Gilding techniques
Case study of a chair from the gild room of Malmaison castle

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On the occasion of the restoration of the chairs from the gild room of national museum of castles of Malmaison and Bois-Préau, a gilded area with a greenish tint, probably due to an old restoration has caught the conservator’s attention. Is it a bronze, a gold-silver alloy or a green glaze? A micro sample has been taken to provide an answer.

The stratigraphic study of this sample complemented with an elementary analysis has confirmed it was a second gilding, but executed with pure gold. The SEM-EDX image revealed a feature different from that usually observed for a gilding with gold leaf. These characteristics have been noted for other re-gilt elements of this chair but with a yellow-gold tint.

The possibility of using gold powder form has been raised. To confirm and refine this interpretation, a comparative study was carried out from mock-ups made with different gold powder forms.

Study of the gilding of the chair

Detail of the gilding with the greenish tint, top of the left front feet © C2RMF N. Balcar

Detail of the gilding, seat, left crossbar © C2RMF N. Balcar

Cross section photomicrograph. Both gildings has been carried out with orange mordant.

Cross section photomicrograph. Between the two gildings achieved with orange mordant, a thick preparation.

During the study of another area of this chair, with a visible restoration and a mate yellow-gold surface, a backscattered electron image again shows an important thickness and a very particular aspect for the gold of the second gilding, which suggests that this time gold powder has been used.

Gilding mock-ups with gold powdered

To confirm the hypothesis that these second gildings have been achieved with a gold powder form, the gilder conservators of the C2RMF have made mock-ups with gold powder form bought in a conservation material shop: one is called shell gold (or à la coquille) and the other is called powdered gold.

Cross sections have been made in order to make a comparative study of the backscattered electron images.

Electronic images show it is possible to distinguish shell gold, which has an appearance comparable to thin chips of gold leaf without organization, from powdered gold whose appearance is similar to a stack of chips.

The comparison of these images with those obtained for the samples of the chair allows: first to confirm the use of a gold powder form for the second gildings and strongly suggests the use of shell gold for the crossbar of the seat whereas the greenish tint gilding for the superior part of the foot is more typical of the use of powdered gold.

Conclusions

At the issue of this study, it appears that greenish tint of the gilding is neither due to alteration nor to the use of bronze or colored coating. The second gildings studied on this chair, even if they have different aspects (color, matte) have been achieved with pure gold powder form and not with traditional gilding with gold leaf.

Is the greenish tint related to the use of gold powder form? Probably if one refers to a paragraph, in the chapter ‘gilding metal powder’ in one of the RORET guidebooks (see opposite). Are there different shades depending on the method of gold powder preparation? Is its use limited to furniture? And does it correspond to a particular time?

All these questions encourage us: to search more guidebooks which detail methods of preparation and application of gold, to make more mock-ups with different gold powder forms and gilding techniques, to observe the final aspect and tint of these gildings and to perform electronic images for their characterization and to find them in samples from artefacts.