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Nature Leading Architecture

Architecture has been taking cues from nature for thousands of years. Natural forces and patterns can shape a build from its overall form to the small details. So far I have seen examples where nature has been both abstracted and reacted to in architecture.

The earliest example of nature inspiring architecture, that we visited, would be the Pyramids. The Pyramids of Egypt were built over a thousand years ago as tombs for the pharaohs. These massive monuments of stone honor one of the greatest of Egyptian gods, Ra. The shape of the Pyramids reflect the rays of the sun, which Ra is god of. This symbolic form was inspired by an abstracted observation of nature. The Egyptians continued this abstracted form into the design of the Obelisks and the Valley of the Kings, which was built into the side of a pyramid shaped mountain.

The Great Wall of China responds to nature in a different way. The wall itself has a very simple design. Its militaristic orthogonal form of brick and mortar wraps up and around the mountains that surround Beijing. Reacting to the natural landscape, the wall's overall composition is defined by the natural landscape that surrounds it. This is functional reaction to China's natural landscape. The function of the wall is defensive, it's reaction to the landscape helps it fulfill its purpose.

Singapore, as a whole, emphasizes functionality in everything that it does. The Lotus Museum along the Marina Bay abstracts the form of the Lotus flower into a landmark building. The building is both a museum and art gallery. The upper part of the building abstracts the lotus pedals, arching upwards. At the tip of each pedal is a large window, diffusing indirect light down into the individual gallery rooms. The light is diffused more effectively because the curved walls of the large flower-like shape. The overall abstracted form of the building is symbolic of the country's national flower, but the positioning of window, to diffuse light into the spaces below, serves a functional purpose.

Chinese architecture historically has called upon nature to inspire its form. In the 2008 Olympics, China revealed the Birds Nest Stadium. The stadium is named such because of the overlaying strips of metal across the outer facades of the stadium. This abstraction of an organic form made the stadium famous. The façade of the stadium also acts as a visual screen hiding the less attractive HVAC systems and concrete undersides of the stadium seating. The Birds Nest is an example of both a symbolic and functional abstraction of a natural form. The symbolic feature is emphasized by its use as a functional piece of the building's outer structure.

The Pyramids of Egypt, the Lotus Museum in Singapore, and the Bird's Nest in China are abstractions of natural, organic forms. The Pyramids are purely symbolic in its abstraction of rays of sunlight. Both the Lotus museum and the Bird's Nest were symbolic but also had functional aspects to them both. The Great Wall of China, however, was a pure reaction to the natural landscape around it in order to fulfill its overall function as a defensive wall. The difference between the examples given, in how they utilize nature, is key in differentiating between natural and organic design. However, both of which are still inspired by nature.

Moving forward, I was read two essays on design theory, one by Vitruvius and the other by Le Corbusier. The essay by Vitruvius was an excerpt from his Ten Books of Architecture, this specific excerpt was about symmetry in Temples and in the Human Body. He said that, "since nature designed the human body so that its members are duly proportioned...it was from the human body that they (ancient builders) derived the fundamental ideas of the measures which are obviously necessary in all works". Vitruvius implies that many architectural proportions are derived from the proportions of the human body. This concept was further supported in the 1400's by Leonard Da Vinci's Vitruvian Man which emphasized the the proportions, orders, and geometric symmetries of the human body as the origin of architectural design. Le Corbusier, in an excerpt from "Le Modular" sought the standardization of architecture by using modular forms. He based his measurements directly off of the Human body. Further building off of Vitruvius' proportions, Le Corbusier created a proportioning grid based off of measurements from the human body. He titled this system Le Modular.

If buildings are at their core based off of human proportions, then are all buildings natural forms? Architecture for thousands of years has reacted to the human proportion from head height, sight lines, step riser height, and the list could go on and on. The columns of the famous Parthenon in Athens lean inward and swell, reacting to the human perception that they should be straight. Ancient temples, in Egypt and Greece, were designed symmetrically to reflect the perceived symmetry of the human body. In Xian, China, the archer towers lining the city walls were set a standard length apart from each other. The standard length was based off of the distance an archer could accurately shoot an arrow in order to defend the base of the archer tower adjacent to it. Are these examples all then nature inspired forms?

The Human body follows the Golden Ratio, Corbusier proved this by basing his modular system off a six foot tall man. A six foot man is 1.828 meters tall. The golden section is based off of the proportion 1.828, a proportion which appears in almost every Greek/Roman temple. The importance of aligning with the golden section is that as a proportion it transcends the issue of whether to use the foot or meter as units of measurement.

Since the human body was "designed" by nature. Then a building that is proportionally built in response to the human scale, and/or its surrounding environment, is responding to nature. In responding to nature it is both functional and symbolic. Therefore if a building's function is to be utilized by humans, whom are design by nature, the form follows the nature inspired function and is thus a product of nature. "Form ever follows function", Louis Sullivan.