CONSERVATION OF AN EBENEZER TRACY SETTEE*

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One of the truly unique objects in the Winterthur Museum collection is an Ebenezer Tracy sack back settee. Ebenezer Tracy (1744-1803), of Lisbon, Connecticut, is known as one of the great Windsor chair makers of his time (1), and this settee has been referred to as "tour de force" and "ne plus ultra" (2). The massive crest rail demonstrates an imagination, an artistic capability, and a structural understanding of the dynamics of seating furniture that justifies the esteem in which Tracy is held. An added bonus for Windsor fans is the repeated stamping of the underside of the seat with Tracy's documented brand.

The "wrap-around" design of the upper back is not only of very inviting appearance, it adds the triangularity of form that is so crucial to the structural integrity of Windsor chairs. The "basket" shape of a single chair is often lost when single, double, or even triple bows surmount, in a single plane, a long, sawn back rail of a settee, and do not anchor around the elbow into the arms. It is due to Tracy's having brought this assembly so far around and forward that the upper back structure is, even today, the soundest area of the settee.

One is immediately struck by the unique sawn and half-lapped construction of the crest rail, particularly the cabriol terminations which sport rat claw feet! It is no wonder that these unusual terminations have often been believed to have been produced from one of Tracy's tripod table leg templates. The novelty of this entire construction to the maker is made clear by the extra set of spindle holes in the crest rail, plugged and redrilled when, upon initial assembly of the piece it must have become apparent to Tracy that things didn't look just right. X-rays taken at the time of treatment support this scenario, showing less exaggerated spindle spacing, and a common spoon bit print. (3)

Materials used in construction are as expected except for the heavy chestnut seat plank which takes the place of more commonly found pine or tulip. (4)

CONDITION

True to the often used period moniker of Windsors as "green" chairs, this settee was not only originally painted green, the six or so subsequent coats of paint (as determined by microscopic; examination of surface coating samples at 200x and 400x under an ultraviolet light source) were also various shades of green. In fact, the paint buildup is so extreme that extensive cleaving at an early layer has plagued this piece for quite some time, indicated by various combinations of later layers of paint which run over areas of earlier losses. A heavy, rough texture due to losses and haphazard repainting, combined with ubiquitous and still active cleaving, produced a surface that was both unstable and, indeed, deteriorating. The more serious problem was structural, however, caused by a degenerating condition of the feet. As is so common with Windsor furniture, there is evidence that the piece fell into disuse or disfavor, and was relegated to the cellar or barn, where long periods were spent standing on a damp (dirt?) floor, thus

* see also: Evans, Nancy Goyne; " A Connecticut settee at Winterthur." *Winterthur Newsletter*, Vol. 28, no. 3, Fall 1982.

encouraging fungal attack in the four front feet, and subsequent wood loss. The loss, unfortunately for the settee, was uneven: approximately 2" was lost from the proper left front foot, with incrementally less from each adjacent foot, ending up with a loss of only about 3/4" from the proper right foot. The rear feet, strangely enough, were spared. Areas of soft, degraded wood, were, for the most part, confined to the interior of each foot, indicating that the piece had been placed back in service after fungal attack had seriously weakened the wood structure. This had the effect of mechanically sloughing off wood wherever the rasping of the floor could do its work, leaving a shortened and jagged, but nonetheless fairly rigid shell of wood, with a soft, excavated inner core, extending up and into the center of each leg.

Many seasonal cycles must have passed with the settee in this condition, because the lack of support by the proper left front feet caused a constant torque to be applied to the seat plank, causing a permanent twist of approximately 1 1/2" out of plane to be induced into the entire piece. The twist in the seat was transferred to the back structure which, true to the plastic qualities of this furniture form, followed suit…to a point. Spindles were loosened and twisted from their sockets, and the proper left arm post broken where it entered the seat socket.

TREATMENT

It was our honor to have invaluable curatorial collaboration with Nancy Goyne Evans, Senior Registrar at Winterthur Museum, and the foremost authority on Windsor furniture. Mrs. Evans suggested that a decision be postponed regarding the final disposition of the various applications of paint. It was decided that the surface would merely be stabilized, and a 10% gelatin solution, run under the surface with a fine point brush, was used to consolidate cleavage and readhere loose flakes. A heated micro-spatula was used to press flakes into place wherever possible.

The broken arm post and loose spindles were reglued with 152 g. hot hide glue.

Our attention then turned to the degraded feet and the resultant twist in the seat and back structure. Because of the losses to the feet, the settee had a most disconcerting appearance of tumbling forward, toward the viewer, an appearance that was deemed unacceptable from an interpretive perspective. Also, despite a museum environment that halted further fungal deterioration, mere contact with the cobblestone floor on which the piece is displayed, endangered the fragile front feet.

A completely passive system was first considered that would consist of a plexiglass structure supporting the piece by the stretchers, at once tipping it back to a more visually acceptable position, and lifting the front feet away from the floor. This was rejected because of museum programs which require that objects such as this be moved from time to time, and the difficulty of consistently proper reestablishment of support placement. Also, the general atmosphere of period setting at Winterthur is not readily conducive to this type of presentation the settee is viewed in a large interior courtyard displayed in casual grouping with many other Windsors, none of which overtly displays a malady of this seriousness.

It was decided that the settee should darn well stand on its own eight feet, and a treatment of consolidation and restoration of losses was formulated. But first, just how much replacement? Given the present twist, if the full length of the proper left foot was restored, the proper right feet would require about 1 1/2" more length than they started out life with.

A scenario that might return the seat plank to plane was discussed. Applying opposite torque, and cycling the piece through accelerated humidity variations might reverse the deformation, but because of the time that would, be required and danger of further damage to the painted surface, as well as the many joints, this option was rejected.

It was finally decided that the twist would be accepted, the proper left feet would be built up to the point that the appearance of forward tumble would be relieved, and that the right feet would be built up to extend to the floor. This decision accepts the slightly more backwards rake of the right side rather than a forward rake of the left.

Up to the present, the usual way that chair feet, suffering from this affliction, have been built up has been to remove degraded material, usually by sawing off the leg above the damage, boring a hole up into the leg, and doweling on a new foot. A recent treatment such as this, also carried out on a Windsor settee, has been completely described in the publication of that institution's newsletter.(5) In keeping with concern for the integrity of original material, it was decided that the Tracy settee would receive a modified treatment: consolidation of degraded material, and the addition of replacement material which would conform to, rather than require the removal of original material. The replacements would be made of a thermosetting resin, cast in place to the shape of the foot and the configuration of the degraded (but consolidated) original surface.

First the consolidation was carried out. As was mentioned, the degraded, soft wood of the effected feet was primarily on the interior and the exposed bottom surface where wood had already sloughed off. Therefore, penetration of the degraded area, even by a low concentration solution of consolidant, followed by a "skinning over" of the surface to be added to with a higher concentration, was deemed adequate. Butvar B-98 (polyvinyl butyral) was chosen (6), and a 5% solution in a 50/50 mixture of ethanol and diacetone alcohol (in order to slow solvent release) was prepared. The settee was inverted, and the solution was brushed onto the bottoms of the feet in multiple applications, each time until the wood absorbed no more, and the consolidant puddled on the surface. Initially, a plastic bag was placed over each foot after an application to further slow solvent evaporation and thus encourage penetration. As the introduction proceeded, the bags were eliminated, and a more concentrated solution was applied, until the viscosity (by solid content) was high, approximately a 20% solution with decreasing percentages of diacetone alcohol. At this point the consolidant began to form a film on the degraded surface, and when that film was complete, that is, when no more consolidant would soak in, the application was halted and the resin allowed to harden.

To digress for a moment, it should be mentioned that when deciding upon a resin/solvent system, the usual narrowing of the field by object sensitivity to solvent was made very difficult in this case by the many and varied layers of paint. At least one layer of paint was sensitive to each of the solvents tested, thus making the choice difficult. Early layers seemed to resist solvation by alcohol however, and that, combined with the fact that most of the paint had been lost from the affected area of the feet made the choice of alcohol borne resin acceptable.

Once the consolidation was accomplished, cast replacements for the feet were made in place in the following manner.

The settee was set upright on two parallel beams, and it was shimmed under the stretchers to the desired rake. A silicon mold was made of a healthy back foot (including paint losses and other surface irregularities) which was high enough to accommodate the greatest loss in the front.(7) A reference point (above the mold) was drawn with a soft pencil on this back leg as well as all front legs, following the same principle that is observed when Windsor legs are originally cut to length and bevel by the maker.(8) A darn of LEGO brand interlocking children's blocks was built around the back foot, a pointer, registering the reference mark was positioned inside the darn, and the liquid silicon poured in. When hard, the blocks were removed, and the mold cut away from the leg. This is d6ne with a single cut, almost through to the leg, tearing the last 1/8" or so, and snapping the mold away from the leg. About 1/8" inch of material was then removed from the cut interface to ensure that the mold would be tight around any slightly smaller front legs.

The settee was then inverted again, and the new feet were cast in place. Initially, consideration had been given to a process that would have allowed the casting of the feet in place with a release agent on the leg. The casting would then be removed, any minor adjustments made, and then glued back in place. It was decided that the casting and adhering would be done in one procedure, since no matter how irreversible the casting material might be, the skinned over consolident would be reversible, and if a "carvable" casting resin was used, it could be mechanically reduced to the region of the interface which could then be disrupted by reversing the surface consolident. A patternmaker's epoxy casting resin was chosen for its carvability, as well as its relatively low viscosity which allows it to pour when mixed, and also take excellent detail. (9)

A final precaution was taken so that the epoxy would not run too deeply into the excavated part of the leg, making removal more difficult. On the two left feet, a blob of soft microcrystaline wax, was pressed into the center of the cavities, leaving a perimeter of about 1/2" to which the epoxy would bond. Given that the settee would never have to support the weight of a person again, the bond strength was considered more than adequate. An added benefit of this procedure was that in the event of a need to reverse the treatment, the object could be inverted and a small hole drilled from the underside of the new foot, down to the wax. Solvent could then be introduced as a reservoir to begin the softening of the surface consolident prior to the carving away of the foot.

The mold was positioned on the end of each front leg in turn, registering the pointer to the reference mark, and rotating the mold to properly align by eye, relative to the other 7 legs, what would be the bevel on the bottom of the new foot. The parting line was squeezed tightly together, and the mold held to the leg with a clamp. Kleenclay brand modeling clay was used to seal any irregularities in the fit from the outside, and the mixed epoxy was poured into the mold. When all feet had been cast in this manner, flashing was carved away, and a slight bit of distress added to the edge of the foot bottom. It should also be noted at this point that if this treatment was to be considered for a piece that was to be used, and concern was voiced over the strength of the replacement bond, a threaded stainless steel rod could be screwed into the leg and allowed to protrude and be invested in the epoxy casting. To reverse, the epoxy would be carved away and the rod unscrewed. True, original material must be removed for this, but the amount is minimal and the area is of least concern.

An unexpected benefit of the REN casting resin was that it was very close in color to the paintless areas

of wood adjacent to the replacements. This was a more than adequate base color for inpainting the new material which was done with Magna colours, creatively exploiting the areas of paint loss so well rendered in the mold from the back foot, and thus on the replacement material. The joint between the casting resin and original material was so good, that merely a slight overlap of paint was enough to obscure it. (The slight run over of Butvar acting as an isolating layer on the original material.)

CONCLUSION

There are two broadly useful concepts utilized for this treatment: 1) the use of a resin not only as a consolidant for deteriorated wood, but also as a retreatable isolating barrier that can nonetheless be adhered to by a thermoplastic replacement material, thus contributing to the reversibility of the thermosetting resin; 2) the use of existing elements as patterns for the moldmaking, and the subsequent in place casting of replacement elements. As a conservator who is sensitive to time constraints on custom treatments, it is heartening to point out that this treatment was not only strong, retreatable, respectful of original material, and visually successful, but was also straightforward and not at all time consuming relative to other, perhaps less respectful approaches.

NOTES

[1]Nancy Goyne Evans, "The Tracy Chairmakers Identified," Connecticut Antiquarian 33:2 (1981): 14-21.

[2]Charles Santore, The Windsor Style in America (Philadelphia: Running Press, 1981), pp. 152-3.

[3]sperry Rand, tungsten filament; 38 kv, 2.8 ma, 1.5 mins. at 30", Kodak Industrex AA film.

[4]Micro. I.D. by Harry Alden, wood anatomist, Winterthur Museum.

Crest rail:	white oak group (Quercus sp.)
Right medial stretcher:	white oak group (Quercus sp.)
Spindle:	white oak group (Quercus sp.)
Prop. left front leg:	soft maple group (Acer sp.)
Proper left arm post:	soft maple group (Acer sp.)
Arm rail:	soft maple group (Acer sp.)
Seat:	chestnut (Castanea sp.)

[5]"The Luminary," The Journal of the Museum of Early Southern Decorative Arts 8:1 (1987): 1-5.

[6]Arno P. Schniewind and Dale P. Kronkright, "Strength Evaluation of Deteriorated Wood with Consolidants," London: IIC, 1984, Adhesives and Consolidants, Preprints of the Contributions to the Paris Congress, 1984, pp. 146-150.

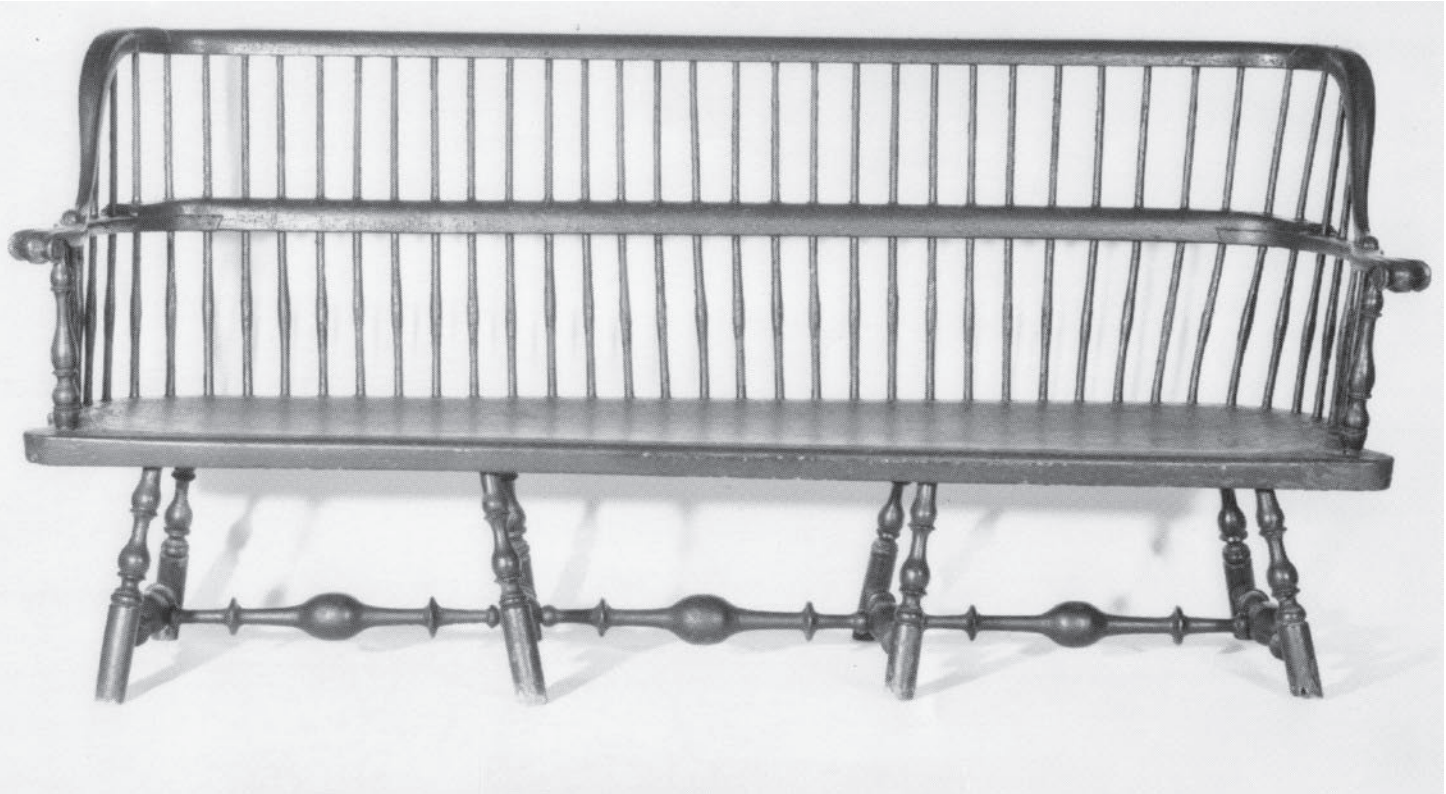
Butvar 98 purchased from Conservation Materials Ltd., Sparks, NV.

[7]Dow Corning 3110 RTV, #1 Catalyst, ibid.

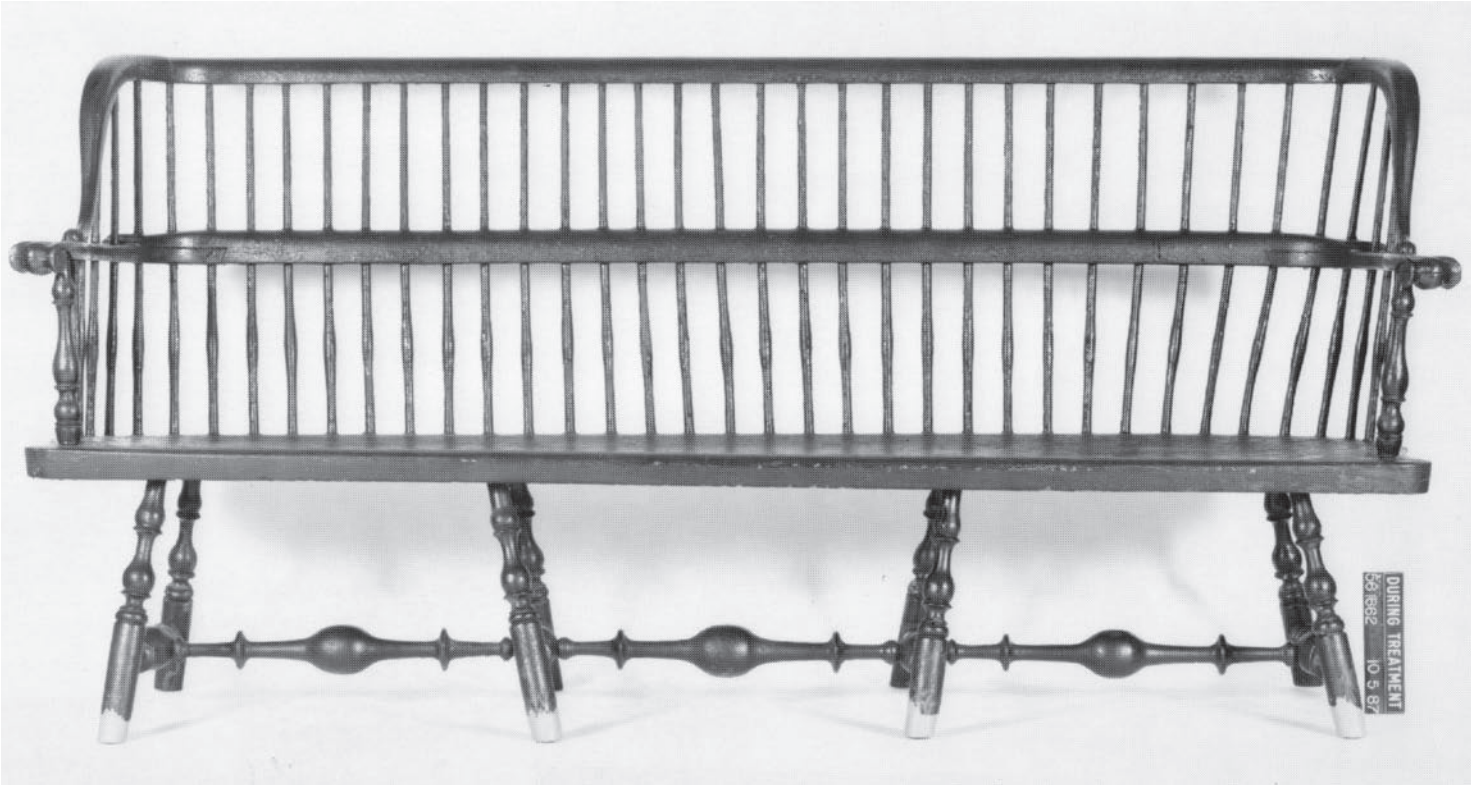
[8]TO level a newly made Windsor chair, it is placed on a flat surface and shimmed to the proper rake front to back, and leveled side to side. The amount that the chair must then be lowered to affect the desired

seat height is set on a pair of dividers or compass. Holding the tool plumb and running one leg on the flat surface, scribe with the other a line around each foot. Cutting to this line gives not only the proper seat height, but also the exact bevel for solid contact with the floor. (The author uses a table saw bed to carry this operation out.)

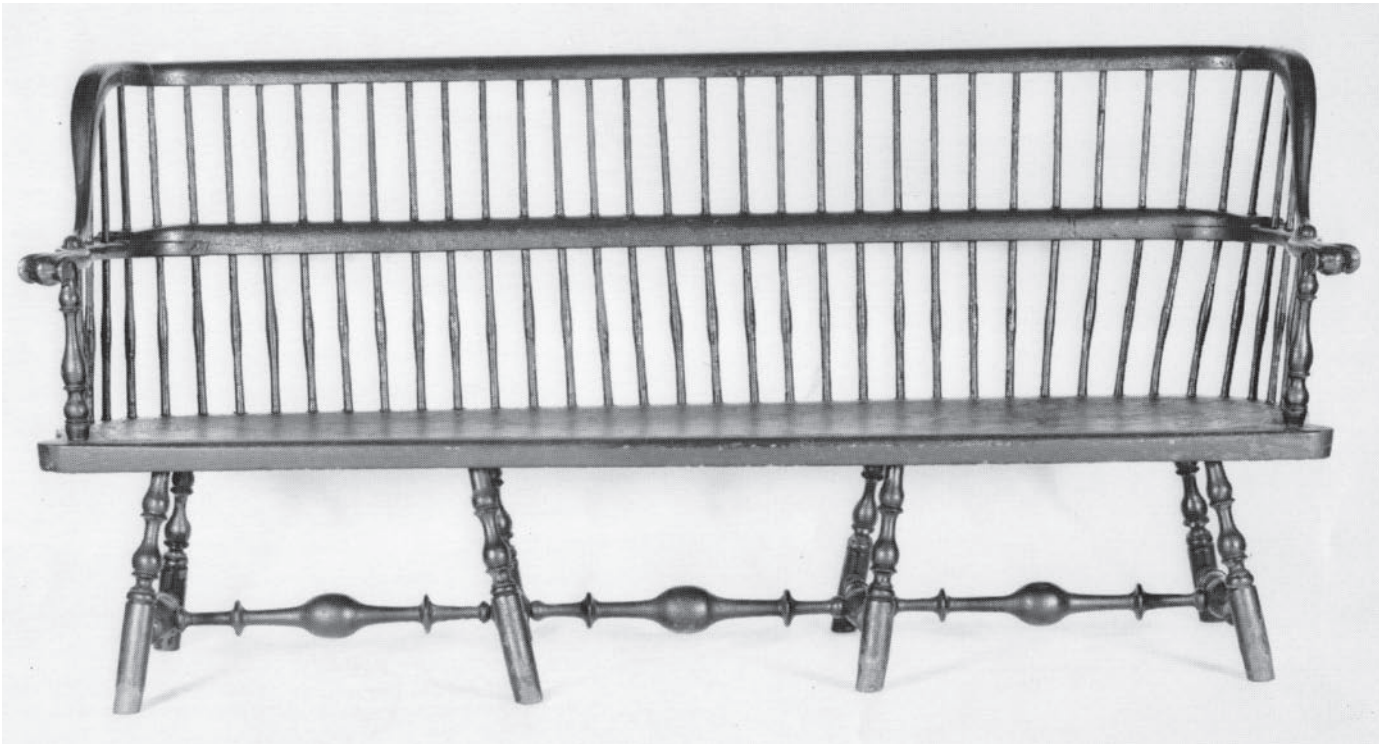
[9]REN RP-306 casting material; Formulated Systems Group, East Lansing, MI, Div. of Ciba Geigy Corp.



Before Treatment
Photo courtesy of the Henry Francis du Pont Winterthur Museum



During Treatment
Photo courtesy of the Henry Francis du Pont Winterthur Museum



After Treatment
Photo courtesy of the Henry Francis du Pont Winterthur Museum

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