

The Hidden KingdomThe Geometry of Ritual Space

Since 1968 I have been occupied from time to time with something I happened to observe in a small Mayan vase my brother had collected as an addition to his then fledgling collection of pre columbian art. Were it not for the fact that I was a working professional artist and a student of the painter's secret geometry found in european pictorial composition I might very well have failed to notice it, that within the vase's painting of an old fire priest there seemed to be something very similar at work. As far as I knew, at that time no one had mentioned the existence of such an organizing principle in any of the books in our small library of precolumbian cultures, nor had I heard about anything like it from other sources.

However, what was known about the maya suggested that such a thing was certainly in keeping with their character.

Their achievements in Calendars, astronomy and mathematics were well known as was their love of order. The extremely satisfying proportions of their architecture

and sculpture and the classical look and feel of their ceramics and painting all suggested the possibility of something more than just good taste at work.

I thought it worth investigating which I began by tracing out the vase's painting and transferring it to a flat surface. I was grateful that its painter had provided an outline for the painting's rectangular format, a necessary condition for accuracy. I inked in the outlines and toned the drawing into a good facsimile of the original. Then in a series of tracing paper overlays I experimented with the European geometric systems with which I was familiar, ending with a scheme based upon the ancient Greek golden section.

They all yielded interesting results and many workable relationships and coincidences. I had found parallel pictorial elements, lines of direction and what appeared to be the influences of vertical and horizontal axes - all tell tale signs of a geometric system at work, but it was some other scheme. The ones I experimented with^{had} all ended in disappointment but I was not discouraged.

Still, wondering whether our small vase was not just a fluke, I turned to our library of books on precolumbian art and architecture to see if I could find other works which gave me this same impression of an internal order. It was everywhere I turned, in other painted ceramics, in the proportions of Maya buildings and in the compositions of carved stelae and sculpted glyphs. I made drawings of many of these and investigated them with the same methods I had used on the vase - again with the same unsatisfactory results. It appeared that my problem had been one of too many clues rather than too few. I had been led off into too many different directions all leading to general confusion, but in spite of this I had come to at least one tentative conclusion, an intimation if you will, that in all the works I had studied, what I had been looking for was a single system, one that would work with them all.

Temporarily frustrated, I gathered up all my notes and drawings, put them away and went on to other things. Years passed with only an occasional

return to the work when I happened upon it by accident while looking for something else. I would play with it a while before returning it to the gathering dust of my old portfolios there to be forgotten as more time passed.

During those years our collection, our library and our knowledge of meso american cultures grew dramatically especially in the field of religious studies. My primary interest had shifted by that time from the world of the maya to that of the Aztecs about whom there was much more first hand information available especially about the functions, character, and the permeable nature of the gods, the importance of the strict observance of ritual, and their ideas about cosmic structure.

Although I was unaware of it, my expanded frame of reference already contained within it the answers I had been looking for so long before. All I needed was for something to come along powerful enough to make the connection and revive the old interest.

This happened a few years ago, one evening when

I was thumbing through a book on precolumbian art. ~~When~~ Suddenly I came upon a page containing a drawing of one of those colossal Olmec stone heads over which someone had drawn out a geometric scheme based upon the golden section. I was thunderstruck. Until that moment I had ^{had} no idea that this approach had occurred to anyone else. I studied the work closely but skeptically since I knew from my own studies of the golden section that any reasonably proportioned human head would fit within its geometry. It appeared to work rather well. What disturbed me, however, was the fact that the golden section was the product of Greek philosophical and religious ideas about the order of the cosmos and the principles of growth in nature and would have held little meaning for the Maya or for any of the other mesoamerican civilizations for that matter.

The important consequence of finding the Olmec head drawing was not that it had the golden section drawn over it but that it forced me to become re aware of the concepts behind that particular system as well as some of the others

I had worked with. I realized that my investigations and experiments had been little more than abstract academic exercises in aesthetics and surface geometry with little thought being given to the ideas which had created them. As I returned to the problem I wondered if the same kind of expression of cosmic order could also be at the heart of the geometric system I had been seeking. What I knew about the Maya certainly pointed in that direction. For instance many of their ceramic works were highly valued as sacred objects. That these could be created without the observance of appropriate ritual ~~was unlikely~~ would be highly unlikely given that ritual accompanied almost every thing they did. Chief among these was the creation of ritual space as a condition for any subsequent ceremony. A priest took fire and incense and with these fumigated the four cardinal directions and the upper and lower worlds from his position at the center. By doing this he acknowledged and sanctified the cosmic order as well as his position within it. So too did the artist by creating a geometric paradigm of the cosmos to serve the same purpose.

But just ~~how~~ was that cosmos structured? and how could that structure be stated graphically in such a way as to be useful for Architects, sculptors and artists?

First of all it consisted of two different interconnected elements, the three levels of existence of the heavens, the earth and the underworld oriented around a central axis which linked them through their centers like beads upon a string. The central level contained the second element, the plane of the earth's surface which was oriented according to the four cardinal directions emanating from the center. This center was also a spiritual portal with access to both the upper and lower worlds. I have shown in figure _____. There were a few minor variations in the concept involving the numbers of the heavens, but throughout Mesoamerica the basic elements were the same.

Given a rectangle it was rather simple to draw out the basic idea. First I divided each side of the rectangle equally into halves. Lines were drawn from side to side establishing the central vertical and horizontal

apex creating the four cardinal directions plus the center. I then drew the diagonals from corner to corner completing the first element of the two part plan.

The second part concerned the triple levels mentioned in the description. How did a system based on two progress into one based also on three and yet still contain within it the original bisymmetrical scheme?

More importantly could one evolve out of the other as a natural geometric development rather than by imposition of one upon the other? There was one more question, I knew that such a triple division of the rectangle would result in not only two new vertical apex but in two new horizontal apex as well. Since I felt that the rectangle was primarily the plane of the earth, was there a compelling reason for such a triple division since it was already dominated by the apex of the four cardinal directions?

The answers to all of these questions came rather quickly. I found in the given rectangle that once

The Cardinal apes and the diagonals of the figure had been established, only one more line was required to effect a triple division. This line could be drawn from any of the four cardinal points where they intersected the outline border of the rectangle to any of the corners opposite those points, where the line crossed one of the diagonals of the rectangle it divided the plane both vertically and horizontally into the division of a third. The way this happened and with only one line, evolving so naturally from the lines which had preceded it struck me as particularly beautiful in its simplicity and logic.

As for a compelling reason for a triple division of the earth's surface I needed to look no further than the seasonal and diurnal passage of the sun particularly the former since of all celestial movements this was the most important.

What I now had was a scheme showing the division of both sides of a rectangle into thirds with the two great apes of the Cardinal directions emanating from

the center and bisecting the sides. all that I needed now was a way to lock these two systems together into a single interrelated system and this was already indicated in the drawing. The middle third of each side's triple division was bisected by the central directional apex. By likewise dividing the other thirds I would have six equal divisions for each side of the rectangle and thus the first possible statement of the complete geometric scheme. In the end it was as simple as multiplying two times three. The resulting number six was the first number common to both and had important symbolic associations with the god of fate and with the center.

But even more exciting was the idea that it took seven lines to create the six divisions and seven was the Mesoamerican expression, *pa' excellence*, for completion.

I now had what I believed to be the system I had been looking for, one that was a product of a natural geometric growth which could be drawn out without the aid of measurements. I had chosen to work it

out independently, apart from any reference to a particular work of art or architecture with the idea that I would be better able to judge its workability when it came time to test it.