

## **Anthology of the Violin Shrine Project**

### **Turning a Midlife Crisis into a Lifetime of joy**

I was turning forty in two months. I had met all my goals for that milestone in sports and business, but gnawing at me was the one goal that still remained; to be able to play just one song on a musical instrument. I harbored that goal for decades and had kicked the can down the road long enough. Having always enjoyed classical music I had been going to the summer concert series at the BSO. I was captivated and mystified by the bowing of the string players. How did they all move their bows in perfect unison? That, I thought, could not be a coincidence.

I was out with my daughters who were 7 and 5 years old at the time. We were at the Festival at Bel Air and came out of a furniture store directly across the parking lot from the Music and Arts store. What I did next would change my life forever.

I took the girls into the store and went to the counter and asked, "How much does it cost to rent a violin?" The girls looked at me in disbelief and asked, "For us?" I said, "No, for me". They were shocked ...and relieved. I walked out of that store with a violin and a beginner book and before I turned forty, I played the first song all violinists learn, "Twinkle, Twinkle Little Star."

Since then, I have met multitudes of wonderful people, taken many hundreds of lessons from a dozen different teachers and spent thousands of hours practicing. I traded a car for my violin, played the weddings of business associates, bombed at recitals, and learned to respect and love the violin. I find it fascinating, and mine is my most prized possession.

My expectations for my playing are realistic. I play for the joy of it. I will never be a concert violinist and that's OK. My contribution to the world of music is chronicled in the following narrative of the project that I call "Violin Shrine."

### **Inspired in Paris**

In the summer of 2001, I went to Paris with some friends. We hit all the usual touristy destinations, a few Latin nightclubs and some string concerts in churches. We had our favorite street musicians and had been tipping them well every time we went by. When we went to say goodbye to one of my favorites my friends told him that I played the violin. He broke into a big smile, held out his bow and instrument and invited me to play his violin in the Paris Metro.

It was a fantastic trip, and we took the Metro everywhere. One of the things that I loved most about Paris was the architecture, especially the entrances to the Metro stations. They were Art Nouveau, and I found the style very interesting. I loved the use of Art Nouveau in buildings and how they blended exotic woods, metals, and glass to create luxurious doors, windows, and stairways. I was sure that I had seen Art Nouveau before, but I had never really taken notice and once I did, I became a huge fan.

When I returned home, I decided that I was going to make a display cabinet for my violin. I had just moved into a new condo, and I thought that it would make an interesting conversation piece. Also, I had come to the conclusion early on that when my violin was out of the case I practiced more, and since I couldn't get the image of the Art Nouveau style out of my head, I would combine the two ideas.

Now taking a design idea in my mind to 2 dimensions then 3 dimensions and finally to a finished product was a whole different story. I have a design background, but at the time I knew nothing about CAD modeling, and I had no illusions of being a cabinetmaker. This would be a complicated project and I knew that there were a multitude of things that I needed to learn if I was going to complete it.

My first sketch was very basic. It was based on the photo of a doorway that I had seen in Paris and I drew a frame with a cap and some drawers. The problem was that the doors would partially obscure the violin and I wanted the instrument to be the focal point. I did not like it much and wasn't inspired. For the time being I decided to put the Art Nouveau motif on the shelf, regroup and tackle something less elaborate...well, anyway...that's what I thought.

### **Designing Shinichi**

I had always been interested in the furniture designs of George Nakashima. He believed, in his words, "That trees yearn to live again, to provide beauty and utility and to serve man." He saw in them the potential to become "an object of great artistic worth." He was a minimalist and what I thought meant simplicity, actually disguised how difficult it would be to achieve the Nakashima look.

I researched his works and knock offs of his works and whittled it down to the design elements that I wanted to incorporate into **my** cabinet. I wanted a floating top supported by sturdy standoffs, concealed drawers for tuners and strings, a lighted background and a mixture of complimentary woods. I wanted a curved glass front so that the violin would be the focal point, I wanted dramatic spotlighting, and I wanted humidity control to protect the violin. I put together a ½ scale preliminary drawing with dimensions and I had no idea how I would build it.

You wonder what sales guys talk about on the phone all day? Well, our projects. I had been telling my friend Steve Schramm about my project and the challenges I was running into. Steve introduced me to his friend Ed Ferdebar from Marketechs, a design company in York, PA. Ed's company makes large displays for colleges, businesses, and museums. They had just completed the sports pavilion display at Stevenson University next to my house and it was beautiful. I was particularly interested in Marketechs museum connection because I was concerned about humidity and UV protection for the violins that I would be displaying.

Marketechs agreed to help me with the design of a prototype, and I was sold on everything except that the front glass opened out on hinges. I did not want a front frame that would infringe on the view of the violin and to construct it without a frame would require the glass to be too thick. That would add more weight and I could picture someone banging into it when it was open. I envisioned the idea of a drawer that would open to the side on sliders, allowing the glass to be stationary and we began to make the first cabinet.

I found out very quickly how expensive high-quality materials can be. The prices that I was finding for high quality curved glass were insane. Finding a translucent background and bending it for effect does not come cheap either. Lighting also presented a big challenge. Low heat emitting LED technology was evolving so fast that it was hard to keep up with the changes. After an endless search, I was able to find affordable glass in Florida, and acrylic and beautiful museum quality lighting from the UK. I was learning new things every day, from back light diffusion and LED power supplies and dimmers, to characteristics of museum quality glass and acrylics.

Once I began ordering components there were numerous disasters, mostly caused by shipping companies. The glass arrived from Florida broken in shipping, twice. Fragile stickers mean nothing to freight carriers. The acrylic was being shipped by ocean vessel from Asia and in the middle of the voyage the shipping company, Hanjin went bankrupt. No ports would allow them to dock, and I found myself tracking the shipment on-line daily to see if there was any movement. When you know the name and location of the ship carrying your goods, and it has not moved in a week or two you know you might have a problem.

Well, we finally finished the prototype and Marketechs provided me with a beautifully detailed build book. I brought the prototype home and mounted it in my home office using French cleats. I could not stop looking at it and there was quite a parade of friends who came by to see it, they were all blown away. That is when my friend Matt first called it “art.” I named it “Shinichi” after Mr. Shinichi Suzuki, the man who introduced me to Bach.

### **Meeting Shlomi**

While Marketechs was busy working on the prototype of what was now called the Shinichi, I went back to working on my original Art Nouveau design. I had been sketching a new concept on scrap paper, used envelopes and the occasional napkin. I was trying to capture the look of the Paris metro stations and blend it with the functionality that I had achieved with the Shinichi. While working on my design I always circled back to the struggle of how I would actually build it. There were no straight lines and no such thing as a square corner. Everything was curved and would require craftsmanship and building techniques that at the time were foreign to me. Little did I know how much I was about to learn.

In the merry travels of my day job, while in Timonium I stopped into Free State Timbers where they deal in exotic hardwoods. I was blown away by the selection of slabs of exotic species of wood. I talked to the owner, Joshua and showed him a sketch of my designs and asked for his advice. He looked at them, pointed to the Art Nouveau and said, “That one’s Art Nouveau and here’s your guy for that.” He handed me a brochure and it was for Kaya Furniture Design, owned by Shlomi Abukassis. That was seven years ago.

I knew that Joshua was for real when he then pulled out an old issue of Fine Woodworking from 1987 and went right to an article titled, ***Building an Art Nouveau Cabinet*** written by Terrie Noll. Terrie and Danielle Hanrahan had worked together on a display cabinet, and it was a work of art. I already had a copy of that article that I found while searching my archive CD of every issue of Fine Woodworking. The article was a treasure trove of detailed information on how to make the frame using rail and stile construction. It was written long before CAD and CNC(computer numerical control) were introduced into the mainstream and it would play a huge role in the future of my projects.

I took Joshua’s advice and called Shlomi. He was enthusiastic and passionate and interested in talking with me about my project. He invited me to stop by his workshop in Southeast Baltimore. I gathered up my sketches and loaded the prototype into my truck and took them to meet Shlomi. We spent a couple of exhaustive hours talking about both projects and went over my prototype in detail to discuss how we could improve the design. The build book from Marketechs was an essential part of the discussion; it provided the information that we needed without tearing the cabinet apart.

## **Building Shinichi**

Shlomi and I would meet a few times a week and the weeks turned into months. He is as much an artist as craftsman and possessed the patience and eye to build such a complex cabinet. There were still numerous fine details to work out and we made many changes to the prototype. At the suggestion of a famous luthier named Howard Nedham that I had the pleasure of meeting, we modified the lighting to strike the violin dramatically, while minimizing the shadow effects. Because we wanted the cabinet to last a lifetime with minimal service, we nixed the small, hinged accessories doors. I feared that over time their alignment could shift, and we simplified the electrical wiring. In place of the original hinged doors, we opted for a one piece curved front drawer. To preserve the sleek look of the drawer, in the spirit of minimalism, we carved out a hidden pull. We introduced a wire chain that would allow the wiring to glide without friction when the drawer was opened, reducing wear over time. Our final improvement of this generation's design was a revolutionary humidification/dehumidification system that would maintain a stable humidity level year-round.

The wood that Shlomi choose to build the Shinichi was stunning Bolivian Rosewood and curly maple, both solids and veneers. The contrast of light on dark woods made for a dramatic look and the cathedrals in the grain of the Bolivian Rosewood created an eye pleasing appearance. If you look closely at the curly maple, you can see a few natural wormholes that tell the story about the forest where the maple trees grew. Mr. Nakashima would have been proud of this unexpected charm.

The crystal clear, curved PPG Starphire glass, and man-made faux Onyx come to life when the LED arrays are illuminated. The intensity of the LED backlighting is dimmable and can be balanced to produce a stark silhouette of the violin, or a more subtle background with the spotlights highlighting the scroll, neck, and body of the instrument per the request of my consulting luthier. The six, pole mounted, super low wattage LED spotlights become an integral part of the presentation and can be adjusted to land the light on any part of the violin.

## **The Crown and Finding John Chester**

For my Art Nouveau cabinet I had sketched an elaborate crown that has since proven to be the most complicated and controversial part of the project. Inspired by the Bastille Metro station entrance designed in early 1900 by Hector Guimard, I had to revert back to my days of structural design to comprehend my own thoughts. I had to lay out the plan view in 2 dimensions while thinking in 3 dimensions. I then cut sectional views at each opening and even though there are no straight lines; just hyperbolas and parabolas, I had to use trigonometry to figure out the angles of the sweeping curves. Still the question always loomed, how would I make this? I figured that my choices were either carving or machining, using CNC technology.

I approached a local carver who went on and on about not liking engineers. I was only going to take that verbal abuse once and he made the decision for me, CNC would be my method of choice. Not knowing anything about CAD design I found a great deal on a trial subscription to Autodesk's Fusion 360. It's a very powerful design program and I went through about 100 YouTube tutorials and got the design just far enough to pass it off to someone who actually knew what they were doing.

I found a great CAD designer on-line, Peter Robinson out of the UK. Peter is a freelancer and trains CAD designers for companies. We spent many hours on FaceTime and with the help of my neighbor and fellow engineer, Ken Marino, we were able to produce an STL drawing of the crown, the base cabinet and the drawer that would hold the violin.

While we were working on the design, I was having a rough time finding someone to mill the crown using CNC. I called at least fifty companies nationwide, many one-man shops and could find no takers. They just wanted to make parts, nothing as complicated as my project. There were a few larger companies with 5-axis CNC mills, but they wanted an arm and a leg.

Frustrated with looking for a CNC millwright, I decided to test my design by having a model made with a 3D printer. Once again, the process of finding a reliable source was arduous. After a half dozen tries, I found Xometry out of Gaithersburg. They were great to work with. They took my files and produced an incredible 2" high 3D plastic model. What I learned from that little model would hold true in manufacturing the crown; my design was delicate but when it was fully assembled it would have abundant strength. Milling the parabolas of the crown with CNC routers could put stresses on the wood that could cause the wood to fail. If they indeed held up, I will have found the balance between strength and beauty. The other lesson that I learned from the 2" 3D model is to get a bigger 3D model. It was so small that I misplaced it and have never found it.

Thank God that I finally found John Chester of CAM 3-D out of Fort Worth, TX. John took my drawings and STL files and produced parts for three crowns, Mahogany, Walnut and Cherry. John matched the woods, glued the blanks, and milled the 4 separate sections for each crown. John did it quickly, affordably, and beautifully. As mentioned, our biggest point of concern during the milling was the delicacy of the crown and we threaded the needle on that. Fortunately, while John was producing the crown parts I found a local CNC shop willing to look at the base cabinet design.

### **McDuffee, Vectric and his CNC Monster**

John Chester in Texas had done a masterful job milling the crowns for what I was now calling the Bastille. In spite of that I was struggling with the thought of how complex it would be to have him produce the final cabinet from such a geographic distance. I would not be able to drop in to discuss the inevitable day in and day out questions. It would also take a lot of the fun out of the process and so I decided to look for someone more local. I was referred to Tom McDuffee from Mr. Airy and he was conveniently nearby. We arranged to meet, and I gathered up my sketches and files and high tailed it over to Mt. Airy.

Tom had not worked with Autodesk's Fusion 360, he worked with another popular program produced by Vectric out of the UK. He could interpret my STL files and needed to upgrade his Vectric software to drive his CNC monster machine to achieve the vertical relief that we would need for the sweeping curves of the front. We agreed to split the upgrade cost and began discussing how we would construct the cabinet.

My initial design for the base and drawer consisted of cutting 2" thick slices and gluing them together to build the cabinet butcher block style. After much discussion we decided that the aesthetics of using veneer to cover the butcher block look was worth a try and went with it. The complexity of this design kept us on our toes, and we were constantly making adjustments. Tom came up with a few crucial

changes. He noticed that the drawer wasn't tall enough to accommodate the length of the bow, so we added an inch and a half. He also recommended that we install a lock to secure the instrument. His electronics background also paid off with many wiring enhancements.

As we were nearing completion the cabinet became a favorite topic of discussion in his shop. Customers would notice the cabinet and ask him all about it. I could tell that he was proud of it, it was not your standard project. He should be proud, he took an extremely complex design and created something without a prototype to work from and it turned out beautifully. With this phase completed, I wondered if I could make another cabinet of the same design from a more traditional method, stile and rail. I thought the audience that I was pursuing, violin purists, might prefer a solid wood heirloom quality cabinet. These are the folks who believe in hand carving everything and yes, they are curious about CNC, but generally don't embrace it. They even scoff at sanding wood, instead preferring to scrape to thickness.

### **Don Baynes' Heirloom Creation**

While at lunch with my landlord Mark, we talked about my Bastille project. Mark really liked the design and had been encouraging me to start selling the cabinets. He has been doing this for 30 years and he's the guy who has the answers to almost any woodworking or shop question that Shlomi and I have and respect his opinion. I told him that I wanted to try building a cabinet using a more traditional method than CNC and veneer and why. Mark agreed and introduced me to the man that he had touted as the best cabinetmaker and finisher he knows, Don Bayne.

Don has a deliberate process, and it would start with a very detailed set of shop drawings. Since his shop was only ten minutes away, we loaded the Bastille that Tom McDuffee had made into his truck and hauled it over there. Don went over the cabinet with a fine-toothed comb and asked a thousand questions, and they were all good questions. We spent a great deal of time nailing down the radius of each of the three pieces of glass, dissected the sliding mechanism and totally revamped the wiring scheme. I wanted all the electrical to be accessible from the front of the cabinet, eliminating the need to remove it from the wall if a light needed changing. Our intention was to build this cabinet to last several lifetimes knowing there will inevitably be a need to access components. We wanted that task to be as painless as possible.

With the shop drawings complete, we were eager to begin the cabinet making process. We chose to make this cabinet out of cherry and Don picked some beautiful grain species that matched perfectly with the crown. Since this cabinet would be hand crafted, Don created templates and jigs that could be used on future orders. Where those future orders would come from was up to me. I had gone from asking how I would build my creations to how, and to whom I would sell them. Of course, in my head I had gone through hundreds of scenarios. I pictured my cabinets in the music rooms of famous violinists, in the lobby of a famous concert hall, on the stage at instrument auctions, etc. It had for some time been more than just a project, it was my passion.

With the complexity of the project, Don was doing most of the work himself. A master cabinetmaker, I could tell that he too was caught up in the opportunity to build something so different than his normal masterpiece. His Art Nouveau carvings and previous works had demonstrated to me that he was not only a fan, but a student of the style. This project was a topic of conversation in his shop too, and one day when I was waiting to meet with him one of his cabinetmakers asked, "Can I help you?" I told him

that I was waiting to talk to Don about my Art Nouveau cabinet. He just shook his head and said, "That things a woodworkers dream," and walked back to his project.

The Bastille in cherry was completed. It had become what we could officially call a fine piece of heirloom furniture and I felt that we had come very close to perfection. The fit of the glass, the dramatic effect of the lighting, the way that the violin seemed to suspend from the hanger and the majesty of the crown gave me a tremendous sense of accomplishment. I had finished wrestling with the wiring and I was finally ready to hang it on the wall of the showroom. At Mark's suggestion I placed it where it would be the first cabinet that you would see coming through the door. We illuminated all three cabinets and just hung out together on a Friday afternoon, admiring an accomplishment that we all shared.