

Physical Order and Disorder in Greek Architecture Style

¹Saeid Rahmatabadi, ²Reza Tousemalani

¹Department of Architecture, Broujerd Branch, Islamic Azad University, Broujerd, Iran.

²Department of Physics, Broujerd Branch, Islamic Azad University, Broujerd, Iran.

Abstract: In general, Greek civilization has been summarized in three invariable elements: human, nature, and wisdom. goal of religious Greeks was temple in their architecture. They were asserting building itself as a kind of statue which has an abstract form and this statue has power to embody human qualities." Pervasive importance of the temple which had statue its inspirational role in public life was emphasized by adopting a high point- often over a hill overlooking or dominating the city (Acropolis) - for their building. In Greek architecture, like classical music, there's a simple central theme or content which a complex set of forms are grown from within which are more meaningful. The most ancient dividable practices in Greek architecture are: Doric style belonging to the mainland of Greece, Ionic (Ionian) style belonging to central Asian and islands of Aegean Sea, and Corinthian style. The most obvious difference among these methods is in their capitals. Max Bense who is one of the founders of informative aesthetic believes that, order has three degrees: chaos, being structured and being shaped. When we consider complete chaos that there are no regulations for connection between different components. In this case the possibility of prediction equals zero and innovation in maximum. Definition of being structured is one organized order with a structure that might have different forms. Bense calls the third part of order as a "chaos or disorganize order". In all three factors above replacement of components affected by a general organization whatever the rate of order is more and this order is more complicated, the informative content is less. In this paper first we have introduced this style briefly, we described order and disorder in the architecture and we have analyzed Evidences of order and disorder in this style.

Key words: Physical order and disorder, Greek architecture style, Evidence

Greek style:

Jordan, an English author, writes: the story of modern human begins when Greek come into the arena of history. In general, Greek civilization has been summarized in three invariable elements: human, nature, and wisdom. Recognition of Greek civilization is to know part of new Western civilization which is impossible without knowing East Mediterranean civilization. Because, as it was mentioned before, this civilization has had an important contribution in creation of Greek civilization and art. Discovery of humanity theory, or a human, who by thinking in each issue, can be brought to understanding and knowledge, led Greek to pass mythical and magical thinking to step in rational transition. And it was at this time that philosophy, writing history, and science replaced old thoughts. Identifying the person and following that, placing value for him/her created personal freedoms. What has had mattered in Greek humanistic (human oriented) world view has been human and he/she was the central scale of everything. In addition to all, in Greek thinking, what has distinguished human from other creatures is his/her wits. Nature and beauty has had a special place in Greek civilization in a way that natural factors and specific nature of Greece have played a decisive role in the formation of Greek architecture and other arts.

GREEK ARCHITECTURE (650-30 B.C)

ARCHITECTURAL CHARACTER

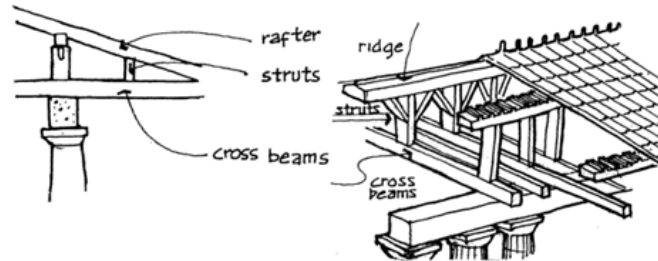
1 Hellenic Period (650-323 B.C.)

Though temples were now the chief building type, the earliest resembled the Aegean megaron in plan and in having timber laced, sun-dried brick walls, stucco-covered, on stone dadoes; timber-enframed portals (the origin of tile door architrave), narrowing a little towards the top; timber antae or uprights protecting the free

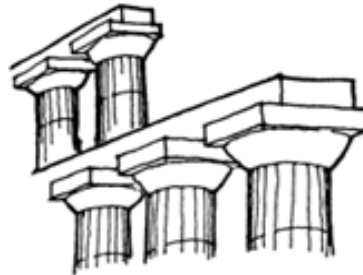
Corresponding Author: Saeid Rahmatabadi, Department of Architecture, Broujerd Branch, Islamic Azad University, Broujerd, Iran.

E-mail: Atomicboy_reza@yahoo.com & Saeid_gh_rahmatabadi@yahoo.com

ends of the naos walls where they embraced the pronaos or porch and a low-pitched roof showing pediments or gables over the narrow ends. Then too, temple enclosures had propylaea, but the outstanding difference was that, colonnades appear, surrounding the temple and forming an essential part of it. Greek architecture was essentially columnar and trabeated (trabs = a beam), and this gave it that simple straight forward character in which the constructive system is self-evident. The wooden roofs were untrussed, the rafters being supported by longitudinal beams-wall plates, purlins and ridge-piece-laid on the walls and colonnades themselves or propped or struts from cross beams.

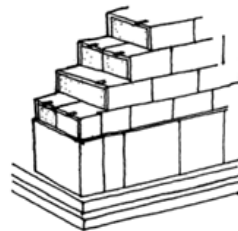


As the principle of triangulation was unknown, spans could not be large, unless internal lines of columns were supplied, and these usually were in two superimposed tiers.



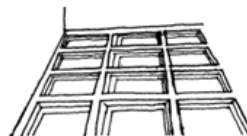
Greek columns and their entablatures were at first entirely of timber, with terra-cotta decorations in the upper trabeation, but were converted into stone quite early in the period, about 600 B.C. the translation was quite direct, timber forms being imitated in stone with remarkable exactness. For this reason, Greek architecture sometimes has been called "carpentry in marble". The walls, too, became wholly of stone about the same time, yet the tradition of the dado always survived in the special way the stones were arranged at the base of the wall.

**Dado* — the portion of a pedestal between its base and cornice. A term also applied to the lower portions of walls when decorated separately.



Ceilings sometimes omitted, leaving an open roof, were treated decoratively with timber — panelled coffers or, within the colonnades around temples, were of flat, stone slabs, coffered to imitate the timber.

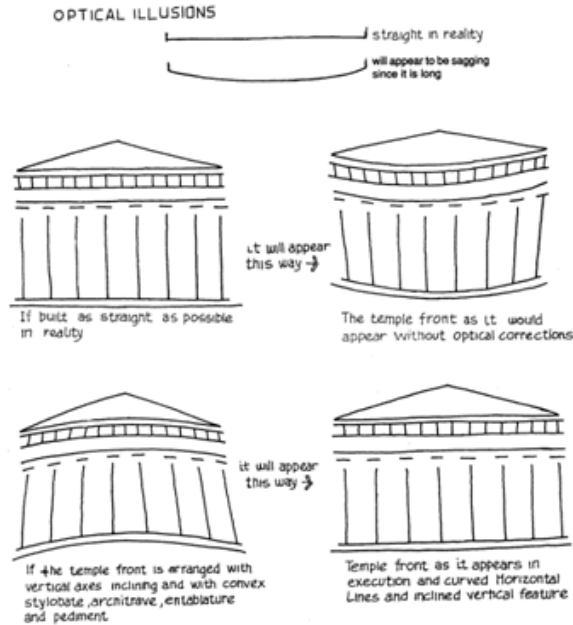
**Coffers* — sunk panels, caissons or lacunaria formed in ceilings, vaults of domes.



Almost all kinds of stone walls were used, from coursed rubble to the finest ashlar, well-bonded but always without mortar. In such work the stones were secured together by wrought-iron cramps and dowels, protected by molten lead.

Optical Illusions:

Several important refinements were practised in Greek architecture in order to correct optical illusions. The long horizontal lines of such features as stylobates, architraves and cornices, which if straight in reality, would have appeared to the Greek eye to sag or drop in the middle of their length, were formed

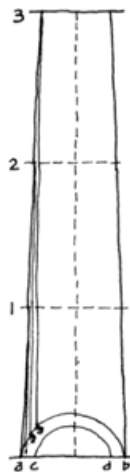


In the parthenon, vertical features were inclined inwards towards the top to correct the appearance of falling outwards; thus the axes of the angle columns lean inwards 60 mm (22/3 ins.) and the axes of the columns if produced, would meet at a distance of 2.4 km (1/2 miles) above the stylobate.

Greek columns usually have an entasis.

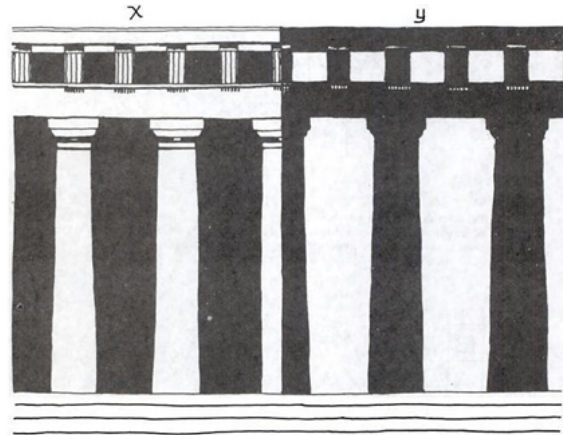
Entasis— a swelling or curving outwards along the outline of a column Shaft, designed to counteract the optical illusion which gives a shaft bounded by straight lines the appearance of curving inwards.

Methods for Entasis: ab, cd are bonom and top diameters respectively. Describe semicircles on these and at c, erect perpendicular cutting larger one in 3. Divide segment a-3 and height of column into any number of equal pans—say 3 a. number both 1, 2, 3 from a. Thru points 1, 2, 3 in segment erect perpendiculars cutting corresponding divisions of the height. Thru the points thus obtained draw curve.



Angle columns of temples were not only set closer to Me adjacent columns, but were also stouter, as it was found that they appeared thinner against she open sky than those seen against the solid background of the "Naos." Well.

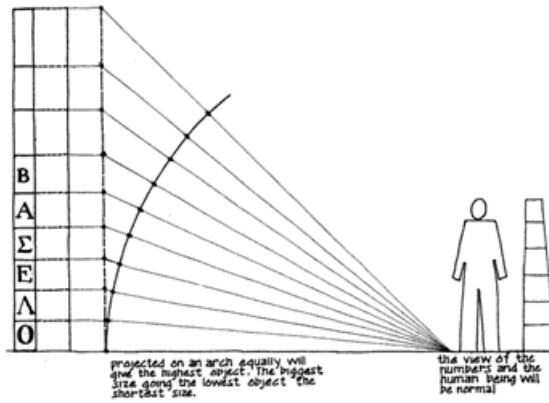
The finest sculpture completed the most important buildings, and the delicate adjustment and refined treatment, were made possible by the hard, fine grain of the marble. Color was restricted to the architectural detail, the broader, flat surfaces being left plain. When marble-masonry was not forthcoming, a coating of hard stucco, made with powdered marble, gave the desired quality of finish to stone-built structures. Mural painting, as on the walls of temples and porticoes, was a highly developed art.



COLOR EFFECT ON PROPORTIONS

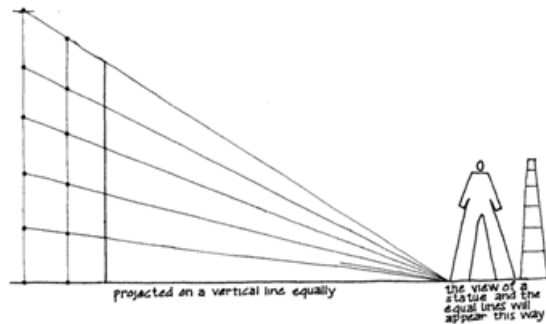
X - the metopes and frieze wall being black the columns appear shorter and the architrave, triglyphs and cornice have importance.

Y - with reversed colouring the columns appear taller and higher and the entablature loses in importance.



projected on an arch equally will give the highest object the biggest size, and the lowest object the shortest size.

the view of the numbers and the human being will be normal.



projected on a vertical line equally

the view of a statue and the equal lines will appear this way

From the original two "orders of Architecture", DORIC and IONIC, evolved simultaneously by the two main branches of the Greek race, there at length arose a third, the CORINTHIAN a purely decorative variant which although invented by the Hellenic Greeks was only to attain its full identify in the hands of the Romans. The etruscans developed the Tuscan, inspired by the Doric and a simpler and cruder version of it. While the last to appear was the "Composite" a Roman contribution which did not differ greatly from the corinthian and which, like it, was an offshoot from the Ionic. These were the "FIVE ORDERS OF ARCHITECTURE" of classical times. An order consists of the upright column or support including the capital, and base, if any, and

the horizontal entablature or part supported. The entablature is divided into architrave or lower part, frieze or middle part, and cornice or upper part. The proportions of columns and entablature vary in the different 'orders' as do also their mouldings and ornament. The origin and evolution of the different parts of the 3 Greek orders.



'Doric — used chiefly in South Italy and sicily and on the Greek mainland.

Physical Order and Disorder in Architecture:

The architecture is composed of different part. The connection between these components has been organized. It means that all these components are subsystem of an organism. This system or organism might be very simple or complicated. Max Bense who is one of the founders of informative aesthetic believes that, order has three degrees: chaos, being structured and being shaped. When we consider complete chaos that there are no regulations for connection between different components. In this case the possibility of prediction equals zero and innovation in maximum. Definition of being structured is one organized order with a structure that might have different forms. Bense calls the third part of order as a “chaos or disorganize order”. When we talk about this order that in which all materials have been replaced that displaying the choices have been picked up freely and in united system.

In all three factors above replacement of components affected by a general organization whatever the rate of order is more and this order is more complicated, the informative content is less .But we should not think that more complication equals chaos automatically. This order couldn't be recognize easily and could even cause mistake. More order equals less innovation .In complete chaos the probability of all components are equal, so squandering information equals zero and in consequence the possibility of new combination or maximum creation is possible.

Continuing of a style is in connection with order and squandering information and not to be with innovation. The contrast of styles comes from the difference of its components and its dominated order .In this case they have been more or less complicate and by means of that they have been connected by viewer or user. For example in Indian temples in India there is an order that they are not identifiable at the first glance because their components are almost complicated.

Order means obligation automatically. Whatever this order is sever the open space is less so it could be remained for the variety of components. And each part should obey these rules more and more. In a case that some these parts couldn't even do their main task and in reverse a kind of complicated order creates more freedom and this freedom creates more open space for forming the components and causing opacity. The two kinds of orders, of course, have some exceptions just in a condition that the main factors of organism stay stable and without changing.

Buildings which are in order and are not flexible give us less freedom. In the other word changing one factor in this system could hardly possible. But in the opposite, these architectures give us their messages very clear and straight and nothing for personal interpretation for buildings with complicated order the issue is something else. Here in this case, we are completely free to act. Personal interpretation and opacity are possible. Such building expects us to be more active. We ourselves should discover the order of that and also search for its system. We can compare this building with Picasso's painting named Guernica. In there also this is viewer wants to comprehend the painting and this is also the viewer who is obliged to search about the organism and thoughts, problems which lay behind of the painting.

Architectural styles of Mies van der Rohe and Venturi are eventually the same (Spectrum). The contrast between the two even influenced the choice of materials. But which one of these two styles is better or more beautiful?

For answering this question it would be impossible to find a definite answer. As we will see the value of aesthetic of objects could be measured or adjusted. This value equals with the consequence of the division of order by complication. Whatever a building is more complicated its organism should be more expanded that we will be able to find a measurement for its aesthetic.

Buildings with severe order like many of Mies van der Rohe's works, either gives no opportunity to complication or it ends to chaos. In the other words, the Robert Venturi's open order needs complication that wouldn't be naively.

The important note is that in each style should be equivalent between complication and relevant order the comparison between two styles is impossible. We couldn't consider any style as the best in architecture absolutely.

But which or who make it clear that how the dominated order should be, simple or complicated?

In T. Munro's opinion that: the complication in an organism continuously being increased in an art till it makes studying harder occasionally. The consequence of this hardship is the general turning point and return to a more simplified organism. The trueness of this Munro's idea could be confirmed by informative theory.

Peter Smith proves that during architecture history, one phase with three steps is really recognition which has been repeated several times.

- A severe and distinct order dominates in first step. Coordination and simplicity has basic role in this era.
- The main characteristic of second step is tension.
- Lack of clarification and seduction are the main traits of third step. Order in here is that complicated which we are approaching to the maximum capacity of our conceptual.

There is a direct connection between the rate of regularity and division of information to semantic and aesthetics quota of semantic information and with the same ratio the effect of wisdom on emotion will be more and vice versa: when aesthetics information has had more quota or order is more complicated emotion dominates on wisdom.

An introvert person who is rationalist basically prefers the clear order and extrovert person is more emotionalists and prefers the complicated order more.

Evidences of Order and Disorder in this Style:

What we have seen in Greek (Ionic) architecture are order, compactness, and symmetry. The most important rule in this architecture is good symmetry and their effort is to achieve the ideal form based on regular relationships of numerical and geometric rules.

- In Greek-style, there can be seen a kind of mutation of very simple units to more complex ones without any fundamental change in the kind of units or their groupings; because, in Greek architecture, like classical music, there's a simple central theme or content which a complex set of forms are grown from within which are more meaningful. Or with another comparison, we can say that map of temples, is like that major Greeks' invention (that is geometry) which its thermos and its other side analyses are conclusions from a set of simple conventional and basic principles.

- Greeks' insistence on the mathematical order was their leader to achieve proportionality of the existing temples. The temples (belonging to the ancient period) were often narrow and long of which the ratio of posterior and anterior walls with of the lateral walls were about one to three. The maps of post-classical and Hellenistic periods got closer in the ratio of one to two but they never had this exact ratio; the lateral walls of temples in classical period often were a little more than doubled than the posterior and anterior walls.

This ratio became a little shorter in Hellenistic temples. Proportion in architecture and sculpturing and having harmony in music were like a united phenomenon in the Greeks' mind and in other word were visual expressions of cosmic order as the good and logical life was like this. Describing Greeks building from foundation to top can be expressed with terminologies like column, podium, superstructure or entablature ; combination or relationship of these three parts or units are called method.

- Like Greek mathematics, science, and philosophy, Greek architecture was also primarily relied on setting determined limits. This assumption starts with an ordinary principle that you should not exceed the mentioned limits and always there should exist something within it and it should not be dump.

- For Greek artist using levels, in a manner that Egyptian artists were using giant columns like squares for complicated decoration, was not acceptable. The own building (that is Greek temple) should have had resolute Euclidean proof in form that it was seen in reality. Not only the map, vertical image, and functional decoration but also without mortar building prove this. And apparently, it's the evidence for this claim that Greek architects were looking at their temples not only as a building but also as giant pieces of a figure. Building site selection strengthens the body aspect of the building; the Greek temples were built in the direction of open areas.

- The line graph which shows changes in the ratios of Doric style from ancient to Classical periods is the emphasis on the assumption that Greek art evolves according to a specific reason in both aspect of configuration and architecture. And it follows this conclusion that at the same being real it is satisfactory too. During speaking about mimetic arts, Plato announced that the degree of truth or accuracy of these art is determined by appropriateness of their components and principally, if we want to judge about them, we should judge according to "truth criteria and nothing more".

- Architects of this style consider Classical architecture as an eternal and timeless architecture. Principles of this architecture are eternal like order, proportions, symmetry, harmony, and perfection which were designed for the gods' home (temples). Greek gods were human like with ultimate beauty, perfection, and immortality. Therefore their house should have had these specifications too. So the Classical architecture should have been a perfect architecture. Parthenon temple (438-447 BC) in Athens can be one of the sophisticated sign in the field of this architecture. This temple is designed and constructed completely based on Mathematical principles and geometric proportions. Simple volume and details of this beautiful house have been designed and constructed in such a way that even the eye errors have been corrected in it. Parthenon temple seems such a building that all of its horizontal lines are completely parallel, all of its columns are vertical, the distance between the them are exactly the same amount, their diameter are equal, and the depth of furrows on the columns around the building are equal from bottom to top.

It should be noted that in Parthenon temple, there is no straight line and all the facts which have been noted and reaching to this level of perfection is possible only with exact geometrical setting and correction.

Conclusion:

What we have seen in Greek (Ionic) architecture are order, compactness, and symmetry. The most important rule in this architecture is good symmetry and their effort is to achieve the ideal form based on regular relationships of numerical and geometric rules. Principles of this architecture are eternal like order, proportions, symmetry, harmony, and perfection which were designed for the gods' home (temples). In Greek-style, there can be seen a kind of mutation of very simple units to more complex ones without any fundamental change in the kind of units or their groupings; because, in Greek architecture, like classical music, there's a simple central theme or content which a complex set of forms are grown from within which are more meaningful. Or with another comparison, we can say that map of temples, is like that major Greeks' invention (that is geometry) which its thermos and its other side analyses are conclusions from a set of simple conventional and basic principles.

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