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Conservation of Wall Paintings of Sinon Monastery, Sikkim

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ABSTRACT

The paper deals with transfer and restoration of wall paintings of Sinon Monastery, Sikkim. The method of transfer of the paintings and the technique used to provide rigid fibre glass support are described in detail. The general condition of the paintings, prior to their removal, is also discussed.

INTRODUCTION

Sinon is a small place in the west of Sikkim. It is located about 8 km. away from Tashiding on a hilltop. This monastery was built during the regime of the Ghogyal Phuntsok Namgyal in the 17th century by a monk named Gyalwa Nagadak Sempa Chenpo. The monastery is a two storeyed building. The floor area is 99.36 sq. m. The building walls, as a tradition, have been extensively painted, depicting various stories about spread of Buddhism in Sikkim, figures of Buddha and stories connected with his life, and a few Tantrik themes. The style of the paintings is akin to the Tibetan style of paintings.

Since the monastery building was showing signs of ageing because of long and wide cracks on the walls, there was a danger of the whole building collapsing one day. The Sikkim government requested the NRLC to save these paintings from total destruction. It was desired by the Sikkim Government authorities that the monastery, after removal of paintings, be reconstructed and the paintings could be displayed in a museum at Gangtok. The NRLC, therefore, undertook the work of transfer of paintings from the walls in September, 1986. Areas of the paintings to be transferred were marked by Shri T. T. Bhutia, Dy. Director (Culture), Sikkim. Detailed plans of the location of each panel to be transferred were made to maintain the same sequence as they were on the original wall, during their treatment and subsequent mounting. Photographic documentation in colour and B&W was also done to record their physical condition. A total of 27 panels measuring more than 200 sq. feet were removed.

STRUCTURE OF THE PAINTINGS

The wall was constructed of stone slabs, joined with mud-mortar and plastered also with mud. Thickness of plaster was ranging from 1.3cms to 5.5cms, and at many places the plaster was in several layers. The priming layer (mostly yellow in colour) was laid over the plaster. Outlines of the drawing were made with black colour on the priming layer and the drawings were filled with colours. There was no evidence of surface coating. The paintings appeared to be in glue tempera. The main colours used were yellow (yellow ochre), red (Red-
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ochre), blue(azurite), green (malachite), golden (gold), white, black, and their combinations. The identifications of pigments were made on the basis of spot test and micro-chemical analysis.

PHYSICAL CONDITION OF THE MURALS

The general condition of the paintings was not satisfactory. These had cracks going deep in the plaster and, at a few places, the plaster along with paintings had already detached or had tendency to separate from the ground. The paintings had smoke, water stains, cobwebs, grease, dust and dirt accumulated on them. The paint had flaked off from a number of areas and in many places, it had a tendency to separate from the plaster, but in some areas the adherence with plaster was strong enough.

SCHEME FOR TRANSFER

These paintings being on mud plaster had weak bond between the paint and the plaster but at some places the bond appeared quite strong. It was, therefore, decided to detach these paintings (as per plan of detachment) together with some part of the plaster, a method similar to the Italian Stacco method. Transfer of wall paintings in this case entailed five distinct processes:

1. Removal of paintings from the wall
2. Transferring the painting on a new support
3. Removal of the facing and cleaning
4. Mounting on rigid support
5. Restoration.

1. Removal of Paintings from the wall

The first stage of detachment of paintings consisted of applying a facing. Before applying the facing, the paintings were cleaned, consolidated and coated with 2-3 coats of 2.5% solution of polyvinyl acetate. The paintings were then given two layers of facing: first a thin muslin cloth and then a thick canvas cloth, using animal glue as adhesive, covering the entire painting to be transferred. Before application, the facing cloth was washed to remove the sizing material, dried, and the edges teased out in order to avoid any distortion, and then ironed and rolled on a stick to facilitate handling. Before applying the muslin cloth, a preliminary layer of adhesive was spread on the painting over an area of the size of one piece of muslin cloth. The glue used was a fairly concentrated solution (15%). This was to prevent the weave of the muslin from leaving an impression on the painting. The facing was applied to the glue coated surface in successive layers from the bottom upwards so that the adhesive will not drip on the paintings. The entire surface was given a second coating of adhesive taking care not to leave any air bubbles trapped between the paintings and the facing. The edges of the muslin cloth, about 5 cm wide, were folded back on themselves around the borders of the paintings so as to form a kind of hem. The upper edge of the canvas was extended 30 cm above the top edge of the painting. This flap was tacked to the wall or if the wall was painted to a horizontal wooden beam fixed firmly in place for this purpose. The second layer of facing was given after the first layer had dried. This facing was to serve as support and provide protection for the
painting during the entire process of transfer and conservation.

The painting panels were numbered on the facing cloth according to the scheme prepared earlier, and boundaries of the panels were marked on the facing cloth. The cuts along the boundary lines of the section to be detached, were made with a surgical knife. A supporting panel of plywood padded with felt, of the same size as the section to be detached, was prepared. This was to support the surface of the painting during the subsequent operations, and to bear its weight when the painting is separated from the wall. The plywood panel duly padded with felt was then put on the surface of the painting covered with its facing and held in position with the help of two or more wooden buttresses. The hems of the facing canvas were turned over the edges of the panel and stapled. Particular attention was paid to secure the top. At this stage, the paintings along with some thickness of plaster are detached from the wall by inserting long flat chisels, especially made for the purpose, through the plaster. Inserting of chisels was started from the bottom to upwards to avoid the collecting of rubbles in the pockets behind the painting. When the painting had completely detached from the wall, the whole slab was slowly taken down and put on the ground.

The thickness of the plaster was reduced at the site, and in this way, all the 27 panels were detached from the walls. The detached panels were securely packed in crates and transported to NRLC, Lucknow, for further treatment and processing.

2. Transferring the painting on a new support

The plaster from the back of the paintings was removed by scraping. Thus only a layer of paint and the yellowish priming and a thin layer of ground remained on the facing cloth, which was given a coating of PVA for additional water proofing and to consolidate the ground and paint from the back. A layer of cotton gauze was put with the lime-casein adhesive and allowed to dry and set. The next step was to give another support of thick canvas using the same lime-casein adhesive.

3. Removal of the facing and cleaning of the painting

After the canvas was completely set, the paintings were now turned so that the painted side faced upward. The facing layers applied at the time of detachment of the paintings from the wall, were soaked up with lukewarm water to soften the animal glue applied then. The two layers of facing were gently removed one by one.

Chemical cleaning of the paintings was done at this stage to remove remnants of accretions of smoke etc. The extra cloth edge, if any, were pruned to the size of the painting panels.

4. Mounting on a rigid support

Rigid supports of the traditional type are inconvenient because they are heavy and fragile, and therefore, difficult to handle during later interventions. Canvas, on the other hand, though has the advantage of being adaptable to a size and form, requires stretching to
maintain the shape, and, therefore, does not meet the requirements of a good support for wall paintings.

A decisive step towards a better solution to the problem was taken by using polyester resin and glass fibre for the construction of a rigid support. In this technique, no pressure or external heat is required to be applied during curing and there is no limit to size and complexity of the article made. The fibre glass and polyester resin support are resistant to heat, moisture, insects and fungus attack. The technique is described as follows:

At the edges of the panel, glass strips (coated with Petroleum Jelly) were temporarily fixed with wax. The space left between the glass strips and the edge of the panel, if any, was filled with molten wax to avoid the resin from flowing down. The polyester resin (GP) : 100 parts, catalyst (Methylethylketone peroxide) : 3 parts and accelerator (Cobalt nephthalate) : 1.5 parts were mixed thoroughly and brushed evenly on the canvas. A layer of glass fibre mat (450 FGP) tailored to the required size was then placed in position and the resin mix dabbed with brush (uncharged) to bring the resin through the mat. Care was taken to drive all the air bubbles out from the glass fibre during the process. If required, resin mix was added to the starved areas, and brushed carefully. When the first layer had been laid properly, further layers of the resin mix and glass fibre were applied in the same way, until the required thickness was built up. The resin mix was allowed to harden to form a rigid structure. When the resin had set and became hard, the glass strips were removed. Wherever it was necessary, the trimming of the new support was done at the green stage with a surgical knife.

To avoid distortion and also to join the different parts of the painting, bolts were embedded in the above structure according to the scheme prepared earlier, so that different parts of the painting could be joined together with the aluminium strips and angles by using nuts, at the time of their display.

5. Restoration

The losses were built up with fine clay of original mud plaster and PVA emulsion putty. The painted areas which were already missing before the transfer work was undertaken, were painted in a uniform neutral tone but not reproduced. The paintings were finally given two coats of 1% PVA in toluene as a preservative coating.

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A Method for the Preservation of Black Outlines of Figures drawn with Lamp-Black during Removal of Accretions of Soot etc. from Ajanta Wall Paintings

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ABSTRACT

Black-colour has been used for the bold outlines of the figures and different designs in the Ajanta murals, and some accretions on the paintings are also blackish. Therefore, the preservation of the sensitive black pigment (susceptible against the organic solvents) poses great problems during the removal of black accretions. The paper describes a method for the protection of the black pigment (lamp-black) during the removal of accretions of soot, smoke, blackened varnish, grime etc. from the painted surface of the Ajanta Caves.

INTRODUCTION

In the world famous wall-paintings of Ajanta Caves, at some of the places, the background colours such as red or green or yellow as per their requirements have been applied on the priming and then the desired figures have been drawn with bold outlines of black colour. But at some places, the outlines have been drawn first on the priming with red colour, repainted with black pigment and then different colours, repainted with black pigment and then different colours have been filled in. In some places, thin lime has been used as ground and priming too.

The paintings were, in general, covered with different types of accretions, some of which, including the aged varnish, were blackish in colour. Removal of such accretions from black painted areas posed a serious problem, as it was difficult to discern blackish accretions on black pigment, and there were chances of getting black pigment removed while cleaning accretions. Therefore, a method was perfected to remove blackish accretions from black painted areas. The method is described in detail in the paper.

DIFFERENT KINDS OF ACCREITIONS AND THEIR ERADICATION

1. Grime (consisting of dust and dirt):

The accretions of dust and dirt on the paintings, not only give an unpleasing look to the murals but also damage the paintings slowly and gradually. Therefore, eradication of grime is necessary in the interest of preservation of the paintings. Since the colours used except lamp-black, are generally inorganic compounds, the use of organic solvents for removal of accretions and for cleaning the paintings is preferable.
The chemical treatment of Ajanta murals is in progress in cave no. 17 at present. For eradication of grime, the mixture of the following solvents in different proportions according to the demand of the particular place has been used with success by rubbing gently cotton-swabs of required size, soaked in the solvents:—

1. Absolute alcohol and methanol  
2. n-butanol and Amyl alcohol  
3. Diacetone alcohol and methanol  
4. Acetone and turpentine (1:3)  
5. Toluene and dibutyl phthalate.

2. Thick coats of soot, smoke and dark brown varnish:

The coating of varnish along with other accretions, such as soot and smoke, totally hides some of the paintings. The chemical composition of the soot is the same as of the black pigment (lamp-black) which has been used for drawing outlines of the figures. Therefore, even the slightest carelessness cannot be afforded in respect of the preservation of this pigment. An extra-care has to be taken for the protection of the black colour during the removal of soot so that the black pigment may not come out along with the accretions of soot. The following method was used for the removal of the accretions.

To make visible the black outlines of the figures in the paintings covered by the dark-brown and blackened varnishes, the surface was moistened with turpentine oil with a cotton swab. In most of the cases the black outline became visible. The outlines coated with 10 to 15% PVA were allowed to dry for 24 hours.

When the PVA became dry on the black pigment of the paintings, the chemical cleaning and eradication of black and dark-brown accretions was carried out. When the black pigment of the painting did not become visible after applying turpentine oil, the accretions were removed slowly and very carefully by the above described method for eradication of grime till the outlines became visible, and then the black colour was preserved with 10 to 15% PVA.

The area taken for chemical treatment was made wet by applying ethylene glycol and ethylene glycol monoethyl ether. However, the use of ethylene glycol should be avoided during rainy season when relative humidity is very high, because the ethylene glycol absorbs moisture double of its weight, from the humid air. After 10 to 15 minutes, the dark accretions were eliminated by the soft hog hair brushes of suitable size soaked in the mixture (1) morpholine (2) n-butylamine, (3) cellosolve, (4) butyllactate, (5) Dibutyl phthalate, (6) trietanolamine and (7) sec-butanol in the ratio 1:1/2:1/4:1/10:1/10:1, respectively. The proportion of individual chemicals can be varied as per the demand of the work. Chemical treatment should not be carried out in rainy season when humidity increases above 70%.

After removal of the accretions, the painted surface under chemical treatment was dried up with denatured spirit and petroleum spirit in equal ratio. During the process, the chemicals which could have entered into plaster are also evaporated. In the process of drying or evaporation of solvents, the coats of 10-15% PVA are also removed from the black pigment. The chemically
treated area was left for a week or so for complete drying of the surface.

Finally, two coats of 2% to 3% (W/V) PVA in toluene containing 2% dibutyl phthalate was applied for preservation.

CONCLUSION

The method was applied with success on several areas of the paintings. For obtaining the best results, knowledge of chemicals, their properties and their use alone is not sufficient for a restorer. In order to save the black pigment and beautiful shades of excellently painted figures during the process of chemical treatment, a scientist or a restorer must essentially have an artistic view and dexterity, in addition to full knowledge of his subject. Only then, a scientist or restorer can do justice to his job of preservation of Ajanta paintings.

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