



# A Guide to Safe Woodcarving

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# Chris Pye: A Guide to Safe Woodcarving

Take woodcarving safety seriously: Why be glumly and painfully wiser with hindsight when foresight is always to hand?

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Please read this document carefully, even if you think you know everything already.

Any comments and improving suggestions are very welcome.

Safe carving!

*Chris Pye*

## Disclaimer:

I have tried to be as complete as possible here but, because I cannot know of your particular circumstances, I accept no legal responsibility whatsoever for any consequence arising from the application of information, advice or instruction given in this or any of my publications, or on my websites.



# 1: Introduction

I have been teaching woodcarving for many years, to hundreds of students, and I can say that the worst injuries sustained in my classes have been small nicks to fingers. Such cuts are invariably got when picking up tools from the bench or toolroll, rather than while actually carving.

The most annoying consequence is a blood spot on the work - I sometimes suspect students are happy mixing this blood with their sweat and tears, to collect the complete set...

Given that we are handling extremely sharp cutting edges for hours on end, it surprises some visitors that there is so little bloodshed.

I've written this Guide to Safe Woodcarving to explain why this is so. What follows is an overview of my attitude to safety in general and a description of some of the specific precautions I teach. My hope would be that all carvers adopt these practices from the start.

More than anything, safety is an attitude - as much as it is checklists of do's and don't's. Because all workshops and carving situations are different, I can't pretend to cover all circumstances. But with correct attitude, you should be able to carve without significant accidents.

Although the bulk of my notes are aimed particularly at woodcarving, I recognize that many carvers work in a more general workshop environment. For that reason, I've included some wider-ranging comments on certain commonly used power tools. I'll begin by saying that safety is partly in your hands, and partly in your mind.

How is this so?

*Let's start with ...*



## 2: Your Best Safeguards

What is the best precaution against accidents? Mindfulness. Most accidents are caused by momentary absent-mindedness - a lack of concentration or presence of mind.

Still, you can minimise the chances of accidents happening by controlling your environment, and thinking through potential hazards. So for example, the cutting edge of a gouge is projecting, and you strike your hand on it. What actually causes the accident is a mixture of unawareness, and the attitude that leaves the gouge or the hand dangerously positioned. It is easy to daydream or to be otherwise distracted while carving. From time to time, all carvers will have this happen.

1. Back up your normal mindfulness two ways:
2. Work in as safe an environment as possible.

Cultivate good, safe working practices - specific carving habits and more general workshop disciplines.

Lack of experience certainly counts too, so make an effort to understand and familiarise yourself with all tools - especially power equipment - before using them in earnest. Also, remember that familiarity - while it may not "breed contempt" in the workshop - certainly invites a casual attitude. And "casual", when carving, is hazardous. So:

- Be mindful, aware
- Control your working environment.
- Establish safe habits of woodcarving and woodworking
- Beware of distractions
- Avoid overconfidence.

Much of what follows occurs, in broader context and more detail, in my books, where you can study the issues more deliberately. See the notes that follow more or less as a whole, rather than "steps" in any particular order.

*Before looking at woodcarving itself, let's walk around the place where you do it and ...*



## 3: Consider your Workshop

Do this excellent exercise. (Seriously... go and do it!)

- 1: Stand at the entrance to your workplace with a notepad.
- 2: Challenge yourself to think of all the ways you could be hurt in the space in front of you, anything from sharp corners to your tools and equipment.
- 3: Get a friend to do this exercise for you, with a fresh, unbiased eye.
- 4: Next to the items you have registered as danger points, note safety precautions, and things you might change.

What you have just done is, in the jargon, called 'risk assessment'.

It's an exercise that makes you more aware of hazards where you work. Workshop safety is worth taking seriously. Mostly it's common sense tempered with an imagination like Stephen King's.

Remember, too, that the chances for accidents increase when children and visitors enter the workplace.

### **Some further thoughts:**

- Keep a fully-stocked, first aid box easily accessible. Remember you may have to get at things with one hand, and quickly
- Include an eye bath and implements for splinter removal
- Make sure that the spaces where you walk are free from the danger of sharp edges and corners: things to bump into and stumble over
- See that you can easily and safely work around your bench, and that woodchips and dust on the floor do not make it slippery
- Store and arrange tools and equipment safely, securely and conveniently. (For example, sharp tools left clamped in vices, with tangs or edges exposed ready for fitting a handle, are very dangerous)

- Long hair and loose clothing etc should be tied back (cuffs and ties)
- Keep jewellery (necklaces and rings) out of the sphere of activity and, in particular, away from the moving parts of machines
- Make sure all electric wires are properly installed, and either buried or covered to prevent tripping.

**And think about FIRE:**

Take every possible precaution against fire: The woodcarver's environment tends to be dry and littered with flammable wood chips, finishing agents etc.

- Fit a fire alarm and extinguisher in the shop-and don't put the extinguisher in any place where a fire would be likely to keep you from it
- Never leave a naked flame unattended
- No smoking in the workshop
- Ensure that heat sources are safe before using them
- Bag up and remove dust and debris regularly
- Keep rags used for oil (Linseed, Tung, Danish etc) finishing in sealed metal tins that are closed when not in use, and away from children, heat, and naked flames.
- Use and store solvents, glues, turpentine, spirit and oil-based stains -in fact all other volatiles - in well-ventilated areas.

Once you have a safe place to work, you can relax and get on with what you really want to do - woodcarving!

*In fact let's turn to that now and look at some safety factors which are...*



## 4: Woodcarving Specific

Back up general mindfulness and a safe working environment with some safety-conscious carving habits, disciplines, things you do without thinking:

### **Work:**

- Hold your work securely to a stable bench or surface, so that it can never move unpredictably
- The rule is: Only the cutting edge moves; the workpiece remains fixed
- Re-position the work to avoid carving dangerously
- Check clamps and fixings periodically.

### **Bench discipline:**

- Lay the carving tools you aren't using flat down, in a row, at the back of the bench and away from where your hands are working. (Be methodical about this good habit which also protects the delicate cutting edges from clashing together.)

Normally, you'd be keeping your cutting edges pointing towards yourself to make it easier to recognize the particular tool you need. This is, in the main, a safe way of working. However, when working with the blades like this close by your hands make sure the tools will push backwards loosely and easily if you knock against their sharp edges. The last thing you want is for the tool handle to abut something fixed, while the spike-like, immovable edge is pointing at you.

- Never try to catch a falling carving tool, either with your hand, or by putting your foot in the way. Let it go!
- Carve in footwear strong enough to protect the feet from falling clamps, tools or wood

## Sharpness:

- Keep your tools as sharp and clean as possible
- A blunt cutting edge needs far more pressure to cut wood fibres and, at the end of its cut, a blunt carving tool tends to jerk uncontrollably out of the wood and into the fresh air. Contrary to what most people think, a sharp tool is safer because it cuts cleanly and with less effort
- Take particular care when using the benchstrop - especially the forward stroke.

## Tool use:

- Keep both hands and fingers behind the cutting edge at all times
- Since only the actual cutting edge is sharp, it follows that it is impossible to cut your hands and fingers so long as they're behind the edge
- Don't wave your carving tools in the air - something easily and unconsciously done while talking or demonstrating. Students and onlookers will find such waving, at the very least, alarming, and you'll feel very silly dressing your own wounds
- Be very careful walking around the room with extremely sharp cutting edges in your hand
- Carving tools are offered to the wood at many different angles: be prepared to re-position the work or your body to avoid carving dangerously
- Never cut, or exert pressure, towards any part of the body
- Both hands should be on the carving tool, with the blade-hand resting on the wood
- The only exceptions to this are mallet work and specific, one-handed carving techniques.
- If you need to hold the work with one hand and manipulate the chisel with the other, use the thumb of the work-holding hand as a pivot or guide to control the cutting. Never cut towards the work-holding hand. I'd advise protective carving gloves of thumb stalls too.
- In vigorous mallet work, especially with very hard, brittle or old and dry woods, wear eye protection.



### **Bench height:**

- Try to work with a straight back at all times and you will avoid backache. To this end, the bench (or workpiece) must be at a correct height.

My book Woodcarving Tools, Materials & Equipment, Vol. 2 has a discussion for figuring correct bench height - which is an individual matter for you, the carver. The normal woodworker's or joiner's bench is far too low for most people. Raise it on blocks or fit a false top, and adjust the workpiece as necessary. Relief carvings can be fixed vertically - details of some vertical carving stands can be found in my book Elements of Woodcarving.

### **Wood:**

- A lump of wood can be surprisingly heavy, and toes surprisingly small and painful. Wear boots with steel toe-caps when shifting and sorting lumber
- Lifting: Don't just bend over and use your back. Keep your back straight and use your strong leg muscles by bending and straightening your knees.

### **Mallets:**

- Work rhythmically at a regular pace - this is less tiring and easier on the joints than sporadic, violent bursts of passion
- Use the lightest mallet that will do the job.
- Keep the elbow of the mallet arm in (towards the body) as much as possible, and strike so as to include the shoulder. This lessens the stress and fatigue on the elbow and arm
- Use the mallet with either arm - learn to do this from the start
- Wear eye protection with hard, brittle woods
- Mallet work can be hard on the ears! Ear defenders reduce the tension that creeps up on you with loud, sharp noises.

## Wood shaping:

- Use a tough leather glove to protect the skin if you grip the end of a rasp
- Protect the heels of your hands from sharply-cut edges, splinters and facets of wood with fingerless gloves
- Use a dust mask without fail when you sand wood, and protect your eyes.
- Never blow away sandpaper grit and wood dust
- Know your material: some tropical hardwoods are toxic to everyone; others cause allergic and other reactions.

There are other conditions which can affect woodcarvers besides this tool and wood-related family.

*Problems which might affect ...*



## 5: Your Body

Physically, mechanically, carving can be quite hard going, especially for older people or those not used to handwork. Besides being a satisfying life-long challenge, carving should be fun! So take it easy. Build up muscle strength slowly with regular practice. In the first rush of enthusiasm, it is easy to overdo things.

Safety lies in looking after yourself, both short and long-term. If in any doubt about your ability to stand or carve, then you must seek guidance from your medical practitioner.

### Here are some things to look out for:

- Standing and relaxing:
- As a general practice, it's always best to stand when carving.

However - depending on the size of work - standing may not be important. Indeed, standing can stress hip and knee joints and exacerbate varicose veins. If you find standing difficult, arrange to sit comfortably, either at the bench or on a 'carving horse'

- Walk about every so often
- Stretch your arms, particularly behind your back
- Arch your back - carvers tend to use the front-of-chest, pectoral muscles a lot
- Loosen your neck and shoulders
- To relax the eyes, occasionally stare away from the carving into the distance.

### **Wrists and Carpal Tunnel Syndrome:**

Besides the mallet, carvers have always driven their gouges by striking them with the palm of the hand, perhaps building up quite considerable calluses over the years (so-called 'carver's hoof'. Although occasional, light thumping may not cause problems, there is a very real danger of damaging the large numbers of nerves and tendons that pass through the wrist and palm - the 'carpal tunnel'.

The effect varies between individuals but thickening here can give rise to a well-recognised, claw-like deformity of the hand (which many carvers also had). The surgical repair of this condition is often unsuccessful.

If you *must* strike the handle with the palm, at least use the meaty bit at the base of the thumb or its equivalent on the other side; and avoid the centre. Do this lightly and infrequently.

'Palm mallets' made of leather and resilient gel pads are available, and give some protection. Better still, use the mallet.

### **'Repetitive stress injury':**

Carvers prone to repetitive stress injury will feel a burning sensation in the wrist and elbow joints, accompanied, in severe cases, by redness and swelling. The condition is caused by mechanical stress on a particular joint, especially through holding or repeating the same, tense position in the same joint for long periods of time.

In the elbow, this condition is familiar as 'tennis elbow' or 'condylitis.' In woodcarving, there may be a case for calling it 'carvers elbow'. The earlier you recognise the symptoms the better. Don't persist in the activity which is causing pain hoping it will get better. Pain is a warning. *Do not think the problem has gone because you have taken pain killers, or used ice.*

Seek medical advice early. This is important for reasons of health insurance: it can be a slow condition to clear up and may be incapacitating in the long term.

Best of all: be proactive. There are things you can do, such as using special forearm straps to remove strain from the elbow.

To minimize future strain from the joint, you may need to find new carving techniques, tool grips and working positions. Luckily there is plenty of scope for this in carving.

One of the best things you can do - and all serious professional carvers will have worked conscientiously on this ability from the start of their careers - is to develop ambidexterity. Being able to switch hands will not only help your carving, but it will also distribute the workload more evenly between the arms and muscles of both joints.

Many carvers use electrical tools. But those who do so only occasionally will be more at risk than woodworkers who are familiar with power tools through routine use.

*So finally let us look at safety concerns with using ...*



## 6: Power Tools & Equipment

I know of carvers who have given themselves serious cuts and even stab wounds with gouges, but that is nothing to the damage that fixed or portable power tools can inflict.

Steel versus flesh is no competition.

Many carvers regularly use bandsaws, chainsaws, sanders, woodcutting discs on angle grinders, routers and so on regularly.

What follows is general advice. There's a lot of it, because there's a lot that can go wrong:

## **Manuals:**

More and more, because of regulations and increased awareness of customer usage, reputable manufacturers are including excellent, comprehensive instructions and safety recommendations with their machines. Read and follow all safety guidelines!

If you buy power tools or equipment second-hand, contact the maker for missing spec sheets and safety advice.

## **Training:**

It is really wise to go on a training course for larger machines - and certainly for chainsaws. At the very least, familiarise yourself with any tool or piece of equipment before using it.

## **General advice:**

Some men haughtily disregard guards, eye, ear, body protection, etc., as being 'unmanly.' This attitude is stupid and needs serious rethinking.

- Face and/or eye protection is absolutely essential. Grit and sparks will penetrate the eyeball; wood chips will fly off; and cutters or burrs -however finely made or judiciously used - will sometime shatter
- Wear ear protectors too
- Keep face masks, eye and ear protection easily to hand - and put them on before you switch on your equipment
- Alcohol is right out. Not just while in the workshop but its influence from drinking beforehand
- Tie back long hair and loose clothing (cuffs and ties). Keep jewellery (necklaces and rings) out of the sphere of activity and particularly away from moving machine parts
- Properly adjust - and routinely use - guards, rests, etc
- Use push sticks
- Fix work securely before drilling, power shaping etc.
- Double check everything, including the locking of chucks, the table, or any fence before starting the machine

- Keep the floor clean of shavings and wood chips. They are a fire risk and dangerous for walking on. Clear up floor and surfaces regularly
- Keep hands and fingers well clear of moving parts. Remember that most accidents happen quicker than you can notice...
- Never reach over or across machines
- Keep wiring from machines and electrical hand tools neatly out of the way - not trailing over the floor or work surfaces
- If you have to sharpen, adjust, or change a blade or cutter, always isolate the machine first, by pulling out the plug
- Do not drip water from the cooling jar over motors, electrical connections or plugs.

### **Bandsaws:**

- Never use a blunt blade.

It's one of the most dangerous things you can do with a bandsaw. A dull blade forces you to exert more pressure and sudden break-out can draw hands and fingers into the cut. Once you've installed a new blade, kink the old one so it is unusable and throw it away.

- Never exert pressure with your hands directly towards the blade, for the same reason as above; rather push out of line with the blade
- Make sure the wood is flat to the table and cannot twist suddenly
- Use the guards! - especially the top one, which can be brought down close to the surface of the wood.

### **Flexible drive shafts:**

- Repeat: face or eye protection is absolutely essential! Chips of wood can fly off, cutters and burrs can break
- When using a cutter or other accessory with a high speed shaft, never exceed - and try to work below - its maximum rated speed. Used above rated speeds, cutters can - and will - fly apart, bend or otherwise be damaged

- Never use a bent or damaged cutter or burr - or one that vibrates or chatters - in a high speed flexible shaft. Instead, throw these away
- Never force or pressure these accessories.

### **Disc Cutters:**

The angle grinder used with these discs (eg Arbortech) flings wood chips and dust at high speed, with and without the guards.

I wear:

- zip overalls
- leather gauntlets (welder or gardener) to protect my forearms
- a full head helmet with face visor, fan operated air filter
- and ear defenders...

OK, so I feel like an astronaut, but anything else, to me, is not protection enough.

- Before plugging into the mains, check the machine itself to ensure the switch is off
- Don't put the tool down until the wheel has stopped rotating
- Hold the grinder with both hands at all times
- Keep back from action in case the cutter snatches or kicks
- Keep as far back from the action as feasible, in case the cutter snatches or kicks
- Use the guards as much as possible. If, in sculpturing, you must leave off the guards, then be sure to take extra care while working.



That's it! Thanks and bravo for taking your safety seriously. Joy and success to your carving!

**Chris Pye**

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