

Value of Geometric forms in Modern Art and Design

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Abstract: Geometry is a kind or branch of mathematics. We look around different Geometric shapes. Most of the Geometrical forms are sketched in straight lines polygons including triangles, quadrilaterals. Some of them have curved circle and ellipse. Straight Lines and circle/ellipse forms cone. These shapes create also three dimensional forms like cubes, cuboids, pyramids etc.

Present paper focuses on these Geometrical forms which are stolen from the nature. How and why these are valuable for the Modern Art and Design. This paper also compares to how be the value of Geometric forms in our Eastern and Western culture and environment as well as flourishing to art and design worldwide.

Key words: Geometry, lines, from, shapes, Eastern, Western, art and design

Hypothesis: Art and Design are the part of Mathematics. The art of East and West reciprocally influenced to each other. All the Geometric forms are derived from Nature

Methodology: The chosen method for this research paper is based dividing into major three of the following methods:

1. **Sample analysis** involves analyzing different samples as selective are mentioned from the East and West including India. This criterion for the analysis includes what geometric forms/shapes are used in Drawings and Paintings along with their value for the cause of necessity depicting joy, beauty and communication.
2. **Literature study** is helpful and more important to bring out to desired sources and facts. Related literature of the topic as published in books/journals/thesis and available on line sources in the Google/web sites has been traced and referenced.
3. **Observations and Comparative** method of the study is very helpful in visual arts studies. Both factors could be examined with the help of above two in this category. I am grateful to all those authors and collectors of visuals in any forms which have been quoted with their prior and anticipated Courtesy. It was not possible to put all the visuals in this article as thoroughly searched. This for the sake of research would promote in for future by always citing the facts.

Introduction: Talking about Mathematics numerical no one to nine including zero comes naturally in our minds. Alike ellipse shape, Zero as a placeholder invented independently in civilizations around the world. Art is closely associated with science not only in the terms of making equipments but also in the terms of subject matter and making the object for art form. The academic activities of art began with the most prime shapes of geometry. (Joshi, Labadie & Viranjan 2014) How Geometry deals with the most apparent connection between art and math's, drawing and the use of shapes and forms as well as an understanding of spatial concepts, two and three dimensions, measurement, estimation, and pattern is very important and mysterious to a common man. Nature is full of geometry and this mathematical perfection is what inspired so many artists to use these geometrical forms. Geometric concepts are also evident in painting, sculpture and architecture.

Travelling around centuries these shapes glorified by Greece philosopher Plato in his theory of imitation and in modern period the manmade object generated by the help of geometrical shapes. In painting Pablo Picasso and Georges Braque broke up the two dimensional surface of their paintings with geometric forms to signify different perspective. However, the geometry is not only the practice of the 20th century avant-grade artist, but the roots of geometry can be seen in the cultural manifestation from all over the world historically as decorative and art practices. (Joshi, Labadie & Viranjan 2014)

Geometrical Forms in Ancient Culture: Prehistoric artists were mathematician. They created triangle circle and rectangle in the form of animals and human figures. In the town planning of Harappa and Mohenjo-Daro reflect the geometrical calculations.



Plate 1 (town planning of Harappa and Mohenjo-Daro/Google)

The Pyramids of Egypt play a vital role in the history of Art. These are representing the Geometric shapes. The best examples are of the Pyramid of Mycerinus (c.2470 B.C.), Chefren (c.2500 B.C.) and Cheops (c.2530 B.C.) in art and culture (Janson, 57). The Oriental zing phase of Greek art was a period of experiment and transition, in contrast to the stable and consistent Geometric style. (Janson, 96)

Islamic art is mostly based on Geometric patterns including vegetative motifs. They are made up of a small number of repeated geometric elements. The simple forms of the circle, square, and straight line are the basis of the patterns. These elements are combined, duplicated, interlaced, and arranged in intricate combinations. They are two-dimensional. Islamic designs

often have a background and foreground pattern. The placement of pattern upon pattern serves to flatten the space, and there is no attempt to create depth. The mathematical term for this type of construction is “tessellation.” (Google)

Art Forms Reflected in the East and West: As said earlier that the Oriental zing phase of Greek art was a period of experiment and transition, in contrast to the stable and consistent Geometric style. Once the new elements from the East had been fully assimilated, however there emerged another style, as well defined as the Geometric but infinitely greater in range; the Archaic, which lasted from the later seventh century (Janson, 96) during this period. Besides, vase painting as it was seen in monumental architecture and sculpture.

Colosseum or Coliseum Ancient Roman architecture also known as the Flavian Amphitheatre of Rome Italy was designed and reflected the best three dimensional geometric. For nineteen centuries the Colosseum has stood as the symbol of the Eternal City of Rome. The giant ellipse, enclosed by its dramatically repetitious tiers of arches, creates a unique visual impact.



Plate 2 (City of Rome/Google)

Renowned European artist Paul Cezanne traced geometrical form in nature and painted landscapes depicting the same. Georges Seurat and Paul Signac developed painting with coloured point (dot), technique of painting is called Pointillism. Mexican modernist Diego Rivera, American artist David Smith, Spanish artist Pablo Picasso, French artist George Braque, Russian artist Kasimir Malvich and Dutch artist Piet Mondrian are those who actively explored geometric shapes.

In India many artists are exploring in their paintings working on tantric based especially in geometric forms. J Swaminathan, G R Santosh, S. H. Raza, P. T. Reddy, K. C. S. Panicker, Biren De, Om Prakash, K. V. Hardasan and some others have been worked in this category. Point (dot/ *Bindu*) is explored by Tantra artists. Triangles, circles, and others are full of mistrial communication. S. H. Raza found his niche in the concept of *bindu*- the origin of life, the centre point of everything. K. G. Subramanyan, Satish Gujral and many other muralists also acquired major geometric shapes for their work.



Plate 3 (Painting of G R Santosh/Google)

Anish Kapoor an International Sculptor and Installation artist has shown noteworthy work across the world from east to west with the help of Geometric shapes too. In Folk art/paintings of Warli Maharashtra, Aipan of Uttarakhand and others are shown widely Geometrical based motifs.

Value of Geometric Forms and Design: Each geometric form has a unique shape and nature resembling in helpful to other shape/form. Lines are more valued to show directions and also help to form the shapes in triangles and beyond. Star is a visual star created with the help of combination of Triangles. Even two parallel lines never meet each other in any surface or in the earth. The straight line signifies growth and development. These lines including criss-cross manner are helpful to form a certain order/form for the divisions of space, measures of time as well as some extend to the any base lines of the universe/beauty. Pure linear patterns draw attention towards lyrical effects of sound vibrations; or geometrically, Horizontal line represent to peace while vertical line shows the pride.

The square symbolizes the elemental earth or the material quality of nature. The triangle represents the three worlds: the neutral, the positive and the negative *Sattava, Rajas and Tamas*. The triangle with its apex downwards represents the yoni, the female energy or nature (*Prakrit*). The triangle pointing upwards is identified with the male principle (*Purusha*). When the two triangles penetrate each other in a form of five pointed star or a pentagon, each of its five points represent the five elements earth (*Kshiti*), water (*ap*), energy (*Tejas*), air (*marut*), and space (*Vyoman*). When the two triangles are separated and form an hour-glass pattern or the shape of a *damoru*, the drum of Bhairava, they represent dissolution time and space cease to exist. (Naghma, 2007)

Geometric pattern not only beautifies our life, and a kind media of information communicate can transcend the language barriers, ethnic and geographical barriers by static images to communicate with the receivers (Zhu and Yue Gao, 2010).

According to a book titled “Islamic Art and Geometric Design” published by The Metropolitan Museum of Art, Artists of the Islamic world were largely uninterested in linear perspective. Of the various styles of Islamic art, it was in Persian painting that a type of three-dimensional space was used in which figures could interact, but this space presented multiple viewpoints and simultaneously featured bird’s-eye and worm’s-eye views. (Google)

Nasreen Mohammadi of India connects the ideology of mathematics and Islam architecture with the help of reverberating lines in her work recall “Indian Music”.

The Staatliches Bauhaus, commonly known as the Bauhaus, was a German art school operational from 1919 to 1933 that combined crafts and the fine arts, and was famous for the approach to design that it publicized and taught. The Bauhaus was founded by Walter Gropius in Weimar. (Google)

Abstract geometry, with its seemingly random placement of shapes, has become prominent in modern graphic design. It might seem like a sudden trend, but it has roots in early modern art and even pre-historic art.

When Wassily Kandinsky began to create what we know as abstract art, he and those who followed were deconstructing the principles that guided institutionally recognized art to that point. They reduced their art to *expressions* of forms, colors, lines, and shape. Cubists, Bauhaus, and other Group, went on to evolve the use of geometry and grids, planting the seeds for modern graphic design styles. (Google)

At present Modern abstract design is the best way of communication for festival posters, web design, magazine covers and related in general.

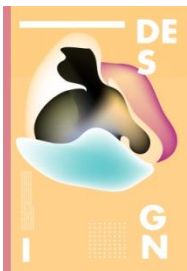


Plate 4 (Design based on Abstract/Google)

Conclusion: Each geometric form has a unique nature. Geometric Forms by and large conveys mystical communication including literary and mathematical signs. It can be amazingly true that a small dot (*bindu*) can stop a big sentence, but few more dots can give continuity. *Bindu* would be the origin of life, the centre point of everything. Linear drawing, pattern, gridding etc. nicely sketch towards valued geometric shapes/forms. These forms are source of power, dignity, duty, and other related. These are also helpful to show the directions. Reflecting that these are the sources initially derived from mathematics.

Nevertheless these are full of conveying believes, joy, sorrow and other emotions. Finally these build artistic shapes full of beauty beyond nature within the nature



Plate 5 (*Sparsh, Finger Nail on Paper* by Shekhar Chandra Joshi)



Plate 6 (Home in the Space, Finger Nail on Paper by Shekhar Chandra Joshi)

to create our everlasting art, design and creativity. Finally most of the geometrical shapes are assumed never-ending epitome of energy reciprocally influencing to each other in the visual arts of East and West.

Acknowledgement: I am grateful to its publisher including all those authors and collectors of visuals in any forms as quoted in this paper with many thanks to all for their kind Courtesy also for the sake of research only.

Cite This Paper: Joshi Shekhar Chandra (2010) Value of Geometric forms in Modern Art and Design, (name of publisher, page no, online code will be mentioned after publishing the same)

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