TREATMENT OF AN EARLY 20TH CENTURY ROAD COACH: ALFRED G. VANDERBILT'S "VENTURE"

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Abstract: A road coach built in 1903 by the Brewster Company of New for Alfred G. Vanderbilt was in excellent structural condition but needed cosmetic work. Ingrained dirt and grime and deteriorated surface coatings were judged to be visually unsatisfactory for exhibition and occasional driving. The treatment involved cleaning, reduction of the transparent surface coating, inpainting where necessary, coating with acrylic spirit varnishes, and waxing. Conservation issues involving the metal, leather, and textile components were also addressed.

INTRODUCTION

The Venture is a coach, or, as the original bill of sale has it, a "heavy park drag - made road style"[1], built for Alfred G. Vanderbilt by the Brewster Company of New York in 1903. Perhaps originally intended for social use, the Venture was repainted and put into service as a passenger coach in the New York City area and then in England between London and Brighton. It is a large vehicle, weighing approximately 2812 pounds, and is black with cream colored doors and quarter panels, and maroon or claret bottom edge and undercarriage. The coach has been in the Breakers' Stable for many years as the flagship of the Preservation Society of Newport County's carriage collection.

The importance of the carriage is twofold. First, it is a direct link to the life of Alfred G. Vanderbilt, a very famous driver in his day, a man whose celebrity in that regard continued until his tragic death aboard the Lusitania in 1915. The Society has numerous accounts, passenger lists, and photos of Vanderbilt driving the Venture. This element alone was reason enough for the Society to expend especial energy upon its preservation and such restoration as it required. Secondly, the Venture is one of only a handful of road coaches of this type in what might be considered to be period condition[2], and it is critical to preserve these few remaining documents of an important era in our transportation history.

The committee overseeing the project was initially interested in a restoration, complete with sandblasting the undercarriage. After some discussion, however, the final decision was made to conserve the vehicle by preserving historic paints and surfaces, stabilizing deteriorating elements, and restoring only areas of loss. The conservation project was approved with the added provision that the vehicle be able to be occasionally driven. This decision added safety concerns which otherwise would not have needed to be addressed.

PREPARATION

To effect the entire project, the coach body was removed from the undercarriage and set on stands on a rolling platform. The wheels were removed from the undercarriage and a fixture was built to which two wheels at a time could be mounted for treatment. The undercarriage was separated into two parts, each of which was mounted on a rolling platform to make surfaces more accessible. A multitude of small and large metal and leather parts were removed from the body and undercarriage. These were cataloged, tagged, and photographed, and stored on racks to await treatment.

STRUCTURAL EXAMINATION

A preliminary safety inspection of the coach by Richard Nicoll, Manager of Coaches at Colonial Williamsburg, showed that it was in excellent structural condition. There were no severely damaged

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areas or breaks, merely abrasion and such wear, corrosion, and surface loss as might normally be associated with a horse-drawn passenger vehicle that is 90 years old. He was able to certify the vehicle's roadworthiness if carefully driven "at a medium working trot pace", further advising that a new pole and lead bars be made for use while driving[3]. He also recommended that, while the wheels will withstand occasional, careful use for a limited number of years, new ones should be made for actual use. This would address a safety issue as well as preserve the original wheels. These would then be reserved for use when the coach is on display. He similarly suggested that certain leather accessories which were severely weakened be replaced. Once the issue of how the eventual driving of the coach would influence what had to be done to it, the treatment issues could be addressed.

CONDITION AND TREATMENT OF NON-STRUCTURAL ELEMENTS

An object such as this is an aggregate of materials. This one consists of painted, polished, or plated metals, painted and varnished wood, tanned and patent leather, linoleum, oilcloth, caning, and textiles. There are a multitude of problems in non-structural areas that are inherent in these materials, such as yellowing and degradation of varnishes, cracking paints, deteriorating coated leather surfaces, corroding metal, and deteriorating textiles.

Each problematic materia1 and situation was examined, with the following results, recommendations, and/or treatment:

TEXTILES

Condition and Treatment

The textile on the exterior seat cushions is extremely degraded. The surfaces are stained, torn, abraded, dry, and brittle. A similar or reproduction fabric is being considered for use on new cushions for use while driving. The originals will be used when the vehicle is on exhibition. The cloth covering on the window frames was badly moth-eaten, and it was decided that replacement of this covering was necessary.

LEATHER AND LEATHER-LIKE MATERIALS

Condition and Treatment

A local objects conservator, Alexandra O'Donnell, was consulted to more closely examine the leather and leather-like fitments and a report was submitted to us. In essence, the leathers are substantially degraded. The tanned leather luggage nets and miscellaneous safety straps are deeply cracked, brittle, and weak. Because of the safety concerns mentioned above, these were reproduced for use when the coach is active[4]. Again, it is possible for the originals to be remounted when the coach is on exhibition. They will be cleaned with Lexol brand leather cleaner and waxed. The patent or enameled leather elements have a pronounced alligatored surface which is typical behavior for this material as it ages[5]. They were simply cleaned with Lexol and waxed with black beeswax polish. Linoleum decking was cleaned with Lexol and waxed, as were some of the leather accessories. oilcloth covered seat cushions were cleaned with Lexol and given a thin coat of Soluvar Gloss acrylic varnish diluted fifty percent with mineral spirits.

METALWORK

Condition and Treatment

The approximately 75 pieces of ironwork located variously on the undercarriage and attached to the surface of the vehicle had chipped and abraded paint, as well as varying degrees of pitting and light corrosion. These were cleaned with nylon brushes by brushing with mineral spirits to which 10% Vulpex

had been added, rinsed with mineral spirits then distilled water. After drying, they were coated with B-72, filled where necessary with Liquitex Acrylic Modeling Paste, and inpainted with either black shellac or gouache. Each piece was then recoated with B-72, rubbed down with Mohawk Deluxing Compound, then finally waxed with Behlen's Brown Blue Label Paste Wax.

COATINGS ON WOOD

Condition

The committee agreed that the most objectionable aspect of the coach was its aesthetic presentation, especially the coach body. The paints there were deeply cracked, as was the yellowed overvarnish. These features, in combination with ingrained dirt and grime, created, to them, a very disruptive surface.

Examination of the surface under ultraviolet light showed a greenish fluorescence, whose uniformity indicated that the existing painted and varnished surface had not been altered to any great degree since its last treatment. Protected areas, such as behind metal plates, fluoresced a startling yellow-green.

Microscopic examination of paint layers revealed the character of the layers, such as thickness and composition. Evident were degraded surface varnishes with ingrained dirt, very thin paints, glazes, what may be paint/varnish mixtures, plus coarse textured primer coats. It was interesting to note that, whereas the interior of the coach shows a multi-layer history of repainting and varnishing, the exterior showed only one paint package. The coach was undoubtedly repainted many times as a maintenance procedure for a working vehicle. The literature indicates that old paint was frequently burned off before repainting[6]. This would be easier on the outside of the coach, and perhaps unnecessary on the inside. This is probably the case here.

Solvent testing revealed that the original surface varnish, where it was protected, from air and light, was fully soluble in surprisingly mild solvents, such as xylene and toluene, without damage to the underpaint. The oxidized surface varnish, which is all of the exposed surface, only responded to much stronger solvents, ones which would also readily attack the underpaints. This varnish had more of the characteristics of a spirit varnish based on dammar or mastic than of the drying oil varnishes than the literature described as coach varnishes.[7]

Given the importance of the visual appeal of the surface, and a desire to preserve what we could of the original surface, it was decided to remove or reduce the crazed surface varnish in order to allow the painted surface to show through more clearly. The results of solvent testing revealed the extreme sensitivity of the underpaints, so solvent based removal of the surface varnish was eliminated as a treatment. It was decided that treatment with detergents and solvent/detergent emulsions followed by abrasion would result in a reduction of the thickness of the varnish. The surface thus obtained would then be coated with an acrylic spirit varnish to brighten it.

Treatment

On the undercarriage, wheels, and body (except for white panels), the following procedure was used: a detergent and mineral spirits emulsion[8] was cautiously applied by rubbing with a fine nylon pad, with removal of the residue using clean paper towels. The changing color of the residue was indicative of the depth of cleaning: beginning with a dirty blackish color, to brown, and finally to hints of maroon or

black, depending on the area being cleaned. It was desirable to leave as much varnish on as possible while achieving an improved surface, so as the residue began to turn brown, treatment was stopped. The surface was then wiped with mineral spirits then water. Some surfaces, on the coach body especially, were then lightly sanded with 320 Dry-lube sandpaper. All surfaces were then "spirited off" with a cloth dampened with alcohol. This tended to amalgamate the surface a little, bring up a shine, as well as eliminate blanching.

Then, for the undercarriage and wheels, a coat of B-72 spirit varnish[9] was applied with an Apollo HPLV spray gun. Next, small losses were filled with interior/exterior spackle or Liquitex Acrylic Modeling Paste then inpainted with Liquitex Arcylic artists colors. After inpainting, several more coats of B-72 were sprayed on. When dry, this surface was waxed first with Mohawk Deluxing Compound, then with Behlen's Brown Wax.

The white paint on the doors, lower quarter panels, and boot door panel did not respond well to the emulsion cleaning. It was very slow and quite uneven. Apparently carriage painters realized that the white color of their paint would be yellowed by the application and subsequent deterioration of varnish, so they mixed varnish and paint together to form an opaque intermediate kind of coating, which would not discolor so quickly[10]. This may be the case here. In any event, one part household ammonia in three parts water was used to clean this surface. The result was still somewhat uneven, so, after applying a coat of Soluvar Gloss, we used a very thin wash of gouache colors to make these surfaces more uniform in appearance. The entire coach body, in fact, was coated with Soluvar as a final presentation surface. Originally B-72 was going to be used, but areas of the body were discovered which were sensitive to toluene, so it was decided to use the Soluvar instead. Best results were obtained by spraying the material from a distance and achieving a somewhat matte surface rather than the fairly high gloss which was evident in protected areas. The relative appearance is quite good and this method tends to hide surface irregularities better.

FINAL ASSEMBLY

Once treatment of the body, undercarriage, and metal parts had been accomplished, the vehicle could be reassembled. The two parts of the undercarriage were bolted together and the wheels mounted on it. Then, in a somewhat hair-raising operation, the body was suspended in the air with a sling at one end and a beam and cribbing at the other, while the rolling platform and jacks were removed. The undercarriage was then rolled into place, and the jacks reinstalled. These allowed us to carefully and with complete control lower the body into position over the undercarriage so that the springs holding the body to the undercarriage could be attached. The jacks were then removed.

Remaining metal parts were installed, minor touch-ups undertaken, and, finally, the original and reproduction leather elements were installed. The replacement cushions with appropriate fabric are being fabricated. The spare wheels have been delayed due to budgetary constraints.

CONCLUSION

This was a challenging project by virtue of the sheer size of the coach, the variety of the materials, and especially the unexpected nature of the surface varnish. Perhaps further examination of the coating or research in the literature would uncover whether it is an anomaly, or whether it may have been intended to be easily soluble so that its relatively frequent removal and revarnishing would be easier. That would be a novel idea!

As it stands after treatment, the coach, while not appearing new, is much improved from a visual standpoint, and has a general look of use without abuse. Much of the long-term success of the treatment will depend on such factors as the skill of the driver, the condition of the road, the degree of reverence for the vehicle itself by its users, and even the weather. The nature of the materials used for the conservation work will, to some degree, limit the way the vehicle can be used and the environment to which it can be exposed.

Because this vehicle bridges a gap between a static one in a real museum and one regularly used, its treatment will hopefully educate those who are drivers and collectors of wheeled vehicles, and enlighten them as to the possibility that conservation of historic materials on vehicles in actual use can, in some cases, be achieved.

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ENDNOTES

1. From copy of original bill of sale, obtained from the New York Public Library.

2. Communication with Merri Ferrell, Curator, Carriage Collection, The Museums at Stony Brook, Stony Brook, Long Island, N.Y.

3. A new pole was made by a local woodworker of three pieces of ash laminated together with West System epoxy.

   New lead bars were from:

   Abner S. Lapp
   Lapp's Coach Shop
   3572 W. Newport Road Box 38
   Intercourse, PA 17534

4. Alternate leather fitments from:

   Greg Hunt
   Hunt's Harness
   W. 296 North 9540 Riverview Lane
   Colgate, WI 53017

5. Seeley, Nigel and Amanda Sutherland. "Enamelled, Japanned and Patent Carriage Leathers," in *Conservation of Leather in Transport Collections: Papers Given at a UKIC Conference - Restoration '91*, London, October 1991, by the United Kingdom Institute for Conservation. London: UKIC, pp. 24-27.

6. Isles, George L. *The Restoration of Carriages*. London: J.A. Allen, 1989, p.49.

7. Recipes for some of these varnishes are referred to in several sources which are contemporary with the period in question. For example:

Finishing body varnish:

Gum Kauri	100 lbs
Prepared oil	20 gals
Manganese resinate	4 lbs
Turpentine	45 gal

Hard carriage varnish:

Pontianac resin	100 lbs
Baltic linseed oil	25 gal
Litharge	2 lbs
Red lead	2 lbs
Manganese dioxide	1/2 lbs
Turpentine	50 gal

both from: Bearn, J.G. *The Chemistry of Paints. Varnishes. and Piqments*. New York: Van Nostrand Co., 1924.

Also:

Standard carriage varnish

Oil	2 gal
Red lead	15 lbs
Litharge	5 lbs
Manganese dioxide	1 lb
Shellac	10 lbs

Pale carriage varnish

Oil	2 gal
Litharge	4 lbs
Shellac	4 lbs
Liquid Mn drier	-

both from: Sabin, A.H. *The Industrial and Artistic Technology of Paint and Varnish*. New York: Wiley and Sons, 1927.

8. Detergent/mineral spirits emulsion:

25ml Micro Liquid Laboratory Cleaner
25ml mineral spirits
50ml distilled water (variable)

9. Recipe for 15% B-72 to brush or spray:

    30ml B-72 at 50% in toluene
    60ml toluene
    10ml diethylbenzene, to slow evaporation

10. Communication with Timothy H. Ragle, Carriage restorer, 69 Green St., Apt. 2, Brattleboro, VT 05301

MATERIALS LIST

1. Lexol Ph-Balanced Leather Cleaner, from local tack shops:

    Lexol Division
    Summit Industries, Inc.
    Atlanta, GA 30301

    Contains: glycerine, non-ionic soap, alcohol, water.

2. Micro Liquid Laboratory Cleaner, Ph approximately 9.0, from:

    International Products Corporation
    New York Ave. and Fuld St., Box 118
    Trenton, N.J. 08601

    Contains (from the MSDS):

    Cations: Sodium, Ammonium (less than 1%), Triethylammonium
    Anions: Ethylenediamine tetraacetate, Linear alkyl aryl sulfonates
    Nonionics: Polyethoxynonylphenol

3. Nylon "Scotch-Brite Metal Finishing Pad", by 3-M, from your local hardware store.

4. UGL 222 Interior/Exterior Spackling Paste, from local hardware stores.

    United Gilsonite Laboratories
    Scranton, PA 18501

5. Soluvar acrylic spirit varnish, Liquitex Acrylic Artists Colors, and Liquitex Acrylic Modeling Paste from local art stores. All by:

    Binney and Smith, Inc.
    Easton, PA 18044

6. Mohawk Deluxing Compound, silicone-free wax containing fine abrasives from:

    Mohawk Finishing Products, Inc.

Rt. 30, Perth Road.
Amsterdam, N.Y. 12010

7. Behlen's Brown Wax, silicone-free pigmented wax from:

Woodfinishing Supply Co., Inc.
100 Throop St.
Palmyra, N.Y. 14522