SUSTAINABILITY THROUGH ADAPTIVE REUSE AND UPCYCLING

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Abstract

Architecture and interior design addresses the cultural, behavioral and environmental issues that affects the built environment by viewing the spaces with imagination and emotional intellect to design a habitable spaces with sustainability.

The understanding of sustainable design is fundamental to all levels of educations. With the growing global concern associated with waste management and climate change, the planners and designers of space need to mitigate the impacts of negative footprints of development through not only scientific study for the modern solutions, but also historic research on built up spaces. Vernacular design is an important base of contemporary architecture. The art and craft which has evolved from a long-established cultural backdrop offers many lessons on aesthetics as well as sustainability. Likewise the changing trends in designing propagates reuse and reinvention of material like furniture, fixtures and articles that have lost their primary value original in due course of time and context.

The Indian sub-continent offers indigenous and rich montage of art and heritage spaces with diversity of materials and design elements. This paper aims to explore concept of adaptive reuse, upscaling and reinventing for aesthetic evolution and conservation of the spaces.

Key Words: *Design, Materials, Upcycling, Adaptive reuse.*

Introduction:

Most historic buildings are characteristically sustainable. In a wide sense, ***sustainable*** means to keep in existence, to be capable of being continued with minimal negative effect on the environment. Because of the ecological roots of the term, it is mostly used to address environmental and climatic concerns. The effects, problems and concerns of global warming are not new anymore. The climatology and energy experts opine that it is because of the world's huge consumption of energy, there is a need to re-use, re-place and re-cycle the present resources much more so as to decrease the rate of using up energy resources and to slow down global warming.

The right practice of conservation can maximize the use of the existing materials and infrastructure and in return reduces waste caused by demolition and energy put into the production of new materials and construction. Many facets of historic buildings were developed with reference to aspects like climate and site situation, in purview of sustainability build. If correctly conserved, many old buildings can serve future generations for many years to come.

Sustainability practices:

The concepts of adaptive reuse, upcycling and reinventing for aesthetic evolution and conservation of the spaces are valued best practices to promote concerted efforts towards sustainability. This paper is based on the concept and systematic approach of literature review. This paper looks at how resources need to be recontextualized with upcycling and adaptive reuse as part of remedial practice for the suffering global ecologies due to production and consumption.

Adaptive reuse:

The story starts when the conservation movement was born in Britain in 1957. Even adaptive reuse was developed because it is one of kind intervention. Now it is most popular because it is, consider most sustainable and economical (Latham, 2000).

Building Adaptation is one of the seven levels of adjudications for maintaining old heritage buildings.

"Adaptive reuse is often the only economic way in which old buildings can be saved, by

adapting them to the requirements of the new tenants. This could sometimes involve radical intervention, especially in the internal organization of space"."(Fitch, 1982) It can be considered recycling of the building.

This is closely associated with historic restoration and conservation. The process helps property to regain life and become compatible with present surroundings through repair, conversion, extension and rehabilitation. The important parts, which convey historical, cultural and architectural values, are to be preserved. The main concept behind the adaptation is to respect history and structure by providing new programs according to requirement (Snyder, 2005).

Adaptation is considered sometimes to be sustainable for old buildings and has the ability to establish a link between new developments and old traditions. When a building is no longer used for its original function, it is wise to adapt a new use, which helps to sustain it in the new environment. It is a process, which helps to retain energy and the quality of the original building whether it is a special architectural or historic interest or simply redundant building. New use can bring new energy and life to exhausted buildings (Latham, 2000). Adaptive reuse provides a second life for historic structures in a same way as body with a new spirit, where body represents structure of the building and spirit appears as the function of the building. The interior, function and immediate environment of the building help in blending with the new developments.

Much of today's building activity takes place in sensitive historic environments and architects are often engaged in redesigning existing buildings. It is therefore essential for students of architecture to be aware of the philosophy of conservation of historic and vernacular buildings. To achieve sustainability, the efficient use and reuse of built resources is crucial. In addition, traditional settlements constitute a very important part of the cultural heritage of every country and incorporate many bioclimatic elements. The detailed investigation of vernacular settlements, and the principles for their conservation and reuse, constitute some of the essential elements of a compulsory course in the architecture programmes at some Universities. A combination of theoretical teaching and practical projects constitute a pedagogical approach and implement an educational

strategy which leads to students acquiring the skills for an interdisciplinary, holistic approach towards the rehabilitation of traditional settlements, and helps them recognize and assess their different values.

Whenever a building is recycled, by opting for refurbishment rather than demolishing and rebuilding the structure then a large amount of energy is being saved by avoiding the need to extract raw materials and convert them into a replacement building. Smaller scale refurbishment, for example; when the existing structure and the external building envelope are retained, will clearly yield the greatest energy savings, but even the more drastic renovations, where larger scale refurbishment takes place involving the structural aspects and the refurbishing of the outer leaf will mostly use up considerably less energy resources than the choice to demolish and rebuild. (Highfield,2000) Even though this may only seem like a very small saving of energy compared to the overall consumption of energy, if a lot of projects are refurbished instead of being demolished and rebuilt then a lot of energy could be saved.

At the individual level, renowned designers, ordinary individuals, and even marginalized communities with limited knowledge have developed upcycled products (Sung, Cooper, & Kettley, 2014), creating interest and trends towards upcycling.

The growing number of publications on upcycling in various subject areas also shows that the concept of upcycling has received more attention from numerous business practitioners, researchers, and craft professionals and hobbyists in recent years. related books have been published since 1999.

Upcycling is an activity that utilizes the limited affordance of the discarded products to develop a new product (or material) of comparatively better value (McDonough & Braungart, 2013). Upcycling activities have proved to be effective in delaying waste disposal (Singh & Ordoñez, 2016), eliminating the need for new products, enhancing the aesthetic value (Sung & Cooper, 2015; Wilson, 2016), and consuming less energy in material circulation as compared to recycling (Nilakantan & Nutt, 2015). Particularly, in the case of developing and underdeveloped countries, upcycling is a suitable option to discard recovery (Slotegraaf, 2012), where the other waste management techniques, such

as recycling, biodegradation, landfilling, incineration, etc., are not efficient irrespective of latest technological interventions due to system and service level limitations (Guerrero, Maas, & Hogland, 2012; Hoornweg & Bhada-Tata, 2012).

The benefits of upcycling are discussed on the basis of the three pillars of sustainability – economic, environmental and social sustenance. Environmental benefits included solid waste reduction (and prevention), space saving, raw materials use reduction, energy use reduction, and greenhouse gas emission reduction. Economic benefits include cost savings and new profit opportunities for manufacturers, entrepreneurs and consumers. Social benefits in developing countries are mostly poverty alleviation and, in developed countries are more relevant to psychological wellbeing and socio-cultural benefits based on individual upcycling. These benefits, however, are mostly generic and vivid rather than specific and quantified unless the papers deal with technical aspects of the upcycling process. (Kyungeun Sung 2015)

Tendering best practices:

It is vital to apply the best practices in the pedagogical domain, looking at possible implications of the principles of 'upcycling' and value adding through design as a means for educating global citizens.

The obsessive pursual of perfectionism, is an undeniable evil of consumption. In a time of perfectly curated social media feeds, endless volleys of new products, services, and people, the traditional Japanese philosophy of embracing imperfections is a way of life. Wabi-sabi stretches to everything from the aesthetic, to temples, to classic gardens, and to ceramics. It is the beauty of things imperfect, impermanent, and incomplete. A great example of wabi-sabi is the art of kintsugi, where cracked pottery is filled with gold dusted lacquer as a way to showcase the beauty of its age and damage rather than hiding it. This infuses the belief of acceptance and respect for existing substance.

Application of these best practices are evident from the restorative actions and conservation policies adopted by various public authorities. Chhatrapati Shivaji Terminus is an excellent case study of adaptive reuse in Mumbai. New age restaurants , pub lounges, boutiques are designed by extensive scavenging of the valuable discards from various

premises, also termed as *architectural salvage.* Advent of Heritage hotels exemplifies the philosophy of adaption to fit the present demand of sustenance as well as preservation of history with its unique splendor. The magnificence of historic monuments retained through intelligent use of spaces and generation of steady monetary resources for subsistence. Specialist enterprises have been floated which propagate the concept of upcycling in refurbishment of spaces. To a large extent, the process of salvage can be converted into a fairly manageable enterprise and livelihood.

Institutional curriculum is a vital platform to publicize the upcycling practice. It is an agreeable effort to imbibe the culture of reusing architectural salvage for social benefits, especially in developing countries, where resources are scarce and unaffordable to a large population.

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