



## SEPTEMBER MEETING

The 5160 Club will meet at Woodcraft of Eugene (Delta Oaks – Beltline & Delta Hwy) September 5 at 6:00 pm. Bring your show-and-tell!



## AUGUST MEETING

Craig Morgan brought in a box full of wheels he was getting rid of – suitable for grinder builds.

After a bit of conversation about home-built grinders, Wayne asked why we like to forge rather than stock removal. He seemed pleased that nobody was claiming any magic mumbo-jumbo about the superior properties of a forged blade. But then Wayne offered a critique of what he'd seen at the hammer-in a week or two earlier: “what I saw was not good – what you guys were doing to that steel.” He saw us keeping the steel in the forge too long and too many heats to accomplish the shaping of a knife.

Wayne went over forging basics – and proper use of a diagonal cross-peen hammer to spread the steel in the direction you need it to go. He used modeling clay to illustrate how a cross-peen will move more material perpendicular to the peen than away from the ends – so you peen valleys into the steel then flatten them out with a flat hammer head to quickly move the steel where you want.

*Mike Johnston's toothpick*

He also likes a “well trained” hammer that sits flat with the handle straight up so they are ready to grab quickly.



He outlined a couple of options for creating shock absorbing handles – coating with cast-able rubber &/or cutting a groove out of the center of the hammer and filling it with rubber.

Wayne indicated a fondness for forging with ball peen hammers. He likes the weight-forward feel.



He used his integral kris to illustrate how you can move the steel where you want it (and punch and drift etc.) in a minimal number of heats.



He noted that for a little 4” hunter he used to start with a pre-form with a 45° clip pre-cut – and 4 or 5 hits on the power hammer would bring that up to a nice clip-point hunter.

Wayne moved on to talk about knife design and his conviction that a blade should not have straight lines. Even a very slight curve can give a blade a liveliness that a straight line doesn't have.



Erik Land was next up with tales of his recent slip-joint work. He's been intrigued by the Wharncliffe style and worked up his own spring design. The spring is only pinned in one place and contacts at both ends. What he didn't realize was how much stronger that made the spring action. He passed his first try around and you really had to use some force to work the blade.

Erik said he was contemplating this and heard Wayne's voice saying "You never learn anything if you have success right out of the gate." So he went back to the design and changed how he loaded the spring and came up with another knife with good walk and talk!

Erik shared several progressions of his Wharncliffe design – including getting away from straight lines – and having room for a thong hole (his original reason for wanting a single spring pin). Nice work!!



He's also been caught by the physician's knife style:



And here's another of the Erik's folders:



And one in progress...

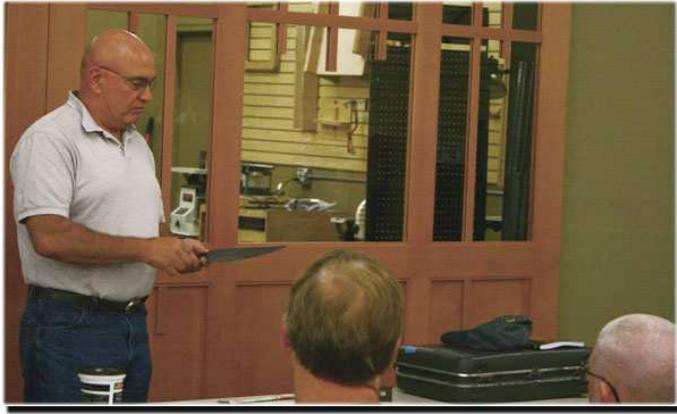


... stacked up on a "working set" of pins.

Eric shared that "If you are going to do folders you just have to accept that you are going to put that thing together and take it apart a hundred times. So I'll have a working set of pins that I don't care if I mess up the surface – and then right before I do the final fit-up I cut a final set of pins that are nice and polished up."

Last meeting Jerry Davis shared his logo etch stencil process from [img-electromark.com](http://img-electromark.com) – Eric saw how simple the process was and got stencils made up by Ernie Gropitch in Florida <http://www.erniesknives.com/> For \$53 he gives you 12 logos.

"If you're good to them you'll get 10 knives easy out of each one."



Mike Johnston was next. He relayed that while ranch sitting in Eastern Oregon he picked up a couple of old spring-tooth harrow tines. At last year's NWBA conference Mike had a guy who was demoing spark testing try it out and it sparks just like 1095. The beautiful knife at the top of this newsletter is one of the blades Mike forged out of the tines.

He noted that with the 1095 he had to darken his shop to be able to see any color when it is hot enough to become non-magnetic. He emphasized that in his testing of blades and grain size he's found that a single normalizing cycle leaves large grains. However if he does three normalizing cycles the grain size is fine as silk.

Mike got the nice hamon temper line on the blade featured at the top of this newsletter using Rutland Chimney Sweep Furnace Cement (2700°f). You can get this at most hardware stores. After grinding the blade to 120 grit Mike applied thinned down furnace cement for clay backing – at about the consistency of thin pancake batter. He applied it thicker where it looped down toward the edge – maybe 1/16” in the thin area and 1/8” in the thick areas. If I understood right he also did 1/8” thick rat's legs toward the edge (nezumi ashi). He heated it gently to dry the cement. He held it at non-magnetic for a minute, then quenched the blade in 120°f canola oil. He credits the triple normalizing for the fact that it came out straight as you could ask for. There was no flaking at all with the Rutland cement. In fact he had to use a shop knife to scrape it off.

The hamon showed even at 120 grit cleanup and really popped at 400 grit with a light etch. He finished it up to 2000 grit.

Mike opened up discussion on whether he should knock back the ricasso (ABS style) or leave it full width. Which led into “what's authentic”? To which Mike responded that his goal is to make an authentic 2013 Mike Johnston Bowie [to general chuckles and approval from the audience].

I caught Mike before he sat down to ask his understanding of Oregon knife laws (as he is a former officer). From his answers and my research I've come to some conclusions that are noted later in this newsletter. And Mike noted that even if your knife is technically legal, you can get arrested for your attitude if you are being unruly.

*Scribe's note: Bantering back and forth with folks, going over the Verhoeven PDF (see links below), and checking with Kevin Cashen – I've come to the understanding that grain size is reduced both on the phase change into austenite and also on the phase change back out of austenite – and that **if you avoid overheating** grain size is refined in quenching, annealing, and normalizing. Lower temp stress relief and tempering do not involve a phase change and do not have a noticeable effect on grain size.*

There was discussion of using the magnetic/non-magnetic state of the steel to judge when the steel had changed phase. On the way up simple carbon steels go non-magnetic at just over 1418°f regardless of carbon content – while the normalizing and annealing temps vary by carbon content and are slightly above non-magnetic – but close enough for our purposes. See the Tempil chart link in the “References” section of this newsletter to see the differences. On the way down, however, I've learned that non-magnetic can hang on down to 750°f (as I noted in the July-August 2013 newsletter). And return to magnetic indicates that the phase change out of austenite has occurred.

Martin Brandt brought up decalescence and recalescence as another way to catch the phase change. On heating, the steel takes on color and brightens in a smooth way until the point where the iron is changing from Body Centered Cubic to Face Centered Cubic structure (for an explanation of BCC/FCC see either of Wayne's books – or the June 2013 newsletter). This is the point where it is transforming into austenite. In order to make that change the lattice is sucking up extra thermal energy

and you will see a shadow on the steel – when the phase transformation is done then the steel brightens up again and the shadow disappears. When cooling from austenite, recalescence occurs when the Face Centered Cubic structure shifts to Body Centered Cubic. This releases energy and instead of the steel gradually getting darker, at this point it seems to brighten slightly – then go back to getting darker as the phase change completes.

Martin says that in his experience you can follow the shadow of decalescence and brightness of recalescence with a magnet and the magnetic/non-magnetic line follows the decalescence and recalescence.

Wayne recalled some stories of knife testing – including a recent report from J.D. Smith that one of his students has accomplished heat treat where a knife bent 90° springs back to straight. He also noted that the sharpest knife he ever saw was when Bob Kramer did his ABS JS performance test under Wayne's oversight.

As a matter of fact, if you watch this CBS video: <http://www.youtube.com/watch?v=-OCoS81G2CY> at about 2:20 into the video Kramer bends one of his chef knives 90° and it springs back straight.

Wayne also recommended a book called The Wheelwrights Shop that documented skills that were in the process of disappearing: <http://www.amazon.com/Wheelwrights-Shop-George-Sturt/dp/0521091950>

There was general discussion of preparing woods for handle material... and we wandered into the night.



## MICHAEL'S NOTES

### NW BLACKSMITH CONFERENCE

OK. My little pocket camera broke. So I don't have photos – but I **did** have a great time! And there are a few photos here:

<http://blacksmith.org/western-states-conference-wrap-up/>

There were all sorts of forges – propane ruled but there were several coal forges in use – and there was even one wood fired forge. I watched the guy forge weld cable into a billet in the wood fired forge – no kidding. At normal forging temp he said it consumes about one 5 gallon bucket of dried fir per hour.

I got to listen to Bob Kramer MS expound on knife making and the history of steel – as well as watching him dry-forge-weld a billet. He has learned in his shop that the initial forge weld does NOT need to have any flux at all if the steels are ground clean. Subsequent folding welds need a little flux to carry off the scale. Bob runs a high-end kitchen cutlery operation so I'll take his word for it:

<http://kramerknives.com/>

Bob also had a modern wootz steel blade from Al Pendray in Florida:

<http://www.coldbluesteel.com/pendray.htm>

The wootz/Damascus pattern in the blade was awesome... though Bob said that it pales in comparison to the ancient Damascus wootz blades that Pendray has on hand. Somehow Pendray convinced a couple of collectors to let him slice and analyze a couple of “low quality” ancient Damascus blades. Pendray has a process that precipitates carbides into “cluster sheets” that nucleate around the trace quantities of vanadium (if I got it right) – and these cluster-sheets cause the wootz patterning.

And of course there were farriers – it's always a pleasure to watch these guys work.

And there were a couple of gunsmiths who forged a muzzle-loading gun barrel over the weekend.

And there was the “Blacksmith War” with teams racing to make a table-and-lamp over the course of the conference.

As for bladesmiths other than Bob Kramer: Bill Burke MS and Shane Taylor MS were giving hands-on intro-to-forging lessons while Dave Lisch gave demos on stock remove grinding.

I don't find a web site for Burke, but here's Taylor's:

<http://www.taylorknives.com/>

... and Lisch's site:

<http://davidlisch.com/>

Murray Carter MS (<http://www.cartercutlery.com/>), a regular at the OKCA show, dropped by with some visitors from a Japanese steel maker. At one point Carter and Burke were sharing a forge and anvil to whip up a couple of rough forged hunter blades for the visitors.

*Scribe's confession: I blew out of there Saturday afternoon – not even collecting on the dinner at Timberline Lodge. I'm just a hermit and after visiting relatives in Seattle, even the small friendly crowd at the conference was getting to me. I hightailed it for my home in the woods. P.S. If (like me) you are not fond of sanitized hotel rooms and would rather car camp at an unofficial site by a rushing stream under old growth cedars 8 miles from the Government Camp conference site – I know the spot! Seriously. They would have to pay me to swap that for a hotel room. I'm cheap - \$50 would do.*

## OREGON & EUGENE KNIFE LAWS

I'm no lawyer, so the following is *my understanding* of the law backed up by queries to the Eugene Police Department and Mayor's Office.

What I'd heard of Oregon knife law – and City of Eugene – was pretty fuzzy with plenty of contradictions. I mean, if it's legal in Oregon to open carry firearms how did these rumors make any sense. Not that the law *has* to make any sense at all.

Here's the only Oregon knife law I know of:

### 166.240 Carrying of concealed weapons.

(1) Except as provided in subsection (2) of this section, any person who carries concealed upon the person any knife having a blade that projects or swings into position by force of a spring or by centrifugal force, any dirk, dagger, ice pick, slungshot, metal knuckles, or any similar instrument by the use of which injury could be inflicted upon the person or property of any other person, commits a Class B misdemeanor.

(2) Nothing in subsection (1) of this section applies to any peace officer as defined in ORS 133.005, whose duty it is to serve process or make arrests. Justice

courts have concurrent jurisdiction to try any person charged with violating any of the provisions of subsection (1) of this section. [Amended by 1977 c.454 §1; 1985 c.543 §2; 1989 c.839 §21; 1999 c.1040 §15]

And here's the link:

<http://www.leg.state.or.us/ors/166.html>

And here's the only Eugene ordinance I could find:

### 4.887 Weapons - Carrying of Concealed Weapon.

(1) Except as provided in subsection (2) of this section, no person shall carry concealed upon the person any knife having a blade that projects or swings into position by force of a spring or centrifugal force and commonly known as a switchblade knife, any dirk, dagger, ice pick, Eugene Code 4-101 4/16/2013 slung shot, metal knuckles, nunchaku, shirika, butterfly knife, blackjack, billy club, sap, sap gloves, straight razor, bolo knife, or bayonet, or any similar instrument by the use of which injury could be inflicted upon the person or property of any other person. For purposes of this section, a dagger shall include, but is not limited to, any knife sharpened on both edges.

(2) Nothing in subsection (1) of this section applies to any peace officer as defined in ORS 133.005, whose duty it is to serve process or make arrests.

And here's the link to the PDF – search for 4.887: <http://www.eugene-or.gov/DocumentCenter/View/2693>

You might notice that the Eugene ordinance is basically a copy of the Oregon statute with more weapons listed.

I checked with the Eugene Police Department through two channels (their Facebook page, and their Crime Prevention Unit). I also checked with the Eugene Mayor's office (who also checked with EPD before responding). They confirmed that the laws cited above are the only ones for Oregon and Eugene.

I also ran into some notes on Oregon case law in my searches with regard to the length of concealed folding knives.

My personal take on it is this:

\* The laws apply ONLY to concealed knives.

\* A folder with a pocket clip that is carried so that the

clip is exposed is not a concealed knife.

- \* There is no length limit on unconcealed knives.
- \* Case law regarding the blade length of concealed folders (pocket knives) is that 4-3/4" is OK (State v. Strong) and 6" is NOT OK (State v. Witherbee). For lengths between 4-3/4" and 6": carry it in an exposed sheath or pocket clip – or you may wind up paying a lawyer's annual golf club membership fee.
- \* Concealed auto or gravity knives are not allowed. Open carry is fine.
- \* Concealed fixed blades, dirks, or daggers are not allowed. Open carry is fine.
- \* Federal buildings are no-carry zones.
- \* State & public building's security personnel may require you to surrender a knife.

This is the bullet list I sent to EPD and the Mayor's office asking if I had it right. Of course nobody had the guts to say "yah that's right" or "no you got this part wrong" but they all agreed that the laws quoted above are all there is. But in any case – if you piss off the officer he or she might decide to arrest you for whatever and let the lawyers sort it out.

PLEASE let me know if you find ordinances or case law that adds to or contradicts what I've laid out here. I'm not interested in hearsay. As Sgt. Friday was fond of saying: "Just the facts, mam."



## WEBSITE LINKS

Send me a note if you have a favorite site to add or have comments about a site I've posted.

### 5160 CLUB

5160 Club members and presenters, past and present: Send me a note if you have a web site you'd like listed in future newsletters. If you want to be listed w/out a web site I can post your email &/or phone number. A sentence or two on your specialty or what you offer would be good as well.

5160 Club Newsletters are archived at:  
<http://www.elementalforge.com/5160Club/>

## FORUMS

Knifedog Forum

<http://knifedogs.com/forum.php>

Bladesmith's Forum aka Don Fogg Forum

**\*\*This URL Changed in August\*\***

<http://www.bladesmithsforum.com/>

American Bladesmith Society

<http://www.americanbladesmith.com/ipboard/>

Usual Suspects Network

<http://www.usualsuspect.net/forums/forum.php>

Blade Forums

<http://www.bladeforums.com/forums/forum.php>

## REFERENCES

Many of the sites linked under "Knife Maker General" have book & video sections. Our own Wayne Goddard's books are available at Amazon:  
<http://www.amazon.com/Wayne-Goddard/e/B001JS9M10>  
And you can email Wayne directly for his DVD at [wgoddard44@comcast.net](mailto:wgoddard44@comcast.net)

Here's a few other useful references:

Verhoeven's Metallurgy For Bladesmiths PDF

<http://www.feine-klingen.de/PDFs/verhoeven.pdf>

Verhoeven's updated book:

<http://www.amazon.com/Steel-Metallurgy-Non-Metallurgist-J-Verhoeven/dp/0871708582>

ZKnives – Knife steel composition/comparison/etc.

<http://zknives.com/knives/steels>

Kevin Cashen's Bladesmithing Info

<http://www.cashenblades.com/info.html>

Tempil Basic Guide to Ferrous Metallurgy

[http://www.tempil.com/wp-content/plugins/download-monitor/download.php?id=Basic\\_Guide\\_to\\_Ferrous\\_2010.pdf](http://www.tempil.com/wp-content/plugins/download-monitor/download.php?id=Basic_Guide_to_Ferrous_2010.pdf)

## GENERAL TOOLS & SUPPLIES

Woodcraft Eugene – special thanks to Joe & the crew! 1052 Green Acres Rd Eugene, OR 97408 (Delta Oaks Shopping Center) 541 685-0677  
<http://www.woodcraft.com/stores/store.aspx?id=515>

MSC Direct  
<http://www.mscdirect.com/>

Grainger  
<http://www.grainger.com>

Surplus Center  
<http://www.surpluscenter.com/>

## KNIFE MAKER GENERAL

Knife kits, steel, tools, machines, supplies such as handle material, fasteners, belts, glues, finishes, etc.

Jantz Supply  
<http://www.knifemaking.com>

Texas Knifemaker's Supply  
<http://www.texasknife.com>

USA Knife Maker's Supply  
<http://www.usaknifemaker.com/>

Knife and Gun (K&G)  
<http://www.knifeandgun.com/>

Alpha Knife Supply  
<http://www.alphaknifesupply.com/>

## KNIFE STEEL SOURCES

New Jersey Steel Baron  
<http://newjerseysteelbaron.com/>

Niagara Specialty Metals  
<http://www.nsm-ny.com> (click Products/Knife Steels)

SB Specialty Metals  
<http://sb-specialty-metals.com/products/knifesteels>

Bohler Uddeholm  
<http://www.bucorp.com/knives.htm>

Pacific Machinery & Tool Steel – Portland, Oregon  
<http://www.pmtsco.com/tool-die-steel.php>

## 2X72 BELT GRINDERS

Beaumont (KMG) – the industry standard  
<http://www.beaumontmetalworks.com/shop/>

Travis Wuertz – premium brand  
[http://www.twuertz.com/Home\\_Page.php](http://www.twuertz.com/Home_Page.php)

Pheer – affordable, satisfied customers on the forums  
<http://www.2x72beltgrinder.com>

Coote – affordable, reliable – you supply the motor  
<http://www.cootebeltgrinder.com>

Grinder-In-A-Box – low cost – assembly required  
[http://www.polarbearforge.com/grinder\\_kit.html](http://www.polarbearforge.com/grinder_kit.html)

Wayne Coe – grinders, motors, VFDs, etc.  
<http://www.waynecoeartistblacksmith.com>

Contact Rubber Corp – wheels etc.  
<http://contactrubber.com/contact-wheels.asp>

Sunray – drive wheels  
<http://www.sunray-inc.com/drive-wheels/>

True Grit – grinder belts  
<http://www.trugrit.com>

## FORGE & REFRACTORY

Chile Forge  
<http://www.chileforge.com/>

High Temp Tools (scroll down the page for the category buttons)  
<http://www.hightemptools.com/supplies-mainpage.html>

Omega – thermocouples & measuring equipment  
<http://www.omega.com/>

Auber – more thermocouples and controllers, etc.  
<http://www.auberins.com>

Hybridburners – home of the venturi T-Rex  
<http://www.hybridburners.com/>

Zoeller Forge – low cost venturi & parts: Z Burners  
<http://zoellerforge.com/>

## **BLACKSMITH**

Blacksmith Depot  
<http://www.blacksmithsdepot.com>

Pieh Tool  
<http://www.piehtoolco.com>

Centaur Forge  
<http://www.centaurforge.com>

## **LOGO/ETCHING**

Ernie Grospitch – Blue Lightning Stencil  
<http://www.erniesknives.com/>

IMG International Marking Group  
<http://img-electromark.com/>

## **OTHER GOODIES**

Sally Martin Mosaic Pins – So. Oregon  
<http://customknife.com/index.php?cPath=13>

Burl Source – handle blocks/scales – So. Oregon  
<http://www.burlsales.com/>

Gilmer Wood – N.W. Portland  
<https://www.gilmerwood.com/>

Oregon Leather – 810 Conger Eugene and 110 N.W.  
2ND Portland  
<http://www.oregonleatherco.com/>

Coyote Steel – misc., scrap, copper, brass, bronze –  
Garfield & Cross St. Eugene  
<http://www.coyotesteel.com>

Cherry City Metals – Salem, Oregon – metal  
recycling and useful objects  
<http://www.cherrycitymetals.com/>

Amtek – tool steel & cutting tools  
<http://websales.amtektool.com>

Rio Grande – jewelry tools/supplies  
<http://www.riogrande.com>

Otto Frei – jewelry tools/supplies  
<http://www.ottofrei.com>



Keep Well & bring your show-and-tell to the  
meeting!

Your Scribe ~ ~ ~ Michael Kemp