Guilloché: From Watch Dials to Fantastic Creations

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Introduction

Guilloché has been around for hundreds of years (literally, since around the 1750s) and in that time, surprisingly, very little has changed. Some of the big-name watch companies are still using the same decorations they started with in the 1700s. Many are calling them vintage and bringing them back. The possibilities are limitless, as you may have heard or read. It is incomprehensible why more patterns are not employed.

A few watch companies are just now becoming innovative with their guilloché. This means not making just one single pattern and putting a transparent enamel over it. ChronoSwiss has added an element of the hear/speak/see no evil monkeys over guilloché (Figure 1) and has also begun to use guilloché to decorate their movements (Figure 2). Another Swiss company, Vacheron Constantin, is using guilloché as a background decoration to their Florilege series of watches (Figure 3), which showcases but does not overwhelm the viewer; the enamel over simply and gently leads the eye to discover more.

Figure 1 *Monkeys added over guilloché on a watch face (scan from a* ChronoSwiss Collections *book, 2016-2017)*

Figure 2 *Watch movement decorated with guilloché (scan from a* ChronoSwiss Collections *book, 2016-2017)*

Figure 3 *Enamel over guilloché (scan from a* Vacheron Constantin Collections *book, 2016)*

While there is no denying that guilloché is absolutely mesmerizing to look at, adds sparkle, and leads the eye over an entire piece, one has to wonder why no one has thought to change the patterns, the work guilloché is applied to, or the forms over the years. Research based in both Europe and the United States has revealed some startling evolutions in tandem, if you will, which will be explored in this paper.

The Two Schools of Thought on Guilloché Training

As someone who has been practicing guilloché for nine years, I have been exposed to the two different camps: the traditionalists, where only eight classic patterns are used and there is no room for experimentation, and the innovators, where anything goes. Most of the people I know who practice guilloché are innovators. There is nothing wrong with being strictly a traditionalist; it has its perks. The only places I know of still teaching and using strictly the "traditionalist" methods are within a 60-kilometer radius of where I am in Switzerland, although the U.S. is quickly catching up on concentrated areas of guillocheurs (notably Colorado and New Mexico).

In Switzerland, the craft is taught to be perfect and nothing else, and the workers are only taught to do the "classic eight" patterns. There is no time for experimentation, and many of the people in these situations don't have any interest in experimenting. So, today we are looking not to what was done, or the history, but what can be done and how to integrate guilloché into a society that is already overwhelmed with beauty, perfection, and a large number of crafts. The generation of guillocheurs who are now between 65 and 75 years old was taught to be rigorous and strict and, by the time they were finished with daily work, were too tired to even think about different types of applications. Many were not passionate about guilloché as we might think of someone today, but were highly skilled workers, paid to be perfectionists. In fact, having encountered many operators of rose engines, I am amazed that, for most people in Switzerland, it is merely a means to an end. I don't find many people curious about the origins, the parts and the flexibility of a machine.

Two Types of Teachers (the "Cans" and the "Can Nots")

There are two main methods in this modern age to learn guilloché. The first is to find someone who has a machine and is willing to let you try your hand at it, then ask for some guidance and knowledge OR find a machine, start fabricating the missing pieces because, inevitably, many will be missing, and then teach yourself through trial and error. Although the former is how people can still be introduced to guilloché, it was the only method from the mid-1700s until now. There have been only two official schools, to my knowledge, that held actual courses with certificates, but those died out with the First World War, and were short lived at that (roughly eight years). In Figure 4, I am teaching an introductory class to meet the machines.

Figure 4 *Teaching is one of the ways to influence the future of guilloché and ensure that there is a future.*

Here is where I will start to talk about the future. I know many of you may be thinking this is a hokey thing, but I promise, this is not crystal ball reading; it is much like someone who does trending for jewelry.

About half of the people who learned guilloché by way of mentor, professor, or apprenticeship training were told that guilloché had to be the absolute last step in decorating with the exception of enameling. The other half heard no such thing. This leads to the two distinct "personalities" in guillochage (the act of applying guilloché). The first group believes wholeheartedly that guilloché is so fragile and precious that it must be the last step (mostly people at watch companies who are taught to think like this). These people seem to hold themselves above any other practitioners because they are forced to create almost perfect work, and they consider guilloché to be one of the highest arts. The second group throws caution to the wind and does whatever the heck they want. This group likes to play, experiment and, if they have some throwaway pieces, so be it.

I started haphazardly with research and then, when I began with guilloché, my mentor, G. Phil Poirier, never told me what I could and could not do; he simply showed me a rose engine made by Plant and Sons, gave me the function of each different moving part, explained which bits created which types of patterns, and then let me start experimenting.

After two years of phone calls and a few visits, I was offered a job at Breguet (high-end Swatch group partner). It was here that I was then brainwashed into the first category of "can not." For my first three months (a trial period) I was good; I did what I was told, mostly. I didn't question the reasoning too much until I found the work to be boring. Then I came up with systems to make my production much quicker and more logical. The Swiss are precise, but I was a bit too precise even for them. I started daydreaming about more interesting applications and so have found my way back to the innovative group.

The future of guilloché lies with those people in the innovative camp, so that is where we will begin. The future of experimentation also has a secret past. Ever wonder about the Fabergé eggs and how they were so seemingly perfect? It takes years to master and get the angles perfect; only a master could do it. But I have met a gentleman in Germany who creates round sheets of guilloché. He uses a wood male and female die to press the top and bottom halves with no obvious stretching or distortion of the pattern. In fact, unless the pattern is super tiny and super tight, there won't be any obvious distortion. Why not use entire patterned sheets of guilloché to create this egg form as seen in Figure 5?

Figure 5 *G. Phil Poirier's egg halves in copper and silver*

Perhaps even think of using a sheet patterned on both sides to create a little surprise for the owner of the piece. In Figure 6 we see a piece that has been attached to a die (used to form the piece from a solid sheet), which is inserted directly onto the rose engine for decoration. This could also be decorated beforehand and then pushed into a die.

Figure 6 *A 3D piece still on its die (indicated by red arrow), mounted on a rose engine (Calina C. Shevlin)*

I am a believer in the craftsman's touch (who doesn't love a perfect piece?). I don't like to have people think that a piece was machine made, with absolutely no variation in depth. What about those small moments (e.g., someone at the door) when there was an interruption, also known as life? I like to see a teeny bit of irregularity. I'm not saying this to encourage people to be lazy. I just know that these things happen and they give a human touch. I remember seeing a watch dial that was created by one worker at Breguet, who was referred to as the best guillocheur in the world. The piece, shown in a book that was distributed at Basel World, had a variation that was quite obvious. This just goes to show that we are all human, best in the world or not, and we are all capable of making mistakes. I made my first pen in 2014 (Figure 7) and for all the care I took, still made a few "mistakes" because I was talking while doing a demonstration.

Figure 7 *Pen created by Calina C. Shevlin in 2014 with a few "irregularities"*

We have also seen a number of "innovations" from people to make the life of guillochage much better. The following tools are now almost exclusively being used by guillocheurs: binoculars to aid with sight, LED lights and compressed air nozzles attached to get rid of swarf (the bits of cut metal). All of these inventions

came about due to necessity and all around the same time. Sometimes people who do guilloché feel like they are really isolated and coming up with these incredible ideas in a vacuum, but it seems we are all naturally evolving around the same time.

The methods of holding a workpiece have varied over the years, but now, if we don't have a holding chuck, link chuck or centering chuck, then what do we do? We have a machine, but no way to make a complicated chuck. Many people have been using cyanoacrylates (yep, Super Glue) to hold work on securely and flat, and yet easy to remove with a razorblade and a bit of acetone. I often employ this method, as well as using Jett Sett™, when I don't have a chuck handy. These aren't much different from the shellac, wax, or pitch methods that have been used since the 1700s.

We have seen the rise of new materials in rose engines and straight-line machines. David Lindow has a great rose engine with acrylic rosettes, and very detailed work can be done with this machine if you change the base for more stability. I use rubbers/touches made from Delrin® and steel (Figure 8), as opposed to the more commonly used all-steel rubbers. The rubbers function by being secured in place, usually on the left hand side of the rosettes, and then the head stock with selected rosette rests on the rubber, much like how a pantograph transfers the design. The rubber rides along the rosette, which is turning, and in turn creates a rocking action in the form of the rosette, which is shown on the workpiece. The steel is the holder and I have interchangeable tips, which I prefer to a whole host of rubbers. For me, space is an issue so to have interchangeable tips, as opposed to many different steel rubbers to store, is optimal.

Figure 8 *Steel and Delrin® rubber fabricated by Calina C. Shevlin*

With the added use of 1) motors to combine guilloché and ornamental turning, 2) roller printed plates to press guilloché-type patterns into a softer metal, and 3) hydraulic presses and their myriad attachments, the possibilities multiply rapidly.

Nothing has to be created painstakingly by archaic methods, although purists still do so. We are now able to quickly press an entire sheet of faux-guilloché, which gives instant decoration. This was popular in the 1930s to press plastic for car dashboards, clocks and vanity sets. In Figure 9 you see the guilloché applied, individually, all over one large and very thick plate to be used as a master to press various items made of differently colored transparent plastics.

We can now form, alter the look and change guilloché into objects in their own right. Gone are the days of exclusivity to watch dials and picture frames.

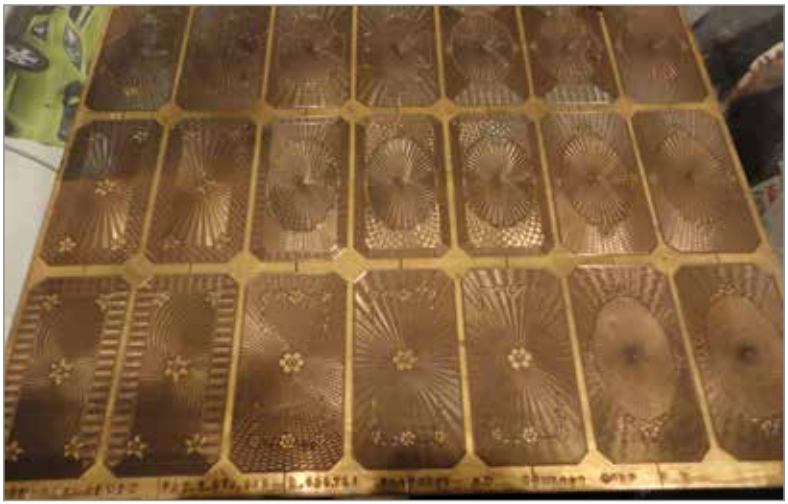

Figure 9 *Large brass plates decorated with guilloché to be used to press plastics (from the collection of David Wood-Heath, Kent, UK)*

The Future in Processes

For the most part, my research has been done through verbal interviews as there are very few books on the subject, which I hope will begin to change soon! I viewed a series of photos on Instagram (more about that later) that really got me thinking about what inspired people to move out of the 2D comfort zone. Figures 10-13 show the photos that intrigued me and led to the question of what inspires people.

I contacted Al Collins for an interview via telephone. For him, the leap into innovation came when I posted something on Instagram that started him thinking about different possibilities and construction techniques and why couldn't he do something that had guilloché going over the edge and continuing. He had been making some boxes with a break from the pumping action into the rocking action, as many people do because going around a curve is quite challenging and takes years of practice, patience and no interruption due to its tediousness.

Figure 10 *Mounted plate with guilloché (courtesy of Al Collins, 2017)*

Figure 11 *Box as pressed on a hydraulic press with a homemade die (courtesy of Al Collins, 2017)*

Figure 12 *Two finished boxes (courtesy of Al Collins, 2017)*

Figure 13 *Guilloché plate ready for removal (courtesy of Al Collins, 2017)*

Al told me he used some homemade dies and a hydraulic press to press out a box after it had been decorated. I was thinking that he probably used some wood dies because I couldn't see marring on the box. I was

surprised when Al said he used steel dies, but he wasn't happy with the stretching of the pattern, which was meticulously planned out and applied. I suggested the use of wood dies and he said he hadn't thought of that. I personally have been creating a "Fractals" series (Figure 14) where I guilloché somewhat large plates of around three square inches up to five square inches (Figure 15). Then, I tape over the guilloché and turn the plate over to start mapping out where I will cut out different forms for earrings, bracelets and pendants (Figure 16). The resulting cut-outs are seen in Figure 17.

Figure 14 *"Fractals" series of jewelry (Calina C. Shevlin)*

Figure 15 *Process shot of a design layout for guilloché (Calina C. Shevlin)*

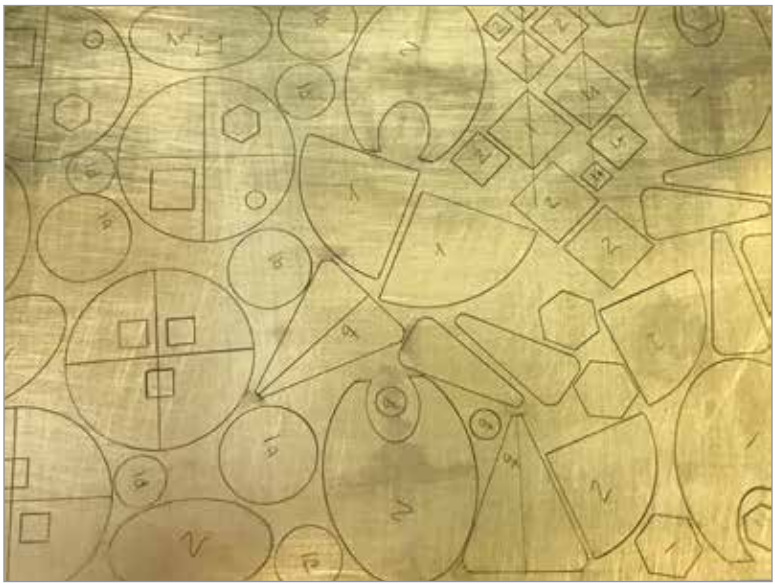

Figure 16 *Process shot of a guilloché plate ready to cut out (Calina C. Shevlin)*

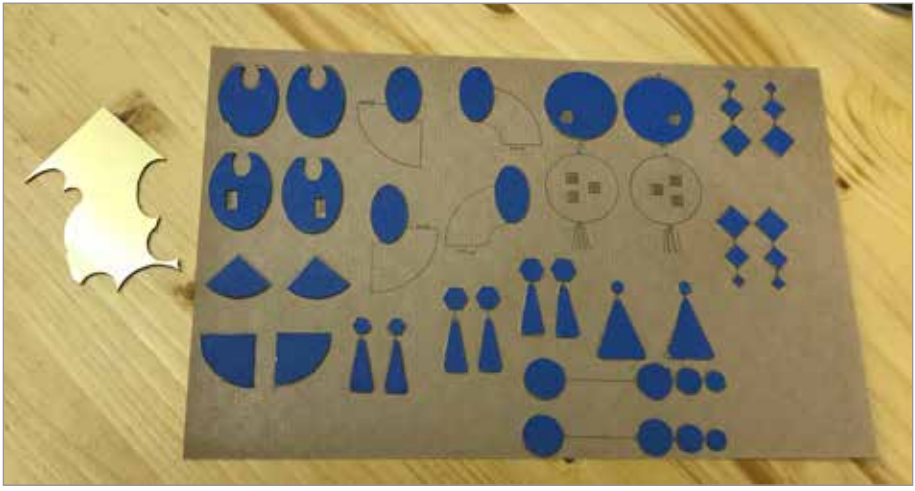

Figure 17 *Process shot of cut-out pieces (Calina C. Shevlin)*

I am in love with this process of combining many different patterns without it seeming to be too forced. The results are eye-catching and I have wondered why no one had tried this yet; it was so easy!

Well, someone else was apparently trying it around the same time I was—in another country, specifically, Germany. As I've said before, it seems that all inventions come about at around the same time. Was I upset/angry/disappointed? No, I surprised even myself here. I was ecstatic that someone else was thinking

along the same lines as I was. The same is to be said about my own book,[1] which was published in 2017. Another book by a colleague was also published in 2017[2] and had almost the same thoughts as my own and, again, I was in awe to see that the thought process was eerily similar.

The Future in Materials

For the last three to four years, I've noticed different types of materials being experimented with. From wood, acrylic, and exotic metals to bone, enamel and Corian, guilloché is not only changing by way of process but also by the acceptable materials. Before this century, guilloché was applied to precious metals, brass, steel, sometimes horn and not much else. I've experimented with acrylic and it cuts fantastically (Figure 18). Although it needs a polish at the end, I see many interesting projects in my future with this material including double-sided with spaces between the patterns. While African blackwood has been primarily used in the 3D form of ornamental turning, it would make an excellent candidate for guilloché as a surface embellishment due to its ability to be work-polished. As I write these suggestions, all which reside on my to-do list already, my own excitement begins to mount.

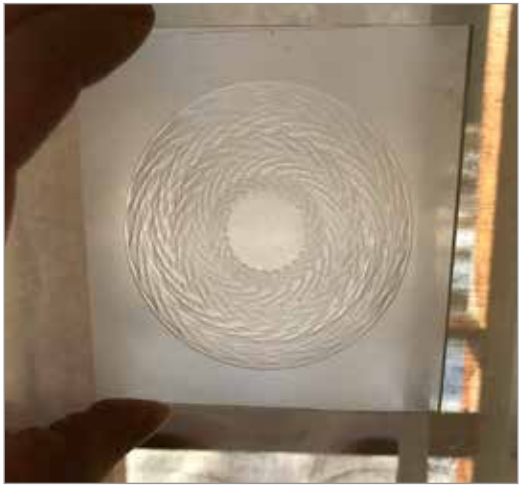

Figure 18 *Acrylic sample with guilloché (Calina C. Shevlin)*

There are contemporary artists such as Peter W. Gilroy and G. Phil Poirier and probably more who are extending their knowledge to new metals such as niobium and titanium, an interesting selection of metals that can be spot anodized. This is a great alternative to enameling and plating and can be used to emphasize only portions of guilloché. Peter uses anodizing on titanium much like a painter uses a brush to selectively add color, as seen in Figures 19 and 20. His guilloché is not background or prominent but rather in harmony and seems natural with all of the elements.

Figure 19 *Titanium wave ring (left) and titanium bolo ties (right) (Peter W. Gilroy, 2017)*

Figure 20 *Moonrise titanium cuff bracelet (left) and sunrise titanium cuff bracelet (right) (Peter W. Gilroy, 2017)*

The Future in Finishing

Not only are new forming techniques and materials being used, but we must not discount the types of finishing as well. Guilloché is not only being covered with enamel or left bare, but it is also being gold-plated, anodized and dyed. There is guilloché that is highly polished or completely matte. There are also combinations of all of the above methods being used in harmony. A highly polished piece is then decorated, select parts becoming matte with the use of abrasives or etching compounds, and some areas have selective color applied, all together in one piece.

With so many different combinations, the possibilities are expanding on how guilloché may look for the future. Guilloché does not need to be showcased *per se* but may be used as an accent, or it may be covered with other materials including lighted displays. In the 1800s and early 1900s, all watch companies were notorious for covering guilloché with opalescent enamels (Figure 21). In those days students were taught the tools of their trade, so using modern materials now seems a logical next step.

Figure 21 *Student sample from the École d'Arts Appliques, La Chaux-de-Fonds, Switzerland, 1907 (photo by Calina C. Shevlin)*

Frieda Dörfer is a German jewelry artist whom I happened to meet at an art gallery opening in Lausanne, Switzerland, in December 2014. I had no idea that someone who used guilloché would be showing there but was pleasantly surprised. Frieda sculpts her work after creating a large sheet of guilloché. She measures and lays out a pattern to cut and fold into various forms, and then solders from behind. Examples of her work are seen in Figures 22-25.

What is most interesting about these pieces is the planning for the final shape, the alignment of the pattern beforehand, and the cuts made because, in the end, everything lines up well. Frieda makes extremely precise geometric shapes (Figure 22) that showcase not only guilloché but also the form. Now she has moved on to making geometric egg-form brooches (Figures 23 and 24), which are light and easy to wear. These eggs tend to keep the eye moving, not only because of the guilloché but also because of the form. Figure 25 shows a large geometric brooch that may seem intimidating; however, it is very light due to it being hollow and it's a treat to wear.

Figure 22 *Geometric necklace of brass (photo by Frieda Dörfer)*

Figure 23 *Geometric egg brooch, red-gold plated and hollow mounted (photo by Frieda Dörfer)*

Figure 24 *Silver geometric egg brooch, hollow mounted (photo by Frieda Dörfer)*

Figure 25 *Geometric silver brooch, hollow (photo by Frieda Dörfer)*

Conclusion

Will guilloché gain in popularity? I think that, with the advent and now almost obsessive use of social media, the answer is yes! I believe that there is now a platform to get our work out there to not only garner appreciation for the process (with

in-process shots and videos) but also to inform people of what exactly guilloché is and how time-intensive it is to create. This method did leave me skeptical at first, but after posting a few guilloché pieces on my personal Instagram, I found that people were really responding well, so I created an account for my atelier (studio). Not only is it a great way to disseminate information but also to get feedback on how well some of the creations are liked, which ones are "bombing," and much more. It is almost like a weekly critique, which everyone needs. The more people who like an Instagram post, the more it is shared, so the future of guilloché (and maybe this is most important) also lies in social media and self-promotion. This is how guilloché is being presented to the masses, if you will.

After some research and more technological tools and applications, any work can be seen in a professional-type setting by simply using text over photo, apps that help with composition and more. With a little effort and thought, guilloché can now be presented in beautiful formats to entice the audience to interact, be curious and, most importantly, do research.

With the new introduction of CNC machines to the playing field, which are becoming better and better, will the craft of guilloché still continue to slowly rise, or will it die out to be reborn yet again little by little, thus completing the cycle of centuries? Stay tuned!

Acknowledgements

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References

1. Calina C. Shevlin, *Guilloché: A History and Practical Manual* (Atglen: Schiffer Publishing Ltd., 2017).
2. Andreas Gut and Frieda Dörfer, *Embossing, Punching, Guilloché Engraving Contemporary Artisanal Jewelry Production*. (Stuttgart: Arnoldsche Art Publishers, 2017).