

[MEM.95.4]

Gravity is constantly at work on the materials of architecture, trying to pull them to the earth's center of gravity. An important consequence is that this action establishes the horizon. Because gravity is pulling (accelerating) us toward the center of the earth and perpendicular to its surface, the surface appears to us as a flat line, normal to our standing position. Because gravity does not change the direction of its acceleration of all objects on its surface, the horizon is a universal visual reference, the same at any time and place on earth. Of course, in the absence of gravity there is no horizon, for example, for astronauts in space. It is from this understanding that Ernst Mach developed his theory of inertia frames, which influenced Albert Einstein's relativistic theory of gravity, but that is another story.

Gravity is an important factor in earthquakes. First, it establishes the direction that seismic forces move--mostly parallel to the earth's surface, whose movement creates the forces. The earth's surface is perpendicular to the direction of gravity's acceleration--forming the horizon--because gravity has flattened out the material of earth's mass from primeval times, and is still working to do that. Hence, and secondly, gravity determines the direction in which materials loosed by seismic forces will fall.

In thinking about how to employ seismic forces in the making of architecture (and not simply trying to resist them), it occurred to me that the horizon determines how we perceive space. We always stand perpendicular to the horizon (a fact, it is said, that inspired Pythagoras to formulate his theory of the right-angled triangle). If, however, we were to rotate an asymmetrical space, without altering it otherwise, it would appear very different to us. A long space, rotated from a horizontal to a vertical position, would appear to us as a tall space, with corresponding aesthetical and psychological impact.

The Horizon Houses are spatial structures that turn, or are turned, either continuously (the Wheel House) or from/to fixed positions (the Star and Block Houses). They are structures experimenting with our perception of spatial transformations, accomplished without any material changes to the structures themselves. In these projects, my concern was the question of space. The engineering questions of how to turn the houses could be answered by conventional mechanical means--cranes and the like--but these seem clumsy and inelegant. The mechanical solution may lie in the idea of self-propelling structures, using hydraulics. But of more immediate concern: how would the changing spaces impact the ways we might inhabit them? But that is another story.