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The restoration of an early 17th century chest

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Preliminary examination

The object was discovered by its present owner under a pile of firewood in a village in the Harz. He purchased it and had the white paint stripped off. In this condition the chest was brought for conservation (Fig. 1).

After research the chest was identified as south German and — by the characteristic crest of the coat of arms — dated to the beginning of the 17th century.

To reconstruct the missing base and to determine the arms, enquiries were sent to about 60 museums and town archives. Through the friendly support of some institutes, who supplied information and photos, comparisons and sketches of similar objects in different museums led to the shape of the missing mouldings becoming clear. The enquiry into the origin of the arms remains unsuccessful, because no traces of pigments could be found on the thoroughly stripped object and only the colour would allow an exact classification.

The making of a base of half the height of the object, in the proportion of 2:1 (object:base) was rejected by the customer for economical reasons.

In comparison, a separate base frame was built, that the chest could be set upon (Fig. 2).

The historically adequate version is shown in the restoration proposal.

Lid construction

Frame and panel with grooved-in moulding joined by a dove-tailed lapjoint. The edge moulding is nailed to the front, but grooved into the sides. The panel mouldings are nailed. The wrought hinges are nailed from inside.

Chest construction

Solid boards dove-tailed at the corners, the bottom nailed to the sides. The dove-tails themselves are on the front and back, the uppermost cut to a mitre. The joint includes a kind of bevelled housing. Wedges 2–3 mm thick are driven into the pins (Fig. 3). A box with two small drawers at the base and a moulded lid is grooved into the left side.



Fig. 1 Chest before restoration



Fig. 2 Chest after restoration

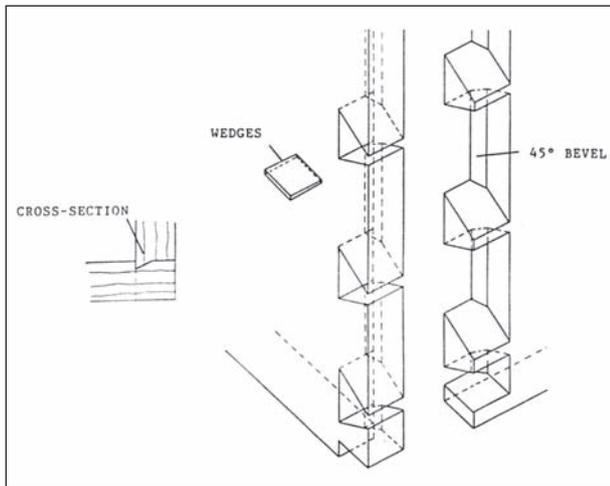


Fig. 3 Dove-Tailed joint

Description and materials

Chest of Swiss pine with applied oak relief. In the centre of each half is a coat of arms carved in lime framed by an arch between two pilasters and dentil frieze. The pilasters and the middle panel are decorated with strapwork and arabesque ornaments in maple, plum, beech, birch and bog oak inlay glued to paper. Strapwork in maple is applied to the arcade and decorated with nail-heads in bog oak. The visible portions of carcass timber were painted black.

The lid is also Swiss pine, the lip mouldings, and the decorative panel mouldings of bog oak.

The sides are built up in oak in imitation of a framed panel, with the handles attached through the centre of the panel where it becomes very thick. The panels are moulded and have maple fielding.

Hinges and handles are tinned iron, partially engraved. The hinges were underlaid with red velvet.

Condition

The base and the left lid panel are modern replacements; the body is so deformed that the sides are no longer vertical nor square to each other. The back has several cracks along the grain. Most of the joints are open and the applied ornament loose. Parts of the strapwork of the arcades are missing entirely. A photograph taken by the owner prior to stripping showed that the arches had contained keystones. Mouldings are probably also missing from the pilasters. Under the edges of veneers next to exposed carcass timber, which appeared grey, remnants of water soluble black paint were found. Large sections of the object, especially the base, lid and back are heavily wor-

meaten (*Anobia Punctatum*). Similarly, the coat of arms could be crushed by light pressure. The lid is very worn and damaged. The right edge moulding of the lid is missing. The object contains about 70 modern iron nails which have also split the wood in many places. Incorrect caustic stripping has bleached the oak and left traces of salt crystals. Also further very obvious destruction of the surface done by the stripper, who stapled the loose veneer back on after underlaying it with coarse sandpaper. The metal parts are corroded, the hinges are bent and broken apart at the knuckles. The lock, key and one handle are missing. Most of the wrought nails holding the ironwork are also missing or heavily corroded.

Restoration measures

The lid is to be dismantled and cleaned. To strengthen it, the wood will be preheated and coated four times with a very thin animal glue, mixed with a fungicide and alum. To assist deep penetration, the object is to be brushed with ethyl alcohol. Missing sections are to be replaced with old, naturally patinated wood of matching structure. Due to shrinkage, the frame members of the lid no longer fit together: the tongues are longer than the crossmembers are wide so will be slight-

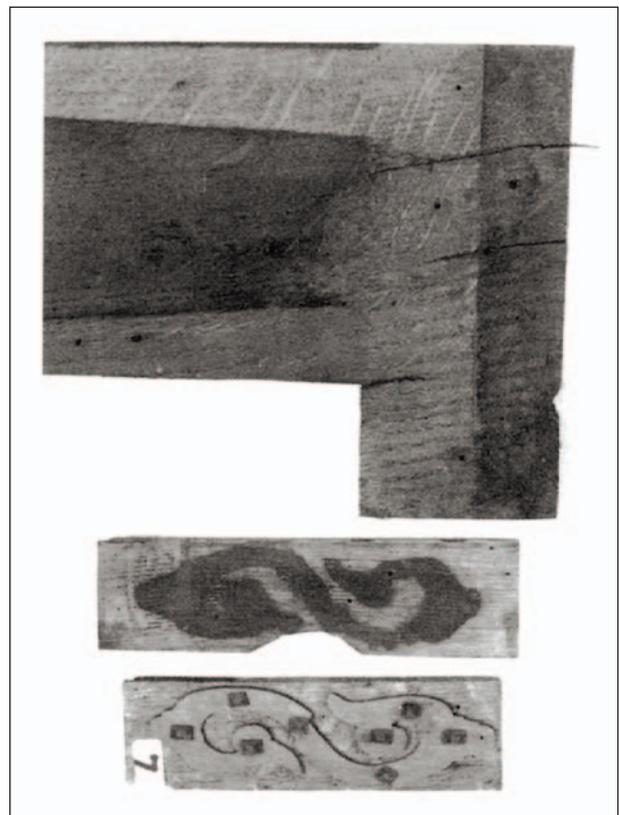


Fig. 4 Parts protected from the stripping under ornament and pilaster show the retained patina of the 400 year old oak

ly shortened. After removal of the replacement pedestal and iron nails, the bottom is to be removed and strengthened as above. Broken pieces and cracks are to be glued. In expectation of the chest being used, porous sections are to be coated with a mixture of animal glue and wood dust to which 20% glycerine relative to glue is added to reduce shrinkage. After finishing the body, the bottom is to be glued back in place and the shrinkage crack shimmed. As much as 60-70% of the applied decorations are loose and the ground very dirty, so all applied decorations are to be removed. Special care is to be taken not to damage the small trenails which secure the veneers so that the pieces can be reglued as exactly as possible. Of course all parts are to be numbered and photographed prior to removal. The bleaching caused by incorrect stripping penetrates as much as half a millimetre into the oak. Under the applied decoration, in places the stripper could not reach, the dark brown patina of the almost 400 year old oak is untouched (Fig. 4). A test with ammonia (96%) on the bleached wood shows that the tannic acid is entirely gone. Therefore an exactly matching nutbrown stain is to be made. To make sure that no further damage will be caused by the stripping, the oak is to be neutralized with dilute acetic acid. All glueing is to be exclusively done with hot french rabbitskin glue at about 60°C (140° F), the wood surfaces having been previously warmed with lamps.

Replacement keystones and mouldings for the top of the pilasters and elsewhere are to be made where their form is known, but since the reconstruction of the ornaments above the arcades would be speculative, these will not be replaced.

The coats of arms are to be injected with a solution of ethylmethacrylate (Paraloid B82) in ethyl alcohol; this is to be repeated as often as necessary to obtain a reasonable stability.

After completion of the strengthening, glueing and assorted staining, the surface is to be twice coated with a very dilute lemon shellac, carefully polished afterwards (400 grit). This is to be finished by very thin hot wax-resin, 2 pts carnauba wax, 10 pts thinner No. 222, Livos, a non harmful citrus-fruit distillation product, containing terpe-

ne. The broken hinges are to be welded. Because the original rivets have retained only one head, a piece of threaded rod is to be welded to the ends of the rivets to allow removal of the lid at a later date. Otherwise the hinges are to be fixed with modern wrought nails. The missing handle is to be copied by a blacksmith. The surface of the iron

parts is to be carefully freed of loose rust and dirt. The stable rust is a part of the structural patina and so should not be removed, as would happen were the pieces to be sandblasted. Instead the rust is to be stabilized by treatment with tannic acid, which has a strong anti-oxidative effect and is able to form stable chemical compounds with the ferric oxide. After secondary cleaning with a stiff brush the surface is to be waxed (10 pts beeswax, 1 tt carnauba wax). The missing mouldings of the lid and the entire pedestal are to be made from old, carefully dried oak; the final mouldings will be made with 19th century (English) moulding planes. After completion, the pedestal and the new mouldings of the lid are to be smoked with ammonia fumes and subsequently coated with a solution of potassium bichromate to match the original. The chosen method combines the advantages of a non-fading, natural colour and a positive stain.

The standard for the restoration was the conservation and consolidation of the original structure, adequate and authenticated reconstruction and documentation covering the whole process from the start of the preliminary examination to completion. Another standard was the cooperation of the customer, his appreciation of art and his available funds-factors that enable and limit the work of the freelance restorer.