Simitra's
Exquisite Things

Tortoiseshell

Real or Fake?

How to tell the difference

This article will concentrate upon the use of tortoiseshell for ornamental hair combs, as well as the various materials which have been employed to imitate it. However much of the material included here will be of interest to collectors of other antique and vintage shell objects.

I will outline some rules of thumb for distinguishing genuine from imitation tortoiseshell, and methods for caring for it.

Introduction

For collectors of antiques and vintage items there are many reasons why it is important to be able to distinguish real from fake (or faux) tortoiseshell.

1) Real turtle shell is not allowed on eBay. If you are a seller and you are reported by a snitch for selling items in real shell you will get your listing/s pulled and a policy violation. You could even have your account suspended.

2) Much more significant is the fact that trade in real shell violates several US and other international laws. There are different regulations for antique and modern items made from turtle shell. The legal situation is extremely complex and what is allowed in one state or country may be prohibited in another. This however, is not an area that I intend to discuss here. Further information and reference to the various laws can be found in the eBay help section dealing with prohibited items.

3) Antique items made from real shell command a far higher price than those in synthetic or other substitutes because of their rarity value. So if you are a seller or serious collector it is important for economic (as well as aesthetic) reasons to be able to distinguish it from other substances.

4) If you have made a decision on principle not to use or trade in items made from real shell then you would probably not wish to violate your own policies through lack of knowledge.

5) Genuine shell has different requirements for taking care of it than other materials such as synthetics.

Appearance and use

Tortoiseshell is a substance with a long history of use for articles of vanity and personal adornment, as well as for decorative inlays on furniture, and so on.

The material which we call tortoiseshell has long been prized for its ability to take a high polish, and its beautiful colouration. Characteristically this consists of a random mottling of translucent amber with darker tints of deep reddish brown. Shell can also be found that is not mottled, but an almost uniform dark brown. There are also rarer varieties which vary from pale yellow to a deep amber colour. These materials are known as *blonde* and *demi blonde* shell.

The typical colour variation produces a very exotic translucent and almost three dimensional effect when the material has been worked into one of the high Spanish style combs which were fashionable throughout the 19th and early 20th century. The larger of these ornaments were worn standing proud from the top of the head by anything up to 12 inches. This allowed the light to pass through the top or heading, and to show up the beauty and transparency of the pierced design, as well as of the material itself.

Picture 1: Hair comb late 19th century showing the typical effect of mottled tortoiseshell

Picture 1 is a late Victorian mantilla style hair comb. It shows the typical appearance of the most common or mottled form of the material. This is the effect which most people understand by the term tortoiseshell.

In this handsome example the pattern appears as dark brown and orange blotches randomly scattered upon a pale amber coloured ground. This is the most highly prized form of mottled tortoiseshell in which the darker markings are distributed across the piece and stand out well upon the lighter translucent ground. The light can be seen through the comb, producing a very beautiful three dimensional effect which is typical of genuine shell.

Picture 2: Early 19th century hair comb of carved *blonde* tortoiseshell

Picture 2 shows an early 19th century mantilla style hair comb made from the so called *blonde* variety of tortoiseshell, which is considered the most desirable. This beautiful comb is a rich amber colour and has been carved and pierced into a rich and elaborate design. It probably dates from the 1820s or 1830s when such combs were worn by fashionable ladies to support high and fantastical hairdressings.

Where does tortoiseshell come from?

The term itself is a misleading one. The substance we know as tortoiseshell has nothing at all to do with land tortoises. Rather it is derived from the shells of certain species of sea turtles, notably the hawksbill. Therefore it would be more correct to refer to this material as turtle shell, or simply, shell.

The hawksbill, the main source or turtle shell, is a creature which inhabits the seas of Southeast Asia and from the Caribbean down to the coast or Brazil. Turtle shell is not actually a shell but rather a horn like substance which covers the back and belly of the creature. The plates which cover the back or upper half are known as the carapace while the lower part or belly is called the plastron.

The carapace of the turtle consists of thirteen horny plates, known as plaques or shields, with five in the centre and four overlapping at each side. This upper part is the source of the most characteristic shell, which is the mottled or spotted variety. The under belly or plastron of the turtle consists of twelve plates of a uniform yellowish amber, without any mottling. Popularly known as *blonde* tortoiseshell, this is the rarest and most prized variety of turtle shell. The animal also has twenty four marginal plates

which are also a yellowish colour but often show some brown streaking. The material derived from these is known as *demi-blonde.*

In the past the shells were removed from turtles with such incredible and barbaric cruelty that I shall not dwell upon the process. Suffice to mention at it was often done by immersion in boiling oil or water while the creature still lived.

Nowadays this turtle is a protected species. At one time, it was lawful to make jewellery, glasses, boxes, and other items using genuine turtle/tortoise shell. However, many turtle and tortoise species are now designated as either threatened or endangered, and therefore protected by Federal and international law, including the 1973 Endangered Species Act.

Characteristics of turtle shell

One of the most important characteristics of turtle shell is that it is a natural thermoplastic. That is its ability to be softened by the application of heat and moulded into various forms. On cooling the material retains the form into which it has been shaped. It also possesses natural bonding properties whereby small plates may be fused together to obtain larger ones of the type utilised for large decorative mantilla style hair combs.

Picture 3: Hair comb of moulded tortoiseshell showing the plastic properties of the material

In comb making this means that various decorative elements intended to ornament the headings could be fused in position without apparent joins, giving the appearance of having been hand carved from one large piece. Its thermoplastic properties mean that turtle shell may be pressed or shaped to a basic shape in a mould. It can then be further embellished by other decorative treatments.

Picture 3 shows a Mid Victorian hair comb which clearly demonstrates these thermoplastic properties. The intertwined piece which forms the top arch of the heading was formed separately and then fused into position against the teeth part. This gives the impression that the comb was made all in one piece and hand carved from a larger piece of shell.

It was possible to embed various precious materials directly into the heated surface of tortoiseshell. Gold, silver and mother of pearl are the usual materials. Once the ground material cooled and contracted, these pieces were held firmly in position without the aid of adhesive. This treatment, known as *pique* work, is one of the favourite means of decorating ornamental tortoiseshell combs in the 19th century.

Picture 4: Mottled tortoiseshell comb decorated with gold pique inlay

In picture 4 we find a very beautiful tiara style hair comb decorated with *pique* inlay. We can see that the light passes through the beautifully mottled shell which forms a wonderful foil for the inlay work. Here the decoration consists of a simple form of inlay formed out of dots. This form is called pique point. However there are much more elaborate forms in which both gold and silver inlay are used, with the inlaid shapes cut into stars, flowers and other motifs. In the most elaborate and costly form of pique work other materials such as mother of pearl may also be added.

Turtle shell can take a very high surface polish, and lends itself well to other decorative techniques such as engraving and carving. Some of the hair combs produced in the 19th century particularly those manufactured in the Orient are of such translucent delicacy that they resemble lace. In the best examples the craftsman has used great artistry to adapt the design to the natural mottling and colour variation of the basic material.

Picture 5: Fine lace like carving on the heading of a large late 19th century mantilla comb

On picture 5 we see a wonderful example of high quality carving. This forms part of the heading of a very large Victorian period mantilla style comb. It was probably produced in China or elsewhere in the Orient for the Western market.

Towards the later end of the 19th century European trade with these countries increased, and this led to an interest in and a desire for, such exquisitely made turtle shell objects. This superb example has a combination of Eastern and Western motifs. Three lyres are placed in the centre, surrounded by formalised representations of lotus flowers. The lotus is one of the favourite motifs in Oriental symbolism. It represents purity and the ability to rise above earthly concerns. This is because the lotus flower has its roots in mud.

Horn as a turtle shell substitute

Long before legislation was introduced to protect the creatures, turtle shell was considered a luxury product. Only the most expensive combs and vanity items were made from it. Therefore cheaper items were made in other, less expensive materials.

One of the first materials to simulate shell was horn. Since horns are derived mainly from various breeds of cattle, the horn working industry was a bi product of the meat industry. Butchers had no use for the horns which were therefore available free or cheaply to the horn workers. Before it could be made into plates suitable for cutting combs, the horn required much arduous preparation. In the early

19th century this was done by hand. However by the late Victorian period preparation of horn was largely mechanized in manufactories.

A visually beautiful material in its own right, horn can be subjected to many of the same decorative techniques which are used to adorn turtle shell. Like shell it has natural thermoplastic characteristics which enable it to be shaped and moulded. It can also be stamped, engraved, painted upon and carved into designs of breath-taking lacelike delicacy. However the chief use for which it was employed throughout the 19th century was as a substitute for the much more expensive shell.

One of the processes used to prepare the horn for working was that of clarifying. Having been boiled to remover its natural colouring horn could then be stained in various ways. Adding nitric acid to the boiling water produced sheets of a pale translucent yellowish amber which made it a suitable substitute for the so-called blonde variety of genuine shell. This yellow hue also produced a credible base which could then be subjected to the various painting and staining techniques which simulated the natural mottling of genuine turtle shell.

Picture 6: Horn hair comb simulating tortoiseshell

Some of these stains were applied with great skill. Without close inspection the material can pass for genuine shell, and even experienced dealers and collectors have been deceived. However, a closer examination will reveal that the mottled effect has been painted upon the surface. It does not go completely through it, as is the case with natural turtle shell.

Picture 6 shows a late 19th century horn hair comb which has been stained and painted in this manner to resemble tortoiseshell. This example has been nicely carved and pierced. However held up to the light the mottled effect does not have the characteristic three dimensional quality of genuine shell. Place this comb side by side with one of real shell and it is not difficult to tell the difference.

Synthetic substitutes for turtle shell

Throughout the 19th century scientists strove to discover substitutes for the increasingly expensive natural materials such as turtle shell, ivory, and jet and so on. The search to develop products which could be moulded quickly and cheaply became the motivating force behind the development of plastics.

In the USA, John Hyatt set up the Celluloid Company in 1871. In Britain Daniel Spill, Parkes former works manager, also continued his studies. His work led to the setting up of the British Xylonite Company in 1879.

Cellulose nitrate was now a commercially viable product from which combs, toilet articles, and many decorative objects were mass produced. It was now possible to produce hair combs not only in a wide range of styles but also to simulate many materials found in nature. Chief among these were ivory, mother of pearl and, most prolific of all, tortoiseshell.

The cheapness of the basic material and the ease with which these natural materials could be simulated led to swift domination of the market by celluloid materials. Celluloid had many advantages over these genuine materials. The method of manufacture meant that there was little waste and off cuts could easily be reused. It could be shaped in moulds; die stamped out of thin sheets, and twisted into many complex decorative shapes. Materials such as rhinestones or metal studs could be embedded directly into it without the need of adhesive.

Picture 7: Faux tortoiseshell celluloid hair comb

Picture 7 shows a celluloid faux tortoiseshell comb from the late 19th century. It is made in the Art Nouveau style which features naturalistic motifs such as flowers, leaves and fruit. Although this is a very pretty comb we can see that it has been produced by a process of moulding, rather than one of hand carving. It is a good example of a quality hair comb that has been mass produced.

The chief disadvantage of cellulose nitrate products at the time was their inflammability. Another was the volatile nature of the basic material. Over the generations many combs which now come down to the collector have begun to quite literally disintegrate. This is initially visible by stress lines and crazing within the internal structure and eventually the object simply crumbles to pieces.

From the 1920s cellulose acetate began to replace cellulose nitrate in comb manufacture. This newer plastic material was non inflammable and could be manufactured in sheets to produce a wide range of decorative effects. This material could therefore be employed to produce a more faithful imitation of the mottling found in natural shell, and was widely popular in that respect.

Distinguishing true from fake turtle shell

Here are a few rules of thumb for discerning the difference between genuine shell and other products.

Style

Fashions in hair combs changed slowly and it is seldom possible to date them exactly. However doing a little basic research in order to gain some familiarity with changing fashions of an ornament is one of the easiest methods of distinguishing real from fake turtle shell. For example the light and dainty hair combs in vogue at the end of the 19th and the beginning of the 20th century are in marked contrast to the large and chunky examples of the mid Victorian period.

An example of changing fashion is the fashion for very large mantilla style hair combs which became popular in Europe when the mass holiday market began in Spain in the mid 20th century. I have often seen such combs advertised both on eBay and at antique fairs as “tortoise shell” when it is quite clear from the style and colouration that they are made from modern plastics.

Although the surface of such ornaments may superficially appear to be carved, a close examination will reveal that this “carving” is, in fact, produced by injection moulding. Therefore collectors who take the

trouble to familiarise themselves with the basic styles will often be able to tell without even picking up the object that it is faux rather than real shell. Similarly, experienced collectors and dealers can often distinguish true from false shell simply from looking at a picture of the object.

Picture 8: Large mantilla comb of modern acrylic faux tortoiseshell

Picture 8 is an example of these large moulded mantilla combs. It is clear to even a casual observer that this showy but mass produced example was made in a mould, rather than carved. The pattern is quite thick and the faux tortoise effect is artificial looking and nothing like the real thing. No one who has carefully examined examples in real shell would be taken in by such an obvious imitation.

There is nothing wrong with buying or collecting such combs in their own right. I sell a great many of these in my store. They are far more suitable for pageants, dressing up and Spanish type dance than antique shell examples. They are lighter and much more durable. However there is a huge difference in price and availability between such ornaments and an antique example in genuine tortoiseshell.

Manufacture

Genuine shell is usually hand worked or at least hand finished, whereas synthetic products are produced by moulding. A hand carved shell comb will bear the inevitable marks of tools when examined closely. Hand done carving always reveals minor irregularities and imperfections, no matter how high the level of skill. Moulded designs are more regular. When examined minutely they will often bear signs of the moulding process such as extra flakes or bumps which were not removed by the finishing.

Weight

Shell is lighter in weight than an equivalent piece of horn but heavier than the same in celluloid. However modern acrylics are often very light, thin and flexible.

Flexibility

The tines of a celluloid hair comb will have more “give” than those of a genuine shell comb, which have a much stiffer feel.

Microscopic examination

Being made from living animal plates of genuine shell, it can exhibit growth rings and variations of colouration which produce the random mottled patterns which are characteristic of the material. When examined under a microscope or good quality loupe genuine turtle shell has an unmistakable three dimensional quality which is impossible for even the most skilfully made synthetics to imitate exactly.

It is also distinguishable from horn in this respect since the pigmentation was painted onto the surface of the horn, rather than contained within the fabric of the material. Some of the better synthetics are extremely difficult to distinguish from natural shell with the naked eye. However, microscopic examination reveals that the apparently random mottles have a much more sharply delineated outline than in the genuine material.

Decoration

One of the favourite methods of decorating genuine shell throughout the 19th century was that of *pique* work. This involves the embedding of decorative materials such as gold, silver and mother of pearl into the heated surface. When the material cools the materials are held firmly in place without the need for adhesive. In the late 19th and early 20th centuries this method was also used to decorate faux tortoiseshell combs.

Collectors will also encounter ornaments in which rhinestones are embedded directly within the surface, or are set into pre-drilled holes. These combs are almost invariably synthetics. When pastes or artificial stones are added to a genuine shell comb they are usually incorporated into a metal framework which may itself be highly ornate.

Picture 9: Shell comb with elaborate applied metal work in the Art Nouveau taste

A fine example of a late 19th century tortoiseshell hair comb with applied metal decoration of this type is seen in picture 9. The gilded metal mounting is extremely elaborate and incorporates a female face amid foliage. This decorative element is held in place with fine rivets which pass through the shell and can be seen from the back.

Friction or heat test and smell

Some writers advocate testing for genuineness by the use of a hot needle. Genuine shell will burn to a black mixture and emit the small of burned hair. However few dealers are going to allow you to do this!

A less drastic method is to file the material in an inconspicuous place with a piece of emery paper. Horn has an unmistakable odour of burned horn. However synthetics will emit an acrid chemical smell which is similar to that of acetone when subjected to friction. Genuine shell does not have a distinctive smell in the same manner. To a lesser extent the same effect may also be elicited by rubbing the material with a piece of cloth and then sniffing it. It is the heat caused by friction which produces the smell.

Weevil damage

The presence of small holes resembling “nibbles” indicates that the material is a natural one, as opposed to synthetic. However weevils attack both horn and turtle shell, although they appear to prefer the former!

Care of turtle shell

Avoid storing tortoiseshell in conditions of excessive heat, humidity or dryness. Turtle shell objects should not be exposed to direct sunlight for any extended period as this can cause them to take on an unattractive greyish hue as the surface moisture dries out.

Turtle shell objects should not be immersed in water, as this will remove the polish. Placing the item in hot water will leave the surface looking dull and pitted and the polish can only be restored by re-

buffing. Dirt and finger marks can usually be removed by a simple wipe over with a damp cloth and then a careful polish and dry.

Another hazard for shell combs and those in other materials is the residue left from sticky labels. This can be removed with a small amount of white spirit (turpentine) or piece of impregnated wadding which are sold for cleaning metal jewellery. Following removal the area should be carefully cleaned and polished.

Cleaning with any kind of alcohol or spirit (such as methylated spirits or methanol) should be avoided as this tends to draw the natural oils from the surface and leave it dull and lustreless. The use of aerosol polishes containing silicone should also be avoided as these are not suitable for turtle shell. A light wax such as beeswax is suitable for preserving the shine of shell combs.

Shell combs are often discovered in a dull and scuffed condition. Some conservators recommend soaking in light vegetable oil to restore the natural moisture of objects whose surface has lost their lustre. This should be followed by a vigorous buffing with chamois leather or soft lint free. This will restore much of the surface shine and help to disguise light scratches. However deep scratches or nicks will always be visible when the polished surface is held in a certain light.

Picture 10: Carved shell comb following restorative oil soaking treatment

Older combs are sometimes found with dull white patches on the surface. This indicates that the area has been damaged by heating, or possibly water trapped beneath the surface. The recommended treatment is to completely immerse the object in corn oil for twenty four hours, followed by cleaning and polishing. However some items may well be too badly damaged to restore their shine completely.

Picture 10 shows a carved tortoiseshell comb which was in a sorry state when I bought it. This comb dates from the early Victorian period and has very nice carved and pierced decoration. It is about 170 years old. Unfortunately it had been kept in a glass case to preserve it. Although in perfect condition, the surface of the shell had dried out. The comb was dull and lifeless looking, with no transparency or colour definition.

Here was see how the comb emerged from an overnight bath in corn oil. The beautiful colour definition is now apparent and the beautiful pieced pattern of stars and foliage has been emphasized. The oil treatment has restored much of the dried out moisture and the material has again become semi-transparent.

We can see from this account that genuine shell is a very beautiful material and is still much desired by collectors. However the beauty has a dark side, because it was based upon an unspeakably cruel trade and upon the suffering of innocent creatures. Many of the faux tortoise effects available today and in the better vintage examples are comparable in appearance. They are also superior in terms of durability.

And thankfully, they do not carry the same dark legacy of exploitation. The collector can purchase and wear them with a clear conscience.

Further reading

The information in this guide owes a tribute to the following work which includes a considerable amount of information on tortoiseshell, how it is fashioned into combs, and how to care for it. The book illustrates the use of combs as articles of grooming and dressing as well as for ornamental use. It is an in depth and essential reference book for both collectors and scholars.

Jen CRUSE, The Comb, its development and history. Robert Hale, 2007.