

French Polishing

a treatise on finishing raw wood with shellac

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French polishing is the application of shellac to a surface, either raw wood or one previously finished, by means of rubbing the surface with a pad "charged" with a dilute solution of shellac. It is considered by those in the antique trade to be the most beautiful and most expensive finish available. A fine gloss can be achieved with the thinnest possible film. A thin film is desirable for a number of reasons. First, because there is much less material over the wood, the wood "reads" better. Secondly, a thin film makes removal with ethanol quite easy and safe. Lastly, thick shellac films may not dry properly and will be prone to crazing or "alligatoring."

The advantages of French polish over other finishing methods are many. French polish can easily be renewed, even after hundreds of years. Because it is rubbed on, it follows the undulations of the wood, a feature typical of old surfaces. It will fill the many scratches and dents that appear on antiques. In fact, wood that has been badly marred by injudicious sanding can be finished and have those defects minimized without resorting to aggressive sanding or scraping of the wood. This is because the slurry that is filling the grain will fill sanding marks with the color of the wood itself. No sanding between coats is required for coats of French polish to bond to each other as the solvent reactivates the existing film. It is easy to color repairs during polishing. The combination of alcohol-soluble aniline dyes and dry pigment in shellac can be used as glazes to match new repairs to the existing wood. Should you not be happy with the way the repair looks or how the job is going, wiping it off with an alcohol rag is simple and fast.

French polish has a few disadvantages however. Shellac is susceptible to marking from heat over 140° F. or from alcohol or water left on it too long. French polish is generally a high gloss film and does not lend itself to a matte or satin finish without careful rubbing out. As any shellac film, French polish, if applied too thickly, will degrade badly. The shellac must also be relatively fresh (not more than six months old) or it may not dry properly. Lastly, French polish requires a certain *finesse* to achieve a perfect finish. As with most things it is a skill that takes time to perfect although serviceable results can be achieved by the amateur.

There probably are as many ways to French polish as there are French polishers. Different techniques may be used in the conservation of finishes as well. To finish raw wood, I have found the techniques of George Frank to produce a clear, thin finish. They will be outlined here but for further reading consult the bibliography. If the wood is new, filling the grain will take longer and will require more applications with a few days rest between applications as the grain has not yet been stopped up. New wood should be surfaced with sandpaper or a scraper and, if necessary, dyed with water-soluble aniline dyes (*not* alcohol-soluble dyes). Pine requires an oil stain. When French polishing as with any other finishing, it is necessary to work *under* adequate light so that you can see what changes are taking place on the surface using the reflection of the bulb. Careful observation will tell you when the grain is beginning to fill, or if you are getting a good gloss. By turning the work under the fluorescent lights, you will get two views of the surface, one when the bulbs' reflection is with the grain and one when their reflection is perpendicular to the grain. When polishing opposite the direction of the bulb, the surface will appear glossier and will show defects and streaks well.

The choice of shellac will be determined as to what you are finishing. With mahogany and rosewood, you might use a ruby or orange shellac for a slightly tinted surface. In order to preserve the color of pale woods such as faded English walnut, tulipwood or kingwood, blonde shellac should be used. Dewaxed varieties may be used on table tops to aid in resisting water marking. Prepare a 2 lb. cut, that is 2 lb. of dry flake with a gallon of alcohol. This is usually a good start. The shellac should have a viscosity that allows it to be absorbed easily into the cotton and not sit on the surface. Usually, I grind the shellac flake in an electric coffee mill, put the ground flake into a Mason jar and add the proper ratio of alcohol. I shake it for about 2 or 3 minutes, shaking it again a number of times over the course of an hour. If you don't shake it, a thick, plastic mass forms on the bottom which takes a long time to dissolve.

Prepare a pad or 'rubber.' This is an egg sized wad of cotton with an outer covering of either linen or cotton. Smaller pads can be made for small or irregular surfaces such as legs and chair parts. Linen is best for filling the grain because it holds the pumice on the surface and doesn't get lost in the weave as in other materials. Close woven cotton (100%) and silk will also work but are less durable. They are good for building up the film once the filling stage has been complete.

French polish has four basic steps: The first polish which fills the grain. The second polish which

continues filling the grain after it has shrunk. There may be multiple "second" polishes in order to get a filled surface that is no longer shrinking. Next, we build the film, and finally, we finishing off, getting a perfect, streak-free surface.

We begin by oiling the wood with mineral oil. Boiled linseed oil may also be used. This will usually be the only time oil is used in the refinishing process. The oil is applied with cheese cloth and then rubbed dry with a paper towel or cloth.¹ The wood, of course, will have absorbed some oil. During the filling stage of polishing the pumice-wood slurry will push the oil out of the grain and lubricate the pad. Oil is not strictly necessary. It is a lubricant that makes polishing easier and forgiving of a pad with too much shellac in it. However, there may be circumstances when you would like to keep oil out of the refinishing schedule. However, you will need to have good control of the amount and viscosity of the shellac with which you charge the pad.

The surface to be finished is then sprinkled with pumice (I use a kitchen salt shaker) – a light dusting evenly over the surface. Each wood specie will use more or less depending on the amount and size of the grain. Only long experience will tell you the optimum amount. Woods that have microscopic pores such as pine, cherry, and maple do not need to be filled with pumice and may look bad. The filling stage is omitted. However, mahogany, oak, walnut, and rosewood all require filling for a good looking polish.

Charge the polishing pad with your shellac solution so that the pad is pretty soaked. This is the only time the pad is charged this heavily. This will bind the pumice/wood slurry into the pores. Tap the pad to the palm of your other hand to disperse the shellac into the pad and get a sense as to how wet it is. This will become habit every time you charge the pad. Push the filler into the grain with the rubber by pressing with alternating circular motion and straight-line motion. The surface of the wood is rubbed with the pad in small circular motions, 3-4" in diameter, moving across the surface about an inch at a time, less as the pad begins to dry. What this motion does is effectively move the shellac and slurry around and push it into the grain. This slurry will fill the grain and will take on the color of the wood. Check the pad for color. Too much pumice will give the fill a gray color which is to be avoided. If it is gray, dab some burnt sienna dry pigment onto the pad and fill the grain as usual. This will color the filler enough so it doesn't stand out. If it seems to color the surface, you only need to polish the area more, moving what is on the surface into the grain.

¹ Oily rags should be disposed of carefully to avoid spontaneous combustion. Generally it is best to allow them to dry outside separated from each other. Kept in a clump, they will accelerate the exothermic reaction (heat is given off) of drying and produce enough heat to combust.

Polishing dyed wood always lightens the color of the wood so one should account for this in assessing the strength of the dye. When filling dyed wood try to keep an evenness to the color. It will be tempting to add more pumice and overwork an area that resists filling but invariably more of the dye will be removed and a light area will result. It is difficult to French polish wood dyed darkly because of this. Fortunately a certain variability in color will not adversely affect the look of an antique.

Go over the entire surface until all the pumice has been pushed into the grain and none is left on the surface. You will feel the pad glide more smoothly and will not see any gritty areas. Inspect the surface closely to see how the grain is being filled. You will probably have to sprinkle pumice on the surface again and, again, charge the pad (remember, remove the cover and apply the shellac to the cotton core) and push the pumice into the grain. Initially you will feel that you are making no progress and may feel you need make some adjustment. Be patient and keep polishing. Some areas will fill faster than others. Add more pumice to those areas that need filling but don't concentrate on those areas with the pad. Polish the whole surface. Keep polishing until the pad is dry. As it dries, press harder, make tighter circles and slow your progress over the surface. If you have added enough pumice the first time, only an occasional light sprinkle on the pad will be necessary. There is usually a point where it seems that, all of a sudden, the grain is filling. You have found the ideal conditions for filling. Try to remember how wet the pad is, how tight you are swirling and how hard you are pressing. Edges should be done first and concentrated on as these are more difficult because they are touched by only one side of the circular motion. The middle is hit more often and "will do themselves". The pad should not be charged with more shellac as it dries unless you think that the grain is not filling because there is not enough binder. The mistake of the beginner is to put too much shellac on the surface because it is not filling fast enough. The longer it takes to fill the grain the better the result will be. It takes a good half hour to an hour to fill the grain on a mahogany top two square feet.

During the filling stages, alternate between "O" shaped swirls and with-the-grain polishing. A dab of pumice applied to the pad will help move the finish around. As the pad gets drier, more pressure can be applied to the pad; tighter circles will fill the remaining grain quickly. This is when you'll really see the grain fill. You should not release a discernible amount of the shellac solution, so regulate the pressure of the pad toward that end. The drier the pad the harder you can press. The pad should be almost dry before recharging it with alcohol and very little shellac, if any. Towards the

end of filling, it is best to apply the pumice to the pad with your finger and fill localized areas not yet filled. Be careful not to rub one area continuously or you will pull the filler out of the grain and deplete the surface of oil, and color if the wood has been dyed. The surface will then have a dull and grainy spot that will be difficult to remove. If you "burn" the film, apply a trace of oil to the spot with your finger and polish with a small amount of shellac on the pad. Polish over the dull spot into the area around the spot with alternating straight-line and swirls. Even alternate the direction of the straight-line polish. The area needs to dry somewhat between passes. If, try as you might, the dull spot persists then consider removing the finish and starting from scratch. Whenever something goes wrong with the finishing, do not hesitate to remove the finish. The second try usually goes a lot faster because you have already filled the grain to a large extent. Again, remove a shellac finish with alcohol only and pick up the waste with burlap. This will pack finish into the pores.

After the grain has been filled it should be inspected for every pore being filled. *Visually, the pores should have a shiny appearance whereas the solid wood around the pore will be matte.* When you are satisfied that all the grain is filled and there is no slurry on the surface, you may fill any voids needing wood filler or shellac stick. The surfaces should then be polished again adding a just enough shellac to build up a gloss. It should look "deliverable" if not perfect. The surfaces should then rest overnight or, preferably, a few days. Add a little alcohol to the pad and put it in an air tight container to keep it from drying out.

The filler in the pores will shrink over time. Previously finished wood will have used less filler and will have less shrinkage. New wood will have markedly greater shrinkage. In any case, the grain will have to be filled a second and third time and sometimes more, though each time goes much faster.

The second polish seeks to remediate any deficiencies in the first polish. Start by charging the pad with alcohol only but do not make the pad as wet as before. The first motions should be with the grain with light pressure and no overlapping strokes in case the pad is too wet. These strokes will not rub through the finish. The idea is to soften the shellac and start moving whatever is left on the surface. Once the pad dries out a bit, change to circular motions. If there was substantial shrinkage in the grain you'll need to add a dab of pumice on the pad to speed things along and help get those difficult areas filled. The same circular motions occasionally alternating with straight line motion is continued. The pores of the wood that appear longer will take a bit more effort. Get the finish moving again and fill without gloss. You should not need to add shellac to your pad. Proceed as in

the first stage and get the surface to the same state as before with all the grain filled. You will use a pad that is a lot less wet. The pad should not leave any wetness behind. If it does it must be left to dry or your next pass will remove the finish. Again, as the pad dries use tighter swirls with more pressure. This will really pack the filler into the grain and make the surface smooth and filled. When the grain is filled, you may work on building gloss and removing streaks and swirls as in the first polish. For this a with-the-grain motion is used almost exclusively now. The pad must be almost dry but not so dry as to drag and leave streaks. You should not attempt to build the finish other than to achieve the desired gloss. Again, you should always be looking at the reflection of light on the surface to see the changes taking place.

Again, rest the surfaces overnight or longer. The finish will again shrink due to solvent release but less than the first time. Repeat the filling and polishing stage until there is no shrinkage after a few days rest.

When you are sure no more filling is necessary, any repairs can be touched up with glazes made of a mixture of thin shellac and dry color or alcohol soluble aniline dye. Carefully polish over these repairs by padding with thin shellac, not so wet that you end up dissolving the film but wet enough that you'll not have to press hard. Layering the glazes between polishes works well to get the look of wood. If the repairman keeps his touching up confined to only the repair or defect, he/she will avoid making a muddy mess of it. Failure to get the right color of glaze often tempts the repairman to color beyond the repair. (See *Touching Up*). Only when all the filling and touching up is done should any build of finish begin. This is done by changing the cover to clean cotton and charging the pad with more shellac. Do not have the pad too wet and do not overlap each pass. Wait until the whole surface has been done once and go back and fill in the areas between passes. As the pad dries you may overlap your passes. Alternate between shellac and alcohol until the surface is perfect. Getting the streaks out requires a special touch. Usually, the pad is too wet. At any stage, if things start to go badly, stop and allow the finish to dry for an hour or so. Surface the finish with steel wool, ScotchBright® or 600 grit wet-or-dry sandpaper and remove any roughness on the surface as it will tend to pull more thinner or shellac than is needed and will further damage the surface. Be more careful not let your pad get too wet or too heavily charged with shellac.

Finishing off or "spiriting off" removes trace oil from the surface and gets all the streaks out. Prepare a new pad with either a linen or cotton cover. Both will work but with different results. The linen will give a softer, less glossy surface while the cotton will be a somewhat higher shine. Charge

the new pad with a little alcohol only (you do not need to remove the cover to charge the pad), press it against your palm repeatedly so that the alcohol is dispersed. The pad should be damp not wet. Using a straight-line, with-the-grain motion polish the top, initially without overlap until you are sure that pad is not too wet that it will substantially soften the film. Then you can go over any dull streaks with two maybe three passes, no more. You should see the streaks lessen. You should move on across the top and then come back to the streaks.

The polishing of chair parts and carved areas requires a slightly different technique. A smaller pad is needed and initially, you may need to apply the shellac with a brush to get a layer first and get it in the crevices. A stiff, worn, bristle brush may substitute for the pad to polish the carvings. I generally use oil during the process, not just in the beginning. Though it is tedious to polish carvings and small parts with a small pad, the process seems to go faster on these curved surfaces. Before the final polishing is done, it is sometimes necessary to apply color to areas of low relief to simulate dirt and to cover defects in the stripping process (i.e. paint in crevices). This can be done with a little artists' oil paint mixed with linseed oil, brushed in and wiped off and allowed to dry. Usually though, I just mix a little color in shellac, brush it in and polish it off with a damp pad, leaving the color in the recesses.

As I have become more proficient at polishing, I find I use less and less material. And because gloss is only a function of the smoothness of the reflective surface, I really only have to build up enough material to form a continuous, discreet film. Since oil is difficult to get out of wood once put in, I often polish objects of historic or antique value without oil. This is not too difficult if you become sensitive to the effects that the porportion of shellac and amount that you load the pad will have on polishing a surface. Thin solutions need to be put on thinly so the solvent can evaporate before it damages the film. If you want to put on a heavier coat then the solution should be thicker (less solvent). A 3 lb cut is probably as heavy a cut as I would brush and a 2 lb. cut for French polishing. But I often work the film with just alcohol, but not so much that I actually wet the film. The last thing the polisher needs to develop sensitivity towards is the level of pressure he or she applies to the pad. The harder one presses the more material is released. So I will not press down very hard on a pad that was just charged. I will press ever so lightly at first to determine what effect that degree of wetness has on my surface and adjust from there. Too wet and I'll bang the pad against my palm to

disperse the liquid better and try again. You must learn what effect your pad has on the surface by observing the surface under the lights. A drier pad allows for a harder press which will actually move the shellac surface and fill in defects, scratches, swirls and the dreaded streaks! I'll even add a pinch of pumice to the pad to give the film a softer sheen. Finally I may use a large shoe polish brush to go over the surface, not after the film has thoroughly dried by after I have just polished the film. This same brush can be charged with pumice to dull a dried film to a satin sheen, a much better alternative to steel wool. I'll then spit on the brush to dampen it ever so lightly to pick up pumice/shellac residue. While I rarely wax a freshly polished surface (it looks so good!), it can be done especially if streaks seem to be a problem. Try to *see* what the surface is doing and *why*. This will greatly accelerate the time it takes to learn how to French polish.