Power Buffing of Turnings

by Lyn J. Mangiameli

Why Power Buffing and How it Works:

People buff turnings for some combination of several reasons; to improve visual appearance, to improve the tactual feel of the piece, to seal the surface, and to reduce time and effort invested in the finishing process.

The main action of buffing is usually to change a rough surface into a smoother one (it can be used to go in the opposite direction as well). It can do this through either or both of two actions. The first is by repeated abrasion (either of the bare buffing wheels themselves or an abrasive compound applied to the buffing wheels) and the second by application of sealers and waxes. Often, these two processes are concurrent. If you think of the unbuffed surface of the turning as being made up of near microscopic peaks and valleys, the abrasive action will wear off the peaks (just as sanding or scraping can do) and the waxes and sealers will fill in the valleys. Depending on the particle size and sharpness of the abrasive compounds, and coarseness of the wheels, one can control the depth of the valleys and the distance between them (that is, smaller particles will make more grooves for a given distance, and the grooves will be less deep). This process is the same, whether applied to bare wood, or to a finish applied in or on the surface of the wood.

The smoother the surface, the more it will reflect light in a consistent direction, and as a result, the surface will appear shinier. Shallow sharp grooves will cause the light to slightly scatter in different directions as it is reflected, and provide more of a soft sheen. Deeper, less sharp, and more randomly spaced peaks and valleys will result in little reflection and leave a dull surface. Thus buffing is one means by which to control the reflection of light.

Because buffing can leave the surface of the wood very smooth, it can improve (or at least change) the feel of the turning to the hand. For some, this smoothness is perceived as making the wood feel softer (likely because any hard nubs are removed). This smoothness can sometimes make one feel closer to the wood, as, depending on finish, it can leave a finish that closely follows the contours of the wood, rather than filling them in or having ripples or nubs rising above it.

Because the buffing wheels can be loaded with waxes and some other finishes, which are then partially released to the turning when the buffing wheels contact the wood, buffing can serve as a means to apply and distribute some finishes, usually waxes. Buffing is particularly effective as a means to apply a very hard wax such as carnauba, allowing it to be applied thinly and distributed evenly.

Some turners like buffing because it can be used to reduce sanding and generally speeds up the process of finishing. While some turners feel that the base wood should be sanded to as fine an effective grit as possible before applying a finish and then buffing, others find that they can stop sanding at 220-320 grit, then apply one to three coats of a drying oil finish (e.g., tung or linseed oil), let the finish harden, then buff and have the same apparent quality of finish as if they had applied many coats of finish to a surface sanded to 600 grit or higher. Thus, some find the overall system to save time and money, some may choose the system solely because of the appearance or texture that can be achieved, and others because it can do both.

The Procedure:

Buffing wheels need to be attached to some shaft and driven by some motor. This can be a single purpose motor (used washing machine motors of 1/3 or greater hp work well) driving an arbor via a belt, a direct drive motor found in stand alone buffers or grinders modified to take a buffing wheel, or by using an existing motor driven device like a drill press, hand drill, or most common to turners, the lathe. Adapters are readily available for all of these purposes. Each set up has its advantages and disadvantages, but most often, turners just use their lathes. If used on a grinder, make sure you don't accidentally contaminate your buffing wheels with metal grit.

Buffing wheels are made of a variety of fabrics and with different constructions. I will discuss selection of wheels at the end of this article. Just know you will need to have one buffing wheel for each compound you plan to use—usually two or three wheels are sufficient. With a buffing wheel mounted to the drive system of your choice, the edge of a buffing wheel acts like sanding pad and the buffing compound the sandpaper grit. The speed at which the wheel turns, along with its construction and material, will determine just how hard a "pad" the wheel creates. How hard you press against the "pad" of the wheel edge, just like pressing on a sanding pad, will also effect how aggressive is the buffing action.

Beall recommends a speed around 1800rpm for their large 8-9 inch wheels and 3600 for their small 4 inch wheels. I never worry too much about this and probably use around 1200 or so because that was the highest speed of the pulley I was usually on when I had a Nova 3000. I've read that several others experienced with buffing also have determined that a speed in the 1200 RPM range has proven to be preferable, and recently Wood N Things also have recommended that speed for their 8 inch buffing wheels.

The faster the speed the stiffer the wheels will be, so with a pulley and/or variable speed drive (as is available on a lathe, but not on most dedicated buffing motors) one can adjust the speed of rotation to achieve the conformation to the wheel you want. This makes the choice of wheel type less critical than on single speed motors. If the speed is set way too low, it will be harder to apply compound both to the wheel and in turn to the piece, and also the wheel will become a bit more grabby. When the wheel speed is too low, even moderate hand pressure against the wheel will cause it to collapse, i.e., the body of the wheel will loose its disc shape and either bend to the side or the leaves of the wheel will part. If the speed is way too high, it will be very hard

Various methods of mounting buffing wheels to the lathe.

and you risk the chance of the friction from the wheels themselves overheating and/or abrading the finish. Regardless of compound, the friction of the wheels can create enough heat to actually melt some finishes; the faster the wheels turn, the greater the friction. Shellac is the worst in this respect and makes a real mess when it has softened, smeared and then picked up fibers from the wheels as well. Such problems are most common at the far extremes of speed, and reasonable caution will easily keep one from applying too much pressure or too great or little speed. The Beall speed recommendations are a good place to start, or to use in selection of a single speed motor, but I do find them a bit on the high side.

There are a wide variety of buffing compounds available, but most turners use only two abrasive compounds; Tripoli and White Diamond. The Tripoli compound is very soft and sticks readily to the wheels, one doesn't need very much or it will actually gum up the wheel and smear on your turning. Just apply it long enough to obtain a light brown coloring to the wheel and renew as necessary. Usually, you should apply any compound to a buffing wheel only 1/2 to 1 second at a time, then repeat again only if required. If, over time, you do end up with too much of a buildup on the wheel, just hold the end of a rough cut piece of non resinous wood up to the wheel and this will "rake" off most of the excess and "clean" the wheel. I like this much better than the metal rakes sold or improvised as it is less apt to get caught in the wheels, and prevents any chance of transferring any metal particles or protectants to the wheels. Beware of Tripoli in that it is actually pretty abrasive (I'd guess equivalent to about 800-1200 grit sandpaper) and while it works quite well on bare wood, it can cut through any applied finish if you press too long and too hard in one spot. One doesn't need to worry excessively about this as Tripoli won't cut through easily, but if one presses hard and holds a piece in one place for a long time, it will cut through. This is really no different than making sure one does not sand in one place for too long. Also, like with sandpaper, it is wise to buff in the direction of the grain when possible.

White Diamond (the proprietary name for an aluminum oxide compound) is not quite so soft as a compound but still adheres pretty easily to the wheels. The problem is that, being white, it is not very easy to see how much you have applied to your wheels. I'd err in the direction of too much rather than too little (the opposite of Tripoli). The White Diamond is abrasive, but not nearly so much as Tripoli. For fairly smooth finishes that you are worried about, just skip the Tripoli and start with White Diamond. The Tripoli usually will lodge in small crevices in the wood and can look poorly on light colored woods. The White Diamond is usually effective at removing that Tripoli and leaving light colored woods apparently clean. On the other hand, if you use a lot of White Diamond, you can get the opposite effect on dark colored woods. If so, either go back to Tripoli just long enough to clear out the white spots, or try using a clean soft wheel with no compound to see if it will clear it out, or if you know this will be a problem, just skip the White Diamond step. In the worst of cases, going over your turning with a flannel rag moistened with mineral spirits will usually remove more stubborn deposits.

Some, but not all, turners like to end their buffing by applying a wax, usually Carnauba. Carnauba is very hard and is actually somewhat difficult to achieve a buildup on the wheels. Fortunately you need very little to achieve a good finish on the wood. While it is very hard to do, one doesn't want to get too much Car-

nauba on a wheel as then it won't apply evenly to the wood and is very hard to smooth out. Frankly, I don't think you get a nice even coating on the wheel until you have used that wheel for a good five or six times. The Carnauba will give a hard slick bright finish, that, being thin, still follows the contours of the wood but looks very deep. Over a well prepared surface, it both imparts "brightness" and luster. If one doesn't want such a "bright" shiny finish, just skip the Carnauba and you will still have a very nice, but softer, finish after the White Diamond, particularly on dense oily woods.

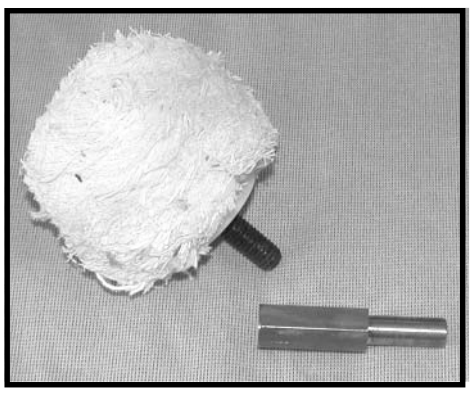
If one has a variable speed motor, applying the Tripoli and White Diamond can be done with greater transfer and less mess if one turns the speed down a bit, just keep in mind that the shape of the wheel under pressure is determined by the speed, so it is possible for the compound to be spread differently on the wheel than the shape it will take at full speed. For Carnauba, one pretty much needs high speed to melt the wax enough to transfer it to the wheel. Just a final note on compounds: It is wise to keep your different buffing compounds in separate containers, such as zip lock bags, to prevent cross contamination of the compounds, or accidental application to your wheels or buffs.

In general, to get a feel for the buffing systems, I suggest trying it once or twice on some bare but well sanded wood. Indeed, often bare wood will look great by the time you have gone through the three steps. Then I'd try oil finishes which can be easily repaired if you should accidentally cut through the finish (again, don't worry too much about this, just know it's possible). Use drying oil finishes like Tung, Linseed, or the processed versions of these (e.g., Lee Valley / Southerland Welles Polymerized Tung Oil, Boiled Linseed Oil, Tried and True, etc.). Only after you feel comfortable that you have a feel for these, would I suggest trying the system with Shellac or Lacquer.

Four General Cautions

Four general cautions: One, have a good grip on your piece and don't press too hard into the wheels. It is quite possible for the wheel to pull the piece out of your hands and smash it into the bed or bench or floor. It usually won't break the piece, more often, it will just leave nasty dents in your near perfectly finished turning. I sometimes drape some closed cell foam sheets over the bed and bench, just in case. If your turning has sharp corners or edges, you need to present them to the wheel such that the edge flows away from the contact section of wheel. Again, the best way to avoid snatches is to always locate your work piece with respect to the wheel so that the rotation of the wheel goes off from any edge, that is, off the bottom.

Second, the wheels will shed fibers, create fluff and the compound will be strewn into the air in the form of small particles. With brand new wheels, you can feel like you've gotten caught in a chicken coop. Tripoli compound, for example, contains silica quartz than can cause irritation of the eyes, ears, nose and respiratory track. Eye and respiratory protection is a must when using a



A Beall Bowl Buff for buffing the inside of a bowl and a drill chuck adapter that is carried by Packard Woodworks.

buffing system (remember the fabric workers getting "white lung" disease; coal miners getting "black lung" disease). You may also want to have a dust collector running the first couple of times you use these wheels (and even then it will leave fine lint and strings over everything). This will get better as the wheels get used, but never goes away entirely.

Third, the rotating wheels can capture and draw in any loose material that contacts them. This can be disastrous if what is drawn in is long hair that becomes wrapped around the core. Like with any rotating machinery, precautions need to be observed with respect to long hair, open shirt sleeves, rags, and other loose material that might be caught up in the equipment.

Fourth, on a lathe, until recently the only way to mount the wheels has been with a Morse taper to 1/2 or 5/8 inch arbor adapter (with the Morse taper going into your headstock spindle and the arbor used to hold either the wheels directly or via an intermediary Beall quick change adapter). Like with any Morse taper device, this mounting method can come loose unless some continuous pressure is maintained to seat the taper in the spindle. You can do this either by bringing up the tailstock and having a live center press against the end of the arbor/buffing wheel center, or by using a Morse taper adapter with a threaded interior on its headstock side to which you will attach a section of 1/4 inch-20 all thread rod long enough to emerge on the outboard end of the spindle where you will use a washer and wingnut to tighten it to the end of the spindle. This is called a draw bar and makes sure the taper cannot loosen (which it surely will under the forces of buffing). Both approaches are effective, and essential, but somewhat unwieldily. Of the two methods, I prefer the draw bar as it gives me more freedom of movement than the tailstock, but both do the job. Fortunately, Steve Houston of the Woodtradesman, and Jim Driskell of Wood N Things have both come out with more elegant and effective spindle mount solutions that I will talk about in the last section of this article.

An argument against buffing.

Russ Fairfield holds an alternate view that, while controversial in some of its aspects, is worthy of consideration. He suggests that the difference between buffing and sanding is one of speed vs. quality, and while both have their place in our kit of finishing techniques, he asserts that some woods that have been sanded to an equivalent grit will have a sharper and clearer grain picture than one that has been buffed. He suggests taking two identical bowls from the same wood, and sanding one to 1500 or 2000 grit while taking the other to the buffing wheel, then comparing the difference. In his experience, there is often a difference in the reflective quality, "brightness," of a sanded surface, over a buffed surface, because of the shape of the scratches, and the mechanical action of the sanding vs. buffing. Though the differences will become less as one learns to use buffing wheels and their associated compounds.

Russ has explained the difference this way: The sanding abrasives that we use in the finer grades are usually either carbide (black wet/dry paper), or Aluminum-Oxide up to about 600 or 800-grit. Both are very sharp and hard, and they do not easily wear down into a duller rounded particle. These sharp particles make a clean cut across the surface because of their hardness, the direction of the cutting action which is flat across the surface, and the relative stiffness of the backing paper. The end result leaves a pattern of fine "V" shaped scratches on the surface and the ends of the wood grain are open and sharp. If a finish is applied to bare wood prepared in this fashion, the "finish" is readily absorbed into the open grain and accents the sharp differences between end and side grains.

Buffing on the other hand is done with a softer abrasive particle that is more rounded in shape, and it is applied to the wood with a soft backing (cloth wheel or buff) and a combination flailing/rubbing action from the spinning wheel on the wood. The scratch pattern is made up of shallow "U" shaped scratches from the rounded abrasive particle, and this shape has a softer reflection than the "V" shaped scratches from the sandpaper. The flailing action of the buffing wheel will smear (burnish) over the open ends of the wood grain, rather than it being cleanly cut, and this further softens the reflection of the surface. Should a "finish" be applied to previously buffed wood, it will not be as readily absorbed into the grain ends, and the appearance will be slightly muddy compared to the sanded one.

The strength of the flailing action is increased as rotational speed is increased, as the cloth fibers get stiffer from the higher speed. Furthermore, whenever an abrasive becomes rounded, if begins to rub rather than cut. In both cases, there will be more friction generated heat which will enhance the smearing (burnishing) action on the open ends of the grain. At a cellular level, the cells on the surface of bare wood can become oxidized, forming a sealed surface. If a finish has been applied, it can melt.

Russ contends that buffing may have further degraded the surface by pounding a red, white, or whatever colored binder wax into every pore and open end-grain of the wood. How much effect the wax will have depends on how much, if any, the buffing wheel was overloaded, and how much contrast there is between the color of the wood and the color of the compound. Immediately following with Carnauba wax only seals these colored waxes into the wood.

Using these abrasives to buff the "finish" coating on the wood will have a similar effect as we get when used on the bare wood. The scratch pattern will not be as sharp, the reflection will be scattered and softer, and the finish can have a muddy appearance when compared to one that has been polished with Rottenstone and a thinned Oil. Rottenstone is about the same effective grit as "White Diamond".

Russ' suggested alternative hand rubbing technique for Tung oil and film finishes is to:

1. Lightly sand with 600 grit sandpaper and warm water to remove any "nibs" in the dry surface.

2. Polish with 4F Pumice and water (with a few drops of dishwashing detergent added),

3. Polish with Rottenstone and water (with a few drops of dishwashing detergent added)

4. Polish with Rottenstone and oil

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(Mineral oil thinned with kerosene or mineral spirits—or I would substitute, commercial paraffin oil).

5. Clean residue from surface with kerosene or mineral spirits.

Russ notes that micro-mesh abrasive sheets or 3M polishing compounds can be substituted, but at a much higher price than the traditional pumice and Rottenstone.

While Russ puts forward a thoughtful argument, and the techniques he describes are well recognized in the finishing of fine furniture, there is argument as to whether they offer a significant improvement over buffing techniques used not only by turners, but also common to the auto paint industry where buffing is pretty much the standard, though often with compounds going out to less than 15 thousand in grit size (at which point you are getting below the wavelength of light). Of course, it will be the exceedingly rare woodturner who will be buffing out to 15 thousand grit, and the exposed wood surface of turnings (often with an almost even division of endgrain and face grain) is not the same as the predominant face grain found in most furniture and cabinets, or the even more homogenous surface of automobiles.

In the end, whatever methods are employed, the primary issue is whether the turner and those ultimate recipients of the turning like the appearance and/or feel of the surface produced. Of course there will never be any single consensus on that, as in most matters of aesthetics. Nor, for that matter, is there apt to be any single best technique for the wide variety of woods and finishes available to the turner. The important thing for the individual turner is to be aware of the techniques that are available, have some knowledge about them so that one can think through one's choices, try them if necessary (or simply curious), attend to the way the (potential) recipients respond to the different finish techniques, and then to make up ones' own mind.

So, if you still remain interested in using a buffing system, how do you acquire one?

Selection of a Buffing System:

You generally need to match your wheels to the compounds you will be using with them, and the purposes you wish to use them for. As mentioned above, you will need a separate wheel for each compound you use, and sometimes one spare "clean" wheel for touch-up polishing, which means most turners will need no less than two, and usually no more than four. Beall and the Wood N Things wheels have black print on the side of each wheel identifying the compound associated with that wheel. If you purchase your wheels from other sources, you might want to use a black felt marker to identify the wheels (distinguishing between the White Diamond and Carnauba wheels is not always easy).

Spiral sewn wheels are stiffer in body, but often somewhat softer in action, and the end fibers wave or "thrash" less. The problem with them is that they often do not work well with the often broader surface that turners wish to buff. So generally, woodturners use unsewn or only loosely sewn wheels. Not being sewn tightly together the cloth sheets can collapse a bit around the turning, allowing the cloth more easily to enter into fine details and crevices, and conform to unusual shapes..

Spiral sewn sisal wheels are good for use with Emory black compound to cut metal quickly. This combination is unlikely to see much use by turners, but I mention it so you will know to stay away from these common wheels and compound.

All linen wheels are usually the preferred wheel for use with Tripoli, and is the one found in commercial packages. These wheels are usually partially or loosely sewn.

White Diamond is usually used with an unsewn or partially sewn combination linen and cotton wheel, but either fabric alone would be acceptable.

Loosely stitched layers of cotton flannel cloth, often with the stitching restricted to a circle around the arbor hole, are the softest and flare out easily over wide gradually curving surfaces. They are particularly effective for final application of wax or used bare to just polish up an existing wax finish.

There are three commercial systems readily available in North America; the Beall, the Wood N Things, and the Oneway (Chris Stott, offers a Beall-like system in the UK). In most respects the commercial systems are similar, using the same compounds and providing three wheels, but the Oneway wheels are stitched differently (presumably so they will shed less and generate less heat when buffing) and use a standard arbor flange mount. The Oneway wheels are also narrower, having fewer cloth plys than do the Beall, and are all 8 inch in diameter, while the Beall traditionally has had two 9 inch wheels and only one 8 inch wheel (the latest information on his website suggests he may now be offering only 8 inch wheels, which is unfortunate, as I prefer the slightly larger 9 inch wheels). I have heard from several turners who have used both the Oneway and Beall wheels, and all of that small sample have preferred the Beall wheels, both in terms of use and longevity. I haven't used the Oneway wheels, so I can't say for myself. Wood N Things is a new system from Jim Driskell (available through Don Pencil's website, and perhaps others) that is most similar to the Beall. It also uses a bolt mounting system, and about the only apparent difference from the Beall is that all three wheels are 8 inches in size and use a flat head bolt rather than the Beall socket head bolt and washer. All the commercial packages cost about the same.

These commercial systems have two great advantages over making up a system for yourself, but neither of them have anything to do with performance. The first advantage is that all the right components are gathered together into one package. This saves you pouring over catalogs trying to figure out just which of the many buffing wheels are the correct ones and perhaps needing to order your buffing wheels or compounds from more than one source. The second advantage is that the Beall and Wood N Things systems have the wheels mounted to a bolt that threads onto what Beall calls a Quick Change adapter and what Wood N Things calls a "lathe adapter." The Beall Quick Change adapter then attaches to a 1/2 or 5/8 inch arbor (he provides a shim so it will fit both), while the Wood N Things threads directly onto the lathe spindle. Since there are three wheels and most of us use at least two, if not all three for each turning, the ability to quickly change the wheels is very nice. Not that it can't be done easily with wheels held using the traditional nut and flange arbor system, but the Beall and Wood N Things wheels are faster and easier to change.

If used on a lathe, whether with wheels with bolts for a quick change system, or mounting the wheels directly, you will have to have some sort of arbor. Traditionally this has been an arbor that mounted to the spindle by means of a #1 or #2 Morse taper. As mentioned earlier, arbors mounted using a Morse taper have to be restrained, either by using a draw bar, or by bringing up a live center mounted in the tailstock (ideally mating to a concave dimple in the end of the arbor). Not all Morse taper mount arbors are drilled out for a draw bar (Beall makes an inexpensive one that is), or dimpled on one end (the one sold by Packard is), so it is important to check with the manufacturer or seller before purchasing one, to be certain the arbor will be able to be restrained by the technique of your choice.

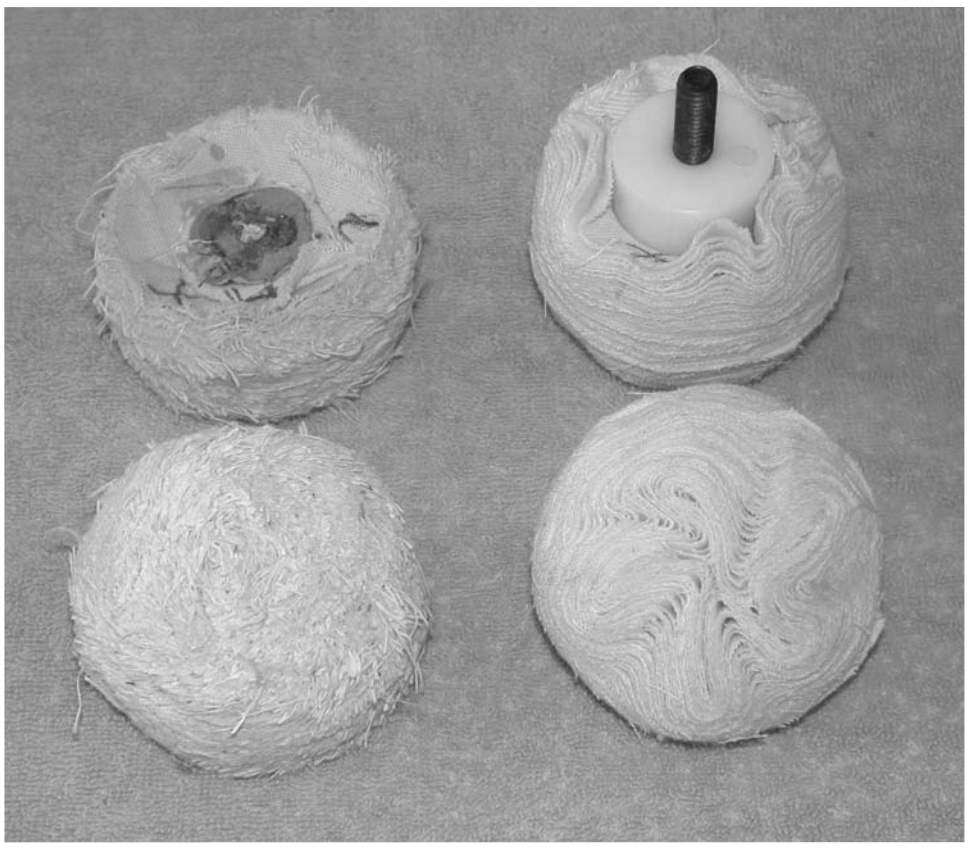
Beall has recently introduced an 18 inch long mandrel that fits in your Morse taper on one end and a live center in your tailstock on the other. This mandrel requires special versions of his wheels with 3/4 inch holes (these wheels are also available separately for direct attachment to a dedicated buffer). While I am sure this "3-On Lathe Mandrel" will be appealing to some, as it allows all three wheels to be mounted simultaneously, I prefer wheels that are unrestrained on one end, allowing the item being buffed to be presented to the wheel from directions other than immediately from the front.

The latest, and to my mind by far the superior method of mounting buffing wheels to a lathe, involves threaded spindle mount arbors that to my knowledge were first introduced by Steve Houston of The Woodtradesman, then by John Nichols, and more recently by Wood N Things. These have several advantages. Since they do not require any additional means to secure them, they will not require one to work around a tailstock, to remove vacuum adapters or sometimes hand wheels in order to run a draw bar or use a knock out bar, and do not require the two step activity of removing the draw bar and then driving out the Morse taper. Lathes like the Poolewoods and some custom lathes that do not have a through bored spindle shaft, and perhaps lack even a Morse taper, now have quick and easy solutions for mounting buffing wheels. Houston offers these in threaded versions, and also a straight shaft model that mates solidly to the Beall Quick Change Adapter (the latter, when used with the Beall Morse Taper adapter, extends out 4.25 inches from the headstock; with the Houston adapter it extends out 6.75 inches). The Wood N Things come in two lengths (3.75 and 8 inches), are nicely anodized and have a hole to take a spanner or bar to make removal very easy. The John Nichols version, like all things Nichols makes, is rugged and can be customized to your precise needs (for example, extension length). If one desires a very long extension or has an unusual spindle size, the Nichols provides a very credible alternative to the others. All these adapters are threaded on the tailstock end to take the standard 3/8 X 16 tpi thread of the quick change bolts used by both Beall and Wood N Things (and also will take the Wood N' Things screw in pigtail adapter described below). Since I've started using spindle mount arbors, I don't want ever to go back to the traditional methods.

Goblet and Bowl Buffs

It also should be noted that both Beall and Wood N Things offers several sizes of specially shaped hemispherical buffs for concave surfaces (Beall also offers a small Taper Buff). Wood N Things buffs and the original Beall Goblet buffs use the same materials as their linen buffing wheels, and can work well to buff the inside of bowls, boxes, and, of course, goblets. Both have their own quick change adapter that is a metal spiral "pigtail" mandrel. Wood N Things offers a right hand spiral pigtail adapter which is threaded to screw into the end of their lathe adapter (it will also fit in the Beall Quick Change adapter). With the Beall, the preferred full size pigtail mandrel (available in either left or right hand spiral) is arbor or motor shaft mounted, and there is a smaller right hand spiral drill chuck mandrel available as well. I use the latter mandrel on the outboard fitting of my Lee Valley Power Sharpening System with a tightly stitched wheel and chromium oxide honing compound to polish gouge flutes.

Jerry Beall has also added a separate line of buffs which he calls Bowl Buffs. Though similar in shape and sizes (2, 3 & 4 inches) to Goblet buffs, these new buffs differ in several ways from his the Goblet Buffs and the bowl buffs from Wood N Things. The most obvious difference is that the Beall Bowl Buffs use the same quick change system as the Beall Wheels. Though more expensive, the added cost is slightly counterbalanced in that one no longer needs to purchase a separate tapered "pigtail" mandrel. Now it can be quick and easy to change from the standard wheel used to buff the outside of a bowl, to a Bowl Buff to work the inside of a small bowl. [Packard Woodworks carries an inexpensive adapter, a prototype version of which I have been using for several months, that also allows the threaded buffs to be used with a hand drill or with a drill press. This drill adapter, when used together with the screw thread pig tail adapter from Wood N Things, also will allow you to mount the traditional style buffs.] The other difference is more subtle, but perhaps even



A comparison of the Goblet Buffs and Bowl Buffs.

more important. Unlike the Goblet Buffs which are only available constructed from firm all linen material, the new Bowl Buffs are made up from the same three fabrics as his large wheels: all linen for use with Tripoli, combined linen and cotton for use with White Diamond and soft cotton flannel for use with Carnauba Wax or by themselves. The buffs are marked on their back with a different colored press on dot for each fabric. This will probably work fine, as by the time the dots might ever come loose, the buff will have been loaded with wax or compound sufficiently to distinguish between them. Still, I used a felt tip marker to write the compound type on the rear fabric of each buff.

These new Beall Bowl Buffs use fewer layers of fabric, which make them easier to conform to the interior contours of your turnings. Because the Bowl Buffs are smaller in diameter than the 8-9 inch buffing wheels, and thus have lower peripheral speed, it is wise to use higher buffing speeds than you would normally use with the larger size wheels (say, something in the 2000-3000 rpm range). This is easy to achieve with a lathe and many hand drills, but may not be possible if your buffing system is powered by a fixed speed motor. Faster speed or not, the buffs work fine.

Jerry suggests a method of preconditioning the Bowl Buffs to allow them to work better and shed less. He recommends that you first apply approximately 100 grit sandpaper to a short section of wood and then press this paddle up against the spinning buff (keep a good hold on the sandpaper paddle, otherwise the friction of buff against the sandpaper can pull the paddle from your hands). Then move the paddle over the surface of the buff. This will pull loose fibers from the buff and likely abrade and soften the remaining surface fibers. If you can, mount the inlet of a shop vac or dust collector close to the buff so that you can suck up the fibers as they are released. As always, you should do this wearing eye and respiratory protection.

Finally, before leaving the topic of specialized buffs, I want to bring to your attention Russ Fairfield's ingenious idea of using a 12 inch lambs wool paint roller as a buffer for small items like pens. Russ turns a couple of loose fitting wooden plugs to fit in each end of these paint rollers so that the roller can be mounted between centers. He than uses Tripoli on one end, White Diamond in the center and wax on the right end, saving himself the chore of changing buffers for each material. This is an inexpensive and very effective buffer for small items.

Sources and Choices

If you don't mind hunting down the buffing components on your own, you can perhaps find them a bit more cheaply in catalogs catering to auto body, metal working and sometimes rock/gem supplies. T P Tools and Equipment is one good source for individual buffing wheels, Grizzly is another. The Beall system is offered by most woodturning and many woodworking suppliers, like Craft Supplies (they call it the Woodbuff, but it is the Beall), The Cutting Edge, Lee Valley, Packard Woodworks and Woodcraft, as well as direct from Jerry Beall. Wood N Things adapters, wheels and buffs are all available from the Don Pencil website, and the adapters can be found in the catalogs of both Craft Supplies and Packard Woodworks. The Oneway wheels can be special ordered from most Oneway dealers, and are kept in stock at Highland Hardware and the Japan Woodworker. Tripoli, White Diamond and Carnauba wax are included with both the Beall, Wood N Things and Oneway packages, and can easily be obtained elsewhere, as the former are very commonly used buffing compounds. T P Tools and Equipment has particularly good prices on larger bars of buffing compound; Lee Valley, Woodcraft, and all the other Beall dealers sell replacement sizes of the compounds and wax.

Should you decide to go with a commercial buffer, like with grinders, Baldor is seen as one of the best. Beall, Klingspor and again TP tools and Equipment all handle Baldor buffers. Grizzly offers its own buffer and buffing packages. Both Lee Valley and Klingspor offer a package with pillow blocks, a shaft, and adapters to make up your own buffer using a motor of your own.

Personally I'd recommend just obtaining the Beall or Wood N Things system as they are well thought out, convenient to purchase and easy to use. I regularly use both systems and am very pleased with them; there is no problem mixing items from each system (i.e., you can use the wheels, buffs or compounds interchangeably between systems). If you don't care about the quick change feature, then the Oneway system can be seen as a credible, although not identical, alternative. Either way, if you are going to mount buffers to a lathe, I'd definitely encourage going with the new spindle mount arbors from Wood N Things (I'd suggest going with the 8 inch version) or The Woodtradesman. They are far more secure and easier to use than those that require a Morse taper mount.

Buffing methods have a long history, but as the recent new items from Houston, Beall, Nichols and Wood N Things show, there is still room to increase the utility of the method for turners. I suspect that we will see even more turners embrace some form of buffing system as a result of these new offerings.

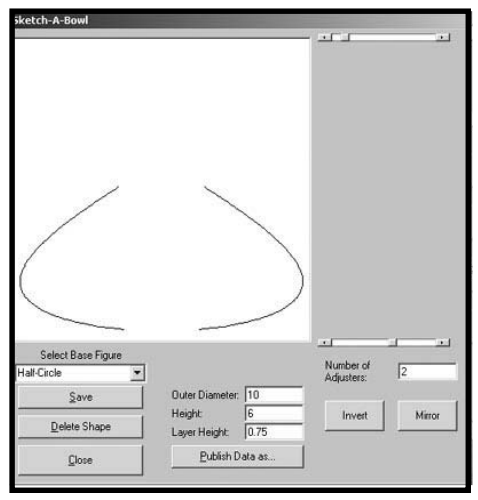
Partial List of Sources:

Beall: http://www.bealltool.com
Craft Supplies: http://www.woodturnerscatalog.com
The Cutting Edge: http://www.cuttingedgetools.com
Don Pencil (Wood N Things): http://www.donpencil.com/buffingsystems.htm
Grizzly: http://www.grizzly.com/
Highland Hardware: http://www.highland-hardware.com/
Japan Woodworker: http://japanwoodworker.com/
Klingspor: http://orders.woodworkingshop.com/ (It's much easier to deal with these folks from their print catalog or over the phone 1-800-228-0000)
Lee Valley: http://www.leevalley.com/home/main.asp
John Nichols products are only available direct from him. He can be reached through his website: http://www.nicholslathe.com/
Oneway: http://www.oneway.on.ca/
Packard Woodworks: http://www.packardwoodworks.com/
Chris Stott: email, chrisstott1@compuserve.com or phone at +44(0)1724 782052

Available in the UK. Included are: a pigtail which fits in a Jacobs chuck; three 6 inch x 1.5 inch unstitched buffing wheels; Tripoli and White Lustre compounds; carnauba wax.
TP Tools: http://www.tptools.com/
The Woodtradesman: http://www.thewoodtradesman.com or http://www.SpindleAdapters.com
Woodcraft: http://shop.woodcraft.com/Woodcraft/assets/html/homepage.asp

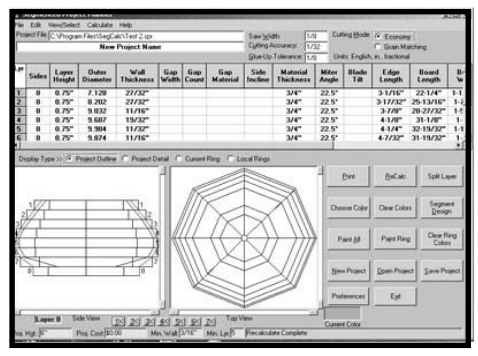
Segmented Project Planner Continued from Page 3

There is a lot of color capability in this program, but I can't illustrate that with a black and white printing capability. As I say, the Sketch-A-Bowl capability appealed to me the most. The following picture illustrates this screen.



Sketch-A-Bowl Screen.

I used this screen to start the shapes of several designs. You have the options to start with a circle, a half circle (which I used in the above), a straight line and a hyperbola shape. By changing those shapes, you can create a wide range of shapes. Find one that pleases you and it transfers to the new project screen and adds rings and segments to fit the needs. The following shows a screen after a Sketch-A-Bowl Screen was transferred to a new project screen.



Sample screen after a Sketch-A-Bowl outline has been transferred to a new project screen.

I've only touched on some of the capabilities of this very complex program. It is easy to use and may just provide the felexibility you need to design your next segmented project.

It is amazing to me the amount capabilities that have been built into these various segmented project programs. When I started turning some 15 years ago, I had to do segmenting because I didn't have anything but flat boards that I could use to make bowls. Where were programs such as this?

I'm glad I don't have to choose which of the segmenting programs that I've used are best. They are all very good and will give you the help you need to produce some very fine segmented work. For more information, contact:

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