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Research Article

The Scientific Preservation of the Mural Paintings at Siva Temple, Peruvanam, Cherpu, Thrissur District: Preserving the History and Promoting the Culture

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ABSTRACT

The murals of Kerala are renowned for their prominence in beauty, clarity, and symmetry with unmatched linear accuracy. The peculiarity of Kerala murals is their simple and thematic presentation of idealistic reproduction of humans, animals, and nature with technical excellence, illustrated with rich and delicate strokes and hued with bright colors. The tradition of mural painting in Kerala is unique in the world, and it is extremely rich with symbolism. Made only with natural mineral pigments, they stand out as the testimonies of an indigenous tradition and technique. The uniqueness of the Kerala temple murals comes with equally posed challenges in terms of preservation and management. This paper critically narrates different methods adopted by conservationists in the scientific treatment of mural paintings adored in the walls of the Siva Temple, Peruvanam, Cherpu in Thrissur District.

Keywords: Murals, Peruvanam, Preservation, Organic, Cultural Heritage.

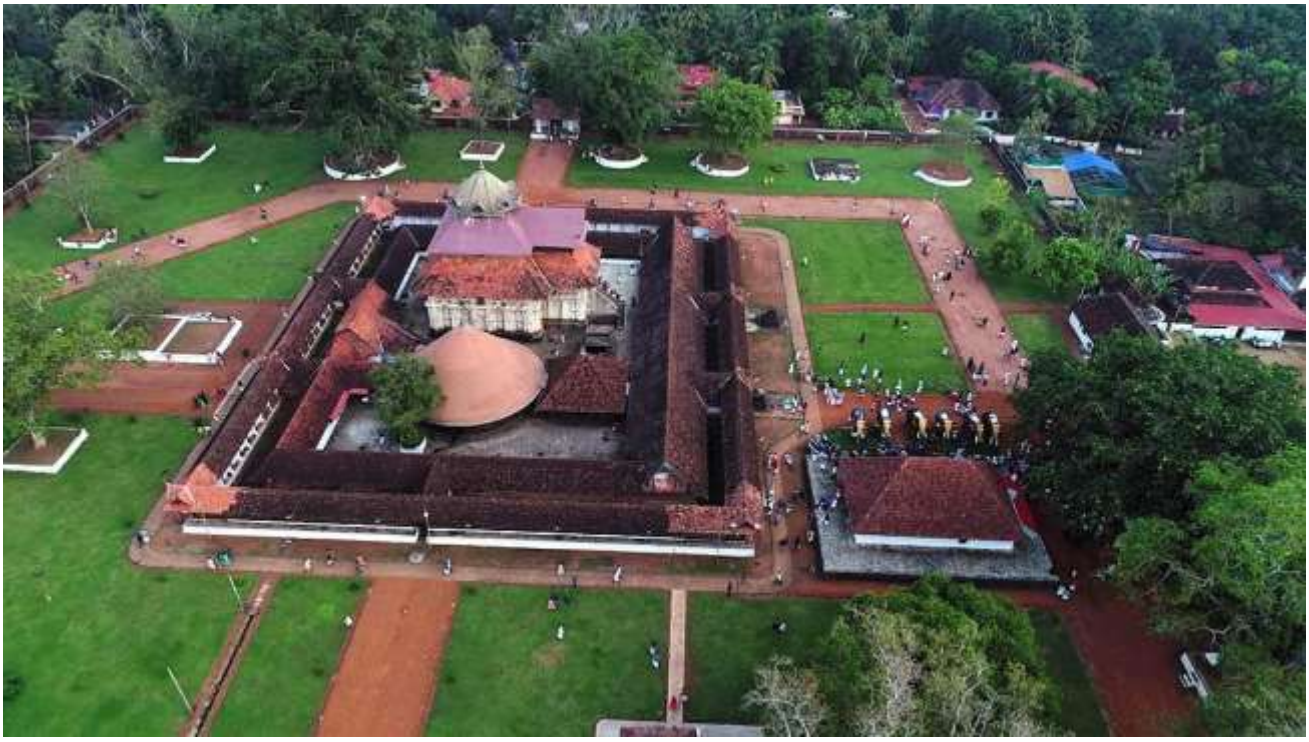
Introduction

The mural paintings are one of the valuable traditional cultural heritages of the State of Kerala. The execution of these mural paintings primarily occupied the walls of Kerala's temples, palaces and churches (Shashibhooshan 1997). The earliest mural paintings in Kerala were found on the walls of the Thirunandikarai rock-cut temple, in the erstwhile Travancore and present-day Kanyakumari district of Tamil Nadu. Here the paintings are seen in the interior of the cave. Though fragmentary, the presence is strong evidence of a painting tradition in Kerala that is stylistically related to the painting tradition of the Pandyas. There was also a revival of trade and a bhakti movement during the 14th/15th centuries CE, which gave fresh impetus to temple art and the mural tradition in Kerala. Mural art, which was rather profoundly temple-centric during this period, also came to adorn palaces and churches. Most of the surviving mural art traditions in Kerala are datable between the 16th and 19th centuries CE (Sheena and Renjeshlal 2022).

The Peruvanam Temple is at *Cherpu* located in *Oorakam* village of Thrissur taluk in Thrissur District. It is located about 10km south of Thrissur, the District headquarters.
The Temple stands on a sprawling 7-acre ground surrounded by a tall and hefty compound wall. As per *Keralolpati*, Peruvanam is one among the thirty-two settlements or villages where Brahmans originally settled (Veluthat, 1978). The village is also mentioned in *Chandrolsavam*, a literary work composed in the *Manipravala* style in the early 14th Century CE (Veluthat 1978 and Rajan 2020).

The *mathilakam* (the bounding enclosure) is very extensive and has two *dvarasalas*, at west and east, the latter in ruins. As one enters the western *dvarasala*, the make-shift *Koothambalam* on an old foundation is seen in front of the *Naalambalam*. There are two *Balikkals* (of 2m height) in front of the *naalambalam* coinciding with the axis of the two *shrikovils*, that of *Erattayappan* on the north and that of *Maadathilappan* on the south. Of these the *Erattayappan* shrine is raised on a circular base (14.33m diameter). It is an *ekatala vimana* built on a granite *adhishtana*. The superstructure (*bhithi*) is made of laterite blocks, duly plastered and decorated with *Kudya stambhas, niches* etc.

A recessed *mukhamandapa* exists, at the top of the flight of steps in the *Sopana*, with a free-standing pillar facade and shrine door proper at the rear wall. The *Sopana* is having lateral steps meeting at a common landing, screened by a carved phalaka in front of the western entrance to the *Shrikovil*.There are two *dvarapalakas* on either side of the *Shrikovil* entry, standing on the coils of a snake. One of the legs entwines the club and the other rests on the hood of the snake. The coil of the snake in turn is placed on a lotus seat. The *garbha-griha* is square in shape enclosed by the circular *Shrikovil*. Two rows of pillars - the inner row having twelve and the outer row sixteen - have been arranged around the square sanctum. The idol consists of two lingas, contributing to the concept of *Erattayappan,* the lord in the double, signifying *Ardhanareeswara* to some and *Shankaranarayana* to others (H Sarkar 1978).



Aerial view of Siva temple, Peruvanam

The *pratishta* is also considered as that of Shiva in the role of *Thripuradahanan* as per some early references. There are three functional openings and a *Ghanadvara* (dummy door) in the circular ground plan. Apart from the *Shrikovil* entry on the west, those in the south and east accommodate *Dakshinamoorthy* and *Parvathy* respectively. The *Ghanadvara* is on the north, just above the *pranala*, which is supported on a *bhuta-gana* figure in the pose of drinking lustral water from a bowl.
There is a spacious *namaskara mandapa* in front of the circular *Shrikovil*, built on a square plan. As in all traditional *swastika mandapas*, there are twelve pillars along the periphery with four numbers larger ornamented pillars inside the *mandapa*. Its pyramidal roof, like the conical roof of the main shrine, is covered with copper sheets. Beautiful wood carvings adorn the *mandapa* ceiling as well as the pillars. The southern side of the *Shrikovil* has *Kiratham katha* engraved in wood, starting from Parvathi's shrine. Another woodwork that is worth mentioning is that of Garuda swallowing *Jeemoothavahana* and that of *Dakshinamoorthy* (H Sarkar 1978).

General aspects of Mural Paintings at *Erattayappan* shrine: Make, Genre, Character and Style

As with any murals in Kerala, the Mural paintings mounted over the circular base at *Erattayappan* shrine may be connected and related to their make, nature, genre and style of art. These murals are composed of 'carrier', the 'ground', the 'pigment' and the 'binding medium'. The carrier of the mural art is mainly a circular lime-pointed laterite structure holding the ground and pigments. Being stucco work, the ground comprises of adequate mixture of lime and sand. The preparation of the wall of the painting was a very complicated process implemented in threefold stages.

The laterite wall is pasted with lime and sieved sand in a ratio of 1:2. This is mixed and fine-grounded to a paste form. To elevate the viscosity factor of the same, *Oonjal Valli (Cissus Glauca Roxb)*, Ink-Nut *(Terminalia Chebula Retz), and palm jaggery* water were the most common ingredients. Upon the ground, a rough and coarse lime coat was primarily applied around half to one-inch thickness which would be left for around a stipulated time for setting. The secondary coating would be the same material such as lime and sand in the ratio of 1:2 mixed along with cotton fibers (*Gossypium Herbaceum*) which imparts a white lustrous, polished and glazed appearance with fine texture over the base of the Mural. The said mixture is ground to butter smooth

along with the gum of *Cissus Glauca Roxb*. This peripheral coating is extremely smooth and plastered at *Pappad* made from *black gram* to a thickness of 1mm. The second layer is further kept for drying for further one day. The superficial third layer is made indigenously by mixing of quick lime (Calcium oxide) and tender coconut juice. The mixture is finally applied over the second layer. Upon this, the terminal layer of pigments along with associated suitable binding medium was applied to withhold the same to generate the superficial layer of the mural art based on Iconographic attributes.

Scientific preservation of Murals at *Erattayappan* shrine: A Felt Need

The Mural arts adopted on the circular wall of Siva Temple Peruvanam were mainly based on *"Panchavarna"* technique where we find the usage of five pigments namely red, green, yellow, white and black. The mural encircling *Erattayappan* main shrine was found to be grotesque in appearance due to multiple factors. This is mainly due to perturbed climatic factors such as variation in relative humidity, temperature, gradation in atmospheric pressure, wind speed, and wind direction. The same was accompanied by the multiple-fold effect of burned camphor, oil spilling from hanging lamps and sooty accretions deposited on various portions of pigment layer on the murals. Many of the portions of the mural were associated with flaked pigments, cracks and grooves where filling and filleting works were mandatory. Any inordinate delay could have affected the integrity of the mural paintings as it is exposed to different climatic features such as heavy rains, higher humidity and direct sunlight.

Scientific cleaning of Mural painting at Erattayappan:The fundamental phase

As a primary requisite of mural conservation, the elementary stage triggers with removal of the dust, dirt and other accretions adhered to the surface of the same. This is put into effect by eradicating of all these with the aid of very smooth soft-bristled brushes without affecting the original texture, iconographic features and make of the murals. At the areas where the remnants of previously coated PVA (Poly Vinyl Acetate) were found, the same was wiped off with Toluene -Sulphur free solvent. Once this stage is attained, the carbonaceous deposits in the form of smoke and soot are to be eliminated. The best results were accomplished at the mural surface on treatment with soft organic chemicals such as Triethanolamine (TEA), and Diacetone alcoholetc. The application mode of these chemicals involves the usage of absorbent cotton carrying the organic solvents. Cotton is moved very softly in clockwise and anti-clockwise directions all over the mural surface to pull off all the carbonaceous accretions making the surface immaculate. Wiped off the same area with turpentine oil which operates as a restrainer.

Selection of binders and binding medium of the filling material: A probe into the resources

The wall of the mural encircling the circular wall had developed cracks on the pigment layer in some cases extended to the ground comprising the lime plaster too. The same was also well associated with minute grooves and ditches on the surfaces where filleting works were very much necessary appealing for the felt need of a good preservation state. In both cases, there should be a *'binder'* and binding *medium to* generate the filling material and to facilitate the filling works. As per the ethics of the conservation strategies, the filling material comprising of the *'binding medium' should* camouflage with the prototype. Moreover, the theory of reversibility of such specimens implemented for filling methods was also to be taken into account. The *'binding medium choice* in this regard was lime. The *'binder'* selected was based on a trial-and-error experimental basis compatible with the medium of binding of the filling material. At the developmental stage before its mixing with the binding medium, a set of three indigenous environmentally friendly natural gum extracts were selected which were applied along with the binding medium on micro level basis at the cracks or crevices developed on the mural surface. The natural gum extracts for filling material include *Oonjal Valli (Cissus Glauca Roxb) extract,* tender coconut juice and bael fruit extract.

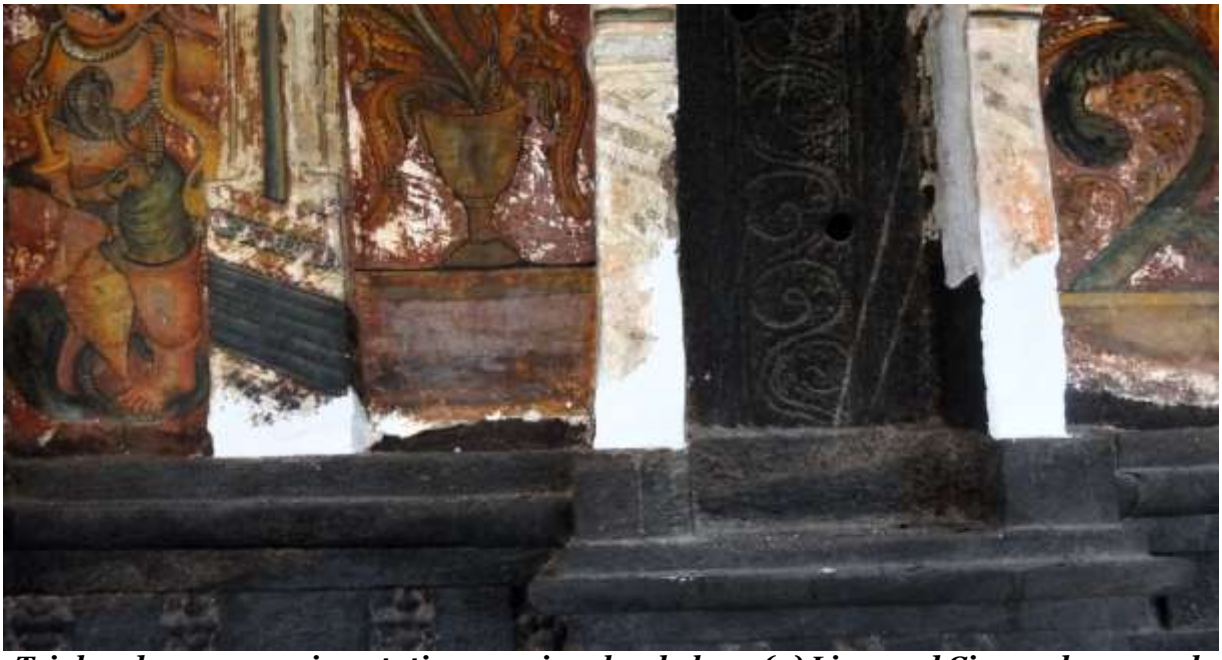
Preparation, experimentation and designing the filling material: Unveiling the facts and technical inputs

As a prime requisite three binders in the form of natural gum extracts where selected for hit and trial method of experimentation. Cissus *glauca roxb* extract which is selected as one of the natural binder is prepared by crushing the same into chunks. The mass obtained is kept in a container dispersed in water for one week. After this span of time period, the liquid is decanted to draw out the extract. As a counterpart, Bael fruit extract was also preferred to substantiate the filling lime pack mode. Bael fruit is richly available in Kerala within the Temple premises. Once obtained or made available, the fruit is crushed to pieces and the mass obtained is boiled with water. The resultant supernatant liquid obtained thus is collected efficaciously and decanted to obtain Bael fruit extract. The third option focused on inclusion of tender coconut juice which is directly available from tender coconuts.

Preparation of Bael extract (a) Bael fruit (b) Crushing Bael fruit to chunks (c) Crushed Bael fruit subjected to boiling with water to yield Bael fruit extract (d) The Supernatant binder extract decanted for the filling purpose

(a) & (b) Tender coconut water. The same is used as such for binding purpose taking in account of its adhesive capacity

The three selected binders were blended with lime water to form a glue type. All these three filling materials in the form of lime pack is applied over selected micro surfaces such as minor cracks and grooves on the murals. The three specimens where kept for examination for about a span of two weeks to check the compatibility and efficacy in binding to original structure. As per the examination, it was found that the filling material in combination with Cissus *glauca roxb* extract and tender coconut juice developed minor cracks whereas the combination of lime with Bael fruit extract remained intact and hence the same was selected for filling and filleting work at the mural on macro level basis.



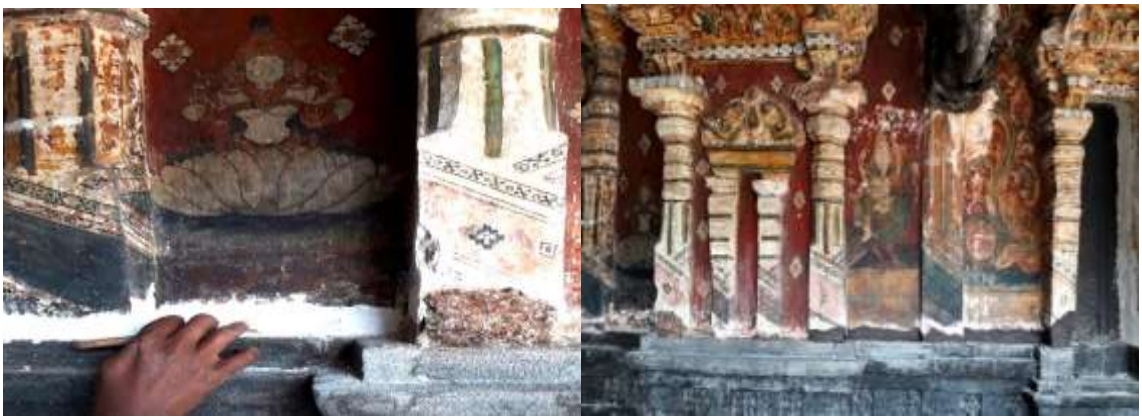
Trial and error experimentation on micro level phase (a) Lime and Cissus glauca roxb extract (b) Lime with Bael fruit extract (c)Lime mixed-up with tender coconut water applied on the walls

Filling, filleting, edging and color reintegration works: An indigenous eco-friendly method in line with the conservation ethics and strategies

As consequent to the results observed from the inspection method, the combination of the bael fruit extract and lime is applied on the broken portions, crevices, fissures, holes and grooves of the murals scaled up to macro levels as per the felt need for scientific preservation. Once applied on the broken potions, the contrasting texture of the filling material on drying owing to the presence of bael extract is matched with a superficial coating of lime water thus concealing the said surface in turn camouflaging with the original surface. The portions with larger bulged portions were filled up by mixing the same in liquefied from thus injecting into the grooves or holes developed on the bulged portions. As a pre-requisite to the injection method before the same, the surface of the cracks was strengthened by the facing method.

This is done by fixing a muslin cloth over the cracked fragile bulged area with 1% Poly Vinyl Acetate (PVA) in Toluene. The application of the same on muslin cloth is exercised in criss-cross mode. The injection of the filling material is implemented to the small bore or hole as per the requirement within the proximity of the mural area where facing is accomplished. Once the filling vide injection was put into effect, the surface is levelled by taking extreme care and the facing is left for a stipulated period of more than 2-3 weeks. Once the

period is compassed the muslin cloth is removed with the help of toluene solvent. In certain spots and areas, it was observed that the stucco portion where in totally dilapidated condition where the ground was deteriorated where the carrier was exposed. In such cases there is a chance that the remaining loosely bounded ground and pigment layer may get peeled off from the exposed edges on account of gravity. Even such remote chances are curbed on the edging of such exposed panels whereby the same is strengthened with the aid of filling material applied on fringes. Once applied on the edges, the surface is leveled and smoothened with a palette knife. Once the filling, filleting, fixing and edgings are executed to its completion, the same areas where colour-matched and reintegrated camouflaging with the primordial version.

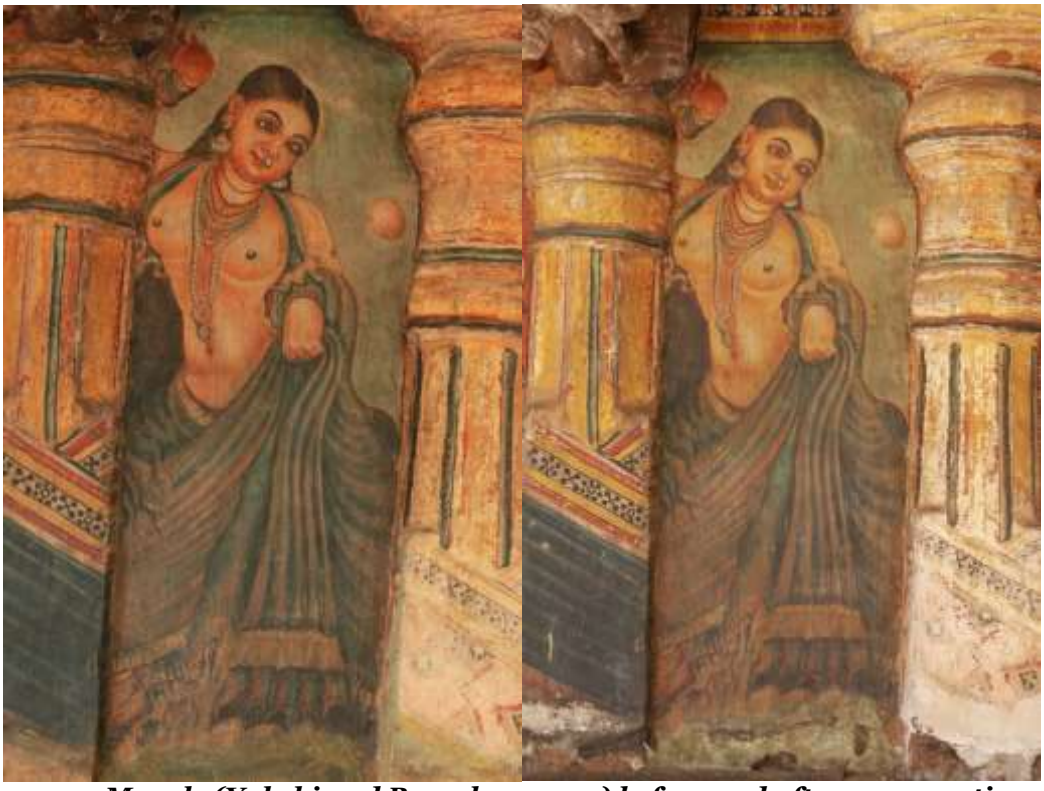


(a) Filling work on the cracked base of the murals at Erattayappan at macro level execution phase (b) Further lime coating on the cracked fissures and grooves to accomplish white lime texture for feasible colour reintegration works

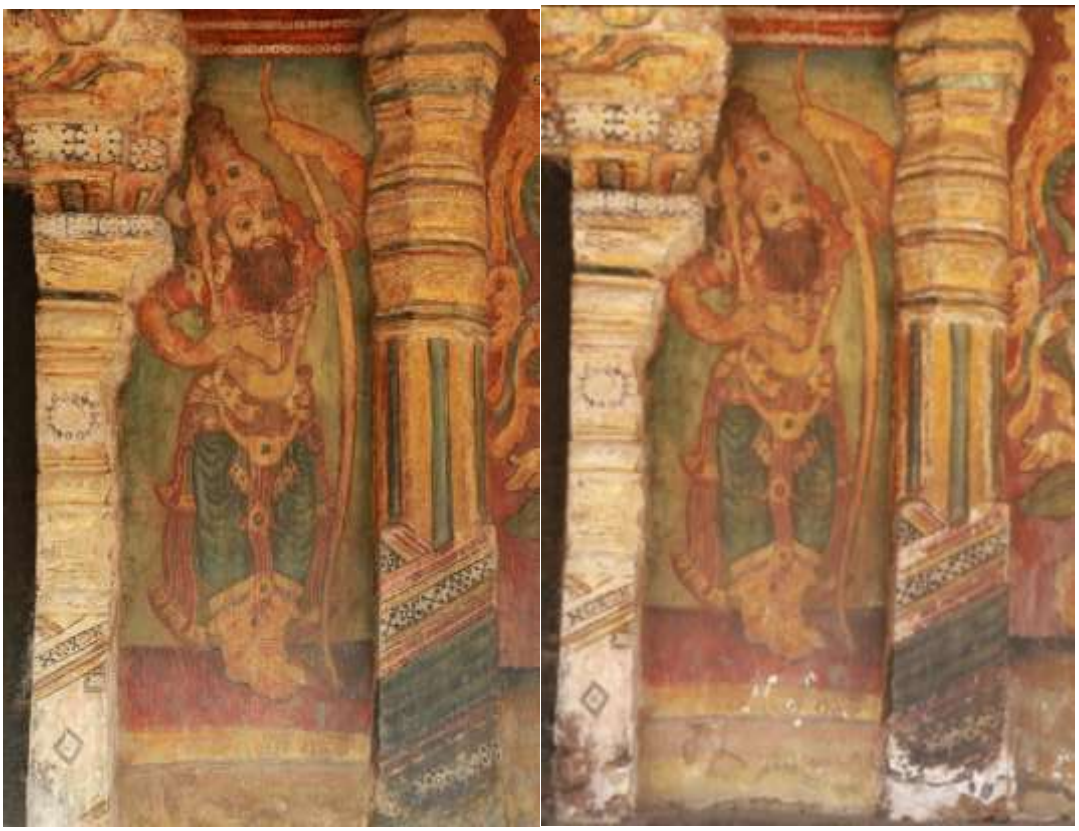
(a) Filling work on the minor cracks and fissures of the murals at Erattayappan at by injection method- Diluted lime with binder extract taken in syringe for injection into the micro fissures under consideration (b) Injection of lime into the micro fissures to fill the hollow area of the ground

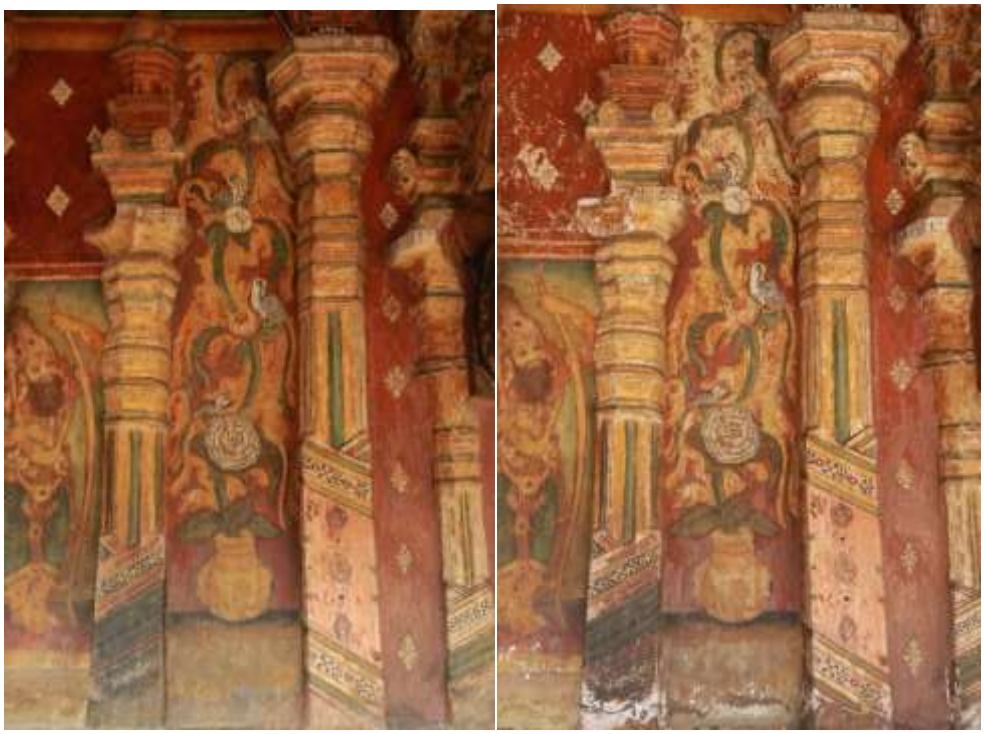
Scientific preservative coating of the treated mural areas: A canopy for sustainability- Discussion of Results

Once all the preservation procedures on the *Erattayappan* murals are fulfilled to the core, measures are taken to protect and preserve the treated areas from the twofold effects of perturbed climatic parameters and carbonaceous gatherings. Such protective shielding is made possible only when there is adequate safeguard between the pigment layers of the mural surface with that of the outer environment. To attain this, a film of 1% Poly Vinyl Acetate (PVA) in Toluene was applied in criss-cross format with very soft brushes over the supernatant pigment layer of the mural surface. Poly Vinyl Acetate (PVA) being a polymer when applied on the surface forms an organic film over the surface. Being hydrophobic, it helps the pigment and further interior layers including ground from heavy rainfall and further climatic vagaries. By keeping the reversibility factor of scientific conservation ethics in mind, it is undoubtedly proven fact that the same coating can be revoked using Toluene or other organic solvents as and when required. The treated surface thus enhances safeguarding and sustainability quite appreciably from further deteriorating factors thus retaining the aesthetic beauty, and archaeological potential coupled with an extended life span of these supreme murals.

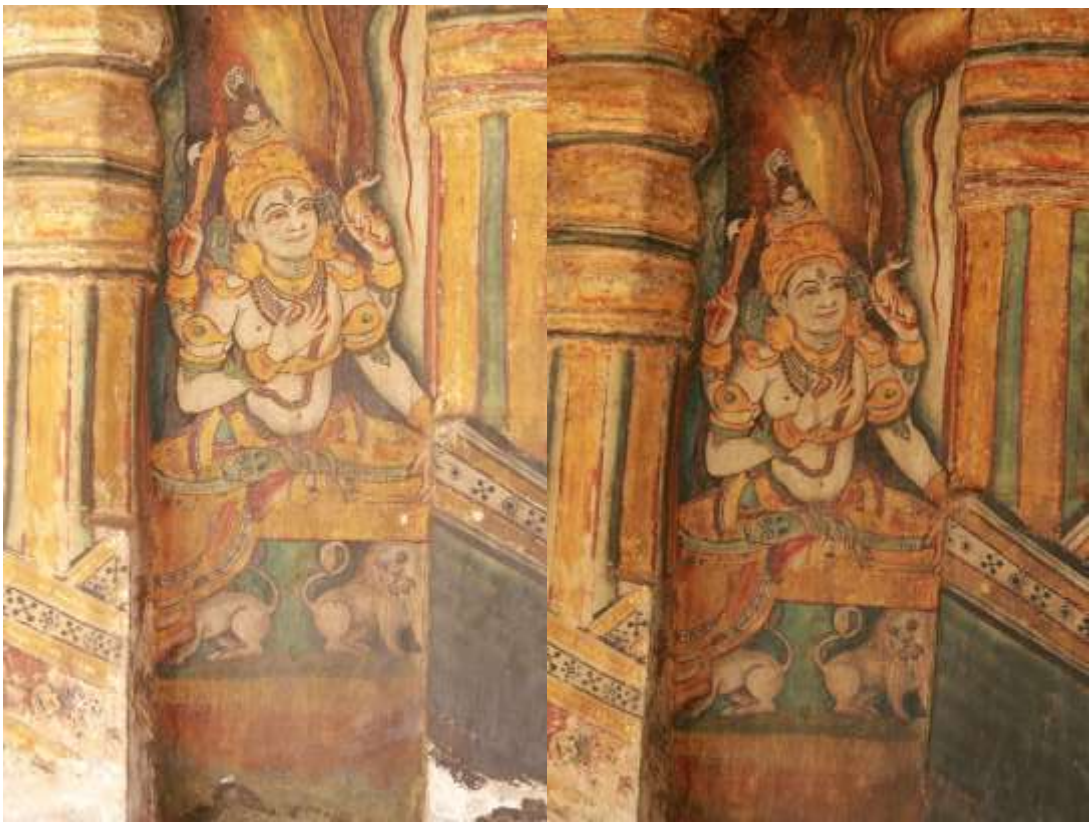


Erattayappan Murals (Yakshi and Parashuarama) before and after preservation– A two-fold view of filling and filleting works at the basement of mural along with colour reintegration works. The after treated mural is preserved and protected from climatic vagaries using 1% PVA in Toluene

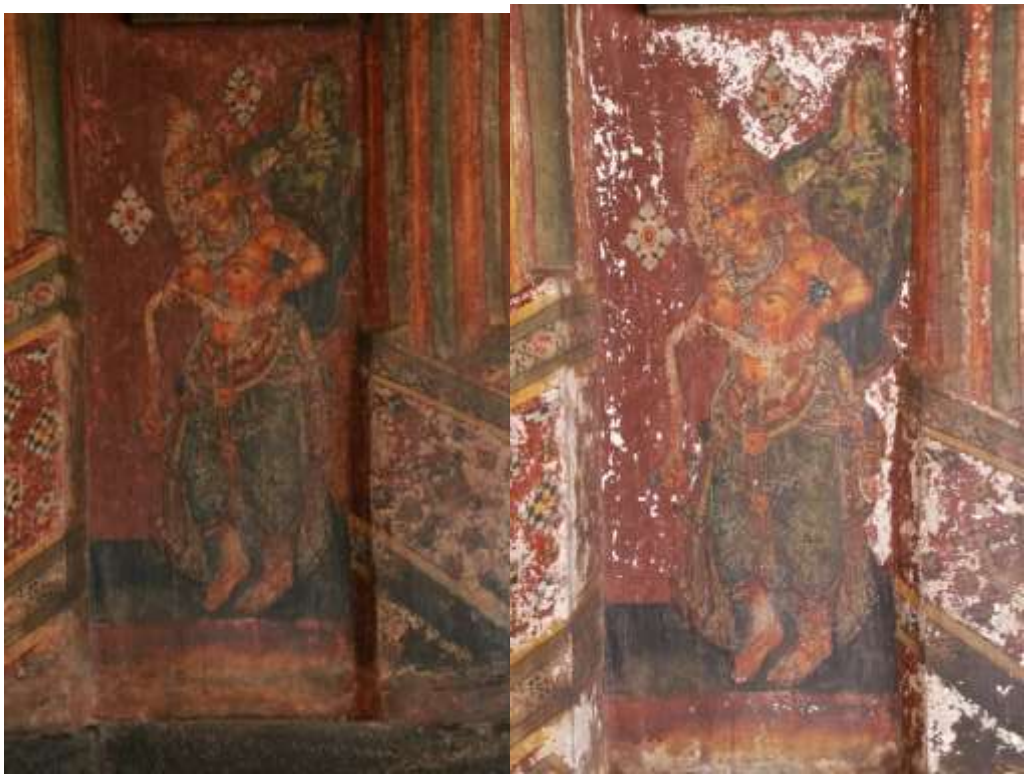




Erattayappan Murals before and after preservation – A two-fold view of filling and filleting works at the foot of the muralscoupled with colour reintegration works for both the floral motifs and iconographic depiction of Dakshinamoorthyof the related murals. The after treated mural is preserved and protected from climatic vagaries using 1% PVA in Toluene



***E** before and after preservation – The iconographic feature depicts the panel of Hanuman at the top. This panel portrays the duel between Hanuman and Lanka Lakshmi (Situated on the left side of the Hanuman mural panel atcircular Erattayappan Shrine which is missing at the current frame) and Lord Sree Krishna at the bottom. In both cases, the missing pigmented portions was subjected to colour reintegration along with rendering filling and filleting works where ever essentially required.*



Erattayappan Murals before and after preservationdepicting Parvathy parinayam and Dwarapalaka on the other panel - The missing pigmented portions where colour reintegrated along with filling and filleting works concentrated at the base level of the mural painting.

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