

Cutting edge

Kieran Meeke visits a Suffolk forge to witness one of mankind's oldest manufacturing processes – the hand-forging of steel into blades. Although the techniques are millennia away from the Fourth Industrial Revolution, the personalisation and matching of each blade to each customer is right at the front line of where modern high-value manufacturers need to go.

My train from London pulls into Ipswich 15 minutes late and I have missed my connection. "Points failure" – steel rails warped by the heat of an English summer. The next train is an hour away.

At Elmswell, I am the only passenger getting off, or on, and from there it is four miles along a road that meanders across the flat Suffolk landscape. Its many turns seem dictated by ancient field boundaries rather than geography.

I have come to Upper Town Farm to meet Sergio Muelle, who appears in the searing sunlight with an even warmer smile, summoned by the barking of his dogs. We go back into the cool of an old barn that is now a workshop for his handcrafted knives.

Life's twists and turns

Sergio works under the brand name 'Twisted Horseshoe Knives', a reference to his former career as a farrier. He was born in Peru but his life has taken a somewhat twisted path as well.

"I left Peru when I was three and went to the States – hence my accent," he says. "From Massachusetts, the family went back to Peru for a few years, then Spain, and then Portugal when I was about 15. My dad was a vet, so I went back to Madrid to study veterinary medicine.

"Then I got distracted by horse's feet and became a farrier. I came to the UK because this is the only country that offers a very serious examination in farriery."

His eventual mentor here, who he met in a pub, was Simon Curtis, whose family have been farriers and blacksmiths in Newmarket for 150 years. Sergio flew back and forth between Spain and England until he passed his farrier exams, then moved to England permanently. He married a Suffolk woman and they now live on the family farm.

His interest in knife-making began when his knees started to give out. Lifting a horse's leg while it is shod puts a strain on all the muscles. It is usually the back that gives out first, but in Sergio's case it was his knees.

"We breed our own pigs here and I started making sausages and hams, doing my own butchery. I was really annoyed at the knives I had so I made a set for myself. I put them on Facebook and people asked me to make them a pair. That's really how it started. It gave me a purpose and it grew from there."

From Toledo to Suffolk

During his time in Spain, he lived in Toledo, a name synonymous with sword making. The art is thought to have come to Spain with the Moors, and towns such as Albacete and Santa



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The blade is finished with a laborious process of hand grinding and sharpening and then put into an acid bath to reveal the pattern.



Cruz de Mudela still carry on a tradition of making the “navaja” folding knives carried by many Spanish men, and not a few women.

Like everywhere else, the craft is threatened by mass production from overseas, which is ironic when you consider blacksmithing for arms and armour originated much of our earliest mass manufacturing processes. When wars started, demand could soar overnight. Even in 1427, the armourers of Milan outfitted 4,000 cavalry and 2,000 infantry inside a few days.

“For £20 you can get a very good machine-made knife: Swedish or Swiss,” says Sergio. “But people now want a handcrafted item, made with old-fashioned high-carbon steel. That’s a bit counterintuitive because it requires a bit more attention and care to look after it.”

Handmade and personalised

As well as kitchen knives, he makes bushcraft knives, popular with outdoor enthusiasts including fishermen and hikers.

“There is still a close emotional connection between men and knives in places like Finland, France or Spain, or South America. There was once a similar culture here in the UK but it lapsed in the last 50 years. At the market, although all my

knives are under lock and key, some people consider them dangerous. They call them ‘weapons’ and tell me I’m not supposed to sell them. It’s a kitchen knife!”

He credits the boom in cooking for a growing interest in his products. Cookery shows have encouraged us all into the kitchen and the one indispensable tool for any chef is a good knife. A sharp knife is less dangerous when chopping than a blunt one.

Sergio now produces his own range and takes them to markets and trade fairs. Of course his designs are not to everyone’s liking, one reason he offers a personalisation option.

“Being a farrier, you need the right intuition as to what is the best shoe for a horse,” he says. “I have that same intuition now for what is the best knife for each customer. After a few words, I know what they are trying to do and where they need to get to in the knife design. Being able to personalise it gives them more joy in the kitchen.”

Part of that process even includes the steel of the blade, the wood of the handle or its brass detailing.

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Below: Sergio’s knives are supplied with camellia oil to protect the carbon steel blades and tung oil to feed the handle wood.



Steel, brass and wood

“I know a lot of my clients through my farrier days and they might have a horseshoe that belongs to a favourite horse. Because I make my own folded steel, I can incorporate a bit of that horseshoe as long as I make sure it doesn’t come out on the edge. It’s too soft for a good edge.

“I have had people give me granddad’s files because he was a carpenter. It can be beautiful steel to work with. I hunt in car boot sales, because that is the best place to haggle, and buy up brass figures and such that I melt down.

“A friend has even given me some Anglo Saxon and Viking brass and bronze. Not every piece is big enough or good enough to put on display. It’s lovely to have that old bronze in a knife handle. I melt it down, so when I say it is handmade, every bit of it is handmade.”

He shows me some of the old brass, and takes me through the wood he is preparing, labelled oak, cherry, and apple or even with a question mark. A homemade vacuum, made from a refrigerator compressor, serves to pump preservatives and colouring into the wood.

From modest beginnings, finding his feet through trial and error, he has reached a point where production is starting to take off. However he hesitates to take on an apprentice because of the investment needed in meeting the safety standards to bring in an outsider.

He pays tribute to the generous help given to him by other craftspeople during his own learning curve and holds one-day workshops for those interested in learning themselves.

Blades from a forge

At his forge, Sergio shows me the process involved in making a blade from raw metal. He starts with a billet that overlaps up to 11 layers of metal. That is forge welded, then stretched out and cut in into four pieces. These are then stacked together, spot welded and forged again. The process is repeated five or six times until there are hundreds of layers. Beating and heating, he turns the rough metal into a recognisable straight blade. He makes it look easy.

“Back in the day, the folding process was necessary to purify the iron,” he says. “The more they folded and hit it, the more impurities came off it. And, having started



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with iron, they were making steel, because iron plus carbon is steel. The carbon was coming from the forge itself. If your blade has an intricate pattern, that meant it has been folded many, many times and should be a better blade. Nowadays we start off with top quality steel, so we just do it to get a pretty pattern.”

After forging, the metal is ‘blued’ through heat treatment and cooling in rapeseed oil from local farms.

“I use a Japanese system of differential quenching,” he says. “You coat the back of the blade in clay, just leaving the cutting edge exposed. Then you bring it to what is called the critical temperature, which varies from steel to steel.

“As a rough guide, an easy trick to use is a magnet. Once the hot metal loses its magnetism that tends to be the critical point.



Each blade starts as a rough stack of steel plates that are repeatedly heated, stretched folded and cut to create hundreds of layers of steel in each blade.



No two knives are the same and Sergio can offer bespoke details from the size and shape of the blade to the source of the steel, brass and wood.

“Then you quench it in oil with the clay on. That means the edge is really hard and the blade a bit softer, so you have the elasticity you need. After that you grind the blade, being carefully not to heat it up too much and it then goes into the heat treatment in an electric oven.

“I do three ‘baths’ of two hours at a time, at around 210-225 Celsius. That brings the colour from yellow to bluish on the blade and feathers out the hard edge of the first quenching.”

The blade is finished with a laborious process of hand grinding and sharpening and then put into an acid bath to reveal the pattern. Either ferric chloride or white vinegar is used, with a soda bicarbonate solution to stop the reaction.

“I never quite know how it will turn out,” says Sergio. “There is always a moment of giddiness when I see what does.”

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Where to get your knife

Prices for Sergio’s knives start from £40 for monosteel and from £100 for the Damascus range.

www.twistedhorsehoe knives.co.uk
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