I remember the day the project was completed. I mean really completed. No more hinge adjustments, no more touch ups, no more tightening of screws. I was by myself in my living room and had applied the last coat of Waterlox over the entire cabinet just the day before. Two weeks before, the cabinet was moved from the workshop in Worcester to my house by rental van. There in the living room I completed the final construction including touch-up work, installation of proper drawer stops, door hinge setting adjustments, installation of drawer pulls and door handles, and fastening the cabinet top, the piece de resistance in that in its glistening wood finish gave a certain elegance to the cabinet. After overnight drying of that final coat, the cabinet was then positioned in place. I'm a pretty orderly guy but I surprised myself by how quickly I wanted to clean up the area to see the cabinet finished and uncluttered in place where I once fantasized about dressing up that part of the living room. It was a culmination of a lot of education, work, details, workarounds, lunches and deepening friendship with my friend and woodworking mentor. Overall, it took about a calendar year from idea to ideal but after it all, the ideal was positioned where I had expected to see it. My wife loves it. My friends love it. I can't be happier with the outcome, especially from where I started a few years ago when the living room upgrade was in its infancy.

I had been looking for a cabinet for the living room for a while. My original idea was the cabinet I buy should be made of oak or a wood that would fit with the existing décor but I was open to a style that could be early 20th century or contemporary. I visited furniture stores and websites. Some pieces came closer than others to my vision but it was becoming clear that this was not going to be a quick acquisition. Most popular styles did not meet my aesthetic choices. Plus, furniture prices had risen considerably since I last went furniture shopping. Having adjusted to today's price tags, the next realization was that oak furniture was considered out of favor and, therefore, not readily available. I was looking for something special but the unacceptable price, style, workmanship, or a combination of those made the process frustrating. One option that I never really considered was to embark on making a cabinet of my own design. I had made a number of simple pieces. I renovated an entire kitchen and restored some furniture. I would not describe any of this work as fine woodworking. Those projects just didn't have the complexity, design features, finish, and overall pizzazz that you'd see in woodworking magazines. Moreover, the thought of making something special seemed impossible without owning a woodworking shop of essential tools. So when I was asked, at a garden party, whether I would like to make the cabinet I had some hesitation. After all, this piece was going to be located front and center in my house. If it didn't turn out very well, I'd have to chuck

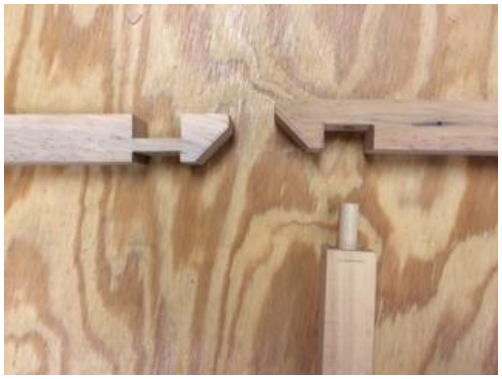

Figure 1. Components for interlocking table frame including leg (with dowel) was one of the clever woodworking features embedded in the design.

it and return to my long, frustrating search to buy a cabinet that fit my existing furniture.

The party was hosted by a friend and member of a poker club that I've been a part of for thirty years. Other members of the poker club also attended, one of whom, Jim Tartaglia, is a woodworker, who over the years would occasionally show us pictures of beautiful pieces he built. In fact, during my furniture search several months earlier I had asked Jim's advice about places where I might find oak furniture. Still, I found nothing carried the "That's it!" claim. After updating Jim of my latest attempt to Jim a few weeks later, he offered a proposal that prompted my interest. "Have you ever thought about making your own piece?", he suggested. While privately fantasizing about building a gorgeous and functional cabinet, I explained that I did not have a decent workshop or any experience in fine woodworking. Jim countered my concerns stating that we would use his workshop. Then I had to overcome my doubts that I could actually make something that would be presentable. Again Jim countered that he would not let anything leave his workshop unless it was well built and passed his high standards.

Soon after that garden party we discussed and agreed to the process to follow. We would meet one day a week on Wednesdays at Jim's workshop. I would do all the cutting and machine operations. Jim would do machine setup and provide advice and education on joinery and the tools we would use. I would join the EMGW and take part in the mentor program and FIG meetings. I would design the piece and have it be agreeable to Jim so as not to exceed a reasonable level of difficulty. The design would be essentially completed before making any cuts. What was Jim's interest in this sweet deal? Developing a closer friendship, mentoring, and enjoying all-expenses paid lunches on our workdays.

I was a novice user of many of the tools in Jim's workshop. The first couple of weeks highlighted safety issues using tools. This included what to wear, how and where to position one's hands and stance, and learning about the dangers of using these powerful tools. On off-workshop days I thought about designs and drafted a few simple ones just to start the process. Together we decided I should scour the Internet for ideas. A few days later I discovered works by Maine woodworker Thomas Moser on the Internet. Jim liked them as well so we scheduled a field trip to Moser's showroom in Boston to see the sideboard that caught our collective eye. Viewing it convinced me that although the piece wasn't made of oak and was smaller in size, it was cleverly constructed in its American Bungalow style. It used a visually fascinating characteristic by suspending the cabinet case from a table-like frame. The table-like frame with its tapered legs and Asian ornamental features allow light to pass through the sides while

Figure 2. Jim demonstrating proper positioning for using radial arm saw.

adding stability to the piece. Moser describes his American Bungalow collection as reminiscent of the early 1900s craftsmanship using natural materials and traditional joinery such as characteristic reverse tapered legs. I find it akin to the Mission style. With some design changes it could be "the" design for the living room in my American Craftsman style home. Discussing the design on our departure, it was clear Jim had analyzed the piece. He had a good idea how my piece could be constructed. I drafted designs at home using a free download of SketchUp. I learned this application on my own, which came easily and quickly. Soon I was sending Jim emails with sketches of parts that he would review and respond to with constructive feedback, especially on the joinery.

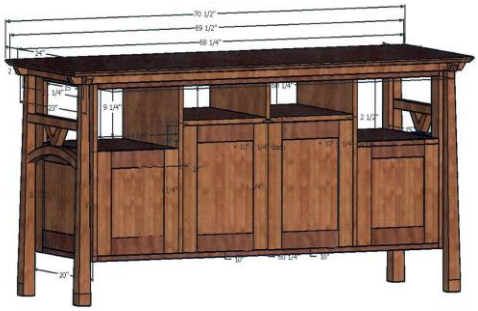

Figure 3. Almost the last iteration of the entire design assembled using component parts in SketchUp.

The joinery was, indeed, a mystery to me. It was fascinating how different joints demanded different methods of joining wood parts. Seems simple, but I've come to understand there are a lot of simple but elegant techniques in fine woodworking that I suppose most experienced woodworkers take for granted. Half-joking, I've been accused of being an analytical sort. I worked with computers before it was called computer science and later specialized in Artificial Intelligence. I've been an entrepreneur and technical lead in the medical device field and although it's important to keep the big picture in mind, it's the details, stupid – especially in the medical field where quality and reliability trump leading edge. It was this curiosity, this desire for the details that was embedded in the development of this project. I have to applaud Jim on this. Sometimes I would think in my naïve way, of offering instead a different approach that could be easier or a more stable technique. Jim was flexible, cooperative, and thoughtful when these questions arose. In fact, I think he rather enjoyed re-thinking his reasons why – at least most of the time. That to me showed his self-confidence and curiosity. After all, Jim is an educator by training. It's not the first time he was asked to explain the why's. That's not to say Jim was influenced enough to revamp his repertoire of techniques, but a few times when there was merit he accepted it. The bottom line is that this could have been difficult bordering on abrasive, but we easily and quietly found a way to pursue our common objectives and proper understanding of joining wood parts.

Figure 4. Vincent using the jointer after the design was essentially complete.

Joining the Eastern Massachusetts Guild of Woodworkers (EMGW) would prove to be crucial to the success of the design and overall construction. The design was now moving at a good pace. We made major deviations from Moser's design to incorporate cabinets and shelves that I needed. Another departure from the Moser design was my interest to include exposed shelves on each side of the cabinet. Jim thought it wouldn't work. After fully discussing the issue with Jim, who also had backing from my wife, we worked out a solution so we kept the feature in. This was an early important process issue that showed we could be flexible and work together. Parts were drawn exactly in SketchUp and joined electronically.

I attended monthly Furniture Interest Group (FIG) meetings of EMGW to discuss design issues that would normally arise. In attendance are many expert woodworkers with different areas of expertise – joinery, tools, jig making, finishing, SketchUp, and so on. Receiving honest, well-thought out feedback was very worthwhile and furthered the aesthetic and craftsmanship of the outcome. For example, it was Jim's advice to avoid hand planing the joined oak boards for the cabinet (table) top due to my inexperience with the art. Instead our plan would use ¾" oak plywood. When presented to the members, the attendees of FIG unanimously disagreed, suggesting that plywood would detract from the quality of the piece. My inexperience with hand planing remained without a solution – until Paul Shultz offered me the use of his 30" sander.

Once we settled on the overall length of the cabinet, we could decouple the two main assemblies, the table-like frame and the cabinet case. For the length I started out somewhere around 78" – 80". Jim countered with the fact that given all the oak in this piece we'd have to cut the size down to reduce weight. We settled on 70½". As long as the length of the cabinet case was 1½" less than the inside length between the legs at opposite ends (this allowed a ¾" space between the cabinet and legs) the table-like frame could be designed and sketched first. It took a few weeks and many iterations. Once completed, this allowed us to purchase rough red oak lumber that we would use for the frame and legs and tabletop. I own a table saw, but I had my first experience using the jointer and bandsaw on this project. All these tools were used to square boards and cut tapered legs and curved and straight ornamental parts under Jim's watchful eye. The table frame, as Jim surmised from the Moser showroom visit, was notched a couple of inches in from each end which created an inverted square cup ¼" deep when interlocked. Each upper leg (1¼" tapered down to 2") fit into its corresponding cup. Legs were glued into its cup and joined further with dowel. The ornamental assembly is composed of a horizontal bar resting on a "V" shaped block resting on the center of a downward curved bar. It

Figure 3. Frame and legs assembled with ornamental piece.

is assembled with glue and fastened between the legs with dowels on each leg. The table top, which eventually would become the cabinet top, was joined, sanded to 200 grit, and routed along the edges. I brought the table top home to finish while leaving the table-like frame at the workshop. During this time the cabinet case design was completed.

The inset cabinetry was more complicated. The cabinetry involved drawers, shelves, cabinet doors and sides with mortises and tenons, squaring dividers and sides, aligning dados for the top and bottom boards for the dividers, aligning dados in sides and dividers for shelves, drilling holes for adjustable height shelves (using one of Jim's jigs to ensure equal and level spacing), chiseling, and more – a lot of tools and techniques that I never used before. I had experience with routers, table saw, and belt sanders, but this was new woodworking territory for me. The burn marks from the table saw cuts were an indication that I had more learning to accomplish. My penance for committing such mistakes was the remedy of scraping. But week after week, Jim and I were seeing 90° joints, or very close to it, and parts fitting together as planned. It was a remarkable scene as the case frame began to take shape. As long as we could remember which side was the front of the cabinet we were in good shape.

Figure 4. Cabinet takes shape with top formed with mortise and tenon joinery and horizontal and vertical boards positioned in dados for extra strength.

Not everything went according to plan though. As the work continued now months after we started, design decisions had to be made. The cabinet was oak heavy. To lighten the piece we decided to use red oak plywood for door panels and wherever the part was not fully exposed to the viewer. The controversial exposed shelves were another matter. Butt ends would be lined with red oak strips. So all the internal and exposed shelves, door panels, dividers, back panel, and floor board were made of red oak plywood. Also, we hadn't anticipated the need for a jointer larger than the one Jim owns. Again EMGW came to the rescue. Jack Murphy offered his 16" jointer. Problem solved. Then there were the occasional miscuts but nothing serious more like inconveniences and surprisingly few.

Working with red oak had its issues too. Being a porous hardwood, oak does not cut or drill easily like softwood. Furthermore, finishing red oak was troublesome, but this was overcome with copious experimentation and advice from Jim and FIG members. I used Behlen Solar-Lux stain because of its non-grain rising characteristic and Waterlox (tung oil base) sealer. One of my goals for the cabinet's appearance was to match the finish of my existing oak furniture. I could not find any one stain that reproduced the color so I

experimented by trying proportions of a combination of Solar-Lux stains along with a reducer and retarder to minimize blotching. This continued for weeks until I was satisfied with the reproducibility of the desired color. For larger parts like the cabinet (table) top I first applied shellac to minimize blotching. This worked less well than I thought it would but in the end the cabinet top looked great. For most parts that would be handled, or exposed like door fronts, shelves, table top, and others I applied five to six coats of Waterlox Original Gloss Sheen. The very last coat was Waterlox Original Satin Sheen. I learned to apply it fast with either a brush or clean rag.

Figure 5. It took many attempts using a mixture of different Behlen NGR Solar-Lux stains on red oak samples to arrive at the desired color.

It might be useful to note that except for the last coat of Waterlox, I finished nearly all parts prior to gluing. This, I understand, is unusual. Removing any overflow glue was relatively easy since the glue didn't adhere permanently to a "sealed" finish. Plus by finishing the parts in my meager workshop, we could expedite the completion of this project. After all, there were six possible days of work at my workshop for every single day at Jim's workshop. It would have been inefficient to go to Jim's workshop every day – not to mention disruptive of his time – just to apply the finish and then leave for the application to dry overnight. This proved to dramatically shorten the already extended timeline.

Working the cabinet doors was the hardest part of the project. Rails and stiles were solid red oak 2 ½" wide by ¾" thick while the inside panel was ¼" oak plywood. There was minimal margin for error when cutting dados and mortises and forming the tenons. My first use of mortises and tenons was with the cabinet sides, which have a similar rail and stile appearance to the cabinet door. Again Jim played a vital mentoring role in this phase. Rails were joined to stiles with mortise and tenon made by router and Jim's dedicated mortise and tenon making tool. Dados were cut into the rails and stiles by table saw for panel insertion. To expedite the project we ordered dovetailed drawers to which I attached finished red oak fronts. The drawers were purchased on-line from CCF Industries of Apollo, PA.

Figure 6. Vincent using a router with a mortise and tenon tool.

Lumber and plywood were purchased from The Woodery in Lunenburg, MA. This was another recommendation that came from EMGW. The Woodery has a good assortment of woods in various lengths, good service, and decent prices. Jim and I made the first trip together. I made subsequent trips on my own selecting specific boards. This was another indication of my maturation in the woodworking process.

With the cabinet case completed with hidden door hinges attached (Blum hinges from leevalley.com) it was August, eleven months since we started working on the project. Cabinet doors were tested for fit. Then the table frame, idle for months, was brought in for a test fit. Even without the cabinet table top, to see the two major assembles come together was magical. Yet, we were not immune from experiencing the syndrome of *woodworking issues happen*. The original thought was that we would drop the cabinet case through the opening of the table frame then fasten it. (Remember that the cabinet case touches neither the floor nor the legs.) I've come to accept that sometimes there are better ways of constructing and sometimes there are no other ways of constructing. It turns out due largely to the weight of the cabinet it was better to fasten the cabinet from underneath the table frame. So we turned the table frame upside down and laid the cabinet upside down on the frame then fastened it. While upside down we used Moser's technique of joining the legs to the cabinet as planned for stability by using plain but aesthetically pleasing L-brackets. It is correct to note that Jim and I worked well on this issue and other issues that often required a workaround. After turning it right-side up it was a sight to behold. Taking a deep breath, Jim and I saluted to each other with a high five.

Figure 8. After final gluing, the upside-down table frame awaits an upside-down cabinet case for assembly.

Figure 7. Table frame and cabinet assembly with shelves inserted prior to attaching cabinet doors.

Soon after, we made arrangements to move the piece to my house. This brings us to where my story started. Critical as it was, the cabinet top was the main part missing but a few other issues as mentioned above also needed closure. Jim left for a scheduled vacation, and I finished the rest of the work on my own.

As I ogled the cabinet in the new living room the last year flashed before me. Besides the time working together, Jim and I had nearly a year of Wednesday lunches together. Only some lunches, which often lasted a couple of hours, included discussions about the cabinet. There were many other topics to discuss. We discovered many similarities in each other from our daily pre-retirement lunches of turkey sandwiches down to the type of mustard to our Italian-American cultural backgrounds. I got to know Jim's wife Linda and their daughters Joy and Ivy much better as well. Despite my intrusions into

Figure 9. The Mission style cabinet feeling at home in the living room.

their space and time, they were all graceful and gracious. Occasionally, Jim would call to Linda to come to the workshop to witness another milestone accomplished. Every time she was in awe and said just the right things. I guess she had a lot of experience with being in awe of Jim's woodworking. During the year, my wife Deborah and I met Linda and Jim socially. I expect that to continue.

I am also indebted to the Eastern Massachusetts Guild of Woodworkers. I received invaluable feedback from expert members notwithstanding the advice I received at the first meeting with my SketchUp drawing when I was told that the cabinet design was too complicated for a novice and that I should start my mentorship with a small table or stool. Actually, during the project I sometimes thought I should have followed that advice. I found the group to be very helpful and outreaching. My experience in the

mentoring program couldn't have been better. If anyone who is reading this story is interested in woodworking and planning to join, I can't recommend the Guild highly enough. There are many members with various levels of expertise in many areas of woodworking. As I've come to realize it takes a community to build fine furniture – at least for a novice.

One final thought should be included in this report. I write explicitly of many technical aspects of my woodworking adventure. I write also of the camaraderie enjoyed by Jim and me. I write about the assistance and support volunteered by woodworkers and non-woodworkers. While showing the completed work to visitors who had heard about this adventure in wood during the making of the cabinet, the emotional content that producing such a piece entails also became apparent. There is a certain Zen of woodworking that I experienced. Much as I enjoy it, this is not artificial intelligence. This is natural woodworking with a soul. And a story to tell.