

# FIBONACCI PAVILION

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The Phyllotaxis is not only an old subject but also a new subject of science. Most plants have used the golden ratio for several tens of millions of years. Since they can get maximum sunlight and stand stably, they are very successful today. It is the most ecological structure on the earth.

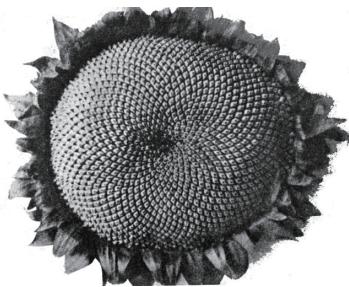
We should learn from plants to build bright, well-ventilated, and stable architecture.

This proposal is just a sample as a prototype.

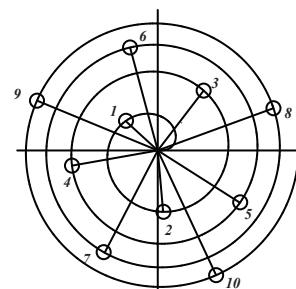
However, this principle should become a general architectural form in the future.

It will be built anywhere in the world as a house, pavilion, temple, museum, library, theater, or stadium using any materials (lumber, log, bamboo, metal, etc.) on any scale that we want.

In this sample, the main structure consists only of two-by-twelve pieces of lumber for simplicity.



H. Weyl "Symmetry" (1952)

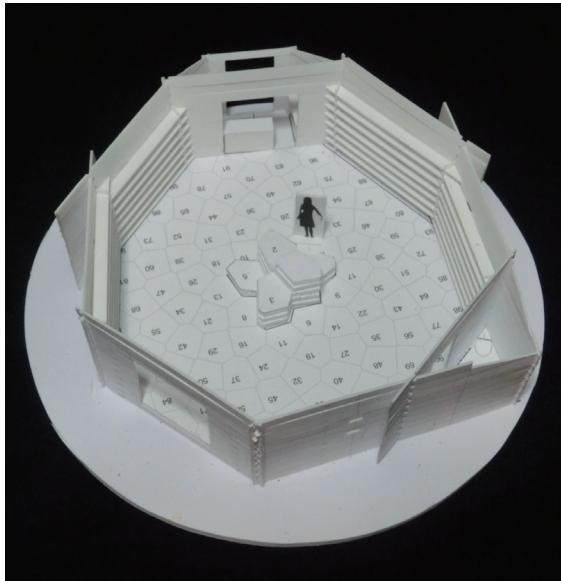
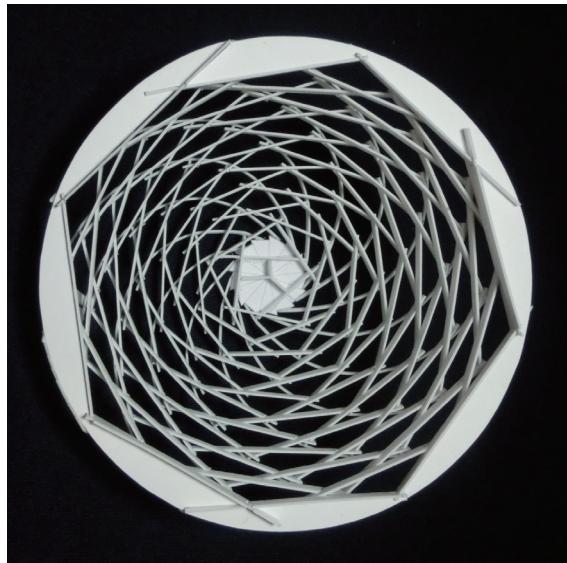


$$r_n^2 = a \theta_n$$

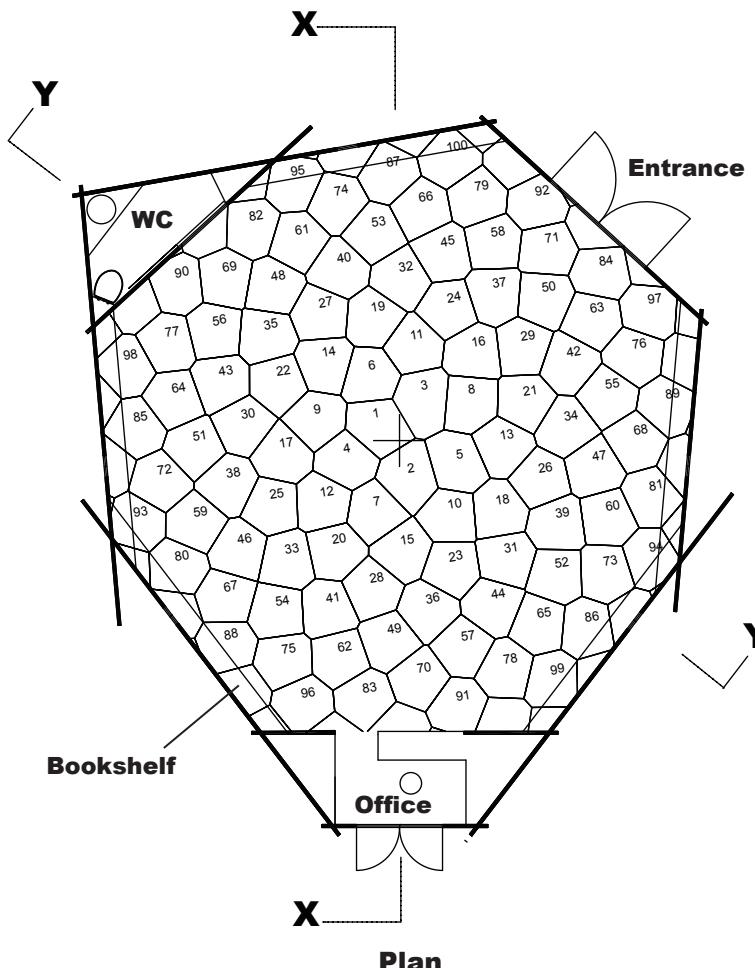
$$\theta_n = 2\pi(2 - \tau)n$$

$$n = 1, 2, 3, 4, 5, \dots$$

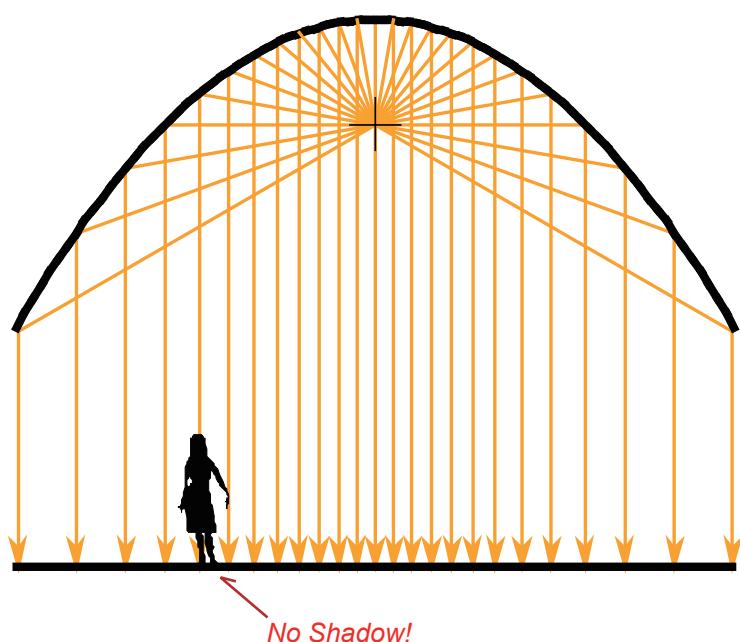
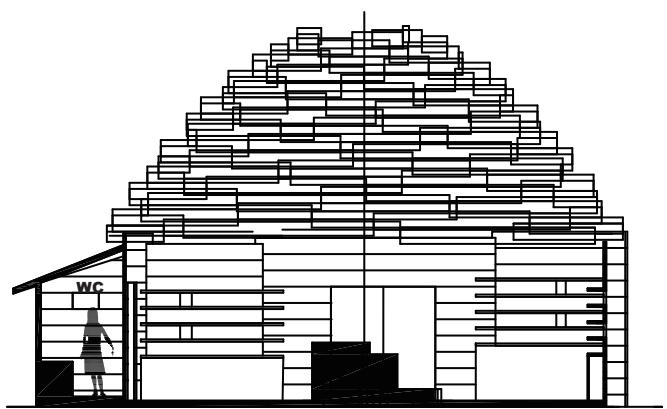
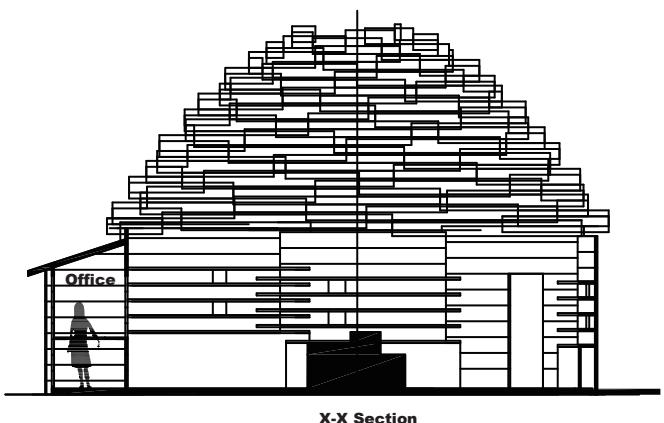
(where  $\tau$  denotes the Golden Ratio)



Scale Model 1/40



The floor is tiled by the Voronoi tessellation based on the Phyllotaxis.



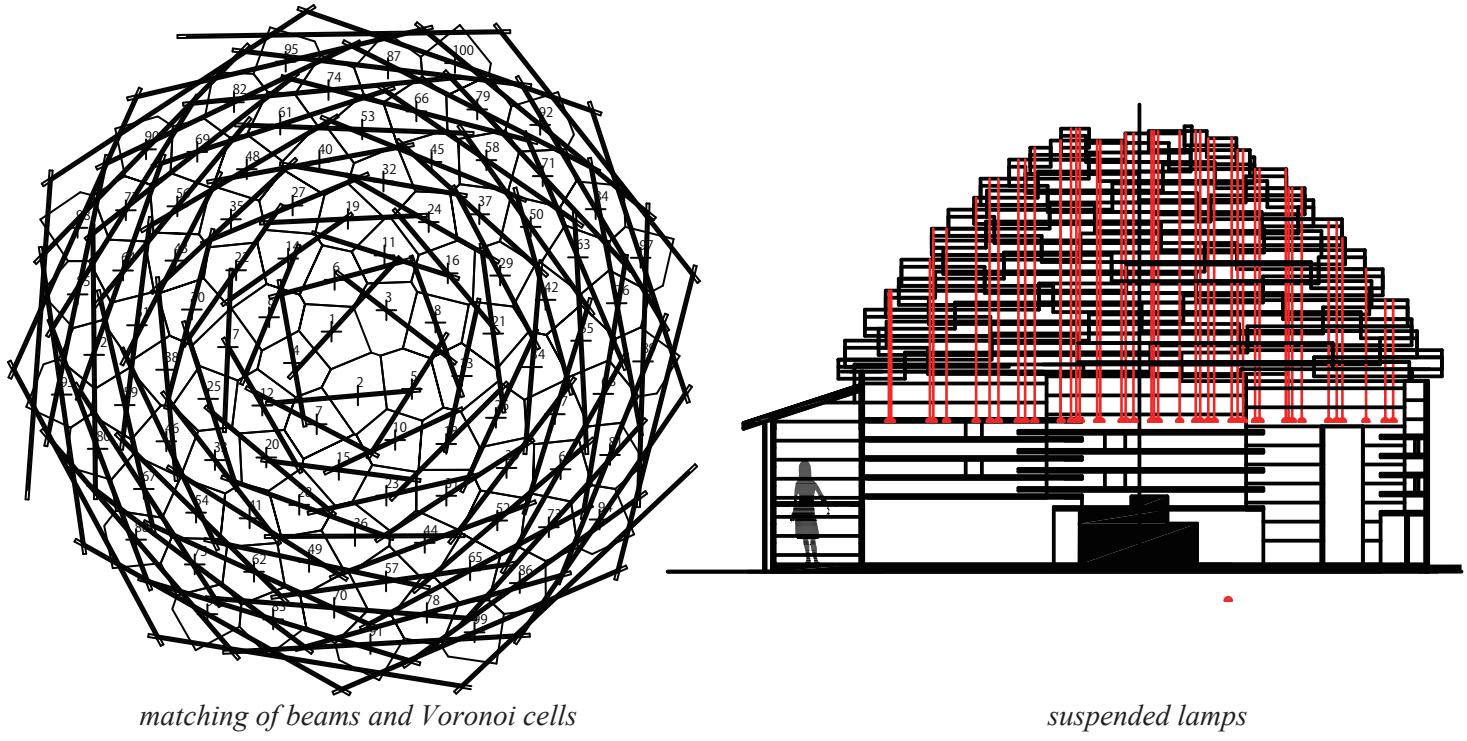
## Wall and Roof Structure

You can find many spirals of phyllotaxis. It is the most earthquake-proof structure. In general, the phyllotaxis (Golden Ratio) diffuses most effectively any kind of wave, that is, light and sound.

The roof structure forms the paraboloid. It is the most elegant way to construct the parabolic antenna.

Only one lamp is enough in a room. For example, if the lamp is at the focus of the paraboloid, all reflected lights fall exactly vertically. There will be no shadow!

I believe that it is special acoustic space.



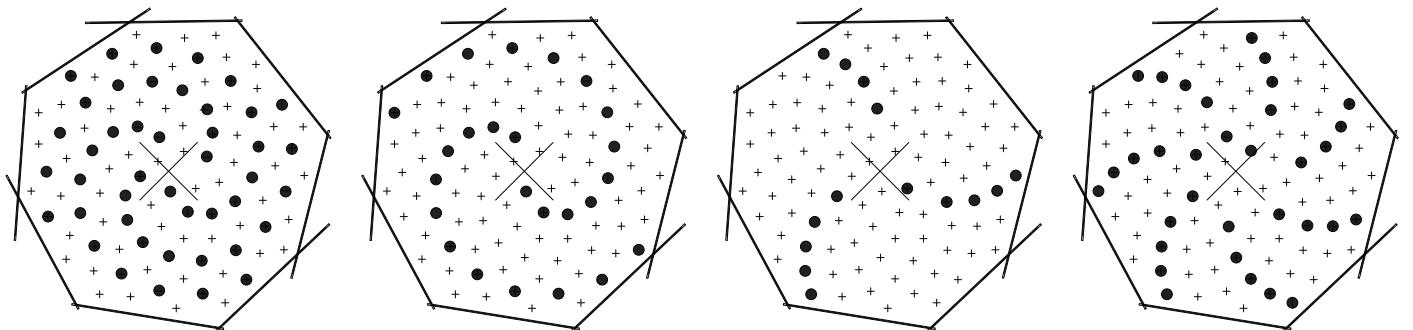
### Another Lighting Effect

The center of each cell is matched to the center of each beam precisely.

This fact is very useful for lighting effect.

One hundred pendants will be hung from the beams. They light the center of each cell from above as a one-to-one correspondence.

We can use such various spiral patterns for lighting and display. The figures below show some examples of light arrangements. There are various flexibilities.



*Variations of display and lighting pattern.*

# EXTENSION

We can extend the principle of this structure.

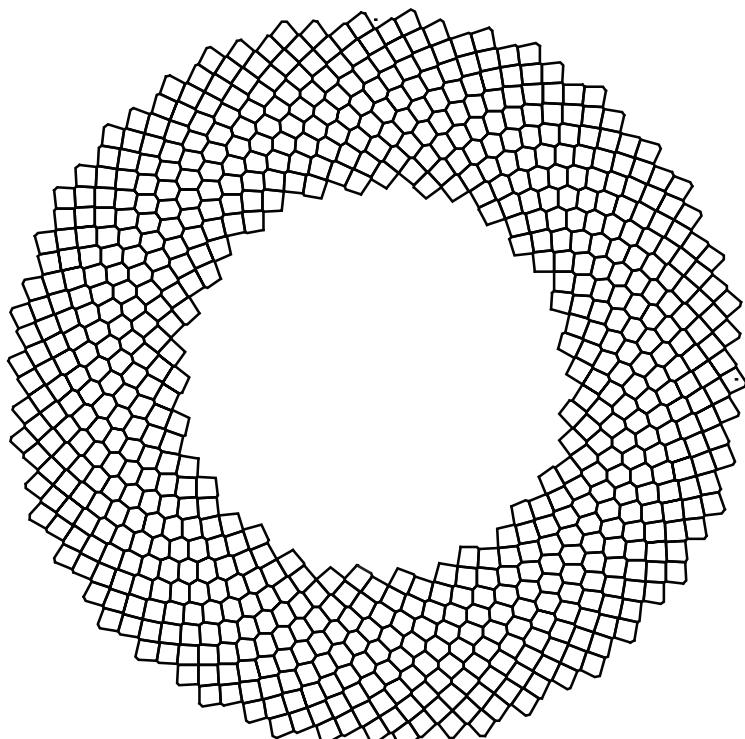
We can change the height of each Voronoi cell at will.

For example, the following figures are a proposal for an ideal stadium.

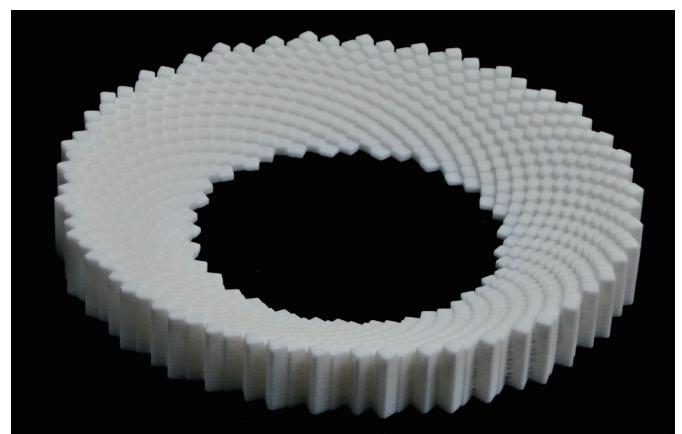
In such a stadium, every member of the audience can view the center stage.

Of course, we can build the roof structure in the same way as the Fibonacci Pavilion.

I named this stadium "FIBONACCI COLOSSEO".

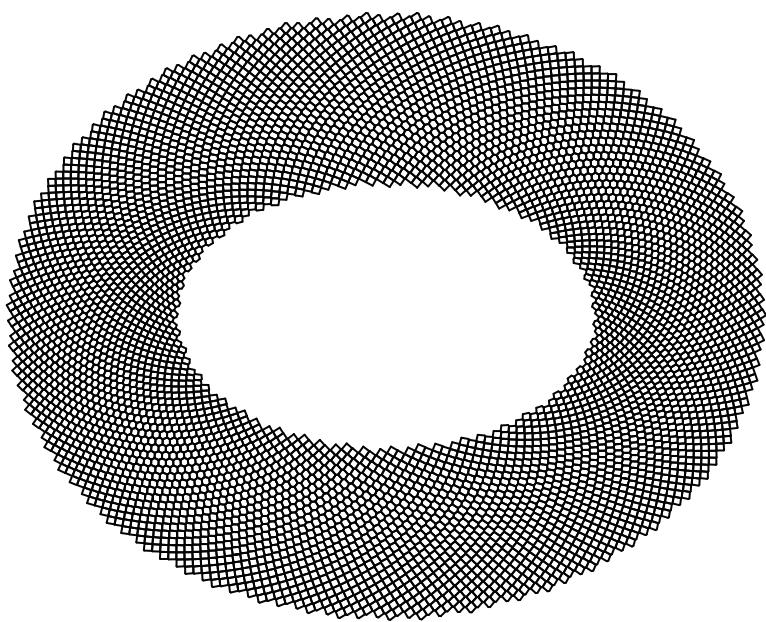


*Plan*

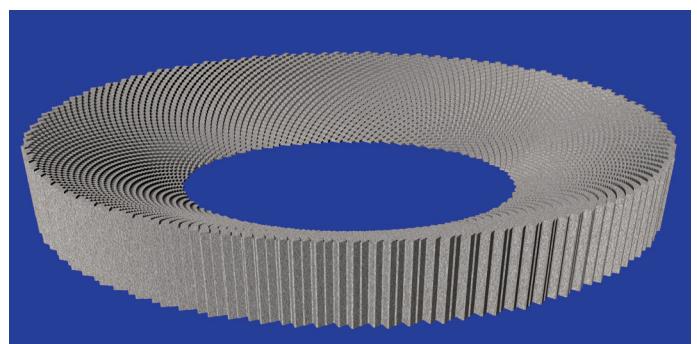


*Scale Model*

*Round Stadium*



*Plan*



*Perspective*

*Oval Stadium*