


Chasing the Cognitive Roots of Our Rectangular Mindset

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 "Popurri_01_t07" by [Eduardo Paz](#)

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Introduction:

Aerial views of earth predominantly show rectangular patterns formed by fields, housing complexes, cities and maps of roads with the exceptions of natural forms like terrains, jungles and rivers. The rectangularity is the evident signature of human creations.

Most of the man-made creations are based on rectilinear approach. We have rectangular buildings, houses, rooms, furniture and many of our belongings. We tend to align everything along the walls of a room consciously and even unconsciously. The objects kept on a table are aligned to its four sides. **Basically, there is an invisible grid reference in our mind, which influences at subconscious level our actions and the way we organize things.**

Earth or the universe may be round in its appearance and even the mother's womb, but the moment an infant is born it is kept in a cradle, which is rectangular in shape most of the time. Since then until death one spends his life in a rectangular world. As shown in the picture, the coffin is also quite rectangular in shape.



Circular or round forms are inherent in nature. Ripples in water, stars in the galaxy, fluffy clouds, twirling tornadoes or flames of fire have circular motions and forms. The circle appears to be as vital as the five prime elements of nature. Whereas, rectangle is the most common shape found in artificial creations and a unique one among all geometric primitives. But it is not true that rectangles are not found in nature.

The principle essence of rectangle or grid is seen in nature as well. DNA molecule contains two interwoven helical chains, which are held together by chemical bonds. The schematic diagram of the DNA molecule looks like a ladder or grid structure. The symmetry is seen in the physical shapes of animals, insects, birds, leaves, fruits, seeds etc. But nature has never created 100% symmetric objects although the essence of symmetry is inherent in them. Most of the leaves are symmetric in shape but the left and right sides are not exactly identical. The nature has always disguised its principles with the amalgamation of perfection and imperfection, order and chaos at the same time. For example, leaves are symmetric in shape but a tree has an asymmetric form. The ripples are circular but water is formless. Manmade designs and patterns are usually 100% symmetric and therefore they appear artificial.



The invention of wheel had a lot to do with motion but the invention of rectangle is no less important as it deals with order, structuring and space management.



Properties of Rectangle:

Rectangle is basically a parallelogram, which is perceived through the intersection of two horizontal and two vertical lines at right angles. All the points in a perfect circle revolve in the same circular path whereas if the four sides of a rectangle are extended, the intersecting and parallel lines are revealed. Basically, the rectangle is an outcome of a grid structure. Multiple rectangles in a grid structure can share common sides and seamlessly fit into each other without wasting any space. If you fold a piece of paper, it is easy to divide it further into smaller rectangles. Three-dimensional extrusion of a rectangle offers similar advantages to you. The rectangle is the most unique of all the geometric shapes as it is divisible into infinite number of smaller pieces with similar proportion and symmetry. Hereafter, rectangle and grid will be used as synonymous concepts.

Grid Sensitivity in Ancient Times:

The Paleolithic Cave Art, which is older than 15,000 years, indicates the lack of grid sensitivity. The pictures of bison and other jungle animals are drawn all over the cave without deciding the boundaries of the drawing area. It is apparent that the caveman accepted the entire rocky surface as a canvas. **This**



substantiates the fact that humans are not born with grid sensitivity

but we acquired it through the evolution of civilizations. Remains of some civilizations in the recent past are demonstrative of sensitivity to grid structures.

Indus Valley Civilization, which flourished in the western part of South Asia around 2,500 B. C., has left enough evidence, which shows that Harappans had proper understanding of grid and rectangular structures. They have planned their architectures and constructed them with meticulous brickwork. There are several seals and tablets found in the excavation, which are rectangular in form. The Egyptian pyramids and the remains of Maya civilization also reflect the geometric understanding of the people of that era.

Grid Sensitivity Among Children:

If you observe the drawing performance of 3 to 4 year old children, you will see that their drawing extended over the carpet without halting at the edges of paper. Firstly the children in this age group do not know that paper is a medium of drawing, secondly the use and value of carpet, and finally the rectangular limits of the paper. As the child grows, it develops the sensitivity of limiting the drawing within the boundaries of paper. Teachers or parents have to hammer and cultivate this sensitivity by defining margins on paper. **Children are no different than the cavemen, as nobody is born with grid sensitivity.**

Rectangular Vision:

Without turning the head up or down if one tries to look at the farthest points upward and downward directions; one realizes that our vision is obstructed by forehead while looking up and while looking down cheek bones and nose obstruct the vision. On sideways, our vision is quite unobstructed. It is obvious that our horizontal view is much wider than the vertical view. **The field of our vision is quite rectangular with chamfered or round corners and it is hazy at the farthest points. Also the scenery on earth has greater horizontality.**

The view finders of video and still cameras, negatives and photographs, projection screens, television and computer monitors are rectangular in form and wider in width compared to height because that suites our vision. Our preference of rectangular frames for all the devices mentioned above might be intentional or unintentional but it is definitely due to the comfort and pleasure of viewing.

Geometric Obsession:

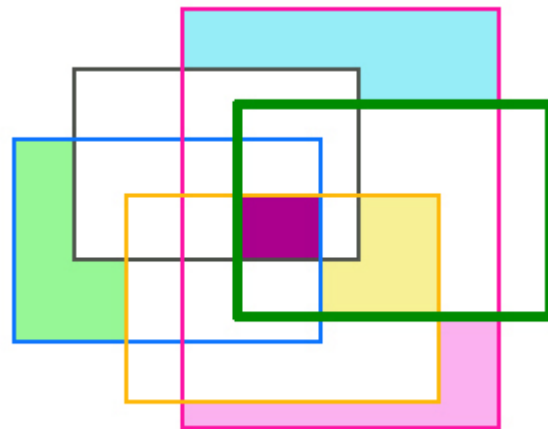
We have seen the gardeners cropping and shaping plants into cubes, spheres and pyramids in front of corporate offices. The modern hairstyles have a lot of straight lines and sharp cuts.

Many of the eatables are shaped rectangular, circular and packaged in cones and boxes. Recently, there was news that farmers in the southern Japanese town of Zentsuji have



figured out how to grow their watermelons so they turn out square. They found square watermelons easy to stack and transport and thus making them cost effective.

The modern man is always trying to seek order, logic and meaning in every aspect of life. In fact, we find it difficult to comprehend the things that are not in ordered format and therefore tend to reject chaotic approach. Our life is more comfortable if it is more predictable and follows a distinct pattern. Minimizing uncertainty and shocking surprises has been the focus of human endeavor. A person's processes are psychologically channelized by the way in which he anticipates events. As Kelly puts it, the psychological grooves or templates, which are cut out by the mechanisms he adopts for realizing his objectives. This type of behavior is manifested in how we plan carrier of a child or an itinerary.



The world map is formed out of the meridians of longitude and parallels of latitude as straight lines intersecting at right angles. The topographic divisions of earth surface help us in perfectly identifying the geographic locations. Bar charts, analytical charts based on X and Y axis give clear insight in the presented information. The painters prefer to rely on grid reference while enlarging portraits. Modernist architects preferred the minimalist approach and took the rectangular geometry of classical architecture. Most of modern architecture designs are influenced by the cost and space constraints and therefore they depend on the rectangular patterns. In case of abundant resources the architects have implemented

innovative designs that are disarrayed with random forms.

Planning, sequencing, structuring, categorizing, arranging and prioritizing happen in our brain at subliminal level while we are absorbing information or thinking. Of course, we have to take intentional efforts for searching order or pattern in complex and chaotic subjects. A grid or matrix is visible in the arrangement of manmade creations. The same grid or matrix is existent in the structure of information though it is not visible to us. Our mind perceives patterns, connections and interrelations between concepts and ideas, and then links them together. **Basically, the persistence of grid logic in every human activity is due to human cognitive style.**

Semantic Grid:

One day, my 6-year-old son was playing cricket with his friend in my bedroom. So many toys were scattered all over the floor. The measuring tape was stretched along the walls and some toy cars were arranged in a row near the bed. Quite angrily, I started picking up the measuring tape and the toy cars. Seeing this, my son screamed at me that I am actually removing the boundary and crease lines. I was shocked to realize that at such young age children visualize quite metaphorically.

As George Lakoff, a well-known cognitive linguist says that we draw conceptual parallels between referral and referred domains in metaphors. Comprehension of metaphors is dependent on similarity or cross-domain mappings. Desktop metaphor used in Windows Operating System is a very well known example of how we draw parallels between software and office environment.

My closest encounter with metaphors happened while working on the Multimedia Rendering of *Dnyaneshwari* project at C-DAC. For example, Saint *Dnyaneshwar* has referred sunrise as enlightenment and the sun as a representation of *Guru*. The lotus is a representation of human body and the beetle, which is in love with the lotus, is like the soul. The night represents ignorance of a person and twinkling stars are like the material knowledge. In the night, the lotus closes all its petals and the beetle gets locked inside. Love or affection is very tender to feel but very to hard break. He says, the beetle can penetrate through a hard

wooden log but prefers to be caught and suffocated inside the closed petals of lotus. The soul represented as beetle is freed when the sun rises and the lotus blooms. The sunrise takes away the night of ignorance as well as the twinkling stars of material knowledge. This example clearly illustrates how parallels are drawn between two domains based on similarity of meaning. **Metaphorical thinking actually forms a semantic grid of thoughts.**

Thinking out of the grid:

The gestalts illustrated in this article indicate that rectangles or grid structure is an inherent aspect of our psychology. Humans mind has always tried to anchor his logic to coordinates formed by repetitive experiences. For example, the directions of space and time are anchored to the rising and setting of the sun. Every individual has his own mental model, which evolves out of his or her experiences. In matrimonial columns we find boys and girls trying to match their profiles. There is an assumption that persons with similar background and exposure are likely to have identical mental models. Our education system is after universalizing the mental models of students by teaching standard lessons.

With the advent of computers, a variety of precision tools are becoming available. It is hardening the grid sensitivity. There is a limited use of standard knowledge transferred on to students for industrial compliances. It is like installing software with standard set of drivers to make it work. Our education system must protect some scope for one to think out of the grid. **This is possible only if we leave the younger generation to discover at least a few areas entirely by themselves. It may require discontinuing the incremental explorations for getting original insights. It may be necessary to refrain from passing on the existing knowledge.**

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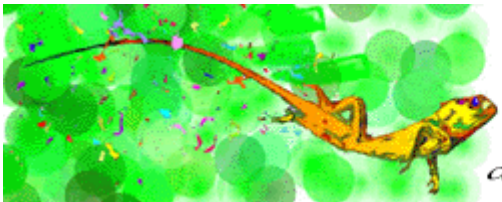
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*Where were you
when The IDEA knocked
at the windows of your mind?*

