ceramics
MONTHLY

Cover: Kimberlee Joy Roth

Techno File: Stalling Kilns

Clay Culture: Ceramic Growlers

Glaze: Cone 06–03 and Cone 6–10

Designing for both WALL AND TABLE

BY KIMBERLEE JOY ROTH

My approach to the development of my work, how I incorporate decorative shapes and forms, and the way these forms become elements within the larger installation is seeded in the design and construction of each individual form. When starting a new tableware form, my intention is for it to become an element within a wall installation. The form's final design is determined by, and determines, the larger installation's composition.

Generating Ideas

Inspiration usually comes to me when researching through my library of Art Nouveau, Asian, and Indian art books, along with my new favorite book *Art Forms in Nature: The Prints of Ernst Haeckel*. I look for something I have not used before, maybe have overlooked because I previously thought it would be too complicated. While looking through these books, I pause to imagine a three-dimensional design of individual forms, think of a possible use for the pieces as tableware, consider how they may play into a larger installation, and try to visualize an entire wall installation.

The chosen design (or geometric shape) is quickly sketched up to 10 times, with each variation at 5 inches in diameter. Other forms are sketched inside of, next to, and around the shape. This process initiates decisions for the shape of the interior serving space and the exterior rim of the piece. It also allows my subconscious to start working on background patterns and complimentary pieces.

I may draw from a diverse historical base of motifs, but I consciously combine only two or three within one installation. If

60 RECIPES
36 PROCESS

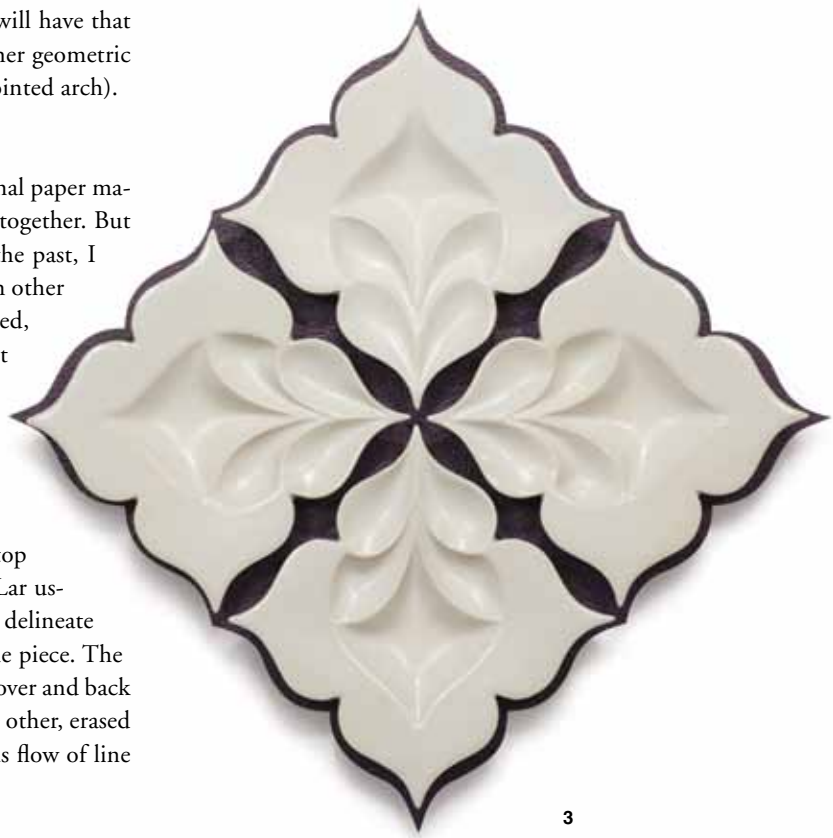
1 *Yellow Green Flower*, to 11 in. (28 cm) in length, slip-cast porcelain, fired to cone 9 in an electric kiln, 2014. *Photo: Peter Lee. Courtesy of Northern Clay Center.* **2** *Clover*, 6 ft. 3 in. (1.9 m) in width installed, slip-cast porcelain, glaze, fired to cone 9 in an electric kiln, 2014. **3** *Isis*, 22½ in. (57 cm) in width, slip-cast porcelain, glaze, fired to cone 9 in an electric kiln, 2014. **2–3** *Photos: Petronella Ytsma.*

I choose a wave or cloud form, then the entire installation will have that motif. The one shape that is consistently combined with other geometric shapes throughout all the work is the ogival arch (Gothic pointed arch).

Planning the Forms

I allow a few days to sketch, creating multiple two-dimensional paper maquettes of all the pieces that I initially think will work well together. But sometimes, a form just does not play well with others. In the past, I have tried to force a specific motif from a source to work with other motifs and the composition usually seemed stiff and contrived, so now I let myself sketch without worrying too much about the origins of a form. I have built up enough confidence in myself to trust what I sketch. Of course there are times when I make the molds, complete several test pieces, then find that I need to make adjustments, re-carve the Styrofoam, and make another mold.

Next, a full-size drawing of the footprint showing the top edges of the serving piece is drawn on frosted, matte Dura-Lar using a mechanical pencil. These footprints consist of lines that delineate convex and concave meeting points on the top surface of the piece. The Dura-Lar is waterproof, erases well and by flipping the sheet over and back again, a curve that is drawn on one side can be refined on the other, erased on the first side, and refined again, until I have a continuous flow of line for the rim and interior spaces of a piece.



4

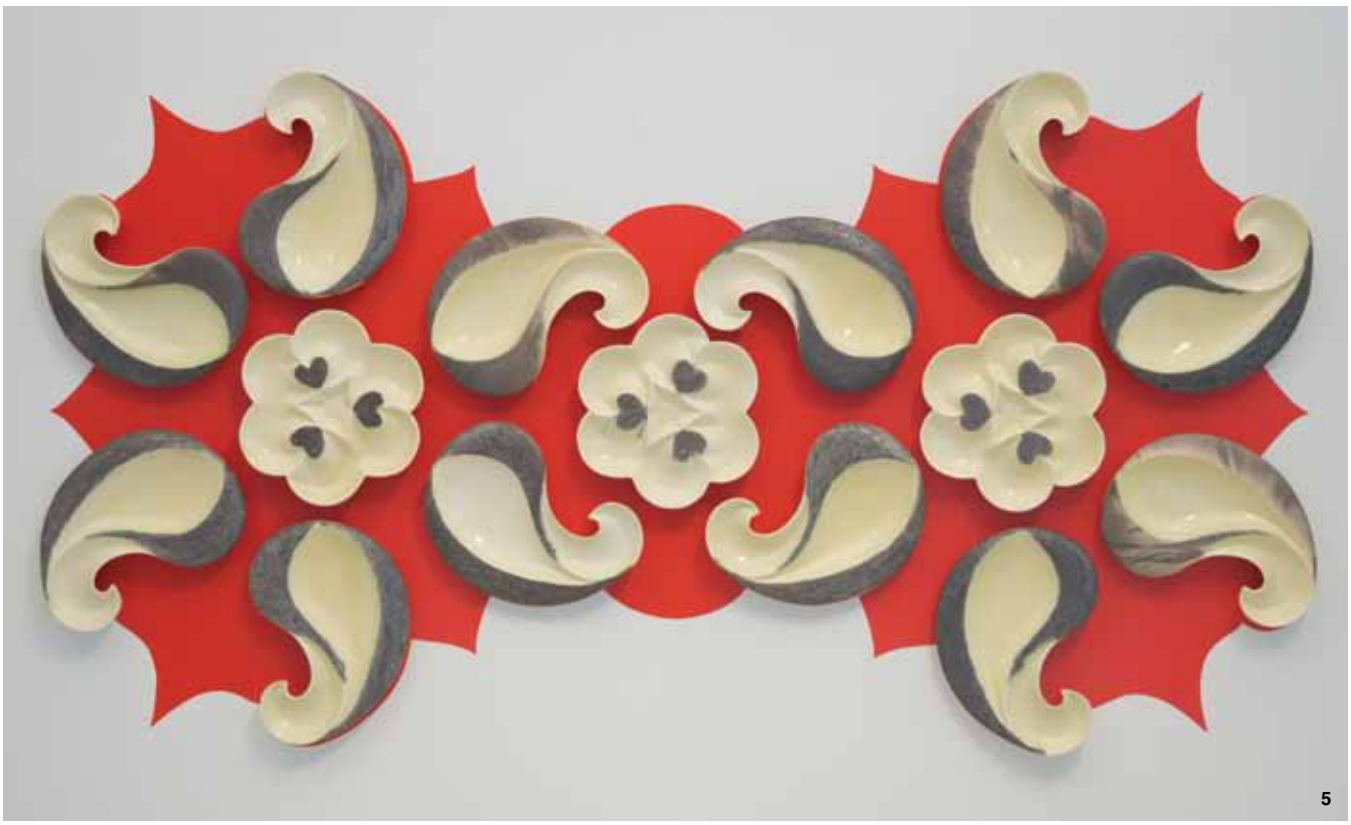
Constructing the Model and Mold

The Dura-Lar template then becomes a punch pattern. I perforate it by punching very small holes along the lines with a T-pin. This allows me to transfer the lines to a 2-inch high piece of Styrofoam. The Styrofoam template is cut out using a Hot Wire Foam Factory hot wire.

Fine woodworking Riffler files, one that is a triangle and one that is round, are used to rough out and refine the shape in the Styrofoam. Drywall sandpaper is used to further refine and sand the surfaces to get the Styrofoam smooth enough to mold.

For creating the background designs, the ceramic pieces are arranged over large Dura-Lar sheets. The background pattern is sketched, refined, and cut out. The background templates are taped to the gallery walls, blue tape is placed under their outline and the pattern is transferred to the blue tape. The outline is then cut out from the tape using a mat knife. To prevent the paint from bleeding under the tape, the edge is sealed with acrylic matte medium and the background design is painted. The same template also has the locations marked for the drywall screws on which to hang the pieces.

The successful utilitarianism of each piece is rooted in my knowledge and skill of throwing and trimming functional forms on a potter's wheel. The sides of the pieces are designed to have a section that is a half concave arch, just like one would trim for a thrown plate. This allows a user to be able to pick up the plate when it is on a flat surface. For bowls, the rims have a thinner section for ease of picking them up. I used to not worry about being able to pick up a piece with one hand, but being able to



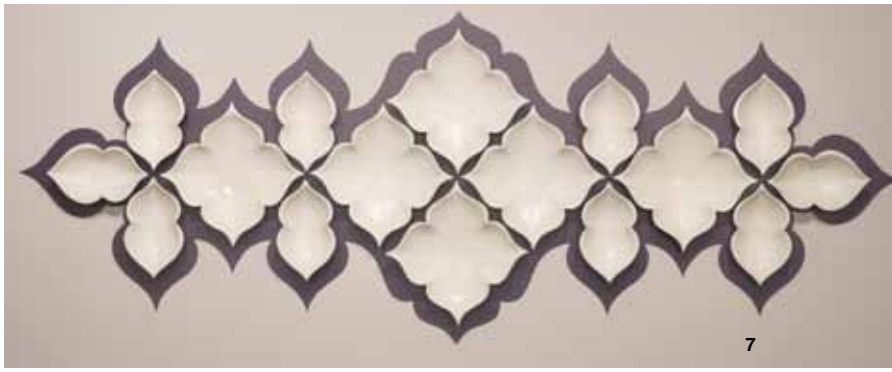
5

do so makes the piece so much more user friendly. I do struggle to refine the forms so they successfully marry functionality and my aesthetic. It is this design challenge, with trial and error until a piece is resolved, that I enjoy most and it keeps me excited in the studio.

For the design of the individual pieces, I create an appropriately sized interior concave section for food that is delineated by a rim with varying width. The larger the piece is, the more area I have to vary the rim and interior shapes. The proportions for the rim size change from form to form to be in concert with the interior space. These proportions are determined by my aesthetic, which is consciously or subconsciously influenced by historical Art Nouveau, Asian, and Indian reference materials.

As far as the structural elements for the work, I choose 2-inch Styrofoam to make the model for casting because the work shrinks to 1¾ inches in height. This is a comfortable plate height that allows the piece to fit in a dishwasher. It is also a low enough relief for the forms to be stable on the wall. All of the pieces hang on the wall with either one or two drywall screws. The interior of the foot is designed with a shallow overhang that hooks over a screw. To remove the work it needs to be lifted up and off of the screw.

As for the glaze and background color decisions, the glaze color comes first and that choice is dependent upon the mood I want to set in the gallery. For the exhibition "Bouquet" at the Burnet Gallery in the Le Meridien Chambers Hotel in Minneapolis, Minnesota, I wanted each grouping to have its own individual voice with bold colors for both the work and the wall field. For the "Six McKnight Artists" exhibition at Northern Clay Center in Minneapolis, Minnesota, I wanted the gallery to feel cool as on a freshly snow-covered winter day, therefore all the work was white with some pieces having cool, minty green rims.



4 *Lotus*, 4 ft. 5 in. (1.3 m) in diameter installed, slip-cast porcelain, glaze, fired to cone 9 in an electric kiln, 2012. **5** *Nautilus*, 5 ft. 9 in. (1.8 m) in width, slip-cast porcelain, glaze, fired to cone 9 in an electric kiln, 2012. **6–7** *Senecadria*, 6 ft. 2 in. (1.9 m) in length, slip-cast porcelain, glaze, fired to cone 9 in an electric kiln, 2014. **4–7** *Photos: Petronella Ytsma*.

Once the work is completely glazed, the designs are arranged over varied paint color swatches to choose background colors that are in keeping with the desired mood for the gallery. The goal for the color relationship between the forms and their field is to force the viewer to give the same amount of attention and awareness to the negative spaces as to the ceramic forms. Therefore, the spacing between the individual pieces plays an important role for giving prominence to the negative spaces.

In contrast to designing work for a gallery setting, when working with a patron to create an installation for a private setting, we work together to maintain my aesthetic while resolving any of their concerns. The color palette in the room, existing wall color, and wall dimensions are taken into consideration. It's a welcome challenge that continues to enhance the versatility of my installations.

Since my installations include very precise background designs that are time intensive to transfer to a wall and paint, I have not been actively applying to galleries outside a 100-mile radius from Minneapolis, Minnesota. I recently completed background tile sets for a few small groupings of pieces, making it possible for anyone to install the work. The tiles have an arrangement of holes. Two holes are used to attach the tiles to the wall with drywall screws and others are used to hang the pieces. I specifically created these tile backgrounds so I can apply to a more diverse group of galleries.

the author *Kimberlee Joy Roth lives and works in Minneapolis, Minnesota. To see more of her work, visit kimberleejoyroth.com.*

Check out the digital version of this issue for images and technical information on Roth's slip-casting methods, along with videos of her mold-making, slip-casting, and installation processes. Visit http://ceramicartsdaily.org/ceramics-monthly/ceramics-monthly-january-2015.

Mixing plaster for a slip-casting mold is different than for a press mold. To ensure even wall thickness throughout the cast, each part of the mold must be made with the same plaster-to-water ratio.

First, prepare your model. Mine is carved from insulating foam that's first cut out using a template and a hot wire foam cutting tool. A separate form is cut out for the slip reservoir (1–2) and held in place on top of the main form with T-pins pushed at an angle through the side of the reservoir form into the main form. Bricks secure the model in place when pouring the plaster. I place my model on a ¼-inch piece of Plexiglas and use a corner of the Plexiglas to square up the cottles. The Plexiglas protects the work surface and allows me to move the entire mold if needed.

Brush a 50/50 Murphy's Oil Soap/water solution liberally on the Plexiglas and the model, arrange the cottle boards, and clamp them together. Seal any seams between the boards with clay coils to prevent plaster leaks (3), then coat them with the soap.

Determining Volume: Method 1

Next, determine the volume of water needed for the pour. I put an estimated volume of water into a 2½-gallon bucket, weigh the bucket, and add more water until I get to the next closest weight on the chart below. Room temperature water works best. Next, weigh out the plaster into a separate dry container using the amount called for in the chart.

PLASTER TO WATER RATIO 10:7

1 kg plaster to 0.7 kg water
2 kg plaster to 1.4 kg water
3 kg plaster to 2.1 kg water
4 kg plaster to 2.8 kg water
5 kg plaster to 3.5 kg water

Determining Volume: Method 2

If you would like to measure the volume of the water needed more precisely, figure out the volume of the space inside the cottle boards. For a rectangular shape, multiply length × width × height of the space to get the volume. For a cylindrical shape, multiply $\pi \times \text{radius}^2 \times \text{height}$.

To find the volume of water needed to make enough plaster, use the following equation. It divides the required volume by the volume of a 3:2 plaster to water mix by weight, (80 cubic inches). The 3:2 ratio means 3 pounds (1.36 kg) of plaster to 2 pounds (.907 kg) of water. Two pounds of water equal a volume of 1 quart (.95 L). The equation uses a plaster to water ratio of 10:6.6 rather than 10:7, which works well and is easier to calculate:

CALCULATING EXACT WATER VOLUME

$$\frac{\text{volume of space (cubic inches or L)}}{\text{80 cubic inches (1.3 L)}} = \text{volume of water}$$

To determine the weight of the plaster needed, multiply the resulting number of quarts or liters of water by 3.

Pouring the First Section

Slowly pour the plaster into the water so as not to cause splashes. Stir with your hand. It should take less than 2 minutes to get the plaster mixed and get any clumps broken up. I pour as soon as all the clumps are out (4). Pour the plaster through your fingers to avoid splashes. When you have the plaster up to the level you


1


2


3


4


5


6


7


8

want, put your fingers into the plaster and run them gently over the surface of your model, the Plexiglas, and the cottles to release any air bubbles. Also, remove the T-pins if you used them, but the brick weights should remain. Let the mold set up for a few hours until the plaster has heated then cooled before removing the boards and preparing for the next section.

Cleanup and Prep Work for Multiple-Section Molds

I clean up each mold section and carve registration keys into its surface before I pour the adjacent section. First scrape all the edges of the mold with a fettling knife to remove the sharp slivers of plaster (5). To clean the face of the mold I use water, drywall sandpaper, and wet/dry sandpaper (6). I sand around it and lightly on the top edges with wet/dry sandpaper to get the plaster level to the model's surface. If using a clay model, use a needle tool to remove any clay that adheres to the plaster close to the model and to remove any plaster on the clay model. If you are using a bisque-fired piece, remove and soak it in water before pouring each adjacent mold section. To cut keys into the plaster, use a quarter or a dime to create a half sphere indentation at two or three locations on the surface.

Before pouring the next section, coat all the surfaces of the mold (even the bottom) and all the surfaces of the model liberally with the soap solution (7). Place the mold on the Plexiglas, arrange and clamp the cottles, seal any seams between the boards and plaster with clay coils (8), and coat the cottles with the soap solution. Find the volume of water needed, mix another batch of plaster, and pour it over the first section to the desired height (9). Put your fingers into the plaster and slide them over the first plaster section, the model, and the sides of the cottles to release any air bubbles on their surfaces.

Finishing, Drying, and Using the Mold

Take the mold apart 2–3 hours after pouring the last section. Use a fettling knife to pry apart the sections (10–11). If it won't come apart easily, let it set overnight. Remove the model (12–13), sand the outside of the mold to eliminate any rough edges, sand the inside where needed (14–15), check that the interior seams line up while the mold is assembled, and re-sand if necessary (16). Wash the mold with water and place the separated sections into a dry box or place the assembled mold in front of a fan on a rotating wheel head so it dries uniformly.

When the mold is completely dry and before I use it for the first time, I submerse each piece into a tub of water for a few seconds. This starts the capillary action within the plaster so that the casting process works more quickly. Next, remove any remaining soap that is on the casting area with vinegar.

The first cast will probably not release easily from the mold so gently use compressed air (at 35 to 50 psi) aimed at the casting-slip/mold interface or just wait another 10–20 minutes.

After two casts, if the form won't release, check for undercuts (areas where plaster overhangs prevent the clay from releasing). View the mold sections from above, place a fingernail against the mold at the top edge of the casting area and move it down toward the bottom. If at any point you can't see the tip of your fingernail, you have an undercut that needs to be sanded away.


9


10


11


12


13


14


15


16

cone 6–10 glazes

Kimberlee Joy Roth shares her cone 6–10 oxidation and reduction glaze recipes for matte and shiny glazes.

1 Green Breaks Blue glaze

2 Liz White, Pink, and Green Glaze

3 Liz White with Green Glaze on rim

4 Don Swartz Yellow, Wild Rose Metallic

GREEN BREAKS BLUE (1)

Cone 8–10 Oxidation or Reduction

Gerstley Borate	2 %
Lithium Carbonate	4
Whiting	5
Nepheline Syenite	70
OM4 Ball Clay	14
Silica	5
	100 %
Add: Cobalt Carbonate	1 %
Rutile	2 %

Matte kelly green where thin and very shiny blue with crazing where thick.

LIZ WHITE (2–3)

Cone 9–10 Oxidation or Reduction

Dolomite	12.96 %
Lithium Carbonate	1.85
Whiting	14.81
Custer Feldspar	33.33
EPK Kaolin	5.57
Silica	31.48
	100.00 %

Do not eliminate lithium or the glaze will settle. I use 1.85% lithium, but up to 3.7% will work. Fire to cone 9 to get a satin surface. It is satin matte at cone 8 and very glossy at cone 10. Great liner glaze when satin—coffee and tea will not stain it. In reduction, it is a bit blue.

PINK (2)

Cone 6–10 Oxidation

Whiting	20.0 %
Ferro Frit 3134	14.0
Nepheline Syenite	18.0
OM4 Ball Clay	18.0
Silica	30.0
	100.0 %
Add: Tin Oxide	7.5 %

Shiny at all temperatures, gets darker pink as the glaze gets thicker, white where very thin. I fire this to cone 9, at cone 8 it is a darker pink. At cone 10 it is almost white.

GREEN GLAZE (2–3)

Cone 8–10 Oxidation or Reduction

Bone Ash	1.00 %
Talc	7.50
Whiting	22.50
Custer Feldspar	31.00
EPK Kaolin	12.50
Silica	25.50
	100.00 %
Add: Copper Carbonate	4.50 %
Copper Oxide	0.25 %
Bentonite	1.00 %

(This glaze is just a slight variation on Don Swartz's Base and Fred Herbst's Oribe Glaze) This is the green I brush or dip over Liz White on the rims of the work.

WILD ROSE (4)

Cone 9–10 Oxidation or Reduction

Bone Ash	10 %
Lithium Carbonate	10
Nepheline Syenite	62
Grolleg Kaolin	18
	100 %
Red	
Add: Spanish Red Iron Oxide	10 %
Metallic	
Add: Copper Carbonate	2 %
Rutile	5 %

SAINT JOHN'S BLACK

Cone 8–10 Oxidation or Reduction

Albany Slip	80.00 %
Nepheline Syenite	20.00
	100.00 %
Add: Cobalt Carbonate	7.41 %

At cone 9 this glaze is a very nice satin black. You can also use cobalt oxide at 5% instead of 7.41% cobalt carbonate. Eliminating the cobalt carbonate or oxide results in a nice chocolate brown glaze.

DON SWARTZ'S BASE (4)

Cone 8–10 Oxidation or Reduction

Bone Ash	1.02 %
Talc	7.11
Whiting	22.34
Custer Feldspar	31.47
EPK Kaolin	12.68
Silica	25.38
	100.00 %
Yellow	
Add: Mason Stain #6440	1.50 %
Green	
Add: Copper Carbonate	1.50 %
Copper Oxide	0.75 %
Light Blue	
Add: Cobalt Oxide	0.20 %
Manganese Carbonate	1.00 %
Medium Blue	
Add: Cobalt Oxide	0.45 %
Manganese Carbonate	2.25%
Dark Blue	
Add: Cobalt Oxide	1.00 %
Manganese Carbonate	5.00 %
Brown	
Add: Red Iron Oxide	2.00 %
Violet	
Add: Mason Stain #6304	15.00 %
Tangerine	
Add: Mason Stain #6027	15.00 %
Light Green	
Add: Copper Carbonate	0.50 %
Yellow Ochre	5.00 %
Dark Green	
Add: Iron Chromate	4.00 %
Cobalt Oxide	0.1695%

I fire this to cone 9. It has a satin surface at cone 8. This is a good base glaze for experimenting with colorant additions.