Heat, Beat, Repeat: UA Employees Combine Ancient Art With Science at New Blacksmithing School

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On a Thursday evening in late February, Pete Brown stood in a nondescript brick building on Tucson's south side, beating a hot, glowing piece of steel with a hammer.

Brown, director of communications in the College of Engineering [1], had just used a pair of large tongs to yank the hunk of metal from a forge—a propane-powered furnace used for heating metal to temperatures above 2,000 degrees. The workpiece, a rod about 8 inches long, was now gripped in tongs held by his gloved left hand as his right beat it with a hammer.

The pounding sent clangs echoing across the room, but it didn't seem to bother the group gathered around a nearby workbench watching an instructor pour molten metal into a cast.

After a few minutes of pounding, the results of Brown's elbow grease would have seemed minimal to the untrained eye; the rod was only slightly more tapered than it had been before he pulled it from the forge, making it now look like a flathead screwdriver. It was one of the first steps toward making a scroll, or a spiraled fixture, that would eventually hold a candle, Brown hoped.

As the glow faded, Brown shoved the piece back into the forge. As he did so, he uttered the blacksmith's three-word mantra: "Heat, beat, repeat."

When Brown isn't helping tell the stories [2] of the College of Engineering's students, faculty and staff, he can often be found in this southside industrial building helping run the operation it houses? Desert Metal Craft [3], a blacksmithing school that aims to make the centuries-old trade accessible to anyone in Southern Arizona. The school, which officially opened in February, is the brainchild of Brown's partners, Liz Cameron, a senior research specialist in the Department of Materials Science and Engineering [4], and local blacksmith Rich Greenwood.

"We're trying to kind of get out the vibe that everyone's really welcome here," Cameron said. "You don't have to be a big guy with a bushy beard to do well here."

A dream job

Like many startups, Desert Metal Craft took shape as a dream job. It was fall 2015, and Greenwood was working as a new instructor at Pima Community College's west campus, teaching a course on making knife blades.

Greenwood brought no formal teaching experience to the job, but, as someone who grew up working with his hands, he had picked up blacksmithing several years prior. He also had appeared, in 2015, on the premiere episode of "Forged in Fire," a History Channel reality
show that challenges knife- and sword-makers to re-create historical knives and swords in a series of elimination rounds. Greenwood made it to the final round, earning him national recognition, which in turn helped him get the teaching gig at Pima.

Cameron, in addition to her research position in materials science and engineering, is also an instructor at Pima's downtown campus, where she teaches applied metallurgy — the study of the elemental makeup of metal. She often gave guest lectures to Greenwood’s students, providing a deeper look at the science that makes blacksmithing work. Greenwood returned the favor with his own guest lecture, giving Cameron’s students a demonstration of metallurgical concepts through the craft of blacksmithing.

As a lifelong handyman who had discovered a love for teaching, Greenwood knew his time as an adjunct faculty member was likely limited without any formal training in higher education. He began to think about ways he could continue teaching.

When he finally settled on an idea, he mentioned it to Cameron. "I think I'm just going to start a school," Greenwood recalled telling her.

When Cameron asked if she could be involved, the answer was an easy yes, Greenwood said. Cameron, who also used to work as an instructor at the UA, brought formal academic training to the table, meaning she could help design the academic framework for the school — as well as serve as a capable metallurgy instructor.

The idea was tabled until Greenwood was laid off from Pima in spring 2018. He and Cameron saw the bad news as an opportunity.

"We both kind of sat down again and said, 'Hey, remember that thing that we wanted to do?" Cameron recalled.

They didn't realize they needed a third partner until the right one came along.

**A natural partnership**

Brown's first foray into metalsmithing came at the age of 12 or 13, while going to school in the West Country of England. There, a metalworking class taught him basic skills, such as how to make a small copper tray and fix legs to it by brazing, a form of welding.

Brown recalls "thoroughly enjoying" the class, but he didn't stick with it. "I got sidetracked into a career of publishing," he joked. He began at the College of Engineering as an editor in 2008.

Over the years, Brown continued to stoke his interest in blacksmithing, attending local "hammer-ins" — open houses hosted by local smiths where beginners can use tools and materials to try their hand at the craft under the supervision of experienced volunteers.

But in 2016, Brown found a chance to formalize his blacksmith training when he came across a course offered at Pima. Greenwood was the instructor.

Once again, Brown was immersed in the basics of blacksmithing. Like Greenwood, he had long been making things with his hands, but metalworking was a new challenge compared with other trades he'd been dabbling in for years, such as woodworking.

"I just wanted something a bit more elaborate, a bit more involved, with new skills to learn," he
And this time, Brown stuck with it. He completed Greenwood's course, which focused on "bladesmithing" - the craft of making blades for knives and swords - and went on to take Cameron's course on applied metallurgy.

When Greenwood was laid off in 2018, he announced in a Facebook post that he planned to start his own school. Brown immediately picked up the phone, called Greenwood, and asked how he could be involved. When Cameron and Greenwood realized Brown made his living in marketing and communications, it seemed like a natural partnership.

"The three of us complement each other really well, in terms of our strengths," Cameron said. "It seemed very natural."

**Overwhelming response**

Just a few months after opening its doors, Desert Metal Craft's "everybody's welcome" policy seems to be paying off. Nearly every class the school lists on its website sells out in a matter of days, Brown and Cameron said, and there's been interest from people across the country.

In addition to the blacksmith's heating and beating, the school's classes cover a variety of disciplines under the metalworking umbrella, such as welding, casting and fabrication, and the ancient Japanese arts of mokume-gane, a metalworking procedure, and making tamagahane steel in a traditional furnace called a tatara. The school partners with experts in each discipline to lead these specialized courses.

Although Brown focuses on getting out the word about the school, the experience he has gained working with his partners and guest instructors has improved his skills to the point that he now teaches the beginning blacksmithing course, where students learn how to heat, beat and repeat their own pieces of metal into similar candleholders.

Brown said the community response is exactly what's surprised him most about helping to open a blacksmithing school in Southern Arizona. As overwhelming as it's been, he said, that was the whole point.

"We've gone out of our way to invite the whole community," Brown said. "We want everyone to enjoy this."

*To learn more about Desert Metal Craft courses, visit the online schedule*[5]. *The school, at 544 E. 24th St., will hold an open house with members of the Arizona Artist Blacksmith Association on Saturday.*

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**Links**


[2] https://news.engineering.arizona.edu/


[4] https://mse.engineering.arizona.edu/