CHANGE THE GEOMETRY TO CHANGE THE ARCHITECTURE

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Over these last hundred years since the beginning of the twentieth century, the world's population has increased from 1.6 billion to 6 billion. At the same time, people have concentrated in urban areas in ever greater numbers. As a result, society has suddenly been obliged to construct quantities of buildings rapidly and economically. In responding to this challenge, the demand has been for architecture independent of any special regional or environmental character, simple homogeneous spaces that could be factory-produced. Modernist architecture gave theoretical bases to societal demands as well as a normalized aesthetic mean.

Under the ideological banner of Mies van der Rohe's dictum "Less is more," the Modernists drew up beautiful continuous spaces on a uniform grid. While Le Corbusier's assertion that "The house is a machine for living in" found concrete expression in an idealized architecture of pure geometric forms--circles, cubes, cylinders.

Such Modernist architectural ideas were widely accepted by twentieth century society, and cities throughout the world conformed to the vision of uniform spaces composed on a Euclidian geometric grid. Today in the twenty-first century, however, population growth in developed countries is actually beginning to decline, while the shortcomings of cheap Modernist architecture thrown up quickly for economy sake are becoming apparent.

Likewise, pure geometric architecture meant uniform interiors and monotonous surroundings, a living environment that engages no one. That is, architecture has been reduced to completely self-sealed "black oxes."

Before Modernist architecture, buildings were devised to skillfully control natural energy flows--light, wind, water, etc. That is, both in terms of form and function, buildings harmonized wonderfully with their natural environment. Now as we give serious thought to the painful warning signals the global ecosystem is giving us, should we not reconsider the legacy of self-sealed "black box" Modernist architecture?
Modernist architecture now predominates in today's world, yet within these overwhelming circumstances, we are searching for possibilities in architecture to revive relationships to nature. That is, working within the bounds of existing production systems, we have sought out ways not to seal off the interior from the exterior, to regain non-uniform spaces that relate to elements of the environment. Let us look at a few examples.

**Sendai Mediatheque (2001)**

Sendai Mediatheque (2001) is a cubic volume, with seven floors above ground and one below. The frontal facade is glass, giving full view of the layered interior whose most salient features are the thirteen upright tubular spaces that pierce and support all levels as structural elements. These "tubes" serve as means of communication between floors, as well as letting in natural light and ventilation and providing conduits for air circulation. The non-uniform angles and irregular placement introduce a hint of nature into an otherwise artificial "box."
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The Serpentine Gallery Pavilion (2002)

The Serpentine Gallery Pavilion (2002) project was essentially a cube in outward shape, distinguished by surface articulations that also provided structure by means of an algorithm whereby the square of the roof is simultaneously rotated and inset in a nested fashion, then connecting lines extended down over all four vertical faces to form a structural network of diverse intersecting angles. Thus we have transformed the standard static model pure geometric volume into a dynamic rotating body.
TOD's Omotesando Building (2004)

TOD's Omotesando Building (2004) stands seven stories above ground in a central business district of Tokyo. A further development upon the network structure of the Serpentine Gallery Pavilion, here executed in site-cast reinforced concrete instead of steel plates as before. Moreover, in keeping with its multistoried height, the external walls of the structure are distinguished by a wrap-around tree pattern on overlapping networks that branch out like a tree top toward the higher levels of the building.
The Relaxation Park in Torrevieja (2001- )

The Relaxation Park in Torrevieja (2001- ) is a spa facility currently under construction in a small city in Spain's Autonomous Region of Valencia. The site on the shore of a thermal pond slightly inland from the Mediterranean is landscaped with sand dunes whose slopes provide the setting for three snail shell-shaped buildings 64m, 80m and 102m, each functioning as a restaurant, dressing/shower room and spa respectively. All feature an identical structural system focused on a 12m diameter spiral of five curved steel bars interstices with wood. At present, the dressing/shower room is almost finished; the other two buildings are expected to be completed in the near future.
8. Fukuoka Island City Central Park "Grin Grin" (2005)

Fukuoka Island City Central Park "Grin Grin" (2005) is a 190m-long building for a park created on landfill. The concrete structure is an organic fusion of three shell-curved forms, with most of the roof and interior planted with greenery. Placed on a rise up gentle slope from a lake in the centre of the park, we anticipate that once the plants grow the architecture will merge into the surrounding landscape. The three-dimensional curvature of the roof was studied using free-form models that were then digitized into data for structural analyses. After dozens of repeated simulations, the shape was gradually altering the shape until we arrived at an optimum balance. The complex concrete form was molded on-site.

Mikimoto Ginza 2 (2005) is a 56m-high commercial building of nine floors above ground and two below, located in the heart of Tokyo's Ginza shopping district. The most prominent feature is the steel plate and concrete construction system of the external wall and the irregular entrance opening inset therein. Pairs of steel plates of a size that can be easily factory produced and transported are lined up 20cm apart on site and the gap filled with concrete; the plates are then welded together, primed and finished to form a huge mirror-smooth seamless surface. The irregular entrance opening is intended to accentuate the emblematic image of the building.
10. Taichung Metropolitan Opera House (2005- )

Taichung Metropolitan Opera House (2005- ) This working plan for a competition held by the city of Taichung, Taiwan houses three theatres of 2000, 800 and 200 seats respectively, the entire building comprising a total of some 34,000m² in area. The structure is a curved three-dimensional "emerging grid" composed of interwoven horizontal and vertical tubes with the three theatres formed in the spaces in-between. --a "topological grid" in place of a uniform twentieth-century Cartesian grid--while the spatial continuum seen from outside is sliced off rectilinearly, exposing cross-sectional facades. Due for completion in 2009.
As seen in these examples, I am trying in various ways to break out the "black box," to escape from the uniform spaces and pure geometric of Modernism. Taken as a whole, these efforts aim to reintroduce relationships to nature into architectural thinking by means of:

1. Architecture that harmonizes with nature.
2. Architecture that breathes naturally.
3. Architecture that helps generate nature.