

HAND PAPERMAKING

VOLUME 27, NUMBER 1 • SUMMER 2012

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FRONT COVER: Mould maker's loom by Timothy Moore. It stands just under 6 feet tall. In this view, it is freestanding, set up with brackets. To save space, the loom can be fastened to a wall. This loom can create a laid facing or a backing for a paper mould measuring up to 30 x 40 inches. A small laid facing is in progress; a few inches of laid wires have been twisted into place. The operator stands in front of the right side of the loom, resting his/her foot on the foot treadle to raise and lower the beam and rod from which the facing hangs in order to add new laid wires one at a time. Photo by Pati Scobey, courtesy of the author. BACK COVER: Selection of tools for Korean papermaking set-up, drawn by Aimee Lee.



Korean Papermaking Goes West: Building the Anne F. Eiben Hanji Studio in Cleveland

AIMEE LEE

Tom Balbo checks the height and placement of the bal teul in the final stages of vat making. All photos by and courtesy of the author, taken in Cleveland, 2010 unless otherwise noted.

One of my long-term goals after returning from a year in Korea studying hanji on a Fulbright grant was to build a Korean papermaking facility in the US. To my surprise, the hanji studio that I thought would take ten years to materialize took only one. Instead of starting from scratch, I collaborated with an existing paper mill to complement their Western studio with an Eastern one. I contacted Tom Balbo at the Morgan Conservatory in August 2009 about teaching a hanji workshop in Cleveland. When he offered to build a large vat, I decided to help him build a full studio, endowed by and named after Anne F. Eiben. In July 2010, with Kickstarter project funding, I arrived in Cleveland to work with a team of fifteen interns, volunteers, staff, and board members (plus several off-site advisors). Amidst scorching heat and humidity and daily mosquito bites, this is what we accomplished in five short weeks.¹

BARK PREPARATION TOOLS

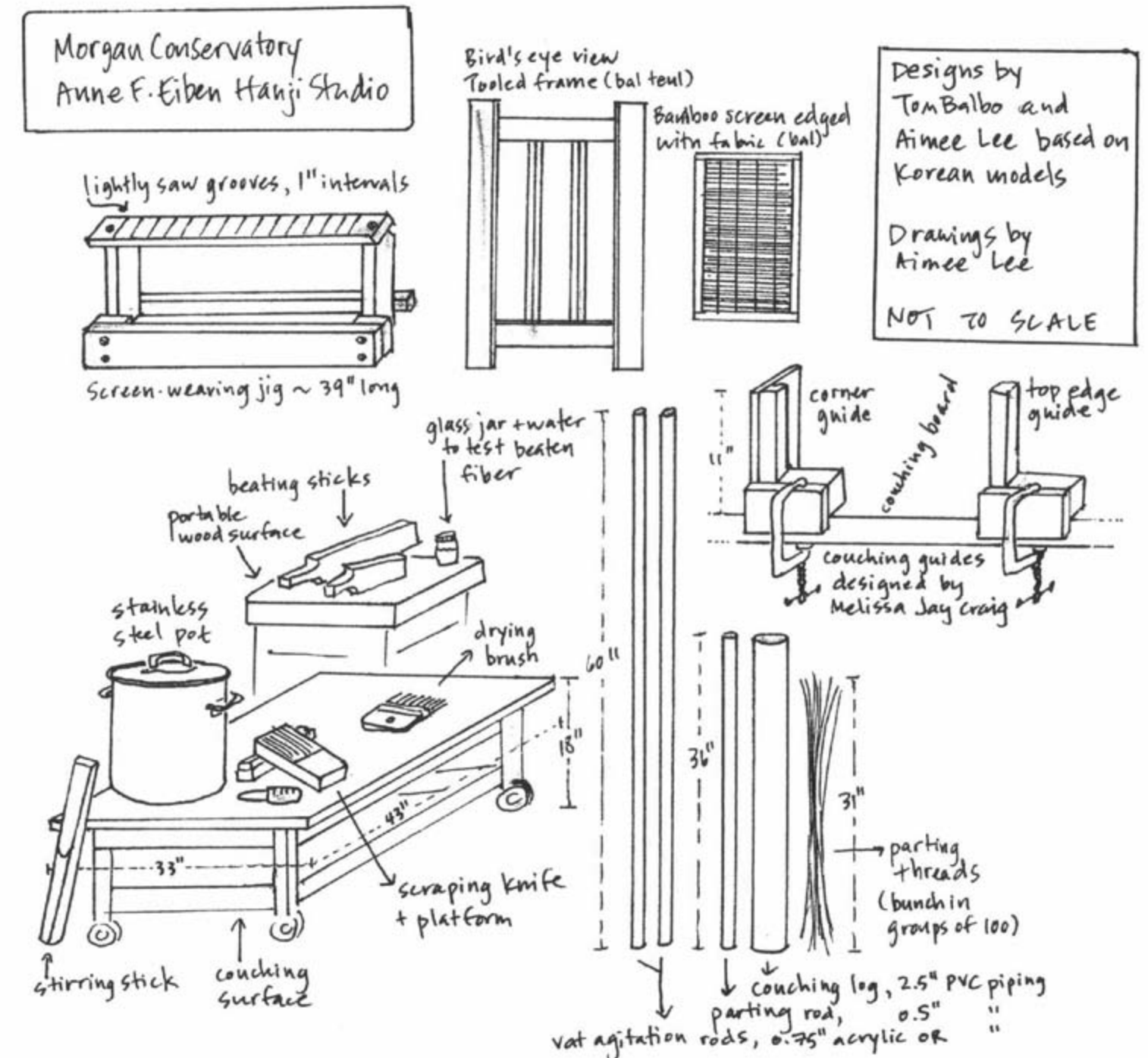
We built bark-scraping platforms of raised two-by-fours half covered with scrap rubber. We repurposed oyster-shucking knives to scrape away the outer bark.

COOKING AND BEATING EQUIPMENT

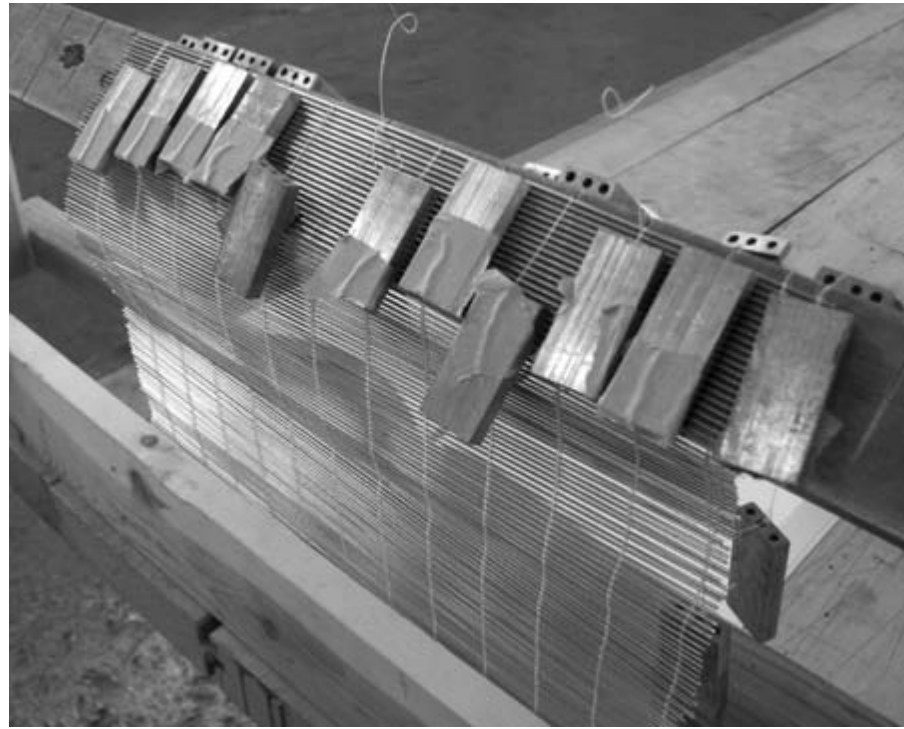
Tom installed a gas line for a 2-burner industrial range that we wheeled outside to cook fiber. He purchased a second large, stainless steel pot and cut scrap wood into a stirring stick. The Morgan already had wooden mallets (and spare baseball bats) to beat fiber on a portable wood tabletop and stand, and in good weather we moved the noisy beating outdoors.

MOULDS AND SCREENS

I donated my traditional Korean mould (*bal teul*) to the Morgan and an intern drew its specs for future replication. Tom designed and tooled a smaller student version, and an intern constructed



Hanji papermaking tools. Drawn by the author.



A steel screen in the process of being woven on a jig, with letterpress slugs taped to monofilament.

eight more moulds that produce 13 x 18-inch sheets. We used these moulds, rigged to ceiling pipes, with deep vats originally made for Western papermaking, and set up couching boards on sawhorses for the workshop.

We used my full-sized *bal*, or fine bamboo screen, for large 25 x 36.5-inch sheets, but also attempted to make smaller screens. We experimented with 0.045-inch stainless tig welding rods cut into foot-long pieces.³ At first we tried to weave them on a flat surface with monofilament using letterpress slugs as bobbins, but this effort was unsuccessful. Then I built a weaving jig based on one used by a Korean screen-making master. This jig kept the slugs' weight equal throughout the process. We sewed borders with scrap cloth around the edges of two test screens. The steel *bal* made crude paper, so we switched to store-bought bamboo placemats, which a volunteer trimmed to size and edged to fit the student moulds.³ Since these mats were not as fine as traditional *bal*, we used Pellons between sheets while couching rather than stacking them directly on top of each other.

VAT AND ACCESSORIES

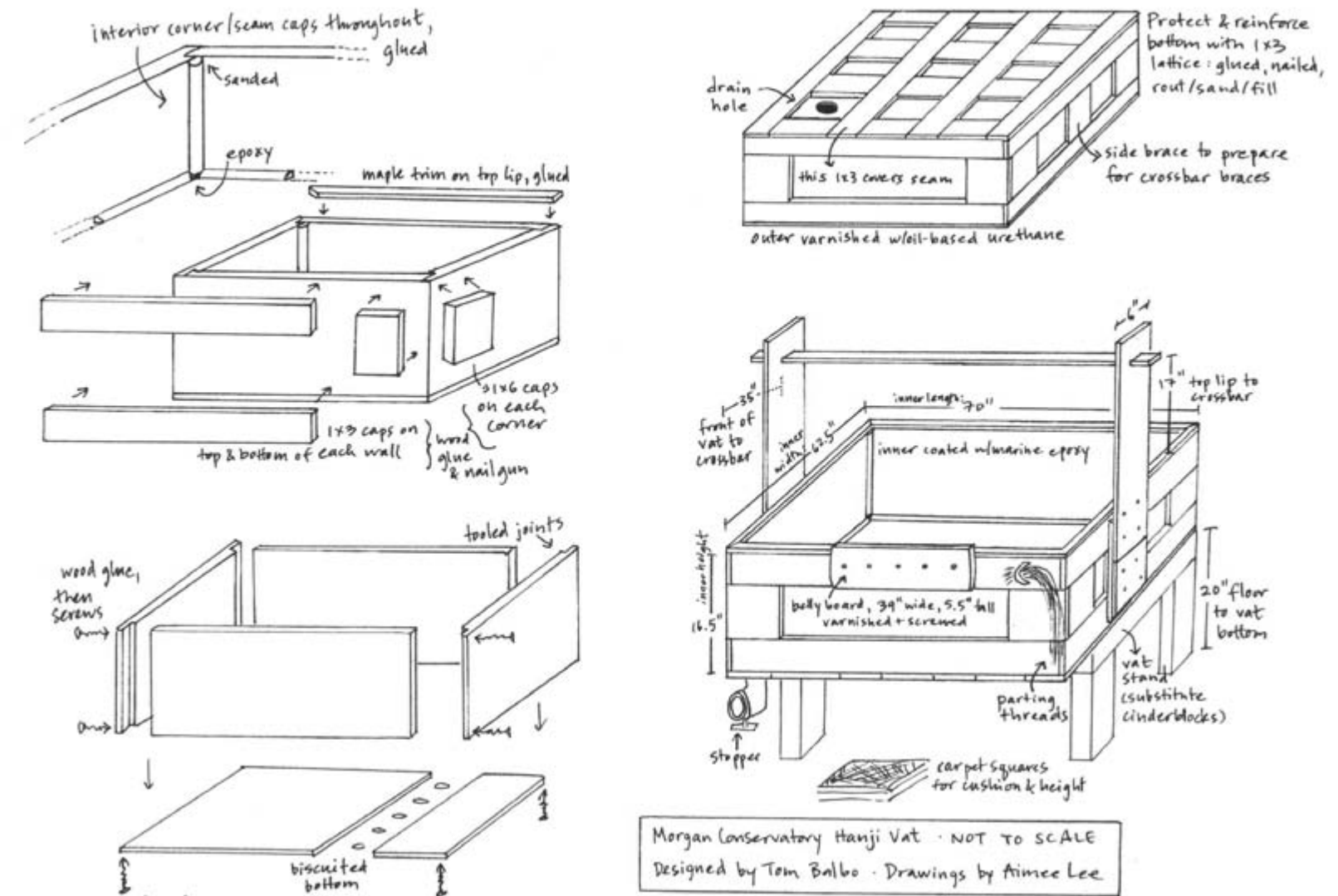
This was the biggest project, but most straightforward: a water-tight box of the right dimensions. We biscuited $\frac{3}{4}$ -inch plywood for the floor, glued and screwed on the walls, and capped the inner seams with thin strips of molding.⁴ We reinforced all four walls, top and bottom, with one-by-threes and capped the corners with one-by-sixes. We reinforced the bottom of the vat with a lattice of one-by-threes glued and nailed to the floor, with one beam covering the floor seam. We used maple for the top lip and attached a belly board in front, which also created a front ledge to

rest the feet of the *bal teul*. Side beams secured a crossbar from which to hang the *bal teul*. We used four coats of West System marine epoxy⁵ to waterproof the inside and varnished the rest with polyurethane. The drain hole was cut into a bottom corner (some vat makers prefer to add the drain hole in a side wall) and we added plumbing with a stopper to prevent leaks.

We reinforced an old table with two-by-fours for the vat stand and piled carpet squares in front of the vat for cushioning and to match each papermaker's height. For the couching table, we screwed scrap wood to a stand on casters, and we cut parting threads that were wrapped in plastic and taped to the vat. The Morgan had plenty of large pressboards and felts. Melissa Jay Craig designed the couching guides, three or four pieces of wood glued together and C-clamped to the couching surface. Each station required two guides, one for the corner of the screen, and one to guide its top edge. In lieu of bamboo rods to stir the vat, we used $\frac{3}{4}$ -inch PVC and acrylic piping, and cut $2\frac{1}{2}$ -inch PVC piping the length of the *bal* as a couching log.

DRYING UNITS

Months prior, the Morgan trucked home a large hydraulic press and steel heat dryer from artist Leslie Parke. Unlike Korean models, the dryer's steel plate is enclosed and curved. Equipped with a heating system and a dehumidifier, a fan circulates air through the dryer. Since it is slower than traditional dryers due to lower heat settings, we also dried hanji onto tabletops and doors. We cut $\frac{1}{2}$ -inch PVC piping to use as a parting rod, and bought wall-finishing brushes with animal bristles that worked perfectly to brush the sheets onto the drying surfaces.⁶



Hanji papermaking tools. Drawn by the author.



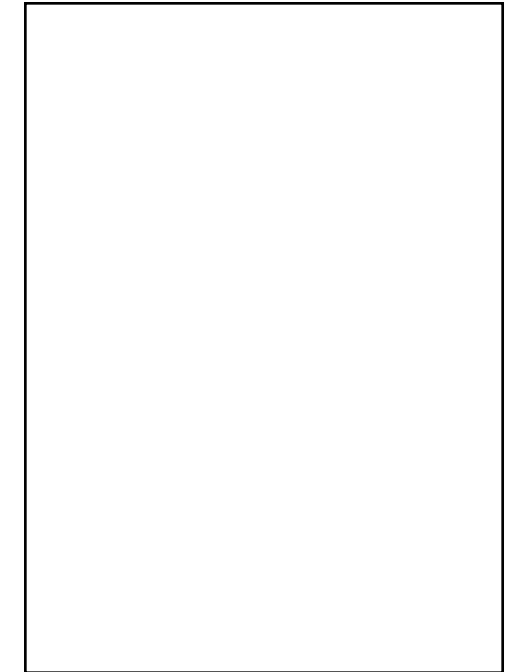
Aimee Lee peels away a dry sheet of hanji from the curved surface of the heat dryer. The steel plate is heated while a dehumidifier removes moisture from the sheet. The system circulates air through the wide plastic passage that opens to the right and left of the steel plate. Photo: Stephanie Brewer.

We inaugurated the studio with a hanji workshop in early August 2010. This project was blessed by a confluence of the right place, people, and vision: Cleveland was close to my alma mater in Oberlin, so I had a particular affinity for Northeast Ohio, and its climate is conducive to growing hardy kozo; The Morgan is an organization unencumbered by political and logistical red tape, and led by Tom, a generous, hardworking, and super-capable DIYer, who recruited lots of talent; the staff, interns, and volunteers, most new to Eastern papermaking, were interested and engaged in the project, always asking questions and never refusing difficult or tedious work. I couldn't have asked for a better place to start Korean papermaking in the States, and am grateful to call the Eiben Studio a home.

NOTES

1. For a narrated slideshow of the process, visit <http://youtu.be/dAWB1dOysdo>. To view more pictures, visit <http://flic.kr/s/aHsjr93jga>. For a personal recollection, refer to my article, "Making History in Cleveland: Building the first Korean papermaking studio in North America," *Book Arts arts du livre Canada*, vol. 2 no. 1, 2011, 26–28.
2. The rods were donated by Jon Thompson of T&T Tools in Michigan.
3. We purchased the mats from *Bed Bath & Beyond*; the first sample and idea courtesy of Melissa Jay Craig.
4. If I could do it again, I would have used waterproof glue rather than wood glue to build the vat, and I would have added fiberglass tape along the inner seams.
5. We chose West System based on advice from Michael Bixler, who built a hanji vat for Lynn Amlie years ago at Wells College. West System has an excellent team of technical advisors who are available via phone.
6. We used Purdy's 6-inch Symphony Wall Weaver brushes.

Paper Sample: Morgan Hanji



AIMEE LEE

This hanji was produced in October 2011 at the Morgan Conservatory.

Tom Balbo soaked three pounds of Japanese kozo (from Carriage House Paper) for a couple of days before cooking over a gas stove in a stainless steel pot. We used a ½ cup of soda ash to each dry pound of fiber and cooked for an hour and a half. After rinsing, Tom, Tony Trausch, and I beat the fiber by hand, and then added it to the vat with water and PEO as formation aid. I formed the *webal* sheets on a traditional 25 x 36.5-inch Korean screen and frame, hung from a rope in the back, using the *yupmuljil* method (side-to-side water action). Each finished sheet is a double laminate consisting of two sheets couched together. The layers are placed front end to back end to compensate for a thicker front end of each layer due to a front-to-back dip that deposits more fiber on the front edge. I separated each double laminate with a thread, but couched all of the sheets directly onto each other. I pressed the post in a hydraulic-jack press in gradual stages, and parted and dried each sheet on a heat dryer or onto tabletops.

The hanji we produce at the Morgan ranges from tissue thin to the thickness traditionally used in oiled floor coverings. It works well in *joomchi* processes (texturing and felting), printmaking, book arts, and sculpture. We are confident that Morgan hanji will perform well in a wide variety of applications that we have yet to try.