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Further step beyond green - From distractive, to balance, towards restorative built environment

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Abstract This main concern of the paper is to elaborate developing strategies and trends which strive for achieving sustainability in building and urban design to create sustainable built environment. Also discuss how far the conventional building practicing and construction activities lead to many serious negative impacts on our natural environment. The main goals of establishing green agenda, in the 2nd half of last century, were to minimize these distractive impacts and seek out a balance between built and natural environment. By the millennium end was discovered that, more pleasing and enjoyable human built environment is not only guaranteed by reducing the harm that stems from constructions and creating buildings which provided protection with the benefits of natural elements. “For some, green architecture is a black and white definition, set by LEED (Leadership in Energy and Environmental Design) standards.”

Many new movements, like biophilic design, have recently gained much momentum within the building community, which provide further step beyond green to restore beneficial contacts between people and natural environment. While the green movement has often focused on the means, biophilic design tends toward emphasizing the end results, establishing natural-based habitats for humans to live and work. Biophilic Design incorporates green building ideas, but considers that true sustainability must include quality of life issues involving human physiological & psychological-health and well-being. So, Biophilic design incorporates elements derived from nature in order to maximize human functioning and health.

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Introduction

The problematic

The beginning of destruction process to the natural ecological balance has been referred to the industrial revolution in 19th century in developed countries. Exploitation of natural resources for excessive production strategies, struggle for global economic manipulation, beside vast acceleration of urbanization process led to a break in the global ecological balance. Subsequent are climate change, ozone problem, CO₂

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omissions, global warming and all related natural disasters around the world. Alarm Sounds proceeded through many ecologists and scientists warning all nations, that “disturb and misuse nature” threat human life and our co-existence on earth. Many team-works from different disciplines, international conferences and international political agreements have been organized to develop strategies and take actions: against environmental degradation and reducing carbon emissions. The outcomes of these efforts concluded the concept of sustainability. Sustainable development, especially in the field of urbanism, aims to build a balanced relation among the physical environmental and local socio-economic conditions considering various applied aspects of the built environment.

The main purpose of paper

is to argue the dialectical relationship between built and natural environment in-light of the sustainable development concept and the interrelations form among its fundamental corners (Environment, Society, and Economy). Also to elaborate the important question; how we can restore our ecosystem vitality to modern urban systems?

Concept of metabolism: linear versus circular cycle

Metabolism refers to the processes which we use in producing food and energy to conduct our daily lives. The wasteful process associated with city metabolism is linear in form. That is, the city consumes goods, energy and food at high rates and pollutes the environment heavily with organic wastes, noxious fumes and inorganic wastes (Fig. 1a).

It has been suggested that this linear urban metabolism should be converted to a form of ‘circular metabolism’ (Fig. 1b) through the actions of design and management. Circular metabolism approximates to the systems found in nature where waste products are integrated into the wider ecosystem – that is, new inputs of energy and output of waste are minimized through the process of recycling [1].

The warning is sounded – (distraction process)

The first warning of the enormity of the global environmental problems was sounded in 1970 at the first general meeting of the Club of Rome. In 1970 and 1971 the first large-scale modeling studies of global environmental conditions were actually created, both prepared as input to the 1972 United Nations (UN) Conference on the Human Environment. The Study of

Critical Environmental Problems (SCEP) focused on pollution-induced ‘changes in climate, ocean ecology, or in large terrestrial ecosystems’.

Edward Goldsmith and four colleagues at that time published their seminal book “A Blueprint for Survival” in 1972, which largely concerned with: the impacts of overexploitation of the Earth’s resources, the underlying problem that lays at the very root of our dilemma today, the potential for CO₂ emissions to lead to significant climate change. The most alarming aspect of this impending change is its unpredictability. Despite countless completed and ongoing regional studies we still know very little about what will actually happen, rather than what may happen [2].

In the early 1970s, several other large-scale atmospheric issues came to the attention of the general public. Notable among these were acid rain, upper-atmospheric pollution problems and stratospheric ozone depletion [3].

Natural resources degradation process

Schumacher warned in his book “Small is Beautiful” (1974), that our planet is being threatened by overproduction, the human race is consuming at an alarming rate, endangering the tolerance margins of nature, and so threatening the life support systems that nurture humankind. It has already been noted that more than 50% of the world’s population will soon be living in cities (Fig. 2), contributing to a massive consumption of global resources (Fig. 2). Giradet (1992) mentioned that the world’s cities occupy about 2% of global land surface, but they use 75% of the world’s resources and release about the same percentage of global wastes. Hardin argued in his book “The Tragedy of the Commons” (1977) that if everyone maximized gain from commonly held property (whether land, sea or air), the result would be the destruction of those commons [1].

Energy and emissions to the air

Since the 70th of 20th Ct. a growing awareness of wider impact of human, or anthropogenic, emissions through the air have been witnessed ‘big three’ issues of acid deposition, stratospheric ozone loss, and global warming. However, there is an understanding that the problems have a common cause in human mainly depending on fossil fuels to produce energy. Of the burden of disease attributable to environmental conditions, it was found that 36% could be attributed to poor urban air quality. In total about 1.3 billion urban residents worldwide are exposed to air pollution levels above recommended

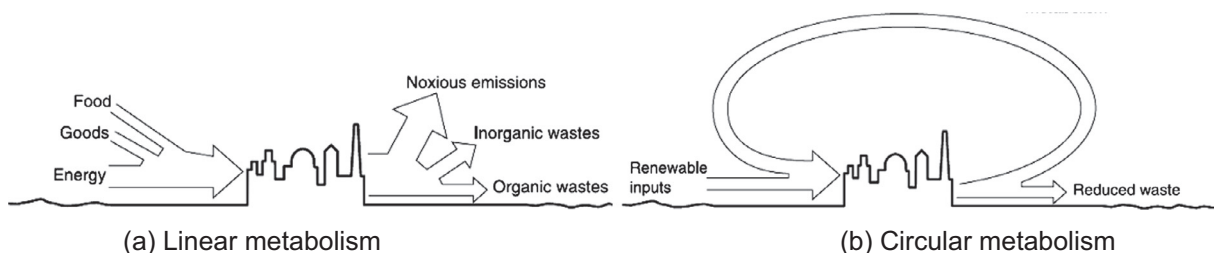


Fig. 1 Metabolism concept of cities.

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