

# NEW TOOLS NEW POSSIBILITIES in Studio Ceramics

by Linda Arbuckle

During a residency at the Archie Bray Foundation for the Ceramic Arts in Helena, Montana, in 2013, I saw Andrew Gilliatt using a die cutter to cut resist shapes out of stick-on label material. These shapes worked with the shapes of his laser-printed decal images (1). I was fascinated, and although I didn't really connect die-cut images with my studio practice, I wanted to learn more about this tool for pattern making.

## What Is a Die Cutter?

In the studio, there are often many choices in tools. The specific tool can influence the end result. Tools have long been a part of making in clay, and from objects pressed into clay for texturing to press molds, from turntables to kick wheels to electric potters' wheels. In the 21st century we have new choices in digital tools, including printing laser decals, digital polychrome decal printers, 3-D printers, and die cutters or plotter cutters.

Plotter cutters have been around for some time, most often used by sign shops to cut vinyl for signs and commercial lettering, like the text you see on gallery and museum walls. The low-end, entry-level machine was in the \$1000 range. Artists did use these for other purposes, but the cost and size of the tool meant a serious commitment before purchase. Clay artist Bennett Bean was an early adopter of this technology for use in creating his painterly surfaces. In 2007 he went from cutting all his stencils by hand to using a Roland Cut Pro for stencils and sandblasting resists (2).

Small, less expensive machines for cutting diverse media (cardstock, chipboard, vinyl, craft foam) hit the market with the rise of hobby scrapbooking, and the commercial market to service scrapbookers. Many of the early units used proprietary cartridges or dies and would only cut pre-made designs purchased from the machine maker. The technology evolved to digital plotter cutters that are connected to a computer and use software to create and edit files, and control the cutter. While the digital machines no longer use dies for cutting, the name seems to have stuck.

Once inexpensive cutters with digital flexibility for image making hit the streets, people started asking what they could do with this tool in the ceramics studio. The prices for low- to mid-range cutters are approachable enough (around \$140–450) for artists to acquire the tool for research.

The die cutter (3) is usually a long bed with a cutting blade that moves laterally, and pinch rollers that move a mat back and forth through



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1 Andrew Gilliatt's *Sunset* plate set, porcelain, die-cut stickers, underglaze, glaze, laser transfers, cone 10, 2013. 2 Bennett Bean's sculpture, pit-fired, painted, gilded earthenware. 3 KNK Zing die cutter.



the cutting bed. In setting up a cutter, you need space in front of and behind the cutter to allow for movement of the mat through the bed. This may be difficult to do within cord length of your computer, so companies are now making wireless versions for more flexibility in placing the cutter. Since you control the blade starting point from the software, the unit is most convenient if placed within sight of your computer.

### Choosing a Die Cutter

If you're interested in shopping for a die cutter, you may want to look at the 2014 Top 10 Reviews list for die cutters at <http://die-cutting-machines-review.toptenreviews.com>. Whether the cutter you want is listed or not, the reviews of features will help you understand what you may want to compare and consider. Cutters vary in price, cutting strength, file formats used, file formats available for import and export, and other features. Most cutters come with software that works with the machine. Some cutter software programs can work with multiple kinds of cutters, while others are proprietary and work only with their own product. The more robust programs will import and trace files in a variety of formats, for example Make the Cut can use GSD, WPC, AI9, PS, EPS, SVG, TTF, OTE, PDF or SCUT File and will export to PDF, SVG, EPS, AI, JPG, and PNG, as well as saving in its own file format. Some programs can trace multiple file types, but will only save in their own format.

Cutters have a limited space between the blade and the bed (e.g. the Zing is adjustable to  $\frac{7}{8}$ -inch blade height, can accept 18-inch-wide media, and can make a 14-inch cut), and most

can cut long banners within those width and height dimensions. Within these limitations, they will cut a variety of media. This varies with the strength of the cutter, and can include cardstock, label medium, chipboard, craft foam, sheets of solid china-paint decal medium, fabric, balsa wood, thin magnet sheets (like car magnets), acetate, Tyvek, soft-drink-can aluminum, and similar materials. A long list of materials that have been cut on a KNK Zing cutter and machine setting details can be found here: <https://knkusa.com/wp-content/uploads/2013/05/Suggested-KNKZing-Settings.pdf>.

### Using a Die Cutter

There is a significant learning curve when using a die cutter. The programs work with vector-based graphics, which can easily be scaled and otherwise manipulated. In most of the common digital cutter software, you can create or edit your own images, and trace imported images, including .SVG files created in Adobe Illustrator or the free open-source analog Inkscape. While vector-drawing skills in programs like Adobe Illustrator may be handy, the die cutter software usually makes use of such programs optional. There are many free images in appropriate file formats on the Internet, and you can certainly draw and scan to produce cutting files.

Learning to cut is a skill that takes some research. The cutting medium is attached to a mat with a sticky surface to hold the material while being cut, to provide a stable feed through the pinch wheels, and to keep the cutouts attached until you're done cutting. A material with a backing that is not cut may not need a mat, e.g. you can cut self-stick vinyl with a blade set to just cut through the vinyl, not the backing. It's more common, though, to use a mat. This also allows you to use materials that are smaller than the distance between the pinch wheels and not have slippage as the material is fed through the cutter.

Variables in cutting set by the user:

- Which blade to use (45° angle is for thinner materials; 60° angle is for thicker materials)
- How far the blade extends from the blade holder
- How far from the cutting surface the blade holder should be
- How fast to set the cutter
- How much cutting pressure to set



- Blade offset (adjustment for the placement of the blade)
- Number of passes (one is typical, but some materials that are fibrous or thick may require more). Note that slow speeds, complex designs, and multiple passes can make for a long cutting time.

#### Troubleshooting and Online Resources

When things go wrong, it takes some tinkering to figure out which of the several variables needs adjusting. Thankfully, there are online forums where users share information. Make the Cut, the software for the Accugraphics Zing cutter, has a weekly live webcast where people can ask questions online in real time of company experts to solve problems. These are recorded and available in an online archive, and I've learned a great deal about what's possible from watching these. Looking on Vimeo or YouTube and searching for your cutter name is another great source of helpful demo videos. There are also user forums online where people generously help each other.

Once you cut your material, your design needs to be separated from the parts that are negative spaces—like the circle inside the letter O. This is called weeding. Many new cutter enthusiasts make very intricate designs, as the tool is capable of great detail. Once you sit with a weeding tool and painstakingly take out all the small spaces cut in the design, you may re-evaluate your design decisions, and reassess how much of a time savings using a cutter is. One of the big challenges is learning to think of designs as a *stencil* (the negative-space cut-outs that are filled with a colored slip or underglaze, or used to create texture—see Chris Pickett's process on page 58) or *frisket* (the positive shape used to reserve the ground color—see 4 (below) and Kip O'Krongly's process on page 59), and consider what happens to *islanded shapes* (the shapes that are part of a pattern, but not connected to other parts once turned into a stencil) when you move and apply your cutouts to your particular application.

For sturdy designs without islanded parts, you can peel your cut shape off the mat and use it as a stencil and (design permitting) use the parts left on the mat as friskets.

For fine work that might stretch or tear, or for designs with islanded parts, sign makers use transfer paper or tape. This is a tape or paper with re-positionable adhesive (like stick-on notes) that is put on the face of the cut design, flipped over, and the mat removed while the pieces stay stuck to the transfer tape to hold pieces in position. The frisket or stencil is affixed on another surface (e.g. with spray adhesive or self-stick vinyl), then the transfer paper/tape gently peeled off. People who do wall graphics often work this way. This may not work as well when transferring a stencil onto leather-hard clay, so you may have to consider how you plan to apply the stencil when you create the design. A number of artists on the Ceramic Die-Cutter Users group on Facebook are cutting thin craft foam, putting packing tape over it to hold the shapes in place before taking the design off the mat, and using that as is (foam-side up) to roll slabs onto for texture.

#### Die Cutters in the Potter's Studio

Some of the most obvious uses of a die cutter are making stencils for use with slip or underglaze, templates for forms, and/or patterns for making texture on soft slabs.

Chris Pickett, resident at the Armory Art Center in West Palm Beach, Florida, is cutting 300-pound watercolor paper on his KNK Zing to make a form that is both a template for his handbuilt tumbler shape, and a tool for making a relief design when rolled onto a soft slab.

Minneapolis, Minnesota-based artist Kip O'Krongly is known for her layered slip work on functional earthenware with images of agriculture, transportation, energy production, and nature. She initially cut stencils for her images out of plastic tablecloths with an X-Acto knife. While the stencils were re-usable, it was a slow process. O'Krongly now uses a die cutter to cut her designs from bamboo paper. Ordinary letter paper is too thin to cut well. O'Krongly's solution was to use re-positionable spray adhesive to laminate together two sheets of bamboo paper together for cutting, then she peels them apart after cutting, like sticky notes, to create two cutouts of the same design. She uses the cut shapes



4 Die-cut bicycle frisket showing the potential for detail in cuts. 5 Linda Arbuckle's majolica cup with Tyvek die-cut leaf stencils held on top of majolica glaze.



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6 Linda Arbuckle's mug, earthenware, slips, die-cut stencils, glaze, made for "Disaster, Relief and Resilience," Crimson Laurel Gallery, 2013. 7 Linda Arbuckle's *Morning Cup*, majolica glaze with die-cut decal motifs cut from decal sheets purchased from Ceramic ART Cart.

as friskets to reserve the ground color when putting on more layers of slip.

My own adventures with a die cutter have produced Tyvek stencils that I hold against raw glaze (adhesives don't stick to raw glaze) and use to make shaped color areas in majolica (5). This helps me produce certain wide shapes or toothed edges that are difficult to do in one brushstroke. When asked to participate in the "Disaster, Relief and Resilience" cup show at Crimson Laurel Gallery to support the Craft Emergency Relief Fund (CERF), I used a different process with the die-cut stencils and slip on terracotta (6).

I've also used the die cutter to cut out sheets of solid-color decal material (7). Online, Chinese Clay Art and Held of Harrogate currently sell sheets of solid-color cone 017 screened china paint decals. Held also sells sheets of luster for hand or machine cutting. These are not stated as food safe. Ceramic ART Cart is developing a line of food-safe decal media color sheets, and I have cut some of the prototypes, and anxiously await commercial availability of food-safe, solid-color decal sheets.

### Die Cutters

There are many varieties, brands, and price points in plotter-cutters. As they say, your mileage may vary. Andrew Gilliatt and Kip O'Krongly use a Silhouette Cameo ([www.silhouetteamerica.com](http://www.silhouetteamerica.com)), Chris Pickett and I both use a KNK Zing (<http://knkusa.com>), and Bennett Bean uses a Roland Cut Pro ([www.rolanddga.com](http://www.rolanddga.com)).

*Credits: Thanks to Accugraphics for providing a KNK Zing die cutter for research. Thanks to Bennett Bean and Andrew Gilliatt for being early adopters of this tool. Thanks to Doris Petersham and Pauline Purdum for enthusiastically sharing their information about using plotter cutters in the studio, and to Nancy Gallagher for sharing her experience generously and frequently on Facebook.*

**the author** Linda Arbuckle is an earthenware potter with a home and studio in Micanopy, Florida, and teaches at University of Florida, Gainesville. To see and learn more, check out <http://lindaarbuckle.com>.

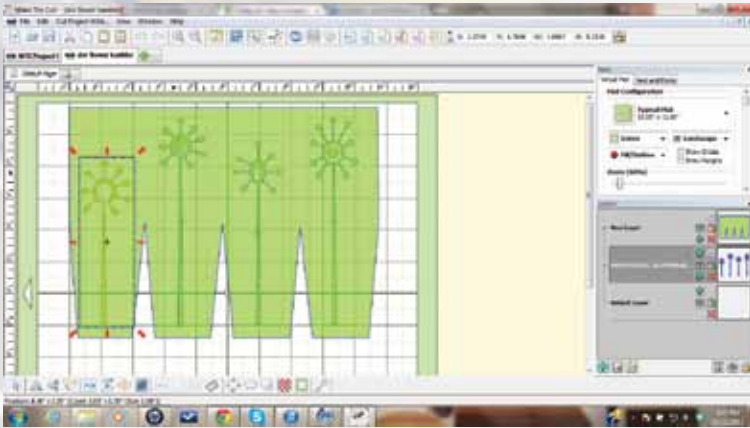
## Resources

- There is a Facebook group, [Ceramic Die-Cutter Users](#), for people to share information about cutters and cutting, and images of works made. Information people have posted has been very helpful as we all figure out new ways to use this tool for clay studio applications.
- I've also put some information and product links for die cutting information and supplies on my website Links page: [http://lindaarbuckle.com/arbuckle\\_links.html](http://lindaarbuckle.com/arbuckle_links.html)
- Andrew Gilliatt [www.andrewgilliatt.com](http://www.andrewgilliatt.com)
- Bennett Bean: <http://bennettbean.com>
- Kip O'Krongly: <http://objectiveclay.com/kip-okrongly> [www.kipokrongly.com](http://www.kipokrongly.com)
- Chris Pickett: [www.chrispickettceramics.com](http://www.chrispickettceramics.com)
- Garth Johnson has a demonstration online of cutting images from sheets of luster: <http://unconsumption.tumblr.com/post/11577549664/garth-johnson-joins-the-uncollection-using>
- Chinese Clay Art: [www.chineseclayart.com](http://www.chineseclayart.com)
- Held of Harrogate (United Kingdom): [www.held.co.uk](http://www.held.co.uk)
- Ceramic ART Cart: [www.ceramicartcart.com](http://www.ceramicartcart.com)
- Ceramic Arts Daily: <http://ceramicartsdaily.org/ceramic-glaze-recipes/high-fire-glaze-recipes/layers-of-color-using-different-colors-of-casting-slip-resist-patterns-and-decals-to-create-graphical-pottery-surfaces>

Watch Andrew Gilliatt using a die-cutter in a clip from his DVD, *Layers of Color* in the digital version of this issue. Visit [ceramicartsdaily.org/ceramics-monthly/ceramics-monthly-march-2015](http://ceramicartsdaily.org/ceramics-monthly/ceramics-monthly-march-2015).



# Chris Pickett's Process



Digital files of the template shape and the stencil designs are created using Make the Cut software.



The completed template files are then sent to the die cutter and cut from 300-pound watercolor paper.



The template is pressed into a fresh clay slab using a small roller.



When the template is removed, the pressed image is revealed.



The clay template is cut out and assembled.

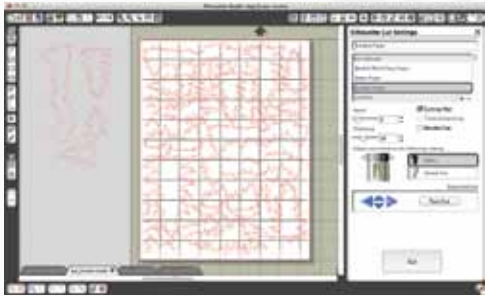


Removing darts articulates the forms.



Chris Pickett's finished tumblers.

# Kip O'Krongly's Process



A computer screenshot of the Silhouette die cutter software with imagery sized and prepared to send to the cutting machine.



The cut friskets ready for removal of the surrounding paper. This process is often referred to as "weeding."



Weeding the background paper from the adhesive mat. These negative spaces can be saved and used as additional stencils.



The friskets ready to be used on leather-hard clay. With repositionable spray adhesive they can be used on bone dry or bisque ware as well.



Separating the double-thick friskets before use. The die cutter cuts better with slightly heavier materials so two sheets are laminated for cutting.



The first layer of friskets placed on top of a coat of black underglaze. Once satisfied with the composition, these are tacked down with water.



A layer of thin slip of a lighter color is brushed over the first friskets. The rim is masked with latex resist to allow for loose brushwork.



Applying an additional layer of friskets. These go on as the second layer, but will appear to be in the background of the final piece.



Brushing a second layer of thicker, contrasting slip onto the surface to build up the appearance of atmospheric perspective.



Peeling up the friskets to reveal the foreground and background layers of imagery. If peeled up carefully, some friskets can be reused.



The completed surface. After brushing on a clear glaze the latex is removed and once bone dry the rim is coated with terra sigillata.



The finished piece, single fired to cone 04 in oxidation. Applying the friskets at different stages gives depth to the image.