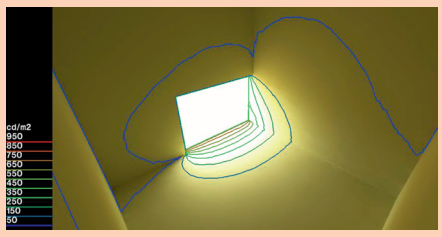
Project work

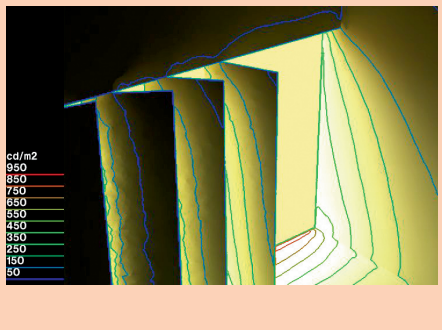
Project work is the central element in training architects and reflects the profession's investigative, creative and activity-oriented practice. Project work has the special property, with methodical training as its central aspect, of being capable of establishing the concurrent development of form-generating talent and interdisciplinary knowledge.

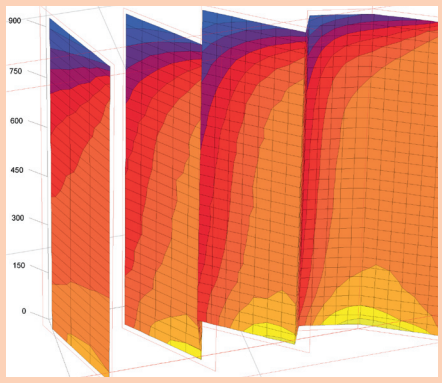
With professional, integrated form generation as a role model, project work in the study unit *"approaching sustainable architecture"* has been organised as a collaborative process in which groups of students and tutors, together with external consultants, establish the knowledge that constitutes the foundation for sketching. Form generation in an integrated manner means drawing on all central form-generating parameters in parallel – the aesthetic and experiential, those relating to the environment and resources and the technical and production-related – right from the initial programming and conceptual sketching stages. In a situation where we are obliged to limit the complexity of studies, this means that form generation is performed on the basis of a selection of parameters that are of particular relevance to the character of the project assignment, its context and educational goals. Some parameters of sustainability are so fundamental that they always form part of the investigatory framework that defines the individual study assignment – the potential of the locality, flexibility of use, the compactness of form, the quality of the daylight in a room, the energy efficiency of a climate screen and the optimisation of the construction. Focusing sharply on the selected design parameters, the basis of the project is developed and programmed with the help of a series of workshops, lectures, preliminary studies and sketch studies. The result is a catalogue of joint knowledge, analyses and strategic form-generation deliberations that create a basis for individual sketching.

Constantly switching the field of study and scale is decisive for the progress of sketching. Sketching is a dialectical process that takes up several angles in parallel and runs iteratively rather than linearly. The principal idea is perception that is developed through the sketching process, not a conceptual choice that governs it. The general goal is to contribute to the development of artistic talent combined with sustainable knowledge.

Studio Approaching Sustainable Architecture, Department of Architecture, 2010/2011.







Daylight analyses.
Ecotect and Radiance
Daylight course Autumn 2010 – Group 4 .

Notes:

[1] Marcus Vitruvius, Roman architect and engineer c. 25 BC, was the author of *De architectura Libri Decem* (*The Ten Books on Architecture*). The manuscript, which deals with everything from the training of architects to the choice of building sites, building materials and technology as well as urban planning, was rediscovered in the 15th century and was of great importance for the rebirth of the architecture of antiquity during the Renaissance.

[2] Chaos theoretician E.N. Lorentz developed a simple mathematical model in 1961 which shows how a tiny, random change in initial conditions can give rise to considerable change over time. He called the phenomenon the "butterfly effect".