

ANCIENT INDIAN PAINTING SECRETS AND MURAL ART METHODOLOGY AT AJANTA

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Abstract

Innovative examinations on Ajanta painted mortars (third – fourth Century A.D) have been endeavored for appropriate conservation methodology and planning of paint ground, distinguishing proof of materials and their rot cycle. Microstructures of layers alongside material design, organization and added substances utilized in the mortar were explored through colorimetry, XRF, FTIR, SEM-EDX, and so forth Molecule size of the dirt mortar investigated by laser dispersing indicated the utilization of high sediment (70 – 75%) and low earth soil, most likely sourced from the gorge of Waghura waterway and utilized for the planning of the mud mortar. Side-effects of endured basaltic stone, for example, celandonite and white zeolites, limited by natural proteic glue were found as filler in mud mortar also. FTIR spectra of paint ground and color layer showed the expansion of natural fastener that has now changed into Calcium oxalate. Likewise, the presence of vegetal issue saw with the FTIR examination, may be because of expansion of parts of cereals, (for example, the rice husk) developed in geological territory. SEM – EDX affirmed the presence of four unique layers. The procedure of painting remained practically indistinguishable in all the caverns with extremely minor variety as for the old Indian composition craftsmanship depicted in Indian old writings. An endeavor to plan mud mortar according to old formula has been featured for the comprehensive reclamation and safeguarding of Ajanta wall paintings (World Heritage Site – WHS).

Keywords: *Ajanta, FTIR, SEM-EDX, Mural Art, XRF.*

I. INTRODUCTION

Ajanta remains as a solitary most significant record of India's Golden Age (3-fourth century A.D) and may be viewed as the humanity's most prominent innovative accomplishment. The 30 Buddhist caverns made by the Vakataka's in a distant gorge at Ajanta structures a reverential complex which positions one of the world's most frightening accomplishments.

An enthusiastic discussion is as of now on among the paleontologist and craftsmanship antiquarians about order of Ajanta Caves[1]. The old view that Ajanta later improvement went for 200 or even 300 years, under the progression of various traditions, can at this point don't be supported and addressed by numerous craftsmanship history specialists. After careful examination and assembling all the dispersed data, a short sequence has now been proposed enduring around 20 years. Such a way to deal with Ajanta's dating has surprisingly uncovering suggestions versus thought about view on longer sequence. It is evident that unearthing of caverns and cutting out the design was very tedious yet the whole mud mortaring and painting would barely have required a year or thereabouts, for two or three dozen of specialists. The short sequence hypothesis depends on the celebrated Visrutacarita that nearly highlight point speaks to the memory of the incomparable Vakataka realm crepuscule[2]. The subject of the divider accounts at Ajanta are different Jatakas, spread out practically like unrolled scroll. As the short/long sequence at Ajanta depends on archeologists/workmanship history specialist's actual highlights and mathematical plans of canvases and models, need was felt to look the mud mortar and shades layer through logical examination to investigate any distinctions in material/painting procedures[3]. Under the Indo-Italian preservation program, the segments of the mud mortar and paint layers were seen under sound system magnifying lens and through different logical instruments, for example, FTIR, SEM, Micro-Raman, XRF and so forth at the site just as miniature grains in research center. It is accepted that part materials or procedure of execution may go through some alteration in 200-300 year's time frame the conservators of Ajanta are additionally expected to have the option to look at information rose up out of the investigation of mud mortar and shades with what has been depicted in old Indian writing written in Sanskrit language. Confirmations of blooming imaginative convention in[4] Sanskrit writing are found in writings on legendary subjects. The fundamental antiquated writing devoted for aesthetic strategies in old India and specialized parts of compositions are the Vastustras (settlements of environment), Vastuoastras (arrangements on dwelling) and Silpaoastras (specialized deals). One ought to have explicit information about the specialized settlements to compose a past filled with Indian work of art workmanship. The story authority and specialized information exhibited by craftsmen at Ajanta propose presence of a few schools of expressions previously utilized in embellishing work of underlying structures and sanctuaries. Among the aforementioned text, there are numerous works where painting method and strategies to be followed are depicted. The principle Indian writings for painting methods are: - The Vishnudharmottara Purana created in 6-seventh A.D. soon after the painting works of Ajanta. - The Samaraga Sutradhara, a silpaoastra ascribed to Bhoja lord of the Paramara tradition of eleventh century chiefly managing pictorial and iconographic workmanship. - The Manasollasa, the content of southern India works of art convention ascribed to lord Somesvara of mid twelfth century Chalukya administration. - The Silparatna, written in sixteenth century, a part of which named "normal for picture" which contains parcel of data on artwork method. - The Aparajita Pecha of Bhuvana Deva, most likely made after Silparatna that portray engineering and contains ideas on improving plan and planning of paint ground. There are numerous different writings written in Sanskrit slokas in which

guidelines on painting artistic creations methods are methodically expressed. A portion of the old compositions messages have not yet been interpreted and others have been deciphered in English, Hindi and Tamil dialects. Practically all the content portrays the strategies for readiness of paint ground and phases of its application alongside planning of shadings for painting work[5]. In spite of the fact that Vishnudharmottara was made a couple of hundreds of years after the execution of Ajanta wall paintings, it could be considered as evident reference text for appropriate comprehension of painted technique on location. The other content composed at far off time from Ajanta and relates to different periods. In all the content it appears to be non-literal work goes before the proficiency both in iconographic and iconological field. The composing works of silpas were assigned to the artists (and not craftsmen) who handle the fundamental ideas of canvases during perception however need direct information about the genuine strategy being followed[6]. Because of this explanation, the solution provided in the antiquated content doesn't harp on the itemized specialized cycles. The other explanation lies in the way that the fundamental part is written in sutra structures, which just fills in as core value for the craftsmen to review the different entries of execution. Plus, there is different understandings and interpretations of sutras by different creators.

In India lovely painted remaining parts can be found from ancient period to Mughal time of 16-seventeenth century A.D. The greater part of the ancient canvases are found in sand stone asylum of focal India where unpleasantness and porosity of sand stone was used for painting. Later works of art are either on mud mortar or lime mortar ground. Known as landmark of canvases, mud mortar structures sponsorship of lime layer coat and basaltic stone help at Ajanta. The shades distinguished at Ajanta are red ochre, yellow ochre, green earth, lapis lazuli, carbon dark and shell/kaolin lime. The shades discovered utilized in India from ancient to Mughal period have remained practically indistinguishable and same absent a lot of varieties. The shades distinguished at Ajanta likewise show close similarity with Roman painted works of fresco. The layouts of the Ajanta canvases are generally drawn via carbon dark or red ochre. The mud mortar thickness changes from not many millimeters to an inch at times where basaltic stone is generally cut. Natural issues, for example, rice husks, plant seeds and plant strands are by and large discovered admixed inside the mud mortar[7]. The subject of the artistic creations is Buddhist Jataka stories with delightful human figures, mathematical plans and creature's figures. The vast majority of the works of art show three dimensional appearances and features the creative expertise of Indian painters in 3-fourth A.D, known as the Golden Age period.

The crude materials utilized for the arrangement of earth ground are generally locally accessible materials gathered from either Waghura waterway before Ajanta caverns or close by places. But blue, all the shades are locally accessible materials including green which is the result of basaltic stone breaking down. Apparently total utilized as fillers to the mud mortar at Ajanta are likewise result of endured basalt gathered from gorge of Waghura. The totals generally distinguished are quartz, zeolites and celandonite. It is seen that 8-10% lime with natural added substances was blended in the low expanding earth to set up the mud mortar at Ajanta. The procedure of artistic creations is simply gum based paint and creature stick has presumably been utilized as restricting specialist to the shades [8]at Ajanta and

related destinations. Not at all like fresco painting, is the canvases strategy in India either gum based paint or secco and restricting medium recognized at Ajanta is creature stick. A comprehension of the sythesis of antiquated mortar and innovation is fundamental for production of new mortar for rebuilding at Ajanta and different destinations. Alongside the essential information on antiquated Indian artwork method and readiness of paint ground, recognizable proof of materials and their rot cycle are of incredible importance. It is likewise fundamental for study miniature designs of the layers, their layers and restricting media for the paint layer and mud mortar. With the scope of logical strategies and exploratory methodology, an endeavor has been made to character the strategy for use of mud layer ground and painting procedure followed for Ajanta wall paintings. Over the span of studies material construction, sythesis and added substances utilized in the mortars were additionally explored. Such investigation of antiquated innovation as far as materials and its application is fundamental for undertaking any protection movement pointed toward safeguarding the painted mortar.

II. DISCUSSION

A dark preliminary layer that contains coarse dark ferruginous silicate material alongside green celandonite and white silicon or aluminum incorporation. Each one of those materials are bound with some sort of proteic cement as proof of appearance of calcium oxalate tops are seen under FTIR pictures. Over this layer, a pinkish white layer with dim little size consideration of sporadic thickness is available. The essential capacity of this layer is to level the coarse surface of preliminary layer before use of color layer. The preliminary layer comprises principally of calcium carbonate and silicate materials. Over the preliminary layer, a dainty layer of kaolin based white tone layer is available to get the tone. The external most outside layer is the shade layer where inorganic mineral shading, for example, red ochre, yellow ochre, green earth as gluconite, lime white and dark carbon have been recognized at various focuses. Proteic material has likewise been distinguished in the paint layer as pinnacles of calcium oxalate are seen under FTIR pictures of the layer. SEM-EDS investigation uncovered that in the paint layer iron based color is constantly connected with silicon and aluminum. This leads us to imagine that the color is constantly connected to kaolin, which was presumably utilized as cover for paint layer alongside creature stick as pinnacles of proteic material is likewise noticed. The SEM-EDS investigation likewise affirms the progression of layers in Ajanta canvases and tosses lights about works of art method.

III. CONCLUSION

Investigation of mud mortars and its organization uncovers that there are no progressions either in piece or innovation of planning of mud mortar and execution method of paintings at Ajanta supporting the short order. The examination indicated that the natural fastener has constantly been utilized in the arrangement of mud mortar of Ajanta as per old content which may have now changed into calcium oxalate, seen through FTIR pictures. The mortar is likewise discovered blended in with natural added substances, for example, rice husk, plant strands and seeds for re-requirement. With minor varieties, practically comparative

innovation was utilized for the arrangement of mud mortar and shade layers were additionally discovered blended in with natural cover and here and there with kaolin according to old content. With minor adjustment, the procedure of painting at Ajanta remained practically indistinguishable and the shades utilized are consistently characteristic mineral tones. All the colors are of neighborhood cause aside from lapis lazuli which was presumably imported from Persian nations through exchange on silk course. The investigations are critical in arranging future preservation proportions of Ajanta paintings and comprehension of execution strategy.

IV. REFERENCES

- [1] M. Gambino et al., "A simple and reliable methodology to detect egg white in art samples," *J. Biosci.*, 2013, doi: 10.1007/s12038-013-9321-z.
- [2] M. Singh and B. R. Arbad, "Ancient Indian painting recipes and mural art technique at Ajanta," *Int. J. Conserv. Sci.*, 2014.
- [3] M. N. Bagde, Y. Badge, A. K. Soni, and A. Sinha, "Stabilization and preservation at world heritage historic Ajanta caves: Problems and issues," 2010.
- [4] N. Mahore, "PAINTING MENTIONS IN ANCIENT INDIAN TEXTS," *Int. J. Res. - GRANTHAALAYAH*, 2019, doi: 10.29121/granthaalayah.v7.i11.2019.984.
- [5] H. R. Ravikumar, S. S. Rao, and C. S. Karigar, "Biodegradation of paints: A current status," *Indian J. Sci. Technol.*, 2012, doi: 10.17485/ijst/2012/v5i1.33.
- [6] J. MILLER, "Contemporary Coast Salish Art," *Museum Anthropol.*, 2006, doi: 10.1525/mua.2006.29.2.151.
- [7] C. Gilbert, "Review: The Pelican History of Art," *J. Soc. Archit. Hist.*, 1980, doi: 10.2307/989583.
- [8] R. D. Hansen, "The First Cities-The Beginnings of Urbanization and State Formation in the Maya Lowlands," *Maya: Divine Kings of the Rain Forest*. 2001.