

# TOP O' THE MORNIN'

## Making the Finger-Snap Top

Roger Zimmermann

I used to start my day by turning a finger-snap top before going off to my job. A salesperson at work—who was 110 percent Irish—heard about, then saw, my tops and dubbed them Top o' the Mornin.' She ordered 200 to pass out to the Big Brothers Big Sisters organization in her area.

Handmade tops are a great item to give to kids (and adults) or sell at craft fairs at low cost. They also represent a good exercise in product engineering and design. In this article I delve a little into the mechanics of tops and offer some tips to make your tops better. The focus will be one-piece finger-spin tops, but many of the principles provided are applicable to other types of tops as well.

### Scale and ease of use

Finger-snap (or spin) tops are small tops that are propelled by a sharp twist of the thumb and first or middle fingers. Kids ages five and up already have the motor skills to spin these, unlike larger tops that are spun with a string or a whip. The tops described here are made from small

scraps of wood and can be turned from start to finish in minutes. For demonstrations at shows, they are ideal.

Snap tops generally measure about 1" to 2" (25 to 50 mm) tall and 1" to 2" in diameter at the widest point, although larger tops are not uncommon. Wood is the traditional medium, but they can also be made from many readily available materials, such as plastic, aluminum, or brass, with ordinary woodturning tools. They can be painted, colored, grooved, or otherwise decorated from simple to very ornate, as in the collaborations of Bonnie Klein and Jacques Vesery.

### Stem

The shaft or stem that drives the top is typically about  $\frac{3}{16}$ " (5 mm) in diameter. If the diameter is thicker or thinner than that, the top may become difficult to spin well. Thinner stems impart a faster spin, but the torque required to generate high speed with quick snapping of the fingers will also be higher. This is particularly noticeable for

tops with heavy or large-diameter bodies.

Making the stem taller increases the probability of introducing wobble into the top. Shorter stems are easier to spin, with better performance. Make the stem no longer than half the overall length of the top. Good balancing also requires attention to the moisture content of the material. If your top was turned from green or semi-dry wood, there is a very good chance the stem will warp and make the top wobble.

I find that ornate features on the stem can often contribute to the beauty of tops. Plain shafts tend to look unimaginative if used for every design, whereas those with beads and graceful curves can greatly enhance the value of a top.





Medley of tops

## Top body

The larger the diameter of the body, the harder it will be to spin the top. Reducing the weight of a large-bodied top, however, can help. Use lighter wood for larger tops and denser wood for smaller tops. Heavy tops will generally spin longer but are harder to get up to full speed because of greater starting inertia. The top must accelerate to high speed in the brief time that finger snapping imparts its force—less than a second! Keep the mass of the body (center of gravity) to the outer edge when possible for lighter tops to achieve longer spinning capability.

The choice of material for tops can be critical. For maximum performance,

choose straight-grained wood free of knots and imperfections with an even density. Be cautious about using wood from branches or small trees. The ideal site for good top wood is about halfway from the center to the sapwood in a tree at least 8" (20 cm) in diameter. A large difference in the spacing of the growth rings will probably lead to instability of the top. Check that the grain lines are evenly spaced across the diameter of the body. Heartwood on one side of the top with sapwood on the other may create imbalance such that the top may not even spin. The grain should run the length of the top and not perpendicular to it. Make sure the outer

edge of the body is perfectly smooth for better balance.

For easier spinning, locate the body somewhere in the lower half of the top. The higher the body on the spinning axis, the greater the chance of inducing a wobble in the top. For little kids, a shorter body that is low to the ground is easier to spin and is much more stable than one that rises halfway up the full height.

Once you get a better feeling for the center of gravity and its effect on motion, you can experiment and make tops that prove harder to spin but have very interesting behaviors.

## Tip of the top

The tip of the top requires a lot of attention. It needs to be in the very center of the bottom and smooth. An ultrasharp tip may actually be worse than one that is a bit rounded over. A sharp point may embed itself in the bearing surface and cause too much friction. It may also not allow the top to orient itself and stand straight up. While making the top, you can insert a round-headed brad into the wood point and then machine it to dead center. A metal tip will last longer than a wooden one, but a wooden tip that is not too pointed will hold up quite well.

## Decoration, finish, and presentation

The surface of the top can be grooved with rings or textured, but don't create an imbalance in the process. Kids love to paint the tops and watch the colors change and meld as the top is spinning. If a natural finish is desired, coat with a simple product like Tung oil or buffing wax. Put finished tops in little velvet bags. ►





Spalted maple, 1¾" x 1½" (44 mm x 38 mm), 45 second spin time, easy to spin with low center of gravity



Maple, 1½" x 1¾" (38 mm x 44 mm), maple, 65 second spin time, very easy to spin because of low center of gravity; tight sleeper, wakes up slowly

They make perfect gifts to cherish forever. Consider making platters with slightly concave surfaces to spin the tops on.

### Spinning technique

Finger-snap tops are spun by the rapid twisting of the stem between thumb and forefinger (middle finger works as well for some). Hold the top in a vertical position with the arm and hand held steady. The stem is allowed to roll between the two fingers as the snap progresses. Don't try for high speeds initially; that will come with a little practice. If snapped well, a good top in excellent balance should spin between 3,000 to 4,000 rpm and continue for about a minute or more, depending on the physical characteristics of the top, supporting surface, and initial snap speed. If the bearing surface is rough, friction will slow the top down sooner. If accelerated to speeds that it cannot handle, the top will wobble out of control.

An alternative method is to spin the top on the end of the stem rather than the tip. Just above a suitable surface, hold the inverted top vertically, body and tip up, between the first finger and thumb. Snap as before, but afterward quickly pull your hand away, allowing the top to fall free to the surface below. This requires a bit of practice. The top may hesitate a bit before righting itself on the end of the stem. Some tops spin better on the end of the stem than on the tip as designed. Go figure!

### Troubleshooting structural problems with spin

If practice does not overcome spinning difficulties, the top itself may need tuning. First, make sure the tip is smooth. If you feel a burr, use very fine sandpaper to sand the tip perpendicular to the top's axis, but do so very lightly. If the point is off center, you may have to carefully



Various tops (top left clockwise): apple, bubinga, white oak, white oak, white oak, cocobolo

remount the top in a jam or vacuum chuck to true the tip. You can also try to balance a wobbly top, but it takes a bit of an effort. It is obviously better to use uniform wood initially. My brother, a mechanical engineer, floats his tops in water. The heavy side will roll to the bottom. You can remove or add weight as you please to stop or retard the rolling. (A drop of dish soap will break down the water's surface tension.) With some persistence you can balance the top to very tight tolerances and make it spin a very long time, as well as go into a deep "sleep."

### Experimentation with performance and design

Most of the rules of thumb offered up to this point apply to making basic tops that spin easily. Once you master these, you may sense that high performance isn't everything. For most people, attractive form and surface also matter. Such considerations, however, may conflict with optimum spin. You have to use your best judgment about which rules to break. For example, you may find it worthwhile to risk slight imbalance or shorter spin time by turning an urnlike silhouette or incorporating some striking sapwood. If the resulting top spins poorly, only a little time and very little material have been lost.

Strive to make your tops as elegant as possible. They will sell better and be much more interesting to look at. Also keep in mind the age and ability of your potential client or audience, including the more sophisticated top lover. Experiment with different grains, densities, stem lengths, diameters, tip sharpness, and placement of the center of gravity. Surprisingly, you can make good spinning tops by doing everything "wrong." You never know until you try. I even keep many of

my top "failures," since they are still lovely to look at. Some of the tops shown here have broken the rules in various ways. One of my very best spinners was cut from a 2"- (50 mm-) diameter maple branch with pith. On the other hand, if you want only a consistently good spinner, stick to the basics.

### Top jargon

Along with tops comes a set of terms that you may want to use with your audiences. During spinning, a well-balanced top will come to a position where it appears to be actually standing still. This is called *going to sleep* or the top is *asleep*. At other times the top may have a secondary spinning axis called precession. This occurs when the axis of the top wobbles in a slow circle around the tip (just as the earth wobbles on its own axis,

though much more gradually). As the top slows down, it will progressively tilt, which is called *waking up* (technically distinct from wobbling). Each top has its own sleeping and waking up pattern, which gives it a unique signature.

### Games to play with the tops

Hold a contest to see which tops can spin the longest. Note that tops spun in a slightly concave dish will bang into each other; find out whose top is left standing at the end. Try spinning your tops on unusual surfaces such as the back or palm of your hand. Try to spin the top on the base of the stem instead of the pointed tip, as described earlier. Above all, have fun! ■

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Ebony, redheart, 2" x 3/4" (50 mm x 19 mm), 20 second spin time, average spinner, less spin time because of its small size



Cocobolo, 2" x 1" (50 mm x 25 mm), 15 second spin time, difficult spinner because of its high center of gravity and narrow diameter

# ARTIFACTS OF ENCHANTMENT

Brigitte Hinrichs

About 20 years ago German woodturner Armin Kolb began developing his craft with the usual repertoire of bowls, boxes, and pens. He already had a preference for spinning tops; however, over time they gravitated to the center of his work. Traditionally, tops were trinkets in the broad product range of the typical woodturner and were often given away with the sale of other items. Armin approached this class of objects with a new perspective. He felt it was important to dispel the notion of the spinning top as a simple children's toy and, instead, to understand it as an artifact.

Years of experimentation led Armin to combine various hardwoods with natural materials such as amber, coral, and bone and occasionally to embellish the ensemble with gold, silver, or gemstones. He investigated which shapes and material combinations were possible and necessary to highlight the aesthetics of a spinning top without robbing it of essential functionality—its rotation. In the process, he built a rose engine lathe and explored eccentric turning and inlay techniques to produce formerly unimagined designs.

The results span a fascinating range of tops evoking timeless architecture, heirloom jewelry, and delicate celestial models. Pierced interiors and zigzag stems on some may initially hold the viewer back because they suggest works too

fragile or eccentric to handle. But the fine workmanship and detail usually prompt closer inspection and first-hand discovery that all his tops really do spin.

## Play

"What exactly do you do with such a top?" many still ask. The answer is as surprising as it is obvious: "You *play* with it." But what is the meaning of play in this context? Or more precisely: What does it mean when adults play? It's about forgetting oneself, as when children become absorbed in their game and lose track of all the distractions around them. Armin's spinning tops invite people to set aside the purpose-orientation of our society and to pause for a few moments, focusing on their own center. In Japan, the name for top—*koma*—literally translates as "happy alone." The top places the spinner under its spell as the world falls away and nothing further needs to be satisfied.

## Movement and stillness

The attraction of tops lies partly in their quirky behavior. Some of them prefer their cozy circles, while others sway drunkenly. Perhaps the most startling display occurs when the top embodies



**Armin Kolb, Germany, *Amma*, 2003,**  
Pink ivory, ebony, black Palmira, amaranth,  
3½" x 2⅓" (9 cm x 6 cm)

Photo: Roland Schmidt

motion at a "standstill," running silently in perfect rectitude. Movement, as a symbol of external action, has become one with stillness, the inner reflection.

For Armin, then, the top offers the user not only the amusement of a familiar children's toy but also the visual and kinetic experience of centering and absorption in the present. Its powers of engagement and nuanced aesthetics provide enough inspiration for him to commit all his energies to its continuing development and enrichment.

See more of Armin Kolb's work at [spinningtop.de/](http://spinningtop.de/).



## Armin Kolb, Germany

*Fernambuk*, 2003, Bone, fernambuk, betelnut, ebony, 4" x 2½" (10 cm x 6 cm) partially turned with a rose engine

Photo: Roland Schmidt



*Eugn*, 2003, African blackwood, amboyna, bone, antler, blue pigment, 3" x 2" (8 cm x 5.5 cm)

Photo: Roland Schmidt



*Coral Tops*, 2001, Bone, coral, silver, gold, ruby, ebony, 4" x 1½" (10 cm x 4 cm)

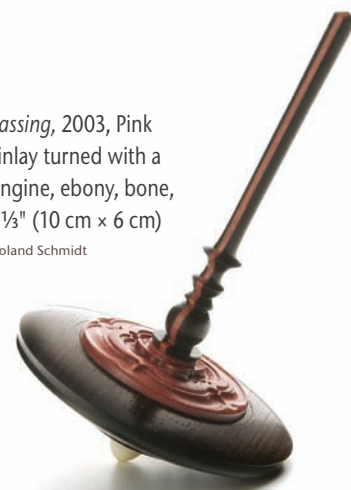


*Without*, 2003, (left) bone turned with rose engine, silver, betelnut, amber, mammoth ivory, emerald, (right) bone turned with a rose engine, coral, amber, mammoth ivory, ruby, 3" x 1½" (8 cm x 3 cm)



*Pink Passing*, 2003, Pink ivory inlay turned with a rose engine, ebony, bone, 4" x 2½" (10 cm x 6 cm)

Photo: Roland Schmidt



*Without*, 2003, (left) Bone, antler, silver, African blackwood, ruby; (right) bone inlay turned with a rose engine, antler, silver, sapphire 2½" x 1½" (6 cm x 4 cm)

Photo: Roland Schmidt



*Untitled*, 2001, Boxwood, 4" x 1½" (10 cm x 3 cm)



*Axe de Rotation*, 2001, Tulipwood, ebony, 3½" x 1½" (9 cm x 4 cm)

Photo: Roland Schmidt



# GALLERY OF TOPS



**Robert Sakauye**

## BEYOND THE SIMPLE TOP

Since the flowering of artistic woodturning in the 1980s, the humble spinning top has evolved into a vehicle of creative expression for many. Long known for her chatter-worked and vibrantly colored tops, for example, Bonnie Klein recently created *Fire and Ice*, reminiscent of fine-cut crystal. It illustrates just how far her continuing explorations have ranged with the use of alternative materials, rose engine detailing, and detachable parts (note the offspring and internal flame). Her crisply foliated collaborations with Jacques Vesery further celebrate the lavish top. Magical intricacy also infuses Robert Sakauye's tops, with their kaleidoscopic surfaces and mating receptacles. The meticulous work of Randy Rhine suggests a similar penchant for labor-intensive assembly and calculated pattern exposure, graphically documented on his website. Comparable precision is evident in the starburst layouts of Eli Avisera's blockless dreidels, which rest on lettered containers for Chanukah presents. In contrast, Judy Ditmer's executive models and

mini-spinny earrings rely on festive bangles to set them apart from traditional tops and make an imaginative leap to the jewelry department.

With little ornamentation, the other tops here take a radically different approach to complexity. John Lucas's microtop series achieves its drama through visualization of a mathematical progression toward the infinitesimal. With a length one-half the width of a parting tool, the smallest member hints at even tinier, invisible tops receding toward the spin of quarks. The trio of tops from high-end furniture manufacturer Herman Miller also envisions relationships—in this case, the interactions of a dance ensemble twirled en pointe. These tops do not need to be stationary to be fully appreciated. They pay tribute to the modernist aesthetic and playfulness of designers Charles and Ray Eames, whose seven-minute film *Spin Tops* (viewable on YouTube) remains a classic for top enthusiasts.

—David Fry

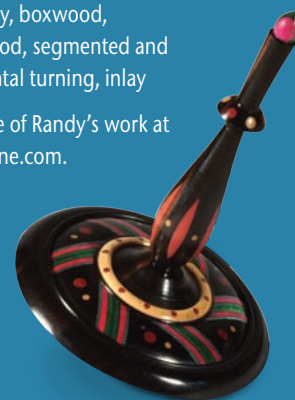
**Randy Rhine,**

Yellowheart, pink ivory, boxwood, blackwood, brass



**Randy Rhine,** Blackwood, pink ivory, boxwood, Colorwood, segmented and ornamental turning, inlay

See more of Randy's work at [randyrhine.com](http://randyrhine.com).







**Judy Ditmer**, assorted tops (clockwise from lower left), tiny executive tops with beads, ½" (13 mm) dia; regular tops 1½" (38 mm) dia; executive top with beads; tiny tops ½" dia, mini-spinnies (earrings with removable earwires become functioning tops)



**Geoff Whaling**, 2010-2012, small collection of square- and radial-laminated spinning tops, various timbers and veneers. Typically 3" x 1¾" (75 mm x 45 mm)

My initial foray into making tops was a deliberate plan to develop spindle-turning skills. Lamination of timber became more pronounced through seeing Jack Wooderson create simple yet effective patterns in tops using concentric rings with laminated veneers as dowel inserts. Exposure to many influences from turners such as Jim McPhail, Randy Rhine, Randy Knapp, Jon Sauer, and later Eli Avisera lead me on a journey to hone my skills in spindle turning and joinery so I could develop and refine a simpler style of spinning top.

At the 2009 Turnfest symposium in Australia, I met Bonnie Klein. She encouraged me to look up Eli's Avisera's work, which led to further refinement of laminated timbers. I am currently working with linear laminated blocks, developing Tunbridge style laminations.

—Geoff Whaling, Australia

**Herman Miller**, 2009 Special Edition Tops, Eames tribute, Walnut, 4½" x 2½" to 3" (114 mm x 63 mm to 76 mm)

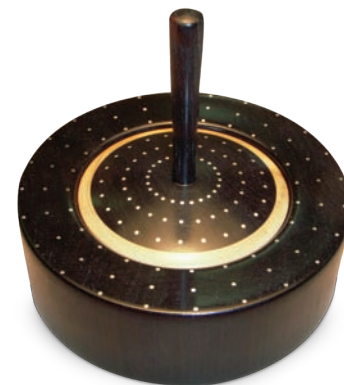
Photo courtesy of Herman Miller, Inc., hermanmiller.com



**Robert Sakauye**, peg top box, African blackwood, boxwood, bloodwood, 3" x 2¾" (76 mm x 60 mm)

See more of Robert's work at gallerym.net.

**John Lucas**, microtops, African blackwood, ½" to ¼" (13 mm to 1.6 mm) high



**Robert Sakauye**, *Starry Night* top, African blackwood, boxwood, silver; 2¼ x 2" (60 mm x 50 mm)



**Eli Avisera**, *Round Dreidel Box*, 2010, Maple, ebony, silver; 3¾" x 2" (95 mm x 10 mm)

See more of Eli's work at avisera.co.il.



**Bonnie Klein**, *Fire & Ice*, 2011, Cast acrylic, 6" x 2½" (152 mm x 64 mm)

See more of Bonnie's work at bonnieklein.com.

Photo: Tib Shaw



# COLLABORATIVE TOPS

## JACQUES VESERY AND BONNIE KLEIN



*As the World Turns & the Seasons Spin*, 2009, Swiss pear, white oak, fossil mammoth ivory, acrylic paint, metal leaf, 6" x 5" x 21" (15 cm x 13 cm x 53 cm)

This collaborative set was featured in "Boxes and Their Makers," a traveling exhibition based on the book *New Masters of the Wooden Box*.



*As the World Turns Green With Envy of the Sun and Moon*, 2007, Cherry, pear, koa, glass, acrylic paint, 6" x 4" (15 cm x 10 cm)

Collection of Gene Colley