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Editors: P.B. Hallebeek, J.A. Mosk
DTP: J.A. Mosk
Word processing: S.F. Fontijn

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System to Refill Lacunae

Mª Isabel Herráez Martin
Instituto de Conservación y Restauración de Bienes Culturales
Ministerio de Cultura
c/ Greco, 4. Ciudad Universitaria
E-28040 Madrid

Introduction

The reintegration of gaps is a normal process in the restoration of leather objects, not only in order to structurally reinforce the object but also to achieve an optical or aesthetic effect of unity.

The materials traditionally used for this purpose, such as fabric or paper, attempt to mimic the special characteristics of leather (flexibility, elasticity, tensile strength, etc.) as closely as possible. However results are not always satisfactory. Currently, synthetic resins are used, with or without thickening agents, but their appearance is usually unsatisfactory from an aesthetic point of view. On the other hand, the most effective solution, that of using new skin or leather, has certain drawbacks from an ethical point of view or in terms of intervention criteria (1, 2, 3, 4, 5).

Description

The object to which this article refers is a hemispherical helmet made of reptile skin over an inner basketwork frame. It belongs to the collections in Madrid’s Naval Museum and has been dated to the 19th century, although we lack details regarding its cultural attribution and provenance.

State of Conservation

The helmet had been rather poorly conserved and was covered with dust and other environmental contaminants. Material was missing in numerous points, both in the basketwork frame which was fractured and shredded, and in the skin itself which had large gaps, fissures, open cracks and general erosion.

Work procedures

First the surface of the helmet was cleaned by soft brushing and vacuuming.

Once clean, broken basketwork elements were fixed with polyvinyl acetate (Mowilith DMC2). The skin was cleaned with small cotton swabs soaked in demineralized water and ethyl alcohol (1:1). Loosened dirt was immediately removed and any moisture dried with blotting paper.

Once the skin was clean the edges of the gaps and the eroded areas were consolidated with an acrylic resin (Pliantex in 1,1,1-trichloroethane, 1:4). Finally, we applied a very thin coat of a leather lubricant (standard Pliantine).

During the restoration process and in view of the extent of material loss, we were faced with the need to reintegrate the skin, for aesthetic reasons as well as to preserve the helmet’s mechanical resistance. Traditional systems employing paper or fabric did not work, since their appearance was not aesthetically pleasing. The use of new skin resembling the original was ruled out by the impossibility of obtaining similar material. We turned to the use of synthetic materials as a last resort, basing ourselves on an old article by John W. Waterer (6) in which gaps were filled using an acrylic resin (Pliantex), the same resin we had used to consolidate edges. To this end, we carried out a series of tests which gave us small fragments of resin film, moderately elastic and flexible, but not particularly resistant. The problem was that we could not apply the resin directly onto the object, as Waterer had done, since we needed either a base to contain the flow of the liquid resin or to use thickening agents which would alter the characteristics of the resin.

Furthermore, even when dyed, the film had an unfortunate, very plastic look.

Several tests were carried out aimed at reinforcing the resin film and at the same achieving a solid, workable material using intermediate or underlying layers of synthetic fabrics (Remay, Bondina, Cerex, etc.) and small, perfectly manageable pieces of fabric for the filling were obtained. Problems arose when we attempted to adapt these pieces to the gaps, since pockets and buckling occurred, the film adhered very poorly and there was no mechanical resistance whatsoever.
We then tried the traditional system of reinforcement with fabric, in this case synthetic, in the zone of the gap. Polyester fabrics (Remay, Bondina) were attached to the inside of the object with polyvinyl acetate and a small piece of dyed resin film was attached to them. The result was fairly good, since the fabric helped restore the skin’s mechanical properties and the resin filled out the gaps visually. Nevertheless, due to the extent and location of material loss, the result was not entirely satisfactory.

We decided that if we could not achieve material similar to the original we could obtain an imitation. To do so a mould was made of the grainy surface of the original skin using dental silicone (Coltex fine). Once the silicone set, a positive impression was obtained in dyed acrylic resin (Pliantex). The outcome was considered definitive and it was decided to reintegrate all the gaps with small pieces of dyed resin film with this moulded surface. The pieces were glued to the synthetic fabric base with the same resin, and cut according to the desired shape. The fissures between the edges of the object and the synthetic skin implant were filled with the same dyed liquid resin.

Conclusions

The described technique of filling lacunae has been used for different leather and skin objects whenever we needed to imitate a special grain pattern of surface work, and we have obtained satisfactory results.

Acknowledgement

Museo Naval, Madrid.

References


Materials

- Ethyl alcohol
- 1, 1, 1-trichloroethane
- Mowilith DMC 2, polyvinyl acetate
- Pliantex, acrylic polymer
- Pliantine standard, lubricant
- Coltex Fine, elastomeric polysiloxane. Colténe AG
- Remay, non woven 100% polyester
- Bondina, non woven 100% polyester. 30 gr, 110 gr/m²
- Cerec, non woven 100% nylon. 10 gr/m²
- Dry ground, Winsor and Newton
- Maimeri colours.