

Flint Knapping: Tools



Gary Abbatee's tool kit, used with permission

Compiled/Edited by Michael Lynn



*Photo of Tim Dillard teaching me at the
Center for American Archaeology in Kampsville, IL*

Dedicated to all those who have taught someone else about the art of flint knapping, especially to my primary teachers – Bruce Boda, Tim Dillard, Mike McGrath and Steve Nissly. This is my attempt to pay forward.

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What Do You Really Need To Start Flintknapping?

Wyatt R. Knapp © copyright 2003.

I've been involved with flintknapping for some time now. I've been through a lot of searching and tool testing. If I've learned one thing it's that **there is no magic tool**. Don't fool yourself by thinking, "Oh, if I only had the tool that so and so uses I'd be able to flintknap." Or, "there must be some tool that makes this simple." Let me tell you, if there was a trick to it that made it easy then everyone would be doing it and it wouldn't be a big deal. Now, come over here and let me whisper the secret of flintknapping success into your ear. Ready? Okay ... **you have to do it a lot**. You have to practice and go through lots of material. And keep trying. You will learn and get better. I promise.

Now, after all these years I feel confident that I can give some good advice on what tools you absolutely need to be a good traditional style knapper. Don't collect a big old bucket of expensive tools and gadgets unless you like that sort of thing. Here's all you really need:

1. A leather pad of thick leather to protect your hand when pressure flaking.
2. A deer antler tine pressure flaker (or a copper tipped one as shown below). Antler tines work very nicely. They wear faster than copper but you get great pressure flakes. If you learn percussion work well, you will only need the pressure flakers for final edge sharpening and retouch anyway.
3. A medium sized antler baton, about 8 inches or so long and about 2 inches across at the business end. Make sure it is a good dense one. Antler is NOT harder to use than copper boppers. Knapping is not easier with copper. It is just as easy to learn to knap with traditional tools than it is with copper billets and such. Try the abo way.
4. A few hammerstones of various sizes. Quartzite or some other hard stone of a nice egg shape. One about 1 1/2 inches long, one about 2 1/2 inches. Also you can add a couple of sandstone ones that will be able to be used on easier material like obsidian or glass. You can usually find hammerstones by gravel pits, the lake shore, etc.
5. An abrader. Either of hard sandstone or a manufactured one.
6. A large thick leather pad to protect your leg while knapping.
7. A notcher. Make it from a cow rib bone, or an antler tine, or make a copper tipped one.

Now you will notice that of all those things, there is only one that would probably constitute a major purchase. That would be the moose antler baton. Prices for good antler batons can vary and there are deals out there. Just make sure the one you choose is good and hard, and dense.

The rest of the stuff on our list can be obtained cheaply, made yourself, or found for free.

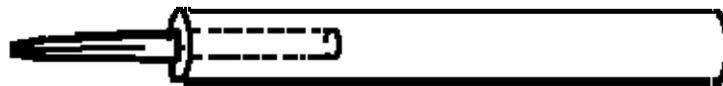
These are the only tools you really need in order to flintknape and I have found that these are the ones I rely on over and over again. They could fit in a shaving bag or could be rolled up into a small leather parfleche and take up hardly any room at all.

Later on you may find that once in a long while you'll have need of a larger billet for spalling or something, but hey -- try a rock. They're free and lots of abo knappers used them. I think there was probably a lot more hammerstone knappers than we realize in prehistoric times. With practice you'll be surprised how well you can remove flakes with stone tools.

Bottom line: You don't have to break your bank account trying to buy every new tool under the sun in order to turn out beautiful points. Do it the abo way!

A Broomhandle Pressure flaker

Take an old broom or shovel handle and cut off a piece that is a comfortable length for your tool handle. Drill into one end of it to a depth of about 2 inches. The diameter of the hole should match the size of your copper wire (Something about 3/16" diameter is nice, but make all different sizes). Cut the wire so that it when it is put in the hole it extends out about 1 1/2". Hammer the wire to a point at the end. I would also suggest that you hammer some flats into it as shown in the illustration. You may want to add a set screw to hold the copper tip in place.



Copper Tip Pressure Flaker

If you want you can make the handle a couple feet long and turn this into an Ishi stick. Many people feel they can get better leverage using the longer handle and bracing it under their arm or against their side.

From <http://www.onagocag.com/tools.html>, April 1 2010, Copied with permission

Note: Wyatt R. Knapp is the author of "The New Atlatl and Dart Workbook" to be released Summer 2010.

Pictures of Modern Tools from Primitive Materials

By Charlie (aka Stonefacescar)

here are the tools that I made and use...

copper ishi stick, hammer for dressing tool tips.



split branch ishi stick



ishi stick adjustment



wrapped



another hammer, encased in rawhide



pressure tools



hand flaker, showing the little bent 'cleat' or 'spur' that locks the tool into the inside of the handle



percussors



raw copper nugget percussor, and a splitting wedge/percussor



antler tine holders



done with these tools



notching tool tip shape..



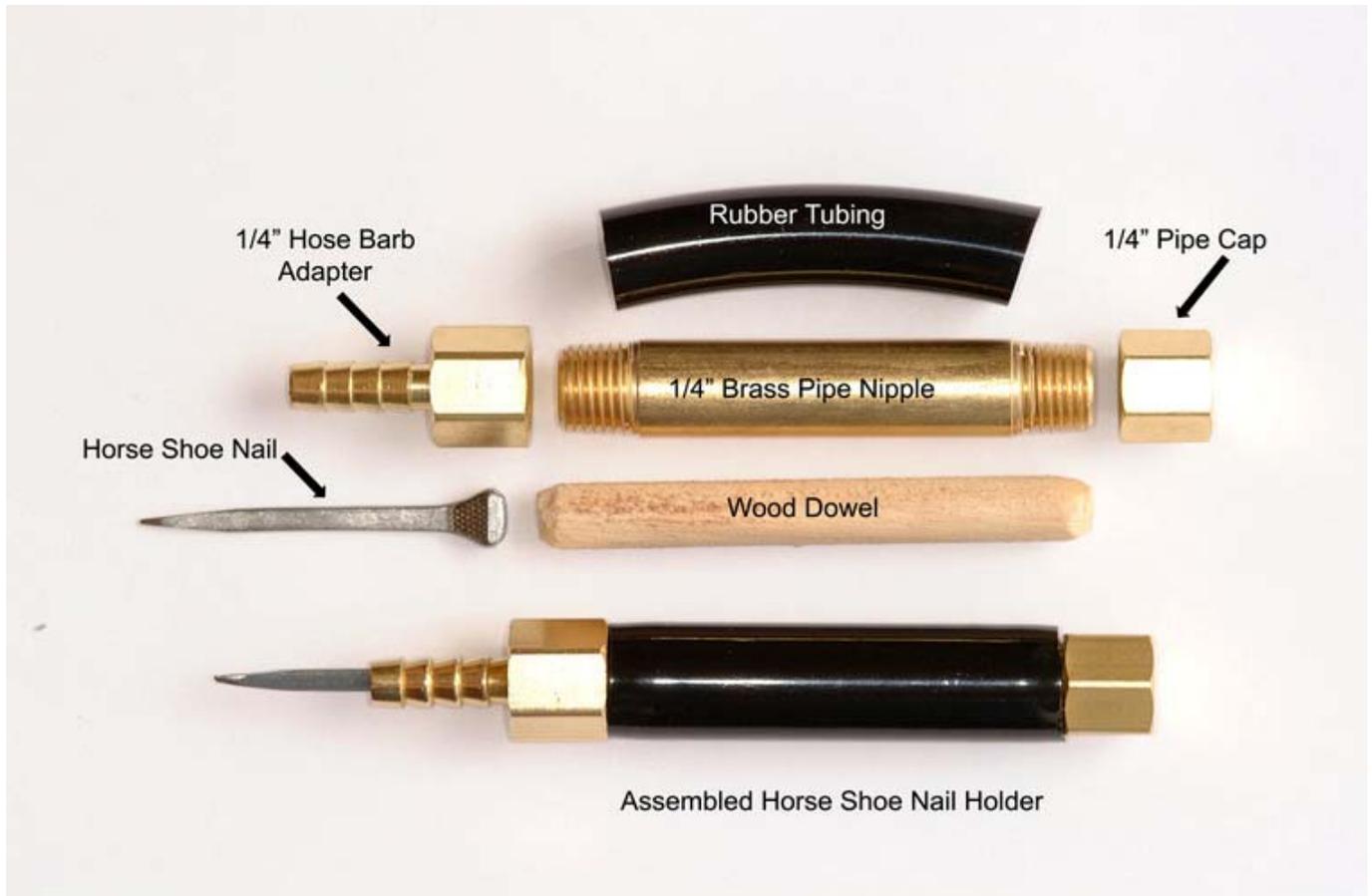
if you use branches off a tree, instead of dowels, it is easier to split the branch, down center, and it is easier to follow the 'pith' to hollow out the center with stone tools, for the antler or copper tools tips...

From <http://www.paleoplanet.net/>, April 3, 2010

Making a Horseshoe Nail Notcher

By Mark Dellinges

I made this horse shoe nail holder from plumbing supply parts. You'll need a 1/4" hose barb adapter, 1/4" brass pipe nipple, 1/4" pipe cap, horse shoe nails, wooden dowel, self cured acrylic resin or epoxy resin, and optional rubber tubing.



Fill the inside of a hose barb adapter about half way up with resin and insert a lubricated horse shoe nail. Allow to set and tap out the nail. Nails of similar type are now interchangeable and have good "side to side" stability.



Now assemble by screwing the hose barb adapter to one end of the pipe, insert the wood dowel and tighten the pipe cap to the other end. Note the good "front to back" stability. If the nail should loosen while in use just tighten the pipe cap.



1. Put nail into tip and screw onto pipe.



2. Insert wood dowel into end of pipe.



3. Screw pipe cap onto end of pipe.
(tighten as required to prevent movement of the nail)

My "narrow entry" notching really improved once I found a way to keep the horse shoe nail vary stable. I hope this helps!

From <http://paleoplanet69529.yuku.com/reply/275691#reply-275691>, April 4, 2010, copied with permission

Making Boppers

by Jim Keffer (aka reefera4m)

For those of you that would like to make your own boppers, here are some photos and tips on how to get started. There are many way to make good boppers - this is just the way I do it.

1. Start by getting organized. Things you'll need, 1) anvils for doming the caps or a doming block/doming punches, 2) hammer(s), 3) clamps, 4) acetone and paper towels for clean-up, 5), a good 2-part epoxy with mixing containers/stirrers, 6) component parts - copper caps, hard lead, handle material, 6) steel wool/sandpaper.

Here is how I start out:



If you don't have a doming block/punch set or want to make larger boppers, there are a number of things you can use for anvils. I use hitch balls (one of which I've ground down by turning it in my drill press), steel round bar w/rounded ends, and ball peen hammer heads. You can also use carriage bolts.



The most important step is doming the cap. The rounder and more even the dome the better the finished bopper will be. I use various ball peen and auto body hammers to dome the caps. While hammering out the cap I also occasionally scrub the cap with steel wool. This serves to highlight any high/low spots on the cap due to hammering. I go back after each steel wool scrubbing and, using progressively smaller hammers and a lighter touch, continue to smooth out the cap:



Because I turn the handles on a wood lathe, I like to get a good even fit. I true the ends of the copper cap using a small block of granite and sand paper:



To insure the best bond of cap to handle I sandblast the interior of the cap. (A study by a couple of guys that make knives professionally found that sandblasting metal provides the best bond when using epoxy to bond metal to wood or antler). Roughing it up with sandpaper also works.



\$20 Siphon Sandblaster:



Now I fill the caps with hard lead (wheel weight lead or lead with additives). It is important to level the cap prior to pouring the lead to get the most even weight distribution and make the bopper perform more consistently:



No photos of the lead pouring - too hard to take photos and pour lead! I just fill the domed portion of the cap. If the lead does not settle evenly, I re-heat and make sure it is even.:



Once the lead cools and the cap size is stable, I turn the handles. Boppers can be made with dowels, whittled wood, plastic rod, etc. I just happened to have a wood lathe and make handles that fit the hand and reduce slipping. I use a variety of wood types and each has different characteristics. Oak and Walnut look very nice and are very durable woods. Some knappers on the other hand, prefer maple which is lighter and allows for more weight distribution towards the tip. Mostly it is a matter of what's readily available or personal preference.



After 4 handles, the last one!



The caps are dry fit to the handle. They shouldn't be too snug or there won't be enough area for the epoxy:



Next I mix a good two-part epoxy (Loctite Heavy Duty Professional - available at most hardware stores). Since I make a lot of larger boppers (1", 1 1/4", 1 1/2" and 2"), I epoxy the lead in the cap and then the cap to the handle and clamp. I also pin the caps on the 2" boppers with copper rivets - epoxy alone is not enough. You can 'punch' the lead in smaller caps for a snug fit if the lead is soft enough. It is more difficult if you use harder lead. Getting lead to adhere to the copper like solder also doesn't work as well if you add zinc or antimony to the lead (makes the lead harder). Epoxy works great and harder lead deforms much less than soft lead so I still epoxy the lead in the cap. In over 200 boppers I've never had the lead come loose (I have had the copper wear through to the lead). Clamp securely and remove any excess epoxy with paper towels and acetone:



Pinned 2" cap



Once the epoxy sets, I do some final sanding of the handles and apply some protective wood finish. This is not merely for looks - a good finish, like Birchwood-Casey's Tru-Oil, seals the wood and prevents it from shrinking/swelling with changes in humidity. I think that drying/shrinking wood is one of the main causes for caps coming loose. In the two or three boppers I've made where the caps have come loose (but not off), I believe that shrinking wood was the culprit. Making sure the handle wood is thoroughly dry and sealing it well helps prevent the wood from absorbing moisture and the swelling/shrinking cycle. Another good choice is MinWax Wood Hardener - it both seals and hardens the wood. It also helps to have a stand for the boppers to dry.



Here's what you can end up with:



P.S. Giving away my secrets

I've shared my method for making boppers with a number of people but I thought I'd make it universal. I've experimented with making boppers quite a bit over the last year and can honestly say these "Secret tips" work.

'Secrets' in **BOLD**

Plan on one hour labor per bopper.

Standard copper cap but **Nibco** brand seems to be the best

Hardened Lead - wheel weights work good but adding extra **zinc** works better at preventing the cap from deforming.

Fill just the 'domed' part of the cap - no more - just the domed part. Best placement/distribution for the weight and leaves plenty of surface area for the epoxy.

Hand-hammer copper caps on rounded steel anvil - work hardens much more than a doming punch.

Bed cap in moist, cool sand and **LEVEL** prior to pouring lead. The sand wicks away the heat preventing or reducing annealing, the leveling insures the best balance of the lead weight in the cap. Alternative - quench immediately after pouring lead - **USE CAUTION** - this will not harden copper like it would steel but does seem to prevent the softening, thus retaining most of the work hardening. The lead will usually be loose after it cools so plan on using epoxy to secure the lead to the inside of the cap.

Sandblast the interior of the cap prior to attaching with epoxy. Sandblasting is the **BEST** way to insure a strong glue-up.

Where the cap slides over the handle make sure the fit is snug but **leave just enough room for the epoxy**.

Glue the lead to the cap first - sometimes if you 'tin' the inside of the copper cap the lead will adhere but this is the exception as copper cools faster than the lead. I epoxy the inside of the cap under the lead, add the lead back, coat the inside of the cap and the outside of the handle where the cap will fit and clamp snugly until the epoxy sets.

Use **Loctite 'Professional Heavy Duty'** 2000 psi epoxy. (available at Lowes or Home Depot). Stronger epoxy like Loctite Hysol E20HP (4,000 - 6,000 psi) is too strong and you won't be able to replace the cap. When the copper wears through to the lead, simply heat the cap and pull off. Form a new cap and melt the lead from the original into the new one and re-attach with epoxy. A standard propane torch is accomplish this in about a minute or two.

Handle size is a matter of personal preference but the vast majority of requests I get are for handles between 4" - 5 1/2" (80%) 15% are shorter and only 5% are longer. **BUT you can always shorten a long handle!**

Finishes are a matter of personal preference - and my preference is Birchwood-Casey Tru-Oil - used to finish gunstocks. Just don't finish too smooth (220 grit is good) or the handle will be too slick to hold.

from: <http://paleoplanet69529.yuku.com/topic/36877> and [/topic/34690](http://paleoplanet69529.yuku.com/topic/34690), accessed 12-5-10, copied with permission

Something New to Me – Notching Jig

By Richard Myers (aka Twobears)

I found out about this totally by accident. I was notching an Andice this morning when I blew the ear off and stuck my notcher in a crack on my work surface. A light bulb went off and this is the result.





Any way it works great and was able to get the next notch in good and deep as seen in the picture. Has any one else used something similar? This really does a fine job and it thins it's path well too. I leave the shank in place and push the point against it and then tap with my bopper and pow it removes a great C flake. It's a lot more stable than trying to hold the notcher and you can get a more exact positioning.

From <http://paleoplanet69529.yuku.com/topic/37981/t/Something-new-to-me-notching-jig.html>, accessed 9/16/10

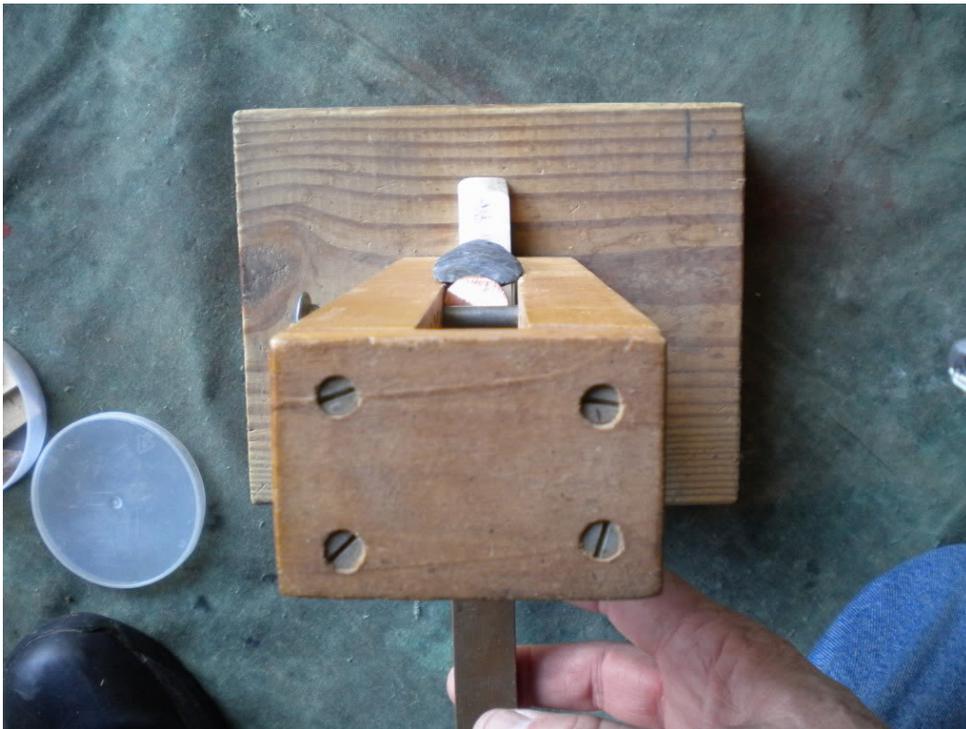
Simple Fluting Jig Pictures

By Ken Wallace (aka Paleoman 52)

To go along with the thread on fluting nipples I am posting a few pics of the fluting jig I have been using since 1993. As you can see this is a pretty uncomplicated device. The secret to making this jig work well is to be sure to spend as much time as you need to on preparing the fluting nipple. Always make sure that the ears of the point aren't pressing too hard against the uprights because this will cause them to snap off. Also be sure that when you are applying maximum pressure that the bar is almost 90 degrees with the preform. It helps to give a tug on the bar once you've applied the pressure you need to cause the fracture that releases the flake.



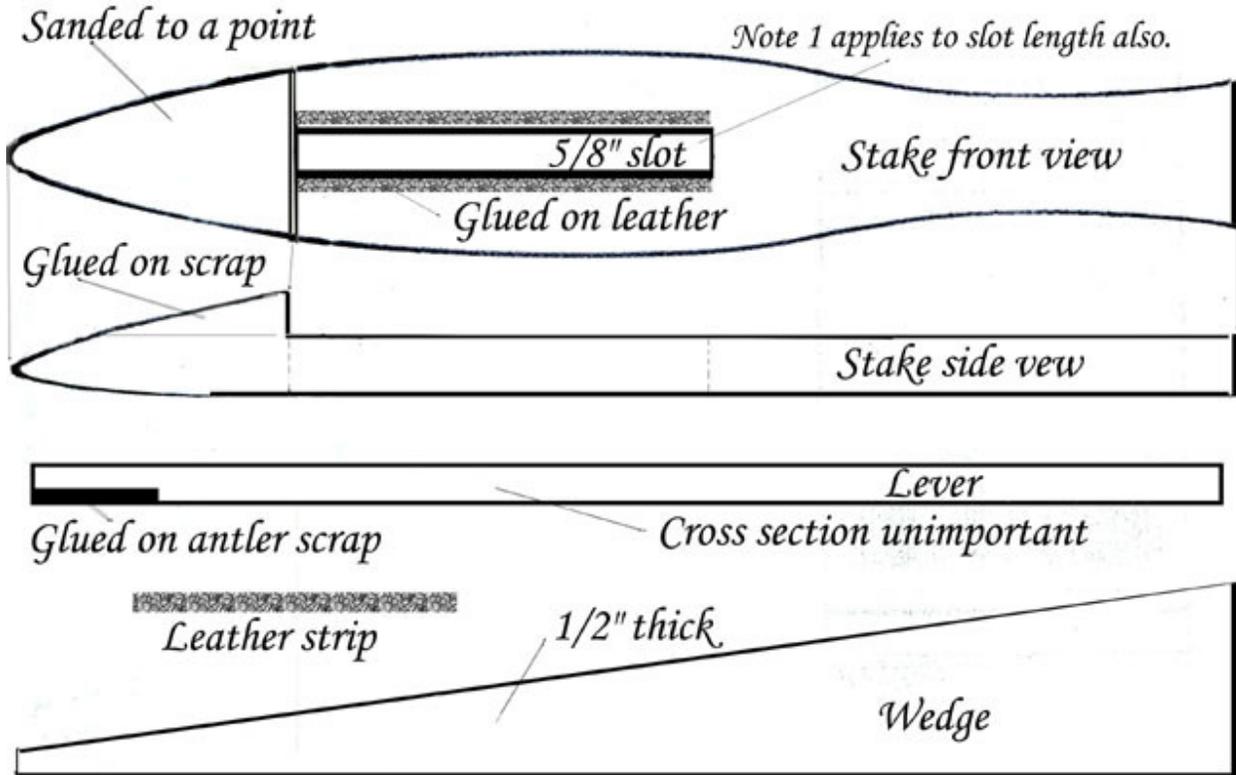




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Tony Soars Fluting Jig

Posted by Richard Meyers (aka Twobear)



The Soars Fluting Jig Construction details

- Notes: 1. Lengths of boards to accommodate length of points to be fluted.
2. Construct of 1/2" hardwood.

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Rocker Punch Board

By Gary Abbatte (aka rhymeswithwhat)

I have interpreted the research of Dothager to construct a modern set of tools using similar physics and a blending the two Dothager tools into one practical set. The key to his Three Digging Stick Tool is the slot or space between the sticks and the use of a foot lever stick and thong to pull down a larger punch and hold it while striking. His second tool, a small split out branch tool, uses a tied down small punch. Both tools use leather pads or a pad over an anvil stone as an aid to locate the height of a preform or spall and set a striking angle for the punch and billet. Here is my tool set that combines the both lap tools into one with modern materials:



At the top is a large Cow Bone punch and a large Antler punch with a leather pull thong around it . The thong connects to the foot operated pedal stick for holding the punches firmly against the workpiece. The pedal stick and thong also holds the lap board very steady across the top of my legs when seated in working position and applying pedal pressure. The lapboard itself is oak, covered with leather and the other end away from the slot on the board is used for small punches that are tied down using a clove hitched leather strip. The underside of the board that rests on my legs is also covered with leather for comfort.

The tools at the left are my striking tools: A Dogwood Billet, A Moose Tine Billet and a Limestone Billet. Small Antler punches can be seen at the right end of the board and one is fastened down in working position.

Below the Foot lever stick is a variety of leather pads and an anvil stone.



A closer picture of the slotted punch board end.



Billets, anvil and padding.



Small punches at the right end of the board.

Conclusion: This tool set has a lot of potential and I hope to gain skill using it. It is nice and steady on the lap and I can take large thinning flakes and shape preforms out of Onondaga with the set. If you are unfamiliar with rocker punch methods for Flint Knapping take a look at the Dothager video set and see how he uses his tools developed from his research:

http://www.spiritinthewind.com/mike_1.htm

Punch em out!

[To see this tool in use, go to <http://s30.photobucket.co...amp;current=punchvid.flv>]

From <http://paleoplanet69529.yuku.com/topic/29696?page=1>, April 4, 2010, copied with permission

Knapping Aids for the Strength or Dexterity Challenged

Compiled and edited by James C. Keffer

This chapter takes a look at various knapping tools used by knappers to either help with specific knapping challenges or to overcome physical limitations. I've compiled a number of these tools and basic instructions on how to use them. To my knowledge, all of the tools were made and used by knappers, and permission to include these jigs, photographs and instructions has been granted by their originators.

Betty Roberts' Jig

This jig was designed and built by Betty Roberts, of Oroville, WA. While better known for her amazing Spinning Wheels, Betty is an accomplished knapper and woodworker.

The jig is built with a wood base upon which a wood ramp is attached. A 'Drill Press Locking Clamp' (available at Harbor Freight (\$9)) is attached to the base with its own mounting bolt. The end of the clamp is modified so that a two-part pad, steel and plastic or rubber is attached. A rubber pad (notched or un-notched) is placed between the wood ramp and the clamp. The rock is held between the locking clamp and the wood ramp by the spring pressure (adjustable) of the clamp.

The jig uses two different fulcrums or 'cheaters' as Betty calls them.

Note – this jig requires a longer pressure flaker tip than is common on most pressure flakers. A pressure flaker that provides for an adjustable tip (set screw) is recommended.

The first is a nylon cord that runs across the end of the rig. This cord acts as a pivot bar for the tip of the pressure flaker and allows for a wider space to work the rock. The pressure flaker tip is placed under the cord and the tip placed on the rock. Lifting up against the cord causes the tip to be pressed down and into the rock to remove the flakes.



The second 'cheater' is a small, rectangular piece of plastic attached to the end of the jig with a screw. A hole is drilled into the top of the plastic to allow for the tip of the pressure flaker to pivot it. This 'cheater' provides for the most pressure in a small area.

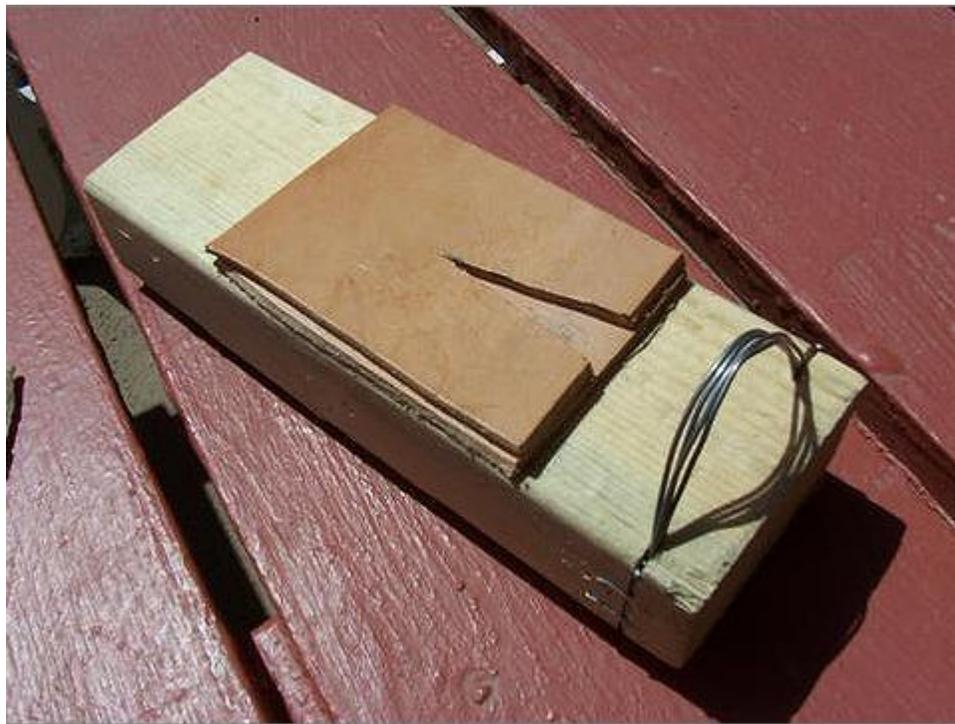


Here's a picture of the 'Drill Press Locking Clamp' that is the key element of this jig.



Otis Price Jig

This simple jig was built by Otis Price of Albuquerque, New Mexico. It employs a block of wood (2x4 or 2x6), a couple of leather pads (rubber may also be used) and several strands of stout wire. Notching the top leather pads provides a place for the flakes to release into. The wire strands provide the pivot for the pressure flaker. Its small size makes it easily portable. This jig also requires a longer tip on the pressure flaker.





Tim Monson's Lap Table and Knapping Aid

Tim Monson, of Lehi, Utah has designed both a handy table and knapping jig all in one! This tool starts out as a lap size board onto which Tim attaches four storage hangers (also known as ladder wall hooks – about \$2.50 at most hardware stores). These hooks fit on the outside of the knappers legs while the board (lap table) lies across the lap.

On the working surface, the table has a jig employing two fixed blocks of wood, an 'eye' bolt (or bolts) that provide the pivot points for the pressure flaker or Ishi stick, and a flaking block. The flaking block is not attached but moves along the two small blocks to properly position the rock in relation to the pressure flaker.

Bottom



Top

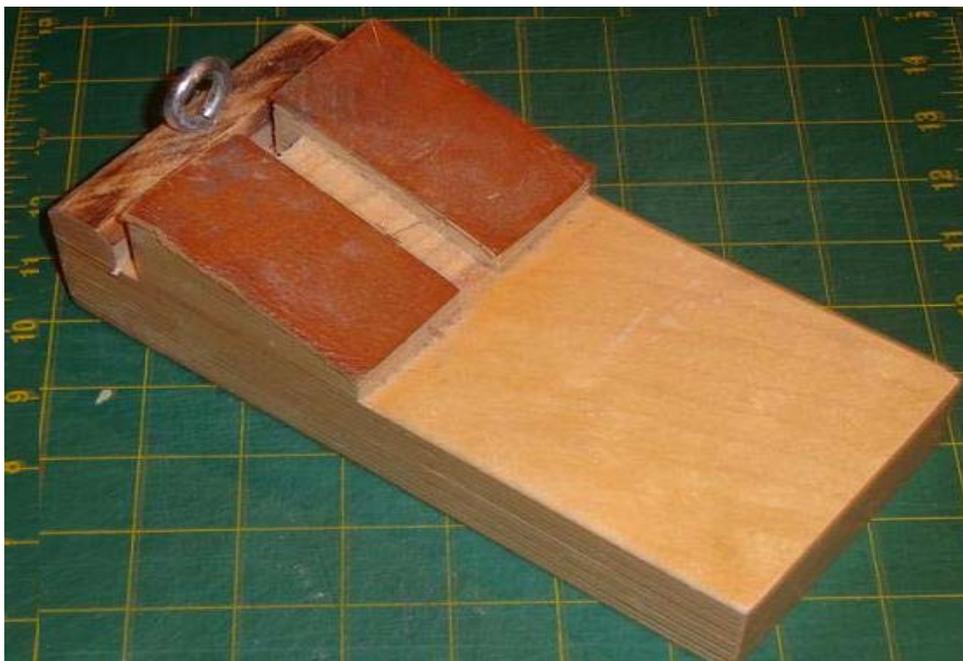


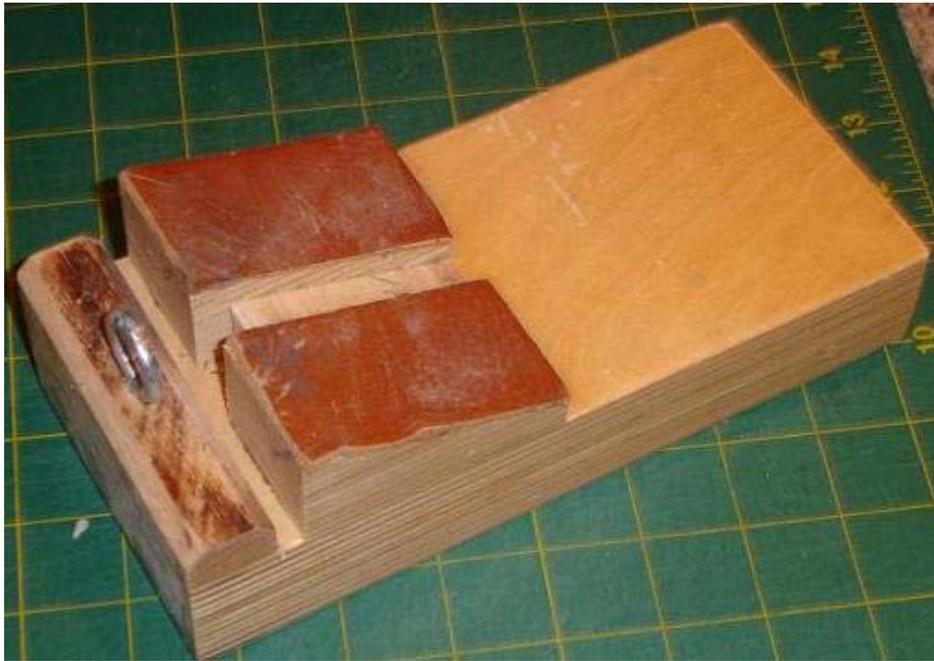
Tim's made several variation of this tool, here's one with the double 'eye' hooks and some strips of wood attached to the side to keep tools from sliding off:



Jerry Marcantel's Jig

Like Otis, Jerry Marcantel, of Tucson, AZ, has opted for efficiency and portability. Rather than using wire strands, Jerry's jig employs an 'eye' bolt (or bolts) to use as the pivot of fulcrum for the pressure flaker/Ishi stick.





from: e-mailed document; elements of this document can be found at
<http://www.pugetsoundknappers.com>, copied with permission

Converting a Pottery Kiln to Heat Treat Flint

by Mark Bracken

Read this **DISCLAIMER** Before you Proceed

Any person(s) using informations from this website constitutes acceptance of this agreement.

Advanced electrical knowledge is **REQUIRED** to begin and or complete this kiln modification. Person(s) using this information or any information offered by this web site are fully responsible for the transfer of this said disclaimer to any other persons user(s) of any informations offered by this web site.

The user(s) assumes full responsibility for the proper interpretations and safe use of these information(s).

Informations here are **Not** recommended for children under 18 years of age.

Keep products and all related products away and out of reach from pets and children.

Improper installation, care or use of products could result in property damage, Fire, electrocution, blindness, serious injury or death.

Safety goggles are **required** during this procedure. Avoid inhaling fumes or dust. Must use proceed with proper ventilation. Must dress properly, wear shoes that completely cover the foot, Full length pants and a shirt are required during installations or modifications.

Must wear heavy leather gloves accompanied.

Consult your physician before you proceed if you suffer from any Breathing illnesses, bleeding disorders, tendentious, carpotunnel or any other discomfort before proceeding.

If problems and or discomfort result, discontinue use and consult your physician.

Do not consume alcohol, drugs or other mind altering substances during this procedure.

If any product defects or excessive product wear are discovered, **do not** attempt to use.

In no event shall the manufacturer(s) or retailer(s) of products used or sold on this web site be liable for incidental or consequential damages or for any other damages to the properties or person(s) of the buyer and or user. The recovery for damages resulting from any and all causes whatsoever, including, but not limited to, misuse, negligence, or strict product liability, will be exclusively limited to the replacement of the product(s) with respect to which losses or damages are claimed or to a refund of any purchase price paid for the products. If you wish to or have purchased products or used information(s) from this web site and **DO NOT** agree and or accept this disclaimer, **DO NOT PROCEED**. Proceed and or use at your own risk.

Switch Installation

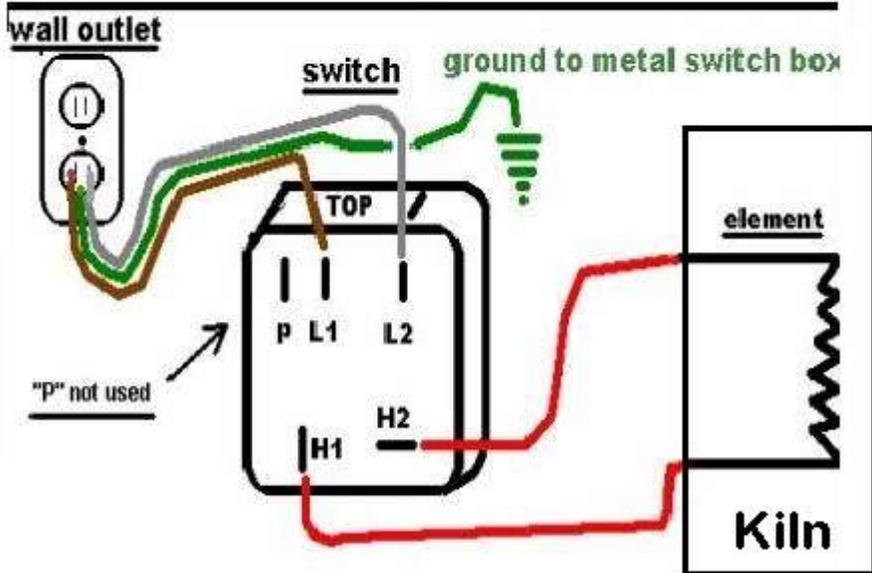
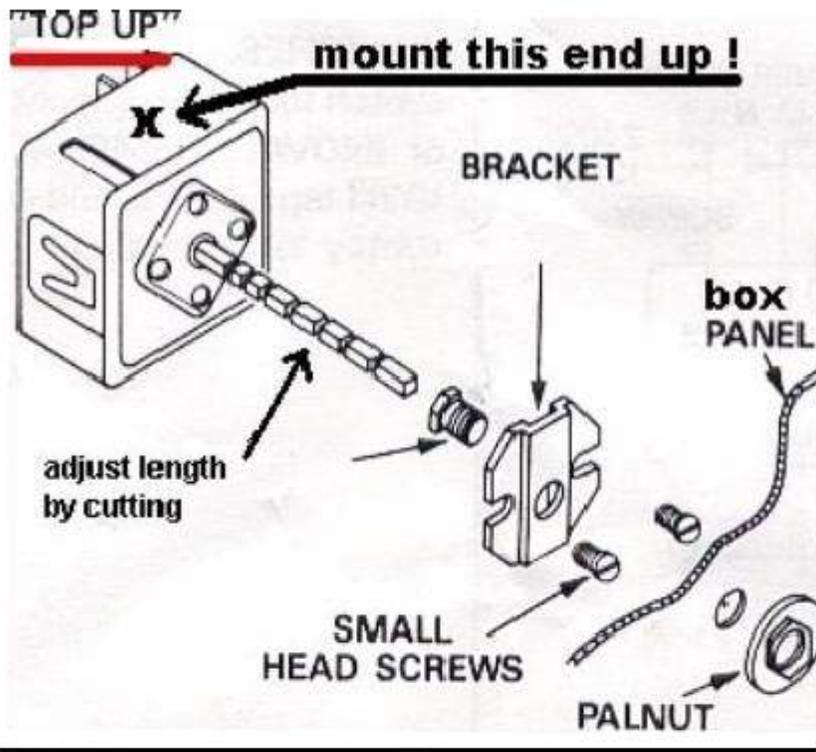
Proceed at your own risk. This switch, Robertshaw 5500-135 commercial infinite switch, is designed for 120v. It can be purchased from any appliance parts store. I recommend the commercial grade switches. Each switch is to be used with one element ranging from 13ohms to 18 ohms. If your kiln holds one 5 Gallon bucket of rock then one switch will be enough. I have a kiln that holds 18 gallons of rock and I have three switches on it. The temps should not be allowed to exceed 800f. NEVER use the kiln on or near the "high" setting. Use caution when settings are near the "high" setting, the kiln could lock in "high" mode and will cause damage to your stone and possibly element(s). Never operate your kiln near any flammable vapors including, Glues, solvents, fuels or others . Infinite switches produce small sparks as they "toggle" in their operation.

The switches have a dial with numbers from 1 to 6 on them with quarter and half marks on them. The dial settings are NOT temperature settings. For example: You must experiment with your kiln to find out what temperature #4 produces. It might be 375f. Make a chart and write down the final values of each setting. Be sure that you are allowing at least 24-36 hours for your kiln to max out at the dial setting you have selected. Don't become tempted to monkey with the dial when your trying to establish final values for a dial setting. Always fire FULL loads of material.

Read this carefully!!!

If you are unfamiliar with proper and safe installation DO NOT PROCEED

1. Unplug all power before working on your kiln!
2. Mount your switch in a metal box on the side of your kiln. Mount with good and safe clearance from any electrical connections to the element or switch itself.
3. Be sure switch is mounted with the "top" indicator is facing upwards. See diagram below.
4. Use a 14 or 12 gauge cord with ground wire. The best option is to make up a new one or remove one from an old appliance with a ground wire still intact. Washing machine, refrigerator, microwave ect... are suitable.
5. Wire switch as shown in the diagrams below using quality crimp connectors. NO ELECTRICAL tape.
6. Check all connections with a multi-meter to insure there are no "shorts" or "longs".
7. Double check your element to be sure it is in the Ohms operating specifications of this switch as per diagram. Do Not Use old or original elements with this switch. They are not compatible.
8. See diagram Below for details. Please note: the "P" connector is not used on this configuration!
9. Use proper terminal leads on all connections, NEVER use electrical tape! NO connections should be located inside the kiln. All connections should be clear of any metal or conducting parts!



Brown = common
 gray = Hot
 green = ground

Operate the kiln safely!

1. Never operate kiln on a wooden or flammable or combustible surface.
2. Place kiln elevated on concrete blocks or metal stand. Do NOT set directly on any floor concrete or otherwise!
3. Keep kiln at least 20" from any walls or other objects at all times.
4. Use cement fiberboard on near by walls for an extra-added protection!
5. Use a "dedicated" outlet for each kiln switch on a 15-amp breaker.
6. Never heat-treat large blocks of stone. Stones could violently break apart. This could knock the lid right off a kiln ejecting VERY hot Fragments, creating a serious fire hazard!
7. Keep your kiln out of the weather, Damage to electrical parts will result.
7. Never operate kiln with flammable fumes, liquids, solids or vapors present.
8. Avoid heat-treating in your home or living space. Heating rocks can produce poisonous or harmful vapors, especially if cut on rock saw!
9. ALWAYS WEAR A RESPIRATOR WHEN LOADING OR UNLOADING YOUR KILN!!! DUST FROM BRICKS AND ROCKS ARE DANGEROUS TO YOUR LUNGS!

From http://www.flintknappingtools.com/heattreating_kiln.html, March 31, 2010, copied with permission

Dan's Cave

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Every man needs a place where he can go to "get away from it all" once in awhile, a cave to hide away in; a place for male bonding, making silica dust and washing it down. Whether it's a room in the basement, or, if a guy's lucky enough, a workshop out behind the house. A place, other than the local pub, where your wife will know where to find you.....yet leave you alone to "create", knowing that you really can't get into any serious trouble "out there". This is the story of my "cave" and how it came to be.

I started knapping almost ten years ago now. Back then it was an outside only activity, done on occasion with a hammerstone and some chunks of Onondaga I picked up walking local fields.....oh yeah, and band-aids too of course. I was curious and interested, but the obsession hadn't quite kicked in yet. After some initial struggles (who didn't?) I found a copy of D.C.'s "The Art of Flintknapping" at the Buffalo Museum of Science. I was astounded.....I couldn't believe that such a thing existed. Boy, I thought, I've got it made now! After reading and struggling some more, I came to the conclusion that I just had to have somebody show me how to do this. At about this time I was introduced to Jack Holland, a gentleman well known in both knapping and archaeology circles....."Mr. Lithics". I pretty much just tormented Jack until he was kind enough to invite me to his home to give me a knapping lesson.....I guess it was either that or learn how to deal with a stalker! Jack showed me the basics, saw that I was sincere in my desire to learn, and decided that he should get me on down to meet Ken Wallace, a knapping legend here in the Northeast.

To make a long story, well, a little shorter. Ken and I became fast friends and I was put firmly on the road to learning this "lost art". Having a good teacher accelerated my abilities light years beyond where I would have been had I continued to struggle on my own. I still consider myself extremely fortunate to have met such a skilled knapper, and one who so easily and generously gave of his knowledge, so early in my knapping career.

The first time I visited Ken with Jack, as I sat in his home marvelling at the case after case of work that he put before me, I wondered where all of this magic happened. My question was answered as we moved outside to "the shop". Ken's shop was small, with a low, sloped ceiling and a wooden floor.....I could see small pieces of debitage imbedded in it and caught between the boards. There were things to see in every nook; arrows, darts, antlers, tanned hides, trade beads.....I was overwhelmed!! The day was somewhat of a blur; it would have seemed almost dreamlike looking back at it later that night, had it not been for the paper thin Snyders point that I clutched in my hand....one of Ken's signature pieces and a gift to remember the day by.

Needless to say, I returned home totally pumped up and ready to knap. I looked at my little room in the basement, the one I shared with the boiler. Sure, it was plenty warm, but the light was poor and

ventilation was non-existent (we tend not to open our windows much in Canada in the winter). Of course there was the rickety old garage, which was fine if it wasn't really cold....kept me out of the wind anyway. I didn't have to worry too much about the flakes on the floor either; we didn't put cars in the garage and it had a gravel floor, as the previous owners had removed the old wooden floor after repeated skunk infestations under it. This wasn't the most pleasant place to knap.....I needed a change.

My next attempt at a knapping studio brought me to our cottage, which is on a large river a short distance from the house. I got hold of a huge canvas tarp at a flea market, moved all of the furniture aside and covered the floor with it. This worked fairly well until Spring, when even after repeated vacuuming of the carpeted floor, my wife, who lives in bare feet as soon as it's warm enough to do so, started to "discover" small hidden flakes. Looked like I needed another plan.

It was time to tear the garage down before it fell down and build a new structure; not a garage but a combination workshop/storeroom. I attacked the garage, and to say that it was in trouble is an understatement; I took the whole thing down with no more than a crowbar....there was nothing bigger than a 2x3 in it!

I had designed an L-shaped building with the larger part of the L being the shop and the shorter part the storage area. After visiting the City planning department I found that I could build a much larger structure than I had thought, but I fought the temptation to eat up too much of the backyard (my wife loves her gardens), so I settled on a 16'x20' area for the shop and a 10'x16' area for storage. I knew that these nice even measurements would make construction easier too. I set to excavating for the floating concrete pad that the whole thing would sit on. Things got interesting almost immediately as I found a few flakes of aboriginal debitage in the soil just outside of what would have been the garage, so I know that it wasn't mine. It really wasn't a total surprise as we live less than two blocks from the Niagara River in one direction and about two blocks from a large tributary of it in another. I considered this an incredibly good omen, even more so than if I had found a point; knowing that prehistoric people had knapped right on that spot made it seem perfect. I even incorporated some of the flakes and a couple of my points into the concrete as we poured the pad.

The structure went up fairly quickly, thanks to pre-fab trusses and a friend who just happens to be a carpenter! We included two large windows on opposite walls on either side of the knapping area, and in line with the prevailing wind for flow-through ventilation. I wasn't just building a workshop for all of the things it might be used for.....I was building this thing with knapping as the primary consideration. I'd already decided where I would be sitting to knap; looking at the window that faces the house so I could see and hear my wife when she called me in for a meal. Being in the throws of a heavy knapping session is one of the few things that will cause me to forget to eat!! I've since installed an intercom to take care of these things in the winter months.

In addition to the two large windows for ventilation and light, I installed a 2'x4' skylight directly over the knapping area. If there is one piece of advice I would pass on to anyone considering building or modifying a shop for knapping, it would be to put in a skylight; it makes all the difference in the world.

It was finally time to begin finishing the inside of the shop; wiring, insulation, deciding where the workbench and power tools would reside, and in which corner the kiln would sit. Figuring out all of this ahead of time also helped me to distribute my electrical load evenly throughout.

Now, what to cover the walls with. I had decided to keep the ceiling open to keep the rafters available for storage (glad I did), but I did want to cover the insulation in the walls with something. I didn't really want to mess around with drywall...had to keep reminding myself that this is "just a shop". I looked around for an alternative and came up with a solution.....at work! I'm a lineman for an electrical utility, and our yard at work had a quantity of hydro poles that had outlived their usefulness. They are western red cedar from British Columbia, and some of the guys had started milling them up and making decks out of them, so I thought, "Why not panelling?" I had them milled to 3/4" thick and whatever width each pole provided. Once through a thickness planer to achieve uniform thickness and smooth them out (and bring out the grain beautifully), and they were ready to go up on the wall. They looked, and smelled, great!

The only wall I didn't cover with the planks is the one behind the woodstove, which is a wall of 100 year old bricks I picked up on my travels. Cedar is a fairly soft wood, which was evident after my "shop warming knap-in" when I found small chert flakes actually imbedded in the walls!

I next hung two eight foot, double tube fluorescent lights on either side of the knapping area and a ceiling fan directly overhead (more air movement). Feeling that I'd covered just about everything; heat, light, ventilation, communication, storage, even a small beer fridge (gotta wash that silica dust down somehow), I realized that the only thing lacking was a bathroom. I hadn't run plumbing to the shop, and knowing that I had neighbours all around I couldn't use the method that we used at Ken's shop (out the back door). Not wanting to leave a toasty warm shop in January to run to the house, I had to come up with an alternative; so I dug a three foot deep hole outside, drilled a hole through the wall and ran some PVC tubing through it. The end of the tubing was at the bottom of the hole in the ground, which I proceeded to fill with alternating layers of sand, gravel and activated charcoal (for odour control). On the inside end of the tubing is a large funnel (the kind you use for draining your motor oil), and behind that on the wall is a small piece of plexiglass.....a splashguard for those knappers who have trouble "hitting the platform". The first test run gurgled back at me....I hadn't considered the requirement of a drain vent. A small hole drilled into the PVC just before it disappeared under the ground solved that problem, and a "flush" from a jug of vinegar keeps things clean without pouring chemicals into the ground. The "bathroom" is even strategically located in a corner so that the user can be behind the door of the shop for a little privacy.

Adorning the walls are several cases of points that I've traded for or been given over the years, and several posters; The Story in Stone poster of course, Pete Bostrom's Clovis poster, and Val's drawings of the Wenatchee points among others. I even have an award that I was presented with at a knap-in a couple of years ago in Pennsylvania.....it was for being "The First to Arrive".....OK, so I got the dates wrong and went a week early!

Are there any things I'd change in retrospect? Yes, only two: First, I didn't know about "cold start" ballasts for fluorescent lights. Seems the lights I hung (the price was right) are made for indoor use only; the air has to be at least 50 degrees for them to operate properly. This is remedied by getting a good fire going in the stove before I settle in to knap.....not a big deal. Secondly, I put a "brushed" finish on the concrete floor, which I thought nothing of until the first time I tried to sweep up flakes.....should've left it smooth. Again, this is taken care of by using a tarp to knap over, which makes clean up easier anyway. All in all I've been very happy with the result, and the knappers that have joined me over the last couple of years have given the place a hearty thumbs up!

If you're considering moving out of the basement or garage, or even modifying an existing space to be more knapper friendly, I hope that some of the suggestions I've put forth here will be of some use to you.

Oh yeah, and don't forget the vinegar!!

From http://knapper_dan.tripod.com/page2.html,
April 4, 2010, copied with permission



Pictures of Dan's cave from <http://www.creeksideartifacts.com/DLKI/index.html>

Paleoman52's Man Cave

by Ken Wallace (aka Paleoman52)

When I started this thread last week I forgot to include my outside cave. Here are a few shots of where the magic takes place. Many of you have been here and will recognize it very well, for those of you that have not been here yet, I welcome you to stop by, My cave is always open to you. My only requirement is bring a rock with you, enjoy!



This is the outside of my Cave and it kinda looks like a cave with that big opening and all the different antlers hanging around the front.



This is the area I like to sit during warmer weather and chip out my creations. It has a good view of the neighborhood and sometimes my neighbors spot me here and bring beer to share.



This is in the inner cave where I collect my finished pieces and grab cold ones out of the fridge to celebrate the successful completion of any point that doesn't break.



More views of the inner sanctum of my cave, this is organized but my wife considers it very messy, Hey I know where everything is, that all that counts.



This is my meager rock supply that I have, when this gone I don't chip anymore until someone brings rock to the area, or I travel to a local knapping gathering.



OK this picture kind of speaks for itself. Am I the only one brave enough to show "The Funnel"? This is one of the most popular places in my Cave and is visited at least one or 2 times a day by everyone when we gather for a day of chipping. I'm sure that all caves have different forms of this feature and recently I have rebuilt and improved my "Funnel" to handle more volume when my friend Mike arrives at my place after he drives in from Niagara Falls, NY. If you look closely you can see that there is a handle hanging from the rafter to pull if the need arises and also a miniature

toilet on the shelf next to the "Funnel" that has a handle to trip and it is complete with full flushing sounds.

It may not be a place of beauty but it is my Cave and I enjoy every moment I spend out there, I hope you enjoyed your tour!

From <http://paleoplanet69529.yuku.com/reply/261940#reply-261940>, April 4, 2010, copied with permission

Exhaust Fan Setup

By Mark Green (aka clamdigger)

In another thread we were talking about silicosis, and breathing in dust and fumes from grinding rock and glass. I've been knapping indoors for about 20 years and I believe it has damaged my lungs. I developed asthma in my thirties and had a terrible bout with pneumonia which knocked me down for nearly 8 months. I'm not blaming the knapping entirely but I feel it has made a contribution to my overall poor, pulmonary health over the past ten years.

I've had to give up my Harleys due to the fact that every time I'd go out for a rip, I'd come home barely able to breathe. There was no way I was gonna give up knapping as well. So I installed a powerful in line exhaust fan adjacent to my knapping chair. I use this fan every time I go to knap, and I've noticed a significant improvement in my breathing and overall health. I used to contract many sinus infections prior to the use of the fan, in the past 2 years I've had maybe 2 infections.

For those of you knapping indoors, you may not feel it now and you may never have a problem, but this stuff builds up over a long period of time. Out of nowhere you start to feel like shit. It's taken me about 3 years now of really being careful with the dust, my chest and breathing are finally starting to feel good.

Here is my set up





The intake and exhaust are 6" diam. a flexible duct can be installed on the intake and you can route the duct where you need it, although I wouldn't make it too long. This set up cost me around \$225

From: <http://paleoplanet69529.yuku.com/topic/38560/t/Exhaust-fan-setup.html>, accessed 10-11-10, copied with permission