



## Sustainable Architecture

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### Can Sustainable Design Sustain?

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#### ABSTRACT

The aim of this study is to offer a commentary on the sustainability of sustainable design science. After a brief introduction on the subject, key concepts of sustainability are presented and then discussed from the viewpoint of management. Although sustainability may survive in the theory domain, we argue that it is impossible for the concept to survive as a practice under current circumstances. It is vital to draw the attention of top-level leaders to this subject; development can only be realised if the issue is placed on the agenda of top-level decision makers.

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#### Introduction

Key discoveries and time periods in history, such as mankind's use of fire, the beginning of writing, growth of religions, and the Renaissance, have affected the human race deeply. The transformation of society from agrarian to industrial was undeniably another significant historical transition. The rise of capitalism and colonialism, and their antithesis, Marxism, are occurrences of the distant past. World wars and economic depression were milestones of the twentieth century, followed by the end of two major world wars, founding of the UN, and use of technology for capitalist purposes—leading us to today's consumer-oriented society. In opposition to the problems faced in contemporary society, the sustainability concept has emerged.

#### Key subjects on sustainability

Steele (1997) associated the introduction of sustainability with the first Earth Day celebration in 1970—a response to the ecology-conscious movement of the 1960s and the great oil crisis in 1963. The study, 'Limits to Growth', was published in 1972. In 1987, the Bruntland Commission's report known as 'Our Common Future' was published by the UN, with contributions from member countries throughout the world. Sustainable development was the focus of the report, which was followed by 'Agenda 21', a report based on the 1992 Earth Summit (Rio Summit). The latter report brought some recommendations for architects; subsequently, the American Institute of Architects expanded on findings of the report<sup>1</sup>.

The theory of sustainability has evolved, and a well-developed theoretical background on the subject has been provided based on the collective contribution of many researchers and institutions, including Lewis, Gaziulusoy, Boecker, Hyde, and Mclenon. Steele introduced major concepts of multi-criteria analysis (x-y-z analysis) for decision makers and critical methods for architects, such as life cycle costing, life cycle inventory, and life cycle modelling. (It should be noted

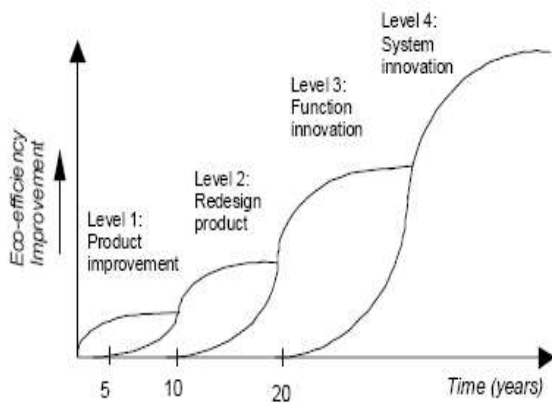
that Steele has conducted an extensive study on this subject, but there may be some errors regarding his origins of life cycle assessment on page 205)<sup>1-6</sup>.

Parallel to the development of well-constructed theories for making decisions pertaining to sustainability, Yudelson (2009) enlightened us about contemporary global issues associated with the concept. He projected that the world's population would increase from 6.6 to 9.4 billion by 2050; Arctic ice would shrink by 20% after 1970; China alone would need 220 billion square feet of new space for residential, commercial, and industrial uses; and buildings would account for more than 40% of all carbon dioxide emissions, with the majority of emissions in the top 40 cities of the third world (mostly China and India). He introduced some scientific hypotheses, such as Gaia, biophilia, and the natural step (TNS), and mystic and unmaterialistic approaches like Feng shui<sup>7</sup>.

Five major concerns have been identified as they relate to 'green building'; they include sustainable sites, energy efficiency, water efficiency, material resources, and indoor environmental quality. On the other hand, there have been assessment attempts to counteract these concerns. Certification systems are utilised, and one of the most important systems is Leadership in Energy and Environmental Design (LEED). The concept was developed from 1990 to 2005. Eco-charrettes, incentives, and fees are other effective tools in this area<sup>7</sup>.

#### Management and sustainable design

Previous efforts to understand sustainable design are summarised in published studies. The effectiveness of design according to levels has been discussed thoroughly by Chung, Brezet, Bhamra, and others. Figure 1 shows levels of improvement based on a time scale. It is inferred that top-level attempts for improvement are the most effective in producing results<sup>8-11</sup>.



**Figure.1. Levels of Design**

When Chung's model is considered, it becomes obvious that every stakeholder has a role in the management of design. It is vital to note, however, that strategic level or top-level attempts are most important. Similarly, Brezet defines levels of design and shows that system innovation is the most effective<sup>8,9</sup>.

### Results and Discussion

Considerable intellectual effort has been invested in the subjects described in this study, and such efforts can easily be put into practice. However, problems on the side of practice are apparent. Sustainability is a subject that relates to our world in the physical domain, and a focus on theory only is useless; theory must translate into action. Thus, the role of top decision makers is critical. Silence on this subject from the world's top three decision makers harms the practical side of the debate; thus, sustainability may not be sustainable as an ideal because of preoccupation with the status quo<sup>12</sup>.

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