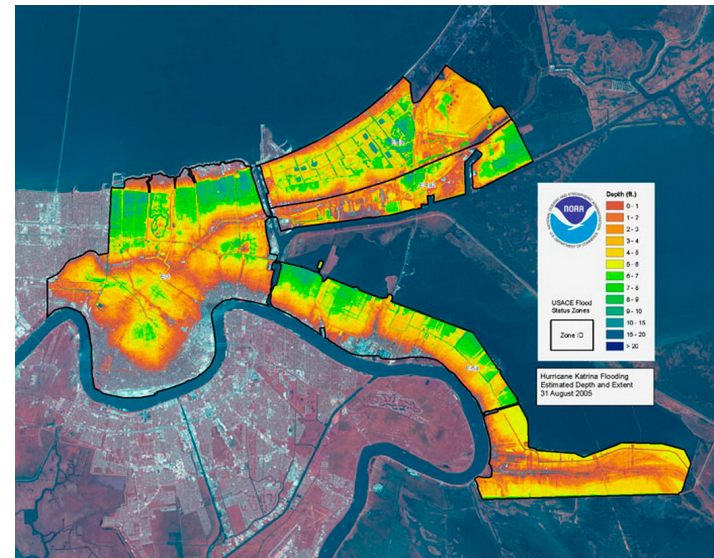




2nd INTERNATIONAL WEEK ESET
professor walter unterrainer

architecture, design and technology
aarhus school of architecture

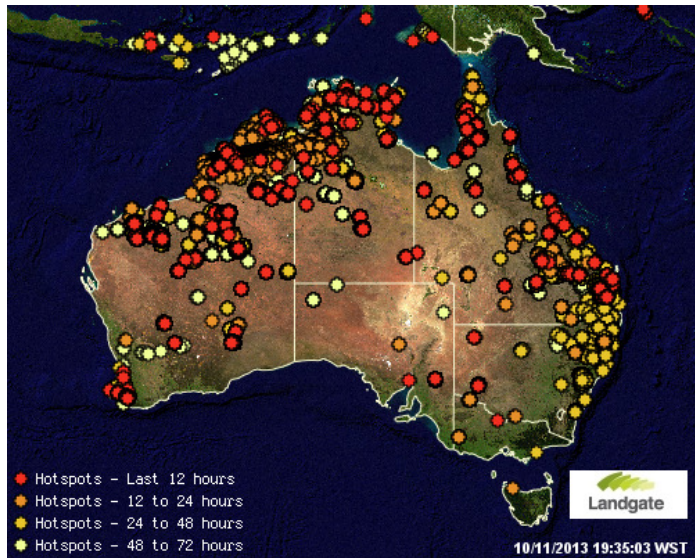
a 'laboratory approach' to integrate sustainability into architectural education



how natural are natural disasters ?

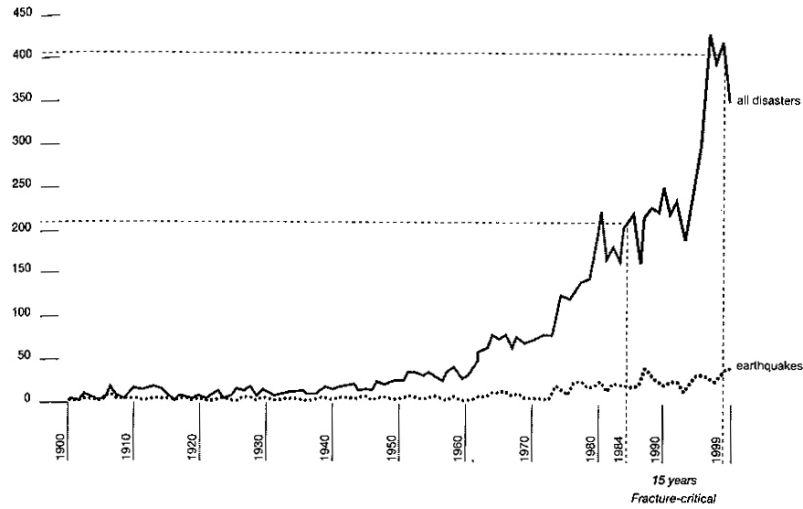
or : are the design decisions the disaster ?

are they responsible for fatalities and destruction ?





earthquakes don't kill,
houses do



sustainability is a time based idea

to sustain means :

to keep in existence to maintain to endure
to supply with necessities or nourishment
to support from below to keep from falling or sinking

sustainability is about all resources, and they are highly conditional to each other

air

water

raw materials and waste

biodiversity

human resources

climate

land and soil

renewable energy

financial resources

Species Extinctions Since 1800

4.2 species per day over the past 10 years disappear forever. One day they might be missing in your local park.

Number of Planets Needed

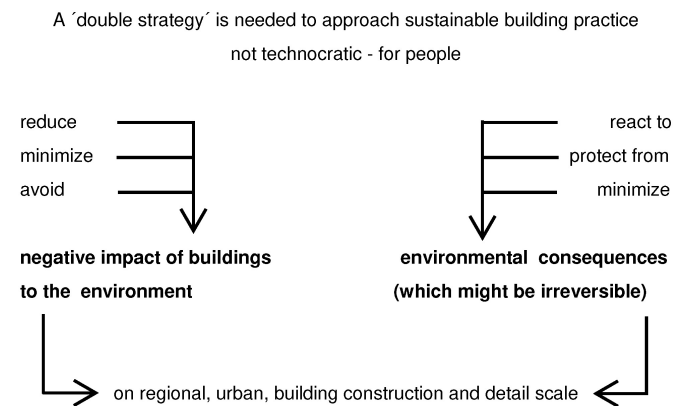
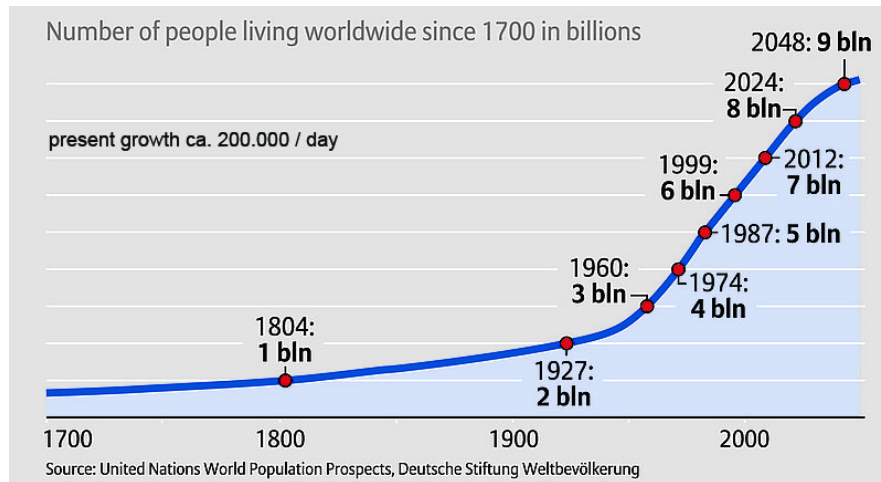
If everyone lived like a resident of the following countries, we would need:

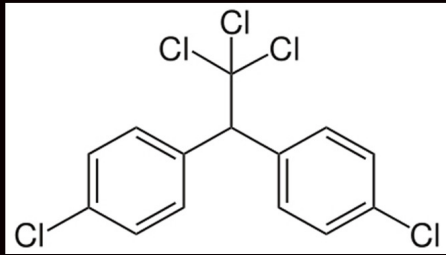
Country	Balanced Budget	Deficit Spending
USA	4.16	4.16
Russia	2.73	2.73
Brazil	1.95	1.95
China	1.18	1.18
India	0.47	0.47
World Avg	1.51 Earths	1.51 Earths

on august 22 was the world's 'overshoot day' in the US, it was March 27th

*Overshoot Day: The day of the year when our Ecological Footprint exceeds the Earth's biocapacity from Overshoot Day forward we are overdrawn on our future.

Global Footprint Network
Growth in human consumption





1948 noble prize in chemistry paul hermann mueller
1962 book 'silent spring' published by Rachel Carson
between 1968-1972 banned in most European countries and the US
time line only 24 year....

designing for durability

= one concept of sustainability

long life settlements = adaptive to change and food security

distant / resistant / resilient to extreme natural forces

long life buildings = adaptive to change and structurally robust

avoiding / reacting to precarious sites

resource intensive (long life materials, design and details for long life, relevant building time)

resources and skills for maintenance and repair nearby





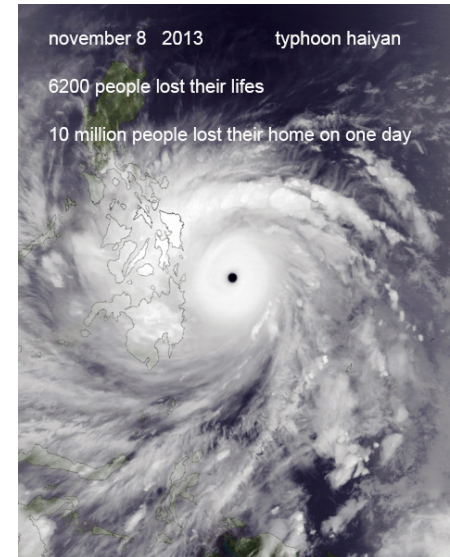
designing for temporary use
= another concept of sustainability

temporary settlements for new nomades
temporary safety and resources for life

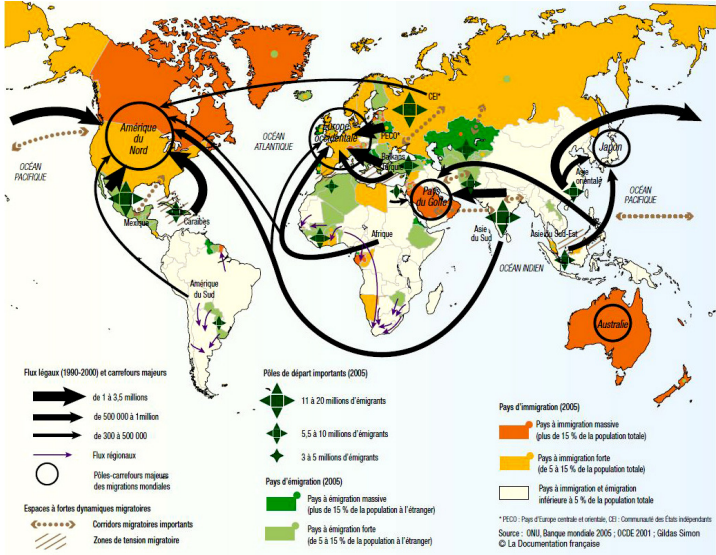
temporary buildings - mobile structures
light weight, deployable, designed for transport
few physical resources

adaptive to different topographies and climate conditions

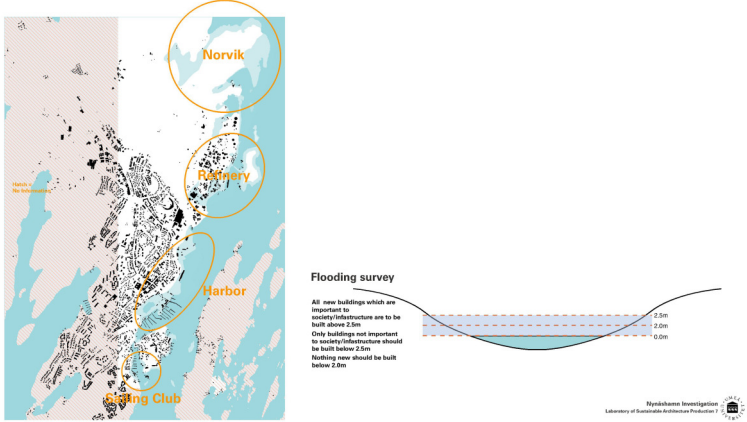
metapher : 'the new tepee'



2011 : 43,7 Mio registered refugees
(UNHCR)



TYPES AND DEVELOPMENT





Hamburg ahead

TOWARDS A NEW CITY
A GUIDE TO THE ELBE ISLANDS AND THE PROJECTS OF THE IBA

There is no sustainable architecture - there is only sustainable architectures !

Like all good architecture, sustainable interventions are highly contextual referencing local cultures, local social conditions, local environments, local climate, local economies. Other local resources including education and knowledge of local building skills are also an intrinsic part of this process.

Standardized and universal solutions labelled as 'best practice' are at best obstacles to the necessary strategic and tectonic diversity needed to implement sustainable interventions but can also be detrimental to the basic concept as they can often lead to accusations of 'green washing'.

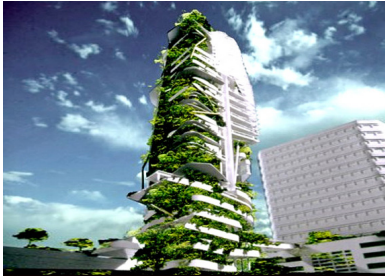
IBA = GENTRIFICATION = SHIT

Window Master

Schools of Architecture must not educate 'better engineers', but designers with artistic, social and political ambitions as well as team players with an understanding for radical approaches and new forms of transdisciplinarity outside the mainstream.

technology is the answer, but what was the question ?

cadric price 1935 - 2003



the fake promise

the unsuccessful experiment



the water-consuming artistic 'green-wash' - in permanent need for extreme maintenance



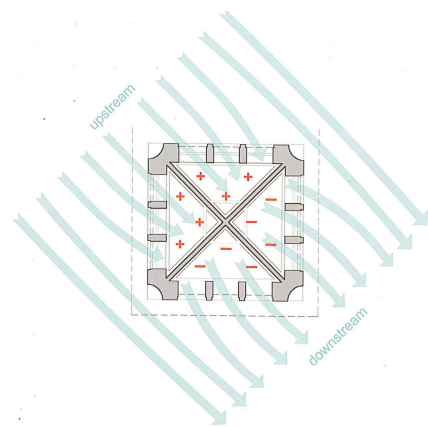
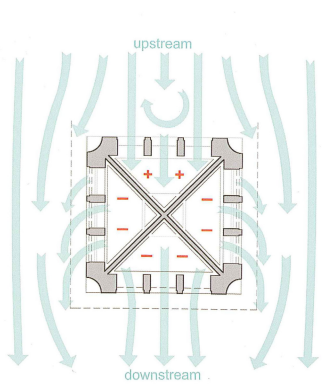
the sad reality

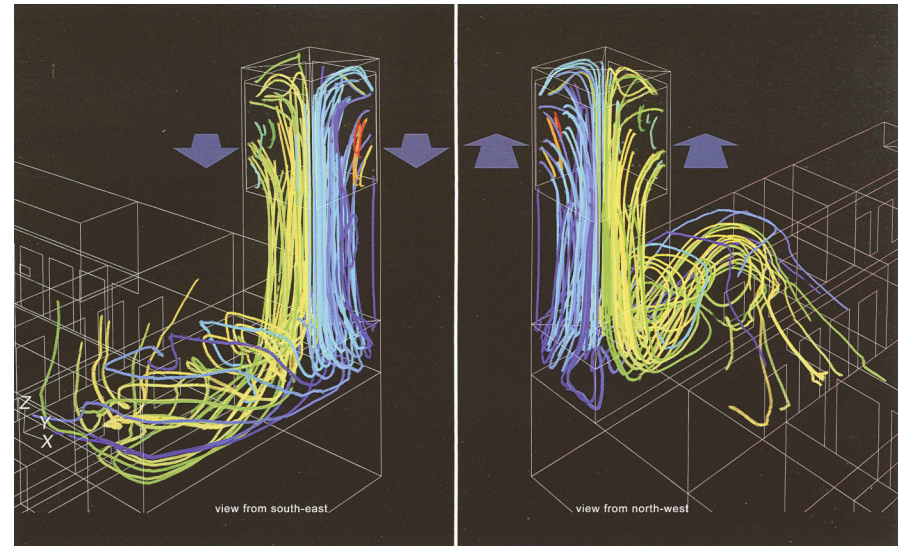
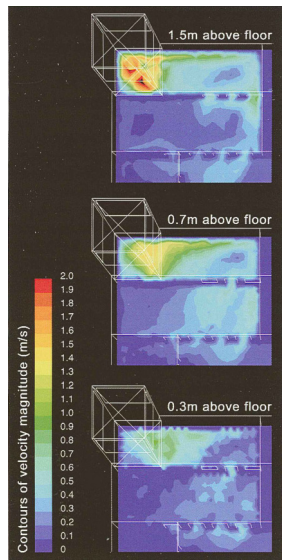


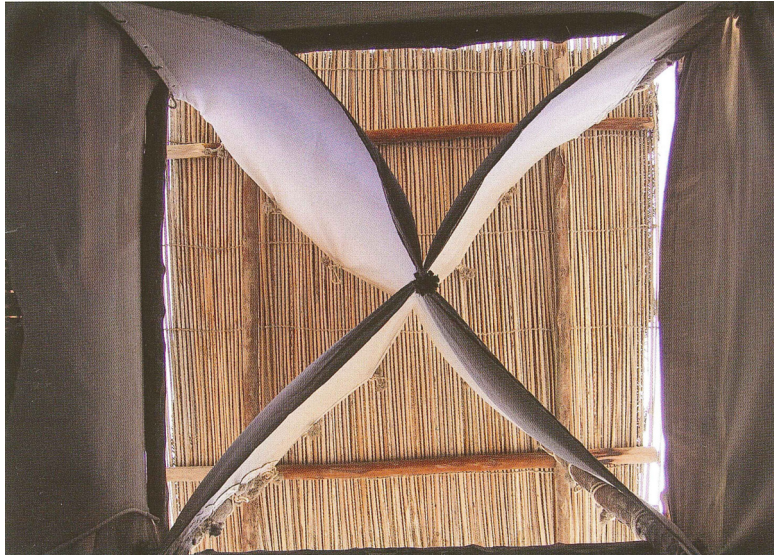
'climate responsive architecture' is a necessity.

To become substantially sustainable, it has to be connected to 'social responsiveness' and to 'material responsiveness'









Architecture is an artistic discipline. It has a lot of non scientific, non measurable and emotional aspects.

Sustainability is about resources and about the impact of buildings to our environment. It is widely measurable (though complex and measuring methods not much developed yet)

While good architecture touches the heart, sustainability must be proofed scientifically and not only proclaimed.

Just like a structural engineer must proof his dimensions.

I would suggest that traditional education is not really education at all. What passes for education in our public schools, in most of our private schools, and certainly in our universities and colleges today, is in fact a sort of training. It has very little to do with allowing for the unfolding of potentialities within the individual, which I see as the basis for real education. It is, rather, an attempt to create and to reproduce the structures of hierarchy and domination that are hegemonic in the larger culture...

Dan Chodorkoff

The Municipality of Nynäshamn plans for a different climate

- Local environmental goals
- Climate strategy and energyplan
- Covenant of mayors
- Layout plan
- Walk- and bicycle plan
- Waste plan
- Stormwater policy
- Extension plan for water and wastewater



Friskt att utvecklas

Agenda



Society development day with the theme: Sustainable development
26 July 2012
Nynäshamn, Sweden

Welcome to an inspiring day on the theme Sustainable development

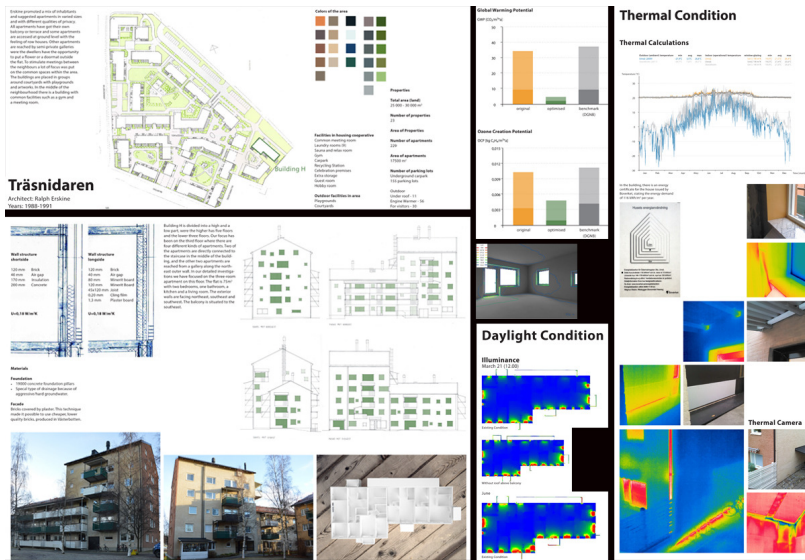
A sustainable society is a society where we can provide present and future generations a good living standard, in the perspective of economic-, social- and environmental wealth.

All planning and building of the society of Nynäshamn has to be sustainable in the long term. How can we achieve this? Which preconditions need to be fulfilled and how does the municipality of Nynäshamn realize its plans?

The purpose of the Society development day is to simulate debate about how to build a society and show how we want Nynäshamn to develop.

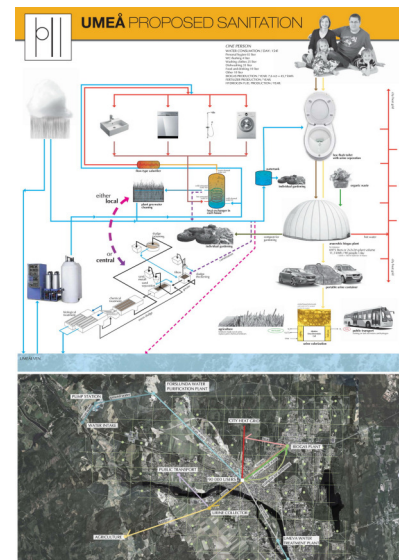
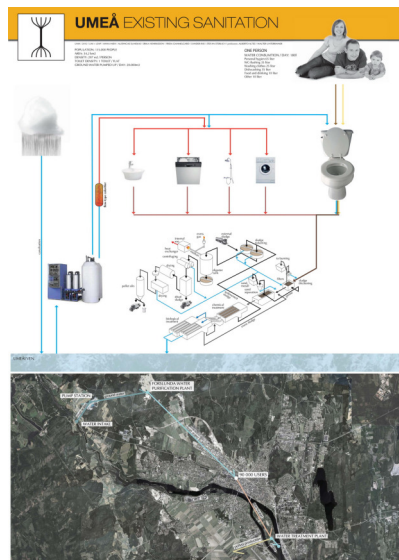
This day is primarily for those who live and work in Nynäshamn and want to learn and take part of the future plans of the development of the municipality

The moderator of this day is Jan-Ove Östbrink, environment- and planning manager in the municipality of Nynäshamn.

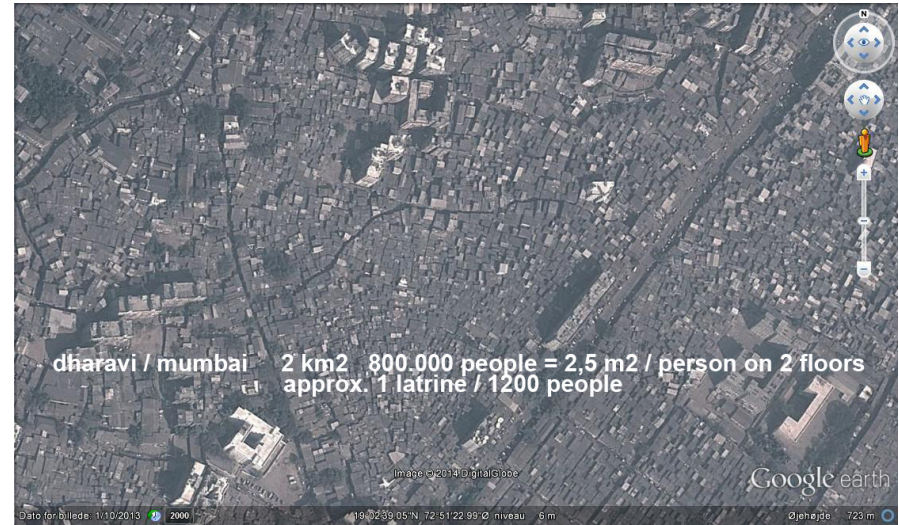


working for a sustainable environment
 requires working on all scales :

the city / town / village
 the quarter
 the building
 the component
 the detail



according to WHO, 2,6 - 3 billion people live without proper sanitation







'architects are not able to design a toilet'

**dr. jockim arputham of indian national slum dwellers organisation
to LSAP**



United Nations' Millennium Development Goals

<p>Goal 1. Eradication of extreme hunger and poverty</p> <ul style="list-style-type: none"> • Halve the proportion of people whose income is less than 1 USD between 1990 and 2015 • Halve the proportion of people who suffer from hunger between 1990 and 2015 <p>Goal 2. Achieve universal primary education</p> <ul style="list-style-type: none"> • Ensure that all the children are entitled to primary education by 2015 <p>Goal 3. Promote gender equality and empower women</p> <ul style="list-style-type: none"> • Eliminate gender disparity in primary and secondary level by 2005 and in all levels by 2015 <p>Goal 4. Reduce child mortality</p> <ul style="list-style-type: none"> • Reduction of two-thirds the under-five mortality by 2015 	<p>Goal 5. Improve maternal health</p> <ul style="list-style-type: none"> • Reduction of three-quarters in maternal mortality ratio by 2015 <p>Goal 6. Combat HIV/AIDS, malaria and other diseases</p> <p>Goal 7. Ensure environmental sustainability</p> <ul style="list-style-type: none"> • Integrate sustainable development principles into country policies and programmes and reverse the loss of environmental resources • Halve the proportion of people suffering the lack of access to safe drinking water and basic sanitation by 2015 • Achievement of significant improvement in the lives of at least 100 million slum dwellers by 2020 <p>Goal 8. Develop a global partnership for development</p> <ul style="list-style-type: none"> • E.g. increase aid to developing countries, creation of nondiscriminative trading and financial systems and debt reductions
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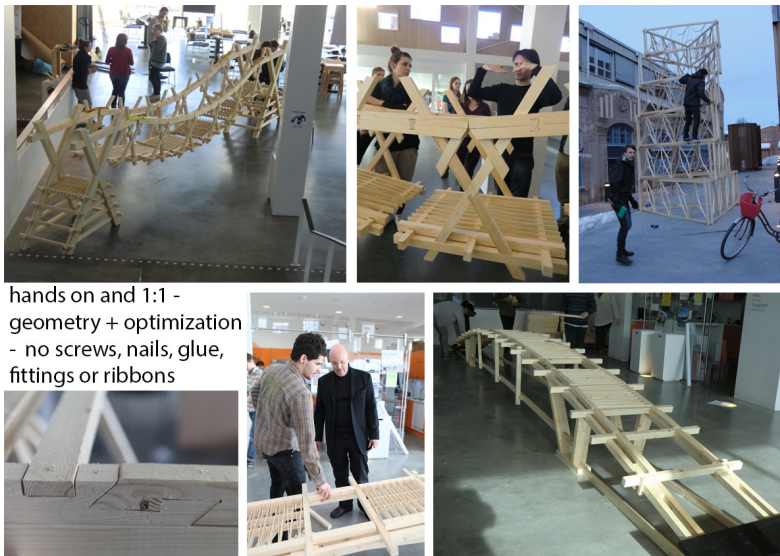
there is no sustainability without reducing inequality

1% population 40 % wealth
 10% population 85 % wealth
 50% population – 1 % wealth

The hallowed ground of our so-called creativity and the aestheticized stronghold of architectural academia may well require nothing less than a direct frontal assault if we are ever to establish an effective antidote to the status quo of professional practice that it largely serves to legitimize.

Kenneth Frampton 'Urbanization and Its Discontents: Megaform an Sustainability'

a holistic approach in sustainable architectures requires a holistic, versatile and transdisciplinary approach in architectural education including cultural, social, environmental and economic sustainability



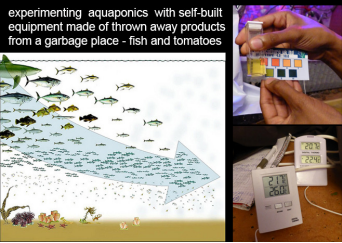
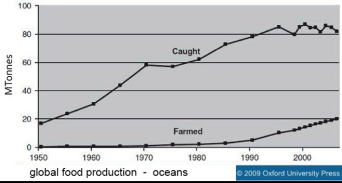
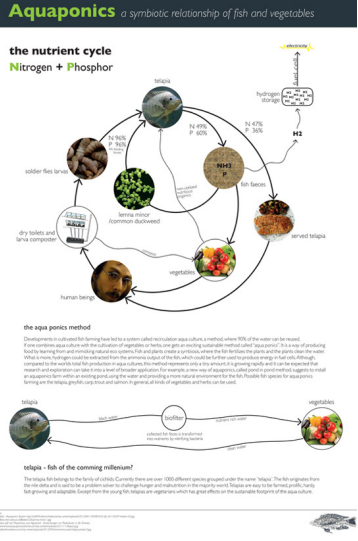
no city without food

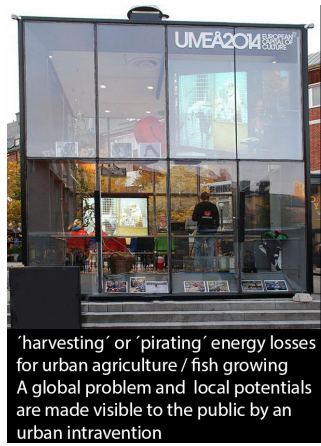
no food without agriculture, the development of urbanism went parallel to the development of agriculture

future cities - food cities ?



'aquaponics' as one form of urban fish farming addressing many complexities

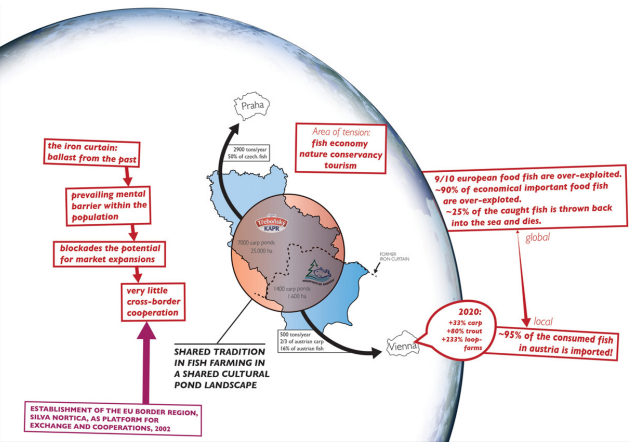
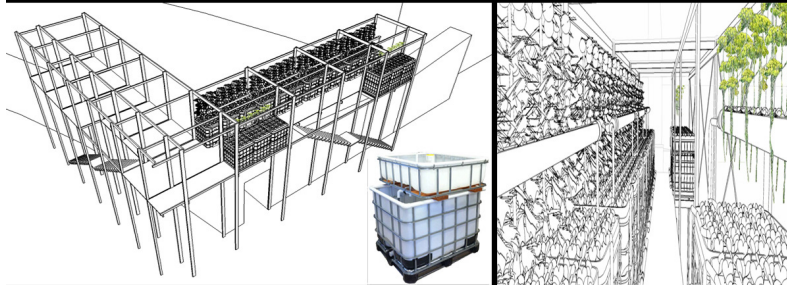


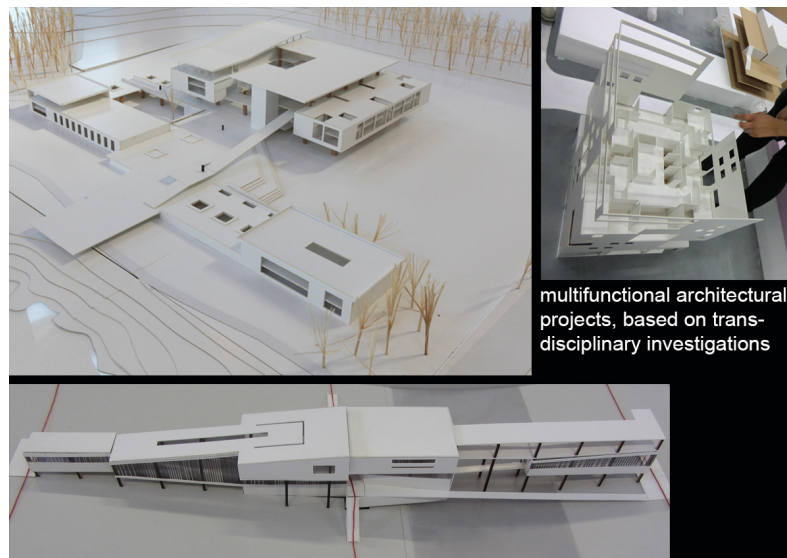
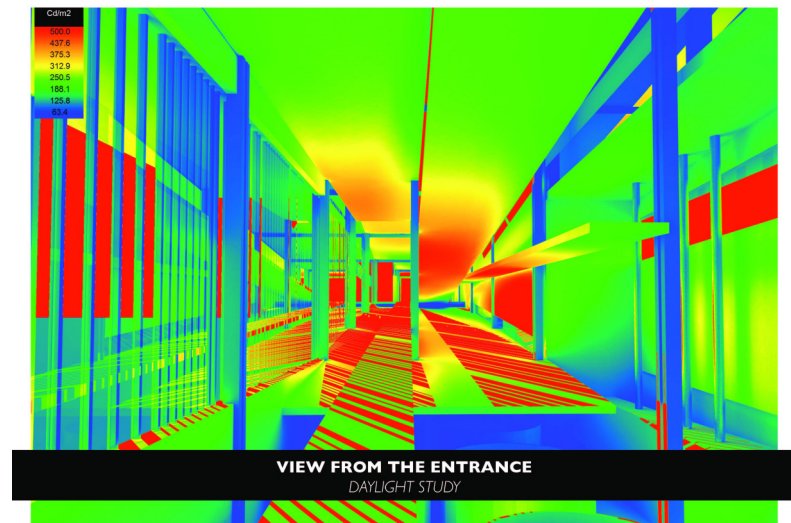
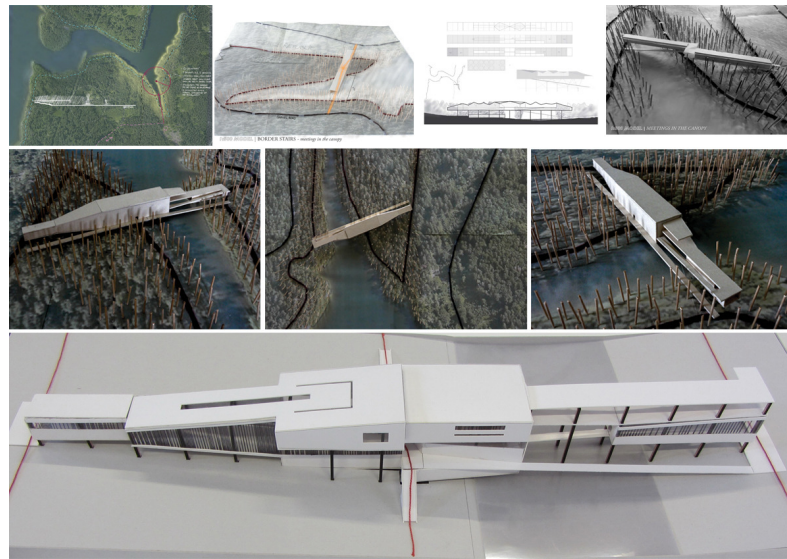


'harvesting' or 'pirating' energy losses for urban agriculture / fish growing
A global problem and local potentials are made visible to the public by an urban intravention



UMA
LSAP Aquaponics workshop





the aquaponic project is one example of student work, addressing the connection between the city and its hinterland in terms of space and food production.

the final outcome was hybrid buildings which question the separation between housing/education and experimental forms of farming.



**urban food
urban food waste
future cities - food cities ?**

Sector	Greenhouse gas emissions of food waste by sector		
	Waste amounts in EU27 t/yr (rounded figures)	Greenhouse gases emissions t CO ₂ eq./t of food waste	Mt CO ₂ eq./yr in EU27
	a	b	a x b / 10 ³
Manufacturing	34 756 000	1.71	59
Households	37 703 000	2.07	78
Others	16 820 000	1.94	33
Total	89 279 000	1.9	170



the urban food project is one example how different and essential aspects of sustainability are integrated into design projects :

we work with urban agriculture and food production in a 'non symbolic' way

we address how the urban population is alienated from food production, we unveil corrupted food cycles and their economy.

we address biodiversity and ecological cycles as a pre requisite for clean water and food.

we support and train trans-disciplinary approaches across very different disciplines and experiment with advanced methods of ecological farming

we negotiate with landowners and political stakeholders to develop win-win situations – we question the 'ownership' of wasted energy

we address local climate and energy sources as a condition for improved dwelling and food production

we address problematic urban patterns and existing building stock and the potential for structural and aesthetic transformation

we design transformation projects in specific contexts, using advanced tools of optimization

we do not focusing on an architecture that creates isolated objects but develop concrete spatial strategies to improve our environment as well as preparing for survival in a possibly irreversibly damaged physical and social environment

we are not only talking, we 'do' things, building prototypes at 1:1 to test and educate; we open up academic borders and communicate directly with society with the language of research based design

Sustainable Architecture is not about buildings as such.

It is about the living conditions of humans now and in the future.

In its essence, sustainability is about survival, although at the moment it is the most misused term and not only in the building sector.

ignore conventions

start something new

dare to be wrong

john michael bishop / elizabeth blackburn nobel prize winners medicine