



A. Cornice decoration. Olympia. Terra cotta.  
 B. Akroterion Parthenon.  
 C. Rosette Olympia. Terra cotta.  
 D. From the Akropolis.  
 E. Terra cotta metope Temple of Thermos.



# ARCHITECTURAL POLYCHROMY

BY LEON V SOLON

## PART IV

*The Technique of Architectural Polychromy. Light & Shade as Media for developing Tone Interest in Flat Color The Greek Method for Neutralizing Antagonistic Tones*

IN the preceding part of the treatise it was maintained that color gradation when artificially produced in architectural polychromy induces visual impressions which are not in accord with actual conditions. One must not, however, condemn tone gradation in every form as disadvantageous. Where color is employed to contribute its quota of beauty to architectural effect, it would be illogical to impose a restriction eliminating one of its most interesting features. Ungraded color was exclusively used by the Greeks in architecture: but, if the conformation of their colored ornamentation be analyzed, it will be found full of significance. The realization that forms ornamentally contrived were ultimately to be viewed as colored decoration, must undoubtedly have influenced their evolution. This probability supplies an objective to research; it becomes necessary to reconstruct the arguments from which the Greeks developed certain practices, and incidentally to ascertain the applicability of their methods to modern problems.

The tendency of flat colors, applied in

comparatively large areas, is to appear harsh and detached in effect. In coloring an architectural design, the Greeks found it advisable to treat certain sizeable items with an unbroken color. Artistic intuition in such cases would automatically prescribe tone modulation as the most effective means for neutralizing the inherent harshness in such color masses. Artificial gradation being inadmissible, the need arises for discovering methods whereby the requisite chromatic quality could be produced, recognizing the necessity of identifying color effect with the individual effect of each architectural item treated. Color depends upon light for its existence; that is to say, for its visibility. Modifications of tone occur in a color as the direct result of varying degrees of light intensity. As a concrete example, imagine a sphere painted in a brilliant color, and placed before us in position that rays of sunlight strike it at an angle of from  $40^{\circ}$  to  $50^{\circ}$ . With the light rays falling upon this object at angles which range from the vertical to the tangent, a gamut of color values will be produced which progress from the brightest tone to the deepest shade of that



color. If, with this observation mind, sections of Greek polychrome detail be studied, the observer will at once become conscious of a specific importance attached to the play of light upon concave, convex, and inclined surfaces. The inter-relation established between the

structure of ornamental form, color, and light, attaches a new interest of all extremely practical nature to certain peculiarities in decorative expression which hitherto possessed primarily a stylistic significance. An exhaustive examination of their achievement during the three most fertile centuries, made from this new point of departure, dispels any surprise at their conservatism in polychrome methods. By this association of media of effect all imperative requirement is fulfilled, in that it identifies color quality with architectural effect, as tone value varies in direct correspondence with the conformation of form and the angles of planes.

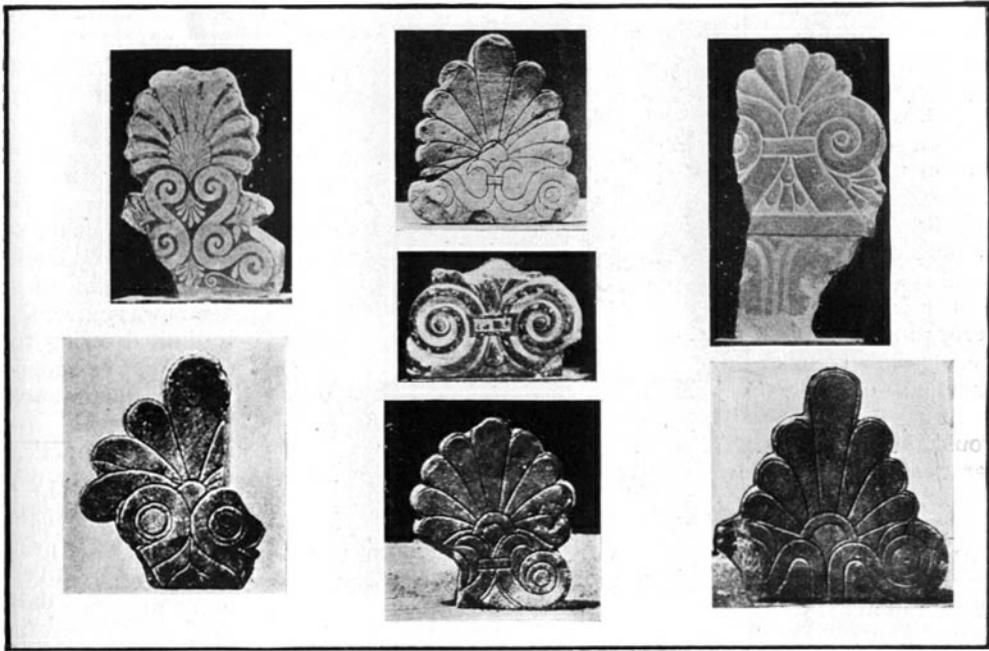
EXAMPLES ILLUSTRATING THE GREEK METHOD FOR TONE DEVELOPMENT BY MEANS OF LIGHT AND SHADE.

The gable akroterion of the Heraion at Olympia (a fragment of which is shown on plate III) is a typical example of the applica-

EXAMPLES SHOWING THE MANNER IN WHICH COLOR UNITS IN COLORED ORNAMENTATION WERE SEPARATED. OLYMPIA. COLORING RED AND BLACK AND MULBERRY AND BLACK ALTERNATING.

tion of the principle. Comparatively large areas of brown constitute the most forceful notes in this striking detail. Were those color masses applied to flat surfaces without tone variation, their uncompromising strength and inherent harshness would react detrimentally upon adjacent delicate ornamentation. As these broad bands of dark color were essential to decorative effect, their tone quality was modified by a modelled treatment of the surfaces, in anticipation of this color treatment. In examining the section of this akroterion (which we illustrate, page 291) it will be found that these surfaces are modelled with undulations almost semi-circular in section, which, by the action of light, produce an infinite variety of tones in the local color. These modulations of tone cause the masses of harsh color to become constituent elements of effect, instead of detached color units.

The circular antefixæ of the same building are a variation of the akroterion motif; but as the proportionate areas of (lark brown are not of sufficient importance to assert themselves detrimentally, they are not modelled. An equally important reason for the unmodulated condition of these color masses is that, as flat tones they constitute a more advanta-



ANTEFIXAE FROM AEGINA.

geous background to the central rosette, which is concave in sections in order that delicate tone modulations may be produced.

At the head of plate IV we illustrate an extremely interesting cornice decoration from Olympia, reconstructed by Curtius and Adler. The material is terra cotta; a wide range of tone values are most ingeniously developed in a single color by the peculiar character of its modelling; a red fillet outline, which defines the constituent ornamental items, serves the additional purpose of accentuating and separating the various tone values created. The comparative simplicity of its coloring is readily accounted for by its proximity to the cyma, which is usually one of the most forcefully colored items in a polychrome structure; greater color elaboration would have introduced an element of confusion through competitive interest; this purely ornamental. The bold variation of the "egg and dart" which embellishes the lower part of this decoration, is an interesting instance of light and color adjustment. In normal lighting the

bold embossment of the red "egg" detail would assure that tone modulation necessary to mitigate the possible flatness of these valuable color spots. As this decoration stands against the sky, these color masses would, by reason of the diffusion of light, appear flat and detached. To compensate for this condition, a triangular motif is designed in the centre of the "egg," which produces a hold equivalent for the high light. The use of white to accentuate the direction of the scrolls is also ingeniously conceived,

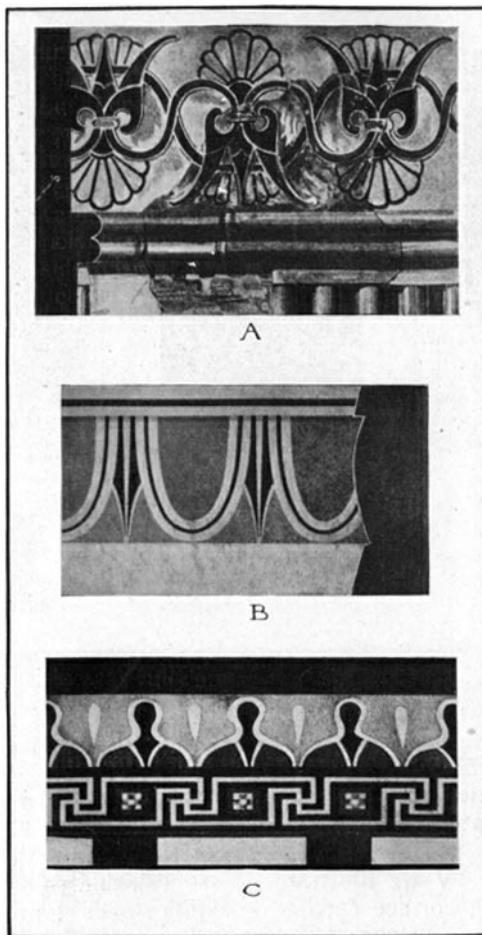
One of the most beautiful examples of this conventional use of concave and convex forms, bounded by the defining fillet outline, will be seen in the carved scroll-like roof decorations which beautify the Tomb of Lysicrates. By this peculiar decorative treatment, ornamental and color values were preserved despite the disadvantages of location against strong light. This magnificent architectural decoration appears to embody the fullest content of expression conceivable in that method of modelled treatment. Unfortunately no trace of any contemporary coloring survives, but there is no reason to

assume that it was a solitary exception to the prevailing practice of polychromy. The subdivision of its detail is so obviously planned for color decoration, speculative reconstruction of its color would be a comparatively simple undertaking.

The necessity for maintaining the decorative integrity of colored items silhouetted against the sky was fully appreciated by the Greeks; this fact is illustrated in a host of examples. III a number of antifixæ the colored decoration is set well within the outer edges, with the intent to preserve ornamental precision from light encroachment and consequent loss in scenic value. The "sawedge" or rudimentary "sunburst" treatment of the contour of the great Heraion anthemion is devised with that object.

THE PRACTICAL PURPOSE SERVED BY  
THE "FILLET OUTLINE" CONVENTION  
IN COLORED ORNAMENTATION

Visibility of color from a distance is an essential requirement in architectural polychromy. The suitable palette must consequently consist of forceful tones or pigments possessing a high degree of radiant energy; colors of such character have usually little harmonious relation, and in many cases are mutually antagonistic. Our next problem is to discover a method whereby colors of such

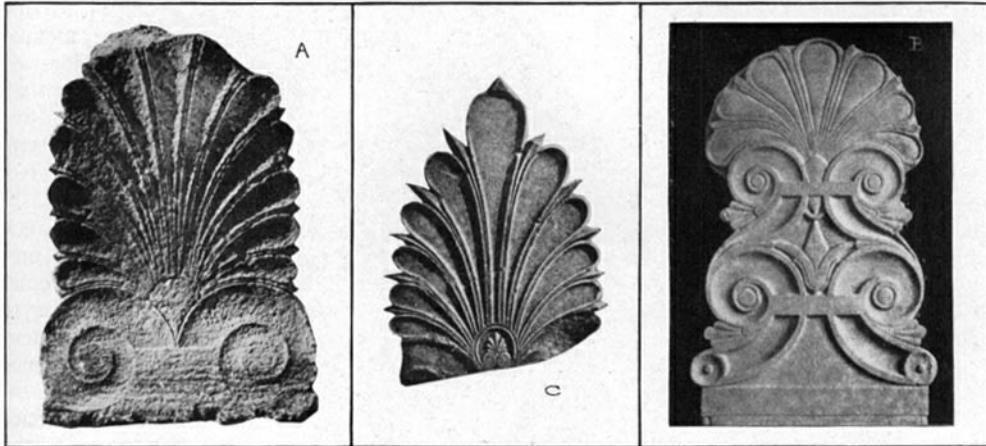


A—OLYMPIA FRIEZE. B.—PROPYLAEUM.  
C—OLYMPIA MOULDING.

character may achieve decorative value when assembled for architectural embellishment. The Greek assortment of pigments was extremely limited owing to their very elementary acquaintance with chemical process; their practice was confined to the use of the simplest color bases. The architectural palette consisted of black, dark blue, light blue, brown or mulberry, red, ochre, yellow and white.\* These color elements are crude, with no apparent mutual tonal relation, so far as can be judged from the modern viewpoint, fully recognizing the fact that we are temperamentally incapable of recording a reaction to a Greek color effect equivalent to that experi-

enced by its author. In this treatise, however, research is directed to those color activities which react upon architectonic properties rather than to those which are individually expressive. As Greek polychrome embellishment was a contributory decorative factor to architectural effect, its invariable use encourages the conviction that results obtained with color cannot have been unworthy of their exalted association; decorative ingenuity based upon sound argument alone could

\*The greenish color found in many fragments was probably blue originally, as chemical analysis proves its derivation from the same form of copper as the blue; disintegration would account for the greenish blue.



EXAMPLES OF CONCAVE AND CONVEX TYPES OF MODELLING FOR COLOR.

have attained beauty with such uncompromising media.

When inherent color activity asserts itself antagonistically to artistic effect, it is necessary to discover either the nature, or the precise location, of such activity. When such reactions in color phenomena are recognized, Greek ornamental conventions identified with color effect must next be studied, to ascertain whether the origin of any of these can be attributed to observations recorded. The color conditions which call primarily for investigation might be illustrated with a colored diagram; this concerns the mutual reaction of antagonistic colors. This diagram should consist of a series of repeating geometrical or ornamental figures, after the plan of diagram D, Plate III; two brilliant and unrelated colors being arranged in alternation upon the subdivisions. To facilitate subsequent observations it is advisable that the size of the unit be not less than one inch in its minimum dimension. With the completion of this diagram a specific color activity comes into opera-

tion, through the contiguity of two unrelated and aggressive colors. Judging from of general decorative utility, the result produced is unfitting for artistic effect. This drawing constitutes an uncompromising illustration of that form of chromatic activity which exists in a group of decorative units treated with unrelated colors possessing appreciable radiant properties. The mutual relation of these units, in their repetition, parallels approximately circumstances that prevail in architectural ornamentation. If the visual effect of this color arrangement be analyzed through prolonged and intent contemplation, an

unpleasant reaction will be experienced by those who are endowed with artistic sensibility; this increases as the critical faculty is concentrated. Intensified examination will reveal the fact that artistic sensibility is irritated most violently at those points at which the two colors make actual contact. From this observation we may formulate a deduction: namely that the most injurious result arising from this form of color grouping proceeds from actual color con-



ANTEFIX—OLYMPIA. GILT ORNAMENTATION ON BLACK



EXAMPLES OF MODELLED TREATMENT FOR THE DEVELOPMENT OF TONE.  
 VARIATION FROM FLAT COLORS.

tacts. To test the accuracy of this observation, it is necessary to make another diagram with the same colors and decorative unit, in which all color contacts are eliminated, by leaving a uniform space between each color unit. In this second diagram, it will be found that the quality of active antagonism between the colors, which characterizes the first diagram, is considerably reduced; in fact, many colors which clash violently in diagram I. seem to acquire a vibrant quality of considerable decorative value when rearranged after the manner of diagram II. Having thus located the focal point of chromatic discord, and found a means for neutralization or elimination (according to the tonal character of the colors involved) our predetermined plan of procedure calls for a careful examination of Greek architectural detail designed for color, with the purpose of tracing a connection between

any peculiarity in decorative expression, and the phenomenon noted.

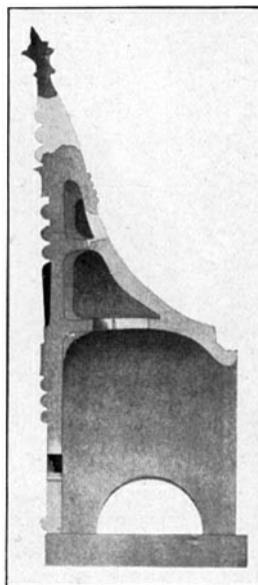
The most superficial examination will reveal the connection sought. The principle of contact elimination, of the harmonizing factor in promiscuous color grouping, is demonstrated in a host of examples; the method of its decorative application embodies one of the most characteristic features of Greek ornamental expression. A species of outline, treated diversely, separates all ornamental color units in Greek polychrome detail; the majority of examples are treated as follows:

Type A The outline separating colors is raised, either rounded in section, or fiat after the manner of a fillet. The structural material forming the raised outline is left uncolored in some instances; in others it is tinted.

- Plate IV, B
- Type B The ornamental motif is designed in such fashion that the spacing between color detail is more or less uniform; these spaces have the appearance of outlines after the manner of "stencil-ties"; the ground color is left untreated. See one and two-color antifixa, page 286.
- Type C The outline is treated in a color distinct from those which it surrounds. In certain examples where a repeating motif is colored in alternating groups of three, colors, the outline colors alternate correspondingly. See three, four and five color moldings.
- Type D The outline is delicately channeled, or sharply sunk in narrow or broadish bands. Plate IV, 9.

This technique of color separation in the various interpretations might be described as universal; rare deviations occur, from exceptional causes only. Incompatible tones in crude pigments, were harmoniously transformed in Greek polychromy by this method, the extreme simplicity of which endowed their color illumination with qualities of strength and dignity. The fact that the Greeks considered polychrome effect to be an indispensable adjunct to their sublime structural conceptions, permits us to assume that the result was not disturbing.

One of the most valuable properties of this



SECTION OF GREAT GABLE AKROTHERION OF THE HERAION  
See Color Plate III.

technique is the apparent incorporation of the color decoration with the architectural item. This cannot be rated too highly, when we consider that the quality of color effect differs radically from that of all other contributory factors in architectural effect.

These invaluable methods which the Greeks devised are the direct outcome of their recognition of so-called "limitations" of media, and disadvanta-

geous phenomena. Much has been expressed regarding the cramped influence of these factors upon art expression; yet, all those decorative processes or ornamental conventions which in by-gone ages have revealed the fullest content of beauty latent in substance, originate in those "limitations."

(To be continued)



TREASURY OF GELA—COLOR SEPARATION BY BROAD ORNAMENTAL COLOR FILLETS.