

Woodworking in a Home Shop

August 24, 2018

People have set up workshops in all kinds of spaces, including outdoors. I think that the majority of hobby and small commercial woodworking shops in North America and Europe are in a basement or a garage. A number of issues need to be considered when setting up a home shop. The point of this reflection is to “get real:” to describe what I think is necessary and to counter the “perfect shop” philosophy that I sometimes find in magazines or on-line.

Except for six months in the basement of a rented duplex, I have worked in unheated, un-cooled garage or outbuilding shops for as long as I have had a shop (more than 40 years now) in Iowa, NC, Va, NE Florida, and now, Golden, Colorado. I became a serious woodworker in a two-car garage shop in St. Augustine, Florida. Now my one-car garage in Golden is my best option for a workshop, although I could drive 20 minutes each way to a larger space. I’ll be referring to both shop setups frequently as I discuss the issues that I think are most important.

Temperature

My workshop in Lone Tree, Iowa was a “detached” garage, literally. The farmhouse to which the garage had once been attached had been torn down, but the garage was left standing -- well, leaning a bit. It was my shop because it was the only outbuilding near the house with a concrete floor. It had a heavy wooden sliding door.

It was unheated, of course. Many days in the Iowa wintertime, I had to wear "Bob Cratchet" gloves, with the fingers cut off. In the wintertime, finishing was impossible unless I could move the piece into the house. I fantasized about a wood stove for that shop. We heated much of the house with wood, but we could not afford the cost of installing a stove in the workshop and I couldn’t spare the space. I mention this only to express my determination over the years to have a place to work.

Rust has always a problem in my workshops, until we moved to Golden. The main cause was condensation resulting from temperature swings (and perspiration, if I leaned on a saw table, etc.). I controlled it with Boeshield® and Butcher's® wax. Today, in Golden, I have minimal rust problems on my tools because of the dry climate.

The summertime weather in St. Augustine was harder to tolerate than the winters in Iowa. When it’s cold you can add layers. The garage in our former St. Augustine house is well insulated and the central air conditioning had a bit of excess capacity, so I could make do for a while with a fan blowing the A/C from the house into the attached garage. When that was insufficient, I elected the luxury of staying inside and writing essays like this. Luckily I had few deadlines and my workshop did not pay the bills.

I seriously considered A/C for that shop but decided against it each time. I was concerned that dust would eventually clog the A/C. On further reflection, I think my dust collection arrangements were good enough that A/C would have been reasonable. If I had had to meet deadlines, then A/C would have been essential. In Golden, a fan to move the air around is usually enough.

Light

I have never seen a garage or basement that was originally equipped with sufficient lighting for a woodshop. As I have aged, I have needed more light to see clearly. But a dim shop is hazardous for anybody. Plenty of light is a must to avoid tripping and other “minor” accidents that can unexpectedly become major accidents.

About 2800 lumens per 100 square feet of floor space is a reasonable target for general lighting, with task lighting to provide additional light in specific work areas. Usually that will require additional recessed or hanging fluorescent lights. A four-foot, 40 watt T-12 fluorescent tube puts out about 3200 lumens, At the front of a garage, if the overhead door would block light from ceiling fixtures, task lights can be installed on each tool table. The position of task lighting is very important to avoid glare from the work surface and to avoid shadows. Each can be as hazardous as insufficient light.

A broom handle, a piece of PVC pipe, or even a strip of plywood makes a serviceable lamp standard to raise the lamp above eye level. Portable aluminum lamps with a spring clamp are inexpensive and easily available. Gooseneck lamps with interchangeable bases (magnetic and mechanical) are the most useful, but also the most expensive.

Space

Space is always an issue. There must be a corollary for Parkinson’s law that applies to space, because we tend to fill any available space with tools or lumber. Woodworkers with full walkout basements are lucky, unless the space is *too* desirable and is pre-empted for a playroom, etc.

I spent about three years finding ways to organize and store my *stuff*. I was developing as a woodworker, acquiring lots of new *stuff* at the same time. It was a race between getting *stuff* in and finding places to *stuff* it. This was not helped by the volume of *stuff* I already had.

Before each move, I have “downsized.” That usually meant throwing out or giving away perhaps a third of my accumulated extra hand tools, spare parts, wires, switches, etc. Giving things away is pleasant, but throwing them away is not.

I dislike waste, and despise our throwaway economy. I formed this attitude during times when money was tight. Also, I have lived in rural areas where an essential screw, etc. might not be readily available. I tend to be reluctant to buy a new widget. So, despite my courageous efforts to “downsize,” I’m often left with many boxes filled with stuff potentially too valuable to throw away. The rule that anything that you have not used for a year should be discarded does not work for me,



Figure 1 Folding outfeed table and side table for saw and rolling tool cabinets (background). The cabinet under the bench rolled out to give access to shelves behind it.

St Augustine

The slightly over-sized two-car garage attached to my home in St. Augustine was adequate for a workshop, with some adjustments and accommodation. Barb liked to put her car away at night. So, we agreed that I would have half of the garage for my workbench, tools, and storage. My pickup truck stayed in the driveway. Our Homeowners Association had rules against this, but luckily the Beauty Police did not come calling.

The following “stationary” power tools fit easily into that space: a 10" table saw, a 10" chop saw on a oversized table, a small portable dust collector, an air cleaner hanging from the ceiling, 14" and a 10" band saws, a heavy table-mounted router, a lathe, an 18" jig saw, a 4" jointer, a 14" planer, table-mounted drill press, 10" wet grinder and a 6" ½ hp grinder. The dust collector fit under the table that held the grinder.

In addition to shelving, etc., I made one rolling tool cabinet the same height as my workbench. It could act as a workbench extension. When I needed an even larger work area, e.g., for assembly or finishing a large table top, I laid a flush door on both the tool cabinet and the workbench. I made another rolling tool cabinet to fit under the workbench. Hardwood cutoffs that I wanted to save went into a box on casters, under the workbench to the left of the cabinet. (Figure 1) Almost every tool table in my shop has shop-made drawers, and some had drawers and shelves.

Every “stationary” tool in that shop (except the workbench, lathe and 6" grinder) was on heavy duty locking casters or a mobile base. The table saw had a rolling side table and a folding outfeed table. The outfeed table was hinged to the cast iron saw table and folded down out of the way. (Figure 1)

Before I could get to work each day, I spent about 5 minutes setting up after I backed the car out. I moved the table saw, side table and tool cabinet into the empty space and hooked up the dust collector. I rolled the chop saw, drill press, bandsaw or jointer in and out of their parking spaces as needed. The dust collector, lathe, grinders and jig saw stayed in place. (You can see some of these in the left background of Figure 1.) I cleaned up every day when I was finished and put everything back on "my" side of the garage, except when a work in progress couldn't be moved out of the way. Then I would request a special dispensation about garaging the car.

Some authors recommend one pair of straight casters (no swivel, no lock) and one pair that swivels and locks. This is also how most mobile tool bases are set up. A configuration like that is not very convenient in a tight shop. A heavy tool is easy enough to pull straight in and out of a parking place, but difficult to maneuver into a tight spot. (By the way, don't forget to allow for the height of the casters and a way to attach them when designing a cabinet. The mounting bolts have to be a non-standard length to go through a plywood base and still allow the wheels to clear.)

Golden

Moving to Golden involved a major downsizing. The St Augustine shop was just about optimum. The Golden shop is a bit cramped. I learned, however, that I can function well in a

smaller apace, just not as efficiently. I gave up the table saw, joiner, wet grinder, 10" band saw, and jig saw. I upgraded the workbench, chop saw, band saw, and dust collector. I replaced the air cleaner with a smaller unit. I arranged the shop on paper before I moved tools into the space. (Figures 2 and 3)

The table saw had been the center of my shop in St. Augustine. The substitute has been a premium 14" band saw for ripping boards up to 12" wide, a sliding compound miter saw for crosscuts up to 12" wide, and a hand-held circular saw with saw guides for larger crosscuts and rip cuts. Where I once cut box joints and tenons on a table saw, I now use a router and jigs. Not having a TS is less convenient because most cuts require more setup time, and band saw cuts need to be faired with a hand plane. Hand planes (or a planer sled) are now my means for preparing stock four-square. In general, I use hand tools more than I did in St. Augustine. SCMS fixtures have replaced my sleds for cutting small segments. Assembling larger pieces is more difficult.

Power

As with illumination, I have never seen a garage that was built with enough power for a workshop. Two 115 V, 15 amp circuits and a few outlets are sufficient (barely) but will limit the choice of tools. (Twenty-amp circuits are somewhat better.) Most garage shops need either to add permanent wall outlets or to have extension cords running here and there, and some hanging from the ceiling. If the entry panel is located where you want the shop, additional outlets or even an additional circuit may not be prohibitively expensive. Extension cords should be kept under cable channels on the floor, or overhead, out of the way. There's not much risk of overload, because we need to operate only two tools at a time, e.g., router and shop vac or table saw and dust collector.

Unless accommodations had been made for a clothes dryer, a garage is not likely to have 220 V service. (I have never lived in a house with 220 V service to the garage.) Some basements have 220 V service for a dryer. This has not been a problem for me so far, because I am satisfied with my table saw, band saw and dust collector all operating on 115 V at 15 amps or less. I have not popped a breaker while using my 15 amp router or table saw, even when I am really making them work hard. The single exception was when I started my dust collector and table saw at exactly the same time on the same circuit. Also, I have not seen any loss of power from using 14 (or even 16) gauge extension cords, despite what some others report..

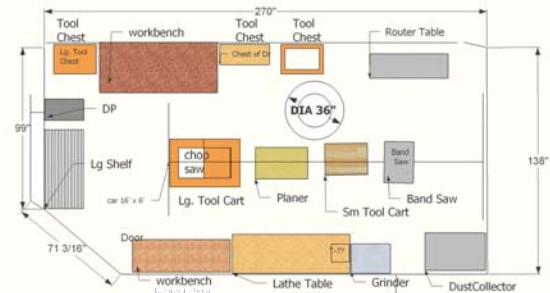


Figure 2. Floorplan of Golden Workshop. Dimensions 22½' x 11½'



Figure 3. Wide-Angle Shot of Golden Shop. You can get work done in a crowded shop.

Ventilation, Dust, and Smells

Dust control is an issue in any wood shop, but especially when the shop connects to the living quarters. As I recognized the health significance of wood dust, I recognized that I needed to protect the house as well as the shop. A dust mask/respirator may protect me, but not the house.

I hook up a dust collector (high CFM) to a table saw, band saw and jointer. I use it with a large hood to collect sanding dust. I use a shop vac to collect dust and chips from the router, random-orbit sanders and chop saw. (Minimally effective for the chop saw, but it gets the finer dust.) I don't really trust the shop vac to collect fine particles, so I have an air cleaner hung near the ceiling to collect them. I try to remember to run it whenever I am using the shop vac. I keep the shop swept up. If I have a lot of power sanding to do, I move outside.

I prefer to finish my work with brush-on or wipe-on finishes, mainly shellac and varnish. These and their solvents, brush cleaners, etc. cannot be healthy in a small garage shop unless the door is wide open. This is one advantage a garage workshop would have over one in the basement, where venting fumes could be a real problem. In a basement, the HVAC may spread fumes throughout the house. A gas or oil furnace, or even an electric motor, could conceivably cause vapors to explode. Special arrangements are necessary for using volatile and inflammable liquids in a basement shop. I am gradually moving to water-based finishes. I avoid brush-on laquer like Deft for many reasons. One reason is that it stinks for a long time.

I rarely spray finishes, but when I do, I prefer to spray outside, so I need to make sure that the car is upwind. If I do decide to spray inside the garage (small items only) I use a simple spray enclosure, made out of drop cloths and supporting sticks, that I can hang from the shelves over my workbench. These don't contain the fumes, of course, but they do contain the over-spray.

Conclusion

Even though the Golden shop is half the size of the St. Augustine shop, both seemed full to me. I felt that I would not be able to add any tool or upgrade to a larger one, e.g., a larger dust collector, unless I could decide what tool to discard. Storing larger jigs and fixtures that I use only occasionally is always an issue. On the other hand, compared to some shops I have seen, even the Golden shop is really useful and nicely set up. I know of some professional woodworkers whose shops are about the same size as my Golden shop. It comes down what choices I make in order to reach my objectives.

Perhaps the basic trade-off is between (a) choice of what projects to do, (b) convenience and efficiency, and (c) shop space and layout. My Golden shop is plenty large enough for almost every project that I want to do. It has plenty of room to make such as end tables and cabinets. I have made a few large items in my Golden shop. To do that, I had to change my style and order of work.

Frankly, I sometimes miss my larger St Augustine shop, but I often wished that even it could have been bigger. My Golden shop in is all I can reasonably justify in the context of my larger choices, such as where I choose to live and what sort of house I want to live in. Finally, if a workshop inventory expands to fill available space, then that's part of the problem, too. I'd eventually bump up against limits even if I had a much larger shop.