

TOOL TRANSFORMATIONS: ALTERING TOOLS TO SUIT THE WORK

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Most people who work with their hands become tool mad. Jewelers are no exception. In addition to scooping up new tools and shopping garage sales for used ones, many jewelers have a tendency to alter their tools—grinding, sanding, drilling and shaping them to suit a specific task or to suit the jeweler's individual way of working.

The Modification Mindset

In fact, a jeweler's work should never be defined by the limitations of the out-of-the-box tool, says Maine metalsmith Michael Good. "I tell all my students: You never buy a tool simply because you want a specific tool to do a specific job. Always to make sure there is enough material [in the tool] that you can change, carve and bend the tool to suit your own needs." Rather than buy tools and try to figure out how to use them, he says, the jeweler should first figure out what he or she wants to do or create, then figure out the tools needed to do that work. "Tools are an extension of your body," says Good. "Your hand is the most flexible and best tool. But your hands are limited, especially if you're working with hard or hot substances." The goal is to figure out how to do with a tool what your hands would do if they could. When looking at a job and the tool for it, Good considers "if my hands were steel, how would I go about efficiently forming the metal in a specific way. Once you get that, you make the connection to the relationship of the tool as an extension of yourself." This tells you not only what tool you need, but how to modify existing tools. This gives you the freedom to focus on the work you want to do, not whether or not the existing tool will allow you to do that work.

Hammers

The hammer is one of the metalsmith's most vital tools. As Good's work depends on forging and forming, he has spent much of his working life altering the peen of the hammers he uses. (Although "peen" with a descriptive word such as "ball" is usually applied to the "other" or secondary-use end of a hammer, Heikki Seppa writes that "the work head of a hammer is called the `peen' regardless of its form or the use for which it is intended.") Good modifies the curves and edges of the hammers so that they integrate with the curve of the stakes against which he works. "I've done just about every possible peen," says Good. Usually the modification is so slight that only another practicing smith would see it, although the difference in working efficiency can be vast.

However, the alteration Good made to a standard embossing hammer is easy to see. Good removed much of the material from the area directly behind the faces of the hammer (the neck) turning the neck of the hammer head into a thin bridge between the check (the part of the head into which the handle is fitted) and the face. There are four benefits to using this strange-looking hammer for planishing. First, the thinned neck allows Good to work the interior surfaces of concavities without damaging the edges of the opening, as might happen with a wider hammer neck. Second, removing excess neck material allows him to see the working surface of the metal more clearly. Third, the reduction in hammer weight allows him to work with more sensitivity on delicate pieces. And fourth, the reduced weight of the hammer is also a bonus for anyone working with hammers as constantly as Good does.

Multi-line Graver

Good teaches students in his workshops all about tool alteration. Others learn them at the bench. Seattle studio jeweler Andy Cooperman says one of the first bench tricks he learned was how to alter a multi-line graver. Putting a Florentine finish on a curved surface can be difficult without a lot of practice, he explains. The tip tends to go in and out

of the surface. Another jeweler taught him to cut grooves, at uniform distances, perpendicularly across the lines on the face of the graver with a separating disk. Each one of those cut lines acts like the leading edge of the graver. You can then use the graver like a file and the lines conform to the outside curve beautifully. And you still have the tip of the graver to use in the standard way on flat surfaces.

Double-ended Dapping Punches

Hammer heads are the classic double-ended tool, but there are other tools that offer great—and usually overlooked—opportunities for double use. Dapping punches are an example. Cooperman says he worked with his dapping punches—which he used as small forming stakes—for years until he realized that they had a second end made of high-quality steel. “So I started altering the striking end.” For example, he says, “I needed to make a tapered square punch. I’d made a bezel and needed it to be spread on one side and tapered.” So he ground four flat sloping sides on the striking end of one of his dapping punches. (He uses a rawhide mallet to strike the dapping end of the punch so that the ball is not at risk.) “Now all my dapping punches have two ends,” he says.

Pliers

Pliers are on the top of the list when it comes to modification opportunities. Because pliers are used like fingers to hold and manipulate—and used so often—just about every jeweler has altered pliers.

One of Good’s favorite’s started out as standard round-nosed pliers. Out of the box, round nosed pliers have regular tapered jaws that end in a flat face perpendicular to the jaws. The jaws already look like a thumb and forefinger pinched together, so Good modified them to be more finger-like by rounding off the tip and adding a gentle curve on the inside of the jaws. “I gravitate to that tool at surprising moments,” he says, using it like he would his fingers, if he could. For example, he might use them to burnish areas of

delicate anticlastic and synclastic forms that might be damaged by other tools, or that he cannot reach by other means.

Cooperman says he looks on most out-of-the-box pliers as “semi-finished blanks,” and feels free to modify any pliers into a more useful holding tool. “I tend to use cheaper pliers to do this. The steel in cheaper pliers is softer, easier to alter. If I wanted to alter a better pliers, with a higher grade of steel, I’d use a diamond bur.”

Some examples: He has ground a flat notch on the inside of round-nosed pliers. He uses the pliers to hold small pieces of tubing from the ends while he grinds away excess solder on the seam. He ground a notch into the jaws of another pair of round-nosed pliers that is useful for closing jump rings or holding small tubing or wire securely. He’s ground a flattened end on another pair of round-nosed pliers, then cut a hole in the flat area with a cylinder bur. He uses the pliers to hold short sections of tubing against an anvil for filing or setting stones.

To cut the notches or the indentations into the pliers, Cooperman starts the cut with a cylinder or ball bur on one jaw of the pliers. Then, with the bur not moving, he sets it into the starting cut, closes the pliers against the bur, and then starts the handpiece with the foot control. This allows him to grind the notches evenly on both jaws of the pliers.

Cooperman often uses decorative rivets in his work. After making the ball head of the rivet, he may want to cut the wire shorter or taper it. To hold the rivet without smashing the ball head, he cut small saucer-shaped depressions in the jaws of flat pliers with a ball bur. The ball head of the rivet fits in the depression and he can hold the wire securely to work with it. (He cut three depressions in order to suit rivets of a variety of lengths.)

Rolling Mill

While most jewelers modify hand tools such as stakes, hammers and pliers, San Diego jewelry Jay Whaley takes on the rolling mill. Because he makes his own stock, a

Durstan rolling mill is an integral part of his work. But for him, the removable side rollers that came with his mill were limited, especially when it came to the variety of half-round wire he could make for wedding rings. "The standard ½ round rollers which come on the mill only go up to 4 mm wide, which is fairly narrow. My clients ask for half-round ring bands sometimes up to 11 mm wide, so I needed to provide a wider roller to create this," he says. He could order special rollers from Durstan, "about \$200 each, not including shipping from England," he says. Or he could contract with a local machinist and have the rollers made to his specifications for \$50 each.

The side rollers come from the factory held snugly in place with "circlip" type clips that fit into a groove at the outside end of the roller spindle, says Whaley. The clips are only removed "with difficulty using a small-tipped round nosed pliers, or better yet, a special circlip pliers available at auto supply stores." Working with the mill and changing the outside rollers as much as he does, the circlips were too much trouble. So Whaley designed a fast release brass clip, that fits into the groove designed for the circlip, but is "finger removable in seconds."

Large or small, no tool is sacrosanct when it comes to making a jeweler's work more efficient and or helping set design ideas free.