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Sustainable Attributes of the Pueblo Revival Style and the Garden City Movement

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Introduction

The long list of architectural styles that have dominated mainstream design over the past two hundred and fifty years has given rise to a spectrum of new forms and architectural innovations, but none have been quite like the present-day Sustainable Movement, which, as it addresses the problem of environmental degradation on a global scale, requires the union of innovators from a medley of professional fields. In the wake of widespread environmental degradation and the need for building solutions that allow for efficient use of land space, lowered energy use, recycled water systems, decreased transportation, and green building materials, technologies enabling these transitions have quickly come to pass in the last decade.

While a global awakening to the effects of rising carbon dioxide levels, deforestation, and toxicity has occurred only in recent years, architectural styles in previous decades established grounds for sustainable architecture that emphasized traits like size and space efficiency, rooftop gardens, and preservation of green space. Without such prior design styles, the Sustainable Movement would be deprived of a solid foundation from which to leverage new green building designs. In this paper we will examine the sustainable attributes of the Pueblo Revival Style in the Southwestern United States in the early 1900's, and the Garden City Movement, begun in the late 19th/early 20th century in Europe and America.

Pueblo Revival Style

The Pueblo Revival Style reintroduced pueblos, or villages with multi-family homes also known as adobes. The design of these homes is heavily influenced by the dry climate of the southwestern region of the United States, and the forms and stylistic details originate from adobe structures built by ancient tribes. Ancient Pueblo Indians constructed large, multi-family homes, and in the 17th and 18th centuries the Spanish adapted the Pueblo Indians' style, using sun-dried bricks which they stacked and covered in a layer of mud.¹ (1) There are 21 federally recognized Pueblos in the United States, which, at the time when treaties ceded Spanish territory to the United States, were designated by the King of Spain as pueblos, and are now legally recognized as pueblos by the Bureau of

Indian Affairs.ⁱⁱ (2) Pueblo Revival houses of the early 1900's were popularized by designers such as John Gaw Meem, Mary Louise Colter, and Glenn Curtiss.ⁱⁱⁱ (3)

Variations in the Pueblo Revival Style can be divided into four categories. The first, Pueblo Deco, unites the styles of Pueblo Revival architecture with Art Deco architecture (a style known for its decorative, elegant, and modern aesthetics, whose roots can be traced to primitive arts and machine-age technology).^{iv} (4) Such homes are known for their geometric design patterns and Native American influence. Second is the Santa Fe Style, a type of pueblo that became the standard in New Mexico after it was defined by the Santa Fe Historic Zoning Ordinance of 1957.^v (5) Thirdly, the Contemporary Pueblo is a streamlined, minimalist version, unornamented and without vigas, beams, or posts. Last, the Territorial Pueblo has corners that are square rather than rounded, and windows are framed with straight wooden moldings.^{vi} (6)

Though pueblos vary in style, there are many common characteristics that define adobe buildings. To begin with, adobe (which is actually a building material) is traditionally made from a mixture of earth, clay, and straw that is hardened to form a brick. These bricks are layered atop one another to form walls. Modern adobes are generally made from cement and lime mixtures, or concrete. Adobes have flat roofs with no overhang, stepped levels, a round parapet or low walls containing spouts to direct rainwater, and continuous round-edged walls.^{vii} (7) The homes are also characterized by vigas, or heavy timbers running through the walls that support the roof; latillas, or poles placed above the vigas in an angled pattern, deep window and door openings, simple fenestration, beehive corner fireplace, protruding bancos; or benches from the walls, nichos; or niches cut into walls, and stone, wood, or brick floors.^{viii} (8)

Today's Sustainable Architecture is characterized by a return to the use of simpler materials derived from renewable sources. These simple materials are by no means less durable, but when taken out of their natural environment to be used as building material, place less of a strain on the remaining habitat. One example is the use of hay in place of wood or cement. A new approach to building that utilizes bales of straw to make sturdy, insulated building walls is a style that echoes the techniques of former architects who made adobes homes out of clay and straw. A field of hay that produces straw is much easier to renew than a forest of trees.

At the Waldorf School in the Roaring Fork Valley of western Colorado, built in 1997, the school is made from bales of straw and lit by solar energy.^{ix} (9) Though straw buildings in the United States are more appropriately linked to straw houses built in the late 1800s in the Nebraska Sandhills,^x (10) the very use of natural, renewable materials like straw and clay once found in the building of adobe homes can, without a doubt, be termed *sustainable*. It is important to note here, however, that modern adobes are more often made from cement than clay and straw. From 1880-1920 during the Railroad Era and Late Territorial Period, railway transportation allowed for the introduction of new building materials including cement, a diverse array of bricks, and factory-made wood products, cast iron, and tin.^{xi} (11) Cement is a material that is not gentle on the

environment, especially when one considers the startling fact that currently production of concrete accounts for 5% of carbon emissions the United States.^{xii} (12)

Other characteristics of the Pueblo Revival Style are distinctly sustainable in their form and function. The low walls, or parapet, surrounding adobes contain spouts to direct rainwater, allowing for efficient means of water control during storm runoff. This helps prevent soil erosion and allows water to travel more directly to drainage systems rather than picking up ground pollutants. A design technique that allows for successful water drainage is the use of bricks laid across the top of the parapet that help protect the walls from erosion.^{xiii} (13) Finally, the adobes are streamlined to use only as much space is needed for the building's square footage; the use of ornamental overhangs, roofs, sprawling porches and additions is not characteristic of adobe design. Rounded walls allow for less square footage, and thus less land is built upon. Adobes often have multiple families or generations living under the same roof, an effect that ultimately conserves land and space. Rather than finding three families in separate homes, three families may live in one adobe, thus promoting extremely efficient use of space. All of these sustainable attributes are undoubtedly related to the geographical location and climate, as well; clay and straw have been available to the southwest and Midwest regions, hot weather has allowed for easy drying of bricks, and the stone material creates a naturally cooler interior that requires less energy to keep the rooms cold.

Garden City Movement

Sir Ebenezer Howard founded the Garden City Movement in 1898 in the United Kingdom.^{xiv} (14) A new approach to urban planning, this movement was less an architectural style and more an all-encompassing development style that employed a birds-eye view of city planning and focused on the creation of self-contained communities with areas of residency, industry, and agriculture. Certainly, this approach to planning brings to mind current modes of sustainable design such as “eat local, buy local” a motto that encourages residents to eat food that is grown locally, thus reducing the need for carbon-generating transportation required for long-distance food deliveries. Furthermore, the Garden City Movement, which originated in England but spread to other parts of Europe and the United States, also emphasized the idea of *balance* on many levels, a core value of the current Sustainability Movement. For example, the design of Garden cities included placement of greenbelts, or undeveloped areas of protected land surrounding commercial or residential areas. Greenbelts were intended to balance out the developed areas, and provide a necessary relief from urban chaos. Greenbelts were implemented to limit urban sprawl, give residents a natural oasis to enjoy the outdoors, provide crucial habitats and migratory spaces for wildlife, and act as storehouses for carbon dioxide, limiting pollutants.^{xv} (15)

Greenbelts bring to mind a similar aspect of green design found in contemporary sustainable planning. As Diana Balmori, Principal of Balmori Associates, Inc., writes in her essay, *Landscapes that Renew*, “Greenways are the twenty-first century park par excellence. Their implications are dramatic: for a relatively small amount of money, these narrow green corridors can reconnect parts of a city. They can weave themselves through

a city, spreading themselves democratically to reach all areas. They can be attached to streams, river, or shores to provide soft edges and restore flood plains.”^{xvi} (16) She goes on to tell us that the idea of the greenway is less than 15 years old. Nevertheless, we can certainly draw a line between the similar design concepts of the “greenbelt,” and the “greenway,” a century later. The greenway, we might argue, is simply a modern revision of the greenbelt. Greenways provide another means of bringing trees and “green lungs”^{xvii} (17) into the city, where otherwise there would be none.

We might go far as to take the idea of *balance* or harmony among the Garden City Movement’s three components “residency, industry, and agriculture,” (which can also be described as homes, commercial buildings, and nature) and apply this concept to modern sustainable design. While the Garden City Movement viewed these three elements from a large scale perspective, sustainable design as we know it today places these constituents under a microscope and applies the idea of tri-harmony to the building itself. In other words, designers are figuring out how to balance the requirements of residency, industry and the natural world in each building, one building at a time. Take, for example, the educational center for the Humber College Arboretum in Toronto that houses educational programs, welcomes visitors, and respects existing outdoor habitats. The LEED Gold building is designed to work in harmony with the land, while creating comfortable spaces on the interior. Two symbolic gestures, “links to both earth and sky,” were important to the building’s architects, Jill Taylor and Pat Hanson of Taylor Hazell Architects. The center is built into a hillside with an insulating earth wall, while “a biofilter system treats all wastewater and sewage, storm water is recycled, a green roof adds insulation...[and] views of the landscape flood the interiors, while the architecture literally embraces the outdoors.”^{xviii} (18)

Another successful union between the built environment and nature is manifest in the recent design of a Japanese apartment building in Tokyo. The complex, *Dancing Trees, Singing Birds*, was designed by Hiroshi Nakamura, the winner of a competition held by FLEG International for the design of the six-unit apartment building. Nakamura was the only architect whose plan did not entirely obliterate the 8,288 square foot wooded lot where the building now stands. Rooms and trees interlace in an effort to preserve existing wildlife despite the building’s construction. Says Nakamura, “Immersing the residents in the forest is our way of raising their awareness of environmental issues.”^{xix}

Conclusion

The Pueblo Revival Style and the Garden City Movement embodied sustainable ideals though design forms and applications of specific structural techniques. The sustainable designs of the Pueblo Revival Style were intrinsic in the form of the adobe homes that favored minimalist, rounded forms using space in the most efficient way possible. Formalities such as the drainage systems on the parapets allowed for efficient stormwater management. The Garden City Movement viewed the role of sustainability and the importance of conservation on a large scale, creating such concepts as the greenbelt in favor of wildlife. Today’s Sustainable Movement in architecture reflects innovative new technologies and building design, much of which can be traced back to previous

architectural styles that came before, breaking ground for eco-minded planning. The idea of balance as a core value in sustainability is a common thread that is now manifest not merely in the layout of a community, but in the systematic design of each new building that must be held accountable for its impact on the environment.

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