Water & Notions of Adaptable Structures

This thesis project proposes a building that creates an analogy between architecture and water’s adaptable characteristics in terms of both a physical and metaphysical nature. Water’s fluid nature maintains a delicate balance in reaction to external forces in order to “sense” its environment and adapt itself to change. This ability to “sense,” and dynamically change form through movement, gives water a sense of will. Water’s metaphysical nature reflects a sense of spirit, and the universe’s continual search to express itself.

Research for this project began with a review of the physical properties of water to identify the qualities of water that can potentially be expressed in architectural forms. The physical structure of water can be defined in terms of its ability to maintain balance and adapt to change. Water acts like a sensory organ by balancing 1) the external forces of gravity and masses that contain it, and 2) the internal forces that are cohesive yet flexible enough to allow its structure to continually fold, bend and reorder itself. The resulting structure allows for movement and adaptation to different environmental conditions.

The balance between water’s reaction to internal forces and external forces reflects its ability to create a boundary between indoor and outdoor environments. The internal cohesive forces of water help maintain the structure and sense of overall form, yet allow the external forces to be absorbed and permeate through the boundary. Is a building’s “skin” able to serve as a permeable boundary through the structural design of its constituent parts?

The adaptable nature of water’s structural makeup also allows it to adapt its form to different environmental conditions. This thesis project proposes architecture that may physically adapt to its environment just as water does, with emphasis on the enabling the structure itself to adapt through various methods of connecting to the building’s skins. Through the continual innovations of new materials, can ornament, structure, and skin work as a complete system, blurring the traditional roles of wall, floor and ceiling?

The pattern of material selection is also fluid in nature. Natural forms become self-realized, and reappear in a variety of materials, some organic, and some inanimate. For example, the form of a wave frozen in place due to a disturbance in a moving river current, allows matter to pass through – the state of movement creates and shapes the form regardless of what molecules are swept up inside of it. Similarly, fractal geometries found within nature repeat despite the varied expressions in forms of coastlines, mountain ranges, ice crystals, rock crystals, spiral shells, ram horns etc. They are all logarithmic formulas of growth over time in response to specific forces in the environment, yet the actual underlying matter differs in all cases. Is it possible to apply this principle to architecture and blur any distinctions between wall, floor, and ceiling? Can materials be more closely associated with the overall meaning and feelings expressed by the spaces and work interdependently with the structure itself to express these ideas? Water’s ability to create forms and sensitive boundaries relies on the behavior of the movement rather than the actual material that flows through it.