Jon Magill will be a demonstrator at the 2016 AAW international symposium in Atlanta, Georgia, June 9-12, 2016. For more, visit woodturner.org.

WHAT IS OLD IS NEW AGAIN

A History of Contemporary Ornamental Turning

Jon Magill

Turned Ivory by Johann Eisenberg, 1624, 16¼" (41cm) tall

Photo by Jon Magill, printed with permission, Museo degli Argenti, Florence, Italy

There seem to be two types of people, those who look at something and say, "That's pretty," and those who ask, "How did they do that?" Most woodturners, myself included, seem to fall into the latter category. That explains in a nutshell how I became fascinated with the relatively obscure realm of ornamental turning, or OT for short.

OT is a specialized subcategory of woodturning, much the way segmented turning can be thought of. Generally speaking, OT is a collection of techniques used to add decoration, or "ornamentation," to turned objects. In some senses, it might be considered geometric carving that is typically accomplished with a rotating cutter of some sort. The departure from normal woodturning techniques becomes obvious when we look at the specifics of the lathes used, how the workpiece is manipulated, and the cutters that are employed. Those constitute the root of OT and the nearly infinite patterns that are possible, once mastered.

What is OT?

OT is all about geometry, the enablers of that geometry being the specialized lathes, the ingenious chucks, and the multitude of various cutters. Starting with the lathes, we encounter the first major division of the OT realm into its two main subcategories: index work and engine turning.

As its name implies, index work is carried out when the spindle on the lathe is indexed to a new fixed position, using an indexing wheel and a pin detent. Once the spindle is positioned, a cut is made, then the lathe is indexed again to another position

JOURNAL ARCHIVE CONNECTION

Jon Magill has written extensively for *American Woodturner* on ornamental turning. His past articles are referenced more specifically throughout this article. AAW members can access these and all past journal articles online at woodturner.org.

to repeat the process. Carried out in repeating sequences, the indexing and cutting develops a pattern. Complex sequences create ever more intricate patterns. Many contemporary lathes have a rudimentary division plate that allows simple index work, like fluting, but is typically limited to twenty-four or forty-eight positions. Traditional OT lathes have multiple concentric rings of holes of various counts, allowing very precise positions to be located. The number of holes in each ring is carefully selected to provide numerous factors for a wide variety of desirable divisions—for example, hole counts of 66, 72, 84, 96, 120, 144, and 192 yield a dizzying array of possibilities, given all their factors.

Engine turning is the over-arching term used for the other subdivision of OT, mainly to refer to the work carried out using a rose engine lathe. There are numerous ingenious machines used for decorating in this vein, but for purposes of brevity we will limit discussion to the rose engine lathe. Unique to most rose engines is a headstock mounted in the bed using pivots, allowing the headstock to rock freely back and forth. The rocking motion of the headstock is controlled by mechanical means of a cam and follower. The cams, known as "rosettes," often produce a floral pattern, hence the name given to the lathe. Traditional lathes arranged an assortment of rosettes in a stack, called a "barrel," onto the spindle of the lathe. The barrel provides the user with a choice of patterns readily at their fingertips. Most rose engine lathes also incorporate the features of an ornamental lathe, hence adding significantly to their cost.

In addition to indexing and rocking, many OT lathes also incorporate a provision for the spindle to traverse, or slide axially, in the headstock. On a conventional OT lathe, this motion enables controlled operations like threading. On a rose engine, under control of a rosette, it allows pushing the spindle in and out to create an action known as "pumping."

All OT lathes need a means to control the movement and position of the cutting tool. That motion is achieved with a sliderest, which is characteristic of all OT lathes. Sliderest designs vary but they all allow precise movement of the tool. When combined with indexing, moving the sliderest over by the width of the cutter for the next set of indexed cuts enables a staggering number of possible patterns. *(For more on OT cutters and patterns, see past* AW *article, "The Cutting Edge of OT," vol 23, no 1, page 32.)*

What may not be obvious by looking at an OT lathe is that the lathes are used at very low speeds. Think 3 rpm. A benefit of those low speeds is that wildly out of balance chucks can be attached to the spindle without the dangers that would be associated with normal woodturning speeds. The result is that the workpiece does not necessarily need to rotate on center and can be oriented at any angle to the tool or lathe bed. *(For more on OT chucks, see past* AW *article, "Slightly Eccentric," vol 24, no 3, page 60.)*

For a turner armed with a capable lathe, an assortment of chucks, and an array of cutting frames, the sky is the limit in terms of patterns and possibilities for adding decoration to turned pieces.

How has OT evolved?

OT in one form or another has been around for centuries. Rose engines were well known and described in early works like Joseph Moxon's 1680 book. Rose engine and swash turning in that era both used fixed tools, held rigidly in place, while the workpiece rotated past and was cut. The turned ivory collection, known as the Coburg Ivories, sacked from the Ehrenburg Palace during the Thirty Years War and now housed in the Pitti Palace in Florence, represent the peak of the craft in that era (*see lead Photo*).

The 18th century brought the advent of rotating cutters, held in frames that could be used with profiled cutters, presented to the workpiece at any desired angle via the sliderest. Combining index work with rotating cutters meant that many patterns could be cut on a much simpler machine, the ornamental turning lathe, simulating the patterns of the much more complex and expensive rose engine lathes.

The rotating cutters were driven by an "overhead" consisting of an upright at each end of the lathe and a rotating drum between them. A light belt dropped from the overhead to drive the rotating cutters. Overheads became the other hallmark of OT lathes, especially those produced during the heyday of OT in the Victorian era.

The Holtzapffel company, whose name is synonymous with OT, produced more than 2,500 lathes during the Victorian prime of OT. Of those, though, perhaps only sixteen ▸

The Rose Engine

"The practice of ornamental turning exercises a fascination for many minds. It provides such endless opportunities for the employment of ingenuity, and offers so much scope for artistic ability, that once its elements are mastered it leads its votary forward, ever urging him to attempt more and more difficult operations, or to produce some more beautiful forms. But like every other mechanical operation, it requires apparatus, and this is by no means cheap. A lathe and set of ordinary chucks can be purchased at a cost which will compare favourably with that of any other hobby, such as a garden, a greenhouse, the collection of stamps or rare books, and the like. But after the lathe is obtained much remains behind, if the whole range of ornamental turning is to be traversed, and chief among the instruments which are unattainable to the possessor of modest means, is the rose engine."

—Excerpted from *Engineering* magazine, Vol. LIV, 19th August 1892

were true rose engine lathes, costing many times more than the simpler ornamental lathes. Holtzapffel & Co. were perhaps even more well known for producing a five-volume set titled, *Turning and Mechanical Manipulation*. Volume five, *The Principles and Practice of Ornamental or Complex Turning*, is commonly referred to as "The Bible" of OT. The sixth volume was expected to include information on the rose engine. Sadly, that was never completed. Recently, ornamental turner John Edwards in England has produced a compendium, titled *Holtzapffel Volume VI*, in an effort to fill that void. For more on that publication, visit ornamentalturning.info.

The creative whims of other Victorian inventors gave us apparatus like Atkinson's Reciprocator, Evans' Spiral Spherical Sliderest, Pudsey-Dawson's Geometric Sliderest, Childs' Universal Rosette, and many more. OT was enjoying the limelight in the technical publications of the day, including *The English Mechanic*, which featured regular articles and commentaries.

Opinions vary, but many suppose that the arrival of the motorcar (c. 1886) provided a new pastime activity for the gentry, resulting in OT's decline around the turn of the 20th century. Subsequent wars, with the melting down of scrap metal, sounded the death knell for many Victorian lathes. Numerous lathes did survive the war and a few practitioners kept the craft alive. In 1948, a small group started the Society of Ornamental Turners in England (the-sot.com). Today, they boast a membership of three hundred worldwide. A more recently formed virtual chapter of the AAW, Ornamental Turners International (ornamentalturners.org), has about 250 members today.

Recent developments and milestones in OT

I was introduced to OT when I was lucky enough to meet Gorst duPlessis. The instant I saw his work and how it was produced, I was captivated. OT married three elements that have always resonated for me: woodworking, geometry, and mechanisms. The problem was, how does one get started? There were not many lathes available. The antique lathes out there were rare, expensive, and usually missing parts. Given the age of the lathes, the missing parts were often made before standardized screws came into being. If I wanted to get into OT, rather than machine restoration, I needed to find some other option.

In 1985, Ray Lawler, a gear manufacturer in Missouri, decided to make some modern ornamental turning lathes. His design inspiration was largely based on the popular Holtzapffel configuration, to which he added some modern innovations, like a full-length lead-screw, motorizing the lathe and increasing its overall size. Ray had produced and sold about thirty-six lathes by the time I learned about ornamental turning, and he was no longer making them. About the same time, James Harris, an accomplished ornamental turner in Texas, had created a website describing his transformation of a Grizzly 12" × 36" (30cm × 91cm) metal lathe into an ornamental turning lathe, with good results.

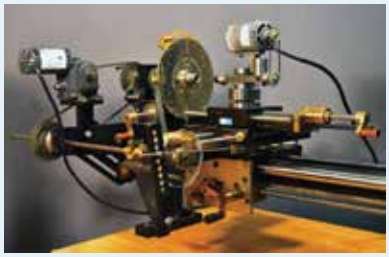
However, Gorst's work that I had seen was produced on a rose engine lathe, and I was convinced I needed to find a way to acquire a similar lathe. The rose engine lathe that Gorst used was a painstakingly reproduced copy of one of the few extant Holtzapffel rose engines. Gorst's lathe was made by Fred Armbruster, who was allowed access to measure every detail of Holtzapffel's rose engine #1636, originally made in 1838. Fred made only two of those lathes, now known as the Mark I's.

Paul Cler, an ingenious machinist in Illinois, had taken up the mantle and was producing a modern rose engine lathe at the rate of one or two a year. I got on his list and had a lathe within a year. The Cler lathe is based on modern linear rails, and his design does not use a rocking headstock, but instead uses the Pudsey-Dawson approach, whereby the top slide of the sliderest, with the tool mounted on it, moves in and out. The differences are somewhat subtle, but the main advantage is that without

OT lathes

Lawler ornamental turning lathe, c. 1996

Photo reproduced from product literature

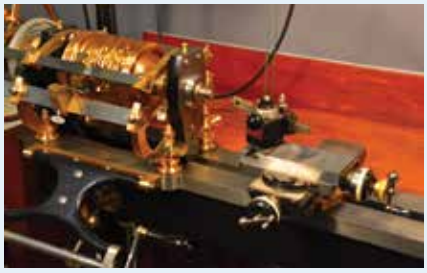


Cler Ornamental Lathe with Rose Engine, 2001

Holy Rose Engine, Gorst duPlessis, AAW Pasadena Symposium, 2003

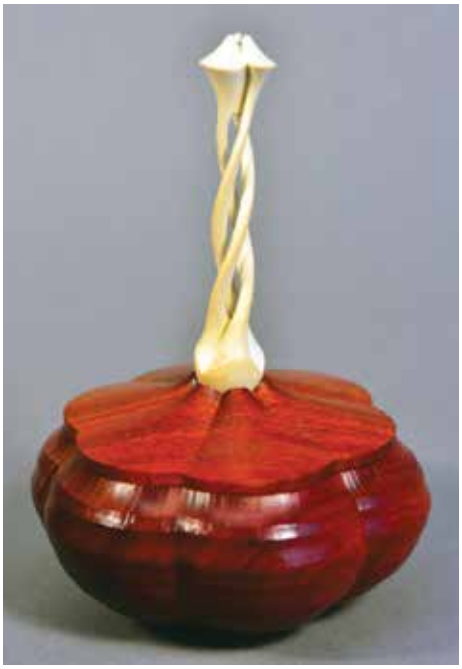
More OT lathes

MDF Rose Engine with sliderest, 2007. Learn more about the MDF rose engine at rogueturner.com.



Armbruster Rose Engine, Mk II, 2009

Lindow Rose Engine with sliderest, 2007. For more, visit roseengineturning.biz.



John Moe, *Trinity's Friend,* 2015, Bloodwood, holly, 5½" × 4" (14cm × 10cm)

a rocking headstock, a simple tailstock can still be used. As mentioned above, most rose engine lathes typically also incorporate ornamental turning functions. Paul's design incorporated a lead-screw to enable spirals, a curvilinear apparatus, and the capability to produce two types of reciprocation, all fodder for future journal articles.

For the AAW's 2003 symposium in Pasadena, California, Gorst built a portable rose engine lathe. He perforated the aluminum body of the lathe to reduce weight and sized it to fit in a suitcase. He wanted to demonstrate OT to the masses. He did three rotations for standing-room-only crowds. People were fascinated and wanted to give OT a try, but they walked out of the demos facing the same hurdle I had a few years earlier: there were no readily available lathes.

Since the 2003 symposium, rose engine plans using MDF (medium density fiberboard) were published for anyone who wanted to build their own lathe. *(See past* AW *article, "Rose-Engine Turning," vol 22, no 1, page 46.)* David Lindow has been producing and selling his Lindow Rose Engine, together with numerous OT accessories. Fred Armbruster has since produced more than twenty Mark II lathes, which maintain the Holtzapffel aesthetics while incorporating a number of modern innovations, notably rocking and pumping from all rosettes and a 5C collet for the spindle. Other lathes are on the horizon, as OT enjoys a relative resurgence in this century. Thanks to the recent availability of equipment, there are many new ornamental turners taking up the craft.

Among his other contributions, Gorst was the master of innovation when it came to producing striking finials. He has also encouraged many to try their hand at making finials inspired by his designs. Gorst and I thought it would make sense to produce a special rosette to enable people to create variants of his signature triple finials. The GDP-3 rosette for the MDF rose engine allows people to try their hands at making a triple finial. Once the basics are mastered, the rosette has additional phasing holes to allow making a twisted version of the triple finial as exemplified by John Moe's twisted finial box. ▸

Paul Fletcher, *Cricket Cage VI,* 2004, African blackwood, 3½" × 3" (9cm × 8cm)

Long-time practitioners of the craft continue to raise the bar for the new generation. I aspire to follow in the footsteps of the late English master, Paul Fletcher. Experts, like Al Collins in California, are exploring techniques to produce works like the masters of centuries past, reviving the nearly lost art of fixed tool work. What is old is new again. In the words of the late Martin Matthews, "Perhaps I can inspire you to participate in the craft of ornamental turning." ■

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Al Collins, *Coburg Quest,* 2015, Alternative ivory, 12" × 3½" (30cm × 9cm)

Loss of a Legend

Gorst duPlessis on his front porch in New Orleans.

Photo: Brad Davis

In April 2015, the woodturning and OT world lost a legend when Gorst duPlessis passed away.

Gorst was perhaps the most prolific ornamental turner of the modern era. His creative flair and eye for aesthetics never tired. He created more signature designs, shapes, and techniques than just about any other ornamental turner. Stylistically, he brought an organic panache to the traditionally rectilinear realm of ornamental turning. With no fear of trying something new, Gorst developed many innovations that have become accepted practice in the OT world.

Gorst and his work inspired countless turners. His zealous joy for sharing and teaching infected many would-be ornamental turners, myself included.

I met Gorst in the summer of 1998, when learning to turn spheres at Bonnie Klein's shop. When we went into the house for a cup of coffee, there was a wooden vase full of flowers on her mantle. Nearly everything in her house has been turned, so I said, "I know that came off a lathe, but I have no idea how." Bonnie's reply has been the punchline for every demo I have given since then: "Oh, that's Gorst. He's out buying wood. He'll be back in an hour." Gorst just happened to be visiting from New Orleans. When he returned and demonstrated the magic of rose engine turning, my own life changed course.

He was a patient, intelligent, and creative genius, probably the most enthusiastic ambassador that the craft of OT has ever had. His quick wit paired perfectly with his expansive repertoire of jokes and quotes. Everyone who knew him misses him. For Gorst's sake, I hope they have lathes in heaven.

(Top row, left to right)
For Mary, 2010, Cocobolo, boxwood, pink ivory, 10½" × 5¼" (27cm × 13cm)

Family of Man Series, 2013, Boxwood, bloodwood, mopane, tallest is 7¼" × 2" (18cm × 5cm)

Seattle Series, 2002, African blackwood, pink ivory, 8¼" × 2½" (21cm × 6cm)

(Bottom) OT Finials, 2010, Various exotic hardwoods, typical size 7" × 3" (18cm × 8cm)