LINDOW MACHINE WORKS

Rose Engine News

The Lindow Rose Engine....Setting New Standards In The World of Ornamental Turning

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John Tarpley, Editor

2014 OTI Symposium Review

John Tarpley

The OTI symposium held at the Hyatt Regency in Columbus, Ohio on October 2-5, 2014 was another successful meeting. With over 100 members and guests in attendance this symposium provided learning experiences, fellowship, good food, and fun.

The venue was excellent providing good meeting space, comfortable rooms, and very good food. I found the hotel staff to be very friendly and helpful. Another plus, were the other restaurants within walking distance. I was initially hesitant about attending a meeting in a downtown setting in a major city, but I didn't find this to be a problem. The only complaint I heard was about the distance from parking and of course we'd all like to have excellent accommodations at budget prices. We all owe a great vote of thanks to everyone who helped organize the meeting and surrounding events.

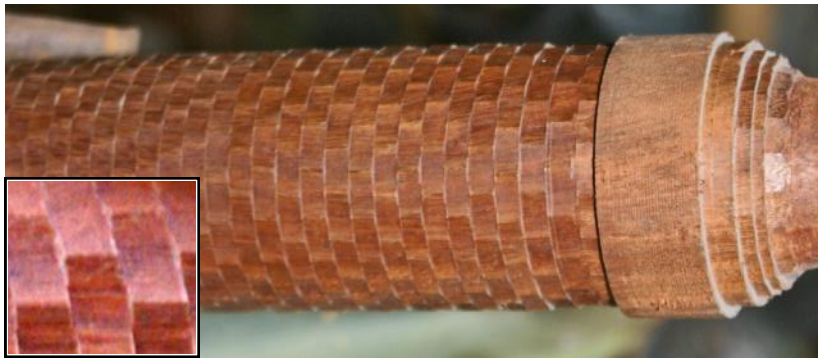
While the meeting did not have an official theme, there was more emphasis on working with metal at this meeting than at some previous meetings. This seemed to develop naturally from the availability of speakers, local businesses, and a growing interest in guilloché. For those of us using the Spencer drills and the techniques and patterns we have shown in recent issues of the newsletters, much of this information is transferrable to working with wood.

While the symposium formally started on Friday, there were two shop visit opportunities on Thursday. The first was a chance to visit Michael Dorsa's studio in Cincinnati. Michael runs a business that does guilloché, enameling, and engraving. A bus was organized to bring attendees from Columbus to Cincinnati, but since I was traveling through Cincinnati on my way to the meeting I just joined the visit in progress. Michael's shop is located in an industrial area of the city in an upper floor of an older building. This gives him a lot of space for his equipment and also great light from the large windows. Michael has multiple rose engines and straightline machines for guilloché and other work. He also has stations for enameling, engraving, and jewelry benches. There are also areas where he allows himself to experiment and develop ideas for future projects. His studio is very full and shows a lot of creativity.

Throughout the shop are examples of work in various stages of completion. Michael does not work alone and has at least two coworkers including his son. Surprising and interesting to me was seeing work done in wood. I don't know if these were test pieces, experimental work, or part of something that will become finished pieces. By the time I arrived the tour was well underway and I didn't get a chance to ask about the work in wood.

Some of Michael's lathes.

Some of the equipment was customized for the job at hand.



On Thursday evening Mike and Diana Stacey opened their home and Mike's home shop for a visit and evening of fun. Mike's home shop is located in their garage and the lower level of their home. Mike makes the best possible use of all his space including vertical and overhead space. While winding our way through his narrow isles designed for only accommodating a single worker and not the large group he graciously hosted we noticed that he needed to store an extra vise. Instead of using valuable bench or shelf space, the vise was placed between the joists for the upper floor and then the jaws were expanded to hold it in place which is a very creative use of space if you are not in earthquake country. In addition to a great and varied collection of tools and machines, Mike also has a large collection of books and equipment manuals that were very interesting to see.

On Friday evening the Stacys hosted an open house at their business, Columbus Machine Works. I reviewed their business last year when we visited during a Lindow Owners Group Meeting held in Columbus. If you

have not had an opportunity to visit Columbus Machine Works it is worth visiting their web site at http://columbusmachine.com/index.htm and take the photo tour.

Everyone needs a small arbor press.

Mike used his pantograph to make the master die for the meeting medallions.

A Charles Field rose engine.

The straightline machine was in use.

Mike's Evans OT Lathe

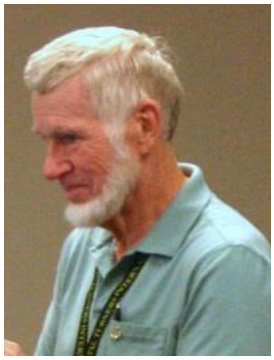
Gudel brocading engine

This is an Ames Triplex made by Ames Works in Waltham, MA. described by David as the "holy grail for machine tool collectors." It was manufactured in the 1930s-40s and is a combination lathe, boring machine, and vertical milling machine. Ames slogan was, "*Three Machine Tools in One - Occupies One-Third Space - One-Third Cost."* More information can be found at http://www.lathes.co.uk/amestriplex/.

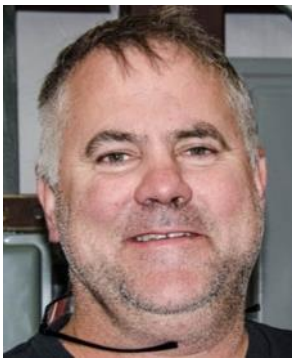
The meeting sessions began on Friday morning with a business meeting. The room for the sessions was comfortably appointed with tables and the needed AV equipment. Since AV equipment rentals can be expensive, OTI decided to purchase the needed equipment which can be used for future meetings.

The first order of business was to choose the officers for the next two year term. David Lindow was reelected President, Brad Davis was elected Vice-President, and Charles Waggoner was reelected Treasurer. John Lea has volunteered to continue to edit the OTI Newsletter. OTI now has 187 members and there are 2900 regular users on the web site. The Denver area was chosen as the location of the 2016 meeting. There was discussion about the type of facilities the members would prefer and the costs and benefits associated with various types of accommodations.

President Lindow



Treasurer Waggoner



Vice-President Davis

Alan Bugbee, Paul Cler, and Walter Balliet were recognized as new Lifetime Members. It was my honor and pleasure to sit next to Alan during many of the sessions and it was very enjoyable to share some of his stories and learn how he came to ornamental turning.

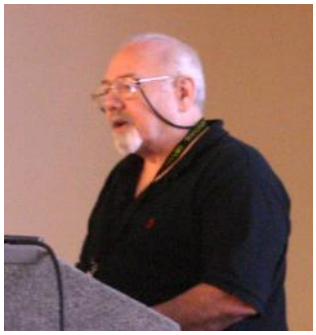
Editor Lea

Our featured speaker was Callie Shevlin who now lives and works in Switzerland. I briefly met Callie in 2011 when she was an Artist In Residence at Arrowmont. She then moved to Switzerland to learn guilloché. She has worked for Swatch Group and now works for Berge Group. These two companies own most of the Swiss watch names that we have come to know. Additionally, she also has her own guilloché business. Callie's presentation was given in two sessions, but I will cover both sessions together.

Callie entitled the first part of her presentation, "The Art of Guilloché; From the late eighteenth century to modernity: the rise and fall of a decorative craft." She began by showing several compass rose patterns like the one shown which have interested her and which can serve as the basis for patterns. She spent this portion of her presentation discussing equipment and how lathes changed through the years. She mentioned names such as Holtzapffel, Plant, Field, Bower, Mills, Lang, Bower, Gudel, Duguet, and Leinhard. She discussed both rose engine and straightline work. Interestingly what we call the toolbox or toolholder is called the Chariot in Switzerland. I'm guessing that this is because the tool "rides" in it. She is in a good position to collect information on the history of machines since several

are available in her area and part of her job is to oversee the company's collection of antique machines.

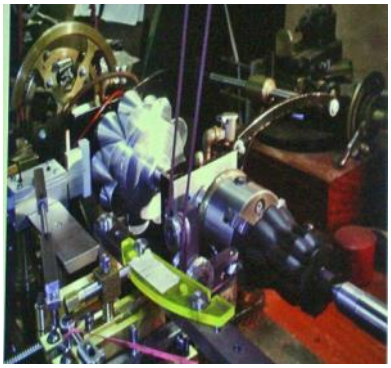
During the second part of her presentation on Saturday morning she discussed patterns and her methods of work. She uses a very thin cutter and does not use a guide since the rubbing of the guide can cause a shadow line on the piece. She uses Adobe Illustrator software to allow her to play with patterns and design new pieces. She keeps a "recipe" book of step by step notes of settings and other information so that she can repeat patterns that she wants to produce again. Callie showed many patterns that can be produced and was asked about a typical work week. She responded that she might receive an order for five watch dials in a particular pattern and each dial could take from 8-12 hours to cut. The five dials would be considered a week's work.



The next presenter was Al Collins who showed new developments and new work he has done with his MADE lathe. The A in MADE is for Al and he helped with the original design ideas and also did the original cabinetry. He began by showing a dome chuck with an angle plate that he has made for the lathe. One of Al's interests is fixed tool work so he has been experimenting with larger size fixed tools made from 1" M2 steel. They required him to enlarge tool holders to accommodate the larger tools.

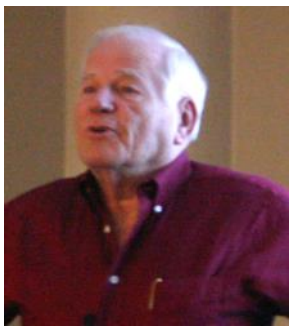
The box is a piece made using these larger cutters. Al has also made an extended range ER16 drill frame for the MADE.

Al spent most of his presentation describing how he approached trying to create triangular shapes in a piece. He started by doing a drawing using the triangular shapes shown in the photo.



He then began to experiment with what might be called 3D rosettes to develop a rosette that would allow him to create the shape. One of those experimental rosettes is shown at left made from aluminum. Along with the rosette he also had to produce other tooling such as new shapes of rubbers.

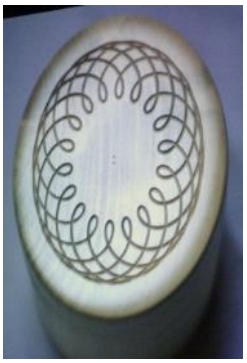
He ultimately perfected the rosette and tooling needed to produce the piece. This was a very interesting glimpse into the design process and methods of a very creative artist. It showed not only his creativity and technical ablility, but also his persistence to continue the process until he achieved the desired result.



David Arnold began the Friday afternoon sessions by showing his Super Cler Hybrid Machine. David met Paul Cler several years ago and has become a friend with great respect for the machine Paul developed. David reminded us that Paul created a traveling lathe which he took to various shows and presentations.

The lathe shown in the photo at right contained everything Paul needed when traveling.

There are 26 Cler lathes and David wanted to modify his lathe to add additional capability. He did this by adding stepper motors and computer controls among other modifications. He uses software from newfangledsolutions.com to generate the G code that controls the lathe. David showed some examples of his work made with his super lathe.



Here's Paul Cler with David's Super Cler Lathe.

Our final presenter of the day was Jon Magil who spoke about advancements and developments for the MDF lathe. He entitled his presentation, "MDF—7 More Years." The MDF began with plans originated by Paul Fletcher and then as a collaboration of Bonnie Klein, Gorst Duplessis, and, of course, Jon. He described several developments and asked for feedback from the audience about what they would like and what would be the most useful ways to advance the lathe. He also referenced articles in two issues of the *SOT Bulletin*. If you have the SOT CD sold by OTI you can read these articles. The first is really two articles by P. Ferraglio in issue # 52 of the *SOT Bulletin* which are a review of the work published by M, de la Condamine in the Memoires of the Royal Academy of Sciences in Paris 1734 and partially reprinted in the 1749 edition of Plumierss *L'Art dul Tourneur*. The figure at left is from that article. The articles are a study of rosettes and the patterns they can produce. The second articles are both in issue # 82 in the *SOT Bulletin*. Both articles are on spiral apparatus. One is by T. D. Walshaw and the second by Paul Fletcher. I think anyone interested in OT work will enjoy the articles.

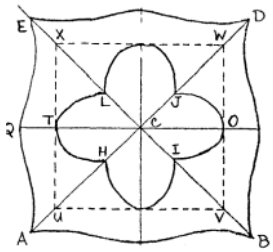


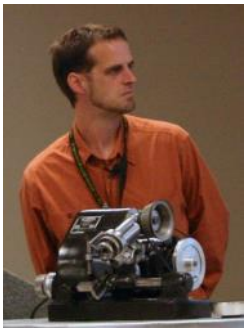
FIG. 1

Jon showed an image of a box in African Blackwood by Paul Fletcher. The designs on the top of the box are "geo flowers" produced on a single stage geometric chuck.

After Callie finished the second portion of her talk our next speaker was Phil Poirier. Phil's presentation was a little different. He did not speak about turning, but rather about, "Innovative Techniques Using the Hydraulic Press for Metal Forming". Since there were several presentations about metal work in this symposium it was a good fit to have someone discuss forming techniques. Phil is a master gem cutter and goldsmith who lives and works near Taos, New Mexico. His work incorporates a variety of techniques and methods. Phil teaches in various venues around the country.

Phil discussed forming, coining, blanking, and deep drawing using a hydraulic press. Each process requires a different level of pressure, differing complexity and type of dies, and in some cases different materials for the dies. Phil's summary slide gave good information for his specific presentation and also for other shop projects. He said, "It is easy to make something more complicated than it needs to be, and challenging to make something as simple as it should be. Cost, time and expense of tooling should fit the job. (Appropriate Technology)."

Here are two examples of Phil's work. He used hydraulic pressing as one of the methods used for each piece.



Our next speaker, Jon Spencer, gave a presentation entitled, "Making Cutters with the Single Lip Cutter Grinder." This talk allowed many of us to put a face with a name we have become familiar with because of the cutters he produces. It was also an excellent opportunity to learn what it takes to produce these well made and useful cutters.

Jon works for Lindow Machine Works on both the clock side and the Rose Engine side of the business. For sometime he has been making carbide cutters and drills that fit our cutting frames. They have expanded the capabilities of the lathe and have allowed doing patterns typically associated with guilloché in wood. Jon starts with MSC Accupro carbide blanks.

To create the cutters he uses an Alexander Single Lipped Cutter Grinder which he has modified to allow it to cut the angles and profiles he uses and to give him the needed accuracy. Seeing his demonstration it is clear that while the grinder allows him the needed repeatability, he has developed great skill making the cuts required and has and continues to solve the problems associated with making this type of high quality cutter. His cutters have a relief angle of 33° which prevents the backside of the cutter rubbing on the work. The Alexander grinder does not use gibs because they would absorb grinding dust causing multiple problems.

This photo shows a blank held in the grinder collet being shaped by the grinding wheel.

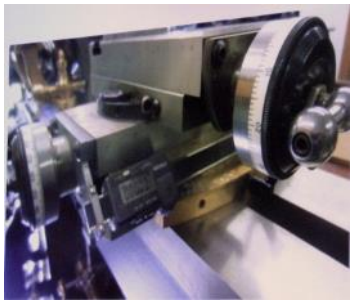
Jon's cutters are available in sets and can be purchased through Lindow Machine Works.

Fred Armbruster spoke on "New Techniques for the Rose Engine" with emphasis on the Armbruster Mark II rose engine.

He began by discussing work holding. Work holding should be affordable, adjustable, and have minimal overhang. As we know vibration increases the farther the workpiece is from the spindle. Fred showed a modular collet system that works on the Mark II which fulfills these requirements.

Fred has developed a prototype rocking tailstock which will facilitate spindle work on the lathe.

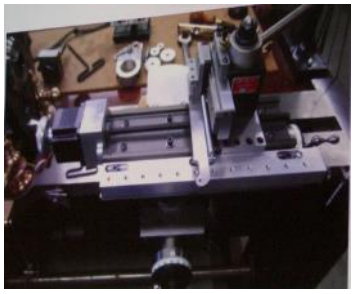
He has made several refinements to the slide rest including the addition of digital readouts, a dust shield for the bottom slide, regulation of the object and tool post, and the addition of rosette fading.



He has also developed an attachment to allow the undistorted cutting of a rose engine pattern on a vertically mounted cylinder or sphere.

There is now a fading stop to allow patterns to change depth as they are cut.

He has developed an extended length Hardinge slide and curvilinear templates.



Rich Littlestone spoke about his shop and his work. As a pen maker I was very happy to have the chance to hear Rich's presentation. I've been following his work since David told me about his web site a few years ago. Rich owns Argent Blue Pens and you can see his work on his site at http://www.argentblue.com/index.html. He has an excellent video of his straightline work at www.youtube.com/watch?v=MyqeeZpSdEo. It is well shot and shows closeup images not usually seen by anyone other than the operator.

Rich has also made custom knives, but now focuses on limited edition unique pens usually made from Damascus steel or fine silver. Rich makes 5-6 pens per year. The colors in Damascus steel result from the differential heating of the metal with the blue colors reflecting higher heat. When Rich became interested in OT he learned that the late Dale Chase's equipment was available so he purchased those machines.

To begin making pens Rich developed a modern pen

chuck that gives him the needed versatility and precision he needs. He replaced the chuck on his machine with a Swiss ER25 collet chuck and the tailstock with a precision live center. This required that he replace some of the machine frame and machine new indexing wheels. Now the combination of worm, worm gear, and indexing head function like a dividing head.

He uses a carbide cutter with an M2 steel Guide. The cutter is sharpened and polished with diamond using a jig he developed. He finds that his polished Guide only makes small lines and only if he pushes very hard. He also finds these marks polish off easily.

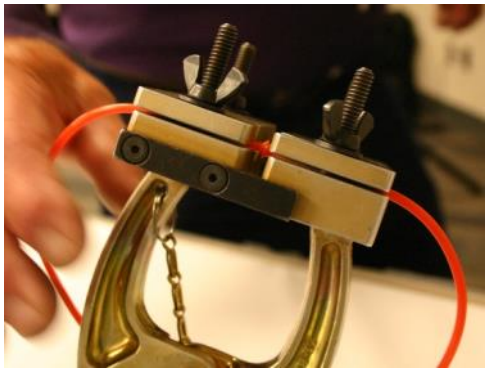
Each of his silver pens are limited editions from patterns he develops. He employs computer software to aid his design process using a program named Excentro which is designed for guilloché along with Adobe Illustrator. Before committing a new design to silver he tests the design using copper plumbing pipe. Rich designs his own pattern bars. He wondered why conventional pattern bars were always uniform over their length so he began designing bars that vary over their length. He also finds this concept can apply to rosettes. He sends his designs to a shop that makes the bars using EDM cutting (Electronic Discharge Machine) so that both bars are identical in squareness, length, and width. This results in a bar that has a smooth surface that works well on the straightline machine. He also has an inverted pattern bar made at the same time so he can make more varied patterns.

Left— example pen Rich calls it a basic basket weave with rose decoration. Above is a pen cap with a 12 lobed rosette decoration.

Saturday evening was the banquet, awards presentation, and auction. It was a wonderful buffet meal with a bluegrass band providing entertainment. The committee did a great job organizing this portion of the meeting. There were several submissions for all the awards. David Lindow won the Straightline in Wood Award, Peter Gerstel won the Rose Engine Award, Ken Newton from New Zealand won the Friendship Cup, Rich Littlestone won the Straightline Award in Metal, and Al Collins won the Award for Best in Show.

Ken Newton's Spoon

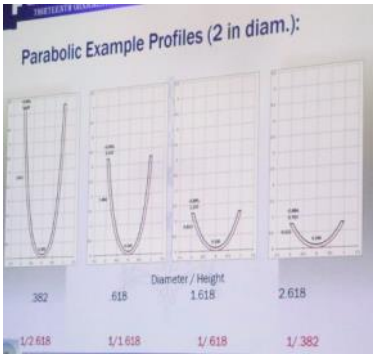
Al Collin's Vessel

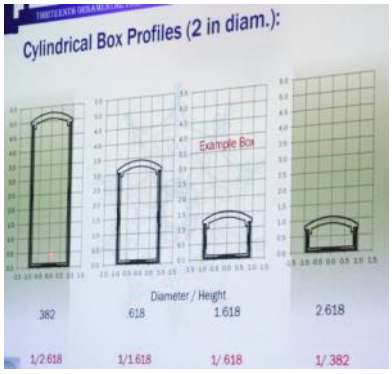


On Sunday morning we had a short added session on belt welding using the Eagle UT-236 belt welding kit. The clamp positions the belt so that it can be heated with a hot knife and then held while it cools properly. Clark Transmission was recommended as one source for orange polyurethane round belting.

D. Mayeron introduced us to, "The Remarkable, Mysterious, Little Known, Under Appreciated Pittler Lathe." Unfortunately, I did not get a usable photo of D. during his presentation, but he was kind enough to send one for this review. The Pittler lathes were patented in 1894 and they were designed to solve machining challenges. There were several models and they had a trapezoidal bed and the headstock could rotate on the bed. This made it capable of preforming many different milling operations. Models are still available today. D. had several images of original company literature and sales material. If you would like to learn more about this unique and flexible lathe you might want to go to http://www.lathes.co.uk/pittler/index.html.

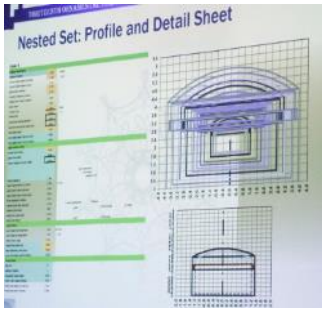
Our final presentation was by Roy Lindley who spoke on, "A Fresh Look at Classic Proportion." Roy began by talking about spontaneous or free style design where the turner starts with a blank and develops the piece as turning progresses. While this can result in a pleasing piece, it may not be the best piece and in some cases incorporating a feature such as threads must be preplanned for the best results. One of the considerations in planning a design is the Golden Rectangle. Roy showed that since turnings have only diameter and height their projection profiles result in four profiles for the golden rectangle. He demonstrated how this could work using the various ratios for both a vessel shape and for a box. Roy uses the Golden Rectangle as a guide for design and finds





that many times his final proportions are close to the Golden Rectangle ratios, but he finds he does not rigidly adhear to them to achieve a pleasing result.

He showed how he designed and turned a three shell box with a domed lid using these proportions for the project.

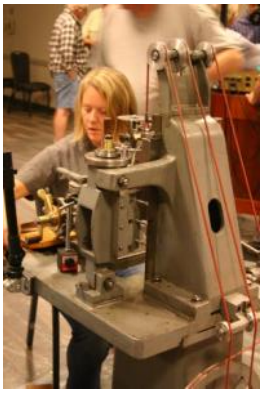


Roy showed a series of Excel spreadsheets that he used to design, setup the rose engine, and determine cutting frame placement for the project. He found that the Golden Ratio was not possible for all the individual boxes for optimal fit and design, but most are close. Roy finds mathematical ratios to be a convenient way to design and rescale pieces and for more complex pieces the ratios can be applied multiple times. However, he feels the use of the Golden Ratio is no guarantee of artistic appeal.

Roy showed his Lindow Rose Engine with its custom cabinetry. The detail shows the custom drawer pulls he made.

Throughout the Symposium the Demo Room was an active place with machines running, equipment to view, items for sale, work to see, items on display, and it was also a gathering place to catch up with turners you may not have seen since the last Symposium.

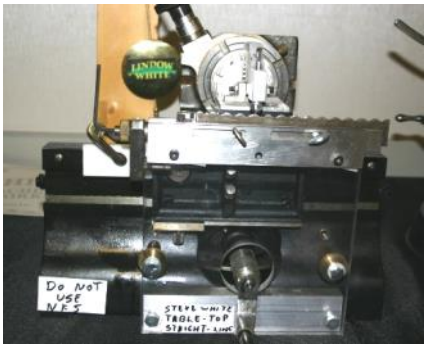
One of the popular areas was the operating brocading machine. Mike Stacy prepared a master to make a commemorative medallion for the meeting. There was an ample supply of blanks, and even though the process took only about five minutes, the machine was in steady use for most of the weekend.

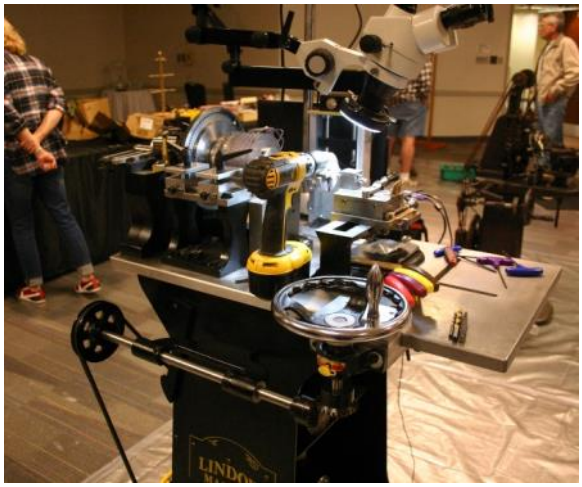


Callie Shevlin turned pens using a straightline machine. The pens were later sold at the auction.

Steve White displayed two rare tabletop machines. The one on the left is a rose engine from the 1930s. The nameplate shows it was made by the L. P. Brown Company in Attlebord, Massachusetts.

The one on the right is a straightline machine. The pattern bar is horizontal.

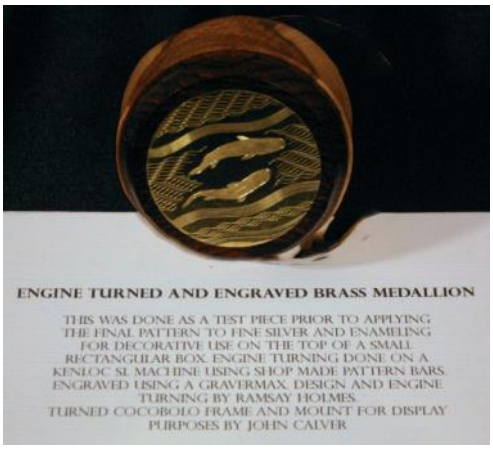




Michael Ezzo setup a Lindow Rose Engine with his modifications for guilloché. Michael has added a gear train to allow the engine to be rotated above the table. He has added a stereomicroscope for added visibility, and for the meeting he added a video system so people could see what the operator was seeing through the microscope. Michael also provided blanks so the attendees could try the lathe for themselves. He had a large number of example patterns available. This was one of the most popular areas in the demo room.

Michael had a large number of medallion patterns on display and as examples for attendees to try.

As always there was a great variety of work on display.



Pieces by Lifetime Member Alan Bugbee

A Letter From David

It was good to see so many of you at the OTI Symposium in Columbus. I carry fond memories of the meeting; and reading through the newsletter reminds me of things not in the forefront of my mind making the memories are all the better. So many people contributed in so many ways providing so much information that without such reminders it would be impossible to retain it all. One thing that both the symposium and the this newsletter really bring out is how far we've progressed with the Lindow Rose Engine since it's humble introduction back in November 2006 at the OTI Symposium in New Hampshire. Even with no crossing plate and a cheap import slide, many of us were impressed with what could be done with the machine. Who would have thought that the machine would develop to the point that it has? The OTI Symposiums have been critical in advancing the machine. Since the symposiums present diverse ideas from many sources we have found ways to adapt and implement many of them for the LRE, thus improving not only our skills as turners but also our machines.

In this edition of the newsletter I am proud to see some of what has come from such a humble beginning. We see complex rosette ideas alongside a method to improve the control of the curvilinear slide. Additionally, we have the basic "constants" of the machine consolidated into one document. All of this has been driven by those using the machine. As we use the machine we find things that improve it for our own use and through a forum like this newsletter the information is disseminated for everyone. As each of our skills grows individually, we grow as a whole because of the shared information. There is information in this edition from those who have contributed many times before and from some that are fairly new to the game, no doubt building on the shoulders of those who've contributed in the past. In the end, the machine improves as we improve, and each new person that's added to the family is in a position to contribute straightaway as the learning curve is flatten by those who've shared their learning experiences. Thus, what I see once again in this newsletter is more than I could have ever hoped to see when we introduced such a humble piece of equipment 8 short years ago.

Roy Lindley's "Constants" article was begun about two years ago when he created a very good list of basic information about the machine. The delay getting it published lays directly on my shoulders because I kept feeling I needed to add to it and information had to come from me to complete it. I am grateful for what he has done. It answers a lot of questions for people before they even ask them and puts all these answers in one place. The usefulness of this information to keep your machine in trim and maintain it cannot be overestimated. It's our hope that as time passes others will contribute to the constants so we can update it regularly.

There is a variety of articles in this edition. They show that many LREs are being used on a regular basis to produce beautiful objects of more complexity. They are also being used with added cleverness to make simple objects more beautiful.

As always much thanks goes to John Tarpley for putting it all together. None of this would happen without him.

Happy Reading,

David

Ed. Note: AAW 2014 Meeting Review

I had hoped to publish a detailed review of the AAW OT turning sessions in this issue. I was unable to attend the meeting and our planned source of information was not available by our deadline. I hope to have the review for the next issue. If you attended the sessions and would like to share the experience, please contact me.

Adding Power to the Lindow Curvilinear Slide

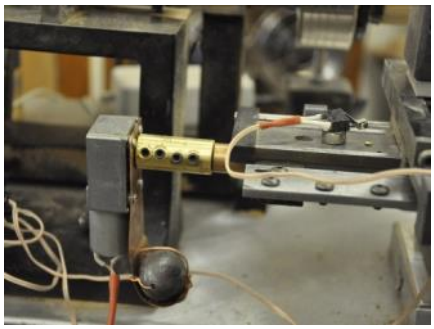
Tres Lennep
228-875-4144 Lennep@cableone.net, www.DesignsByTres.com

While decorating the outside of a vessel and tops of small bird house ornaments I have been adjusting my curvilinear slide to an angle which makes it very difficult to install the belt.

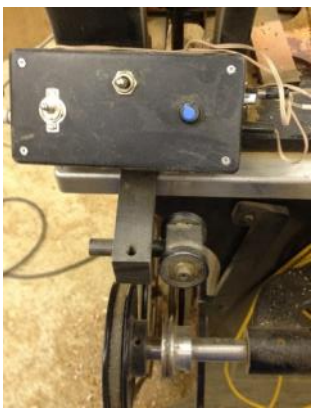
My solution is to add a small DC gear motor to drive the slide. I looked into stepper motors but the controls are more complex so I selected a 2 rpm 12 volt DC gear motor (DC 12V 3500/2RPM Rectangular Gear Box 2 Pin Terminal Electric Geared Motor, $17 from eBay).

The birdhouse roof is copper and was shaped using a form turned on the rose engine.

The curvilinear slide belting system on the Lindow lathe turns about 0.5 to 0.7 rpm. I tried a 10K potentiometer to reduce the voltage for speed control, but was not happy with the result. The best result was using a pulse width modulation (PWM) DC motor speed controller RC regulator switch (12V-36V 3A/6A Pulse Width PWM DC Motor Speed Controller RC Regulator Switch $3.50 from eBay). These speed controller circuits are commonly used to control motor speeds for radio controlled models and thus are readily available.



The connector mounting the motor to the curvilinear slide consists of a piece of brass with a ¼" hole through the center. Only 3 set screws are needed, the one next to the slide is tightened to the slide, the center one holds a ¼" diameter rare earth magnet, and the one on the motor side is ground flat and only tightened enough to prevent the motor from spinning. The magnet keeps the motor in place so that it can be quickly removed and remounted. I mounted a piece of copper on the back side of the motor with a lead weight to prevent it from turning and to balance its weight. The center of gravity is at the motor shaft.



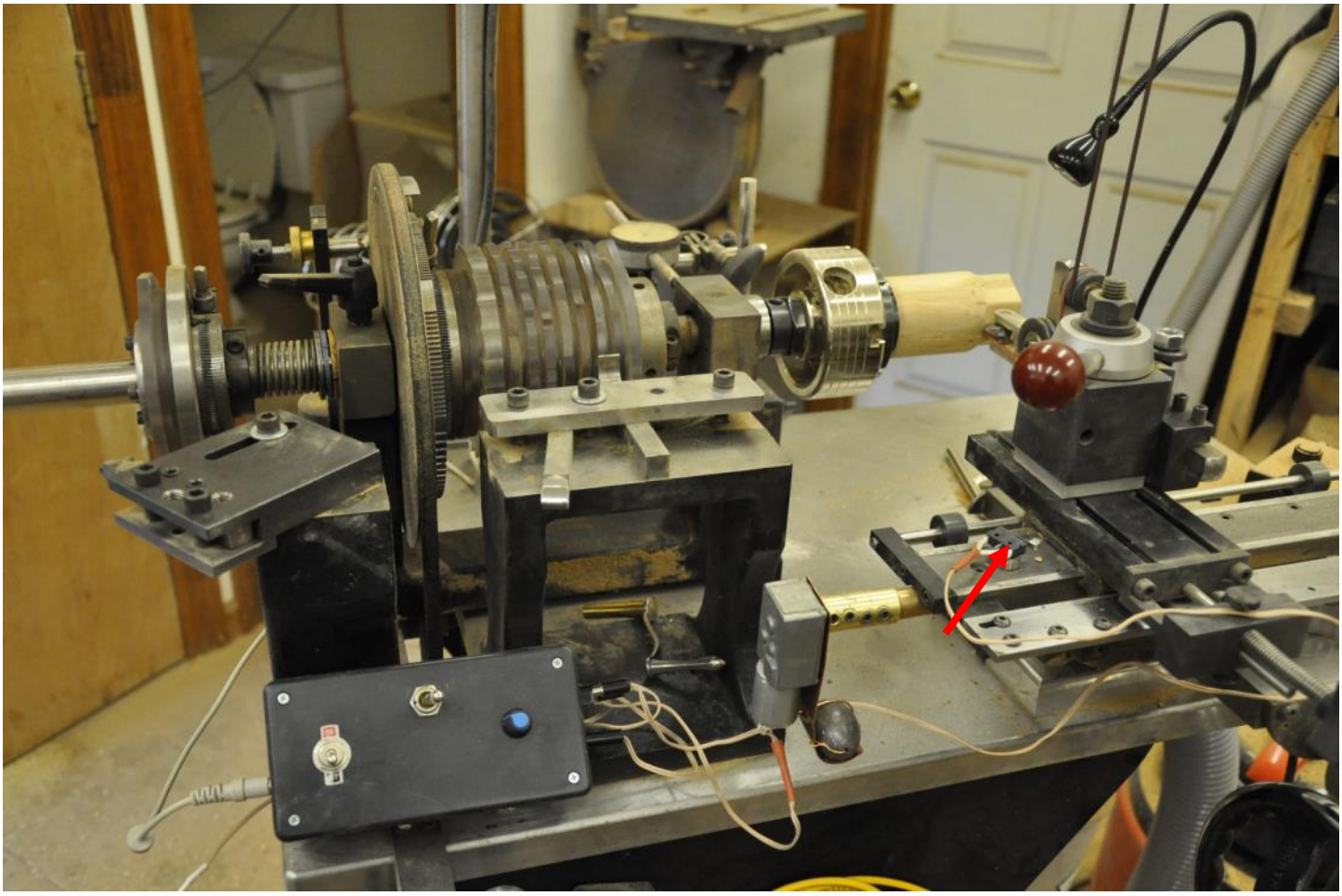
The control box holds the PWM speed controller, on/off switch, a DPDT (Double Pole/Double Throw) switch which is used on the output side of the speed controller to reverse the motor, a dial to control the speed which comes with the PWM speed controller, and plugs to attach the DC power to connect the DC motor and to attach the limit switch. It is a good idea to use a different sized plugs for the motor output and the limit switch. Using different size plugs prevents plugging in the power into the wrong connection.

I used a old printer power supply for my DC power source. A roller lever switch from Radio Shack with a rare earth magnet screwed to the bottom is used as a limit

switch. The purpose of the limit switch is to stop the slide from advancing when you reach the end of the cut. It is positioned on the slide using the magnet where you want the slide to stop. Currently I have one magnet on it but it would work better with two, because it will twist if you move the connecting wires which effects its stopping point and repeatability. I have not tested repeatability as it is not an issue with the work I have been doing, but with two magnets it should be good. *[Ed. Note: A limit switch is used to control a machine, as a safety interlock, or to count objects passing a point.]*

The motor will mount on either end of the curvilinear slide, but the red handle has to be removed if it is mounted on the right hand side.

I have been very happy with the drive. It has cut down the time it takes to turn the outside of a mini birdhouse from 45 minutes to about 15 minutes. I plan to add a tilt switch to the motor. Since the motor is independent of the rose engine drive, if the drive slips or reaches the end of the slide the DC motor will continue to turn. The tilt switch will shut off the motor when it starts twisting on the slide. I will test a couple of mercury switches. An independent drive allows you to use the curvilinear slide with patterns for fluting. I will try higher speed DC gear motors, and because I am using plugs on the control box it is easy to switch motors.



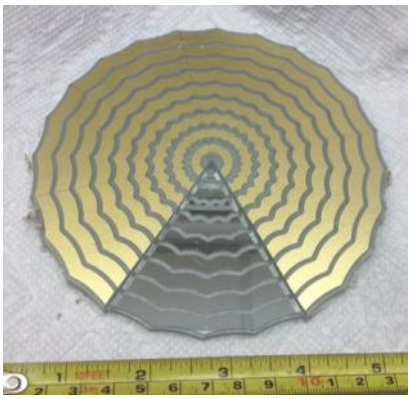
An overview of the completed setup with the controller box at the left of the lathe, the motor driving the slide and the limit switch (red arrow) on the slide.

[Ed Note: You can see more of Tres' work by clicking on his web site link in the title of this article.]

Christmas Ornaments

John Tarpley

I am sure many of you make Christmas ornaments each year. Since I am both a plain and ornamental turner I chose to make a turned bell this year. I made one hundred bells using various woods that were already in my shop. I did not try to ornament the bells because of the number I needed to make and my time limitations. I also made the wire hangers based on techniques I learned from jewelry making and also articles by David Reed Smith who wrote for *Woodturning Design* and also has a useful website. The clapper is shown in the photo insert. You could use a small eyehook for the clapper, but I made one using 20 gauge copper wire. I bend it into a loop which I place into a cup hook mounted in a portable drill. Holding the ends in pliers it is easy to twist the wire with the drill. The ends of the hook are trimmed and the hook is screwed into the clapper using a hole made with a #53 drill. The hanger is constructed from 18 gauge copper wire which is looped through the ring in the clapper. I then tighten the ends of the wire in the drill chuck and hold the looped end with an appropriately sized mandrel. The drill is then used to twist the wire. After trimming the wire ends, I ball the wire using a Mapp gas torch. This melts the wire ends resulting in a smooth tip. I bend the loop using a tool handle which has the curve I need.



Steve White has shared a new tree ornament he has made. He begins with 6" piece of mirrored Lexan. He spray paints the mirrored side green and notes that red also works well. The Lexan is then mounted on a faceplate with double stick tape. The faceplate is attached to the spindle of the RE and a pattern is cut which will simulate tree branches. Each disk will yield seven or eight trees which are cut on his bandsaw. The sawn edges are sanded and a 1/32" hole is drilled in the top for a fishing line hanger. Steve says the project took him about ninety minutes to complete.

Gerhard Thiel, a LRE owner from Adendorf, Germany sent these photos of ornaments he turned. The Nativity Scene is posed before the chapel of John the Baptist, a Gothic brick building, built in 1258. Joseph is18 cm tall and Mary is 14 cm. Both figures are yew and were turned using 3 axes. The crib and baby are from spruce. The angles are similarly made.

I would really like to see photos of the ornaments that you have made this year or in years past. You can email the photos to me at jjtarpley@comcast.net. I will publish them in future issues. I am looking forward to seeing your work.

Useful Lindow Rose Engine Facts and Constants

Roy Lindley with additions by David Lindow & Brian Clarry

This document is intended as a single technical reference for owners who are either not machinists or just need the information from time to time. It is intended to be a living document that can be modified as needed. We hope you will keep this document with your rose engine for reference.

Spindle

Distance from the lathe table to spindle centerline with the spindle at top dead center is 7".

The original solid LRE spindle is threaded 1" by 8 tpi, common to many conventional wood lathes and wood lathe chucks.

The Morse Taper spindle is 18" long, hollow, and has a #2 Morse taper to hold adapters. A draw bar is used to secure the adapter.

The standard 1"-8 adapter has a #1 Morse Taper inside. A 1 ¼" x 8 adaptor and a ¾"x16 Sherline style adapter are also available.

Using adapters enables moving the adapter with an attached holding chuck to most wood lathes. Compared to the use of lathe spindle thread mounts, Morse tapers are more precise and reduce the run out variances from lathe to lathe and can often eliminate using a leveling chuck.

Headstock

Head stock pulley has 96 holes for indexing.

Rosette base diameter is 5.125".

Spindle belt is SPZ 2500 and crank belt is SPZ 2187.

Crossing Wheel

Phasing marks on the headstock Crossing Wheel are numbered to coincide with rosette bump counts. These counts are 12, 18, 24, 36, 40, 48, 60, 72, 84, 96, and 120.

Each count has three notches with the number etched on the center notch. Moving from one notch to another moves the phasing of the cut by ½ or 50%. For example, for a 24 bump rosette this is one half the bump period or 0.5 * 360°/24 = 7.5°.

There are also a series of notches for 96, 192 and 288 divisions on newer models. Older models have notches for 200, and 300 divisions. These notches are marked with numbers.

Each complete turn of the handle of the worm moves the rosette barrel 2° with respect to the spindle meaning the rosette moves 2°, but the spindle remains stationary. Turning the worm key handle 180 turns is a complete barrel rotation of 360° (180 turns x 2°).

As an example—calculate how many turns are required to phase one bump of a 12-bump rosette into three phases:

First divide the number of bumps into 360° (360°/12=30°).

Second, to divide each bump into three phases each phase is 10°. Each turn of the handle moves the phasing 2° requiring 5 turns to move each phase.

Original Tower

The socket head cap (or Allen) screws on the original rubber tower are 5/16".

Overhead

Uses 1/8" Orange urethane belting. Part number Fenner Mfr. Number 4904006 (Orange). One source is MSC Machine under order # 35364561. Also available from Clark Transmission, Fairfield, NJ. Clark sells a different but equal brand for under 1/3 the price.

Universal Cutting Frame with triangular cutters

The screws for the carbide inserts on the universal cutting frame are a Torx T-7. They have a special head which locates the insert and must be purchased as an OEM (Original Equipment Manufacturer) part. They are F-11 screws from Circle Machine and must be bought through a distributor.

Triangular carbide inserts. Part number TDAB (typically 505). Circle Machine Brand Mfr Part # 2828708. One source is MSC Machine # 59873398. These inserts have 0.007" corner radius. Similar equivalent size cutters are available with slightly different specifications.

Uses 1/8" Urethane belting. Same as overhead drive belt above.

Use a 3mm hex wrench on the locking collar unless it has been converted to ¼"-20 which employs 1/8" hex wrench.

Universal Cutting Frame with 3/16" round cutters

Uses 1/8" Urethane belting. Same as overhead drive belt above and it must be cut and fused to length.

Use 3mm hex wrench on the locking collar unless it has been converted to ¼"-20 which employs a 1/8" hex wrench.

Drilling Frame

The collets that fit the original Drilling Frame are "WW" standard size which is similar, but not identical to 8MM size, but either will work.

The extended reach drilling frames manufactured after August 2013 use ER16 collets. It has 7/16" and 1/2" wrench flats to open and close the collet.

Linear Chuck

The linear chuck moves vertically 4" for each rotation of the spindle. Thus if one desires 18 divisions per inch, the rosette must have 72 bumps (18 x 4). You multiply the divisions per inch that you want by four for the rosette needed.

Leveling Chuck

Use a 3/8" wrench to adjust the square bolts for axial truing.

Use a 1/8" hex wrench (Allen key) to adjust for radial truing.

Auxiliary Rosette Holder

Each turn of the worm on the Auxiliary Rosette Holder moves the rosette holder 3° degrees with respect to the lathe spindle. (Note difference with crossing wheel above.) The worm wheel is marked for 120 divisions so turning the worm clock key 120 turns is a full rosette rotation of 360° relative to the spindle. For example, 10° is 10/3 = 3.3 turns. To make the 1/3 turn look at the divisions on the worm barrel. There are 12 increment marks around the worm band so the third increment on the barrel after three whole turns will be 0.3 and then move about 1/3 of the space to next mark on barrel. The second increment is three whole turns plus moving to mark 6 and about 2/3 of way to mark 7. The third setting would be 3 full turns and stop at zero on fourth turn.

The hex cap screws to adjust the rubber holder on the auxiliary rosette tower use a 1/4" hex key.

The hex set screws to clamp the rubber use a 3/16" hex key.

Hardinge Cross Slide

The Hardinge cross slide has a top and bottom slide. Each slide moves an actual 0.100" per full rotation of either slide handle.

Slide Dials.

Top slide dial—the top slide dial has **100** marks on the dial face. Each mark moves the top slide by 0.001". Moving dial handle a complete turn moves the top slide by 0.100".

Bottom slide dial—the bottom slide has **200** marks on the dial face. Each mark moves the bottom slide by 0.0005". Moving dial handle a complete turn moves the bottom slide by 0.100". The reason for the different scales is that turning a round piece of stock removes the same amount of stock from each side so the bottom slide dial needs only move half as much to remove the desired amount of stock.

The bolt on the tool post holder is 7/8".

To move the angle of the top slide, loosen the two swivel lock cams. Note that these are cams not screws.

Sherline Indexing Head

Threads on the Sherline Indexing Head are ¾" x 16 threads per inch. A Spindle Adapter is used to convert ¾" x 16 tpi to the 1" x 8 tpi threads of the Lindow Rose Engine.

The Sherline indexing head has predetermined stops at each 5° of rotation. Thus there are stops for 72 divisions. Thus the stops can generate 72 sides at 5°, 36 at 10°, 24 at 15°, 18 at 20°, 12 at 30°, 9 at 40°, 6 at 60°, 4 at 90°, 3 at 120°, and 2 at 180°.

Always lock the Indexing Head before removing any chuck. The 72-division internal aluminum cog can be stripped easily.

A worm drive unit of 8° per revolution is also available. The dial is marked in 16 divisions of ½° each. It also uses interchangeable detents for fast indexing.

Threading Attachment

The ¾" diameter thread cutter has a small radius on the outer perimeter.

A theoretical sharp "vee" thread depth for 16 threads per inch is 0.054". Good results occur when reducing the thread cutting depth to 0.049" and 'feeling' the starting point on the uncut surface based on hearing a slight scratching of the cutter when the cutter platform spindle is rotated a bit by hand. The difference between external diameter of the male thread body and internal diameter of the female thread for this example is 0.076" (1.4 x 0.054"). See the thread calculator on the Web site at http://www.roseengineturning.biz/thread_calculator.php.

Required Tools

Open End Wrench Set (7/64", 1/8", 9/64", 5/32", 3/16", 1/4", 3/4")

Metric Hex Wrench Set (Minimum—6mm, 5mm, 4mm, 3mm, 2.5mm, 2mm, 1.5mm)

Inch Hex Wrench Set (Minimum – ¼", 7/32", 3/16", 5/32", 9/64", 1/8", 7/64", 3/32", 5/64", 1/16", 0.050").

Turner Profile—John Lea

This month we profile John Lea who is probably known to many of you, since he is an active member of OTI serving as Newsletter Editor and Auctioneer at our symposia. John is also a new owner of a Lindow Rose Engine.

I grew up on a farm in Connecticut and then along the border in southern Arizona. My father was an illustrator and artist in the fashion of Norman Rockwell. He also was remarkably creative and given to make a needed piece of equipment rather than to buy it, and I think he infected me with the concept. I joined the Marine Corps at 16 and subsequently worked in Alaska and Europe on defense-related projects after being discharged. Here and there I worked as a bank loan officer, cabinet maker, collector, and finally spent 24 years on the faculty at Arizona State University teaching courses in management.

Sometimes I wish there was more oxygen in my shop. I can set something down and it can disappear.

My wife of 44 years is a retired court reporter and has a large needlework store here in Mesa, AZ, that has been listed among the top 10 in the world.

I was a charter member of the Arizona Woodturners Association when we broke from the Arizona Association of Fine Woodworkers in 1986. My interest in ornamental turning was piqued when I attended an American Association of Woodturners Symposium presentation by Gorst DuPlessis in Pasadena, CA, in 2003. So, I have been turning for 28 years, and interested in Ornamental Turning for 11 years.

I retired from the University in 2000 and spend my time helping my wife with her business venture. For a number of years I've been training people on forklift operation, conducting OSHA safety meetings for area businesses, consulting for a contact lens manufacturer, and doing furniture and machine repair/restoration.

My wife hosts several needlework symposia/workshops each year and usually I craft some small gift for the attendees, often personalizing it with their names.

These are two Lienhard brocade machines (1919 vintage top and 1911 vintage below) that haven't started down the restoration road. I plan to sell them to make room for the Lindow rose engine.

This is a rose engine created and loaned for the AAW Symposium by a friend, Chuck LaRue, based upon the Jon Magill design but using aluminum instead of MDF.

This is a home-made rose engine that I intend to replace with a Lindow Rose Engine.

At the moment, I have a 1912 Swiss rose engine, two Lienhard brocade machines from 1911 and 1919, a 1994 Lawler ornamental lathe and a home-made rose engine. I'm arranging to purchase a Lindow rose engine in the near future after I sell the rose engines and the brocade machines.

At this point, I'm mostly working on pens and needlework-related items. I have a laser engraver that I use to personalize the pens and that I can use to cut out and decorate the needlework items.

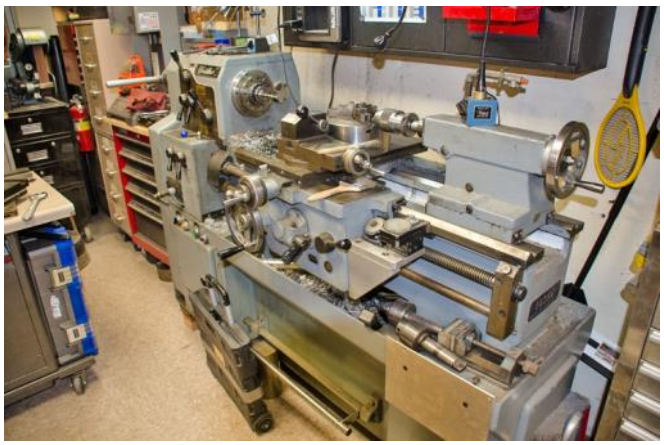
I do not currently sell my work. I am in the process of weaning myself away from fiddling with machines and moving toward making things with them. A novel idea for me.

In addition to woodturning, I have a variety of metal-working equipment. I do some machining and welding for friends and some small businesses, usually repairs or one-off pieces. Machine woodcarving holds a certain fascination and I hope to employ a CNC woodcarving machine that I recently acquired.

There's a great deal of fun to be had in my shop as I explore the capabilities of various machines and learn how to operate them. Boredom just never rears its ugly head at my house. I am truly fortunate that my wife has her passion in counted-thread work, and I have got toys that are always calling for attention. There are some ideas that I'd like to pursue on my "bucket list" while I still have the energy and the interest.

My brother-in-law hopes that I pass on before he does, given all of the "stuff" I've accumulated over the years, as he realizes it may fall to him to help his sister dispose of it. As a consequence, I'm currently dedicated toward downsizing my collection of things.

David Lindow dismantles and explains the inner workings of a Hardinge cross slide. Rose engine in front of us, a Cadillac metal lathe behind David, a CarveWright CNC woodcarving machine behind me, and a 1912 vintage Swiss rose engine on the right nearest the camera.



Cadillac 1428 metal lathe.

Sometimes I wish there was more oxygen in my shop. I can set something down and it can disappear.

[Ed. Note: Michael is sharing another of his creative ideas. By adapting his idea you can develop rosettes which can be changed to allow you to control amplitude and mix different patterns on the same rosette.]

Rosette Iterations: Going Round and Round

Michael J. Ezzo

Lessons Learned

I wanted to understand how a rosette translated to patterns on a pendent (Figure #1).

Fig. 1

I also wanted to add a straight line in the middle or end of a straight line pattern (Figure #2).

Fig. 2

Fig. 3

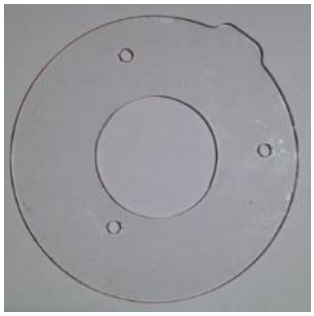


Fig. 4

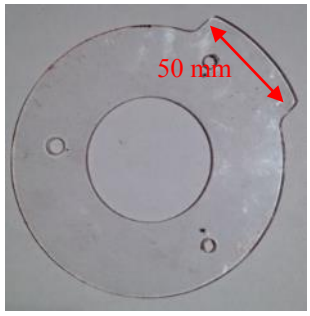


Fig. 5

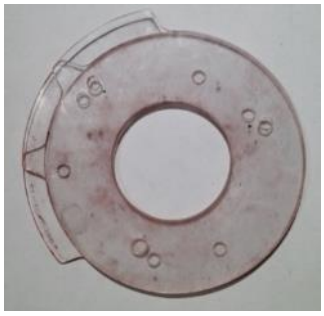


Fig. 6

The first iteration of my investigation began by creating a rosette that would let me introduce a 25mm straight line in any existing rosette pattern. I began with a ¼" thick piece of Lexan to create a rosette (Figure #3). It seemed like a waste of material so I reduced it to a 1/16" thick piece (Figure #4) which reduced both time and materials. Figure #5 shows a 50mm bump-out. By being thin the rosettes also be staggered making any length of line desired (Figure #6).

I created a rosette to introduce a line for 50% of a pattern (Figure #7).

Fig. 7

Fig. 8

Fig. 9

Fig. 10

There seemed to be room for even more efficiency. I attempted a number of designs including 25mm (Figure #8), 50mm (Figure #9), and 75mm (Figure #10). I used 2.3mm 260 brass for these rosettes.

Fig. 11

Fig. 12

Fig. 13

Then it occurred to me to introduce a pattern in the middle of another rosette pattern (Figures #11 and #12). However, there is a problem that will occur anytime one pattern overlays another (Figure #13). It happens at the transition between the two patterns if the slopes do not match. The result is an unwanted blip in the pattern. When working in 2D, like a pendent, the blip can be acceptable as just another pattern variation. I've not yet seen the effect when working on a cylindrical piece of wood.

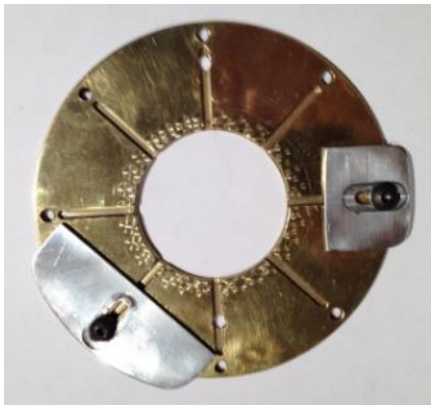


Fig. 14

Fig. 15

Fig. 16

Upon further discovery it seemed that if I could more easily change the width it might be possible to introduce a pattern or line without the unwanted blip. I created a base plate (Figure #14) that would allow me to quickly secure just the new bump or new pattern (Figure #15 and #16). This strategy also allows the height of the bump to be varied to create even more pattern variations.

Fig. 17

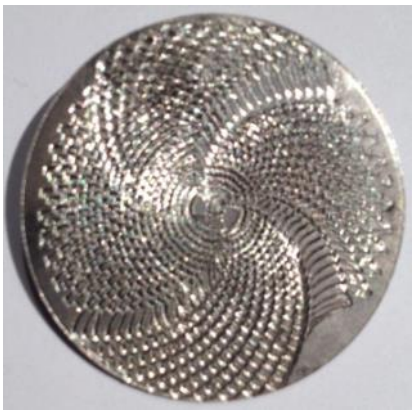


Fig. 18

I noticed that creating subtle changes in the pattern creates an interesting effect, and changing the overall shape of the pattern provides visual interests. The rosette in Figure # 17 has significant distortion in its shape. By shifting or phasing the pattern it seems more interesting than just repeating the pattern without phasing (Figure #18).

Next Iteration.

I began to create rosettes with varying patterns within the rosette. I started with a basic sine wave (Figure #19).

Fig. 19

I often use this as part of a pattern technique to create the first line in a pendent. I then use a Foredom Tool to create scallops along the edge of the piece (Figure #20).

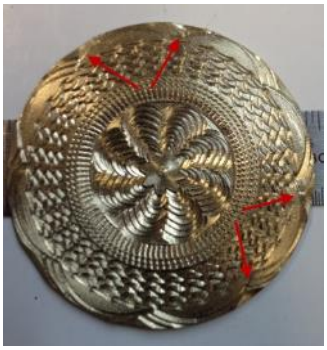


Fig. 20

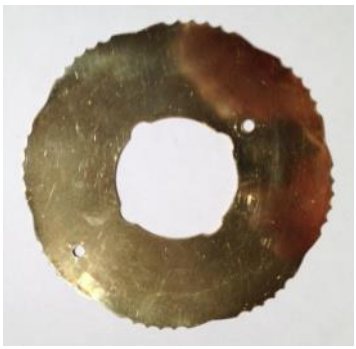


Fig. 21

Fig. 22

Fig. 23

Fig. 24

From the basic sine wave I can then introduce other variations never to exceed the height of the wave as shown in Figures #21-24.

If the maximum slopes of all the rosettes are aligned on the engine, then you can change rosettes and keep synchronization as the pattern changes (Figure # 25).

Fig. 25

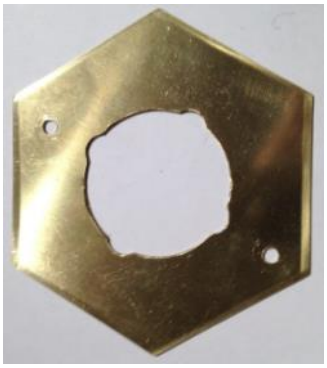


Fig. 26

Fig. 27

Figures #26 and Figure #27 illustrate starting with a basic pattern and then adding variations along that pattern.

Fig. 28

It would be easier to just create a straight section in every rosette or rosettes with multiple patterns in them. However, the number of practical permutations is enormous and outrageously costly. For example, the rosette in Figure #28 is one that Steve White and I created from a book that referenced a similar pattern in the mid-1700s. Just to try this pattern took over 18 hours on my little Sherline CNC mill.

Phasing or shifting each new line in your guilloche work creates visual interest. Maintaining a pattern (without phasing) and allowing the amplitude to diminish as you move towards the center also creates visual interest. However, my motivation for exploring variations in rosettes is to force the eye to analyze the entire object and not quickly come to the conclusion that you're viewing a repeating pattern. This is not to say that a repeating pattern is bad, particularly if the pattern is intended to be the field or background for something else like a watch face or a gemstone. When the pattern is intended to be the art, that's where I want to go beyond the obvious.

Editor's Chips

—John Tarpley

As I write this it is just a few days before Christmas. I have finished all my Christmas ornaments and most of the presents are done. Soon Christmas and New Year's will have passed and we'll enter that season that I call, "The Season of Reflection." This is the time when there are few orders coming into the shop, few items that have to be made on deadline, and with the winter weather it is a time when we usually stay rather close to home. This is the time of year when I make stock in anticipation of next year's orders, a time when I can organize the shop doing any needed maintenance, and a time when I can do any projects for the home that have been postponed due to more pressing matters.

However, perhaps the most important use of this time is for development of ideas. Like everyone else I have a lot of ideas floating around between my ears. Some prove to be good while others not so much. This is the time of year I can spend time developing some of them in preparation for the coming season. It is always a good idea to have something new to show to returning clients and also to use to impress new ones. However, new items take time to refine and when you are a production turner you need to develop ways to make the item in an efficient manner. When orders are flowing, the garden needs tending, and you are trying to work as quickly as possible, it is not the time for item development.

The season of reflection is a favorite time in my shop. I get to let my mind roam and play with ideas. This is not to say that I don't do this during other times of the year, but this is the special time for design. I hope all of you will take advantage of this season of the year. I look forward to seeing what you develop.

I also want to take the opportunity to thank everyone who helped make this issue possible. There would not be a newsletter without all of you. If you have never sent an article or photos of your work, I encourage you to do so. We can all learn from each other. You needn't be concerned about formal writing ability if that is a concern. Just get your ideas on paper and we can work with you on the final format and design.

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