



Designing a Green Planet

By **Stephen Roberts** —————

Architecture (Latin *architectura*, after the Greek- *arkhitekton* – meaning “chief” and “builder, carpenter, mason”) is both the process and the product of planning, designing, and constructing buildings and other physical structures. Architectural works, in the material form of buildings, are often perceived as cultural symbols and as works of art. Historical civilizations are often identified with their surviving architectural achievements.

In simple terms, Architecture has to do with planning, designing and constructing form, space and ambience to reflect functional, technical, social, environmental and aesthetic considerations. It requires the creative manipulation and coordination of materials and technology, and of light and shadow. Often, conflicting requirements must be resolved to achieve harmony. The practice of architecture also encompasses the pragmatic aspects of realising buildings and structures, space planning, sustainable development, scheduling of the project, cost estimation and construction administration,.

Origins of the Principals

The earliest surviving written work on the subject of architecture is *De architectura*, by the Roman architect Vitruvius in the early 1st century AD. According to Vitruvius, a good building should satisfy the three principles of *firmitas, utilitas, venustas*, commonly known by the original translation – firmness, commodity and delight. An equivalent in modern English would be:

- ▶ **Durability** – a building should stand up robustly and remain in good condition.
- ▶ **Utility** – it should be suitable for the purposes for which it is used.
- ▶ **Beauty** – it should be aesthetically pleasing.

According to Vitruvius, the architect should strive to fulfill each of these three attributes as well as possible.

Modern interpretation of architecture has evolved considerably in the last few decades. In the late 20th century a new concept was added to those included in the compass of both structure and function, the consideration of sustainability, hence sustainable architecture. To satisfy the contemporary ethos a building should be constructed in a manner which is environmentally friendly in terms of not only the materials, but also its impact upon the natural and built environment of its surrounding area and the demands that it makes upon non-sustainable power sources for heating, cooling, water and waste management and lighting.

Environmental sustainability has become a fundamental issue, with profound effect on the architectural profession. Many developers, those who support the financing of buildings, have become educated to encourage the facilitation of environmentally sustainable design, rather than solutions based primarily on immediate cost. Major



examples of this can be found in greener roof designs, usage of biodegradable materials, and more attention to a structure's energy usage. This major shift in architecture has also changed upcoming developers, planners and policy makers to focus more on the environment.

Designing space essentially means that one has to take into consideration a wide array of factors. Right from the surroundings and natural elements to how the space will be utilised for the end users without creating an imbalance on the environment.

The United Nations World Commission on Environment and Development defines sustainable development as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" This definition remarkably sums up what sustainable architecture should stand for.

There are some aspects of sustainability that developers need to keep in mind while designing places, some of which are as follows:

- ▶ **Optimising Space Potential**- Creating sustainable buildings starts with proper site selection, including consideration of the reuse or rehabilitation of existing buildings. The location, orientation, and landscaping of a building affect local ecosystems, transportation methods, and energy use. It is important to incorporate smart growth principles into the project development process, whether the project is a single building, commercial office space, or shopping/recreational area. Space is a critical issue in optimising site design, including locations of access roads, parking, vehicle barriers, and perimeter lighting. A site design must integrate with sustainable

design to achieve a successful project. The site of a sustainable building should reduce, control, and/or treat natural elements. If possible, strive to support native flora and fauna of the region in the landscape design.

- ▶ **Multi-functional places-** In the current times when not only are people price sensitive but also time-conscious, it is imperative that the places are designed keeping these two parameters in minds. A place needs to address multi-functional aspect of people's lives. Some examples are- recreational/shopping area adjacent to residential complexes or a studio apartment which can double up as a small office.
- ▶ **Efficient use of energy-** With continually increasing demand on the natural and exhaustible fuel resources, concerns for energy independence are increasing, and the impacts of global climate change are becoming more evident, it is essential to find ways to reduce the carbon foot print, increase efficiency, and maximise the use of renewable energy sources which are available. Improving the energy efficiency of existing buildings is important to increasing our energy independence. Government and private sector organizations are increasingly investing and encouraging operating net zero energy buildings as a way to significantly reduce our dependence on exhaustible fuel-derived energy.
- ▶ **Material usage-** the materials used in a sustainable building minimise life-cycle environmental impacts such as global warming, resource depletion, and human toxicity. Environmentally preferable materials have a reduced effect on human health and the environment and contribute to improved worker safety and health, reduced liabilities, reduced disposal costs, and achievement of environmental goals.
- ▶ **Sustainable/green designing-** People are getting more and more eco-consciousness by the day. There is great merit in designing places which are energy efficient, naturally well lit, in-sync with the overall surroundings and cost effective in maintenance.
- ▶ **Importance of consumer point of view while designing-** While designing, it is important to consider the consumers point of view. One needs to be cognizant of the fact that a space which an individual occupies has a larger effect on his/her personal/professional life. The environmental quality of a building has a significant impact on the occupant's health, comfort, and productivity. Among other attributes, a sustainable building maximizes daylighting, has appropriate ventilation and moisture control, optimises acoustic performance, and avoids the use of materials with high-VOC emissions. Well designed and end-user oriented



designing can have a considerable impact on an individual's lifestyle. Most importantly it should ensure integration of humans with nature.

- ▶ **Maintenance-** Considering a building's operating and maintenance issues during the preliminary design phase of a facility will contribute to improved working environments, higher productivity, reduced energy and resource costs, and prevent system failures. Encourage building operators and maintenance personnel to participate in the design and development phases to ensure optimal operations and maintenance of the building. Designers or energy consultants can specify materials and systems that simplify and reduce maintenance requirements, require less water, energy, and toxic chemicals and cleaners to maintain; and are cost-effective and reduce life-cycle costs.

Architecture or most of it anyway, is a public good: what any one person or institution builds, others must live with, and often for a very long time. An architectural marvel is etched in history and has far-reaching consequences over a course of time. The faculty of architecture has evolved in a very interesting and multi-dimensional way. Gone are the days when architecture was merely about designing buildings, it is now all to do with crafting desires, inspiring cultures, creating aspirations and influencing lifestyles. ■■■