Over the last several decades, a style has developed associated with what has come to be known as sustainable design. The style can be seen in the wide range of “green homes” in cities around the world that boast passive and active systems. It can also be found in the designs of well-known international architects who work in harmony with the ecology of the site to develop buildings requiring minimal systems to sustain a conducive atmosphere. These buildings generally express an honesty of materiality, straightforwardness of structure, and organization around the habits of the resident. In large scale buildings, the sustainable is often manifested in advanced mechanical systems, double skins, green roofs and places for users to retreat outdoors, and a wide array of sustainable materials. They are certified by LEED, WELL, ISO, and other systems and standards that validate their status as sustainable. What, however, is the nature of their beauty? Do we connect what we consider beautiful in a sustainable building to the elements that make it sustainable? Or, is this beauty tied to conventional criteria – proportion, composition, color, attention to detail, hierarchy, and transcendence – that have for centuries been used to evaluate art and architecture? And, in what way does an “aesthetics of the sustainable” help us to move beyond aesthetics as strictly visual and to an understanding of aesthetics as connected to the senses and the atmosphere?

The beauty that modernist artists and architects ascribed to industrial technology as distinct from the artifice of 19th Century ornamentation lies at the heart of these questions. These industrial objects were thought to possess an honesty through the way in which their form was derived from their function that made them beautiful in a more authentic way than decorative art. These objects were, however, designed and this design process often drew on classical systems of proportion and on a deep understanding of how humans behave, see and hear, use space, and generally dwell. In this sense, modern aesthetics can be seen as a return to a more innate grounding of beauty distinct from the academic system that had arisen over the preceding centuries. In this sense, the valuation of these technical devises was not strictly technological, but tied to a deeper meaning that they conveyed and, ultimately, a morality driven by a quest for authenticity. However problematic this notion of modernism authenticity would prove to be, it did convey a quest to live in an unconcealed manner in harmony with one’s surroundings subject to one’s own decisions and fate.

At the beginning of the 20th century, we had great examples of the fusion between the idea of art and utilitarianism. Most were under the wing of abstract purism and based on Neoplatonic philosophy. This generation and many in those that followed were enamored with functional objects because there is a reason for their existence. It is the premise of their longevity. Walter Gropius and the Bauhaus were Pioneers of simplicity. Their fundamental idea relied on the principle of a simple form that would solve all the spatial and vital needs, which could be simultaneously respectable and genuine. They aimed to reconcile custom design and industrial production. All this was based on the application of essential design principles such as the extensive use of natural light and ventilation, simplicity of diagram and structural integrity. Le Corbusier was in search of a more dialectical vision of form. On one hand, he hoped to do so by satisfying functional needs with the use of empirical forms and on the other by using abstract elements that impact the senses and nurture the intellect. Buckminster
Fuller believed that the main purpose of architecture was to continuously achieve higher living standards at a lower cost of both resources and energy. Mies was perhaps the only one who materialized all those ideals, undoubtedly ahead of his time, by consolidating a new vision of architecture where elimination strengthens the content.

Once the reason for their existence is extinct, they become obsolete ruins. Its practical meaning – the core of their existence – is gone. The only thing that remains is its historical significance. In this sense, the impact of industrial objects was not merely an abstract function of their quality as objects, but of the role that those objects played in society. They suggested a liberation from the dreary tenement dwellings of the 19th century, an introduction of light and hygiene, and a new ease of living. The irony, however, was that the proliferation of industrial objects in the 20th century hardly liberated the majority or created a sustainable urban form. Instead, the mass consumption of these objects caused an ever-larger number of people to become subject to the factory systems that produced them and the world to become subject to the byproducts of production.

At the same time, the capital structures – either propelled by free market systems or planned economies – subjected the vast majority of the world to a system concealing and alienating the individual both from their labor and from the natural environment. This is evident in the hundreds of TV and radio channels that support mass media. They distribute events 24 hours a day and have created a need for continuous drama and consumption. Since it is impossible to generate that volume naturally, media outlets have developed artificial ways to produce it. Architects too have become caught in this cycle of drama and celebrity. It is a clear human signal of a confused world showcasing an abbreviated form of personality defined by adding complexity into situations that require clear vision. One of the most devastating consequences has been the acceptance of design and production methodologies that segregate designers living in a reified sphere from builders grounded in materiality and the earth. The result is a social setting that proliferates throughout the world.

In this sense, if we are to address the question of what the “aesthetics of the sustainable” means and how through valuing an “aesthetics of the sustainable” we can begin to reduce the impact of the built environment on our world, we have to begin by understanding that it is a social and behavioral rather than a strictly technological one. Engineers could take our cumulative knowledge and design a solution that would make the world sustainable, but doing so would be meaningless because it would fail to address the underlying systems that define the world at present.

During the beginning of the 20th century we learned that simplicity and purism were the premises for the creation of content and meaning. During the 20th Century, the same premise opened up the door to complexity and contradiction in an attempt to achieve the same result. By the end of the 20th century, it seemed like the new challenge would be to generate more content by using and wasting much less. This is a principle that some call the “lean economy.”
We also learned that evolution and precision are connected. New social functions require new spatial functions. Sophistication in buildings is parallel to the development of art and culture. Energy is taking a more active role in architecture as our energy consumption has become a critical parameter. We use more energy to operate buildings than we do to operate cars. To save is to maintain and to preserve translates into comfort. To generate equals sustainability. Operation costs are becoming as important as construction cost in the building industry. It is ironic that in a world in constant flux the majority of buildings utilize non-adaptable construction methods, and materials and systems fail to respond to their environments like a living entity. Paradoxically the physical properties of buildings remain constant while internal and external agents impose permanent changes on them. The notion of what is possible to generate in the energy plan using mechanical means has kept us away from more adequate solutions.

What all of this is trying to suggest is that beauty of what is sustainable should be defined by how the human lives and the way in which buildings and systems take on form to meet the criteria of living a productive life. The technologies that are employed should be in service of this life and should not become the focus of life. With this in mind, what then should the criteria for sustainability be?

The construction methods describe the way in which materials are formed and combined to become components. A careful understanding of construction method in a particular context is essential to achieving sustainable criteria. Differential construction methods are based on components made up of a variable number of elements that individually are comparatively simple in their design. These include bolts, screws, nails, rivets, spot welds, etc ... Integral methods, are based on a component made of a single material that then forms a unit. The integration methods are several components that are assembled within an almost homogeneous component or sub-assembly. Composite methods, on the other hand, are components that are manufactured from a very diverse number of materials to achieve unity. These include reinforced concrete, hybrids-fiberglass, resins, and sandwich construction among others.

Each of these components is then subjected to a set of criteria that helps to determine the most appropriate use based on context and the collection of systems and components of the building. With regards to energy, the design of buildings should strive for the following: energy efficiency, renewable energy, high-performance complex buildings, zero carbon emission, zero waste production, solar thermal absorption chillers, wind-power generation, photovoltaic panels, thermal inversions at night to draw air into space, producing more energy than is consumed, earthduct pre-cooling, wind cones that support massive intake of cool air into the ground level, hot air exhaust, diffuse daylight, operable windows for cross ventilation, the highest level of negative pressure on roof to promote the highest draw, under floor air distribution systems, solar vacuum tubes for cooling, high thermal mass, passive solar heat blocking, natural shading, natural light, solar absorption and heat reflection, geothermal systems, thermal shields, and collecting energy to heat water and supplement electrical needs.
In terms of planning, the design of buildings should strive for maximum adaptation to the location, the possibility of changes in the use of a building, adaptability of the structure, and plan to recycle component when the building is no longer needed.

In terms of materials, the design of buildings should strive origin of materials in a manufacturing process that does not impact the environment via zero carbon and zero waste, conservation of natural resources, sustainable materials, green roofs, materials with low or zero volatile organic compounds, highly insulated metal panels, high performance low-e coated glass, vacuum glass, transparent photovoltaic roof with 15% light transmission, and ultralight systems that combine several functions in a single component such as envelope, insulation, and structure.

In terms of software, the design of buildings should explore ecotect software, CFD software and integrated simulation of the environment to analyze potential energy gains from the sun.

In terms of policy, the design of buildings should strive for the following: tax incentives for energy efficient buildings focused on lighting, mechanical, envelope, and energy savings standards. In terms of how we live, the design of buildings should strive for the following: sustainable urbanism, sustainable transport, preservation of local culture and heritage, equity and fare trade, health and happiness, and local and sustainable food.

Finally, in terms of the broader ecology, the design of buildings should strive for the following: preservation of natural habitats and wildlife, rainwater collection and treatment, water storage for irrigation, graywater recycling, and permeable sites.

These elements come together in the design of a building that may be considered beautiful based on satisfying the above criteria. It is in this context that an aesthetics of the sustainable should sit. Ultimately, such a sustainable approach to design and construction should reduce the cost of buildings rather than become a defining characteristic of a way of living only available to the wealthiest members of society. In this sense, an aesthetics of the sustainable should support affordable living for humanity as a whole. And, in this sense, would be an aesthetics grounded in universality of many as opposed to the few. At the same time, these structures must meet the centuries old desire to create spaces in which our senses transcend the physical to the metaphysical, almost unconsciously. They are places where form and space penetrate our psyche with the many forms of the psychological.
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