ARMCHAIR

by KRISTEN CAMPBELL HANSEN

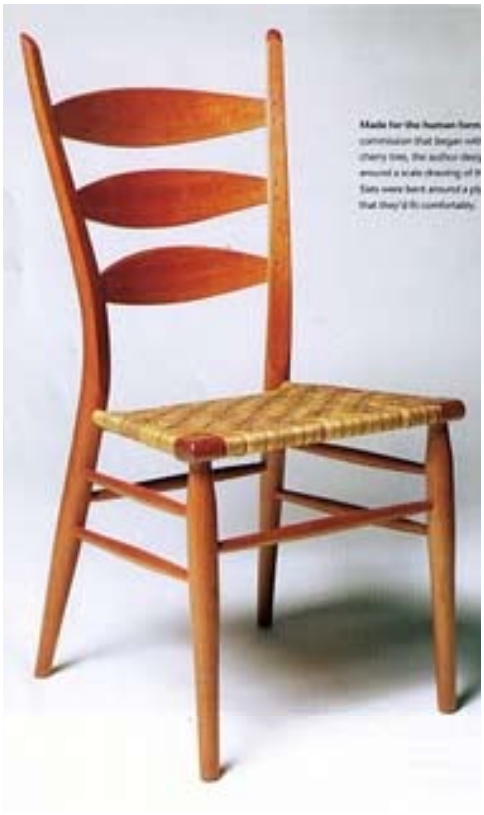
INTEGRATED PROJECT 2009-2010
JOHN MARSHALL
ELONA VAN GENT

People sit. Chairs exist. Why make another one? This was a question I struggled with from the beginning of my Integrated Project this year. Any number of chairs or seating options can be deemed "successful"—so what's the point of trying to make yet another chair? Why try and re-invent the wheel? My answer came in an unexpected place—I decided to work on re-inventing the process and assembly of the chair rather than the design itself. I felt that designing and building a chair would pose a great challenge over the course of the year. My integrated project involved designing and building a transportable lounge chair, constructed without the use of fasteners or glue. The chair will be designed with a mobile user in mind, as it will allow the customer to easily disassemble, pack up, and reassemble the chair should they find themselves moving from place to place. The chair will have the advantages of a transportable piece of furniture, without sacrificing, comfort or stability.

I noticed a trend among furniture—there are pieces you can get which are permanent—that is, pre-assembled and not collapsible at all. Then there is what can be classified as "knock-down furniture," made popular by companies like IKEA. This furniture is bought and later assembled by the users. The idea is that the furniture can be sold at a lower price to the user disassembled, and the user also has the option of disassembly later should they need to move. As a result of this business philosophy, IKEA furniture has become popular among college students, and people who find themselves moving from place to place fairly often.

I wanted to make something that had a handmade aesthetic in order to pose a stark contrast to the knockdown furniture with the IKEA aesthetic—an aesthetic easily recognizable by the use of veneered plywood, bright color blocks, or white pine. I also wanted to make something that would work with the exposed joinery I would most likely be using. Styles that pride themselves on being handmade rather than factory produced, such as Shaker furniture—which has the handmade aesthetic, and is, for the most part, made without additional fasteners. A contemporary designer who uses Shaker designs, Brian Boggs, takes traditional shaker furniture and softens the lines a little, giving the pieces a less stiff look. To the right is a traditional Shaker chair design, and one of Brian Boggs' designs. He has taken the aesthetics and structure of the traditional Shaker furniture, and put his own contemporary twist on the design in order to make it more marketable to today's consumers.

Boggs has also been quite successful at producing handmade chairs efficiently. As he explains it, there is a market for handmade furniture, but people aren't going to buy it if it's overly expensive. As the maker, it is his job to make sure he can produce the furniture at an affordable cost for the buyer.



Top: Traditional Shaker Chair
Bottom: Chair by Brian Boggs

The furniture that was produced during the Arts & Crafts movement is another example of a style that took pride in the handmade. Those who designed furniture in this movement sought to create furniture that was 'for the people and by the people—a source of pleasure for both the user and maker.' According to Kevin Rodel in his book Arts & Crafts Furniture: From Classic to Contemporary, the movement was a response to industrialization—pushing traditional craft over mass-produced work. He also states that much of the furniture from this era were "in favor of straightforward forms that bespoke function with a certain sternness. Linear motifs and flat planes, with their ring of forthright, came to dominate the palette of many designers." (12). Regarding joinery, Rodel states that "To emphasize the point that a piece was made by skilled hands, many Arts & Crafts furniture designers produced furniture with exposed joinery—often the primary embellishments of a piece." (13).

The work created by Morris & Co (in particular the Morris Chairs) are characterized by the use of strong horizontal and vertical lines, using larger stock to create the frame of the chair, and then using thinner wood for the vertical, decorative lines (pictured at the bottom). There is little to no embellishment on these chairs, rather than using curves and decorations on the chair, Morris relies on the lines to create the form. This is a style I worked hard to incorporate in my own designs, without copying it exactly. The clean lines serve to emphasize the material and form of the chair, rather than trying to hide it with embellishments. The mortise and tenon joints also highlight the way the chair is made, giving the user a sense of honesty about the assembly of the chair.

One contemporary furniture designer, Thomas Moser, employs the same linear qualities in his work, particularly in the “Edo” collection, among others. The Edo lounge chair (pictured below) employs the same ideas about simplicity that I enjoyed so much about the Arts & Crafts Movement. What also captured my attention about this chair is the use of almost oversized lumber, giving it the sense of permanence and stability. Despite the use of large lumber, however, Moser manages to keep the design interesting by varying the sizes of the lumber, so the chair does not appear so heavy.

Thos. Moser’s “Edo Chair”

Creating the structure of the chair, while incorporating the styles I wanted, proved difficult—I needed to make sure that it was something that was completely stable, something that wouldn’t move or shift when a person sat down on it. The structure also needed to be something that matched the aesthetic I had chosen to work with. Luckily, as mentioned earlier, furniture from the Arts & Crafts movement often worked with exposed joinery—not only are joints like exposed mortise & tenons some of the most structurally stable joints, they look beautiful when executed correctly.

I set out to improve on the idea of knock-down or temporary, movable furniture. I wanted to create a piece that did not give off the air of the temporary—something that did not look like it was meant to be packed up and moved—and something which would fit back together soundly and correctly every time it is reassembled. A major problem I noticed with this kind of furniture is that the quality degrades after one use—once the pieces of, for example, a dresser, are screwed together, it is not only difficult to take back apart, but the next time it is assembled the pieces won’t fit as well together. There is also the definite possibility that pieces or fasteners will be lost during assembly or disassembly.

In order to learn more about the joinery I would be using I read and looked through numerous woodworking books about joinery in order to explore my options. Fine Woodworking on Joinery and The Complete Illustrated Guide to Joinery were two books that were very helpful in this process. I also did several small studies in foam core on the laser cutter after looking through these to learn how things fit together. The challenge throughout the design process was to maintain the structural stability of the chair, all the while maintaining a carefully designed, rather than engineered, aesthetic.

Pictured to the left is a quarter-scale model I made of one of my designs—as you can tell it resembles both the Morris chair and Edo chair pictured earlier, while remaining a very heavy design with little variation in the size of the lumber. In full-scale, this chair would be made mostly from 2x4 and 2x6 beams, giving the chair a very engineered look, as can be seen in the picture of the full-scale model of the chair below. While the structure of the chair is completely stable when assembled and is easily collapsible, the design is still in need of refinement.

As is evident from this picture, the chair is made out of hardwood rather than something like plywood. I wanted to challenge myself to work with the grain of the wood rather than being able to cut whatever shape I wanted out of plywood. Milled plywood also has a certain aesthetic—one which I was not interested in working with for this project. Hardwood also gave me the challenge of making sure that the expansion and contraction of the grain of the wood would not break the chair, or make the user unable to assemble or disassemble the chair. I used a book called Understanding Wood to assist me in my material selection. It details the expansion rates of dozens of different kinds of wood based off of the time of year, and location in the United States.

I decided on using Poplar, because it is very strong, with a low expansion rate. It has color irregularities (the wood is often a purple, green, or yellow), but it takes stain well, so those irregularities can be covered up. This works perfectly, as I wanted to stain the chair dark in order to emphasize its clean, linear qualities. Poplar is also fairly inexpensive as far as hardwoods go, meaning that the price of production per chair goes down. I also found due to the nature of my design (using mortise & tenon joints) I allowed for the expansion and contraction of the wood. When the wood changes, the wedge in the joint can be tapped in farther to prevent the joints from loosening. While some of the joints will be tighter or looser depending on the humidity and time of year, the structure of the chair should remain solid.

The cushions are an element of the chair that are very changeable. In the first prototype the upholstery fabric for the cushions is a cream colored micro suede, sewn over a medium density foam with memory foam topper. The foam is somewhat firm in order to give the users body some support, but over time the foam will become softer. The fabric could be changed to be in any number of colors, fabrics, or patterns. Slipcovers could easily be sold separately, giving the user the opportunity to change them depending on what matches to their current location.

Despite the often high cost of hardwood, I see this chair as something that could be mass-produced and sold at a reasonable price. There would be minimal manufacturing costs involved in making this chair, as there is no assembly required by the manufacturers. Packaging and shipping prices would also be low because the chair would be sold disassembled, to be assembled later by the user. This is a philosophy which IKEA has very successfully adopted, allowing their furniture to be sold at low prices because the user, rather than the manufacturer, assembles it. The low prices in manufacturing, shipping, and packaging could balance out the potentially high price of materials.

Rather than using processes like CNC routing I have opted to make the chair by hand. I felt that my process of making the chair myself should mirror the users process of assembling the chair themselves. Despite the fact that the chair is handmade—it will not be one of a kind. Multiples of the chair will be made—which means during production I have to take into consideration the most efficient ways to make all of my cuts and do all of the work. Because of the nature of the design, however, this chair could fairly easily be mass-produced in a factory setting. Most of the joints could be made with machines, and all of the joints are repeated multiple times throughout the chair. While designing and building the chair, I always have to be aware of how the chair will be assembled, and whether or not a user, other than myself, would be able to do it by themselves. It needs to be designed so that it is convenient enough to take apart and put back together, so the user will feel inclined to do so and take the chair with them wherever they go.

My chair design tries to find the balance in between inexpensive, knockdown furniture made by companies like IKEA, and more expensive pieces produced by companies like Thomas Moser. This chair allows the user to have a chair that can be easily moved around from place to place, but has the look of a more expensive piece that someone with a more established house would have. It doesn't fit in either category, but takes the best of both.

So why make another chair? The problem have seating has seemingly already been solved—however, the question of how to transport a larger chair easily from place to place is still unanswered. The design combines the ease of use of the knockdown furniture, with the more handmade aesthetic of more expensive furniture. The demographic I am aiming for, namely mobile, young people, are generally confined to buying furniture that they can move around with them easily.The options of easily transportable chairs are limited, and larger lounge chairs are usually difficult, if not impossible to move. The chair I am designing solves both problems of comfort and transportability—creating a comfortable, stylish Morris Style chair that can be easily assembled and disassembled by any user.

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