UCL

# INSTITUTE OF ARCHAEOLOGY
## CONSERVATION FOR ARCHAEOLOGY & MUSEUMS

# CONSERVATION TREATMENT RECORD

## 1.1 TREATMENT CONTEXT

| | |
|---|---|
| **Donor name: Institute of Archaeology** | **Date submitted: 29/01/2015** |
| Owner/Accession number: N/A | Date returned: |

*Brief account of why this object needed conservation:* The top rail of the Windsor chair had broken off at the dowels and warped significantly. The surface of the chair was scratched and very dirty. The object needed to be conserved in order to represent its potential history as V. Gordon Childe's chair.

*Brief account of the projected use and/or context of the object:* The object will be used as a functioning chair in an office at the Institute of Archaeology.

## 1.2 INFO FOR OBJECT ID

| **Student name: Madeline Hagerman** | **Object name: Chair** |
|---|---|
| Lab number: **9355** | Brief descriptor: Sack-backed Windsor Chair |
| Date allocated: 29/01/2015 | Weight: N/A |
| Date completed: **09/06/2015** | Diagnostic dimensions: 49 x 55 x 102 cm |



## 2. OBJECT DESCRIPTION

Sack-backed Windsor chair purported to have belonged to V. Gordon Childe. Classified as a "stick" chair by its round tenens fitted into round sockets.

## 3.1 PRE-TREATMENT SIGNIFICANCE STATEMENT

Windsor chairs were first manufactured in the 1700s across Britain (Rivers & Umney 2003). Originally they may have been used for outdoor seating, but they soon grew in popularity and were made in diverse styles and shapes (Rivers & Umney 2003; see Figure 1).


*Figure 1 Different types of Windsor chairs. Sackback (left), Comb back (middle), Comb-back with writing desk (right). Images from Wikipedia.*

The top rail is probably made of a flexible wood like birch. The rail was steam/heat-bent to form a U-shape. The seat is probably constructed from a split-resistant wood such as elm, commonly used in English Windsor chairs. Pine and poplar were popular choices for seats American Windsor chairs. The legs are probably maple or another hard, ring-porous wood. The spindles are probably made of ash or another ring porous wood such as oak or hickory. The "stick" joins were created by drilling holes into the top rail and seat. Lathe-turned dowels were then fit into the drilled holes (Dillon 2015).

Evidence of animal glue remains on the spindles. This could have been applied as part of the manufacturing process. It could also be the result of a historic repair. Other historic repairs using PVA (polyvinyl acetate), polystyrene, and iron nails/pins are visible throughout the back of the chair. Traditionally these chairs were made without the use of glues (Dillon 2015).

V. Gordon Childe was the director of the Institute of Archaeology from 1946 to 1956 (BBC 2015). Born in Australia, he was a professor of European Prehistory at the Institute and the University of Edinburgh. He is most famous for his theories about prehistoric cultural evolution, especially the agricultural revolution (a term he coined). He also conducted excavations at Skara Brae, the Scottish Neolithic site (Encyclopedia Britannica 2015).

*Figure 2 V. Gordon Childe (1892-1957).*

The only real evidence that the chair belonged to the V. Gordon Childe comes from a label attached to the chair. The label reads, "We think this was Gordon Childe's chair from the Institute of Archaeology, Jean."

Childe was perhaps one of the most well-known archaeologists at the Institute of Archaeology. If the chair indeed belonged to him, it holds great historical and educational significance for the Institute and archaeology in general. It also represents a restoration challenge as the current owner hopes to use it as a functional office chair.

## 3.2 PRE-TREATMENT CONDITION ASSESSMENT

The top rail has broken off at the dowels from the middle rail. This damage split and broke the dowels and has lead to cracking at either end of the top rail (Table 1, a, c, e). Because it was detached from the rest of the chair approximately a year ago, it has warped significantly. Rather than springing outward, it has curled inward (Figure 3). This could perhaps be due to the low relative humidity in the lab. Even though it no longer fits on the middle rail, it still fits onto the spindles.

The remnants of animal glue are visible on the joint edges of the spindles and inside the top rail where the two pieces fit together (Table 1, a, c, e).

Use wear is evident on the arm rails and seat of the chair. The shellac has been abraded in these areas leaving light coloured wood.

There is a crack on the back right side of the arm rail. This goes all the way through to the other side and moves when pressure is applied to the right arm (Table 1, b).

*Figure 3. Chair before treatment.*

Historic repairs are evident using iron pins, wedges of wood, PVA (polyvinyl acetate), polystyrene fills (Table 1, b, d, f).

**Table 1. Images of areas of damage, historic repairs, before treatment**

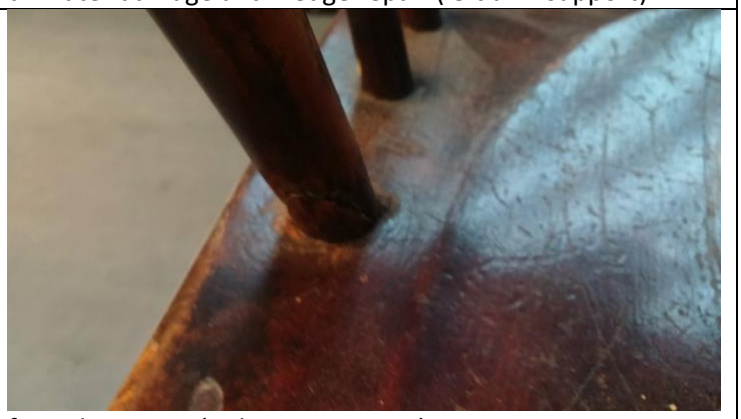
a. Dirty/dusty surface, broken off dowels on left arm rail

b. Historic repair with PVA (red), new, structural crack (blue), right arm rail

c. Top rail (right), broken half of dowel still embedded

d. Water damage and wedge repair (left arm support)

e. Dirty, stained surface, broken off dowels/biscuit join on right arm rail



f. Wedge repair (right arm support)

Table 1. Images of areas of damage, historic repairs, before treatment.

## 3.3 STATEMENT OF CONSERVATION

The owner of the object wants the function of the chair to be restored. As such, quite an interventive treatment is required. If it belonged to V. Gordon Childe, the chair is an important object to the history of the Institute of Archaeology. There is no space to display it, so restoring the chair to its function will help it to be used as it was originally intended.

## 4.1 CLEANING

-The entire surface of the chair was cleaned using large cotton swabs wet slightly with deionised water. This removed residual animal glue and dark brown particulates embedded in a previous wax coating
-The grooves in the legs were filled with old wax. This was removed using a bamboo skewer and moist cotton swabs

-When the right arm was taken down, the joins were cleaned using cotton poultices of deionised water to remove all of the animal glue and packing material
-A scalpel and plastic tweezers were used to remove paper or sawdust packing from the join
-After the top rail was re-joined, animal glue that leaked out of the joins was cleaned with moist tissues and cotton swabs

## 4.2 STABILISATION

-After all treatment was completed, a coating of 50:50 beeswax pellets in white spirit was applied (recipe by Lewis 2010).
-The beeswax was melted using a hot plate. When it was melted but had cooled, an equal amount of white spirit was added to the beeswax in the fume cupboard. It was allowed to cool slightly to prevent highly flammable white spirit from catching fire.
-The wax coating was applied to the entire surface of the chair with a cloth. It was then polished to create an even coating.

## 4.3 RECONSTRUCTION/REPAIR

Reconstruction was completed in two phases. Phase 1: cutting the dowels to size and shape. Phase 2: reconstructing and refitting the chair. The first phase took place at UCL's Institute of Making. The decision was made to take the chair there in order to take advantage of both expertise of the technicians and the power tools and large workspace that the Institute of Making provides. The second phase of reconstruction took place in the more controlled, "conservation grade" space of the Institute of Archaeology Conservation Laboratory.

**Collaboration with the Institute of Making**

-Two ash dowels cut to size using a band saw
-Maximum diameter was 0.78cm
-Shaped using a belt sander

-Before (left) and after (right) filling the broken dowel join on the arm rail
-The broken edges were carved down using an electric carving tool
-U-Pol Easy One (polystyrene wood filler) was used to fill the empty spaces
-Holes were then drilled at an angle using a hand drill fitted with a 0.80cm brad point drill bit
-The process was repeated on the top rail
-At the end of the day, the top rail was able to be put onto the chair for the first time in months

**Institute of Archaeology, Conservation Laboratory**

Before reconstruction, Phillip Kevin, an organics conservator from the British Museum, came to look at the chair and offer advice on how to proceed. He recommended that the right arm support be taken down in order to create a stronger join (red, magnified image Figure 4).

This was completed using poultices of deionised water. A nail was removed from the back of the support using small chisels and pliers. This caused some damage to the wood around the nail, but the join was successfully taken down.

Unfortunately it was discovered that the top of the right arm support was a polystyrene fill covering a metal screw (Figure 4, red box; Figure 5, left, middle). This was removed.

*Figure 4. Image of arm support before treatment. Polystyrene fill (red), poor join (magnified circle).*

The wooden parts of the arm support were reattached with the original screw. Araldite 2020 (two-part cross-linking epoxy resin) was added to the wedge and arm rail (Figure 5, red boxes).

*Figure 5. Polystyrene fill (left, middle). Chair after right arm support was removed (right).*

The top rail was fitted into the dowels on the arm rail and spindles on the back of the chair and adhered using Kremer Fish Glue (organic adhesive). Fish glue was injected into the crack on the right side of the arm rail using a glass pipet. This was clamped in place (Figure 6). Straps were used to keep the top rail in place while the glue and epoxy set (Figure 6).

## 4.4 LOSS COMPENSATION

-Areas of loss and gaps in the joint areas of the chair were filled with Araldite 2020
-The epoxy was bulked with silicone microballoons (bulking agent) to achieve a "toothpaste-like" consistency
-Raw sienna, burnt sienna, and Van Dyke dry pigments were added to colour the mixture
-A small spatula and wax carving tools were used to apply and shape the fills

-Fill material was applied to (Figure 7):
  a. the area where the polystyrene fill had been
  b. gaps around the historic wedge repair and nail damage
  c. gap between the top rail and the arm rail
  d. gap between the historic wedge repair
-The fills were then painted to match the rest of the wood and shellac using acrylic paint (burnt sienna, raw sienna, burnt umber, raw umber)
-Porcelain restoration glaze (acrylic) was applied over the fills to make them blend in with the glossiness of the surrounding wood
-The wax coating applied to the rest of the chair was then applied over the fill to allow it to blend in (Figure 6).

*Figure 6. Large fill after inpainting/waxing.*

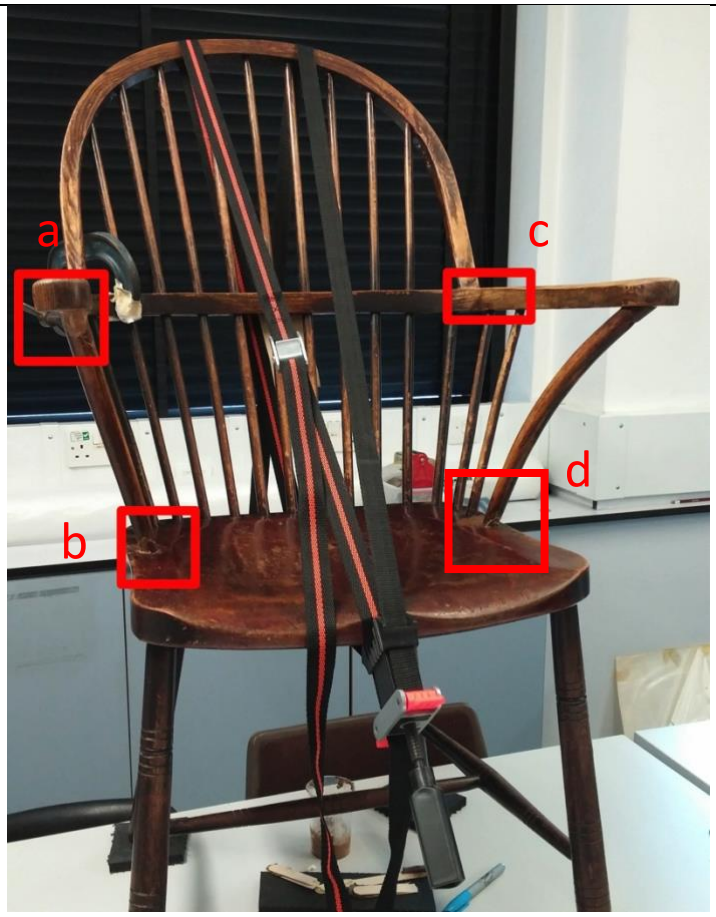



*Figure 7. Set up to allow the fish glue and epoxy resin fills to cure. Two straps kept the top rail under tension. A U-clamp kept the crack on the arm rail together to allow the fish glue to set.*

## 4.5 PACKAGING

No packaging was created for the chair due to its size and future use in an office setting.

## 5. TREATMENT JUSTIFICATIONS

Because the chair potentially belonged to V. Gordon Childe, it was not over-cleaned or re-shellacked. This would have removed evidence of use, especially on the seat and arms. Covering the surface with beeswax has preserved the wear marks, but will protect the surface from dust and water.

The chair will be used as an actual, functional chair, so drilling out the dowels and replacing them was necessary. The potential weight and stress that the chair will be subjected to informed the use of Araldite 2020 and polystyrene—both of which are not commonlu used in the conservation of wooden furniture. The top rail did not align with the middle rail so simple reattachment would be inappropriate to its intended use and not add to the aesthetics of the piece.

## 6.1 POST-TREATMENT SIGNIFICANCE ALTERATIONS

## 6.2 POST-TREATMENT CONDITION ALTERATIONS

## 7. STUDENT EVALUATION

## 8. FUTURE CARE

Though the chair is strong enough to be sat in, it should not be used every day to prevent breakage. It can be dusted with a dry cloth. If any signs of stress or strain are noted, it should be checked in the conservation lab.

## 9. REFERENCES AND SOURCES

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