Double-Walled Vessels

by Hiroe Hanazono

Double-walled vessels cast from original molds, sprayed glazes, fired to cone 6.

I've always had a great passion for food—cooking, eating, setting the table, and sharing in the full dining experience. It's why I make functional pots. The pots I create consist of simple line forms with muted glaze colors, and the work's minimal aesthetic doesn't compete with anyone's domestic surroundings, nor with the food it eventually holds.

I'm especially fascinated with design that's clean and almost severe in its simplicity, and attracted to modern interior design and architecture because both practices work to frame and contain the contents of a given space. Architects and interior designers must consider how people and furniture fit into the overall design of a space. They consider purpose, and how the space will be used. Potters must consider these same issues—good pots consider purpose, use and that which they will eventually contain.

The minimal design of my forms create an ideal setting for the display of food. Simple forms allow for beautiful relationships between the forms themselves and the elements contained within them.

Finished wooden patterns sealed with polyurethane and coated with mold release.

Molduct tubing attached to a wire frame that will be embedded into the top section of the mold.

Pouring slip into the pour holes using funnels.

Draining excess slip.

Squeezing slip into pour holes using ear syringe to fill the pour holes.

Flip the mold to allow slip to fill pour holes and finalize the casting.

My surfaces are also simple foils for the display of food. The repetition of simple geometric shapes and lines goes beyond the idea of decoration, becoming an element that blends into the form. The patterns that I create could serve as the design of the forms of my pots. They could also be rendered subtly in low relief on the surface of my pots, without interfering with the simplicity of the presentation I desire.

Making the Pattern

I use slip casting in the production of my forms. It's the technique that best satisfies my intent to create immaculately executed and unusual forms. Each new piece begins by carving out a pattern, generally made from MDF (medium density fiberboard), from which I then create a plaster mold. Once I have settled upon a design, a meticulous scale drawing is made from which I then begin laying out the MDF pattern. Because there is roughly 20% shrinkage in the casting body, I make the pattern larger than the final piece I'm aiming to produce (see box). Many other artists create

Use compressed air to release the casting.

Remove the mold when the piece is leather hard.

Tracing a pattern on the surface using prism projector.

Carving the traced lines with a needle tool

Filling the incised lines with a colored slip

Scraping excess slip flush to the surface.

their patterns out of plaster or clay, but I've found that wood and MDF better suit my needs. I can control these materials better, with the edges of my forms sharper and the transitions fairer. Also, the durability and longevity of the original pattern is a definite bonus.

The patterns are fabricated using primarily woodworking tools—band saw, table saw, sanders, router, and various hand tools including scrapers, rasps, files, and chisels. A great deal of time is also spent sanding and refining the pattern. The final step in preparing the pattern for mold making is to seal it with at least three layers of polyurethane (figure 1).

Making the Mold

First determine the number of sections the mold will have and identify the location of the plug holes. My molds are typically made in four pieces—the bottom, two sides and the top. Sometimes I embed molduct tubing that's been attached to a metal frame into one of the plaster sections to facilitate removal of the wet slip cast form from the

mold (figure 2). The tubing creates a porous channel so that compressed air can circulate through the mold and help to release the section from the casting with minimal distortion. With double-walled forms, you need to make special considerations when it comes time to make the molds. Simple open molds are not possible for I have to enclose the pattern entirely in plaster to achieve a double wall. This also necessitates creating plug holes for pouring the slip into the mold and then for draining it.

Casting the Piece

Pour casting slip into the mold and allow to set until you achieve the desired thickness (figure 3). Drain the slip from the mold and allow the piece to set up for awhile.

After draining the slip (figure 4), you'll want to fill in the openings in your form left by the drain holes, otherwise the finished piece will have holes in the bottom. Squeeze a small amount of slip into the pour holes using an ear syringe (figure 5). Plug the holes to keep slip contained within mold then flip the mold over to allow slip to fill the pour holes and finalize the casting (figure 6).

When it's time to de-mold the piece, blow pressurized air into the molduct tubing and through the plaster, forcing a separation from the slip cast form and the mold (figure 7).

Cleaning Up and Decorating

Allow the slip cast form to become firm enough to work (leather hard) then remove it from the mold (figure 8). Use metal scrapers and sponges to clean the edges and any other irregularities that appear on the surface of the form. Using a small drill bit, poke two holes in the bottom of the form to allow air movement between the inside and outside of the piece. This prevents the piece from exploding in the kiln as the air contained within the double walled form expands during the firing process.

To create a subtle decorative element for the surface of this piece, I decided to use mishima, a slip inlay technique. Using Adobe Illustrator, I create geometric patterns which I then project onto the cast form, tracing them in pencil and finally carving out the lines with a needle tool (figures 9 and 10). Colored slip is then pushed into the incised lines using a brush (figure 11). Once the slip is

dry, the surface is scraped flush with a metal rib (figure 12) removing all excess slip from the form. What remains, is a clear and clean pattern with the colored slip remaining in the incised lines.

Firing

After bisque firing to cone 06 I spray all of my glazes and fire them to a very hot cone 6. All of the double-walled pieces are down-fired as well, a process by which cooling is slowed through the gradual lowering of the temperature within the kiln. It allows for a more even cooling of the inside and outside of the form, which produces less stress on the overall form. Larger forms are glazed both inside and outside to maintain a balance of surface tension. The use of both of these techniques has reduced the amount of loss I experience in the creation of these double walled forms.

I've found that the shape and size of the forms I design greatly impacts their survival through all stages of my entire making process, from casting through firing. This is particularly true for my double-walled plates. Should the interior walls of one of these castings touch, the chances that piece will survive decreases substantially. My failure rate goes up, with losses happening in the casting process itself and in both the bisque and glaze firings. Therefore, I have to remain aware from the very beginning; in the sketching and drafting phase, how thick the walls will be and how that affects the form. Then, during the casting phase I must be diligent with my casting times to ensure the wall thickness is consistent and accurate, always trying to preserve the integrity of the negative space within the pot and preventing the walls from fusing.

Being a designer, mold-maker, and manufacturer brings me great joy. I enjoy the challenge of creating unusual, well-defined forms for use. The wooden patterns that I create for mold making and the slip casting process enable me to successfully achieve my intent. I have never had formal training in slip casting or in mold making. Working in diverse artist communities I've been exposed to a great variety of artists who have shared their tricks and techniques. It's through this sharing and this collaboration of sorts that I am able to do what I do.