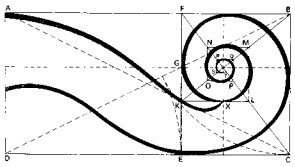

From the Maker's Bench

Part Alchemy, Part Art

The second in a three-part series on Varnish

by Lawrence Anderson

No aspect of violin making is so shrouded in mystery and so steeped in myth as the varnish. Varnish is, according to the many popular articles on the subject, part alchemy, part chemistry and part art. As the value of the old Italian instruments, and especially the old Cremonese instruments, has increased over the centuries, the claims for the varnish on these instruments have become more and more extravagant. Some have proclaimed the varnish to be the secret to the sound of the old Italian instruments, a secret that the masters took with them to their graves. This proclamation has been repeated so often that it has become almost universally accepted. Violin making is of course a process. From the selection of the wood in the forest to the final positioning of the bridge, everything contributes to the sound. Varnish is a part of the process; but in truth, a great varnish cannot salvage a mediocre violin and a mediocre varnish cannot destroy a magnificent one.

This is the second in a three-part essay exploring varnish. I hope to expose in these essays some of the myths and extravagant claims and to share some of the results of modern research on the varnish of previous centuries. This article deals with the history of varnish.

The origin of the word varnish is derived from myth. According to the 3rd century B.C. poet Callimachus, Queen Bernice of Cyrene gave her long amber colored hair to Venus in gratitude for the safe return of her wandering husband. Venus turned her golden tresses into "Bernice's Hair," today known as the Milky Way. Thus all amber colored resins became known as "bernice." By the Middle Ages in Italy, the word under went a phonetic shift to "vernice" and by the 16th century, "vernice" began to refer to all liquid preparations made from resins. Varnish has never quite escaped its mythological origin.

Recipes for varnish appear as early as the 4th century. An anonymous manuscript from the 8th records a collection of recipes. By the middle of the 15th century, with the tradition of bowed instrument making well established, but still a quarter of a century before the advent of the violin, Padre Alesso published his *Secreti*, a book claiming to reveal lost ingredients, secret compositions and esoteric chemical processes know only to a privileged few. By the time the violin explodes onto the world of music, varnish is already wrapped in mystery and myth. At the very birth of the violin, varnish is spoken of as a lost art.

The fact is that violin varnish is not a great secret or a lost art. Recipes have been well known and available for centuries. Of course we can never know what particular recipe a given maker used at a give moment in his career. That will always remain a mystery. But we do have a good idea of the parameters of ingredients and methods of production.

Still the myth of the one lost recipe, responsible for the tone of the great Italian instruments, survives. The myth usually is distilled to the lost recipe of one maker, Antonio Stradivari. Of the many charlatans claiming to know the secret varnish of Stradivari, Joseph Nagyvary is the most celebrated. Although universally ridiculed by makers throughout the world, this Texas A&M chemistry professor's claim has appeared in this country's most prestigious newspapers and magazines. The varnish is no more the secret to the sound of a Stradivarius than, say, the oil paint is the secret to the genius of a painting of Leonardo de Vinci. Violin making is a process. Varnish can indeed enhance the sound and the beauty of a instrument; but a Stradivarius, stripped of most of it's original varnish and covered with touch up (and many have come to us in this condition) is still as magnificent sounding an instrument as those whose varnish remain essentially intact.

However it is not totally misleading to speak of the lost Cremonese varnish. Simone Sacconi noted that Guadagnini was already moving away from the classic Cremonese varnish late in his career, towards the end of the 18th century. As the civil unrest and foreign invasions destabilized Italy and the center of violin making moved from Italy to France around the beginning of the 19th century, the French makers abandoned the slow drying and fragile oil varnish for a faster drying more durable spirit varnish. The oil varnish was abandoned out of economic necessity — oil varnish takes months to dry; spirit varnish dries in a few days.

Of the many spirit varnishes, the "1704" is the most well known, yet very typical. But even its origin is somewhat apocryphal. I have heard variations of a tale that Bisiach owned a copy of the recipe written in Stradivari's hand, that the copy was passed to Guisseppe Fiorini who gave it to Simone Sacconi who in turn passed it on to Hans Weisshar. I can authenticate none of these stories. I have heard them repeated in various forms by old makers, many of whom have since passed away.

Although they initially looked impressive, instruments with spirit varnish did not age as expected and the varnish itself never achieved the depth and the brilliance of the oil varnish. So by the end of the 19th century, the search was on for the old Italian recipes. Makers and scholars began perusing the old manuscripts for the old recipes.

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Still in print is Heron-Allen's *Violin Making as it Was and Is*, published in 1882 which reintroduced many of the old recipes, as well as important books by George Fry (1904) and J. Michelman (1946). Louis Condax did an analysis of small flakes of varnish from the violins of Stradivari at Eastman Kodak laboratories and published the results in a paper in 1968. Recent books by Gary Baese (1985) and William Fulton (1988) have also been influential.

Oil varnish is made by cooking a resin, such as amber, colophony or oxidized distilled oleo-resin, at high temperatures then mixing with oil and thinning with turpentine. Recipes vary in the types of resins, the combination of resins, the temperatures and the length of cooking, the kinds of oils and the proportion of oil to resin. Some recipes call for altering the color chemically by adding mineral salts to resins while cooking; others call for suspending pigments in the varnish before application, while still others call for a combination of chemical alteration and pigments. All of these recipes are "authentic."

Nevertheless, the search for the "authentic" varnish has captured the public's attention. It makes for a good story. And over the past 100 years a succession of charlatans have made a career claiming to possess the "authentic" varnish. Even though their claims are exposed as fraudulent, they keep finding an audience and a journalist willing to promote their claims.

All good classic Italian varnishes are strongly dichroic. Dichroism is the property possessed of some solutions of showing different colors at different concentrations and of exhibiting two different colors when viewed along different axes. The old Italian varnishes display a range of color tones from pale yellow to deep red, or pale amber to deep brown depending in part of the thickness of the coating and the angle from which the varnish is viewed. The transparency of the varnish and the degree of dichroism increases with age. Dichroism is achieved by both the preparation of the varnish and its application. The color of a good varnish is yellow in a single thin layer and in multiple layers from a reddish-orange to a brown-red. Dichroism is why the varnish appears to dance on an old violin. This is what musicians want and what makers strive for.

I believe the beauty and the tonal qualities of any well-made varnish are determined by the skill of application. The undisputed fact is that the old masters used different varnishes and that individual makers used different recipes throughout their careers. They range from the honey brown varnish of Andrea Guarneri, the subtle iridescent orange varnish of Stradivari, or the brilliant red varnish of Guadagnini. During the golden period of violin making, from the beginning of the careers of Brother Amati, around 1625, to the end of the career of Guadagnini in around 1775, varnishes changed from generation to generation, from maker to maker even during different periods in a maker's career. All these varnishes are wonderful. The one thing they all have in common is that the best varnishes of these makers come during the height of their creative powers, when they were most skilled at application. And in most cases the quality of varnish declined as their careers came to an end. Varnishing is very difficult; a varnish poorly applied, even a magnificent one, will not look as good.

I attended a conference on varnish this summer in Boston. The consensus was that less oil is better than more oil because of the index of refraction of oil increase as it ages causing the varnish to become less transparent. Chemically altering the color of varnish is better than suspending pigments because pigments are more opaque. And finally, terpenes make better resin because they are softer and more flexible.

However I have seen many wonderful varnishes from makers who believe just the opposite.

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