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why and how
i am interested in sustainability

Application for Intensive Program on Sustainability (IPoS) 2009

written
on April 25, 2009

The 20th century was shaped by the experience of two brutal World Wars with high casualties and severe destructions on all sides, so any kind of development in the second half of the 20th century strongly focused on securing peace, usually by means of deepening international relations and development of economic prosperity.

But in the forth quarter of the 20th century a critical undertone to economic prosperity and assumed limitless growth entered the public debate. Both individual and political actors started to warn that disaster was imminent if steps were not taken. As an example, on the grassroot level it was the foundation of the NPO Greenpeace 1971 which has since in spectacular campaigns drawn the attention to dangers for our natural habitat and the species living in it. On the political level it was the publication of *The Limits to Growth*, sponsored by the Club of Rome in 1972 and the UN Conference on Human Environment in Stockholm the same year. The Brundtland Commission then coined the term of "Sustainable Development" in 1987.

So we, the students and all young people of today, are the first generation born into a world that seeks sustainability in all aspects of life, intercultural, intergenerational, between mankind and nature.

Although we may not be hold responsible for the development that led to the current status quo, but we are very much responsible to live up to the task at hand and research, develop and design the environment "that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (quote from the Brundtland report). We live here and now to guide the development into the right direction for a sustainable 21st century.

Personally I want to take this task as an imperativ. My profession is architecture and as an architect I am responsible to design the built habitat of the present generation, knowing that it also shapes the habitat of the future generations. The mere common task for an architect is to imagine and design a building for a specific client, therefore the education focuses on the history and typology of the built environment and state-of-the-art technology. But the task at hand demands a much broader view, and deeper knowledge of the long-term impact of design decisions is necessary. Good knowledge of the local environment and laws is not sufficient anymore but the global interrelations have to be understood. Specialists from different fields need to work much closer together, architects not only with specialized building engineers.

and building authorities as in the past, but also with energy, food and water specialists, sociologists, health specialist and local action groups to gain the necessary knowledge and mutual understanding for achieving the sustainability goal.

During my PhD study I am researching the correlation between “Sustainability and Architecture“ as my major focus. The IPoS workshop is a great opportunity to exchange opinions and cultivate new ideas and views on sustainability. It helps to form friendships with others from different nationalities, which will enable all participants to tackle the pressing issue of sustainability.

sustainability of urban areas
tokyo, japan

written
on July 16, 2009

following the lecture

Sustainable Urban Management

a lecture series offered by Department of Civil Engineering, Department of Architecture and Department of Urban Engineering as an activity of the G-COE (Global Center of Excellence) project http://csur.t.u-tokyo.ac.jp/index.html

and a course of the

IARU Global Summer Program 2009
14–30 June 2009, The University of Tokyo, Japan
www.iaruni.org/gsp/courses/tokyo/01/index

1. Introduction

The term sustainability in general is open for many different definitions and interpretations, depending on the particular context under consideration. The context of this report is the city, the built environment of urban areas.

"A sustainable city is a city where achievements in social, economic, and physical development are made to last. It has a lasting supply of the environmental resources on which its development depends, using them only at a level of sustainable yield.
A sustainable city maintains a lasting security from environmental hazards that have the potential to threaten development achievements, allowing only for acceptable risk."[1]

Even so it is understood that social and economical conditions are of major importance, the main focus of this report will be on the physical conditions of urban areas.
As one example I have chosen the urban area of Tokyo, Japan.

2. Current status of the city

It has been widely accepted that our cities nowadays are not sustainable. But what are the crisis issues, that we need to focus our attention on? In the definition given above, two major conditions account for a sustainable city,
(1) "a lasting supply of the environmental resources", and
(2) "a lasting security from environmental hazards".

So the crisis issues could be defined as
(A) lack of environmental resources and
(B) lack of security from environmental hazards.

In the Environmental White Paper 2006 the Tokyo Metropolitan Government (TMG) describes the two crisis issues similarily as
(A) Crisis that endangers the sustainability of cities and the earth, and
(B) Direct crisis that threatens the health of the residents of Tokyo and the safety of their lives.[2]

Let's focus on the issue of resources, as stated in (1) and (A). One popular way to measure the value of necessary environmental resources is the so called ecological footprint, a term coined by Mathis Wackernagel and William Rees in 1992.[3] It basically is used to compare the demands of any kind of human activity with planet earth's regenerating capacity and behind it lies the idea of local responsibility. It is measured in global hectares (gha) of required land area, thus the term footprint on planet earth.

According to The Ecological Footprint Atlas 2008, the available biocapacity per person on planet earth equals 2.1 gha.[4] In contrast, the per-person ecological footprint of Japan exceeds this value already 2.4 times with 4.89 gha.[5]

The inner city of Tokyo is one of the densest habitated urban areas in the world.[6] When calculating the ecological footprint of Tokyo, the results are becoming even more astonishing. The name "Tokyo" is rather ambiguous and depending on the administrative and geographical boundary chosen, different footprints can be calculated (see table 1).

Tokyo [September 1, 2007]	Land area	Population	Density	Ecological Footprint
City of Tokyo (東京市), which existed independently until 1943 and are now the 23 special wards or "inner city" of Tokyo[7]	621 km² (62,100 ha)[8]	8,650,000[9]	13,929 / km²	42,298,500 gha (exceeding 681 times)
Tokyo nowadays, officially Metropolis of Tokyo (東京都), including Tama area, 23 special wards and islands[10]	2,187 km² (218,700 ha)[11]	12,790,000[12]	5,848 / km²	62,543,100 gha (exceeding 286 times)

Table 1

If compared with the land area of Japan, which is 377,923 km² (37,792,300 ha)[13], it becomes apparent that the footprint of Tokyo alone exceeds the land area of whole Japan, in the case of the 23 special wards 1.1 times and in the case of the metropolitan Tokyo 1.6 times, which could be called way beyond ANY notion of sustainability with regard to the ecological footprint. This makes the crisis as formulated in (A) obvious and illustrates how much a city nowadays depends on the bearing capacity of the hinterland, which is in the case of Tokyo also highly populated and adds to the urgency of the problem. In this light all efforts of Factor 4[14] or even Factor 10[15] seem to fall short if we want to achieve true sustainability of cities, which might be impossible. It rather proofs a simple fact as Kano (2000) points out, the fact that cities have, and will continue to have their resource base outside their boundaries. It underlines the axiom, that without this base, there can be no city and that a city cannot sustain by itself.[16]

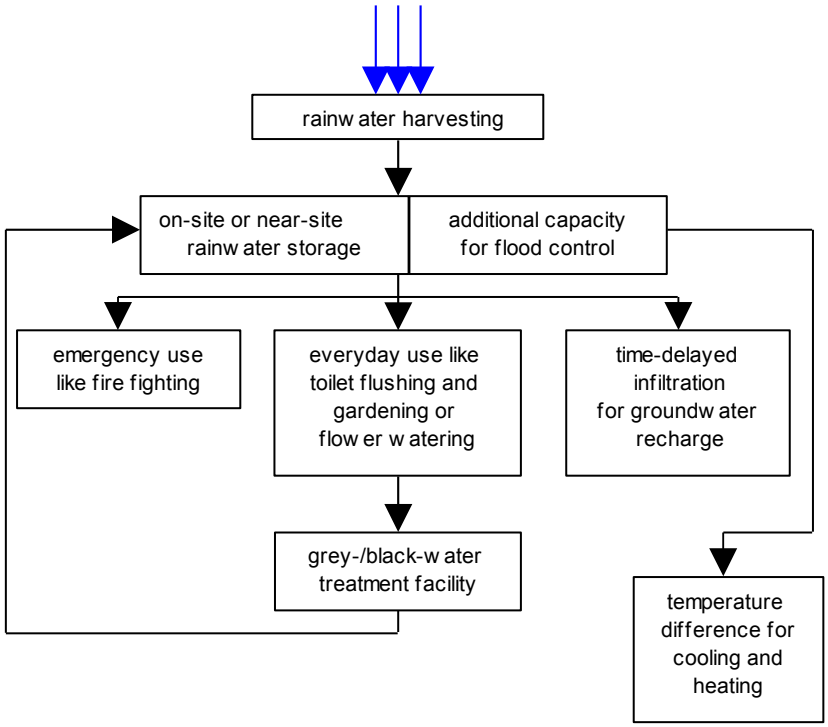
3. Possible solutions

Even so the numbers of this resource based approach are impressive, the least we should do is give up in our efforts to trim the development of cities towards the path of sustainability. As the ecological footprint is a rather gross value calculated from global and national data, it doesn't say anything about the real status of one city in particular. Even so the overall sustainability might be difficult to achieve, it should be nevertheless possible for parts of the city's metabolism. When over time more and more parts will have achieved the sustainability goal, we might feel the strong urge to tackle the impossible.

How can we secure or even increase the availability of resources, to avoid a lack of resources, as stated in (1) and (A)? Not all resources are necessarily scarce to begin with. For the last part of this report, let's focus on the resource water, more

precisely water for domestic use. On the one hand, in our current technologically highly developed society we are keeping the luxury of even flushing our toilets with costly treated clean or white water, the same water that we are using for cooking. In Japan this amounts to 28% of the overall household water use.[17] On the contrary the resource rain water is hardly taken into use for this purpose.
When thinking about rainwater harvesting quite a number of different possibilites for its usage can be found. To begin with, the annual precipitation in Japan is 1700mm, so Japan can be called a country with a large amount of precipitation.[18]

If the storage tank is large enough, and before the rainy season or a typhoon just slightly filled, it can provide additional capacity for flood control in this area. A time-delayed infiltration of the rainwater into the ground would help in reducing the amount of water that is transported in the sewage system and help in recharging the groundwater levels. Furthermore, the temperature difference of the water in the rainwater storage tank in comparison to the outside air temperature could be used for cooling the indoor environment in summer and heating in winter.
One can even think further, depending on the size of the water



Graph 1

However, most of the rain is pouring down in the rainy season and the typhoon. This calls for rainwater storage ideally placed on the site of later use. Furthermore, this water could also be used in case of emergency for fire-fighting purposes.

storage tank, an appropriately sized small-scale water treatment facility could be installed side by side to treat greywater (about 41% of domestic water)[19] or even blackwater for recharging the storage tank in times of little rain.

That such a system can work is notutopian. A wide range of appliances from simple storage tanks for gardeners up to state of the art technology is available. Its implementation on the other hand has just begun and depending on the scale and place of its installation it is a common task for urban engineers, architects and civil engineers to incorporate it into urban forms like a park or river, into buildings like a stadium or a private house or even into roads as a new form of urban infrastructure.

References

1 The United Nations Human Settlements Programme (UN-Habitat) and the United Nations Environment Programme (UNEP) (2001). *Sustainable Cities Programme 1990-2000: A decade of United Nations Support for Broad-based participatory management of Urban Development*. Nairobi, Kenya. Retrieved July 10, 2009, from http://www.unhabitat.org/downloads/docs/5092_16153_scp1990-2000.pdf, p.4.
2 TMG (2006). *Tokyo Metropolitan Government Environmental White Paper 2006.* Retrieved July 7, 2009, from http://www2.kankyo.metro.tokyo.jp/kouhou/env/eng_2006/index.html, p.55.
3 Rees, William E (1992). "Ecological footprints and appropriated carrying capacity: what urban economics leaves out", *Environment and Urbanization*, Vol. 4, No. 2, p.121-130, School of Community and Regional Planning, UBC, Vancouver, B.C., Canada. Retrieved July 7, 2009, from http://eau.sagepub.com/cgi/content/abstract/4/2/121
4 Global Footprint Network (2008, December 16). *The Ecological Footprint Atlas 2008, Version 1.1.* Retrieved July 11, 2009, from http://www.footprintnetwork.org/download.php?id=506, p. 72.
5 Ebd, p.53
6 Wikipedia. *List of cities by population density.* Retrieved July 11, 2009, from http://en.wikipedia.org/wiki/List_of_cities_by_population_density
7 Wikipedia. *Tokyo City.* Retrieved July 11, 2009, from http://en.wikipedia.org/wiki/Tokyo_City
8 TMG. *Geography of Tokyo.* Retrieved July 11, 2009, from http://www.metro.tokyo.jp/ENGLISH/PROFILE/overview02.htm
9 Ibid.
10 TMG. *Administrative areas of Tokyo.* Retrieved July 11, 2009, from http://www.metro.tokyo.jp/ENGLISH/PROFILE/overview04.htm
11 See footnote 8.
12 Ibid.
13 TMG. *Statistics: Fig. 1 Tokyo Compared to the rest of Japan.* Retrieved July 11, 2009, from http://www.metro.tokyo.jp/ENGLISH/PROFILE/appendix02.htm
14 Wuppertal Institute for Climate, Environment and Technology (2004). *Factor Four.* Retrieved July 11, 2009, from http://www.wupperinst.org/FactorFour/
15 Factor 10 Institute (2008). *Factor 10.* Retrieved July 11, 2009, from http://www.factor10-institute.org/
16 Kano, Katsuhiko. 2000. *Observations: Proceedings of the International Conference in Sustainability of Cities,* UNU/IAS & IICRC, Kanazawa, Japan.
17 Water Environment Partnership in Asia (WEPA). *State of water environmental issues: Japan.* Retrieved July 11, 2009, from http://www.wepa-db.net/policies/state/japan/japan.htm
18 Ibid.
19 Ibid.

sustainability

city and building

written
on July 30, 2009

following the lecture

Sustainable Building in Japan

by Professor Tomonari Yashiro, Institute of Industrial Science, Department of Human and Social Systems, Management of Project / Technology
http://yashirolab.iis.u-tokyo.ac.jp/index.html

as part of the lecture series

Architecture & Cities in Japan I (2009)

a lecture series offered by Department of Architecture, Faculty of Engineering, The University of Tokyo
http://www.arch.t.u-tokyo.ac.jp/

1. Introduction

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But latest in the forth quarter of the 20th century a critical undertone to economic prosperity and assumed limitless growth entered the public debate. Both individual and political actors started to warn that disaster was imminent if steps were not taken. As an example, on the grassroot level it was the foundation of the NGO Greenpeace 1971 which has since in spectacular campaigns drawn attention to dangers for our natural habitat and the species living in it. On the political level it was the publication of *The Limits to Growth*, sponsored by the Club of Rome in 1972 and the UN Conference on Human Environment in Stockholm the same year. The Brundtland Commission then coined the term of 'sustainable development' in the report *Our Common Future,* published and adopted in 1987.[1]

2. City - the reality of Tokyo

Originally the purpose of 'sustainable development' was to reconcile economic growth and environmental protection. But since then the usage of the term 'sustainability' has skyrocketed and it has become very fashionable to apply it to almost every aspect of life, like for instance sustainable cities, tourism, etc. But what does this term actually mean or imply when used so freely for almost everything?

When looking at some definitions, for instance from the dictionary Merriam Webster[2] or Wikipedia[3], the general notion of sustainability is drawing attention to two key issues, first of all the 'need' and secondly the 'lack', with both of them circulating around the issue of 'resources'. A 'need' will always exist, it is one of the basics of life and an imperative of human activities. What is required to satisfy needs can be called 'resources'. In case of a 'lack' of resources, the initial need cannot be satisfied. Resources can be scarce from the beginning or become depleted when overused.

One popular way to measure the value of necessary environmental resources is the so called ecological footprint, a term coined by Mathis Wackernagel and William Rees in 1992.[4] It basically is used to

compare the 'needs' or the demands of any kind of human activity with the 'resources', planet earth's regenerating capacity. It is measured in global hectares (gha) of required land area, thus the term footprint on planet earth. According to The Ecological Footprint Atlas 2008, the available biocapacity per person on planet earth equals 2.1 gha.[5] In contrast, the per-person ecological footprint of Japan exceeds this value already 2.4 times with 4.89 gha.[6]

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This example strongly illustrates how much a city nowadays depends on the bearing capacity of the hinterland, which is in the case of Tokyo also highly populated and adds to the urgency of the problem. In this light all efforts of Factor 4[15] or even Factor 10[16] seem to fall short if we want to achieve true sustainability of cities, which might be impossible. It rather proofs a simple fact as Kano (2000) points out, the fact that cities have, and will continue to have their resource base outside their boundaries. It underlines the axiom, that without this base, there can be no city and that a city cannot sustain by itself.[17]

3. Building - building standards

The approach of the ecological footprint is supposedly one of the broadest considering environmental issues of human activities on planet Earth. But as it is with all reporting and assessment tools of this kind the question of boundary arises. Is it actually necessary to achieve full sustainability or self-sustainability for everything? For every house and city for instance? Where do we 'draw' the boundary for evaluating the issue of sustainability?

To address this issue the Global Reporting Initiative (GRI) has published a Boundary Protocol[18] to define the boundary used in their reporting method.

Here the two measures are:
- degree of control or influence and
- level of significance or impact.

It clearly illustrates that the notion of a boundary, to be able to exclude something is clearly opposed to a holistic approach that would aim at considering the totality of relevant issues. The boundary defines what is relevant and what is not, it reflects the initial value judgement and is usually based on assumptions about a manageable scale.[19]

The uncertainty of what is important and what is not, what should be included and what should be excluded has led to the development of thousands of indicators and sustainability standards. When we look on the building industry and their green building standards, the number is easily reaching a hundred. Their main objective in general is to evaluate the environmental performance of singular buildings with focus on mitigation - reducing stresses on natural systems. They rarely address societal questions or medium and long-term issues.[20] Their measurements and targets are often largely differing. Moreover every standard is for marketing resons or due to nationally legal binding force claiming that their method is the best and when building according to the standard the final product will be a sustainable building.
Saunders hshows the difference for instance of BREEAM, LEED, GreenStar and CASBEE[21], but even though some assessment method may be more severe than another one, it is hardly believable that appart from reaching the target set by the standard the main goal of all the effort as pointed out in chapter 2 can thus be achieved.

4. Conclusion

What is needed in this confusion is an approach beyond the existing boundaries, like the interests of professional groups, to achieve the real goal behind our efforts. This as pointed out in chapter 2 is to avoid the 'lack' of 'resources' to be able to satisfy the 'needs'. This approach can properly only be understoond if seen in a wider context as exemplified with the analysis of Tokyo. The existing green building standards on the other hands are focussing mostly on delivering singular buildings as explained in chapter 3.

Sustainable building standards need to broaden their main objectives and try a bit harder to fulfill their role in channeling the urban development towards the sustainability track. Buildings have to be considered in relation to their surrounding environment, as parts of the bigger entity that a city organism is. Otherwise these standards can not carry the label of promoting sustainable buildings.

References

1 United Nations. (1987). *Report of the World Commission on Environment and Development: Our Common Future.* Retrieved July 29, 2009, from http://www.un-documents.net/wced-ocf.htm

2 sustainable. (2009). In *Merriam-Webster Online Dictionary.* Retrieved July 29, 2009, from http://www.merriam-webster.com/dictionary/sustainable 3 sustainability. (2009). In *Wikipedia.* Retrieved July 29, 2009, from http://en.wikipedia.org/wiki/Sustainability

4 Rees, William E. (1992). "Ecological footprints and appropriated carrying capacity: what urban economics leaves out", *Environment and Urbanization*, Vol. 4, No. 2, p.121-130, School of Community and Regional Planning, UBC, Vancouver, B.C., Canada. Retrieved July 7, 2009, from http://eau.sagepub.com/cgi/content/abstract/4/2/121

5 Global Footprint Network (2008, December 16). *The Ecological Footprint Atlas 2008, Version 1.1.* Retrieved July 11, 2009, from http://www.footprintnetwork.org/download.php?id=506, p. 72.

6 Ebd, p.53

7 Wikipedia. *List of cities by population density.* Retrieved July 11, 2009, from http://en.wikipedia.org/wiki/List_of_cities_by_population_density

8 Wikipedia. *Tokyo City.* Retrieved July 11, 2009, from http://en.wikipedia.org/wiki/Tokyo_City

9 Tokyo Metropolitan Government (TMG). *Geography of Tokyo.* Retrieved July 11, 2009, from http://www.metro.tokyo.jp/ENGLISH/PROFILE/overview02.htm

10 Ibid.

11 TMG. *Administrative areas of Tokyo.* Retrieved July 11, 2009, from http://www.metro.tokyo.jp/ENGLISH/PROFILE/overview04.htm

12 See footnote 8.

13 Ibid.

14 TMG. *Statistics: Fig. 1 Tokyo Compared to the rest of Japan.* Retrieved July 11, 2009, from http://www.metro.tokyo.jp/ENGLISH/PROFILE/appendix02.htm

15 Wuppertal Institute for Climate, Environment and Technology (2004). *Factor Four.* Retrieved July 11, 2009, from http://www.wupperinst.org/FactorFour/

16 Factor 10 Institute (2008). *Factor 10.* Retrieved July 11, 2009, from http://www.factor10-institute.org/

17 Kano, Katsuhiko (2000). *Observations: Proceedings of the International Conference in Sustainability of Cities,* UNU/IAS & IICRC, Kanazawa, Japan.

18 Global Reporting Initiative (GRI). (2005, January). *GRI Boundary Protocol.* Retrieved July 29, 2009, from http://www.globalreporting.org/NR/rdonlyres/CE510A00-5F3D-41EA-BE3F-BD89C8425EFF/0/BoundaryProtocol.pdf

19 Maru, Y.T. and K. Woodford (2007). "Revisiting Sustainability Boundaries from a Systems Perspective". In Oxley, L. and Kulasiri, D. (eds) *MODSIM 2007 International Congress on Modelling and Simulation.* Modelling and Simulation Society of Australia and New Zealand, December 2007, pp.477-482. ISBN : 978-0-9758400-4-7. http://www.mssanz.org.au/modsim07/papers/8_s33/RevisitingSustainability_s33_Maru_.pdf

20 Cole, Raymond J and Daniel Pearl (2007). "Blurring Boundaries in the Theory and Practice of Sustainable Building Design". In *International Conference on Whole Life Urban Sustainability and its Assessment,* Glasgow, 2007. Retrieved July 29, 2009, from http://download.sue-mot.org/Conference-2007/Papers/Cole2.pdf

21 Saunders, Thomas. *A Discussion Document Comparing International Environmental Assessment Methods for Buildings.* BRE Global Ltd. Retrieved July 1, 2009, from http://www.breeam.org/page.jsp?id=101

sustainability
timber structures in cities

written
on July 30, 2009

following the lecture

Seismic Performance of Wooden Buildings

by Professor Mikio Koshihara, Institute of Industrial Science, International Center for Urban Safety Engineering (ICUS), Wood Engineering
http://wood.iis.u-tokyo.ac.jp/

as part of the lecture series

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http://www.arch.t.u-tokyo.ac.jp/

1. Background: Japan and its forests

Japan can be said is one of the most densely populated countries in the world. Most of the population is living in cities in the crowded lowland plains along the coast, which however account for only 16 percent of the total land area. On the other hand it is a land of mountains and dense forests. Hilly country and steep mountains make up nearly 80 percent and approximately 67 percent of the land area is covered with forests. In these upland and highland areas the population density is very low.[1]

A particularly interesting aspect in the Japanese uplands is called *satoyama*, which is an area encompassing human settlements and ecosystems, a rural environment mostly comprising of secondary forests surrounding villages intermixed with farmland, ponds as water reservoirs and grasslands or meadows, all of it cultivated and carefully stewarded by human activity. *Satoyama* is located between urban areas and primitive natural areas or forests starting at the foot of a mountain (*sato* means village and *yama* means mountain). This beneficial environment has traditionally provided food, charcoal as fuel and other material goods to the rural community, as well as helped in preventing natural disaster such as landslides or floods. Here the people developed successfully a sustainable system between nature, forestry, agriculture, and community.[2]

The use of wood and its products like timber and paper from everyday products to houses, shrines and temples is deeply rooted in the Japanese culture, in contrast to the dominant use of stone or metal as in other cultures. But despite the high percentage of land area covered with forests the domestic forest industry is in steady decline since its peak output in 1967, when it became more economical to import cheaper wood from abroad. The self-sufficiency rate for wood and wood products was just 20.3 percent in 2006, which means that Japan depends mostly on imports.[3] Furthermore the absence of human intervention and forest management has rendered many neglected or abandoned forests even more economically unviable. The majority of the rural population has moved to the large cities in the postwar period. Subsequently the overall functioning of *satoyama* has been in steady decline over the last half a century.

2. Challenges for timber structures

Timber is one of the oldest building material used for construction.

The natural availability of wood and the regenerating capacity of forests has secured the supply for thousands of years. At the Horyu-ji temple area in Nara prefecture some of the oldest surviving wooden buildings not only in Japan but in the whole world are still standing. The wood used for the *shinbashira* or center pillar of the five-storey pagoda is estimated to have been felled in A.D. 594, which makes it the oldest surviving timber structure in the world.[4] This example illustrates how long-lasting wood can be.

But despite this outstanding example of fine and long-lasting timber architecture, wood is very often regarded as weak in terms of fire safety or seismic stability in comparison with buildings made of concrete for example. In Japan, a country prone to earthquakes the fires that follow a major earthquake are the most devastating. When multiple fires start simultaneously covering a large area and spreading quickly in densely built areas, they easily exceed the capabilities of firefighting services, as happened during the 1923 Kanto Earthquake and the 1995 Hanshin Awaji Earthquake.[5]

But even so wood is a burnable material it has a much better performance in case of fire when compared with steel on the other hand. The reason, why wooden, especially older buildings are very often regarded as not being safe enough has many reasons. At the time of construction the fire regulations were supposedly less stringent than nowadays, which account very often for a lack of fire resistant doors, windows, stairways, walls and floors. Furthermore these buildings have very often a limited access in general and especially for a modern fire brigade, which makes it difficult to limit the damage imposed by a fire.[6]

Subsequently very often legal restrictions have been imposed that limit the use of timber as a structural member. So the possibilities to use wood or timber as a building material not only for surface treatments but for the structural and load-bearing elements depend mostly on the building regulations and vary greatly between different countries. Whereas in America and Scandinavia almost 90 percent of all housing buildings are made of wood, in Switzerland on the contrary, otherwise a country proud of its forests, the market share of wooden housing buildings was only 10 percent in 2003.[7]

To increase the fire safety of wooden buildings different approaches are possible.

A) A traditional approach, which was mainly used in historic buildings, like timber frame houses in Europe, is to overdesign the loadbearing elements. By doing so and in case of a fire the reduction of the loadbearing section will not have any severe impact on the stability of the structure.

B) The use of flame retardent oils or paints can increase the fire safety, but the risks for health and / or the environment when applying these oils or paints need to be considered.

C) Smart fire fighting concepts utilizing automatic fire detection and fire sprinkler systems will help in increasing the fire safety. The large difference of up to 90 percent of housing buildings made of wood in

America and Scandinavia but less then 10 percent in Switzerland could be explained with the installation of sprinklers, which are common in America and Scandinavia but not so in Switzerland.[8]

D) To cover structural elements like ceiling, beams and columns made of timber with fire resistant materials, commonly used are plasterboards or gypsum boards. By encapsulating they increase the performance of the loadbearing structure but render the wood surface virtually invisible.

E) Composite structural systems of timber with a fire resistant material like concrete, for instance in ceilings where timber is used as a self-bearing formwork and lower half of the composite floor system (see example 'Esmarchstrasse 3, Berlin, Germany' in chapter 5.1).

F) The required fire resistance may not be the same overall in a building, it may be higher for evacuation routes than for other parts. In this case the parts with the higher demand may be build in concrete, but the other parts in timber. Sometimes only partial elements like the facade may be build in timber (see examples in chapter 5.1).

How to improve the seismic stability of buildings has been largely tested by the Japanese National Institute for Earth Science and Disaster Prevention (NIED)[9] ranging from one family houses to a seven-storey wooden building. The low dead load of wooden buildings has a positive effect as the forces onto the structure are much lower in comparison to concrete or stone buildings. The results have been impressive, showing that earthquake resistance can be achieved with timber structures.[10]

3. Prospects

Even so there have been many reservations against the use of timber as a reliable structural building material mainly due to concerns of fire safety and seismic stability, recent research in these fields has on the contrary proved the reliability of timber structures. National building regulations have started to include the research results and opened the door for a wider use and application. For instance in the case of Switzerland, new building regulations were introduced in 2005, that allow for wooden buildings up to six storeys and wooden facades up to eight storeys in height. These new building regulations are expected to boost the market share of timber structures, as for multi-storey buildings it was virtually zero.[11]

But also in terms of construction cost, wood performs well. Timber frame construction shows a 10 to 20% cost advantage over the equivalent concrete or steel construction. It is lighter and easier to work with, reducing the need for heavy machinery. Timber structures can be largely prefabricated, which helps in making the whole construction process faster. Furthermore there are no wet trades that are time consuming like waiting for concrete to cure as an example.[12]

Another important issue is the discussion about sustainability and environmental friendliness of building materials, where wood has many major advantages in comparison to all the other standard materials like steel or concrete.


Picture 1


Picture 2


Picture 3

First of all it is a renewable resource. Secondly, during their lifespan trees are absorbing large quantities of carbon dioxide, which they process and partially store as carbon in their biomass and partially release as oxygen into the atmosphere. As long as the biomass is not decomposed or burned they act as natural carbon stores or sinks. The substitution of sustainably produced wood material for other construction materials can reduce greenhouse gas emissions cheaply, efficiently and quickly.

Furthermore wood in form of trees and forests is widely and locally available. It doesǹt require a lot of energy for transport or large facilities for production and treatment. An increase in the demand of wood can create new employment opportunities in the manufacturing industry which are very often located in rural areas. This may help the domestic forest and wood industry to regain some of their lost market shares and improve the viability of the Japanese forests. It will also enhance the availability of other raw materials like sawdust and wood chips, that could be used in the bioenergy sector. Thus the wood industry can even partly produce the needed energy for processing in a sustainable way.[13]

On the other hand the Japanese wood and forest industry is working hard to regain some of its lost market share and become more competitive against imports. One issue is to reduce production costs. Due to the steep mountainous areas of the forests the production costs were in general much higher than in rather flat countries like Canada or northern European countries. A higher grade of mechanization is expected to dissolve this problem.[14]

4. Conclusion

So should we build timber structures in cities?

The answer is definitely yes. In some countries it is already the dominant building material for housing buildings. The ongoing research has proved the reliability of timber also in case of fire safety and seismic stability. A wider application can provide new opportunities for wood and forest industry in especially rural areas and increase the overall functioning and sustainability of forest management.

5. Examples of multi-storey wooden buildings

5.1 Germany

(Picture 1)
Residential and office building
Wiesbaden, Germany, 2001
six-storey wooden facade
architects: Altmann und Zimmer, Wiesbaden, http://www.a-z-architekten.de/

(Picture 2)
Esmarchstrasse 3, Berlin, Germany
seven-storey building, combined wood, steel and concrete structure
architects: Kaden + Klingbeil, Berlin, http://www.kaden-klingbeil.de/

5.2 Switzerland

(Picture 3)
Holzhausen MFH, Steinhausen ZG, Switzerland, 2005-2006
six-storey building, the first in Switzerland, 9 apartments[15]
architect: Scheitlin_Syfrig+Partner Architekten AG, Luzern, http://scheitlin-syfrig.ch/

5.3 Austria

(Picture 4)
INFRACOM, Griffen, Austria, 2000
elevated three-storey office building[16]
architect: Edmund Hoke, Grafenstein, http://www.hoke.at/

5.4 Sweden

(Picture 5)
Välle Broar (Limnologen), Växjö, Sweden, 2006-2009
4 eight-storey buildings, 134 apartments[17]
architect: Ola Malm, Arkitektbolaget, Växjö

(Picture 6)
Inre Hamnen (Inner Harbour), Sundsvall, Sweden, 2004-05
5 six-storey buildings, 94 apartments[18]
architect: Susanne Åström, White Arkitektkontor, http://en.white.se/

For information on further realised multi-storey wooden buildings in Austria since 1996 see http://www.proholz.at/werke_holz/holzbauten1.htm

For information on further realised multi-storey wooden buildings in Germany and other European regions see http://www.wegezumholz.de/index.php?id=41

Picture 4


Picture 5


Picture 6

References

1 Karan, Pradyumna Prasad and Dick Gilbreath (2005). *Japan in the 21st century: environment, economy, and society.* University Press of Kentucky. p.12-22.
2 Kambu, Alphonse, Utiang P Ugbe, Masanori Toga, Grant Boyle, and Maiko Nishi (2008). *Niche Markets for Economic Revitalization of Satoyama Forest Resources in Ishikawa Prefecture.* IICRS and UNU–IAS, Yokohama. Retrieved July 24, 2009, from http://www.ias.unu.edu/sub_page.aspx?catID=111&ddlID=676
3 Ministry of Internal Affairs and Communications, Statistics Bureau (2008). *Statistical Handbook of Japan 2008.* Retrieved July 15, 2009, from http://www.stat.go.jp/english/data/handbook/c05cont.htm
4 Japan Information Network (2001). *100 years older than supposed? World Heritage Pagoda.* Retrieved July 16, 2009, from http://web-japan.org/trends00/honbun/tj010330.html
5 Himoto, Keisuke (2007). *Risk of Fire Spread in Densely Built Environments: A Review Emphasizing Cities in Japan.* Retrieved July 24, 2009, from http://www.fujipress.jp/finder/preview_download.php?pdf_filename=PRE_DSSTR000200040005.pdf&frompage=abst_page&pid=796&lang=English
6 Hovde, Per Jostein and Harald Landrø. *Fire safety of wooden buildings in urban areas.* Retrieved July 23, 2009, from http://www.ntnu.no/treund/fire-safety/firesafety.pdf, p. 2.
7 Frisch, Evelyn Carola (2003). *Mehrgeschossiger Holzbau.* Retrieved July 21, 2009, from http://www.wvs.ch/m/mandanten/159/download/03_1mehrgoschoss.pdf, p.1.
8 Fontana, M. (2005). *Untersuchungen zur Brandsicherheit mehrgeschossiger Holzbauten im Vergleich verschiedener Bauweisen.* Retrieved July 21, 2009, from http://www.fierabolzano.it/bauschau2005/congress/fontana05.pdf
9 See http://www.bosai.go.jp/hyogo/ehyogo/movie.html

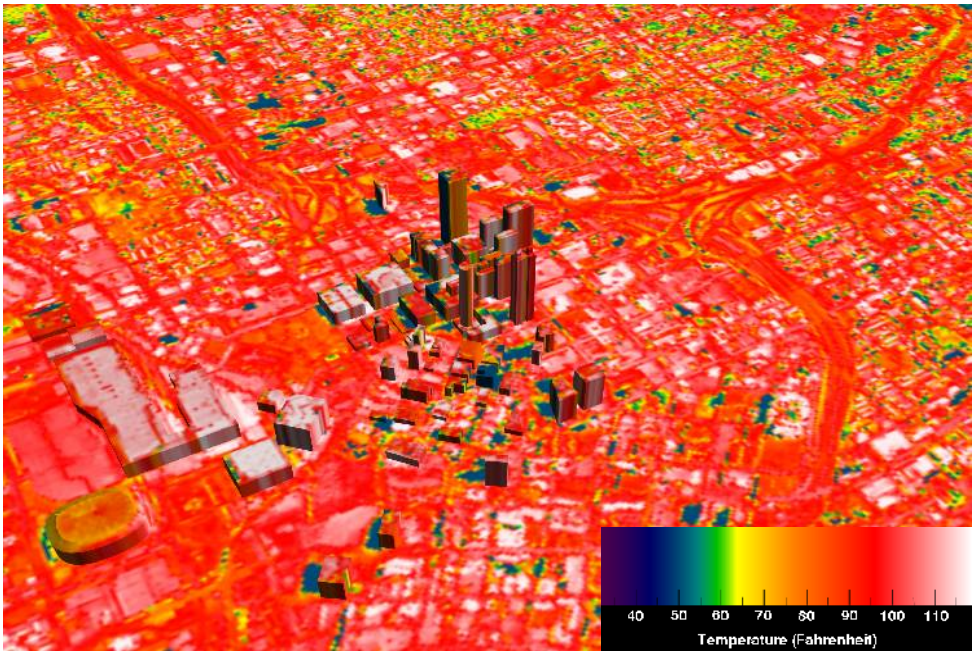
10 Jacob-Freitag, Susanne. *Erdbebenversuch: Wann Holzbauten fast nichts erschüttert.* Retrieved July 24, 2009, from http://www.mikado-online.de/mediadb/153732/179300/Online-Erdbeben.pdf
11 Meuter, Michael (2009). *Der Holzbau legt an Höhe zu.* Lignum. Retrieved July 21, 2009, from http://www.hsb.bfh.ch/NR/rdonlyres/51718B97-5DCF-4B14-9B98-8B6294549C40/0/20090407_SHR2.pdf
12 Walford, G B. "Multistorey timber builing in UK and Sweden" in *NZ Timber Design Journal,* Issue 2, Volume 10. Retrieved July 21, 2009, from http://www.timberdesign.org.nz/files/MultiStorey%20timber%20building%20in%20UK%20and.pdf, p.8.
13 Mahapatra, Krushna and Gustavsson, Leif (2008) "Multi-storey timber buildings: breaking industry path dependency". In *Building Research & Information,* 36:6, pp.638—648. Retrieved July 21, 2009, from http://www.informaworld.com/index/904744462.pdf
14 The Japan Forest Engineering Society. *Mechanization in Japanese forestry.* Retrieved July 24, 2009, from *http://jfes.ac.affrc.go.jp/english/mechaniz.html*
15 *Willkommen in Holzhausen.* Retrieved July 21, 2009, http://www.holzhausen.ch/
16 Altmann, Florentin. "Bürogebäude INFRACOM", In *Atlas – Holzbau,* p.334. Retrieved July 23, 2009, from http://www.archistructura.net/bldgs/334/WS/WS_334.pdf
17 CBBT (Centrum för byggande och boende med trä) and Växjö University (2008). *Documentation of the Limnologen Project.* Retrieved July 23, 2009, from http://www.cbbt.se/website3/1.0.3.0/4/Limnologen_rapport_1_Eng.pdf, p.9. For further information see http://www.vallebroar.se/ and http://194.47.65.210/td/english/civil/research/limnologen/
18 Boverket Byggkostnadsforum (2006). *Sundsvalls Inre Hamn: Ett utvecklings- och informationsprojekt för trähusbyggande i massivträ.* Retrieved July 23, 2009, from http://www.boverket.se/Global/Webbokhandel/Dokument/2006/Sundsvalls_inre_hamn.pdf, p.8.

Pictures

1 http://www.wegezumholz.de/index.php?id=156&user_timbertreasures_pi1[showUid]=1558
2 http://www.kaden-klingbeil.de/index.php?mact=Album,m3,default,1&m3albumid=12&m3returnid=51&page=51
3 http://www.renggli-haus.ch/steinhausen.html
4 http://www.wegezumholz.de/index.php?id=156&user_timbertreasures_pi1[showUid]=2420
5 http://mpd.midroc.se/sv/referenser-fastighetsutveckling/referenser-fastighetsutveckling-limnologen.aspx
6 http://dagbladet.se/nyheter/sundsvall/1.121557

sustainability

urban heat island



Picture 1: Atlanta, GA, Daytime Thermal View of the Heat Island

written
on July 30, 2009

following the lecture

Development of Assessment Tools for Urban Climate and Heat Island Mitigation

by Professor Ryuzo Ooka, Institute of Industrial Science, Department of Human and Social Systems, Environmental Technology for Urban Architecture
http://venus.iis.u-tokyo.ac.jp/english/default.htm

as part of the lecture series

Architecture & Cities in Japan I (2009)

a lecture series offered by Department of Architecture, Faculty of Engineering, The University of Tokyo
http://www.arch.t.u-tokyo.ac.jp/

1. Introduction: What is an urban heat island?

First of all, an urban heat island is an urban area, in a town, city or metropolitan area that has a significantly higher temperature than its surrounding area. Very often this island effect is considered only in conjuction with larger urban agglomerations as in metropolitan areas, where its appearance and effects are most apparent. The reasons for the higher temperature are manifold but are mainly linked to the modified urban surface with only little vegetation.

During daytime the earth surface is exposed to the sun. Based on the features of this surface the solar energy is either reflected or transformed. As a simple example, if the surface is white, than most of the energy is reflected, if the surface is black, most of it is absorbed and transformed into heat energy making the black surface significantly warmer than the white.

Not considering desserts at this moment, but in a natural environment with a lot of vegetation like meadows, trees or any kind of plants, solar energy is used in photosynthetic processes to convert low energy carbon dioxide and water into higher energy organic compounds like carbohydrates. Furthermore, exposed to sunlight

the surface water of rivers and lakes will evaporate, which results in cooling down the remaining water, a phenomenon called evaporative cooling. It is similar to the human body, that cools down by evaporating sweat. This in addition to the low heat capacity of water are just two reasons why river water is always so refreshingly cool. In summary, in a natural green environment large chunks of the solar energy are used in transformation processes that don't result in heating the environment, but can even transform the solar energy for cooling the environment.

Urban built surfaces on the contrary, like streets, facades or roofs, made commonly of materials like stone, tiles, concrete or asphalt have significantly different thermal properties. If exposed to the sun, these materials will mainly transform the absorbed energy into heat energy. Additionally due to their high heat capacity the heat is then stored and even accumulated during the day within the materials. This often results in surface temperatures much higher than the surrounding air temperature. Only during the night time the heat mass can be released, but in dense urban agglomerations this process is very slow, as all surfaces emit heat at the same time, resulting in a higher air temperature which slows down the cooling process. In cold environments the thermal mass of building materials is very often used to store heat for cold nights but in summer and in hot environments this turns into an unpleasant feature. But also heat from cars, factories, industries, shops, offices and homes, the 24-hour city gives off heat day and night.

2. Why is the urban heat island a problem?

First of all, even so the urban heat island phenomenon has been observed for more than 180 years[1], its influence on urban climate and the mutual influence on weather conditions are not yet fully understood and are still being researched.[2, 3]
As the urban heat island is usually noticed in metropolitan areas, the prospect of global urbanization and increase in size and amount of metropolitan areas is just one reason to investigate this phenomenon and all its effects on weather and urban climate.[4]

Aside from the higher temperature of the urban area in contrast to surrounding rural areas, other indirect or secondary effects can be found:

- influence on local climate and increased precipitation[5]
- influence on local flora and fauna, namely longer vegetation periods in generaly cold or mild climate zones[6]
- in hot climate zones an increase in energy demand for cooling, but controversly areas in cold or mild climate zones have less demand for heating[7]
- increased public water demand, for instance for watering of lawns or evaporation from open-air swimming pools[8, 9]
- air pollution increase, which has many reasons but one being higher temperature[10]
- health problems related to air pollution and heat, increase in heat stroke patients[11]

Even so some of the effects may be regarded as positive, escpecially for cities in mild or cold climate zones, like decreased demand for heating or longer vegetation periods, they are counterbalanced by the negative effects, mainly affecting pollution and health risks. Especially the rapidly urbanizing regions in Asia, South America and Africa are almost entirely situated in the hot climate zones.

3. How can the negative effects of an urban heat island be mitigated?

Based on the initial short analyses of the reasons for the urban heat island phenomenon, possible mitigation measures could be:[12, 13]

- reduce absorption, increase reflection, surfaces with high albedo and emittance
- cool roofs, facades and pavements, that help lower surface temperatures
- greening of roofs, which reduces water runoff at the same time
- increase vegetation, planting trees for shading and cooling, urban forests
- bring underground rivers back to the surface
- green buildings that use passive cooling instead of air conditioning
- lower use of combustion engines like cars or factories and change to electric motors
- reduce emissions from cars, factories and industry to reduce air pollution

This list provides just some mitigation measures and is far from complete. How truly effective these methods are to reduce the heat island in a large scale is still being researched.

References

1 Heidorn, Keith C (2009). *Luke Howard: The Man Who Named The Clouds.* Retrieved July 14, 2009, from http://www.islandnet.com/~see/weather/history/howard.htm
2 Japan Meteorological Agency (2009). *Climate Change Monitoring Report 2008,* pp. 30-32. Retrieved July 14, 2009, from http://ds.data.jma.go.jp/tcc/tcc/products/gwp/CCMR2008.pdf
3 *Urban Heat Island.* Retrieved July 14, 2009, from http://www.urbanheatisland.info/
4 UN Department of Economic and Social Affairs Population Division (2008, June). *Urban Agglomerations 2007.* Retrieved July 14, 2009, from http://www.un.org/esa/population/publications/wup2007/2007urban_agglo.htm
5 Goddard Space Flight Center (2002, June 18). *NASA satellite confirms urban heat islands increase rainfall around cities.* Retrieved July 14, 2009, from http://www.gsfc.nasa.gov/topstory/20020613urbanrain.html
6 Goddard Space Flight Center (2004, July 29). *Urban heat islands make cities greener.* Retrieved July 14, 2009, from http://www.nasa.gov/centers/goddard/news/topstory/2004/0801uhigreen.html
7 Nagle, Garrett. (1999). *Britain's Changing Environment,* Nelson Thornes, p.23
8 WETT. *Urban Heat Islands.* Retrieved July 14, 2009, from http://water-energy.lbl.gov/node/14
9 Scott, Christopher A (2009). *The evolution of urban heat island and water demand.* Retrieved July 14, 2009, from http://ams.confex.com/ams/89annual/techprogram/paper_150343.htm

10 New Jersey Department of Environmental Protection. *Weather and Air Quality.* Retrieved July 14, 2009, from http://www.nj.gov/dep/airmon/waqpage.htm
11 Columbia University's Mailman School of Public Health (2007, September 30). *Climate Change May Increase Heat-related Deaths By 2050s, Says Study.* ScienceDaily. Retrieved July 14, 2009, from http://www.sciencedaily.com/releases/2007/09/070927164452.htm
12 Scott, Michon (August 1, 2006). *Beating the Heat: In the World Big Cities.* NASA Earthg Observatory. Retrieved July 14, 2009, from http://earthobservatory.nasa.gov/Features/GreenRoof/greenroof.php
13 U.S. Environmental Protection Agency. *Reducing Urban Heat Islands: Compendium of Strategies.* Retrieved July 14, 2009, from http://www.epa.gov/heatisland/resources/compendium.htm

Pictures

1 http://www.nasa.gov/centers/goddard/news/topstory/2004/0801uhigreen.html

satoyama – scenario building for future development

written
on September 30, 2009

following the lecture

Satoyama, the traditional rural landscape of Japan

organised by
Associate Professor Dr. Toshiya Okuro,
Department of Ecosystem Studies,
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http://www.es.a.u-tokyo.ac.jp/english/lecture/eco.html

as part of the University-wide Graduate School Education Program

Japan-Asian Studies

a program offered by ASNET – Asian Studies Network of The University of Tokyo
http://www.asnet.dir.u-tokyo.ac.jp/edu/

1. Uncertainties and scenario building

As a starting point for developing the scenarios I have chosen two uncertainties, which are in my opinion of high relevance for the future development of *satoyama* landscapes:

(1) Financial viability of *satoyama* landscape related businesses and households and

(2) People's interest and involvement in preserving *satoyama* landscapes.

These two uncertainties form two axes, each is separated into the two opposing and mutually exclusive ends called 'High' and 'Low'. Thus the field for scenario building is split into four areas or four scenarios. After identifying each scenario's driving force a descriptive title was assigned.

Peoples's interest and involvement in preserving *satoyama* landscapes			
	Low	**Technologically transformed** HIGH financial viability of *satoyama* landscape related businesses and households but LOW (people's) interest and involvement in preserving *satoyama* landscapes. Driving force: technological innovation	**Abandoned but newly used** LOW financial viability of *satoyama* landscape related businesses and households and LOW (people's) interest and involvement in preserving *satoyama* landscapes. Driving force: population change
	High	**Vibrant and evolving** HIGH financial viability of *satoyama* landscape related businesses and households and HIGH (people's) interest and involvement in preserving *satoyama* landscapes. Driving force: linkage of urban and rural life and economy	**Protected Areas** LOW financial viability of *satoyama* landscape related businesses and households but HIGH (people's) interest and involvement in preserving *satoyama* landscapes. Driving force: political will for protection
		High	Low
	Financial viability of *satoyama* landscape related businesses and households		

Table 1

2. Four scenarios

As a next step, keywords were used to describe each scenario and to get a better understanding of the speciality of each in contrast to the other scenarios.

3. Storyline of scenario “Vibrant and evolving“

In this scenario the two uncertainties were both assigned a very high certainty.

Peoples's interest and involvement in preserving *satoyama* landscapes			
	Low	**Technologically transformed** Technology driven innovation to develop competetive products that utilise resources that are abundant in *satoyama* landscapes and that requires only little human intervention. Automatised management, required additional energy provided with renewable energy by highly efficient biomass plants and solar energy. Assumed decreasing biodiversity due to mainly economically oriented utilization of farmland and woodland. Driving force: technological innovation	**Abandoned but newly used** Left on its own, fuelled by further decrease of rural population due to continuous migration into cities and population decrease; mainly young people migrate away. Further conversion of agriculturally valuable land into suburban areas or woodland, decreasing biodiversity. Abandoned areas and farmhouses become available for new forms of public or individual involvement and benefits. Examples of successful usages in underpopulated areas include the Finnish private weekend or summerhouses in the countryside called *Mökki* or self catering holiday cottages in Scotland. Driving force: population change
	High	**Vibrant and evolving** Village life as a viable alternative to urban life. Supposedly viable in areas where *satoyama* landscape is in close proximity to urban areas or suburbs. Modern transformation of the traditional, purely internal *satoyama* landscape goods and services flow into an interchanged flow of goods and services between *satoyama* landscape and adjacent urbanised area. *Satoyama* landscape as the necessary hinterland for sustainable urban life. Regionally oriented businesses lead the development. *Satoyama* landscapes are continuously evolving and with it our understanding of what *satoyama* landscapes are actually about. Driving force: linkage of urban and rural life and economy	**Protected Areas** Relying on volunteer activities or managed by the government, financed with subsidies, incentives and tax exemptions. Keeping alive a traditional image of *satoyama* landscapes, protected by laws similar to national parks. Viable for very distinct areas, a small percentage only. Interest in nature preservation increases but involvement may stay low. Possibility of fund raising or enabling, entry to public green via money charge or by volunteering and gaining points. Driving force: political will for protection
		High	Low
		Financial viability of *satoyama* landscape related businesses and households	

Table 2

A high value of 'financial viability of *satoyama* landscape related businesses and households' means

that it is highly certain for businesses to achieve returns above cost of production and for households to have a decent income to support a normal way of life.
A high value of 'interest and involvement in preserving *satoyama* landscapes' means that the ecosystem services for human well-being provided by *satoyama* landscapes are generally understood, accepted and required. People and businesses are generally proactive in opting for a pro-environmental behaviour and a regional quality-oriented consumption pattern.

In our modern world, a strong focus on market economy and globalisation has very often increased the benefit of cities but at the expense of the regional countryside and as part of it the *satoyama* landscapes. The globalised market has dramatically increased the dimension of each city's hinterland rendering the regional countryside very often less competitive and unattractive. In addition the environmental burden or ecological footprint of each city has increased many times over. To shift this development into a more sustainable direction for the benefit of both, city and countryside, this scenario suggests stronger regional interlinkage. The driving forces in this scenario are strong regional economies and markets, that surpass the modern image of city versus countryside. The functioning of cities and hinterland are generally intertwined. This view is derieved from the fact that cities have and will continue to have their resource base outside their boundaries. It underlines the axiom, that without this base, there can be no city and that a city cannot sustain by itself.[1]

The supposedly oldest record that advocates the preference for a well-functioning regional economy can be found in Book 1 of Aristotele's *Politics:* even when complete self-sufficiency was not possible, the local community should not waver from the principle of self-sufficiency, but should carry out trade only to the extent of supplementing self-sufficiency and should not bring commercial activity into the local community in a disorderly manner.[2]

In contrast to the dominance of the economically connected global market here the focus is on a well functioning local or regional market, where products and services that can be produced, offered and consumed locally are produced, offered and consumed locally in the first place. This could be described as an approach to increase the regional self-sufficiency rate and to produce regional wealth from regional resources. Satoyama landscapes are then appreciated as valuable hinterland for a sustainable urban life. A very important and political leverage to promote this issue is the carbon tax on transport, which makes local products more competitive. This can help in raising awareness of the relation between place of production and carbon emissions during transportation to the place of consumption. It has to be noted that in the future, when the energy for transportation may solely come from renewable and carbon free sources this leverage will lose its power.
Furthermore the social value of this approach lies in the simple truth that regional wealth consists of more than properties and stocks but also includes social capital and the freedom to pursue a congenial life-style in a regional society.

1
Kano, Katsuhiko (2000). Observations: Proceedings of the International Conference in Sustainability of Cities, UNU/IAS & IICRC, Kanazawa, Japan.

2
Maruyama, Makoto (2006). “Sustainable economics and urban sustainability“ in: Tamagawa, Hidenori (ed.). Sustainab1e Cities: Japanese Perspectives on Physical and Social Structures, UNU Press, Tokyo, pp. 70-95.

In this scenario, to live in a rural or rather nature rich environment is seen as a viable alternative to a purely urban life. Main stakeholders include regional businesses, households, administrations and organisations which lead the development. A regional labeling system similar to global bio- and eco-labels could further promote regional products and services to make them distinct from national and global brands and advertise regional qualities like home-made, environmentally friendly, carbon neutral etc. A successful *satoyama* landscape can be easily imagined in close proximity to urbanised areas or suburbs, where living close to nature doesn't mean to forgo urban amenities.

In other words the traditional, purely internal provision and usage of *satoyama* landscape goods and services would be transformed into an interchanged flow of goods and services between *satoyama* landscape and adjacent urbanised area to the benefit of both. A city as understood in this context is not anymore a place of consumption of products produced somewhere else but rather a place to promote and make maximal use of abundant regional resources. An imparative is to prevent over-exploitation and to avoid under-exploitation which automatically shifts the focus of all enterprise, regardless of private or public, into a sustainably oriented.

As the meaning of the word *satoyama* is derived from coppice woodlands, the utilisation of wood provides an easy example to illustrate the interlinkage between city and hinterland. Regional forest industry manages the forest stock. Trees are processed into wood and timber for the regional building industry, wood pellets as energy source for houses and biomass for energy production. Urban dwellers can enjoy the amenities of walking in nearby forests that have marked walking routes and sights and dine and sleep in nearby restaurants and accommodations.

Regional festivals help in fostering the mutually beneficial relationship. Traditionally rural culture thus will migrate into urban areas and vice versa. A successful example for the latter is the Echigo-Tsumari Art Triennial in Niigata prefecture that has been held in 2009 for the fourth time already since its start in 2000. It not only involves local people but attracts and draws a national if not global audience into the area. Especially art and art related festivals can function as a medium to raise awareness and both are capable of moving people and connecting people through culture with nature.

The continuous exploration of regional wealth and resources for the communal benefit in an interlinked environment, city and hinterland, humankind and nature will foster innovation and sustainability not as a concept but as a lived activity. In such a situation the *satoyama* landscape will continue to evolve and develop and with it our understanding of what *satoyama* landscapes are actually about. Rather than merely historically developed agricultural places they are culturally transformed areas rich in nature and bio-diversity that provide a broad-range of ecosystem services for human well-being in a sustainable manner.

sustainable urban regeneration
sydney and the opera house

1. How the Opera House project started

The story of the Opera House and the successful urban regeneration project at Bennelong Point in Sydney, Australia does not start with an architectural competition held in 1955 but even before.

The English conductor and composer Eugene Goossens (1893-1962) was the director of the New South Wales (NSW) State Conservatorium of Music from 1947 till 1956 and conducted the Sydney Symphony. He is credited for much of the lobbying to the NSW Government to build a music performance venue larger than the Sydney Town Hall which had been used so far. By 1954 he succeeded in gaining the support of NSW Premier Joseph Cahill. But again it was Goossens who insisted on Bennelong Point overlooking Sydney Harbour to be the better site for the venue, whereas Cahill wanted it to be on or near Wynyard Railway Station in the north-western Sydney Central Business District (CBD)[1]. Ironically, Goossens was forced to resign from his positions after a major public scandal in 1956 and left the country before a competition was held.

Bennelong Point is originally a small tidal island, where shortly after the arrival of the first fleet of British convicts in Sydney Cove on 25/26 January 1788 (Australia Day), the Aborigine Bennelong persuaded the NSW Governor Arthur Phillip in 1790 to build a brick hut for him, giving it it's name.[2] In 1798 a half moon battery was constructed on the east point, which was upgraded to Fort Macquarie between 1817 and 1821. In 1901 it was demolished to make way for new electric tramway sheds that were named after the earlier military fort, Fort Macquarie Tram Depot.[3] Sydney once had the largest tram system in Australia and the second largest in the Commonwealth after London. The system was in place from 1879 and street mileage, car service and patronage peaked in the 1920s, 1930s and 1940s respectively. During the 1950s closure became labor government policy and the system was wound down in stages and finally ended in 1961.[4] Fort Macquarie Tram Depot was closed in 1955 and demolished in 1958.[5] Bennelong Point is a remarkable piece of land jutting out into Sydney Harbour from the parkland of the Botanical Gardens. Here is where a most successful long-term urban regeneration project started.

In 1955 the worldwide design competition for a Sydney music performance venue at Bennelong Point was launched, receiving 233 entries from 32 countries. In 1957 the winner was announced. The four assessors were Professor H. Ingham

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Regeneration of Italian Port Cities – Naples, Palermo, Genova

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as part of the lecture series

Sustainable Urban Regeneration B (winter term 2009/2010)

a lecture series offered by Department of Architecture, Faculty of Engineering, The University of Tokyo
http://www.arch.t.u-tokyo.ac.jp/

Ashworth of Sydney, Professor Leslie Martin of Cambridge, American architect Eero Saarinen and NSW Government Architect Cobden Parkes of Sydney. The story goes that when Eero Saarinen arrived, who had not been available for the early stages of the judging, he was presented with ten 'possibles', none of them appealed to him. He then looked through the rejected entries and finding a young Danish architect's proposal, he was struck by it and told his colleagues: 'Gentlemen, this is the first prize.' But even though it was only a blown-up series of sketches of an idea, and even though there were six clauses detailing what would disqualify an entry and his was liable to be disqualified under four of them, Jørn Utzon (1918-2008), the 38-old Danish architect was declared the winner.[6]

2. Controverse discussions during construction

The design for the Sydney Opera House was regarded as revolutionary, highly controversial and as mentioned before broke most of the competition rules. But when reading the Assessor's Report, it becomes clear, how strongly they have favoured Utzon's design.

"The drawings submitted for this scheme are simple to the point of being diagrammatic. [...] We consider this scheme to be the most original and creative submission. Because of its very originality, it is clearly a controversial design. We are, however, absolutely conviced about its merits."[7]

The scheme features roof shells as geometrically undefined curves in space, but such shapes demanded completely new ways of designing and calculating, that pushed the frontiers of both architectural and structural knowledge and would have been impossible without the first available computers. In fact, only thanks to the initially close and extremely fruitful collaboration between Jørn Utzon and his structural engineer Ove Arup such an endeavour became possible. To get an impression of the almost inhuman scale this challenge meant for the designers, a quote from Ove Arup in 1965.

When you realise that in the course of seven or eight years we alone have spent more than 375,000 man-hours on this job, and over 1,800 computer hours – we could have bought a computer for that money [...]. It has taken us six years to decide the final design of these shells [...]."[8]

That this herculean task was far from going straightforward, can be quickly understood when seeing the cost and time performance. In 1957 the project was estimated at costing AU$ 7.2 million and scheduled for opening on 26 January (Australia Day) 1963. But in 1966 after spiraling cost issues and major design problems still unsolved, Utzon resigned, the circumstances of his step will not be discussed here in detail. His position was taken over by a group of four Australian architects, Peter Hall, Lionel Todd, David S. Littlemore and NSW Government Architect Edward Herbert Farmer. The project was built in three stages. Stage I between 1959–1963 saw the construction of the podium. Stage II between 1963–1967 consisted of building the outer shells. Stage III between 1967–1973

consisted of the interior design and construction.[9] This means that Utzon could not realise his vision for the highly architectural interior. The project's final cost amounts to AU$ 102 million and it was officially opened by Queen Elizabeth II on 20 October 1973. Utzon was the one being scapegoated for the huge increase in cost (14-times the original estimate) and ten years behind schedule. Ironically, although the Opera House was basically his design, he was neither invited to the ceremony, nor was his name even mentioned. This just illustrates how deep the rift between Utzon and the client was, not only at the time of his resignation but even seven years later. Utzon never came back to Sydney to see the finished building. But what he did aim for with his design is maybe best described again by Ove Arup.

"It is not every day that an Architect gets the job of designing a civic centre for the musical arts on a site which almost forces it to become at the same time a focal point and civic symbol for a city which seeks to destroy once and for all the suggestion that it is a cultural backwater."[10]

3. How the Opera House changed the image of Sydney

The Opera House has not only changed the image of Sydney, but became a landmark for the whole Australian continent and an iconic masterpiece of architecture of the 20th century.

To understand the big impact the Opera House had and still has on the image and cultural life of Sydney and beyond, I want to cite some official quotes, the first from the Australian Government.

"Sydney Opera House must be one of the most recognisable images of the modern world - up there with the Eiffel Tower and the Empire State Building - and one of the most photographed. Not only is it recognisable, it has come to represent 'Australia'. Although only having been open since 1973, it is as representative of Australia as the pyramids are of Egypt and the Colosseum of Rome."[11]

The second quote is taken from the homepage of the City of Sydney:

"The Sydney Opera House also embodies timeless popular metaphors. The building's organic shape and lack of surface decoration have made it both timeless and ageless. Moreover, it demonstrates how buildings can add to environmental experience rather than detract from it - something of spiritual value independent of function."[12]

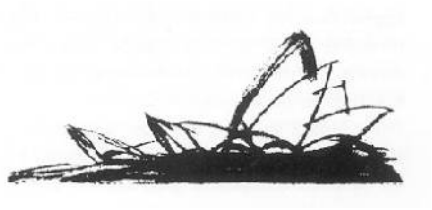
Today, the Sydney Opera House is one of the busiest performing arts centres in the world, each year staging up to 2500 performances and events, drawing around 1.5 million patrons, and attracting an estimated four million visitors. The Sydney Opera House was included in the Australian National Heritage List on 12 July 2005.[13]

That the importance of the Opera House is highly appreciated worldwide, is best illustrated by it being inscribed as a cultural property on UNESCO's World Heritage List on 28 June 2007, as being *"a great architectural work of the 20th century that brings*

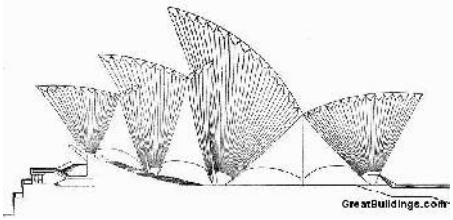
together multiple strands of creativity and innovation in both architectural form and structural design".[14] But even the Danish Ministry of Culture included it as one of twelve outstanding architectural designs of Danish cultural heritage in its "Kulturkanon"[15] (Cultural Canon) in 2006.

Jørn Utzon himself was awarded the Pritzker Price in 2003, one of the world's highest honours in architecture.[16] In 1998 the Sydney City Council reconciled with Utzon by awarding him the symbolic Keys of the City of Sydney. Also in 1998 the Sydney Opera House Trust began negotiations with Utzon for his contribution as an advisor for future renovation and conservation.[17]

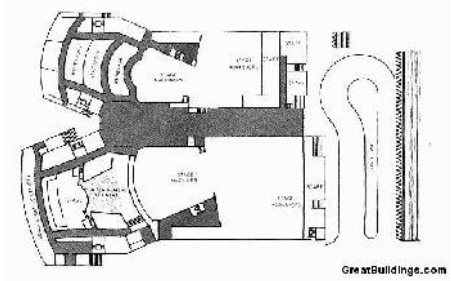
4. Drawings



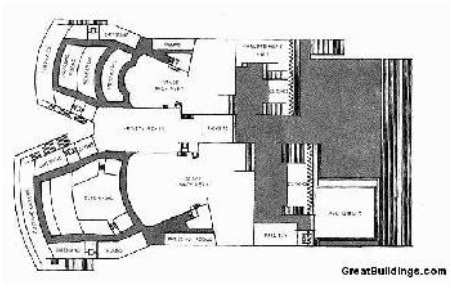
Picture 1: Utzon's original sketch



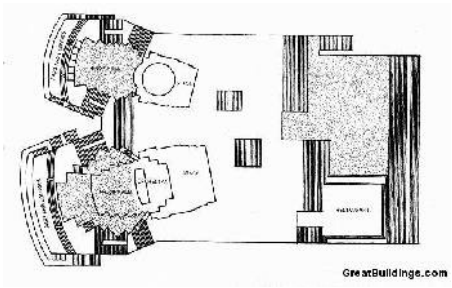
Picture 2: Section



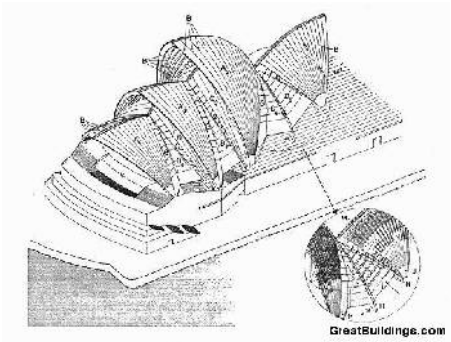
Picture 3: Basement



Picture 4: Lower level



Picture 5: Main level



Picture 6: Axonometry

5. Images

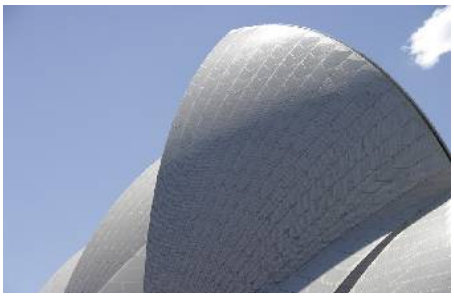
During a study trip to Australia in September 2009 I had the chance to visit Sydney and the Opera House, outside and inside, to join a guided Opera House Tour and to enjoy a concert in the main hall.

Picture 7: View from the Royal Botanic Gardens

Picture 8: Opera House and Harbour Bridge

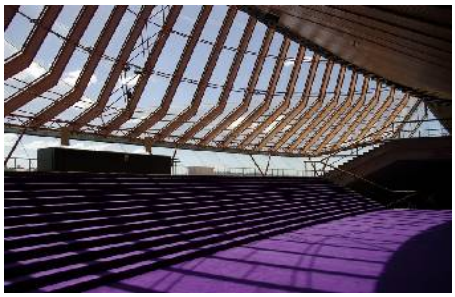
Picture 9: Approach from Royal Botanic Gardens

Picture 10: Wide platform stairs



Picture 11: Billowy Sails

Picture 12 Overlooking harbour and Harbour Bridge



Picture 13 Interior, glass facade and lobby for main hall

Picture 14: Stairs inside and outside st nighttime

Picture 15: Ribbed shells like orange peels

Picture 16: Main hall for concerts

Picture 17: Opera House at nighttime

Picture 18: Ribbed shells

Picture 19: Ribbed shells

References

1 Sydney Architecture: Sydney Opera House. In: http://www.sydneyarchitecture.com/ROC/QUA01.htm, retrieved 15.11.2009.
2 Sydney Opera House. Heritage Council of New South Wales. In: http://www.visit.heritage.nsw.gov.au/16_subnav_09_2.cfm?itemid=5054880&sort_by=&item_id=&item_name=&suburb_name=&product_category=&state_theme=&product_region=, retrieved 15.11.2009.
3 Fort Macquarie. In: http://en.wikipedia.org/wiki/Fort_Macquarie, retrieved 15.11.2009.
4 Trams in Sydney. In: http://en.wikipedia.org/wiki/Trams_in_Sydney, retrieved 15.11.2009.
5 Fort Macquarie Tram Depot. In: http://en.wikipedia.org/wiki/Fort_Macquarie_Tram_Depot, retrieved 15.11.2009.
6 Baume, Michael (1967). The Sydney Opera House Affair. Sydney: Thomas Nelson (Australia) Ltd. p. 17.
7 "Ove Arup's Address to the Prestressed Concrete Development Group, London, on 14 January 1965", in: Michael Baume (1967). *The Sydney Opera House Affair.* Sydney: Thomas Nelson (Australia) Ltd. p. 118-130. p.120.
8 Ibid., p. 126.
9 *Sydney Architecture: Sydney Opera House.* In: http://www.sydneyarchitecture.com/ROC/QUA01.htm, retrieved 15.11.2009.
10 See note 7, p.118.
11 *Sydney Opera House.* Australian Government, Culture Portal. In: http://www.cultureandrecreation.gov.au/articles/sydneyoperahouse/, retrieved 15.11.2009.
12 *Sydney Opera House.* The City of Sydney. In: http://www.cityofsydney.nsw.gov.au/AboutSydney/HistoryAndArchives/SydneyHistory/HistoricBuildings/SydneyOperaHouse.asp, retrieved 15.11.2009.
13 *Sydney Opera House, New South Wales.* Australian Government, Department of the Environment, Water, Heritage and the Arts. In: http://www.environment.gov.au/heritage/places/national/sydney-opera-house/index.html, retrieved 15.11.2009.
14 *World Heritage List: Sydney Opera House.* UNESCO. In: http://whc.unesco.org/en/list/166, retrieved 15.11.2009.
15 *KULTURKANON,* (January 2006). Copenhagen, Kulturministeriet. In: http://kum.dk/graphics/kum/downloads/Kulturkanon/KK_Kulturkanon_januar06.pdf, p. 15, retrieved 15.11.2009.
16 *The Pritzker Architecture Prize: Jørn Utzon – 2003 Laureate.* The Hyatt Foundation. In: http://www.pritzkerprize.com/laureates/2003/index.html, retrieved 15.11.2009.
17 See note 2.

Pictures

1 http://www.visit.heritage.nsw.gov.au/16_subnav_09_3.cfm?itemid=5054880&imageid=5002981&sort_by=&item_name=&suburb_name=&product_category=&state_theme=&product_region=
2 – 6 http://www.greatbuildings.com/buildings/Sydney_Opera.html
7 – 19 author's archive

individual social responsibility
a case study in iga-city, mie-prefecture, japan

written
on January 22, 2010

following the lecture

Design of the Park Library in Medellin, Colombia

by Assistant Prof. Dr. Yoshiyuki Kawazoe, Landscape and Civic Design Lab. - Prof. Hiroshi Naito, Department of Civil Engineering, The University of Tokyo
http://keikan.t.u-tokyo.ac.jp/zoe/

as part of the lecture series

Sustainable Urban Regeneration B (winter term 2009/2010)

a lecture series offered by Department of Architecture, Faculty of Engineering, The University of Tokyo
http://www.arch.t.u-tokyo.ac.jp/

INTRODUCTION

To change the path from wasting resources towards minimizing the use of finite resources the 3R-strategy (Reduce, Reuse, Recycle) is regarded as a cornerstone of sustainability. In terms of building stock management this means reducing the 'scrap and build' mentality that focuses primarily on new building activities in favour of maintenance, renovation, upgrade and reuse strategies to extend the service life of existing buildings. Architects as building professionals are well aware of these issues and should regard themselves as pioneers in disseminating the knowledge about and advantages of such strategies. To reach an even wider audience than just the normal clients, a new understanding of Individual Social Responsibility of professionals may be necessary.

BACKGROUND

One of the buzzwords in contemporary discussions about sustainability is taking on the responsibility of corporations not only for their shareholders but for the societies in which they operate – Corporate Social Responsibility or CSR. To inform about their socially responsible activities corporations have started to compile so called CSR reports. But while talking about it we sometimes forget that it is the 'Individual which make the Corporate'. So if we speak about responsibility for the society we should speak about Individual Social Responsibility or ISR as well.

Generally it is well agreed upon the fact, that every citizen in a society has rights as well as responsibilities, the ancient rule of giving and taking. In a philantrophic point of view the act of giving comes before or even without considering taking. It may be described as *"the power of donating, volunteering & campaigning"* ("Individual Social Responsibility" 2009).
The WCIF ("WCIF position" 2009) describes it as *"the engagement of each person towards the community where he lives, which can be expressed as an interest towards what's happening in the community, as well as in the active participation in the solving of some of the local problems"*.
In my opinion it should be seen as a much broader concept, as this definition focuses only on the local community and should be opened up to include the global community and virtual communities as well. Even while travelling we encounter people we might engage with even if for a very short time only.

CASE STUDY

Iga City, Mie Prefecture, Japan

In 2004/2005 I lived in Japan for twelve months. After having worked for Toyo Ito for half a year I decided to use the next half year to travel the country and learn more about Japan. During this time I did some volunteering on the basis of lodge and food for work. One place I stayed for a while was Iga City in Mie Prefecture. There I had the chance to use my knowledge as an architect to repair an old Japanese wooden house, which was used as an English school for children and adults and where about three to five volunteers found accommodation.

When I arrived in February 2005, the house was in a very bad state. Not only was it neglected by the then residents and hardly maintained as a place for people to live, but some of the original wooden and tatami floors on ground floor where removed to make space for a car to park inside the house !! All the walls where covered with garden fences, which where also used as gates.
My immediate idea was to reverse some of the changes that had altered the house so badly.
After a couple of days for cleaning out garbarge and somehow organising available tools and materials that the volunteers found in the house, a couple of sliding doors as well, we proposed the owner to restore the wooden floor in the main room, the heart of the house. The owner didn't have much money but was willing to spend some 20.000 Yen for timber.

Even though the central room was our main aim, we basically cleaned and repaired almost the whole inside of the house, including a backyard building, that was used as kitchen and dining room, the garden and the shower with no financial support but our bare hands.

Some pictures (see below) show the work we did.

As I pass by this house at least once a year, I have regularly the chance to see how it develops over the years. I guess the owner's decision to use this house as accommodation for foreign volunteers that teach English was based on the fact that due to its originally bad state it was virtually impossible to let. I can even remember that the owner considered to pull it down and use the cleared site as parking space. But since two years a young couple has been living in the house. In this sense our efforts have contributed even further than just to improve the current situation. It may have helped in improving the house to a state where it became possible to find an interested tenant, thus contributing to a small-scale regeneration.

Originally nobody expected me to rebuild anything, instead just to teach a bit of conversational English. But a situation like this when one is able to help beyond the initial mutual agreement is a quite satisfying experience. Once finished everybody was full of surprise, the owner, the users and of course the volunteers that helped to make this miracle happen in just a couple of days.

CONCLUSION

To encounter situations like this, where one is able, because of professional knowledge maybe even more able than others to improve a situation, is always unexpected. But it should be regarded within the responsibilites of professionals to help with their abilities of professional expertise. If this kind of advice is paid, partly paid or eventually unpaid and simply a voluntary action depends on the situation of course, but should not be reduced to paid and thus purely professional responsibilities. In terms of social responsibilities, the surprise, joy and happiness of the people helped can be even more fulfilling than any payment, which highlights the fact, that it is always the 'Individual that make the Corporate'.

So I think, I will have many chances to contribute with my abilities to other people's and the society's benefit beyond obligations in my professional career.

REFERENCES

Individual Social Responsibility. (2009). In *isrworld.* Retrieved December 13, 2009, from http://www.isrworld.org/

WCIF position. (2009). In *Philantrophy - Social Responsibility.* Retrieved December 13, 2009, from http://www.wcif-bg.org/en/sr

That's how it used to be:

10.02.2005: Front room

10.02.2005: Central room after cleaning up

10.02.2005: Courtyard

10.02.2005: Backyard building

05.02.2005: Kitchen and dining room in backyard building

The change:

21.02.2005: Wood had arrived

22.02.2005: The doors shut properly

23.02.2005: Next came the primary loadbearing structure for the floor

24.02.2005: Then the secondary loadbearing structure

25.02.2005: And finally the boards

15.05.2005: Finished, three months later

Some “before – after“ impressions:

05.02.2005: The Garden – before ...

09.05.2005: ... and after

10.02.2005: Inner courtyard – before ...

16.05.2005: ... and after

tokyo

a short contemporary analysis

Tokyo, world's largest metropolitan area by population, a city with an 'empty center' (Roland Barthes), a city of chaos yet with a 'hidden order' (Yoshinobu Ashihara), a city for 'urban nomads' (Toyo Ito), full of 'pet architecture' (Atelier Bow-Wow), that has inspired architects, novelists and filmmakers equally. Authors tend to either praise it as a model city for the future or damn it as uninhabitable. Interestingly, both sides use often enough the same or similar arguments.

But apart from the like theoretical analysis with very often stunning insights, how does Tokyo compare to other cities in the world? To get some impressions I did an Internet search with the term “most livable cities“ and I was wondering what the results might be.

According to the Monocle ranking (“Top 25 Most Livable Cities 2009“, 2009), Tokyo is on place 3 as the “world's most livable megalopolis“. Reasons given include “efficient public transport, commitment to plant one million trees by 2016, service culture and great food“. Number 1 city is Zurich. According to the Mercer Top 50 ranking (Mercer Human Resource Consulting, 2009) in terms of quality of live, Tokyo is on place 35, the second Asian city after Singapore on 26. Tokyo scores 102.2 points. Number 1 is Vienna with 108.6 points, base city is New York with 100 points. In a separate ranking in terms of city infrastructure, Tokyo is on place 12 (103.4 points), the third Japanese city behind Tsukuba on place 4 (105.5 points) and Yokohama on place 5 (105.1 points). Number 1 city is Singapore with 109.1 points.

In our contemporary ultra-mobile and towards sustainability oriented society, a major focus seems to be on good public transport, which sheds a completely new light on the fact, that Tokyo has been shaped to a great extent by railway companies. It is often said that developers lacked a vision, but they were driven by a simple and economic impetus, how to bring as many people as possible in the shortest amount of time from home to work, time-savingly passing through shopping centers and the like. Here the paradigm of efficiency rules. That this has produced not only efficient means of transport but even well integrated solutions for mass transport becomes obvious, if compared to the excrescences of the metropolitan motorway network, that runs elevated through street canyons, above water canals and low-rise buildings, in front of glazed office buildings, casting shadow and polluting the air with exhaust fumes and noise. A feature correctly analysed and promoted in the 'fibercity' project from Hidetoshi Ohno is to increase the number of

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Towards the Livable City: Beyond the 100 Years Experience of Modernization

by Assistant Prof. Yu Nakai, Landscape and Civic Design, Department of Civil Engineering, The University of Tokyo
http://www.civil.t.u-tokyo.ac.jp/lab/inst-nakai.html

as part of the lecture series

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a lecture series offered by Department of Architecture, Faculty of Engineering, The University of Tokyo
http://www.arch.t.u-tokyo.ac.jp/

commuter stations, to make access along the railway lines ubiquitious and private cars even more obsolete.

The other three reasons given in the Monocle ranking can be devided into urban streetscape, which will become greener and cleaner once the one million trees, one per 9 inhabitants are planted, and interior amenities as good service and great food. Both are important for our mental and physical well-being.

That "Greening Tokyo" can be a guiding principle for the next decade was showcased during the 2016 olympic bid (Meinhold, 2009). Even though Tokyo lost the bid, the vision of a greener, cleaner, nature-infused megalopolis of the 21st century has great potential to become reality.

"If it [the issue of sustainability of cities] is going to be solved, it will be solved there [in Japan]" ("The Role of Architecture in Contemporary Society", 2004).

REFERENCES

Meinhold, B. (2009, October 1). *Tokyo's 2016 Olympic Bid Includes Stunning Solar Powered Stadium.* Retrieved February 8, 2010, from http://www.inhabitat.com/2009/10/01/tokyos-2016-olympic-bid-includes-stunning-solar-powered-stadium/

Mercer Human Resource Consulting. (2009, April 28). *Mercer's 2009 Quality of Living survey highlights - Global.* Retrieved February 8, 2010, from http://www.mercer.com/qualityofliving

The Role of Architecture in Contemporary Society. (2004, February 26). In *Japan Society.* Retrieved February 8, 2010, from http://www.japansociety.org/architecture_contemporary_society

Top 25 Most Livable Cities 2009. (2009, July-August). In *Monocle.* Retrieved February 8, 2010, from http://www.monocle.com/sections/edits/Web-Articles/Top-25-Cities/

List of metropolitan areas by population. (2010, February 8). In *Wikipedia: the free encyclopedia.* Retrieved February 8, 2010, from http://en.wikipedia.org/wiki/List_of_metropolitan_areas_by_population

public space in japan
the rise of civic space

After having spent only a couple of days in Tokyo in the year 2000 the visual disorder that entered my eyes wherever I looked was one of the phenomena that challenged my perception of a city. I have to add that Tokyo has been the first Asian city I ever visited.

This visual disorder as I felt it was directly related to the bustling, vibrant city, bursting with energy. In the central parts I could see people rushing around almost everywhere, market streets with shop owners noisily announcing their latest bargains, trains and cars on elevated tracks and roads. There wasn't any place to escape that rush, nowhere to relax it seemed.

What I was looking for was a simple bench, somewhere to sit down, to rest from restlessly running around. As it turned out, I wasn't able to find any. The reason is not that benches are simply non-existent, but that I was looking for them in places where they are usually placed in my own country, Germany. I was looking for benches at urban places, like city plazas or near fountains or within parks or temple areas or in market streets. One reason for the lack as came to my mind is surely the Japanese tradition of sitting on the floor and truly I saw construction workers eating their lunch box while sitting on the street, even between their cars.

Picture 1: a chair, not for sitting but to advertise hospitality of a restaurant, a typical pattern in Tokyo

But what startled me even more than just the lack of benches was the absence of many urban spaces as I was so used to. There were no plazas with statues or wide boulevards or market squares with fountains. At this point it may be helpful to understand the historical concept behind these kind of so called 'public spaces' in the West, that I was subconciously looking for. As Habermas (1962/1989) has analysed, prior to the 18th century European culture had been dominated by a 'representational' culture where the mighty publicly represented their power before the common people. This can be said to be true for the masters of the *oikos'* in the Greek *polis*, the Roman *castra* or military camps that are an origin for many cities and for the knights and kings during the feudal medieval times. Even the churches and city halls that frame so many market squares belong to this kind. The impact of 'representational' culture

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Architectural Design in Urban Fabric of Tokyo

by Professor Manabu Chiba, Department of Architecture, Faculty of Engineering, The University of Tokyo
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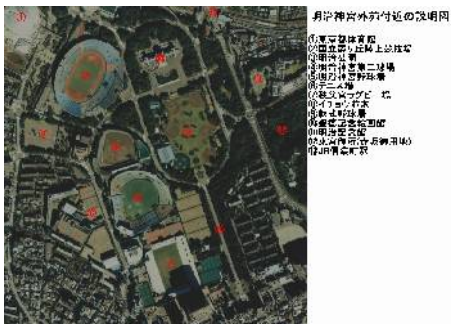
Picture 3: *koban* in Udagawaracho, Shibuya, community police station as public image of security

can be directly seen in urban spaces and it could be argued that this kind of representational city planning continues until the modern times, see Baron Haussmann's plan for Paris, Albert Speer's unrealised plan for Berlin, Oscar Niemeyer's plan for Brasilia, Le Corbusier's plan for Chandigarh or the city plans of Washington D.C. and Canberra.



Picture 2: The Outer garden of Meiji Shrine, an example of representational public space with the Meiji Memorial Picture Gallery as the perspectival focal point of the central axis.

An example of similar shape can be found even in Japan at the Outer garden of Meiji Shrine. But in general, representational spaces in Japan are slightly different. As Nakashima (1999) has pointed out, the garden surrounding the Imperial Palace together with other parks of Tokyo, *Akasaka Gosho* (Crown Prince's Palace), *Shinjuku Gyoen* (Shinjuku Imperial Garden), *Meiji-jingu* (Meiji Shrine), *Meiji-jingu gaien* (Outer garden of Meiji Shrine), *Hamarikyu-teien* (Garden of Hama detached palace), and *Ueno-koen* (Ueno Park), basically all larger parks in central Tokyo, together with dedicated forests throughout Japan, *Meiji no mori* (Forest of Meiji), *Showa no mori* (Forest of Showa), *Shinrin Koen* (Forest Park), *Kokumin no mori* (Forest of the Nation) and *Kenmin no mori* (Prefectural Forest) represent the non-political nature as well as the political nation for the people. As a more direct representation of public security and order I would name the many small neighbourhood police stations called *koban*, unique in itself as the represent an architecturally separate building typology (picture 3). But ultimately, if the vast nature and small boxes are images of public 'representational' spaces, than what is left for urban buildings?

Back to Habermas, in contrast to representational spaces he saw the rise of political *Öffentlichkeit*, 'public sphere' or publicness during the 18th century, when private people came together to discuss matters of public interest and publish their opinions in print media like newspapers to express their opinion on state decisions. These bourgeois' circles didn't enter into the established representational spaces, but were occupying interior spaces like salons or coffee houses and using newly established mass media to communicate, a decentralised and unpredictable challenge to state power. A similar, anti-authoritarian and egalitarian tendency can be attributed to Japanese tea house culture.

The common element of both, pre-18th century 'representational' and after-18th century *Öffentlichkeit* culture in Habermas' discussion is the existence of an inherent 'private' realm that is constituted by the family household (which roots back to the Greek *oikos*) or individual ('Cogito ergo sum') as its smallest member as opposed to the 'public' common realm.

If I reflect on Tokyo than it becomes obvious that the lack of a necessity to represent allows for facades to be plastered with commercial signs.

The absence of representational urban public spaces is counterbalanced by a sheer endless number of commercial interior spaces, from shops and restaurants to department stores and shopping malls, that advertise their services on the non-representational exterior shells (pictures 4, 5).
Ashihara (1986/1989) has emphasised the strive for content before form as the hidden order that underlies Japanese cities. But content in Ashihara's sense is not merely an internal function of a building but “to give sufficient attention to humane and natural environments“. With focus on the human dimension he interprets individual dwellings merely as “bedroom“ and reads the city as an extension of it, where parks serve as “family rooms“, office buildings as “parlors“, airports and harbors as “entryways“, and the like. If taken this concept further I can even say that the dwelling is not more than a 'part-time bedroom', other places can be the train, manga and internet cafes, massage chairs on display in department stores, capsule hotels, the desk at work or in the lab, the car as for many taxi drivers, love hotels that can be rented on an hourly basis or overnight, and even on top of a motorbike or bicycle a resting person can be seen (picture 6). Traditional *sentos,* public baths are the 'bathroom', free public 'toilets' are a Japanese novelty unknown in other metropolises and *conbinis,* so called convenience stores that can be found in close range provide services similar to a 24/7 'refrigerator'. In this sense the city seems to be filled with amenities that attract and serve basic human needs. It is the vision of an adjustable and humane city for living in contrast to a solidified and formal city for representation. The Japanese commodity based private city versus the European political public city.

But the reality is not as simple or opposed as this comparison may suggest. Neither purely public nor purely private interests can guarantee a livable city or the quality of the urban environment. It is a continuous balancing act between partly mutually exclusive interests, especially in times of continuing urbanisation. A slightly different light on the issue of urban quality is shed by Sorensen et al. (2008). Even though Ashihara's view emphasises the humane aspect of Tokyo, it widly ignores the fact, that urban planning did exist since the Meiji era, but with top priority on economic development over quality of urban life or environmental preservation. As neither the market (economic private interest) nor the government (authoritive public interest) can guarantee for quality, local communities have started to demand improvements and define visions for the future of the neighbourhood. Such movements are generally called *machizukuri* and are by now an accepted method of local governance, the rise of the political civil society (Sorensen, 2008; Watanabe, 2007).

Picture 4: Shinjuku downtown, a collage of commercial signs, advertising the interior services

Picture 5: facades not architecturally designed but branded signs of the contemporary city

Picture 6: a biker sleeping on his motorbike

CONCLUSION

Quality urban spaces of the 21st century will be civic spaces, that are "those spaces in which people of different origins and walks of life can co-mingle without overt control by government, commercial or other private interests, or de facto dominance by one group over another" and “in which civil society

Picture 7: Hachiko Square, an example of a railway station as a public meeting point, here the JR Shibuya station.

Picture 8: Yoyogi Park, an example of busking, street musicians.

groups have the physical, psychological, and social space to create their own new norms, shared values, and shared imaginaries for the future of neighbourhoods as shared spaces“ (Sorensen et al., 2008).

As I finally understood the differences in concept and the meaning of truly civic spaces I found many of such spaces also in Japan, traditional places with an ephemeral seasonal character as for instance shrines and temples during festivities, public streets or parks during celebrations like hanami or hanabi, private cafes during daytime, *fureai* called meeting places in metro stations, train stations in general as meeting places in a city where adresses are difficult to locate (picture 7), street musicians in Yoyogi Park in Tokyo (picture 8), the glass facade at the entrance of an office building that turns into a mirrored stage for dancing lessons of young people, small landscaped areas in front of high-rise buildings as part of 'specified block system' developments (floor area ratio bonus in exchange of open space), openly accessable university green areas, rather symbolic pocket parks of local communities as a result of *machizukuri* activities and so on. As a general rule, such spaces are not so obvious like the plaza type urban place, but once understood, their number is manifold and as they can be found virtually everywhere their decentralised locations are very convenient and appropriate for a mobile urban society.

REFERENCES

Ashihara, Y. (1989). *The hidden order.* (L.E. Riggs, Trans.). Tokyo and New York: Kodansha International. (1986).

Habermas, J. (1989). *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society.* (T. Burger, Trans.). Cambridge: MIT Press. (1962).

Nakashima, K. (1999). Representing Nature and Nation: National-Land Afforestation Campaign and the Production of Forest in the 1960's~1970's Japan. In T. Mizuuchi (Ed.). *Nation, Region and the Politics of Geography in East Asia* (pp. 13-29). Osaka: Osaka City University.

Sorensen, A., Koizumi, H., & Miyamoto, A. (2008). Machizukuri, civil society, and community space in Japan. In A. Daniere, & M. Douglass (Eds.), *The Politics of Civic Space in Asia: Building Urban Communities* (pp. 33-50). New York: Routledge.

Watanabe, S.J. (2007). Toshi Keikaku vs machizukuri: Emerging paradigm of civil society in Japan, 1950-1980. In A. Sorensen, & C. Funck (Eds.), *Living Cities in Japan: Citizens' movements, community building, and local environments* (pp. 39-55). London: Routledge.

PICTURES

1 author's archive
2 http://upload.wikimedia.org/wikipedia/commons/9/90/Jingu_gaien_air2.jpg
3 – 6 author's archive
7 http://studio360.files.wordpress.com/2008/11/hachiko-statue.jpg
8 http://www.mikesblender.com/indexblog77.htm

environmental architecture
fundamental and advanced technologies

ABSTRACT

Environmental architecture in itself is nothing new. In fact, all forms of traditional buildings are designed to alter environmental conditions. During the long history of mankind mainly passive strategies were applied that created habitable buildings in otherwise unpleasant or even harsh environments. In modern times many more active strategies were invented that made the passive appear obsolete, but the price we pay is an ever increasing and excessive use of energy generated from non-renewable resources that has many deleterious effects on the environment. To limit these negative effects fundamental and advanced technologies can be applied in the building sector. Furthermore, the application of widespread energy generation from renewable resources creates new opportunities, as buildings change from passive through active to self-sufficient modulators of environmental conditions.

INTRODUCTION

Mankind is building houses for many reasons. To alter environmental conditions, to shield and protect the inside from unpleasant or unwanted conditions that occur outside has been a very basic one since the first primitive hut was erected. Pre-modern structures can be ingeniously designed environmental devices, utilising existing environmental conditions as the daily or yearly available resources of wind, sun, water, trees, sand or stones up to the fullest to create an internal climate that might be far from what we call ideal nowadays, but provided local residents with a habitable shelter to satisfy their basic needs. But the development of modern lighting, heating, ventilating and air-conditioning systems have turned the architecture inside out. They have empowered mankind for the first time in their history to create inside conditions almost independently of external conditions, everywhere, anytime. Banham (1984) has called this the "liberation [of] performance from form" (p. 310).

Unfortunately, great opportunities have often a price that has to be paid for their achievement and the price that we pay for making any form and environment habitable is previously unknown, excessive energy consumption. The energy is mainly generated from non-renewable fossil fuel resources and the emission of CO_2 causes global warming which is the reason for predicted deleterious changes of the environment on a global scale. Generally speaking it is an accepted matter that we need to reduce

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Japanese Strategy for Global Warming Issues and Energy Conservation in Buildings

by Professor
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energy consumption and decrease CO_2 emissions. Although there are no commonly accepted roadmaps of how to achieve it, but the wise exploitation of available knowledge and technology can make a big contribution.

DISCUSSION

In the building sector fundamental and advanced technologies can be applied. This very simple differentiation separates well-established and widely used mature technologies on one side from frontier technologies, still under research with the strong potential of becoming fundamental technologies in the near future on the other side. Fundamental technologies can be further divided into passive and active strategies. Passive strategies utilise or shield from prevalent environmental conditions. Banham (1984) described the application of such strategies as "conservative mode" and "selective mode" (p. 23). In a purely conservative mode the building is designed to prevent unwanted conditions from entering while keeping desired conditions inside. On the other hand, in a purely selective mode the building is designed to admit desirable conditions from outside and expel unwanted conditions from within. Traditional architecture has always been a mixture of both "modes", with preferences according to different climatic conditions. Both passive strategies regulate available conditions without the use of additional energy. Examples include building geometry and orientation, interior zoning, heating by the sun or shading from the sun, open or closed envelopes, insulation and inside thermal mass for heat storage, cross ventilation and daylighting. In pre-modern times, buildings were designed to make full use of the climatic conditions, or in other words, the environmental performance of a building was dictated by its form.

The other fundamental technology are active strategies that use additional power and Banham (1984) calls their application the "regenerative mode" (p. 23). In pre-modern times the utilisation of active strategies included heating with open fires or stoves using fire wood, charcoal, etc., and lighting from the same sources, torches or candles. Their effect was limited as the resources were usually scarce and the burning inefficient. Only modern inventions greatly improved variety and efficiency. Examples include electrical lighting with incandescent light bulbs, fluorescent tubes, ventilation and air-conditioning systems with the possiblity of humidity control, hot water supply systems, basically, what is generally summarised as electrical and HVAC systems. Initially such systems were developed to simply improve climate conditions, but their availability and the sudden ability to design buildings without the need to consider external conditions resulted in a revolutionary "liberation [of] performance from form" (Banham, 1984, p. 310). An emphasis on active strategies resulted very often in buildings that neglect and even counteract passive potentials, further increasing the energy demand.

When only considering the fundamental technologies, a double strategy can help in reducing energy demand. Firstly, the wise utilisation of passive strategies to reduce the

need for additional energy, and secondly, the development and installation of highly energy-efficient appliances. The latter includes for example heat-pumps or LED-lighting. The focus of passive strategies lies very often on the insulating performance of the envelope, but should not be limited to it. Considering daylighting to limit the need for artificial lighting, but avoiding heat gains if undesirable, or admitting natural cross ventilation instead of using mechanical ventilation, but avoiding draughts are just two examples. In other words, the demands on the regulative capacity of the envelope have steadily increased. In fact, the envelope itself is changing from a passive mediating element into an active, energy-regulating device. Here, the advanced technologies will have a major impact.

As described earlier, advanced technologies are frontier technologies, mostly still under research but with the strong potential of becoming fundamental technologies and widely-used in the near future. Two fundamentally different developments can be distinguished. On the one side are those technologies, that aim at further improving the overall energy efficiency. Examples are cogeneration systems, heat recovery

Technology	Elementary			Advanced
Strategy	Passive	Active		Passive/Active
Mode according to Banham	“Conservative“ and "Selective"	“Regenerative“		
Heating	sun heating closed envelope	open fire or stoves	air-conditioning and mechanical ventilation with humidity control	cogeneration, solar thermal heating and cooling
Cooling	sun shading wind open envelope	adding moisture (dry climates)		
Ventilation	cross ventilation	manual fan		heat recovery
Humidity	-	-		
Lighting	day lighting	torches, candles	incandescent lighting	distant daylighting with fiber optics
General	building geometry, orientation, interior zoning, envelope	“liberation [of] performance from form“		
Power	sun	fuel, mainly from renewable resources	electricity, mainly from fossil, non-renewable resources	electricity from renewables (solar, wind, biomass, geothermal), waste heat
Storage	thermal mass (short term)	fuel (long therm)	supply on demand	battery, water, ground (short to long term)

Table 1: Elementary and Advanced Technologies

systems using used air, sewage water or geothermal energy, solar thermal heating and cooling systems. On the other hand are a completely different kind of technologies. I am speaking of devices that transform the renewable, abundantly and freely available environmental energies, store them and retrieve them when needed, to liberate performance from supply. The most striking example are photovoltaic cells, that transform solar light into electrical energy, completely noiseless and maintenance free. Woven into the building's fabric they can charge batteries and supply the required energy for achieving the building's intended performance when needed. Thus a building changes from an energy consuming structure into a truly self-sufficient, environmental energy modulating device. If the generated energy greatly surpasses the building's demand, it may even liberate the building from the currently prevailing energy efficiency only paradigm and opens the door into a still unthinkable future of abundant energy.

CONCLUSION

To achieve a significant reduction in energy consumption as well as CO_2 emissions the following measures should be combined.

- Energy regulating, high-performance envelope (passive strategy, fundamental technologies)
- Energy saving, highly efficient equipment (active strategy, fundamental technologies)
- Energy recovery, generation from renewables and storage (advanced technologies)

As an outlook into a near future, passive elements as for instance the building's envelope may be upgraded with clip-on or integrated solutions into active elements, that can regulate the internal climate more efficiently than in the passive mode. Genereally speaking, buildings are changing from pre-modern, mainly passive through modern, active to future, self-sufficient modulators of environmental conditions. They will provide ideal internal conditions while making full use of external renewable resources.

REFERENCES

Banham, R. (1984). *The Architecture of the Well-tempered Environment* (2nd ed.). Chicago: University of Chicago Press.

japanese traditional architecture
a personal view

My first visit to Japan happened in August 2000, when I attended a three week summer workshop taking place in Saga city in Saga prefecture on the island of Kyushu, jointly organised by the Bauhaus University Weimar, Germany and Waseda University Tokyo, Japan. Naturally I was stunned and overwhelmed by a culture and its visual urban expressions I was not used too. During this time I had the chance of staying in a *ryokan*, a traditional Japanese hotel for one night. What I still recall as a major impact in my appreciation of an unknown spatial experience was a narrow space in room width, set between the main *tatami* room and the fully glazed outer facade, but separated from the room by the typical *shoji,* sliding doors. It was a symbolic version of the traditional *engawa*, that mediates between inside and outside while belonging to both spaces. In the *ryokan* it gave me the feeling of sitting "within" the buildings envelope. I felt not as being inside anymore as I had separated myself from the room by sliding doors, but much more aware of the happenings outside. This reminded me very much of the feeling I had when sitting in the oriel window at home in Germany in the early 20th century Jugendstil building I was living in during that time.

As I realised much later, this transient space is very essential in Japanese architecture. The feeling and meaning extends even further. Traditional buildings are seen as embedded in and derived from nature. It is not only the use of materials like wood, nor the untreated insertion of a naturally and arbitrary grown trunk that symbolically connects the house with its surrounding. It is not the juxtaposition of building and landscape, but essentially the ease and variety in which the user can alter his position towards environmental conditions.

As almost every kind of vernacular, pre-modern architecture, the interaction of building and environmental conditions has strongly shaped the building form, a centuries lasting optimisation process to make the best use of prevalent natural resources of building materials and weather conditions. As in many summer hot and humid climates a shaded but cross ventilation enabling shelter made from abundantly available and fast growing wood that results in light-weight structures with low thermal mass is an often seen result. The necessity to keep the main structure dry to prevent rapid decay has resulted in deep overhanging eaves and a resulting intermediary space, that is the *engawa*. The set-back of the main spaces prevents rain from entering and the open *engawa* allows for

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Discovering Urban Heritage in Asia

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http://www.arch.t.u-tokyo.ac.jp/

quick dry up. Even though it can be seen as a product out of structural necessity, the *engawa* has many other good effects.

As I have mentioned earlier, traditional houses in Japan are made for a summer hot and humid climate. As perfectly as they prevent direct sun from heating the inner space but permit desirable cross ventilation for cooling, the same can not be said during generally cold winters. There is hardly any significant temperature difference between inside and outside during harsh winters. Even in forest rich areas, firewood was merely used for cooking but hardly for heating. The ease in which draught cools the room and lack of thermal mass renders even central fireplaces useless beyond the immediate range of their heat radiating flames and after the fuel has been fully burned. But here again, the *engawa* plays an important role. Even though the deep hanging eaves efficiently block the summer sun, they nevertheless allow the much lower winter sun to heat the *engawa.* I can say from personal experience that it is a much nicer and warmer feeling to sit on a mild winter day outside on the planks of this intermediary space, warmed by the winter sun, than to sit in the draughty interior space heated by a modern oil stove. If the *engawa* was built on all sides, the people can shift their daily routines according to the sun.

This deliberate and conscious interaction with prevalent and mostly favourable environmental conditions is what I like in traditional Japanese architecture.

parkstadt
n.lab – neues . leben am berg

written
on June 9, 2009

PARKSTADT verbindet Natur und Stadt, nicht indem es die Natur der Stadt unterordnet, wie im üblichen Begriff des 'Stadtparks', sondern in einer begrifflichen Überordnung, der Einordnung der Stadt in die menschlich geprägte Natur, eine neue Form der kulturellen Landschaft. Das Ziel der PARKSTADT ist, einen eigenen Maßstab für das n.lab – "Neues Leben am Berg" zu definieren.

PARKstadt

Das Bearbeitungsgebiet war ursprünglich stark hierarchisch aufgrund der früheren militärischen Nutzung gegliedert. Davon zeugen noch die verbleibenden elf parallel angeordneten Zeilenbauten. In den verbliebenen Zwischenräumen hat sich die Natur ausgebreitet, entlang den Straßen wirken Baumreihen und Alleen wie „Grüne Finger“ oder „Grüne Fasern“, die das Gebiet wie Bronchien durchziehen und mit Sauerstoff und Frischluft versorgen. Diese Fasern vernetzen sich und prägen den Charakter des Quartiers.
Die vorgeschlagene Haustypologie für die PARKstadt ist das STADThaus, individuelle, in Höhe, Volumen und Ausprägung unterschiedlich gestaltete Punkthäuser, die sich in dem landschaftlichen Kontinuum des Parkgeflechtes einnisten.
Die Struktur der PARKstadt bleibt durchlässig für Licht und Luft, für Mensch und Tier. Stadtraum und Landschaftsraum fließen ineinander.

STADThaus

Jedes Haus und insbesondere Wohnhaus ist geprägt durch den Außenraumbezug jeder einzelnen Wohnung, meist charakterisiert

durch die Art der Erschließung der Wohnung und die Größe des Außenraumes. Dies wiederum steht in direktem Bezug zur Wohndichte. Das Ziel des STADThauses ist, die Vorzüge der verschiedenen traditionellen Wohnformen wie Eigenheim im Grünen, innerstädtisches Bürgerhaus oder preiswerte Geschosswohnung zu überlagern. Ähnlich einem Baum, der in drei Hauptbestandteile gegliedert werden kann, Wurzel, Stamm und Krone, ist auch das STADThaus vertikal dreigeteilt. Unterscheidungsmerkmale der drei Zonen sind wie vor genannt, die Art der Erschließung und der Bezug zum Außenraum. Die Wurzelzone ist durch den direkten Erdbodenbezug gekennzeichnet. Der Außenraum kann hier direkt „nach außen“ vorgelagert werden und z.B. als Garten oder Terrasse genutzt werden. Die Stammzone setzt auf der Wurzel auf und zieht den Außenraum „nach innen“ in die Gebäudekubatur in Form großzügiger Loggien hinein. Die Kronenzone setzt dem Stamm die Krone auf, wächst sozusagen in die Höhe und ebenso strebt der Außenraum „nach oben“ in Form von Terrassen auf dem Dach. Wohnraum verwebt sich so mit landschaftlichem und städtischem Raum.
Eine grundsätzliche Doppelgeschossigkeit der Wurzel-, Stamm- und Kronenzone erlaubt eine maximale Haushöhe von sechs Geschossen. Dies ermöglicht die Auflockerung der Erdgeschosszone bei gleichzeitiger Verdichtung in der Höhe. Jede Zone kann individuell in mehrere Einheiten unterteilt werden, horizontal, vertikal oder auch räumlich verschränkt; open-plan-Apartment, Maisonette oder kleinteilige Familienwohnung; eine Lebensumgebung, die offen für die verschiedensten Lebensstile, Wohn- und Arbeitsformen ist, „mix use, mix size, mix social, mix age.“ (Kees Christianse)

HAUSgarten

Im Konzept der PARKstadt sind vertikale STADThäuser und horizontale HAUSgärten zueinander gefügt. Ein HAUSgarten ist der Außenraum um ein STADThaus herum, in der Summe sind es alle Zwischenräume zwischen den STADThäusern. Es ist ein Freiraum mit wechselnder Weite und wechselndem Horizont, der private, hausgemeinschaftliche und öffentliche Bereiche aufnehmen kann. Im Zusammenspiel mit der sich „nach außen“ öffnenden Wurzelzone der STADThäuser katalysiert sich das urbane Potential. Nutzungen für gemeinschaftliche Zwecke und Dienstleistungen beleben das städtische Umfeld. Aber auch private oder gemeinschaftliche Gärten und räumlich übergeordnete Bereiche wie die sportlichen Aktionsfelder oder die Parkwiese nebst Wochenmarkt finden hier ihren Platz. In Abstimmung mit den Nutzern kann die Größe der jeweiligen Bereiche individuell festgelegt und gestaltet werden.
Ein fußgängerfreundliches, feinmaschiges Netz verbindet die heterogenen Außenräume.

GARTENbaum und BAUMpark

Vernetzung kann als das Gegenteil von Autarkie betrachtet werden. Grundsätzlich sind Gebäude meist über das Erdgeschoss horizontal mit der Umgebung vernetzt, die vertikale Erschließung erfolgt meist autark.

Bei einer Variante des STADThauses wird die vertikale Erschließung aus der hochgedämmten Thermohülle herausgelöst und dem öffentlichen Außenraum hinzugefügt. Das erhöht den Nutzflächenanteil innerhalb der hochwertigen Thermohülle und ermöglicht von der vertikalen Erschließung aus vielfältige Sicht- und Blickbeziehungen, die Teilnahme und Inanspruchnahme des Au ßenraumes durch die Hausbewohner in der dritten Dimension.
In jeden Garten gehört ein Baum, im HAUSgarten ist dies der GARTENbaum. Im wörtlichen Sinne sind dies die Parkbäume, im übertragenen Sinne sind es auch die baumähnlichen STADThäuser.
Viele Bäume formen einen Park, so auch im BAUMpark, der den Kreis zur PARKstadt wieder schliesst.

In der PARKSTADT steht der Wortbestandteil „PARK“ somit übergeordnet sowohl für die Bäume, als auch für die Häuser. „STADT“ steht für die Aktivitäten der Bewohner, die kulturelle PARKSTADT-Landschaft.

Energiekonzept

Zusätzlich zu Photovoltaikanlagen auf Dachflächen wird die Errichtung weiterer Anlagen an Straßen des überörtlichen Verkehrs vorgeschlagen. Nördlich des Bearbeitungsgebietes befindet sich mit der Umgehungsstraße eine solche Straße, in deren Abstand von 20m bzw. 40m das Errichten von Gebäuden nicht oder nur eingeschränkt gestattet ist. Darüberhinaus sind diese Flächen aufgrund der Lage verkehrstechnisch ideal angeschlossen, was sowohl Installation als auch Wartung enorm einfach gestaltet. In Deutschland

gibt es 231.359km Straßen des über örtlichen Verkehrs (Statistisches Bundesamt 2007). Falls nur 1% davon geeignet wären und nur 1m² zusätzliche Solarfläche je m Straße errichtet werden könnte, wäre das bereits ein gigantisches Potential von 1,8 Mio.m² zusätzlicher Solarfläche und 231GWh Strom pro Jahr.
An der ca. 750m langen Umgehungsstraße, die das Bearbeitungsgebiet nach Norden begrenzt, gibt es im Bereich 5 bis 40m Abstand zur Straße unter Ber ücksichtigung des Baumbestandes ein grafisch ermitteltes Potential von max. 3700m² Solarfläche, ca. 5m² pro lfd.m Straße, was 476MWh pro Jahr und dem Strombedarf von ca. 333 Personen entspricht (Durchschnitt aus 1- bis 4-Personen-Haushalten). Damit ließen sich ca. 264to CO_2 pro Jahr einsparen.

Realisierbarkeit in Stufen

Das Konzept ist stufenweise realisierbar, insgesamt sind bis zu acht (0 bis 7) Baufelder angedacht. Die kleinteilige Struktur ist ideal für einen vielfältigen Mix an verschiedenen Bauherren, wie Wohnungsgenossenschaften und Investoren, aber auch Baugruppen und Einzelpersonen.

721003

PARKSTADT

PARKstadt STADThaus HAUSgarten GARTENbaum BAUMpark

PARKSTADT

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Städtebaulicher Rahmenplan - M 1:2000

Luftbild mit Baumassenstudie

Grüne Finger im Bestand - M 1:5000

Baufelder 0 bis 3 - Parkstadt - Stadt im Park

Baufeld 4 - Sport, Freiflächen und Parkhaus

Photovoltaik und zukünftige Baufelder 5 bis 7

GARTENbaum und BAUMpark

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PARKSTADT

PARKstadt STADThaus HAUSgarten GARTENbaum BAUMpark

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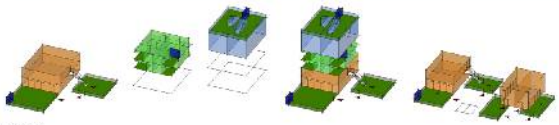
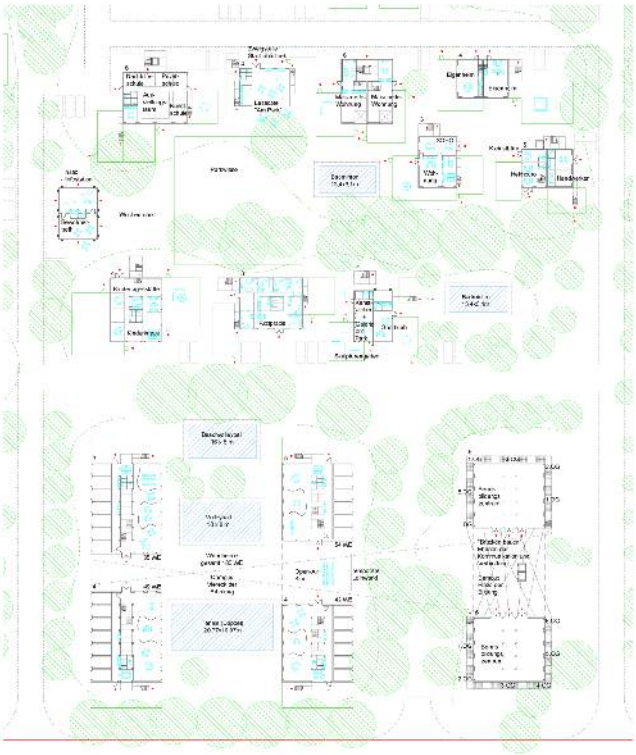
Im Konzept der PARKstadt sind vertikale STADThäuser und horizontale HAUSgärten zueinander gefügt.
Ein HAUSgarten ist der Außenraum um ein STADThaus herum, in der Summe sind es alle Zwischenräume zwischen den STADThäusern. Es ist ein Freiraum mit wechselnder Weite und wechselndem Horizont, der private, hausgemeinschaftliche und öffentliche Bereiche aufnehmen kann.
Im Zusammenspiel mit der sich "nach außen" öffnenden Wurzelzone der STADThäuser katalysiert sich das urbane Potential. Nutzungen für gemeinschaftliche Zwecke und Dienstleistungen beleben das städtische Umfeld. Aber auch private oder gemeinschaftliche Gärten und räumlich übergeordnete Bereiche wie die sportlichen Aktionsfelder oder die Parkwiese nebst Wochenmarkt finden hier ihren Platz. In Abstimmung mit den Nutzern kann die Größe der jeweiligen Bereiche individuell festgelegt und gestaltet werden.
Ein Fußgänger freundliches, feinmaschiges Netz verbindet die hetergenen Außenräume.



STADThaus

Jedes Haus und insbesondere Wohnhaus ist geprägt durch den Außenraumbezug jeder einzelnen Wohnung, meist charakterisiert durch die Art der Erschließung der Wohnung und die Größe des Außenraumes. Dies wiederum steht in direktem Bezug zur Wohndichte.
Das Ziel des STADThauses ist, die Vorzüge der verschiedenen traditionellen Wohnformen wie Eigenheim im Grünen, innerstädtisches Bürgerhaus oder preiswerte Geschosswohnung zu überlagern. Ähnlich einem Baum, der in drei Hauptbestandteile gegliedert werden kann, Wurzel, Stamm und Krone, ist auch das STADThaus vertikal dreigeteilt.
Unterscheidungsmerkmale der drei Zonen sind wie vor genannt, die Art der Erschließung und der Bezug zum Außenraum. Die Wurzelzone ist durch den direkten Erdbodenbezug gekennzeichnet. Der Außenraum kann hier direkt "nach außen" vorgelagert werden und z.B. als Garten oder Terrasse genutzt werden. Die Stammzone setzt auf der Wurzel auf und zieht der Außenraum "nach innen" in die Gebäudekubatur in Form großzügiger Loggien hinein. Die Kronenzone setzt dem Stamm die Krone auf, wüchsi sozusagen in die Höhe und ebenso strebt der Außenraum "nach oben". Wohnraum verwebt sich so mit landschaftlichem und städtischem Raum.

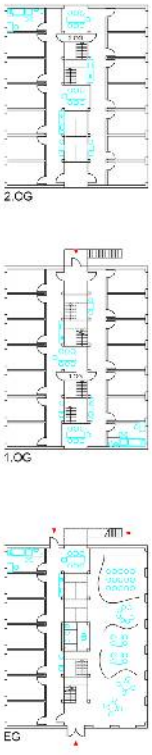
Eine grundsätzliche Doppelgeschossigkeit der Wurzel-, Stamm- und Kronenzone erlaubt eine maximale Haushöhe von sechs Geschossen. Dies ermöglicht die Auflockerung der Erdgeschosszone bei gleichzeitiger Verdichtung in der Höhe. Jede Zone kann individuell in mehrere Einheiten unterteilt werden, horizontal, vertikal oder auch räumlich verschränkt; loop-plan-Apartment, Maisonette oder kleinteilige Familienwohnung; eine Lebensumgebung, die offen für die verschiedensten Lebensstile, Wohn- und Arbeitsformen ist, "mix use, mix size, mix social, mix age." (Kees Christianse)
Vernetzung kann als das Gegenteil von Autarkie betrachtet werden. Grundsätzlich sind Gebäude meist über das Erdgeschoss horizontal mit der Umgebung vernetzt, die vertikale Erschließung erfolgt meist autark. Bei einer Variante des STADThauses wird die vertikale Erschließung aus der hochgedämmten Thermohülle herausgelöst und dem öffentlichen Außenraum hinzugefügt. Das erhöht den Nutzflächenanteil innerhalb der hochwertigen Thermohülle und ermöglicht vielfältige Sicht- und Blickbeziehungen, die Teilnahme und Inanspruchnahme des Außenraumes durch die Hausbewohner in der dritten Dimension.



Baufelder 0 und 1 - M 1:500

Entwicklung

Die Entwicklung des Gebietes ist in verschiedene Baufelder eingeteilt. Baufeld 0 kennzeichnet den Bereich der noch unsanierten Bestandsgebäude 7 bis 10. In Gebäude 10 ist die Unterbringung des Berufsbildungszentrums angedacht, in den Gebäuden 8 und 9 Wohnheime.
Die Umgestaltung der Bestandsgebäude folgt dem vorgenannten Prinzip der Auflockerung der Erdgeschosszone bei gleichzeitiger Verdichtung in der Höhe. Im Einzelnen heisst das, jedes der drei genannten Gebäude wird mittig durchbrochen, so dass zwei Teilgebäude bleiben. In der Länge gekürzt, wird den Teilgebäuden eine teilweise mehrgeschossige Krone aufgesetzt. Hier können beispielsweise für das BBZ größere bzw. höhere Räume eingerichtet werden, die in der bisherigen kleinteiligen Raumstruktur nur schwer zu realisieren sind. Um die maximale Raumflexibilität zu erreichen, wird die komplette vertikale Erschließung des BBZ nach außen gelegt, die Treppen an der Gebäudehülle entlang und Fahrstühle mittig zwischen den Teilgebäuden. Die Teilgebäude sind über Brücken miteinander und den Fahrstühlen verbunden.
Die vertikale Erschließung der Wohnheime erfolgt dagegen im Inneren. Hierfür wird der vormalige mittlere Gang als versetzte Treppenanlage ausgebildet. Alle Gemeinschaftsräume wie Küchen und Essbereiche sind zu dieser mittigen Kommunikationszone hin ausgerichtet und durch Glaswände unterteilt, um maximale Sichtbeziehungen zwischen den Gemeinschaftsbereichen zu ermöglichen.
Baufelder 1 bis 4 sind für die mittelfristige Entwicklung angedacht, Baufelder 5 bis 7 für die langfristige.



Wohnheim - M 1:250

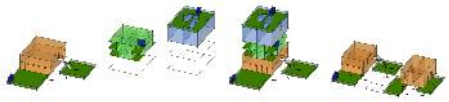
Bautypanalyse:

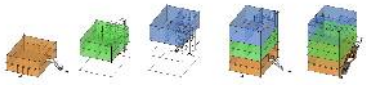
Typische Wohnhaustypologien, die auch in Weimar zahlreich vorkommen, sind Einfamilien-/ Reihenhäuser, innerstädtische Bürgerhäuser und in Satellitenstädten errichtete mehrgeschossige Plattenbauten. Diese Typologien kommen fast ausnahmslos in monotypologischen Stadtquartieren vor.

Vorgeschlagen wird, die in der modernen Stadtplanung vorherrschende großflächige horizontale Zonierung aufzugeben und stattdessen die unterschiedlichen Qualitäten der einzelnen Typologien in unmittelbarer Nachbarschaft, sprich in der Vertikalen eines Baukörpers zu kombinieren.

So radikal dieser Ansatz erscheinen mag, er ist jedoch nicht ohne unmittelbare Vorläufer.
Wer aufmerksam die Häuser der Jungendstilzeit in Weimar betrachtet, wird feststellen, dass auch diese meist drei- bis viergeschossigen Häuser eine stark ausgeprägte vertikale Gliederung aufweisen.

Sowohl bei den Jugendstilhäusern als auch beim Entwurf der PARKSTADT ist der Bezug zum Außenraum die die Gestalt bestimmende Einflussgröße. Gärten im Erdgeschoss, Loggien und Balkone im Mittelgeschoss, sowie Dachgauben bzw. Dachterrassen im Obergeschoss sind Ausdruck der Schnittmenge von Innen- und Außenraum.





catching nature

a school upgrade for hyderabad, india

A competition entry for the 2009 Open Architecture Challenge: Better Classroom Design

written
on May 31, 2009

The 2009 Open Architecture Challenge: Better Classroom Design competition was hosted by Architecture for Humanity, http://openarchitecturenetwork.org/competitions/challenge/2009

The competition entry was done in collaboration with students of Prof. Kazuhiko Namba laboratory: Ryo Ishida, Sato Takashi, Kuroda Mashu, Fukuda Hiroshi, Tan Toon Cheng and Rina Kellermann.

1. Introduction and Design Process

"Humans are creative beings." [1]

When thinking about designing and an environment for children, imagination becomes the key to their world, where fantasy is everything and money nothing. Our design team welcomed the children as vital in the process of designing an environment, where they are going to spend many fruitful years of their young life. So as their physical participation was not possible, we accepted the visual expression of their ideas and creations transported by the drawings and videos provided as their virtual representations. We utilized as much as possible and after listening and watching the videos about the different schools we started using word-snippets from teachers and children to channel our intuition and craft. We used a cooperative sketching and brain storming method during the whole time, just to mention one method of how to include the children. Drawings from the children were taken and successively amended by all team members. Thus the creative input and ideas from the children are incorporated into the design process, productively reflected and nurtured by all team members working together. It became a collaborative and fluid method employing the expertise of different people and fields.

2. Building as environmental device

"Teaching should always be joyful, fun and easy."

Rather then seeing the building as a simple envelope for certain school functions that happen inside, we wish to create a learning environment that helps to activate the basic understanding of the human natural and built environment. The building shall become an environmental device where natural occurrences like wind and rain and sunshine and shadow can be directly experienced in its rich diversity. Furthermore, the building shall make maximal use of natural lighting and ventilation to optimize the spatial conditions. In overlaying rich spatial environments with technically sustainable and affordable solutions we wish to create and provide inspiring learning environments where children and teachers love to be. We aim to amplify the status of each school as being a part of and a big chance for the community and each child individually.

2.1 Reclaimed inner yard

Due to site constraints and the function of the perimeter walls as closed boundary walls, where no

windows are provided, the existing ground floor gives a very underground or autistic impression. The connection to the outside world can only be maintained through a long and narrow entrance passageway and narrow openings in the ceiling. When looking at them from a different perspective, the ceiling openings are like windows toward the exterior, through which daylight and fresh air and even rain can enter. By extending the amount of these openings in series along the outer wall, they start to form a space which is neither fully inside nor outside. It is a kind of courtyard along the vertical perimeter of the building's envelope. In comparison to a compact inner courtyard this perimeter yard can affect much more of the inner space by the simple fact of the yard's longer boundary. To put it simple this perimeter yard is a retrieved exterior space that was forgotten during the construction of the school building, a space where environmental conditions like sun and rain and wind can be freely experienced, where nature and people start to grow and blossom.

2.2 Wind and ventilation

Wind is the best natural air conditioner, its movement accelerates temperature exchange. In a hot environment a slight breeze can add to the comfort. Our research has revealed that wind in Hyderabad is coming from different directions, Northwest in summer and Southeast in winter. To utilize the wind movement for natural ventilation of the building we install four wind towers which connect to ground floor and define the end points of the perimeter yard. These towers work basically as chimneys to

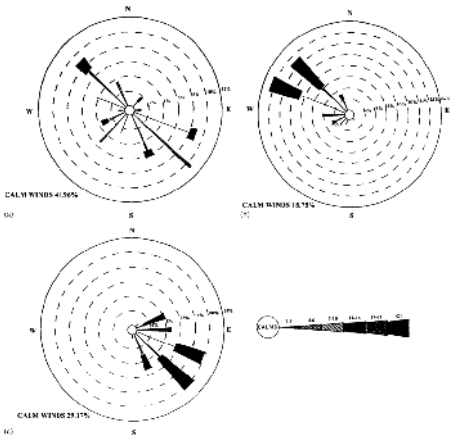


Figure 1: Windrose Hyderabad

siphon used air from inside the building. They are equipped with chimney cowls to support their function using the speed of wind by the Venturi effect. Fresh air can enter through the ceiling openings and circulate throughout the building.

2.3 Sun and lighting

Beside the fresh air also daylight can reach the ground floor more naturally through the perimeter yard. To maximize the amount of natural lighting the perimeter wall will be painted with a silver color, which is very effective but nevertheless cheap. The wind towers are painted black to boost their convection capability by transforming solar radiation into heat.

2.4 Rain and spatial renaturation

When rain falls it will freely pass through the openings down to ground floor. Beside air and sun this is the last ingredient needed to assure the growth of flowers or plants. As natural green is the most refreshing and calming color, flower pots can be freely put into the perimeter yard or even attached to the wall. Their presence will enhance the overall quality of the adjacent

interior spaces dramatically, in terms of air quality, like amount of oxygen and cooling by water evaporation, and friendliness. Empty pots can store excessive water for additional evaporation.

3. Learning spaces

"Children can only learn what they are ready to learn."

In our opinion the school should be organized as much as possible like an open-plan school, which means that fixed separations between learning spaces (e.g. "classrooms") should be minimized. An open-plan school provides much more flexible arrangements for teaching and learning. In cases like a growing class where number of pupils are increasing or combining classes in case a teacher is ill, the size of the learning spaces can easily be altered. Furthermore, "open-plan" can also be interpreted to mean that the school is open to both the pupils as well as the rest of the community. So taken from the many possibilities of how to arrange the learning spaces, on the floor plan drawings we are showing just some options.

3.1 Ground Floor

Starting on ground floor we are showing a rather strict or partitioned layout. Some existing brick walls aligned to the position of the columns are maintained.
In the center we are proposing the new computer lab as a diamond shaped space. The computer lab will be the most artificial space in the whole school. The lab is the home base for any kind of computer based learning and teaching, but if needed and thought beneficial mobile stations can be easily taken to adjacent classrooms.
For security reason it is enclosed by brick and glazed walls up to a height of 2/3rd of the floor height, which allows for natural ventilation of the lab space and will keep running costs down. The glazed walls limit free movement but neither view nor light. Due to the position of the lab centrally on ground floor and the transverse orientation within the rectangular space, the ground floor is segmented into four similar sized spaces each facing one of the glazed walls. This provides for better ventilation air flow around the enclosed space. The lab will be lighted artificially. As we think the computer lab to be in use for the whole school day, it is emitting light into the adjacent classrooms. They on the contrary rely fully on external lighting sources, natural from the perimeter yard and artificial from the lab. This will help to keep running costs down.
The lab functions also as the building's central power distributor, as a kind of hub where all cabling starts or terminates. Horizontal distribution runs along the ceiling but vertical to the upper floor through the perimeter yard. Here it forms part of the vertically rising nature of the perimeter. Similarly the distribution of water to ground and upper floor is intended to run in the yard as well. Therefore the provision of all open classrooms with sun light, air, electricity and water originates in the perimeter yard. Due to the intimate size of the learning spaces on ground floor we imagine them ideal for subjects that need intensive supervision and advice from the teacher like information technology (in the computer lab) and science subjects (rooms are equipped with electricity and water).

3.2 Upper Floor

The upper floor in contrast is utilizing free form or floating space partitions made of fabric which is spanned with bamboo sticks. Thus the size of each space is adjustable to the required size based on the number of pupils. Furthermore, an open sitting arrangement emphasizes a more open teaching method. Space partitions made of soft fabric are good for sound insulation. Here we can easily imagine language classes that require intensive interaction and communication between the pupils.

3.3 Top Floor and Roof as fifth facade

The existing roof top is for future expansion. Here for the first time after circulating through the building a view to the surrounding city scape opens up. The feature of the top floor is its openness, its generosity of free, yet undefined space. The least we can imagine here is a plain addition of merely another floor.
Furthermore, as the whole school building is on the back of the residential part facing the street, a proper street facade or “storefront“ seems to be rather difficult to establish.
Instead we think the roof shall become the highlighted fifth facade, representing and advertising the schools identity. We imagine it to be a landmark for the school and the community.
The chosen hyperbolic paraboloid or “hypar“ is a doubly ruled surface, in simple terms it is shaped like a saddle. In contrast to other roof constructions, this type doesn't need any secondary supports like beams or ridges, it is self supporting. Nevertheless and despite its bend surface it is easily constructed from straight sections of timber or other conventional materials. Our intention is to utilize bamboo as a local and cheap but easy to use material.
Furthermore, the roof shape emphasizes the openness of the top floor and forms an integral part of the overall climatic concept. As it shades the concrete floor, the heat mass which is yet exposed to direct sunlight and responsible for heating up the whole building will be reduced significantly. Its corners are directed to the four ventilation towers. The high corners emphasize the wind supported natural ventilation by directing more wind to the top of the towers and increasing the Venturi effect explained earlier. The low corners emphasize the sun supported, heat driven natural ventilation by exposing them fully to direct sunlight.
The prominent roof will amplify the school's presence and emphasize its role as a focal point of the community's activity. We can easily imagine this partition free floor to provide an arena for assembly or large group teaching as well as to be used for much wider activities, like performing art shows, music, dancing or theater play including children, teachers, parents and guests.

3.4 Play wall

“Play is the engine that drives true learning. Play is not idle behavior. It is a biological imperative to discover how things work.“

Last but definitely not least is the perimeter yard. Beside its function for natural lighting and ventilation the perimeter yard is designed to address the children's wish for a

playground. In contrast to a usual play“ground“ it is rather a vertical play“wall“, a space where the children can roam freely, play and relax. We imagine the play wall to be an adventurous and explorable world in miniature, an environment that provides for rich sensory experiences. In addition to the normal vertical circulation with stairs, which is logical, technical, even digital and pretty much sensible, the play wall provides a more natural and analogue way of climbing. Here sports education to train motor skills can take place. Furthermore, because of a very diverse provision with light and shadow it is an ideal space for gardening and biology subjects.

3.5 Furniture and storage space

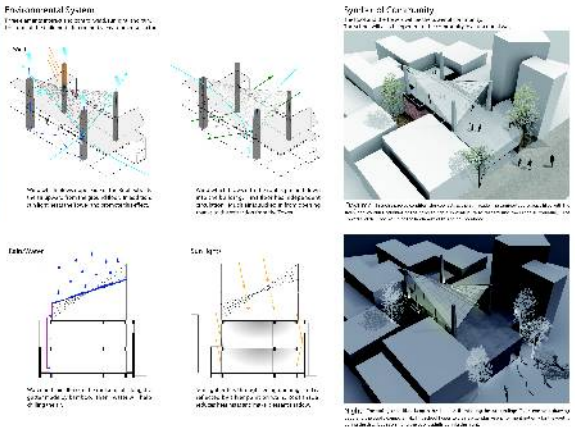
“Education in its etymological sense means to [lead someone to knowledge].“

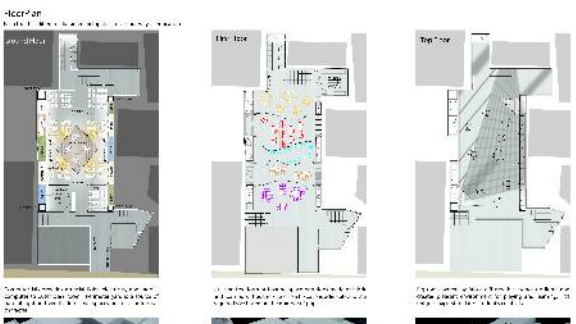
We are proposing the use of a modular design for the furniture, where with only a few and very simple elements like straight tubes, corner connectors and flat boards a wide range of different furniture is possible. The basic elements are simple in design and cheap to manufacture, but powerful when considering their many possible combinations.
The modular design provides a simple solution for quickly assembling additional furniture and enable teacher and children to use the elements as a learning aid. If shown the advantages of a flexible and modular design on an every-day-in-use object, the children can study how to alter and upgrade their personal environment using existing materials without consuming any new resources, a kind of “Froebel’s gifts“ for the creation of real life objects. Storage space can be easily incorporated into the shape of a chair for instance, by adding a rack underneath the seat.
These modular elements provide the basis, but are neither meant to fully encompass or limit other creative ideas. Their strength is the provision of a simple framework that follows simple rules for assembly but can be freely extended by customization, like shortening tubes to their desired size or any kind of imaginable addition.

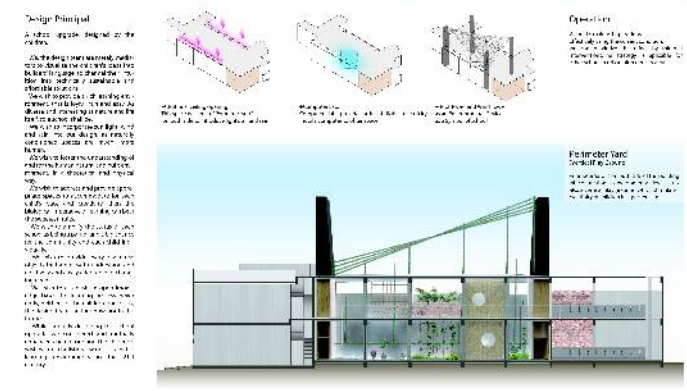
3.6 Billboard to the street

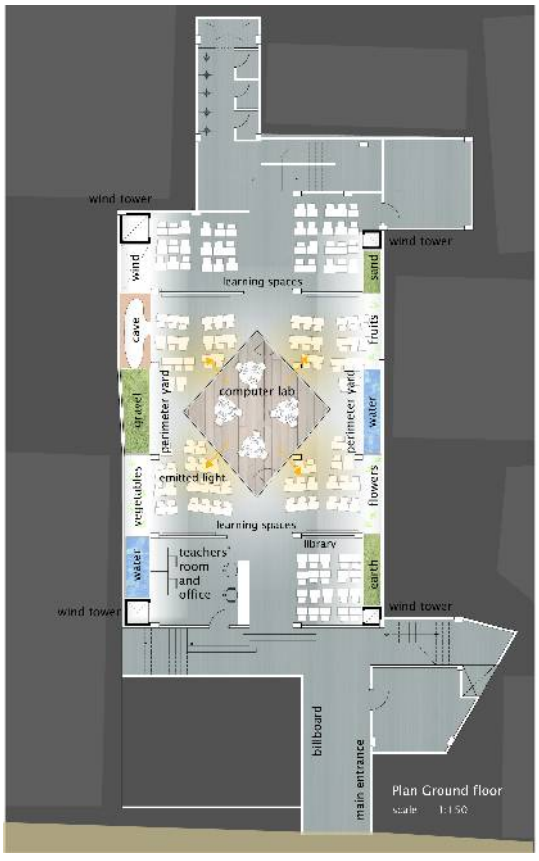
At the entrance a billboard shall be installed, to inform children and parents about the school, its curriculum and interest groups as well as passers-by about after school activities. The school could function as a general education center, with main focus on children but offering tutoring and courses for adults as well. This can help to intensify the intergenerational discourse on education, to establish a knowledge exchange center based on the community itself, its many people's interests as well as its many people's skills. Thus a sustainable learning environment can be formed.

So to conclude, with such many and diverse spaces we wish to provide a rich learning environment that is ideal for all different kinds of subjects. Thus the architecture itself will have a positive impact on the curriculum and functions as learning aid, simply incorporated by the building upgrade.





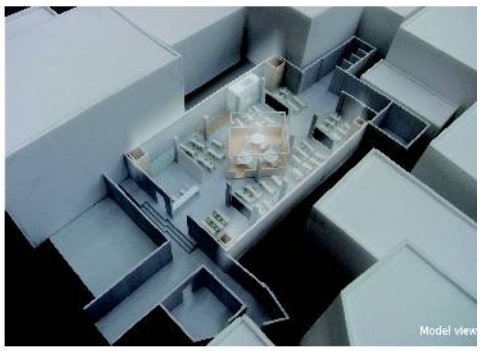




Ground Floor

"Children can only learn what they are ready to learn.'

Starting from the ground floor, we suggest a rather strict layout to complement more specific subjects as a contrast to the uppers levels. The computer lab is proposed as a main diamond shaped space, surrounded by 4 learning classes. In addition, the openings along the sides of the ceiling flood the classrooms with light. This space, perimeter yard, which runs along both lengths of the building has water and green spaces. The central location of the computer room helps in diffusing the light outwards, also, it encourages the children to run around. As this computer lab is open to the public, this gathering of the people forms a community.

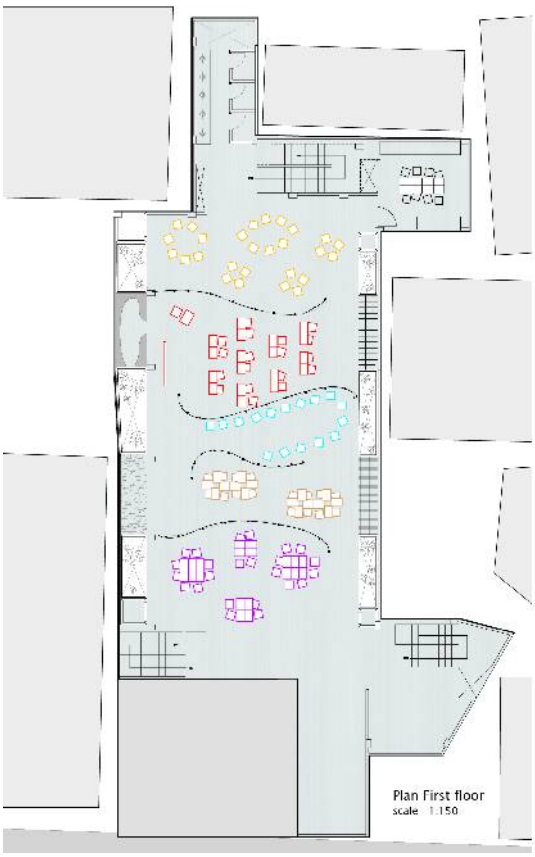


Computer lab will be the only specifically dedicated learning space in the whole school. Maximizing the artificial light, the glazed walls allows for views and light to enter freely at all time, while also emitting light into the adjacent classrooms. In addition, this lab also functions as the home base for all computers based learning, teaching and auxiliary functions. The computers here are mobile which allows them to be moved around, allowing for flexible learning spaces.

All cabling, water pipes, electricity distribution also originates from the perimeter yard (spaces which forms along the lengths of the building). Hence, due to the intimate size of the learning spaces on ground floor we imagine them ideal for subjects (both students and topics) that need intensive supervision and advice from the teacher like information technology and science subjects.

The wind tower at each corner of the building draws up the air, increasing the ventilation in the packed condition of the interior.

4688_Classroom

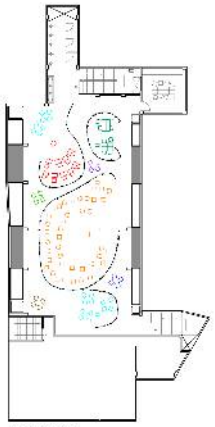


First Floor

"Teaching should always be joyful, fun away."

The first floor in contrast to the ground floor utilizes a more free form or floating space partitions. The partitions are made of fabric which is spanned with bamboo sticks. Thus the size of each space is adjustable to the required size based on the number of students.

Space partitons made of soft fabric are good for sound insulation. Here we can easily imagine language classes that require intensive interaction and communication between the students. the possibility of changing the shape of classrooms enable diffrent types of teaching methods.
As in the ground floor, the outside walls reachesup to 2/3rd of the floor height and the absence of permanent internal partitions allows a natural ventilation.



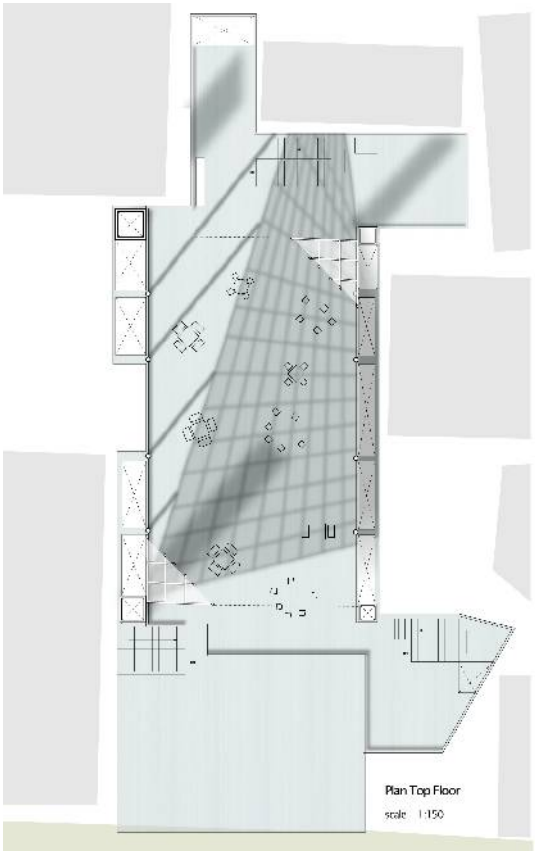
These are three possible variatons on how to divide the classrooms.

Variations 1 separates the space only partially. The fabric walls are standing in the direction of the wind flow to allow for maximum natural ventilation. A limited separation provides a very open atomosphere in which students can easily communicate.

Variation 2 uses free shapes for different sized spaces for big as well as small groups. The seamless boundary between the inside and outside allows for many different kinds of learning. It is possible to listen and discuss in a big group or to do pair work or individual work.

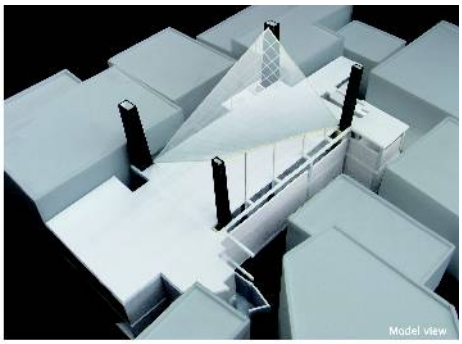
In variation 3 the floor is being split into six equally sized spaces to accommodate as many students as possible as in similar group sizes. This type is appropriate for subjects where the teacher is speaking in the front

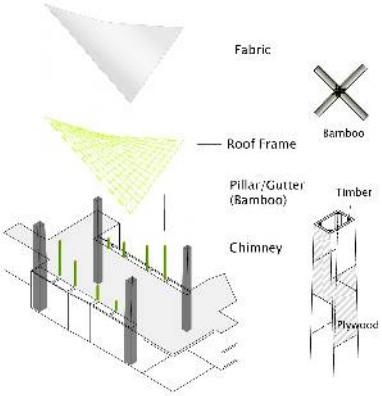
4688_Classroom



Top Floor

In contrast to the existing state on the top floor, we are proposing a flexible open space. As the bottom floors do not have enough space for a schoolyard, hence. this top floor will function as a breakout space for the students, In between and after classes, this space for play hopes to encourage friendly bonding between all members of the school. In addition being high up, it offers the children a beautiful view of their own neighbourhood, inculti-vating more self-pride. This open space with its soft dappled lighting attempys in creating an environment where learning ca also take place outside the classroom. We can easily imagine this partition free floor to provide an arena for assembly or large group teaching as wel as to be used for much wider activities.





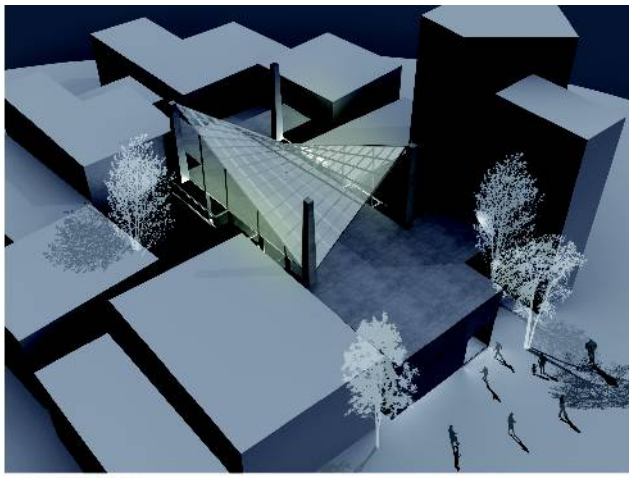
Structure

The Roof is made of simple structure. Roof Frame is composed by 2way of Hipabolic Paraboloid. Simply bind bamboo stick forms dynamic figure. The frame is sustained by bamboo pillars, also functions as gutter, and covered by fabric with diffuse the light and gives pleasant shadow for children. Wind tower is also composed of light and low-cost material. Plywood panels are combinated alternately to get a strength.

4688_Classroom

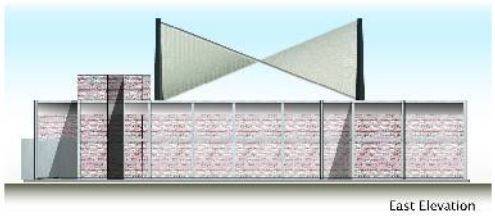
During the day

The top floor of the school functions as an open playground for thestudents. The tight entry of the site cpndtions means that our roof acts as the 5th facade of the building,. In addition, the sail like roof protects the children from the intense heat of the hyderabad sun and allows for the wind to flow through. The semi-outdoure space filled with the lively and youthful activities of the children can also contribute to reenergizing the urban surroundings. From afar, the 4 wind towers would be the landamrks of this neigoabourhood

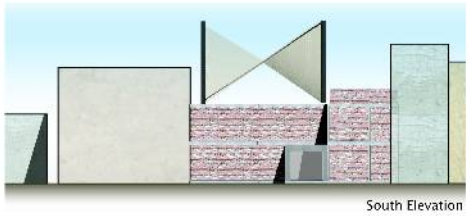


During the night

The roof lights up like a lamp in the darkness, illuminating the surroundings. The thin fabric allows the light to shine through exposing the underside structure of the bamboos; this easily reorganisable features helps in drawings people to the public computer lab. this school hopes to create a condusive environment not only for the youths during the days, but also among the public adults durinfg the night, The funds from this service can the aid in any extra expenses of the school, encourageing a sustainable learning environment



East Elevation



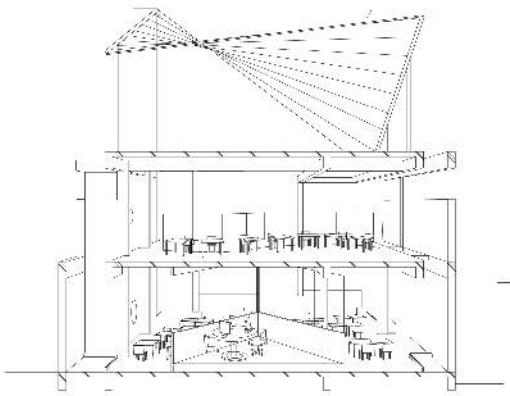
South Elevation

4688_Classroom

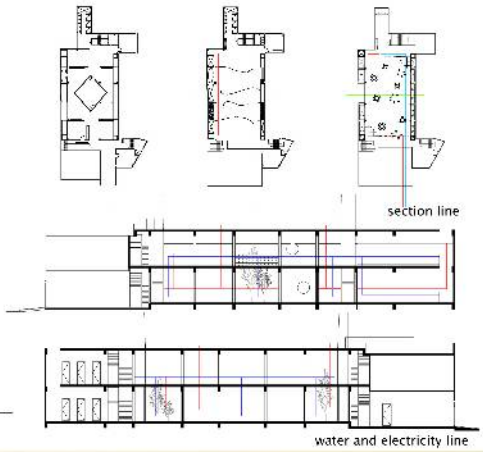
Perimeter yard

Play wall

The perimeter yard acts not only as an environmental device, but also as a play wall. Located in an over populated city, it is difficult to get enough space of playground for students. So we designed the wall as a vertical playground and connected it to the roof top playground in an exciting way. In this space students can roam freely, play and relax. And students can enjoy the whole school running around. We imagine the play wall to be an adventurous and explorable world for students to expose everyday. In addition, this wall functions as an educational device. At the bottom of the wall, there are some ponds and plants space, and teachers can utilize it for their biology class and gardening. Water and electricity are supplied from the wall and students can use it in every classroom.



short section and perspective



section line

water and electricity line

Function of the perimeter space

Water:
Water reflects light from top and lightens inside. Water also makes the air cool and accelerates ventilation from the chimney.
Green:
Plants can grow along the wall and they supply oxygen. Students can use the space for gardening.
Cave:
The Cave inherits the quality of space of former ground floor. But now it is full of light and students can explore inside.
Nets:
Students can climb up the nets and move between upper floor and lower one. It' s totally different experience from using a staircase.
Water pipe.
Water pipes are exposed, so students can feel the connect on between the flowing water and the water they use. The pipes are partially also the guardrail in the first floor.
Electricity:
Electricity lines are also exposed but covered with bamboo. Students can use electricity in every classroom.

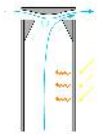
4688_Classroom

Environmental Device

The main feature of this building, "Preimeter yard(Vertical play ground)" , and "Winter roof" ,functions as Environmental Device to keep the school comfortable even in such a packed site condition. Three devices interest and control wind, sunlight, and rain.

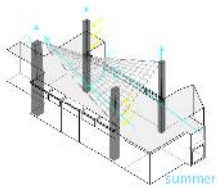
Wind

Wind Tower

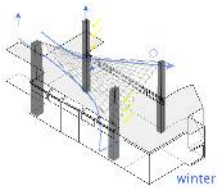


These towers work basically as chimneys to siphon used air from inside the building. They are equipped with chimney cowls to support their function using the speed of wind by the Venturi effect.

Wind Circulation



In summer,
the wind blow from south to north



In winter,
the wind blow from north to south

Wind and ventilation

Wind is the best natural air conditioner. Its movement accelerates temperature exchange. In a hot environment a slight breeze can add to the comfort. Our research has revealed that wind in Hyderabad is coming from different directions, Northwest in summer and in winter. To utilize the wind movement for natural ventilation of the building we install four towers which connect to ground floor and define the end points of the perimeter yard. These towers work basically as chimneys to siphon used air from inside the building. They are equipped with chimney cowls to support their function using the speed of wind by the Venturi effect. Fresh air can enter through the ceiling openings and circulate throughout the building.

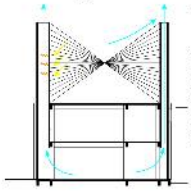
Sun and lighting

Besides the fresh air also daylight can reach the ground floor more naturally through the perimeter yard. To maximize the amount of natural lighting the perimeter wall will be painted with a silver color, which is very effective but nevertheless cheap. The forementioned towers are painted black to boost their convection capability.

Rain and spatial renaturation

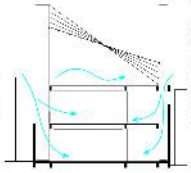
When rain falls it will freely pass through the openings down to ground floor. Besides air and sun this is the last ingredient needed to assure the growth of flowers or plants. As natural green is the most refreshing and calming color, flower pots can be free standing in the perimeter yard or even attached to the wall. Their presence will enhance the overall quality of the adjacent interior spaces dramatically, in terms of air quality, like amount of oxygen and cooling by water evaporation, and friendliness. Empty pots can store excessive water for additional evaporation.

Section Diagram



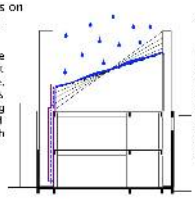
Natural ventilation

wind towers siphon used air out of the building, supported by the wind movement, amplified by the roof shape and enhanced by their black color



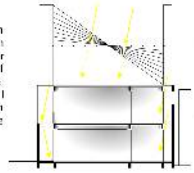
Supporting effects on naturalventilation

Supported by the wind movement and the roof shape, fresh air enters through the ceiling openings and circulate through the building



Water and rain

The rainwater on the roof will drain off along the gutter which are made of bamboo. The dropping water will help to condition the air inside the buildings



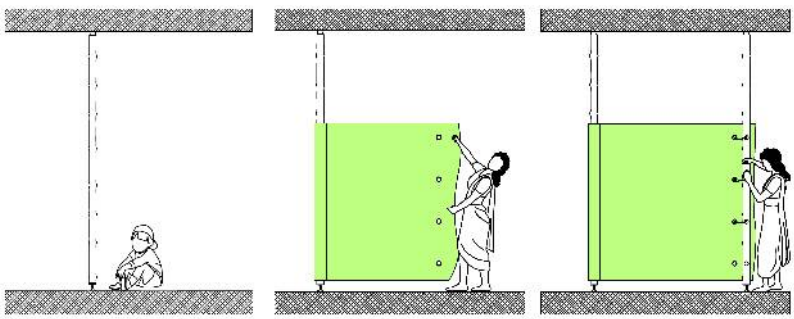
Natural lighting

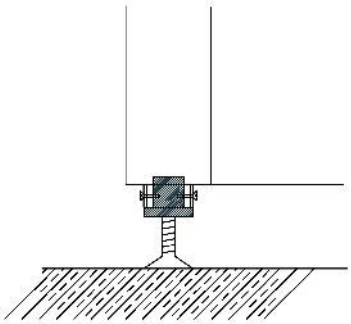
sun light enters through ceiling openings and is reflected by silver paint on walls at the same time the roof structure is reducing the heat by its shade

MATERIALS AND CRAFTS

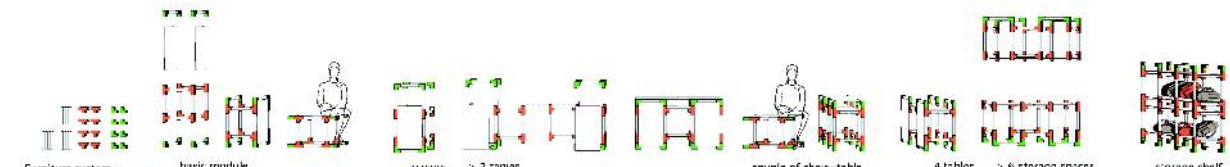
Flexible separation of classrooms

The main idea is to have a flexible way of separating the floor into classrooms. According to the type of teaching and number of classes, shapes of the classrooms should be able to be changed quickly and easily.
We suggest a separation system with bamboo and fabric and furniture, where the act of changing the classroomsizes itself should be an interactiv and communicative process.
The bamboo sticks can be placed anywhere in the room.
The furniture is transformable from a chair to a table and then to a storage shelf – made from just two connector joints.





There are elastic elements located at the top of the bamboo sticks. At the bottom part there is a tightening mechanism, with which the bamboo sticks can be fixed inbetween the floor and the ceiling. The idea is to have some poles with fabric which are movable as the other poles. This allows a flexible location of the fabric walls and also an easy change of old fabric and new ones. When the fabric is pulled out it has to be fixed to futher poles by binding the fabric to poles by strings.



Furniture system
starting components for 1 chair

basic module

2 chairs

> 2 tables

couple of chair–table

4 tables

> 6 storage spaces

storage shelf

4. Beyond Architecture

"True education must help children to understand their true nature as creative beings."

With our proposal we aim to provide a base for further discussion and development in a very broad sense. We are fully aware that further improvements will bear the most fruit only when further feedback from as many of the future beneficiaries will be incorporated. We especially intend to engage the children as the main beneficiaries but also as the main designers. Usually most design labeled "for children" is done by adults, but is it really appropriate? In our opinion the Open Architecture Network opens up a door for a once-in-a-lifetime chance, to listen to the voices of millions of children as creators and not only as consumers, their needs and wishes but even more their ideas with regard to school design.
As a start for easy feedback we imagine an extended Open Architecture Network Online Platform where the proposals of this competition are presented.

Every school that wishes their facilities to be upgraded, shall initiate a regular review of the state of their school and publish it. An online recommendation system for children shall be introduced. They shall be encouraged to present their own ideas in drawings, pictures or models. By the time of future school upgrades a canon of highly rated thus highly recommended design elements or entire school layouts may provide a basis for a more child appropriate school backed by the voices of millions of children. Such an open platform can quickly and directly trace emerging new trends the children will express that are at present difficult to predict. Thus its knowledge base will be receptive for future changes and proposals. It will provide a rich database for continuous research.
To make this online platform truly open and democratized it shall function as an upgrade or plug-in itself, to be easily connected and accessed by any kind of social network platform, offering entrance and advise for everybody who cares to ask and listen to the children's voices.

5. Resources

1 This quote and all the other quotes in this design documentation are from the Froebel Foundation, see http://www.froebelfoundation.org/philosophy.html; Friedrich Froebel, a German pedagogue, created the concept of "kindergarten" and also coined the word, see http://en.wikipedia.org/wiki/Friedrich_Fr%C3%B6bel

6. Figures

1 Wind roses at Hyderabad, see Fig.3, http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VH3-4GP1VT2-6&_user=136130&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000010979&_version=1&_urlVersion=0&_userid=136130&md5=23a82368ab2884bba7f520f0c1d8088d

architour no. 1

kengo kuma in tokyo

compiled
on February 22
2010

November 27, 2009 - #1a
Finished the first day of a planned 3-day "KUMA in TOKYO" tour. Visited the STEEL HOUSE, the exhibition "Organic Architecture" in Gallery Ma and SUNTORY MUSEUM.

November 30, 2009 - #1b
Today I did the second part of the Kuma Kengo architour. Basically I visited three buildings: TIFFANY GINZA, ADK SHOCHIKU SQUARE and CODAN SHINONOME Block 3.
I didn't finish the tour as planned, with two buildings unseen.

December 5, 2009 - #1c
On Dec 2nd I did the third part Kuma Kengo architour together with three other architects. This time we went to the West and Central Tokyo. Started at SHIBUYA STATION (1), continued to Odakyu Chitose-Funabashi Station to see M2 (2) and FOOD AND AGRICULTURE MUSEUM (3). I was really surprised by the M2. Of course I knew its postmodern facade from pictures. What I didn't know that in contrast to its massive and monolithic appearance, the huge Ionic capital is just made of metal sheet !! You can see the sky shine through, where rust has eaten its way. The same inside. Not stone or concrete is the major interior material but iron !! Had lunch in the museum's cafeteria. Back to Shibuya we continued to visit THE SCAPE (4) and RESTAURANT WAKETOKUYAMA (5). The last one Is definitely one of Kuma's finest works.

February 25, 2010 - #1d
Had the sudden urge today morning to visit another building by Kuma Kengo, the RUSTIC from his postmodern period. Most interesting were the persiflage of greek columns, four of them. The first in full scale, but without the base and capital, just the shaft and a slight gap between the column and the architrave. The second with a broken top but round reinforcement bars underneath the architrave. The third already shortened with a vertical truss sticking out. The fourth and last and shortest with a TV on top! That was something. It reminded me of some kind of Media Art I saw during my studies in the 1990s. Interesting as well the symbolic shadows behind the columns, embedded in white marble on the downward stairs. The metal panels on the facade had shadows printed on as well.

February 26, 2010 - #1e
Went to BANRAISHA at the Keio University Mita campus. Was not really sure, what exactly was designed by Kuma, but I think it's the terrace. Stone plates with holes in which trees and plants grow, water sprinkles or cylinders stand to sit on.

1 – Nezu Museum

2 – Tiffany Ginza

3 – Steel House

4 – Suntory Museum

5 – Banraisha

6 – The Scape

7 – NTT Aoyama Building Renovation

8 – Murai Masanari Memorial Art Mus.

9 – Canal Court Codan Block 3

10 – Food and Agriculture Museum


11 – Waketokuyama


12 – One Omotesando


13 – Shibuya Station Renovation


14 – Baisoin Temple


15 – Paint House Building

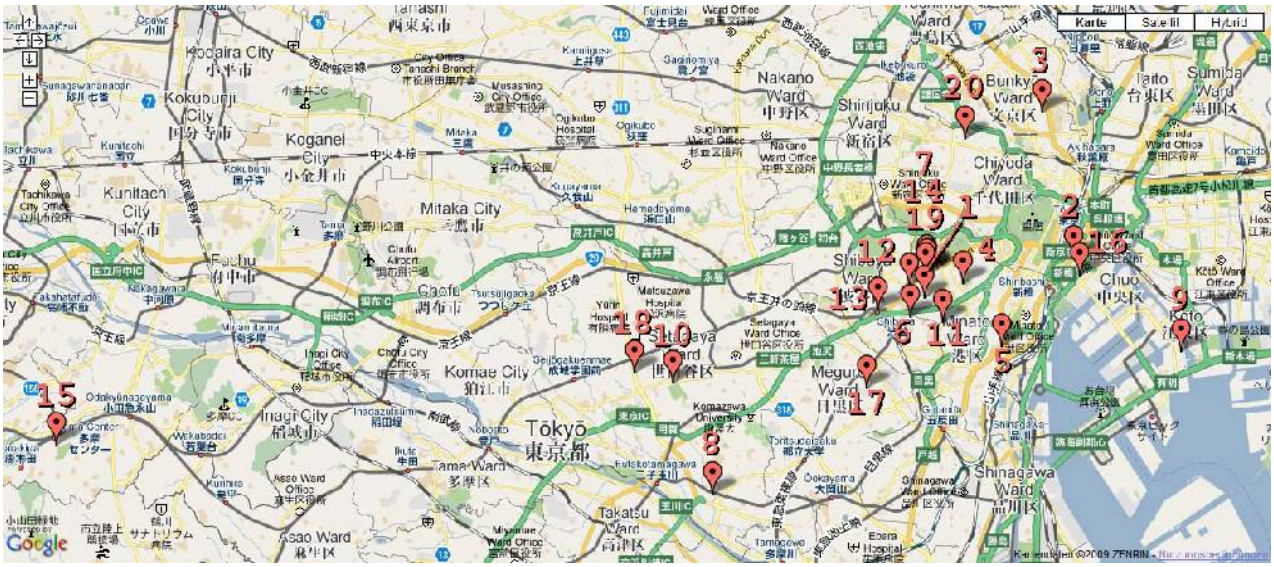

16 – ADK Shochiku Square


17 – Plastic House


18 – M2


19 – Doric


20 – Rustic



Picture 1: map of buildings by Kengo Kuma in Tokyo, map source: Google maps

1	2009.10	Nezu Museum	6-5-1 Minami-Aoyama, Minato-ku, Tokyo	Museum	4,014.08m2
2	2008.10	Tiffany Ginza	2-7-17 Ginza, Chuo-ku, Tokyo	Retail, office	1,109.8m2
3	2007.03	Steel House	1-1-2 Nishikata, Bunkyo-ku, Tokyo	Private residence	265m2
4	2007.01	Suntory Museum of Art	9-7-4 Akasaka, Minato-ku, Tokyo	Museum	4,663.23m2
4a	2007.07	Lucien pellat-finet	9-7-4 Akasaka, Minato-ku, Tokyo	Retail	127.38m2
5	2005.03	Banraisha	Keio University Mita Campus, 2-15-45 Mita, Minato-ku, Tokyo	University facilities	181.9m2
6	2005.03	THE SCAPE	4-4-6 Higashi, Shibuya-ku, Tokyo	Apartment	882.04m2
7	2004.11	NTT Aoyama Building Renovation Project	2-7-15 Kita-Aoyama, Minato-ku, Tokyo	Retail, open space	1,221.89m2
8	2004.05	Murai Masanari Memorial Art Museum	1-6-12 Nakamachi, Setagaya-ku, Tokyo	Museum	268m2
9	2004.05	Canal Court Codan 3 Block	1-9-17, Shinonome, Koto-ku, Tokyo	Apartment, retail, parking	40,919m2
10	2004.03	Food and Agriculture Museum at Tokyo University of Agriculture	2-4-28 Kamiyouga, Setagaya-ku, Tokyo	University	3,465.15m2
11	2004.02	Waketokuyama	5-1-5 Minami-Azabu, Minato-ku, Tokyo	Restaurant	149.66m2
12	2003.09	One Omotesando	3-5-28 Kita-Aoyama, Minato-ku, Tokyo	Office, retail, private residence	7,690m2
13	2003.07	Shibuya Station Renovation Project	Shibuya Station, Shibuya-ku, Tokyo	Station	48m2
14	2003.06	Baisoin Temple	2-26-38 Minami-Aoyama, Minato-ku, Tokyo	Temple, apartment	29,648m2
15	2003.01	Paint House Building	1-47 Ochiai, Tama, Tokyo	Exhibition space	38,018.02m2
16	2002.10	ADK Shochiku Square	1-13-1 Tsukiji, Chuo-ku, Tokyo	Office, apartment, retail	54,069.29m2
17	2002.05	Plastic House	5-19 Naka-Meguro, Meguro-ku, Tokyo	Private residence	172.75m2
18	1991.10	M2	2-4-27 Kinuta, Setagaya-ku, Tokyo	Department, funeral home	4,482.15m2
19	1991.09	Doric	2-27-14 Minami-Aoyama, Minato-ku, Tokyo	Apartment	1,131.4m2
20	1991.01	RUSTIC	77 Tenjin-cho, Shinjuku-ku, Tokyo	Corporative house	714.16m2

kazuhiko namba

boxhouse 001

Eine Übersetzung von Namba (2006, pp. 54-55)

伊藤低
itou tei

Haus Ito

written
on November 10,
2009

竣工年月：1995 年 3 月
shunkou nengetsu: 1995 nen 3 gatsu

Fertigstellung: März 1995

延べ床面積：119.15m^2
nobe yuka menseki: 119.15m^2

Bruttogeschossfläche: 119,15 m^2

構法：木造在来構法
kouhou: mokuzou zairai kouhou

Konstruktion: konventionelle Holzbauweise

夫婦と子供の 3 人のための住宅。
fuufu to kodomo no 3 nin no tame no juutaku.

Ein Haus für ein Ehepaar und deren 3 Kinder.

敷地は東京都杉並区の住宅蜜集地域にあり、南側に細い道路が通っている。
shikichi ha toukyou-to suginami-ku no juutaku mitsushuu chiiki ni ari, minami-gawa ni hosoi douro ga tootte iru.

Das Grundstück liegt in einer Wohnsiedlung im Tokioter Stadtbezirk Suginami, auf der Südseite befindet sich eine schmale Straße.

連続住宅の一住戸単位として考えたので、東西の窓は最小限に抑え、南北からの採光と通風を中心に設計した。
renzoku juutaku no juuko tan'i toshite kangaeta no de, touzai no mado ha saishougen ni osae, nanboku kara no saikou to tsuufuu wo chuushin ni sekkei shita.

Im Kontext dicht an dicht nebeneinander stehender Wohnhäuser, sind die Fenster auf der Ost- und Westseite nur minimal, dagegen auf der Nord- und Südseite zur Belichtung und Belüftung großzügig geplant.

家族室を中心とする開放的な立体空間は、設計当初からのコンセプトで、室内のどこにいても気配が感じとれるような一体感をう生み出している。
kazoku-shitsu wo chuushin to suru kaihouteki na rittai kuukan ha, sekkei tousho kara no konseputo de, shitsunai no doko ni itemo kehai ga kanji toreru youna ittai kan wo umidashiteiru.

Der zweigeschossig offene und zentrale Bereich als Mittelpunkt für die Familie, ein wichtiges Thema seit Planungsbeginn, prägt und eint das Leben im Haus.

家族関係の図式をストレートに投影した単純明快なプランによって、
kazoku kankei no zushiki wo sutore-to ni touei shita tanjun meikai na puran ni yotte,

Der klare Grundriss, schematisches Sinnbild des familiären Zusammenlebens, ermöglicht eine

シンプルな形態と構造システムを統合している。
shinpuru na keitai to kouzou sgisutemu wo tougou shiteiru.

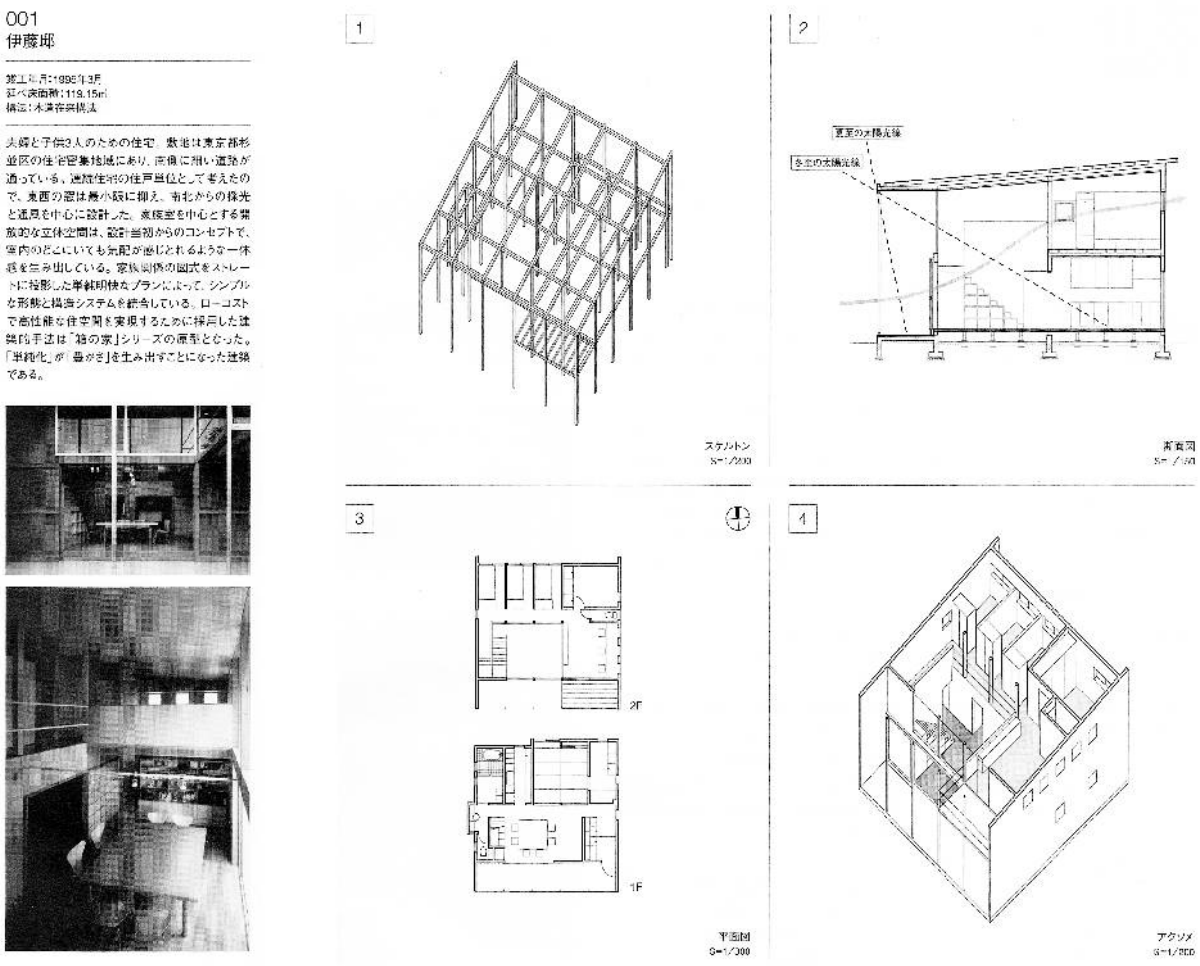
schlichte gestalterische und konstruktive Einheit.

ローコストで高性能な住空間を実現するために採用した建築的手法は「箱の家」シリーズの原型となった。
ro-kosuto de kouseineou na juukuukan wo jitsugen suru tame ni saiyou shita kenchikuteki shuhou ha [hakko no ie] shiri-zu no genkei to natta.

Die angewandte Architektur, um preiswert einen hochwertigen Wohnraum zu gestalten, wurde zum Prototypen der [Box-Haus]-Serie.

「単純化」が「豊かさ」を生み出すことになった建築である。
[tanjunka] ga [yutakasa] wo umidasu koto ni natta kenchiku de aru.

Es ist eine Architektur, die Vielfalt durch Vereinfachung hervorbringt.



Resources

Namba, Kazuhiko. (2006). 「箱の家」エコハウスをめざして [The Box-Houses: Towards a New Ecohouse]. Tokyo: NTT Publishing.

lectures, workshops, exhibitions and symposia

Summer term 2009

with collaboration of the University of Tokyo (UT)

(01) Architecture and Cities in Japan 1 – April 6 to July 6, UT
(02) Chris K. Palmer,.Tradition Meets Modern Digital Fabrication – May 20, UT
(03) IARU – Sustainable Urban Management – June 15 to June 26, UT
(04) Campo Baeza Architecture. The Creation Tree – June 25, UT
(05) IAES, International Architectural Education Summit – July 17 to 19, UT
(06) Jean-Claude Gaillot. Ile-de-France region – July 24, UT
(07) International Workshop on Sustainable Transportation and Energy – August 6, UT
(08) Cocolabo Workshop – August 8, UT
(09) ASNET – Satoyama, the traditional rural landscape of Japan – September 3 to 5, UT
(10) Visionary Urban Event Spaces – September 18 to 24, UTS

other

(11) 32nd LEMON Exhibition of Students' Works – June 12, MU
(12) TITech Diploma 2009 – July 4, TIT
(13) International Expert Meeting on the International Satoyama Initiative Concept – July 25, UNU
(14) Le Corbusier, The National Museum of Western Art – August 10, TNMoWA
(15) Niigata Art Triennal – September 5 to 8, Niigata
(16) Urban Ecosystems and Biodiversity – September 9, UNU-IAS
(17) Learning Collective Intelligence and Competences for Sustainable Development – September 10, UNU-IAS

abbreviations

UT – University of Tokyo

IARU – International Alliance of Research Universities

ASNET – Asian Studies Network of UT

UTS – University of Technology Sydney, Australia

MU – Meiji University, Tokyo

TIT – Tokyo Institute of Technology, Tokyo

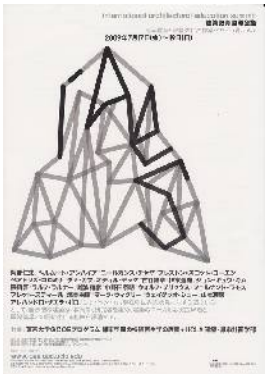
UNU – United Nations University, Tokyo

UNU-IAS – UNU Institute of Advanced Studies, Yokohama

TNMoWA – Tokyo National Museum of Western Art

(03)

(04)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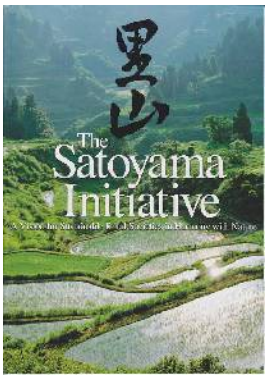

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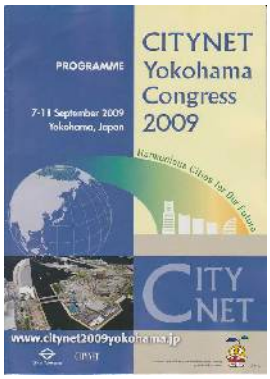

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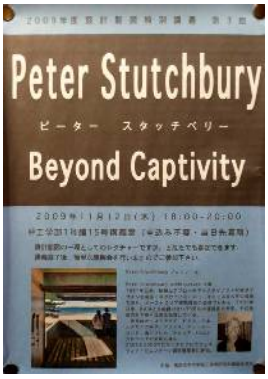

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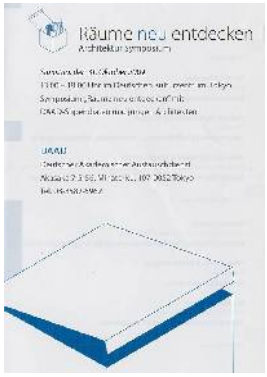

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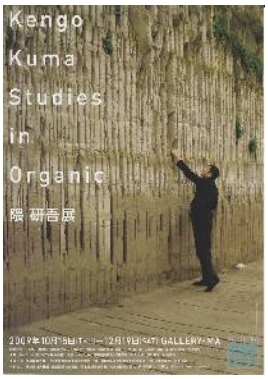

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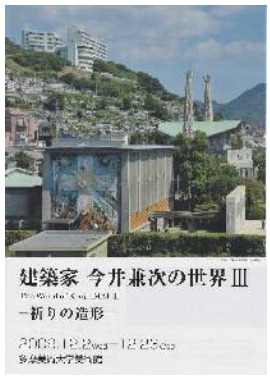

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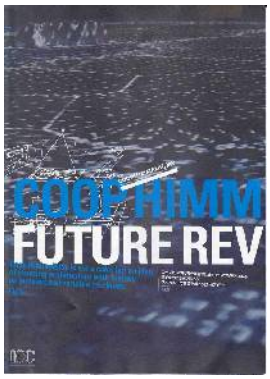

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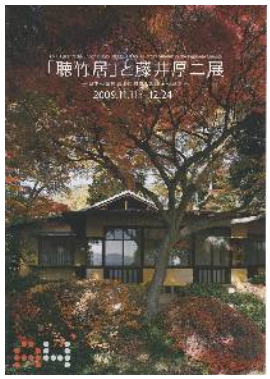

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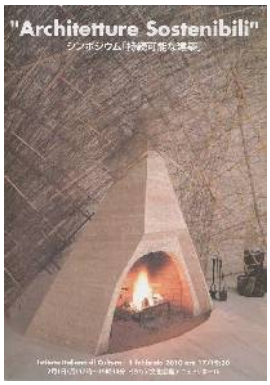

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abbreviations

UT – University of Tokyo

ASNET – Asian Studies Network of UT

DAAD – Deutscher Akademischer Austauschdienst – German Academic Exchange Service, Bonn, Germany

DIJ – Deutsches Institut für Japanstudien – German Institute for Japanese Studies, Tokyo

NTT – Nippon Telegraph & Telephone Corp.

NTT ICC – NTT Inter Communication Center, Tokyo

MU – Meiji University, Tokyo

Winter term 2009/2010

with collaboration of the University of Tokyo (UT)

(18) ASNET – Introduction to Asian Studies: History and International Relations – October 5 to February 2, UT
(19) Innovating Cities, Blending Culture, Tradition and Business – October 8 to January 21, UT
(20) Architecture and Cities in Japan 2 – October 9 to January 29, UT
(21) ASNET – Sustainable Urban Regeneration B – October 9 to January 29, UT
(22) Peter Stutchbury. Beyond Captivity – November 12, UT
(23) Groundscape Design Institute, 3rd Machizukuri – November 13, UT
(24) The Future of Solar Energy Use – December 17, UT
(25) Vinko Penezic & Kresimir Rogina. Architecture as Medium – December 18, UT
(26) Timberize Tokyo – December 25, UT
(27) Tourism and Urban Regeneration – January 15, UT
(28) ASNET – Nature-harmonious society in Asia – February 1 to 10, UT
(29) Françoise Choay. Urbanism, history of architecture and globalization – February 18, UT
(30) Namba Kazuhiko. Last lecture – February 20, UT
(31) Groundscape Design Institute, 4th Machizukuri – March 6, UT
(32) Digital Workshop with AA School – March 17, UT

other

(33) Räume neu entdecken – October 31, DAAD
(34) n.lab – November 2, Bauhaus University, Weimar, Germany
(35) Kuma Kengo, Organic Architecture – November 28, Gallery Ma
(36) Paul J. Scalise (Temple University Japan). Japan's Electricity Deregulation: Prices, Profits, Productivity and the "Reform Idea" – November 30, DIJ
(37) EcoProducts 2009 – December 10-12 , Tokyo Big Sight
(38) The World of Kenji Imai III – December 11, Tama Art Msueum
(39) Coop Himmelb(l)au, Future Revisited – December 20, NTT ICC
(40) Open Space 2009 – December 20, NTT ICC
(41) Verner Panton – December 20, Art Gallery at Tokyo Opera City
(42) Fujii Koji, Chochikukyo – December 24, Takenaka HQ
(43) Architetture Sostenibili – February 1, Istituto Italiano di Cultura
(44) Leif Høgfeldt Hansen. Japonism and Alvar Aalto – February 4, MU
(45) Uchii Shozo, His Thought and Architecture – February 27, Setagaya Art Museum
(46) PV EXPO 2010 – March 3-5, Tokyo Big Sight
(47) Architecture Challenge, Lecture by Kuma Kengo – March 5, Yurakucho Asahi Hall
(48) 16th Architecture + Construction Materials – March 9-12, Tokyo Big Sight

blog @ japan-architect.jimdo.com

written continuously

November 28, 2009
First Entry - Architour #1a - Kuma Kengo

That this is the first entry is basically quite obvious.
BUT I have started to compile this webpage since June, 26th, about five months ago (checked my emails for the exact date). In the beginning I could heavily rely on material I have been collecting since more than four years, but even though the inclusion of this material is still unfinished I have added new material as well. The more I add, the more I start to encounter architects previously not known to me, being related to other architects or I can add more than a single project. Sometimes an architect turns out to be of importance not known to me.
I hope that others will find this database as enriching as it is for me.
Yesterday I finished the first day of a 3-day "KUMA in TOKYO" tour. Visited the STEEL HOUSE, the exhibition "Organic Architecture" in Gallery Ma and SUNTORY MUSEUM. Added the category "Foreign Architects in Japan".
Today I visited the YaNeSen-area, an old temple area since the Edo-period. YaNeSen stands for Yanaka-Nezu-Sendagi, an area Southwest of JR Nippori-station.

November 29, 2009
Weekend additions

I used the Sunday to add some more projects and pictures I took in spring 2005 in Ashiya. I encountered the architect Takeyama Minoru, who seems to be quite known. At least a book about his work was written by Botond Bognar, the same author who wrote *"Kengo Kuma: selected works"* which I am just reading. A further added architect is Uenami Akira, an employee of the former Ministry of Communications, who obviously designed many of the former Ministry buildings all over Japan. Added Oe Kazuo / MANIERA Architects, Ohsugi Yoshihiko, Rokkaku Kijo and Nihon Sekkei, plus further projects of Ando Tadao.
Using 84 of 500 MB.

November 30, 2009
Architour #1b - Kuma Kengo

Today I did the second part of the Kuma Kengo architour. Basically I visited three buildings: TIFFANY GINZA, ADK SHOCHIKU SQUARE and CODAN SHINONOME Block 3. I didn't finish the tour as planned, with two buildings unseen. BUT I enjoyed greatly some other marvellous pieces of architecture mainly in Ginza, but in Shinonome as well.
After compressing some previously uploaded images I squeezed the usage down to 69 MB (- 15 MB).

December 5, 2009
Architour #1c - Kuma Kengo

On Dec 2nd I did the third part Kuma Kengo architour together with three other architects. This time we went to the West and Central Tokyo. Started at SHIBUYA STATION (1), continued to Odakyu Chitose-Funabashi Station to see M2 (2) and FOOD AND AGRICULTURE MUSEUM (3). I was really surprised by the M2. Of course I knew its postmodern facade from pictures. What I didn't know that in contrast to its massive and monolithic appearance, the huge Ionic capital is just made of metal sheet !! You can see the sky shine through, where rust has eaten its way. The same inside. Not stone or concrete is the major interior material but iron !! We visited two Ito Toyo buildings (RESTAURANT PASTINA and HONDA AUTOMOBILE SALON) and one each from Kitayama Kojiro (KINUTA TERRACE) and Workshop (HOUSE IN SAKURAGAOKA) on the way. Had lunch in the museum's cafeteria. Back to Shibuya we continued to visit THE SCAPE (4) and RESTAURANT WAKETOKUYAMA (5). The last one is definitely one of Kuma's finest works.
Yesterday I finished reading Botond Bognar's book about Kuma. Added Taniguchi Yoshio.
Today I added Mitsui Jun and Le Corbusier, some pictures of buildings by Ito Toyo and Yamamoto Riken and an exhibition poster for Imai Kenji. Up to using 93 MB.

December 6, 2009
JLPT weekend

Today I went to the Meiji University Ikuta Campus for the JLPT. Used the afternoon to see some architecture along the Odakyu Line at Seijo-Gakuenmae, mainly from Suzuki Ryoji, Hayakawa Kunihiko and Tange Kenzo.
The catholic church I saw was designed by Imai Kenji, which I realised a week later during the Imai Kenji exhibition.

December 12, 2009
EcoProducts 2009 and Imai Kenji

During the last 3 days the newest environmentally friendly products from Japanese makers where exhibited at the EcoProducts 2009 fair. Yesterday I joined a one-hour guided English tour organised by 'Japan for Sustainability'. As this was definitely not enough time I went again today morning to speak mainly with manufacturers of solar panels, big players like Sharp, Sanyo and Hitachi, smaller wind power makers and also pellet stove makers.
In the afternoon I went to see the Imai Kenji exhibition at Tama Art Museum, where I realised that I saw one of his church buildings the other day. Will add pictures and project later.
Added Azuma Takamitsu, Oe Hiroshi, Nikken Sekkei, Antonin Raymond and Taniguchi Yoshiro. Realised that there were two Taniguchis, father Yoshiro and his son Taniguchi Yoshio. Added projects E1-9 and E45-47 of Hiroshi Watanabe's book: *The Architecture of Tokyo.*
Data up to 100MB.

December 18, 2009
Future of Solar Energy

On Thursday (17th) I attended a symposium about the "Future of Solar Energy".

Met James Lambiasi of Lambiasi & Hayashi Architects later that day, who provided some interesting insights into the relationship of architects, clients and developers based on projects at Omotesando Road. He further explained some "super legal" creative application of the Japanese building code. "Super legal building" (you can find a short explanation -> here[1]) is a term coined by Yoshimura Yasutaka (added).
On Friday (18th) I heard a studio talk of the Croatian office Penezic & Rogina.
Added Furuya Nobuaki, Suzuki Makoto and young architects, still in their 30s but already established, like Ishigami Junya, Fujimoto Sou and Inui Kumiko.

December 22, 2009
Five exhibitions

Went on Sunday (20th) to the Tokyo Opera City building, where five exhibitions were on: at the NTT ICC about the Austrian architects Coop Himmelb(l)au and artists exhibiting at Open Space 2009, and at the Art Gallery about the Danish designer Verner Panton and the painter Okuyama Tamie and Sumita Daisuke.

December 24, 2009
Fujii Koji exhibition

On Christmas Eve (Thursday, 24th) I visited the Fujii Koji exhibition mainly about his masterpiece *'Chochikukyo'* at the Takenaka HQ. The building reminded very much of Arts and Crafts or Jugenstil buildings, as it employed similar details. When I spoke with Namba Kazuhiko about the house, he mentioned that Koji met Bruno Taut and that Taut thought of Koji as a poor designer. Nevertheless, the *'Chochikukyo'* features in the DOCOMOMO Japan list of 100 modernist buildings. To compare the building in its time and country some other Japanese houses were briefly introduced, here a list:

- ✗ Maekawa Kunio, Iihashi House, 1941
- ✗ Maekawa Kunio, Maekawa House, 1942
- ✗ Tsuchiura Kameki, Tsuchiura House, 1935
- ✗ Shinohara Kazuo, House in White, 1966
- ✗ Yoshimura Junzo, House in the Woods, 1962
- ✗ Frank Lloyd Wright, Hayashi Hisaku House, 1917
- ✗ Antonin Raymond, Summer House, 1933
- ✗ Horiguchi Sutemi, Koide House, 1925
- ✗ Masuzawa Makoto, Nara House, 1953
- ✗ Seike Kiyoshi, Dr. Mori House, 1951.

Added Hasegawa Go, Yamashita Yasuhiro and some projects of Inui Kumiko.

January 8, 2010
Happy New Year

Not so New anymore the Year 2010, but nevertheless I wish everybody a Happy one.
Just came back from a tour to Iga City in Mie Prefecture, where I learned two astonishing facts. The city hall I have passed by numerous times and about which I always wondered, who designed this Corbusier like concrete building, was designed by Sakakura Junzo (could have and even guessed it). The second fact, it is scheduled to be

1 http://www.zombiezodiac.com/base/books/super_legal_buildings.html

torn down and replaced with a new building soon.
Added *DOCOMOMO Japan: the 100 Selections* from JA57.

February 4, 2010
"Japonism and Alvar Aalto"

Went to the above mentioned lecture at Meiji University, presented by Leif Høgfeldt Hansen, Associate Professor in Architectural History at Aarhus School of Architecture, Denmark.
What did I learn? That the "missing link" between Japan, F.L. Wright and Aalto may be Antonin Raymond and his published works about Japan. For sure, in Europe Bruno Taut and others are more well known to have strongly influenced the picture about Japan. But Raymond? Did he publish? Obviously at least one VERY nice book about his own "Architectural Details" in 1938 with only 1000 copies, pretty rare by now. Added some references in the "further readings" section. That Aalto and Raymond might have met is quite possible, as the following fact illustrates. Both attended a symposium in New York in May 1939, Aalto as speaker, Raymond in the audience, see here[2].

2 http://tinyurl.com/ybpyl7r

February 18, 2010
Urbanism

Today I heard a lecture by Françoise Choay (* 1925), a French architecture historian. She had a quite profound knowledge, presented stunning insights with an overall pessimistic view on the present day city. I learned that the Catalan Cerdà, originally a trained civil engineer, coined the term 'urbanization' in his 1867 *Teoría General de la Urbanización.* He borrowed many ideas from Baron Haussmann's renovation of Paris. Ms Choay's impression of Baron Haussmann was opposite of what I learned so far. In her opinion he was respecting as much as possible the memory and traces of the past. That Marshall McLuhan is regarded as the one who coined the term 'globalization', that I was aware of. Back to Ms Choay herself, her background is philosophy but her 'career' as an architecture historian started, when she met Jean Prouvé (1901-1984) in the fifties and wrote an article for a newspaper about one of his houses. As the newspaper agent was impressed with her work she could sent from then on whatever she wrote, which was about a paper a week. Her view on urbanism is pessimistic as she sees the human race being more and more disconnected from time and concrete space, the environment being replaced with technical objects. Even constructions, we still call buildings, are merely technical objects in her words, 'homo sapiens sapiens' turning into 'homo proteticus'.

February 22, 2010
Prof. Namba's last lecture

Was staff on Saturday, 20th, at Kazuhiko Namba's last lecture as professor of University of Tokyo, he is going to retire in March.
Added Motono Seigo, Uchi Shozo, Yoshimura Junzo and some posters, 109MB.

February 25, 2010
Architour #1d - Kuma Kengo

Had the sudden urge today morning

to visit another building by Kuma Kengo, the RUSTIC from his postmodern period. Most interesting were the persiflage of greek columns, four of them. The first in full scale, but without the base and capital, just the shaft and a slight gap between the column and the architrave. The second with a broken top but round reinforcement bars underneath the architrave. The third already shortened with a vertical truss sticking out. The fourth and last and shortest with a TV on top! That was something. It reminded me of some kind of Media Art I saw during my studies in the 1990s. Interesting as well the symbolic shadows behind the columns, embedded in white marble on the downward stairs. The metal panels on the facade had shadows printed on as well.

February 26, 2010
Architour #1e - Kuma Kengo

Went to BANRAISHA at the Keio University Mita campus today. Was not really sure, what exactly was designed by Kuma, but I think it's the terrace. Stone plates with holes in which trees and plants grow, water sprinkles or cylinders stand to sit on.

February 27, 2010
Uchii Shozo exhibition

Went to Setagaya Art Museum, that held an exhibition about Uchii Shozo, the architect of the museum. I am sticking to the writing of the family name with double i, as in other online resources.

The English writing of Japanese names is sometimes confusing, see Ito Toyo. If written according to the Kanji's reading it would be Toyoo. So it might be possible to write Uchii as Uchi, with only one i.

March 2, 2010
Yearbook 2009

Added the *JA 76 - Yearbook 2009* as a list and projects 01-08.
Added Nakayama Hideyuki, another young star, and Nishizawa Taira.
Added pictures for the recently visited Kuma Kengo buildings. 112 MB.

March 8, 2010
PV EXPO 2010 and Kuma Kengo lecture

Visited PV EXPO 2010 on last Wednesday (3rd), where many new developments and products in the field of solar energy generation were exhibited.
Went to a Kuma Kengo lecture at the Asahi Yurakucho Hall on last Friday (5th), where he spoke about research in the design field of architecture.
Added Itami Jun.