This poster focuses on the examination and conservation of a mid-19th century painting on a tin-plated iron support. The small-scale portrait (Austrian wholesaler Anton Hainisch) was affected by severe paint delamination and cleavages. The damage was treated in 1994, supported by analytical and technical investigations. Selected adhesives and various filler preparations were tested. Finally, Paraloid®B-48N was applied as the most appropriate consolidant while a preparation containing Lascaux® Adhesive Wax 443-95 and chalk was chosen for the fillings and Lascaux® Medium for Retouching 20-50 for retouching. However, about 20 years later separation and lifting of the paint layer were noticed again. UV investigation revealed that the affected areas were almost not identical with the consolidated sections at that time. The main focus of this study is the re-examination of the painting and the reassessment of the analytical and technical investigations in order to compare the result with the findings of the previous study.

1. Painting technique

The tin-plated iron support was prepared with a thick white priming layer. The paint layers are thinly applied. Close examination of the surface revealed drying cracks on a very small scale almost all over the painting.

Paint cross-section examination

The examination of a cross section (VIS, UV) revealed, that the thick white priming is composed of two layers, containing lead white (XRF). The tonality of the dark brown in the sample area was achieved by at least three paint layers. The initial layer on the white priming is pale brown and might have been applied as underpainting, followed by two thinner paint layers, containing probably red lead (XRF).

Drying cracks

The formation of the small scale drying cracks is clearly evident in the cross-section. Only the two top layers – including the older varnish residues – show the vertical cracks and have developed cupping.

It is suggested, that this formation developed during the drying process of the paint, whereas the thin upper layers dried faster than the thicker oil containing priming and underpainting. The varnish layer on the top has to be attributed to the previous conservation treatment. Residues of a two layered older (original?) varnish could be determined below it.

2. Re-examination of the paint layer delamination

Examination of the paint delamination revealed no defect or corrosion in the tin coating on the iron plate. The delamination of the paint seemed mainly to be due to strong tension and might have been provoked indeed by a deformation of the metal plate. However, the sections consolidated in 1994 seem to be stable, except areas, where only the crack edges had been joined together and the consolidant had not flown underneath the tenting paint.

In 2016, the instable condition of the paint layer in the lower third part, characterized by serious delamination, paint losses, cleavages and blisters, were observed again. The comparison of the instable zones with those treated in 1994 indicated that new areas were affected.

Deformation of the tin-plated iron support

3. Paint consolidation, filling and retouching

The range of adhesives was limited to non aqueous consolidants, e.g. synthetic resins as Paraloid®B72 or B-48N (Horovitz 2002, 2012: 378).

Paint consolidation: In 1994, the flaking paint was consolidated with Paraloid®B-48N in Toluene (15%). As parts of the paint layer had been already penetrated by this consolidant, it was decided to use the same adhesive, applied by very thin specially prepared brushes (12% in Toluene).

A temperature controlled heating film proved to be helpful for warming constantly the metal plate during the consolidation process.

Partial cleaning: After the paint consolidation process the brittle varnish of the lower part of the painting seemed to be affected by blanching. Hence it was decided to reduce the varnish and to remove much of the last treatments retouching material. Afterwards a dammar varnish (12% in turpentine) was applied.

Filling of paint losses: For filling paint losses, Lascaux® Adhesive Wax 443-95 and chalk was chosen, the same material as in 1994. A small amount of sand was added to allow a better imitation of the originals surface structure.

Retouching and Varnish: Lascaux® Medium for Retouching 20-50 (Polyvinyl acetate 50% solution in ethanol/acetone 7:3), diluted in 1-Methoxy-2-Propanol (DOWANOL™ PM), was used for the first retouching layer. The glazes were applied using MUSSINI® artists’ resin-oil-colours (by Schmincke). The gloss of the retouched area was adapted by varnishing selected parts.