The Airbrush Demystified

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About the Author

Artist's Statement

Woodworking provides me with an outlet for my creativity. I enjoy finding a piece of wood, envisioning what it can become, and then transforming it into a beautiful art or craft piece. I make both art pieces and functional pieces, but I always strive for beauty. My woodturning consists of all types of turning disciplines including bowls, hollow forms, platters, vases, boxes and furniture components. I use a variety of wood species in my work including local urban forested woods like eucalyptus, and other reclaimed wood. I also use wood from certified forestry projects in the Pacific Northwest, Mexico and Australia.

Woodworking Biography

I have been an amateur woodworker for over 40 years and an amateur woodturner for more than 15 years. My skills are primarily self-taught with additional learning from various classes, from woodworking publications, and through participation in various woodworking clubs. I have studied with many noted wood artists including, Allan Batty, Stuart Batty, Christian Burchard, Jimmy Clewes, Don Derry, Michael, Hosaluk, John Jordan, Binh Pho, Richard Raffan, Merryll Saylan, and Susan Working. My dad gets the credit for instilling in me a passion for hand-made wood items.

Affiliations:

The San Diego Woodturners
The San Diego Fine Woodworkers Association
American Association of Woodturners

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Why Color? Why Airbrush?

Many turners wonder why anyone would want to add surface enhancements to their wooden art pieces. This is a fair question and one with many answers. First of all, I select wood for the effect that it will provide in the final piece. I consider grain type (open or closed cell), grain orientation, grain pattern/figure, and wood color when designing a piece. If I am making a utilitarian piece, I rarely color or carve because I love the simplicity of the form for the function. If I am turning an art piece from an exotic wood, or a highly-figured wood, again, I usually let the wood stand on its own without additional enhancement. Too much enhancement can be worse than a bland piece of wood.

If, however, I decide to color the wood, I will usually select from among these choices:

- Airbrushing paint and stain
- Airbrushed dyes and inks
- Hand brushing paints and stains including milk paints
- Wiping stains
- Wiping dyes and inks
- Gilding creams
- Gilding and patination
- Wood burning

I want to control the coloring effect to the maximum benefit of the final piece. The airbrush is my main choice of coloring tool because I can control the intensity of the colors, the placement of the colors, and the penetration of the material much more precisely than you can with a rag or bristle brush. Additionally, the choice of airbrush mediums available today offers the highest quality of material for art pieces.

What You Need

In order to airbrush, you only need four things:

- An airbrush
- Quality airbrush paint, ink or dye
- A regulated air source
- Something to color

Every other accessory adds to the effects you can accomplish or the ease of use, but is not strictly necessary. Optional accessories include:

- Airbrush holder
- Masking materials
- Lacquer or other finish
- Stencils and pre-fab designs
- Drafting supplies
- Training videos
- Books and literature

There is a wealth of YouTube videos available and other materials. Keep in mind that there are 50 ways to accomplish everything, so you will find conflicting information.

A Few Definitions

Before diving into the coloring process, I will offer a few definitions:

- **Dye** – Dyes are colorants that are usually mixed in a solvent such as mineral spirits, oil, water or alcohol. Metal acid dyes are sometimes mixed with MEK or other "nasty" solvents. The dyes used in woodworking are actually very similar to those used for dying cloth and other materials. Dyes are characterized as transparent, as they bring about color changes in wood without obscuring the figure. The molecular size of the dye particles is so small they allow light to pass through virtually unhindered. In simple terms, the pigment in stain and paint is colored dirt ground up into small particles. Dyes are typically soluble salts or metals. Once mixed with their proper solvent, dye crystals dissociate into individual molecules, which are vastly smaller than ground up pigment particles. Thus, dye can get into spaces where pigment cannot.
- **Stain (Transparent Paint)** - Stains are really nothing more than very thin oil or water-based paints. Whereas dye stains are typically comprised of only dye and a carrier, stains are comprised of pigment, a carrier and a binder. Using a thin varnish (oil-based)

or acrylic latex (water-based) as a binder, ground particles of natural and synthetic minerals are added to make stains. Stains should be stirred often to insure an even dispersion of pigment because the particles tend to settle on the bottom.

- **Paint** – Paint is nothing more than stain with a heavier pigment load. Paint is typically formulated to provide an opaque cover to the surface, where stains allow some figure to show through.
- **Airbrush** – An airbrush is a spray painting tool that uses compressed air to atomize the coloring medium and project it onto a surface in an even consistency. It is the smaller sibling to an air gun used by automotive and wood finishers.

Coloring Overview - Dyes

I primarily color wood in two ways. If I use dyes, my colors are bold and flowing. I usually select the colors for the complementary effect the color fields and overlap the dyed areas to create blended colors. Dye is a completely transparent medium. You can think of dye like colored filters for a camera. If you hold up blue and red filters together, you will see purple.

The issue is that the color of the wood will blend with the dye too. If you look at the majority of dyed pieces on the blog sites, you will almost never see a true blue or a true red piece. They are almost always a shade of teal or orange, respectively. Wood tends to have yellow and red in it. Poplar has green. When I plan to dye a piece, I usually bleach it with two-part wood bleach. I apply the bleach three to five times to get the wood color out.

The other issue with dye is that it will penetrate end grain much more readily than side grain. This means that wipe-on dye will soak into the end grain and darken that color more than the side grain. When this happens, you will have a white-ish zone where the side grain is located.

You can see both the color shift and the “white ring of death” in these old photos (Figure 1: "Blue" dyed ash vesselFigure 1 and Figure 2). Both are ash vessels. One is dyed with blue and one with red.

Figure 1: "Blue" dyed ash vessel

Figure 2: "Red" dyed ash vessel

My dye process is as follows:

- Sand to 180 or maybe 220 - no finer
- Wet the surface (raise the grain), then re-sand to last grit
- Bleach three to five times
- Seal with vinyl sanding sealer or lacquer
- Sand back the sealer
- Airbrush dye – do not soak the surface or you will get runs
- Seal with a light lacquer spray – not too wet or you will get runs, or reactivate the dye and cause it to run
- Apply additional lacquer coats to achieve build and desired gloss effect (Figure 3)

Figure 3: Figured maple vessels, dye and gloss lacquer

I refer to this whole process as the "Don Derry Finishing Technique" and I've documented it on my website – AirbrushingWood.com. He taught me how to apply this type of finish. He learned it finishing electric guitars.

Coloring Overview – Transparent Paint

Transparent paint is really just stain. What that means is that if you apply enough of the material, it will become opaque. You can see the grain through the paint if you have not over-applied the paint to your project.

In the red oak piece below (Figure 4), I used yellow, red, purple, blue and gray transparent paint.

Figure 4: Oak platter, carved, burned and painted

Figure 5: Birch plate, painted

In the birch piece above (Figure 5), I used transparent black, purple, blue and gray. As soft as the grain pattern is in the birch, you can still see it in all of these colors. The white is opaque paint and the brain is pretty well hidden.

With transparent paint, I am less concerned about the color of the wood because the paint will obscure the wood color so bleaching is not usually necessary.

Coloring With Transparent Paint – The Steps

Here are the steps I generally follow when painting with transparent paint:

- Sand to 180 or maybe 220 - no finer
- Wet the surface (raise the grain), then re-sand to last grit
- Seal with sanding sealer or lacquer, if wood grain is fragile
- Sand back the sealer
- Layout the design directly on the wood or on the mask
- Cut the mask with a knife
- Lift mask and paint the selected areas in desired sequence
- Peal remaining mask
- Seal with a light lacquer spray – not too wet or you will get runs
- Apply additional lacquer coats to achieve build and desired gloss effect

Coloring With Transparent Paint – The Details

Sanding:

When sanding for dye or paint, do not sand past 220 grit. Even 180 grit is fine. Why? Over sanding burnishes the wood fibers. Your sealers and paints will not have enough tooth to mechanically grip the surface and you can get a failure in the finish. Dyes will not penetrate as well.

What is more important is regular sanding patterns. On a vessel, if you are using a rotary sander, the sanding scratches need to be consistent over the entire surface. They do not need to be invisible. Optically, inconsistent scratch patterns are very noticeable underneath the finish. Regular scratch patterns are not.

As part of my sanding protocol, I wet the surface of almost everything with a damp paper towel to raise the grain. Once dry, I sand to the last grit I used during the sanding process. Finishes can raise the grain. On a clear finish, you get the chance to sand it back and apply more finish.

On a dyed or painted surface, sanding raised grain can damage the dye or paint treatment. Prevent the problem from occurring by raising the grain before you start applying the finish.

Sealing:

I usually seal the wood surface with either vinyl sanding sealer or lacquer. This keeps dye penetration more even across end grain and side grain on a given piece. For paint, if the wood fibers are prone to lifting, the sealer hardens the surface. Once sealed, I sand back the sealer down to the wood.

Design Layout:

I have had very little success when trying to mask for dye. Dye is so fluid, it will follow the wood grain and flow under the mask. My recommendation is to use dye for broad, flowing and overlapping colors.

If you are going to have painted and unpainted surfaces, you will need to mask the unpainted areas. You can use masking tape for this such as painter's tape. Try to avoid leaving the tape on the piece for too many days in a row or you could have tape residue issues. You can block large areas with paper scraps.

For the painted areas that are to have distinct colors, use frisket film to cover the whole areas and a sharp hobby knife to cut the color zones for painting.

For example, on Figure 4, the door and the bottom section were masked with tape and paper, as was the outside edge of the platter's rim. The colored area was painted from yellow to gray with no additional masking. The turned moon crescents were turned after the painting was complete.

On Figure 5, the rim was taped with flexible automotive masking tape and painter's masking tape, and then the entire inner portion of the plate was covered with frisket. Once covered, the entire image was transferred to the frisket using transfer/tracing/carbon paper. Next, the black areas were cut as one piece, the moon was cut as two pieces (small piece on the right side of the large cactus), and the sky as six pieces (large section on top, four small pieces next to the ground between the two cacti, and one small piece between the arms of the small cactus).

It is very important that you take care when cutting the frisket. Every cut line needs to intersect with adjacent cut lines. Failure to have the cuts meet will lead to stretching and tearing of the frisket which will show up in your painting. It is worthwhile to practice cutting. If you press too lightly, you will have stretching and tearing. If you press too hard, you can end up with deep cuts in your wood.

Painting:

Painting on Figure 4 was done in a five color sequence: Transparent yellow was sprayed for about the first two inches. Transparent red was sprayed from approximate one inch to about four inches. Transparent purple was next from about three inches to the top. Transparent blue from four inches to the top, and finally, transparent gray was sprayed from about five inches to the top. By overlapping the colors, I created oranges, magentas, and violet-blues.

Painting on Figure 5 was more elaborate. I carefully lifted the two moon frisket pieces and placed them on a clean piece of paper, sticky side down, for later use. Then, I firmly press the remaining frisket edges to make sure that no paint can blow under the edge.

I sprayed opaque white to fill in the moon. Less paint is better than too much. If you spray heavily, you will have puddles and it will take a long time to dry. If you paint too little, you can always add more paint in successive coats of paint.

Aim the airbrush so that it sprays over the edge of the frisket – not into the edge of the frisket as shown in Figure 6. This helps prevent the airbrush from blowing paint under the edge of the mask. Then, let the paint dry.

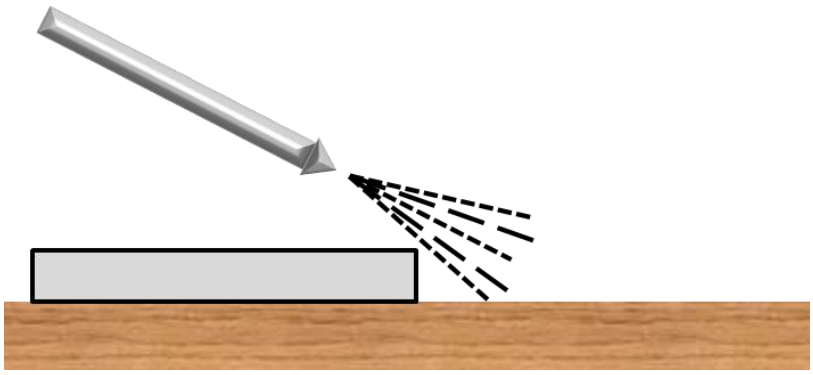

Figure 6: Airbrush over the edge of the mask

Let the paint dry. You can use a hairdryer to speed up the process. Once the paint was dry, I CAREFULLY replaced the moon sections back on the plate exactly where they were previously. Any deviations will show up as overspray, shadowing or unpainted edges. If you choose to draw in the lines after painting with a fine Sharpie marker, for example, these deviations can be subtly hidden.

Next, I lifted the frisket from black zone. It was less important to retain this frisket piece because I did not intend to reuse it. It is still a good idea to set it aside for reuse, just in case it is needed. As you lift the frisket, if you find corners of sections where the knife did not through, re-cut the frisket with the knife before lifting it. If you try to pull it apart, you will get little nibs where the frisket stretched and tore. I then firmly pressed all of the exposed edges. Keep in mind that the white paint on the sky frisket might still be wet or tacky. You can dry this with a hair dryer too.

I then painted the black sections with transparent black. I kept the airbrush well back from the plate so the color was even. If you are too close, you will get hot spots and puddles.

Next, I lifted all of the sky sections so that the only frisket remaining was the moon. I pressed the moon edges to seal them down, and then used three colors for the moon's aura: transparent gray, transparent blue and transparent purple. Each color radiated away from the moon in successive rings. I did not mask between the colors. Instead, I overlapped them for a blended effect.

Once the sky colors were dry, I lifted the moon and the rim tape. Finally, I sealed the plate with two coats of satin lacquer.

Summary

An airbrush can add a significant component to your arsenal of tools. You can create so many different effects with a brush from broad colors to fine detail. It allows you to precisely control the amount of color you are applying to a specific location, but it also allows you to seamlessly blend colors for very nice color gradients.