



# *Creating a Priceless Heirloom*

## *The Trinity Credence Table*

*in memory of  
Captain Edward A. States  
American Airlines Flight 587*

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*Eric M. Saperstein  
September 1, 2002*

## *Preface*

*“Designing and building period furniture is an artistic process, a scope carrying beyond the considerations of functionality where the beauty of the form, materials, sculpture, and finishing all prevail, yet blend simultaneously.*

*My father and I would like to thank Mr. Grant Fraser for his devotion to this project, he has been a pleasure to work with, providing us with detailed guidance while allowing true artistic freedom to triumph in this piece.*

*The legacy behind a work of art creates an allure beyond practical assessment, generating sentimental value, shaping an heirloom, and defining what future generations deem priceless. It is our hope that the story behind this piece serves both to honor the memory of Captain States, and to help create an heirloom for the enjoyment of future generations of Trinity’s congregation.”*

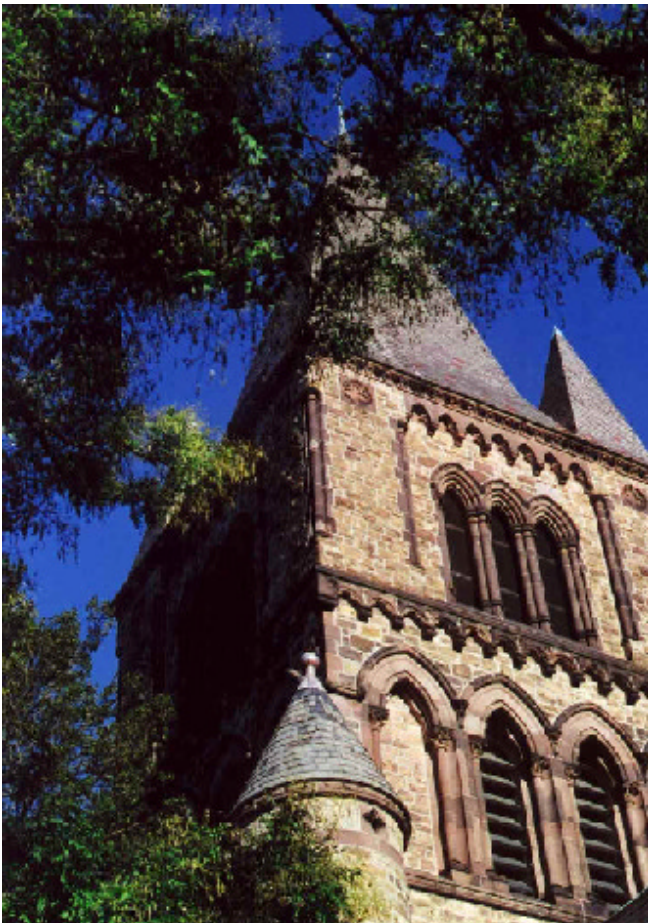
*– Eric M. Saperstein*

## *The Concept and the Need*

Early in January 2002, the *Trenton Times* featured Artisans of the Valley in an article entitled “Carving a Niche” where Janet Purcell tells the story of a 400-year tradition of woodcarving and furniture making transitioning to a new generation. Ms. Purcell did Artisans a great service; the article captured the essence of what Stanley and Eric strive to achieve, and explained the legacy behind their dying art while showing a hope for its future.

In a moment of coincidence, or fate, Mr. Grant Fraser, a Trinity Congregation member, read the article having just perused a church bulletin announcing projects for the New Year. Included within the bulletin was mention of a new Credence table. Mr. Fraser’s connection between these 18<sup>th</sup> century woodworkers and Trinity’s need for a period piece didn’t take but a few minutes, and our story began.

Period work fills a specific niche, and is by no means modern mass production furniture. The process is time consuming, and the results appear truly hand crafted and finished. Artisans interviews customers with equal criteria that the customer interviews them, working with each customer to ensure they are familiar with the process, and the goal for a finished product. Every new customer must visit the showrooms, and explore 18<sup>th</sup> century woodworking before Artisans accepts a commission.



Mr. Fraser described Trinity’s need for a Credence Table, or Communion Table, to replace an existing mismatched piece in disrepair. The project sounded intriguing to Stanley and Eric, and they scheduled a site visit the following week to begin evaluation of Trinity’s existing décor and requirements, and set a plan for Mr. Fraser to visit their shops and showrooms.

**Client Background:** Trinity Church occupies an historic building; a fixture in downtown Princeton nestled within the surroundings of the university campus. The original Richard Upjohn Gothic Revival design was completed in 1868, with later modifications by Ralph Adams Cram. The gallery organ at the west end was built in 1978, illustrating classic French design principles by Casavant Frères Limitée, Quebec. The congregation is highly educated, well versed in art, literature, and decorating. Working in this arena requires experience and extensive knowledge of furniture, historic structure, and design principals.

Stan Saperstein, with a Masters in History, a formal apprenticeship behind him, and 30 years of experience as a woodworker, excels in this area, and is never shy about sharing his knowledge or expressing an opinion – especially toward his son Eric, who is still studying to complete this phase of his apprenticeship. Eric and Stanley spent several hours discussing the principles of the Gothic period and considering suitable designs for the table and the carving pattern options. This discussion began Eric’s research, leading him towards writing this documentary.

**The Memorial:** Early on, Stanley and Eric learned that this project was a memorial effort in the name of Captain Edward A. States, a congregation member, woodworker, and the pilot of American Airlines Flight 587 that tragically crashed in Bell Harbor, NY November 12, 2001.

Mr. Fraser explained that Captain States enjoyed woodworking with his sons, and often offered his skills and time to the Church. When Artisans received the commission, they were now working in the name of another craftsman, an especially important consideration when the design is original, and not a reproduction. An unwritten code among craftspeople and artists calls for special attention in a case such as this. As a result, this piece will become the 2002 Artisans signature, or portfolio, work.

## The Planning and Design Phase

The goal is to infuse the church's Gothic theme into a truly sturdy and durable table while incorporating Trinity's Coat of Arms, an inscription, and elegant hand carving. Mr. Fraser specified the desire for an I-beam structure, and the requirement for frequent movement of the table to accommodate changes in the alter configuration for various affairs. Artisans strives to meet as many customer requirements as feasible within the physical space limits, structural integrity limitations, and period design rules.

The conception of this original design occurred shortly after our site visit, inspired from the many famous works of Grinling Gibbons, the most renowned English woodcarver of all times. Shown to the right, Gibbons' thriving career reined during the 1600's through to his death in 1720. Working for the British royalty and kings including Charles I, William III, and George I, his work remains on display in the palaces, churches, and homes of England. Shown below, is one of the most famed Gibbons' works, the Carving Room of the Petworth House in Sussex.

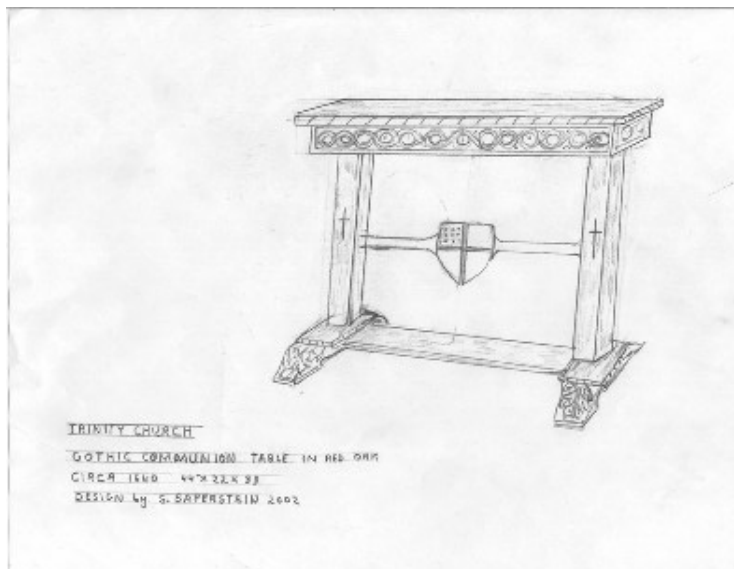


Photo Print: Grinling Gibbons and the art of carving, David Esterly



Stanley finally broke through his dislike of travel and set out on a pilgrimage to London, visiting St. Paul's Cathedral in the spring of 2000. The woodworking community considers St. Paul's as Gibbons' greatest achievement, and is driving a full restoration. Since the trip, Stanley has been eager to enter retirement from the State of New Jersey to pursue his calling as a craftsman. Trinity's table provides the perfect opportunity to begin this quest, allowing him to create a Gibbons-style piece.

With Stanley's nine-to-five retirement also came the transition of Artisans of the Valley as a business to his oldest son Eric. No longer bound by obligations to handle the heavy work, he remains a design consultant overseeing his son's apprenticeship, and popping out of retirement for pieces of special artistic nature. Staying in character, he sticks to traditional pencil drawings with a simple architectural ruler and template. The concept drawing (left) illustrates the basic proportions of the piece, and the carving that will enhance the elegance of this work of art.



This design invokes a variety of Gothic themes within the carving. A rope carving around the tabletop edge creates a transition to the apron, which features a Rosette inside Guilloche design.

This pattern will be a low relief carving, with a stippled background. Rope carving will continue around the feet, which also feature Acanthus leaf designs. Appliqué crosses substantiate the religious significance of the piece, and the inscription for Captain States will be hand carved into the shelf between the feet. The feature sculpture of this piece will be Trinity's Episcopal Coat of Arms suspended between the legs in the center I-beam.

I-beam designs are a traditional mortis and tenon structure, an art perfected during the Gothic period. This joint style is exceptionally durable, especially in a hardwood like oak - a biblical wood customary for church construction and furnishing. The piece will be finished in a classic Jacobean stain, with a hand rubbed shellac and tung oil varnish finish.

## *The History Behind the Design*

The predominant carving style of this piece is low relief, the prevailing style of Romanesque and early Gothic periods. It is important to discuss Romanesque carvings, and the Romanesque period, as this time frame brought what we think of today as 'woodcarving' into existence. Trinity's existing woodworking is Gothic reproduction, original to the late 1800's Gothic Revival, a period revisiting the original High Gothic era.

Religious woodworking traces back to Egyptian times when the carving of religious items gained popularity. The earliest known religious woodcarvings are of Egyptian origin. Statues of their gods, of wood or stone, were preceded by earlier Pre-Egyptian religious icons remaining on cave wall paintings. Although wooden relics exist as examples from these periods, woodcarving did not receive real attention until the Christian era.

The persecution of Christians within the Roman Empire ended in 313 when Constantine of the West and Licinius of the East proclaimed the Edict of Milan, establishing a policy of religious sovereignty for all. The Christian community flourished, and a new era of architecture, artwork, and furnishing dawned despite the Church's internal conflicts debating the sanctity of Christian art. In time, the artists prevailed, and the praise of God and Christ through human creativity, art, and design ingenuity proliferated through Europe.



Romanesque Style Basilica  
Paray-le-Monial, France, 1090-1110  
Views from three angles

The door of the Basilica of St. Sabvina at Rome remains one of the most important and earliest existing Christian relics, providing a glimpse into the uses, methods, and designs of early Christian woodcarving. Unfortunately, the perishable nature of wood left few desirable pieces from these times, but enough relics exist to conclude the functionality of woodworking to church life of this period to be much the same as it is today.



Understanding which patterns apply to which period is sufficient knowledge to design a period piece; tracing the roots of these designs helps build a feeling of history behind an heirloom. It is impossible to trace the entire evolution of woodcarving in a single document; branches and forks grew in every culture, establishing vast frontiers of design and form. As with all papers, the writer must transition between general and specific; establishing focus as is appropriate at the time. This paper covers the origin of Gothic carving, centering on the evolution of the feature patterns for Trinity's table. Each perspective beyond the Christian use of Gothic design will reconnect to this topic within the paper, in the end, creating a path toward the creation of Trinity's Sacracy table.

At the opening of the Romanesque period, woodcarving remained coupled to the established rules of stone carving, featuring rounded patterns commonly painted for detail. Taking the perspective of the craftsman of this period, stone, surprising to most, is easier to carve than wood given the available tools. The timelines of our history books consider the Iron Age over, but mastery of this metal was still in the adolescent stage, only pockets of iron and steel showing throughout Europe. Steel tools remained expensive luxuries, difficult to work given the technology. While a readily available blunt bronze tool can chip stone, exacting detail in wood requires a careful balance of density and temperament only carbon steel can provide.

Examples of this era include the framework surrounding the doors in Norwegian churches, as at Flaa and Aal, the scroll-work borders on the choir-stall and wooden reliquary belonging to the former monastery of Lokkum (1244) in Hanover, a few small wooden coffers in various collections, as at Cologne and Vienna, and several chairs in the museum at Christiania.

The appearance of higher relief began to show towards the close of the Romanesque period, the doors of the Church of Maria im Kapitol at Cologne and the doors of the cathedral of Spoleto. These latter doors, finished by Andrea Guvina in 1214, are perhaps the greatest achievement of Romanesque woodcarving featuring five-centimeter relief carving ornamented with twenty-eight scenes from the life of Christ. The existence of these works illustrates early use of figurative woodcarving within the church, most prevalent to doors, paneling and altars.





Notre Dame, Chartres, France. 1145-1220

By the opening of the Gothic period, the evolution of woodcarving was several hundred years in play, with metalworking and tool making following suit. Around 1350, the woodcarver's bond to the rules of stone carving began to crumble, inaugurating the greatest era of woodcarving.

The roots of Gothic architecture and furniture design are based in the humble desire to embellish the house of the Lord, and this it achieved with lavish form and structure that tested human ingenuity to its fullest, as the spiritual impression of the great churches of Medieval Europe and Britain have never been reviled. Gothic woodcarvers, using these highly developed techniques and cast steel tools, provided churches the means to extend Christian favor of carved wood to include the functional furniture within, such as seats, desks, and tables. Ornate wooden altars and choir-stalls appeared throughout Europe. Existing specimens of the early Gothic era belong almost exclusively to the church; consequently, their ornamentation derives in most instances from cathedral architecture, consisting of crockets, tracery, foliage, figures, and battlements.

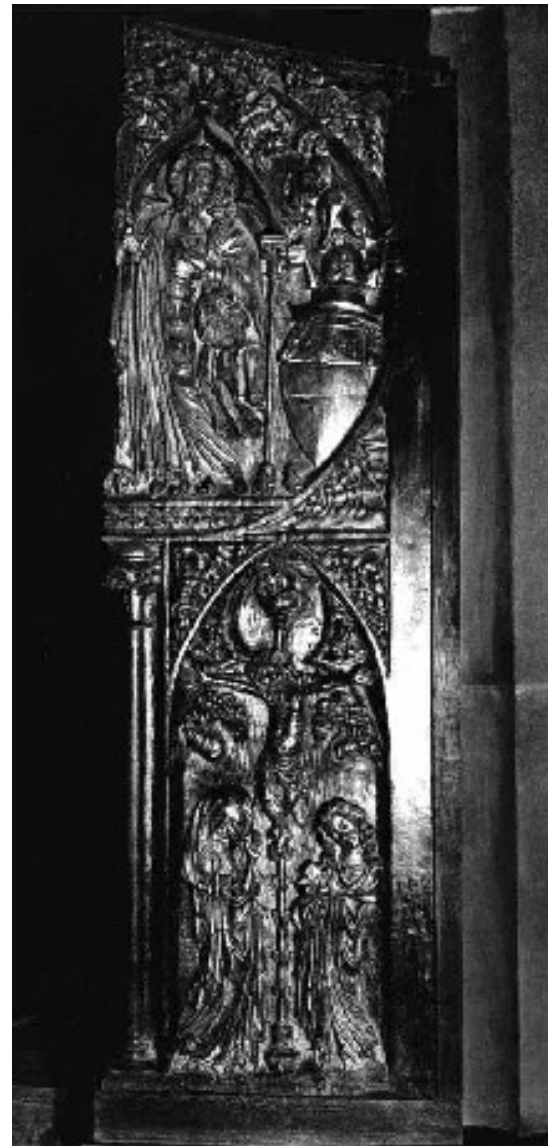
The choir stalls in the Emperor's Cathedral were donated by Kuno von Falkenstein in 1352; he would later become Archbishop of Trier. The photo illustrates a fine example of German Gothic woodcarving of the mid 12<sup>th</sup> Century. Notre Dame features a great many works of the Gothic Era, including high relief sculpture as shown below.

The nature of wood and its ability to accept exacting detail, hold sharp corners, show creased folds, and finish in varying colors and textures allowed imagination and creativity to flourish among carvers. Further improvements in tooling through the period, expansion of imagination, and new levels of medium experience quickly led to the appearance of finely detailed fretwork, interlaced lines, and piercing.



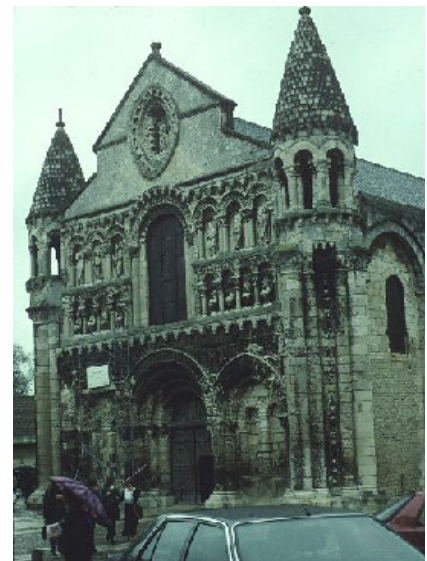
Notre Dame, Chartres, France. 1145-1220

High Gothic Stone Carving



Frankfurt am Main  
Der Kaiserdom  
The Emperor's Cathedral  
<http://www.altfrankfurt.com/Default.htm>

Notre Dame le Grande  
Early 12th Century  
Poitiers, France



## *Trinity's Woodworking*

The Gothic period flourished until the opening of the Renaissance in the latter 1500's, however the influences of this great period lasted through modern times. The church never truly departed from Gothic inspiration in wood and stonework. Trinity offers an illustration of these principals in the Gothic Revival style showing through both stone and woodwork.

In fact, inspection of Trinity's woodworking reveals a great deal of Gothic influence. The lectern and pulpit, choir stalls, and chapels contain examples of Gothic relief carving, sculpture, piercing, and fretwork. We highly recommend that each congregation member take a moment to visit the altar and chapels to appreciate the work already in place within the sanctuary. Thousands of hours of exacting detail have already been dedicated toward bringing Trinity's woodworking to life.

The existing woodwork is finished in Jacobean stain and a seed-lac shellac finish remaining true to the Gothic period. Our choice of finish for the new communion table will match the original grandeur of this finishing process.

Placement of a new piece within this setting must follow the spirit of the original architects and craftsmen. For this reason Stanley's choice is low relief, a subtle style suiting the Gothic Revival, reflecting a more subdued ornament than High Gothic European cathedrals such as St. Paul's and Notre Dame.

Trinity's most outstanding sculpture is a representation of Saint Michael. Saint Michael is the guardian of the body of Moses, whose name echoes as the battle cry of the angels. The statue depicts Saint Michael's triumph over Satan in battle with fine detail, carving, and piercework.



## *Setting the Proportions*

Approval of Stanley's design came through by the end of January, and Artisans received the formal commission around the middle of March. The target start date was June 1<sup>st</sup>, however Artisan's interest in this special piece, and some free time in Stanley's retirement lifestyle, resulted in a much earlier startup.



Although the conceptual design is complete, the design phase is far from being over. Development of working materials cut lists and patterns remains. Conceptual drawings list only the basic dimensions of the piece, addressing the primary concern of the customer, leaving Artisans to proportion each individual part and subassembly accordingly.

Trinity's tabletop will be 44" long by 22" wide; this measurement will be the reference for all other measurements. Tabletop dimensions provide sufficient information to purchase raw materials and begin patterning the legs, feet, supports, and carving. It wasn't long after Artisans received the go ahead before the materials were in the shop. Shown at the left, this modest pile of kiln-dried oak is destined to become Trinity's new Credence table.

## *Making the Tabletop and Apron*

Since the top sets the balance for the rest of the piece, the apron, legs, supports, and feet, it was the first piece made. The actual tabletop consists of two opposing grain boards and a four-piece mitered band. Banding serves for both esthetic purposes and to increase stability. Shown below, the top is secured by bar clamps while the glue sets. The banding will also be secured using pegs, the more traditional method of the Gothic period. Artisans uses modern glues to add strength and durability to our work, but the pegs alone would suffice.

Once the top measurements are set, the apron inset is determined, 1½" in this case, and the apron sized and mitered. Dovetail joints often appear on artistic table aprons, however, Artisans chose a pegged mitered corner to allow the carving pattern a cleaner transition around the apron. Table aprons serve two purposes; they provide structure and stability when properly secured to the tabletop and in this case a surface area for carving.

In addition to the table apron, perpendicular grain batons provide additional stability to a tabletop. On a small tabletop, such as this one, two small batons are all it takes to reduce the risk of movement in the table surface. The batons will secure to the bottom of the table surface floating between the front and back of the apron.





## *The Feet, Braces, Legs, andh Beams*

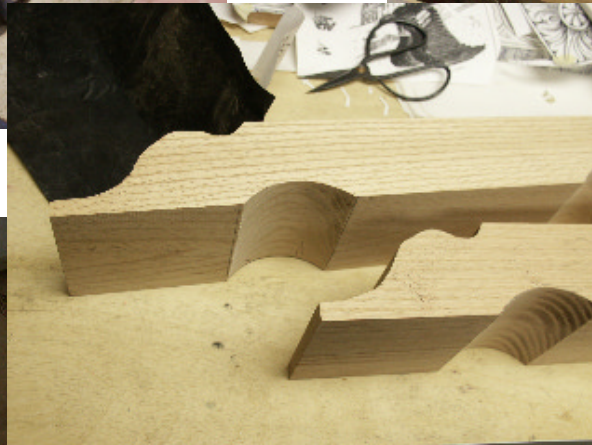
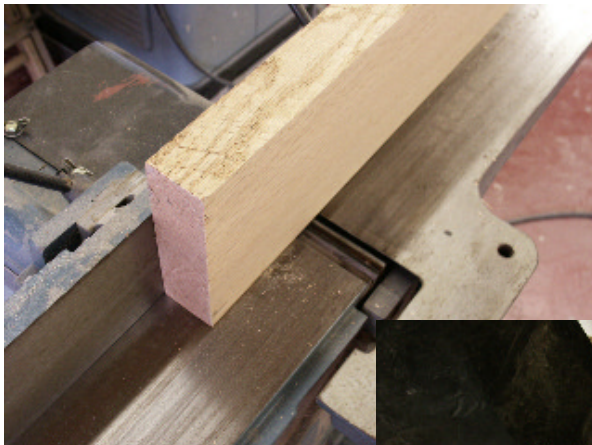
The second key measurement is the height of the table surface, in this case 33". The legs and feet must account for this specification, including the thickness of the tabletop. Figuring the 1½" surface thickness, the legs will be 31½", accounting for the tenon length.

The feet will be approximately four inches wide, three inches high, and 19" long. The length establishes the feet even with the outside surface of the table apron. The braces will be four inches wide, three inches thick, and 17½" long, accounting for fitting within the table apron.

Setting the length of the beams takes into account the apron, thickness of the legs, and the joint work. In this case, the joint will be a mortis and tenon, with a flush tenon.

The legs must sit approximately one half-inch inset from the apron, which takes place by default when centered within the four-inch wide top brace.

The shelf will include a blind tenon, in other words it will not show through the opposing side of the leg. The joint will penetrate within the leg approximately 1½", and will be secured using pegs. Once the feet were cut out square, the shape was formed using the band saw and a belt sander. These simple procedures change a block shape into a flowing form that accents the table while supporting the structure.



## *The Joint Work*

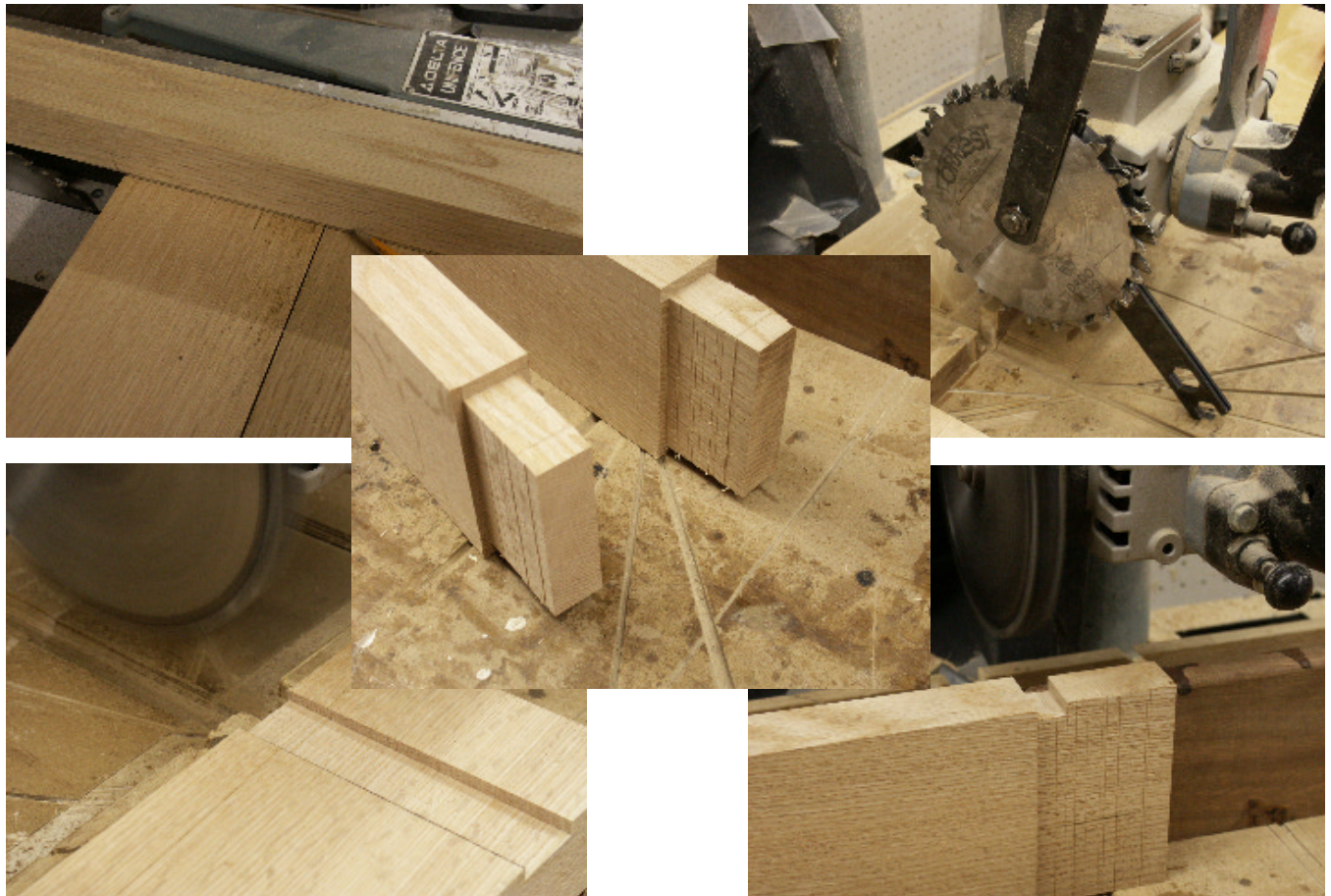
During the tenure of the Romanesque period came vast improvements in knowledge of wood, fueling carvers' and furniture makers' entrance into the Gothic era. Now ready to leave behind the need for bulky metal corners and strapping, they sprung forth mortis and tenon joint work and paneling techniques still in use today. The beauty and durability of Gothic joint work is apparent with the surviving doors and woodworking within the churches of Europe; thanks again to monumental leaps in metallurgy and tool making technology.

Gothic furniture makers perfected the mortis and tenon joint, a method requiring no glue, yet durable enough to withstand centuries of abuse. The method employs the understanding of simple physical structure, using wood in a way that generates strength to counter the forces on a piece by using those very forces. An understanding of grain patterns and stresses is all it takes to recognize how mortis and tenons work.

Mortis and tenon joints function using counteracting perpendicular stresses. Although variations exist, this basic concept holds true for every condition. For example's sake, we will discuss joining the legs to the top brace. The leg is a vertical plain and the brace a horizontal plain. This is very important, all mortis and tenon joint work must form a perpendicular line, or a "T" in the grain of the wood. The grain in the leg runs vertical, while the grain in the brace runs horizontal. Both pieces take advantage of the grain in the wood to apply the greatest strength for their intended purpose. In this case, the leg will receive the tenon, the brace the mortis; forming our "T." The same applies between the leg and the feet. Pegs lock the mortis and tenon together, so no matter which direction stress is introduced, it is counteracted by structure.

Artisans employ modern power equipment to assist in the process of creating a period piece. Time constraints and the cost of labor resources make it almost impossible to hand make joints without tripling the cost of a piece. The result is a clean, square, and stable joint appearing exactly as it would during the Gothic Age. The only catch is that sometimes things are too perfect, and for a client that demands authenticity we often rough cut using power tools and finish by hand, remaining true to authentic appearance.

Tenons will be cut on each end of the leg, allowing the leg to be inserted the full depth of the foot and brace, including the caps. Reducing the width and thickness of a component by removing wood from all four sides creates a standard tenon. The result is a rectangular block approximately  $\frac{3}{4}$  of the original size of the piece. Period techniques involve a handsaw, and a good set of chisels. Modern techniques employ tenoning jigs and dado blades, or specialized tenon cutters.



A mortis is a square hole that closely matches the size of its paired tenon. During the Gothic period, mortis joints were made by first hand drilling out the bulk of the material, with a bit and brace, then cleaning out the sides and corners using special chisels. Modern techniques utilize a drill press like machine that bores inside of a square chisel, resulting in quick clean square mortises.

As the joints are completed, they are dry fit to ensure everything matches and the final assembly dimensions meet specifications. The final step of the mortis and tenon joint process is to drive pegs through the joint. Once the pegs are in place, the assembly is final, so no pegs are driven home until the carving is complete. Mistakes are always possible in both joint work and carving, so the pieces remain unsecured until final quality checks and assembly. Prematurely gluing an assembly, then making a critical error in carving the piece, results in remaking the entire assembly.

The shelf assembly requires an open mortis in each of the table's feet. This open mortis will host the ends of the shelf as the tenons. Pegs will hold this shelf tenon in place, and the foot cap will serve to close the mortis from view.

The photos below illustrate the mortising process for several of the pieces required for the final table assembly. There are twelve mortis joints cut to accommodate eight tenons, the discrepancy due to the feet and top brace caps requiring a mortis to accept the same tenon as the feet and braces themselves.



## *Pattern Development*

The majority of the carving patterning for this project was left to Artisan's discretion, however we often work with our customers to develop custom patterns. We derive the majority of our patterns from our own drawings, books, and previous projects. Stanley's artistic sense allows him to freehand draw many patterns and designs. Modern conveniences include a Xerox machine, some computer assistance, and overhead projection for larger patterns.

Patterns are two dimensional, and provide merely an outline of the carving. Shown below is a sample of the Dogwood and Guilloche pattern for the table apron. Since wood will allow the third dimension of depth, we often complete sample carvings for customer approval. The final product may differ from the perceived visual effect of the two dimensional pattern. Each custom piece requires formal carving patterns to ensure accurate and consistent work throughout the project. We hand transfer every pattern to the wood's surface by tracing the design using good old fashioned carbon paper.



This paper will trace a brief history of each pattern used on the table, and illustrate the tools and carving procedures starting with the table apron, the feet, legs, rope carving, scrollwork and finally the sculptured coat of arms. The process is tedious and time consuming, and mistakes are inevitable along the way, but the beauty of the resulting work of art represents the true effort of artistic creation.

## *The Guilloche*



A Guilloche pattern involves interlaced circular designs, and dates back before the birth of Christ. Guilloche patterns first appeared in stone and woodcarvings, as well as paintings, and tile mosaics. Shown in the figure on the left, the outer circle of the Great Pavement excavated at the site of the Roman Villa at Woodchester, circa AD 117-138. The 25 foot diameter pavement is formed by the Vitruvian scroll of great freedom, enriched with foliage, and bordered without by a double twisted Guilloche, then within by a braided Guilloche. This root provides one tangible fact to illustrate the entrance of Romanesque period into England, and eventually into the hands of carvers such as Gibbons.

The guilloche appeared in woodcarving in almost all carving cultures of the period, including Greek, Roman, Egyptian, and Asian. Variations on the theme of the Guilloche take countless forms, they may be intertwined among their own lines, or encircle rosettes or other patterns. For Trinity's table Stanley chose an interlaced design incorporating a dogwood rosette.

## *The Dogwood*

Within the Guilloche interlace lie dogwood flowers. The dogwood represents a rosette in four petal form holding religious significance from a legend explaining that the cross on which Jesus was crucified was made from dogwood. The flower of the dogwood has four petals, which makes the shape of a cross. The center of the flower resembles the crown of thorns with bright red, clustered fruit in the center representing the blood of Christ. The dogwood's April bloom marks the resurrection of Christ, and the coming of Easter Sunday. The legend is popular, but false, deriving its fame from American folklore. The dogwood tree is native to the extreme southwest of Maine to eastern Kansas, and south to eastern Texas and Florida, never known to exist in the locations of biblical events.

## The Legend of the Dogwood

*Author Unknown*

*There is a legend that at the time of the Crucifixion the dogwood had been the size of the oak and other forest trees. So firm and strong was the tree that it was chosen as the timber of the cross. To be used for such a cruel purpose greatly distressed the tree, and Jesus, nailed upon it, sensed this, and in His gentle pity for all sorrow and suffering said to it: "Because of your regret and pity for My suffering, never again shall the dogwood tree grow large enough to be used as a cross. Not ever again shall the dogwood grow to be large enough for a tree, and so Slender and twisted it shall always be with cross-shaped blossoms for all to see. The petals shall have bloodstains marked brown, and in the blossoms center a thorny crown. All who see it will think of Me, nailed to a cross from a dogwood tree. Protected and cherished this tree shall be a reflection to all of My agony."*

When in bloom, Dogwood flowers appear in small clusters surrounded by four large, showy bracts that are often mistaken as petals. Flowering dogwood blooms in either white or pink, depending on the cultivar. A close look at a dogwood flower reveals not one large bloom but instead a cluster of small flowers in the middle of the white 'bracts'. The bracts are only advertising for pollinating insects like the honeybee.



## *The Acanthus Leaf*

The acanthus leaf is perhaps the most common base for carving patterns from all ages. Originating in Greece, variations of Acanthus ornamentation appear not in only carving, but also architecture, painting, tapestry, and sculpture. By the fifth century BC, the acanthus ornament established an important role in architecture; bragging rights include selection as the principal ornament of the Corinthian capital. The popularity of the acanthus continues through Romanesque, Gothic, and forward to modern times.

The actual acanthus plant, shown bottom right, is indigenous to middle Europe, most abundant in Greece, and has two types, one wild and thorny, and one with soft branches without spines. The flow of its leaves lends itself well to the flow and form of wood and stone. The first acanthus renditions rooted directly from nature, depicting realistic expression rendered in sculpture with truthful detail, whether of the soft or the spiky variety, showing the character, texture, and model of the leaf.

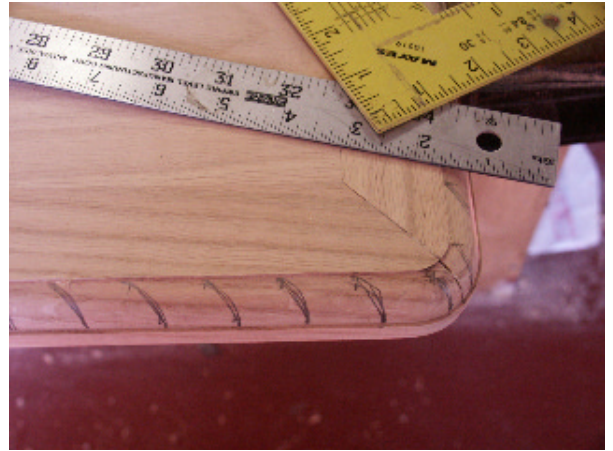
Acanthus carving appeared as one of the first church carvings, and remains today a popular Christian motif. Trinity's table will



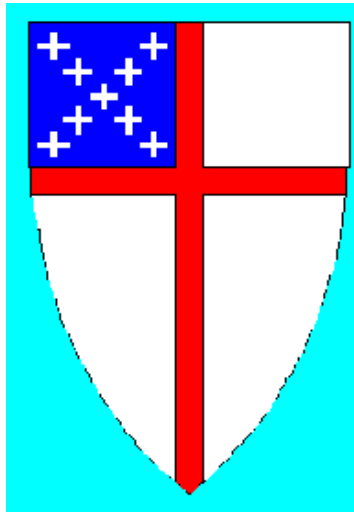
## *Rope Carving and Scrollwork*

Rope carving and scrollwork are ancient designs tracing back before documented history, their exact roots lost in antiquity. Appearances are common in almost every culture, ranging from the Roman columns to Chinese architecture. Scrolls represent a free and flowing form, perfect for the transition between pieces, easily adaptable to stone, wood, or metals, and there are as many scrolls as there are artists. Simple to learn, easy to repeat, rope-carving signatures decorate table edges, frames, columns, and moldings through all the great periods.

Rope carving appears on the table edge, feet caps, and bottom shelf. Rope patterns range in complexity from spiraled ropes to more detailed eggs and darts or intertwined floral sequences. Our choice for this table maintains a relative simplicity with a rope and scallop design centering a teardrop on each side while the scrollwork adorns the table's feet.



## *The Episcopal Shield*



Trinity's shield is a rendition of the Episcopal Church shield. As with all coats of arms, every aspect is symbolic. The formal description of the Episcopal shield is as an argent shield with a cross gules, on a canton azure nine cross-crosslets argent in saltire. The red cross on white is for the Church of England; the white cross-crosslets represent the nine original American dioceses that met in Philadelphia in 1789, adopting the constitution of the Protestant Episcopal Church in the US.

Further research unveils multiple interpretations of the symbolism of color. The blue canton with the crosses in saltire is a reminder of the Episcopal Church of Scotland from whom the first American bishop, Samuel Seabury, received his consecration. The red cross stands for Christ's crucifixion; a cross, because crucifixion by definition is being nailed to a cross, and red to symbolize Christ's atoning blood. Red is also traditionally the color of martyred saints. Blue in the background of St. Andrews' cross, represents truth and loyalty, while the white crosslets symbolize Peace. Red, white, and blue as a whole are symbolic of the sacrifice of Christ, the purity of the Christian faith, and the humanity of the Virgin Mary, as well as the Church's position as a US Anglican Communion.

The specific meanings may vary, but the shield imparts a distinctive mark of Episcopal faith on the Sacrary table. Represented in three dimensions, the shield sculpture will be Stanley and Eric's artistic rendition of the samples provided. Expanding the sample shown above provides the base pattern for the shape of the shield. The shield outline is traced on a ten inch wide oak beam, as a pattern for the final cutout. All the material surrounding the top and base of the shield is removed, and the ends of the beam will become tenons, joining with the table legs. Lamination secures the strength, and adds dimension, while carving and painting accent the design.

## On to the Carving Bench

Photo by Frank Jacobs



Building the functional table is the task of a furniture maker and joiner, a task demonstrating skill and craftsmanship, but representing only portion of the final piece. The true artistic value of Artisans' work comes forth with the addition of hand carving.

The art of woodcarving requires but few kinds of basic tools, allowing a skilled carver to perform all cuts required for completing a carving. All carving tools may vary these basics in size and/or alter them in concave or convex bends; each variation providing a specialty role decreasing carving time on a piece, but a thousand specialty tools are all based on these few:

**The gouge** is a tool with a curved cutting edge, used in a variety of forms and sizes for carving hollows, rounds and sweeping curves

**The chisel** is available in many sizes with a straight cutting edge used for lines and cleaning up flat surfaces.

**The "V" tool, or parting tool**, is used for veining, and in certain classes of flat work for emphasizing lines.

**The stippling punch** was used to provide background contrast before sandpaper was available.

**The mallet** is used to drive the tool through the dense grains of hardwoods.

**A clamp or a vise** is used to secure a piece while carving is in progress to prevent movement, assuring each mallet blow accomplishes its task.

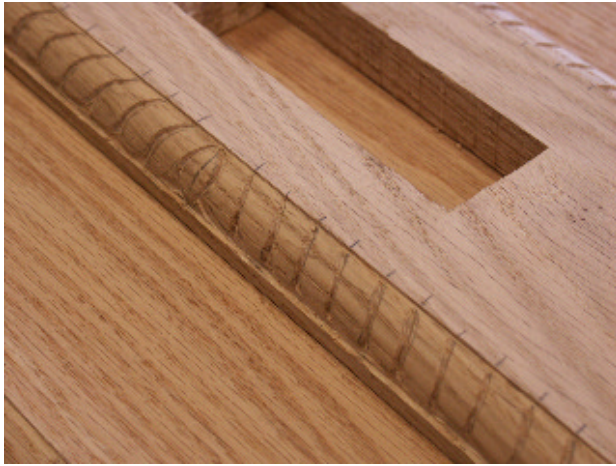
The carving tools used on this project, and all of Artisans' work, represent almost 400 years of history, accumulated or hand made by Stanley, his teacher C. N. Grinnell, and Mr. Grinnell's ancestors. This collection contains "*the vibrations of generations of carvers,*" says Stanley when he fondly admires these prized possessions, "*for all we know, some of these very tools may have participated in the original carvings of churches such as Trinity. We may use power assist in roughing our pieces, but when it comes to the detail, everything falls back to these tools.*"

Shown above is the table apron in various stages of the carving process. The first stage is to outline the carving, tracing the dark carbon lines using a parting tool. Outlining defines the boundaries of each section, but barely shows the true detail of the final piece. The gouge is employed to set the outline and stop cuts for the center of the flower.

A skew - a slanted chisel - softens the harsh outlines, gradually removing small chips and shavings until the texture and shape reach the desired state. Adding fine detail using a smaller parting tool, and setting the breaks between flowers and the folds in the petals takes time and patience. Next, a rasp rough smooths out the work, removing burrs and sharpness, while stippling the background results in contrast between the carving's fore and backgrounds.

Carving is more than tracing lines, even in low relief. A carver's artistic skills and ability to read the grain of the wood turn lines into forms. To the right, this photo illustrates a completed section of apron. The appearance of the raw wood surface is a shadow of its potential; the finishing and tinting process will extenuate the full detail of the carving.





The next phase of carving will be the rope carving on the tabletop, shelf, and feet caps. The initial bead is applied using a router, saving a great deal of time compared to hand planing the bead. The pattern layout is a simple repeating pencil mark guideline, which is carved using a parting tool, and then a rasp or sandpaper rounds the sharp edges.

Our goal is to create a repeating pattern that resembles small flowing leaves around the entire perimeter of each flat piece. A teardrop centerpiece will transition the direction of the rope's flow on each edge of the surface.

Continuing our carving agenda, the acanthus leaf on the feet is the deepest and most complex of the relief carving. The end grain made it almost impossible to photograph the acanthus leaf unfinished, so this photo jumps ahead slightly in the process to show the carved leaf.



The scrollwork, crosses, and bibles are appliqués, adding a touch more sculpture to balance the shield. Appliqués are cut out individually, carved, then applied to the surface of the piece. This allows a much faster preparation than completing the designs in high relief. In this case, it also helps maintain an elegant smooth surface to the feet, legs, and I-beam. Appliqués do not require disturbing the scraped surface of the wood, where carving does. Disturbances to the surface appear much darker when finished, as illustrated by the acanthus leaf photo.



### *The Inscription*

The inscription carving is the permanent memorial to Captain States, reflecting in a simple Gothic chip-carving font. A carved inscription is elegant, and lasts the life of the piece. We laid out the text of the inscription to fill the lower shelf, easily readable from a view standing behind the table. The lettering will be distinguished from the background when the table is finished, reading:

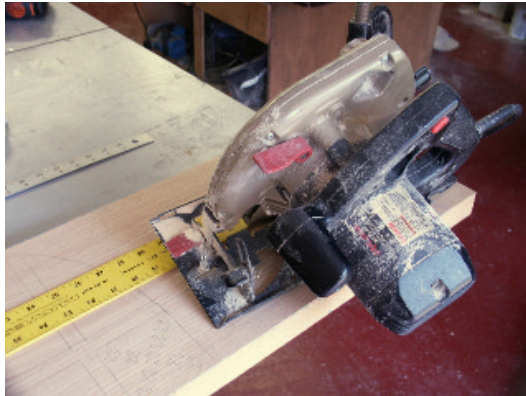
**In Loving Memory of  
Captain Edward A. States  
AA Flight 587  
August 22, 1959 – November 12, 2001**





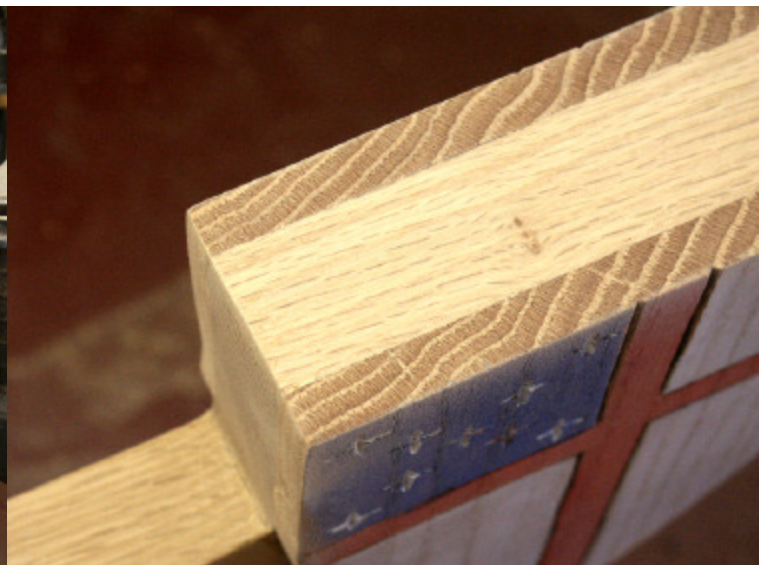
## *The Shield*

The shield sculpture is the centerpiece of Trinity's new Credence table. We intend this sculptural effect to be very much understated, yet highly significant towards perpetrating the religious application of the table. Our debate on just how much of a sculptural effect to introduce concluded towards the minimalist side, thus we avoided the temptation to incorporate extraneous detail beyond the basic Episcopal specifications. The shield is cutout around a template from a single ten-inch wide beam. This ensure structural integrity, removing material to show the full shield centered on the beam. The process involves a circular saw, a jigsaw, a band saw, and a steady hand.



Once the shield outline is cut out, a half-inch solid oak laminate is applied to both sides. Lamination greatly increases strength, and creates a three dimensional effect, raising the shield above the surface of the beam.

Once the lamination was in place, we completed a very simple carving and filled in the appropriate colors. We had to take a few stabs at it before reaching the correct blue; the coloring shown at this stage is a bit too dark.



## *Pegging the Joints*

Pegs bind the separate mortis and tenon pieces together, but do not provide actual joining strength. Their role is simply to prevent separation, maintaining position. Every joint will have at least two pegs, except the shelf, which will have three. The top braces will be secured to the apron and the tabletop using screws. Although this method is not true to the Gothic period, it ensures the table will remain secured in place through years of use. In addition, floating screws centered in holes slightly larger than the screw diameter allow the top to expand and contract freely, reducing the risk of checking over time. Were we to produce this table as a “fake” quality reproduction, the top would be secured using pegs.

To ensure a straight drilled hole, we pre-drill the mortis side of each joint without the tenon inserted. The pre-drilled hole is used as a guide to drill through the tenon after it is placed and clamped in its final location.



## *Assembly*

All the joints have been dry fit. The peg holes have been pre-drilled through the mortises on the drill press to serve as guides, and then it is time to assemble. Assembly goes very quickly; each tenon is coated with glue, and the joints are fit and clamped, then drilled and pegged. Once the pegs are in place, the joint work is strong enough to hold everything together before the glue even sets; glue is just an added security.



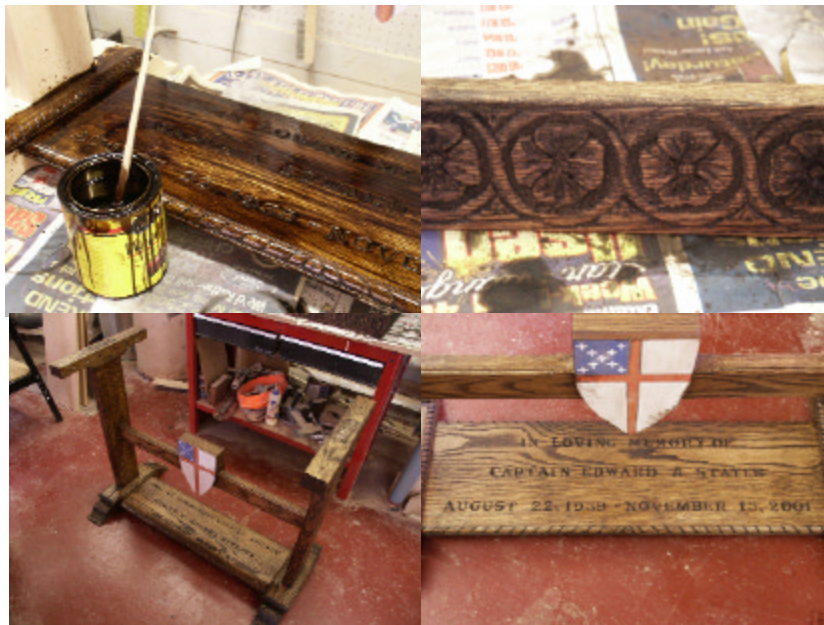
## *Finishing Preparation*

The preparation process is as, if not more important, than the actual finishing process. The entire surface of the table must be sanded, scraped, cleaned, and free of glue marks or obvious defects. Stain is a dye, and it highlights any detail in the wood - intended or not - carving or defect. In some cases, an aging or antique appearance is preferable; Trinity's table is in between these perspectives. The existing wood and stonework is antique, showing years of wear. Because our goal is to blend Trinity's new table with the existing environment, it will appear as a 'restored' antique. An appropriate level of wear will show on the table even though it is new. The best compliment we can receive from this effort is to question if the table is new or antique. It should appear at least a hundred years old.

Oak is an open pore wood, with a coarse texture to the grain. It accepts stain and finishes beautifully, with only minor variations in coloration. Sanding oak requires several steps, as the wood is dense and tough. Starting with eighty-grit, working to one hundred fifty-grit begins the preparation. Sandpaper was not developed until the 19<sup>th</sup> century, leaving Gothic furniture makers to plains and scrapers for surface preparation. We continue this tradition on our true period works, spending several hours scraping the visible surfaces of a piece.

## *The Finishing Process*

At this point, Trinity's Credence table has reached the final stage of production: Finishing. Finishing a piece properly provides not only beauty, but also longevity and durability to a piece. Without protection, exposed wood will decay and return to the Earth within a few years. Furniture may last a hundred years if sheltered, but every piece will eventually succumb to time. Finishing does not stop this process, but prolongs it, allowing wood to maintain its integrity for extended periods. Proper care of this piece will allow it to survive fully functional for perhaps three to four hundred years.



The finishing process consists of four distinct layers: a stain, a sealant, a protective coating, and a wax layer. The stain introduces the coloration to the piece, in this case a dark brownish black known as Jacobean. The sealant - shellac as appropriate to the period - locks the moisture content within the wood in place, and prevents constant variations due to changes in humidity within the environment. The protective layer, tung oil varnish, protects the surface from damage due to direct contact with water or alcohol. Hand rubbed wax provides the final touch, helping the varnish to shed liquids and absorb ultraviolet sunlight before damage occurs.

Staining is a messy process; there is no avoiding this! Proper use of a penetrating oil based stain creates a deep rich look when rubbed into the surface of wood. Modern wiping stains will never compare to this authentic appearance.



The stain is applied with a brush, pushing it into the pores and details of the carving. It is then rubbed with a rag, and allowed to sit a few minutes before the excess is wiped away.

Staining detailed carving with a dark stain, such as Jacobean, results in a slight loss of contrast in some woods. We will rectify this problem later by lightly sanding the surfaces of the carving to create a highlighting effect.

The newly stained piece must dry for at least one full day before a shellac sealant is applied, allowing the color to set and the solvents from the stain to evaporate.

## *Finishing*

Shellac is a natural chemical compound with characteristics that bind with and seal wood, creating a protective boundary and prolonging the life of furniture and woodworking. In addition, shellac creates a warm glowing finish that when properly maintained brings life to furniture. The negative factors include discoloring from contact with water and dissolving when in contact with alcohol.

Although shellac was once the most common finish, most people have no idea of what shellac is or where it comes from. Shellac is an organic resin, actually an insect secretion. The “Shellac Bug,” or *Laccifera Lacca*, is about the size of an apple seed. Indigenous to India and Thailand, the small bug feeds on the sap that it sucks from the twigs of trees to gain materials for a cocoon. The female bug secretes a substance known as “lac”; the resin forms a cocoon around the insect. This cocoon serves to incubate the eggs she lays. This cocoon is the raw material for shellac and is called “sticklac”, because it contains resin and parts of the twig and bug remains. The sticklac is washed and then refined either chemically or by hand, to produce the shellac flakes used to make furniture finish, records, and other products.



Shellac was the most widely used protective finish for wood until the 1920's and 30's when it was replaced by nitrocellulose lacquer, and polymer finishes. Lacquer finishes may be sprayed, reducing production time, but in the eyes of a purist it creates an inferior “ten cent” shine. The use of shellac as a finish remains popular only among furniture restoration and reproduction specialists such as Artisans of the Valley.

The shellac we chose for this project is a custom formulated Garnett lac, a dark brown unrefined base in the seed-lac spectrum. Many people do not realize that a great portion of antique patina is actually the coloring of the finish. Shellac refining techniques were limited and expensive; besides, why would they want to refine out such a deep full bodied color?

We formulated a one lb cut of Garnett shellac flakes for this project; a very thin solution. Most commercial cuts are three lbs of shellac flakes to one gallon of denatured alcohol. The thin cuts require more coats, four to five layers, to reach our desired finish, but this method of using the lighter solution is to penetrate deep into the pores of the wood. This deep penetration infuses the color, and creates a very durable protective seal over the entire surface of the wood, leveling the open pores of the oak.

Limitations in printing and web resolution may not fully illustrate the difference a thin coat of shellac makes, but take a moment to compare the beauty of the grain snapshot from the section on staining, and the one above. You can enhance or lose the beauty of furniture depending on the finish, and the application process. It is our opinion that the proper application of shellac greatly enhances a piece.



## *Post Shellac Assembly*

Common furniture construction practice is to fully assemble a piece before starting any of the staining or finishing process, however our obsessive nature won't allow us to assemble a piece, then seal it. The reason is a simple rule of thumb, what you do to one side of a piece of wood you must do to all sides of that piece. Failure to abide by this rule increases the chance of warping and checking due to uneven sealing of the wood; in other words, one side is sealed with shellac and the other is left open to the environment. Once the first two coats of shellac are applied, the piece is properly sealed and may be assembled. The final assembly brings a few more small parts, such as fastening blocks and corner braces. Although the table is probably strong enough already, we wanted to be sure, so we added additional support. Final coats of shellac and varnish are applied after assembly.



## Varnishing

Shellac will immediately display stains and damage from water or alcohol spills. A coat of varnish will render these elements harmless, an important feature for a table destined to carry vessels of wine. Although varnish is sufficient without shellac, we have found that the combination draws the most from the natural beauty of the wood.

Tung oil varnish is a natural substance derived from the nut of the Tung tree, indigenous to China. The Chinese have been aware of the waterproofing characteristics of tung oil for over 600 years. Its ability to seep into the pores of wood and bond with the structure creates a layer impervious to water and alcohol. This makes the perfect seal for boats, furniture, decks, floors, etc. The application of varnish on European and American period furniture did not catch on until the 20<sup>th</sup> century.

Application of varnish is best using a rag or rubbing pad, creating a glowing surface to the wood, free of brushstrokes. Again, varnish is a penetrating natural substance; it soaks into the pores of the wood, unlike its modern counterparts such as polyurethane or lacquer, which overlay creating a plastic like sheet, hiding the beauty of the wood grain and pores.



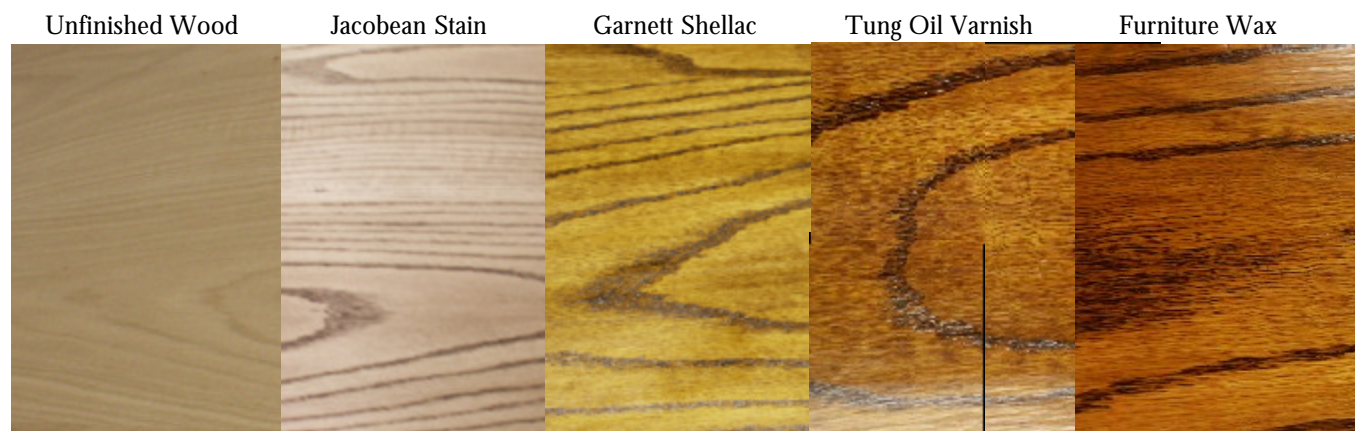
## Waxing

Waxing is simple; a brown wax is applied using steel wool over the surface of the wood. It is then buffed off using a cotton rag and nylon stocking material leaving an invisible protective film over the wood.

Wax contains oils, and it keeps the finish alive by reducing the natural rate of evaporation and deterioration innate to all finishes. It also fills minor defects, and offers a warm layer that reduces glare.



Finishing quick reference:



## Conclusion

*“Thank you for taking your time to read this documentary, we hope it provided you an insight to our creative process. We have gone from a concept, to a sketch, through the design, pattern development, cutouts, carving, assembly, and finishing processes covering as much detail as possible. The most gratifying moment to finishing a project is enjoying the new piece through the eyes of a satisfied client. Truthfully, we are always a bit nervous in the end to be sure we achieve this goal!*

*To the members of Trinity Church: My father and I hope that each of you will take the time to visit the Altar, and enjoy your new Sacraacy table. A process that began eight months ago is now complete. Throughout the process, we selected each opportunity to snap a photograph, and jot down a few notes. The result is this documentary, alongside our finished piece.*

*As we mentioned earlier, the history behind an heirloom, the story behind the craftsman, and reason for its conception, along with its intended use, all play a role in the value of a piece. We offer this documentary as the first step in making this table priceless; its now up to Trinity's congregation to finish the job by building the story of it's day to day use and place in their lives.*

*Please remember, this table is a memorial, we hope each of you that knew Captain States remember him when you accept Communion, enabling his name and dedication to his family and his church to live on in this work of art for many generations to come.*

*“We've burned our signatures into the underside of the tabletop; our work is done.”*

*– Eric & Stanley Saperstein*



Photo by Frank Jacobs



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