Urban Future on Trial: Creative Response(s) to Climate Change[1]

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Introduction

Today, it is obvious that climate changes cannot be prevented, but only reduced and modified. Our cities and society, limited by their increased demands and available resources, are trying to awake their environmental responsibility and overcome present and future consequences of our choices, conformism and arrogance. The dilapidated and contested concept of sustainability has been replaced by new paradigms (for ex. 'low carbon cities'), which represent another attempt to cover a wide range of problems, from pollution to resource management. Unfortunately, these issues mainly remain in the domain of general planning strategies, local initiatives, comprehensive guidelines, (anti)utopian visions and predictions, but it is obvious that urbanized areas could eventually become an opportunity and/or potential for higher energy efficiency, supported and facilitated by new electronic armature and adjusted to the latest eco-demands.

Thinking globally…

Contemporary architecture, urban planning and design reflect various visions of the future. They combine the elements from e-e/eco/e-topia(s) with more 'mundane' scenarios imposed by reduction strategies, policies, building codes and laws. However, it is still difficult to estimate what is really efficient, sustainable, affordable, renewable, user/environmentally-friendly and, above all, ethical in our 'reinvented' perception of energy transition. In the meantime, UN Habitat has detected several innovations which occurred globally and all of them represent options which should facilitate the expected level of synergy (UN habitat 2009).[2]

The scale of actions generated by these 'streams' could vary but all of them tend to implement (or test) new ideas in order to improve urban environment, increase energy efficiency, provide additional (electronic/virtual) layers of integration and interaction and shape/propose new and attractive image(s) of a future bio/technopolis - with significant competitive advantages. However, the projects and initiatives conducted on different levels reveal weaknesses and discrepancies between expectations and outcomes, but the exchange of ideas, their assessment and blending certainly trace new trends in architecture and urban planning.

…Targeting locally

Global strategies might seem too ambitious, unrealistic and even blurred when their implementation has to be adjusted to local complexities. Therefore, the real action is usually channeled through three main types of programs - new cities, joined initiatives (C40, Transition Towns, Ecocities) and urban (re)development projects. Due to specific socio-economic conditions and serious limitations, a number of initiatives and singular projects are highly sensitive towards the involved actors and environmental background.

For example, the 'EcoCity Project' from India, represents a community-oriented approach suitable for developing and undeveloped countries. Initiated in 2002, it involves several stakeholders[3] and it aims to improve the environment, pollution control and sanitary conditions, to protect environmental resources and infrastructure, as well as to create aesthetic surroundings of 12 towns.[4] Consequently, the 'EcoCities' should tackle the environmental quality, socio-economic aspects, the problems of design, recycling, transportation and urban management of these urban nodes.

The opposite approach represents a specific trend-making, which is more adjusted to highly developed urban environments, able to financially support new visions and stimulate their dissemination. A good example of this practice is the work of a pioneer of bioclimatic architectural design, Ken Yeang, who uses a unique fusion of high-tech and organic principles, recognizable in numerous high-rise buildings. His esthetic and design strategy rely on ecosystems hierarchy (Yeang 1999), also generating new techniques. As a result, Yeang's skyscrapers represent vertical cities with hanging gardens, sophisticated technology and low energy consumption, creating a new kind of climatic filters which respect the original ecosystems.

Transcending scales, respecting limits?

The eco-visions might also challenge our perception and disturb boundaries between reality and imagination. The new mega projects of eco-cities (like Masdar, Dongtan and Tianjin), conceived to offer solutions to problems of energy security and climate change, actually reveal images of total(itarian) planning, a futuristic symbioses of high technology and elitism and a questionable sustainability which could finally be transformed into exclusive self-sufficiency.

However, there are other ways to achieve the 'eco-city' label. The well-known examples of Curitiba and Bogota, two cities that managed to transcend their economical and social obstacles, could be used as role models for numerous urban nodes in developing countries. The improvement of their environment is obvious - from well-integrated and organized public

transportation, preserved and expanded green areas, to community development and lower level of pollution.

Midrand, a small and fast growing city in South Africa, has chosen a slightly different path supported by international funding and coordination.[5] The community food gardens, an eco-bank and eco-village, green office buildings, waste recycling, eco-friendly construction and the use of environmentally responsible technologies have enabled better quality of life, which is now threatened by political centralization. Almost simultaneously, a similar model, based on the recognizable eco-design criteria, was successfully applied in a different socio-economic framework - in the Ecocity of Sarriguren, the first one built in Spain (1998/2007).[6]

Obviously, the number of methods and tools, which should facilitate healing of our living environment, increases every day, but their impact still has to be confirmed and measured. Therefore, the question remains - should we just adapt to climate changes or search for more advanced and efficient solutions that could prevent this process?

Between fashion and creativity

The climate change and e3 imperatives have definitely influenced the contemporary architecture and the appearance of our cities. At the same time, a new shift in global comprehension has caused modifications of our life style(s), underpinned by increasing interest for a fashionable symbiosis of techno-green aesthetic. The new symbols of a 'clean' and environmentally friendly approach are nowadays included into numerous projects - from public buildings/spaces to social housing[7], connecting benefits from the physical and electronic surrounding.

The project for the Academy of Science in San Francisco, designed by Renzo Piano, is one of these architectural 'messengers' which combine sustainable features, attraction and research. Its experimental roof blends with landscape, providing the necessary thermoregulation, light, irrigation and an exhibition space for 1.7 million native California plants species. The building certainly represents a new urban icon, able to cover up to 10% of its own energy needs.[8]

The architecture has also added a certain 'chic' to the recycling process, especially through the work of 2012 ARCHITECTEN from Rotterdam. In their process of 'REdesign, REsearch and REbuilding' they incorporate already used, locally accessible building material(s). The office has also developed some new techniques – for ex. 'harvest map', which locates waste material close to the building site, reducing the transportation costs and greenhouse gases.

The environmental problems caused by transport have instigated many interesting programs. For example, Vélib' in Paris is one of the largest bicycle sharing systems in the world, with 20.000 bikes and 1450 stations. The similar initiatives could be found in other world cities,

promoting a new life style, upgrading urban culture, reducing pollution and enabling a new perception of urban space. Less ‘urban’, but equally beneficent, is the Fair Food Project launched by the White Dog Community Enterprises in Philadelphia. It encourages interaction between restaurants and local farmers in order to reduce the impact of food system on the environment, stimulating a shift from fossil fuel-based agriculture to solar–based agriculture.

Beyond the urban realm

The new modes of communication, as well as the virtual levels of our reality, could be used as mediators and transmitters of valuable ideas. Spreading the global knowledge and skills, they should enable numerous strategies and materialize important aims for our greener and healthier future. ‘Solaripedia’ (www.solaripedia.com) - an extensive online resource for green architecture, green building and green development and ‘e2’ (www.pbs.org/e2) - an ongoing PBS series of movies about the economies of being environmentally conscious, certainly provide a good insight into new solutions for accumulated environmental problems. The ‘e2 series’ (launched in 2006) successfully uses power of different media to present innovative approaches in design, energy and transport. The movies also have an educational purpose, while their quality has been ensured by the participation of well-known architects, politicians, Nobel Prize-winners and other innovators. The involvement of famous actors as narrators - like Brad Pitt and Morgan Freeman, has definitely added another layer of attractiveness for possible consumers of this material.

Finally, somewhere between science fiction and ambitious research, the concept of biomimicry has been explored in the project TERMES (Termite Emulation of Regulatory Mound Environments by Simulation). The complex internal structure of mounds, their ducts and channels is used as a model for our possible habitat, which should be able to regulate and control the internal environment, respond to external changes and rely only on renewable energy sources.

Conclusion: A hip place to be?

In the contemporary world, overwhelmed by the mass-production and hyper-consumerism of information, attractions and - pollution, cities have gained a new mission in a general strategy that should improve current condition caused by climate changes. The new trends in architecture and urban design, as well as some new tools in urban planning, have enabled application of latest spatial models, increased popularity of environmental themes and ‘green’/’bio’/’eco’ aesthetic. Even though this approach might seem superficial, it could provide some benefits in the long run. Something that is nowadays considered as fashion could eventually become our culture. Consequently, the imperatives of energy efficiency,

eco-friendliness/awareness and electronic interconnectedness could become our regular framework, which should not be imposed but embedded in our perception.

Obviously, the innovative and creative solutions could be used as fine, but durable threads of future environmental consciousness and their importance cannot be neglected. Their scale, scope, background and limitations could differ, as well as their promotional 'package', but their adjustability to local conditions should become a necessity and a magnet for all target groups.

Finally, the model implemented in Big Dig House in Lexington, MA (SingleSPEED Design) could represent a good beacon for all evolving 'hip' eco-architects. Using the steel beams and concrete from the most expensive highway project in the history of the US, the authors created a structural system of this private house. The tangible elements of urban history are transposed into a new environmental concept while (re)used components, which could carry high loads, successfully enable organization of large (and heavy) roof gardens.

Maybe it is just a matter of fashion, a question of a life style or an ironical remark upon past human failures, but the 'importance of being green' will certainly shape behavior and an outlook of generations to come - with or without apocalyptical subtitles.

Notes

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2. *These innovations are* - development of renewable energy, striving for carbon-neutral cities, distributed power and water systems, increasing photosynthetic spaces as part of green infrastructure, improving eco-efficiency, improving sense of place, sustainable transport, infrastructure priorities and transit planning, street planning and mobility management and developing cities without slums.
3. The main stakeholders are: Central Pollution Control Board and Ministry of Environment & Forests (India), GTZ and Capacity Building International (Germany), Austria Recycling, Adelphy Research and Asia Urbs Programme
4. The cities were selected according to their size, cultural/historical/heritage/tourism importance, regional distribution, environmental improvement needs, ability for PPP and private investments, generators of economic momentum and public participation in decision-making process.

5. The program and the Midrand Eco City Trust were mainly funded by the Royal Danish Government.
6. In 2000, this project was given the distinction of 'Good Practice' by the UN Center for Human Settlements and in 2008 it was awarded by the 7th European Urban and Regional Planning Award in the category of Environmental Sustainability for 2008.
7. For example, the concept of affordable housing conducted by Jonathan Rose, a New York developer, who underlines the importance of community diversity and sustainability, in a living environment which respects natural conditions.
8. It is estimated that 60.000 photovoltaic cells annually prevent the release of 405.000 pounds of greenhouse gas emissions.

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