

Handmade Couched Laminate Boards: a historic process adapted for treatment

INTRODUCTION

This research was developed as part of my Master's project at the Garman Art Conservation Department at SUNY Buffalo State, which focused on wooden and paper board production and treatment. This research has been carried out under the supervision of Anne Hillam and Theresa J. Smith of the Garman Art Conservation Department; and continued while at my graduate internship at the Weissman Preservation Center, under the supervision of Katherine Beaty and Alan Puglia.

I developed a process for making couched laminate boards for fills on book boards. As defined by the Language of Bindings, "Couched laminates were made by couching sheets of paper one on top of the other straight from the papermaker's vat, relying on the hydrogen bonds formed between the sheets to hold them together, reinforced by heavy pressing after couching." Another type of laminate board is an adhesive laminate, made of formed sheets of paper and adhesive. Couched laminates are often softer boards, especially with aging and handling.

The impetus for this research was this softer quality of couched laminate boards. I found that common board fill techniques such as inserting adhesive laminates of materials like blotter and cotton linters created too stiff a fill for the couched laminate boards I was treating. Although adhesive laminate fills are appropriate for some treatments, I wanted to create couched laminate boards for fill material. I believe that it may not always be necessary to create a couched laminate board fill for board losses, even on couched laminate boards, but I would argue that it is useful to have more options in selecting a fill material.

From my understanding of papermaking and experience with making couched laminate boards, I believe that the more couches produce a softer board. This is because with a sheet of paper or mould made board, there are relatively consistent hydrogen bonds between the cellulose fibers throughout. When you pull multiple sheets and couch them to form a board, there are less hydrogen bonds connecting cellulose fibers of neighboring sheets.

Thanks to the research of my professor Anne Hillam, I started with Joseph Jerome Lefrancais de Lalande's detailed essay, "Art du Cartonier", published 1762 in *Description des Arts et Métiers*. Lalande describes the fiber processing and the formation of boards, used not just by book binders, but also for playing cards, boxmaking, and milliners and cobblers. Lelande describes how for couched laminate boards, wet sheets were couched directly on each other before being pressed. This essay was incredibly useful for understanding the historic production of book boards. Other texts on boardmaking were reviewed but are less relevant to making handmade couched laminate boards, so not discussed here.

I also referenced the boardmaking diagram from Loeber's *Paper mould and mouldmaker* (1982) to make my own boardmaking form. Although like a papermaking form in many ways, it has adaptations that make it better for boardmaking. This form has a deckle with higher walls, so it can hold more pulp and pull thicker sheets, as well as a second mould, inserted into the deckle to remove excess water.

PROCESS

I used a deckle and double mould which I had made while at Buffalo, and which I find key to this process. Scraps of Western handmade paper were used to make the pulp. I used techniques from leaf casting and cast paper fills to estimate the amount of pulp per sheet. Rather than pull sheets from the vat, I made extended walls for my deckle with coroplast, which allowed me to pour a specific amount of pulp slurry into the deckle, and have enough volume that I could shake the form for good sheet formation.



Figure 1: Boardmaking form with primary mould (left) deckle (center) and secondary mould (right); and form fitted with extend deckle made with coroplast.

After letting some water drain, I inserted the second mould to press out more water, which reduced the thickness of the sheet. After the second mould and deckle were removed, the sheet was couched on cloth or felts. Following sheets were couched in a stack to the desired thickness. The stack was put in the press to remove water, and then dried to form the board.



Figure 2 Before and after the second mould is inserted



Figure 3 Sheet before and after the second mould is inserted, which reduces the thickness of the sheet

Despite the consistency in my sheet thickness, I am still determining how to maintain consistent board thickness. I found that the second mould is important in consistent sheet thickness because it removes water from the sheet while maintaining the fixed size of the deckle; but I found that many factors contributed to the final thickness of the board, besides the number of couches and concentration of pulp. These include the amount of time the board sits in a post, which allows water to slowly be removed from the board—if the board was nipped in the press without sufficient time in the post, it will be squished and loose thickness by increasing in length and width. The pressure of the press also effects the thickness and stiffness of the board. Time and patience to allow slow water removal are important.

For treatment, I made several boards, and selected the one that was the closest thickness and stiffness to the original board. I shaped the fill with an awl, and attached it with tabs of Japanese tissue and wheat starch paste adhered between the delaminating layers of the original board.

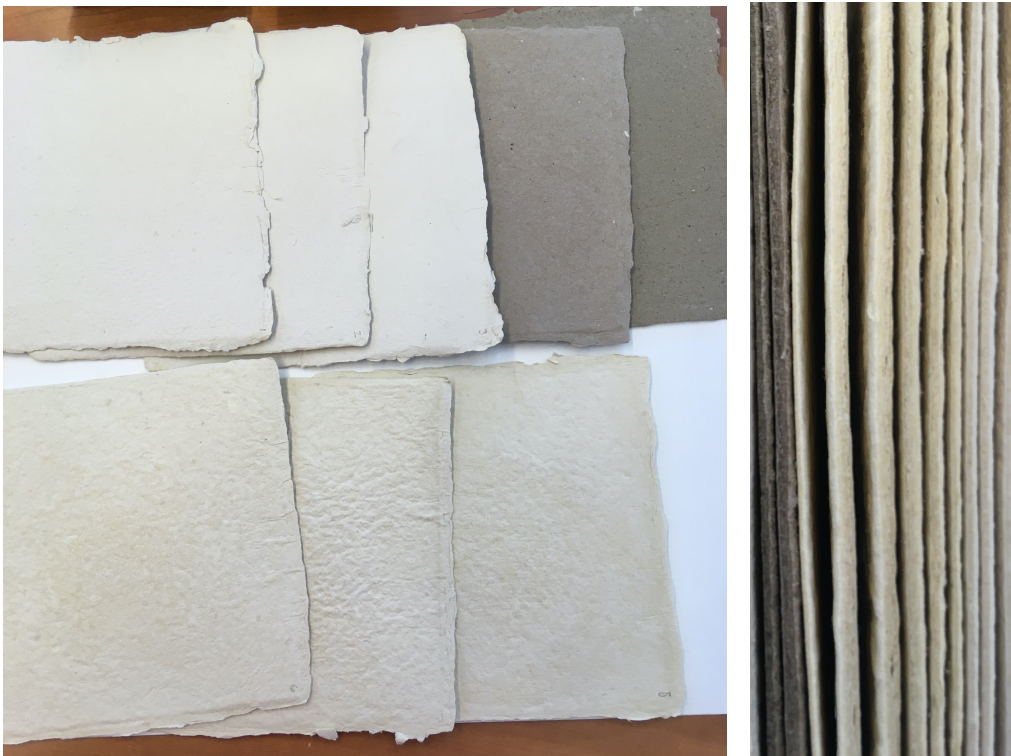


Figure 4 Handmade couched laminate boards, overall and cut edges

CONCLUSIONS

Handmade couched laminate boards are useful for fills in softer boards. I recommend making a number of boards of different thicknesses and stiffnesses to have on hand and use for treatment.

Using a form with two moulds is very important. It allows water to be removed from the sheet, but keeps the length and width of the sheet—the sheet is compressed but the dimensions are fixed by the deckle. Especially for papermaking in a conservation lab setting, it is very useful to remove as much water as possible in a controlled way.

Pending more research, I would recommend making a sampler of boards to have, with a range of sheet thicknesses, number of couches, and drying/pressing techniques. The number of couches and use of a press will affect the stiffness of the board, and this is an area I plan to research more.

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