

An overview of the history of the use of colour in jewellery

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ABSTRACT

From ancient times rare and beautiful coloured materials have been prized and worn as adornment and/or indications of status.

In early societies these materials would have been 'found' objects such as shells and feathers but as technologies advanced metals were used extensively.

For thousands of years jewellers created beautiful objects using a range of metals with limited colours: yellow, red and white. Whether the yellow was high purity gold or bronze, or the white was silver, platinum or a base metal alloy, the visual impact was essentially the same. Other materials were needed to expand the palette to colours such as blue, purple and green.

This paper outlines the materials and methods that were used from the earliest known examples to recent decades.

Historically gemstones and vitreous enamels provided jewellers with a wide range of colours. The Ancient Egyptians used turquoise, lapis and coral with gold to produce vibrant multi-coloured jewellery. The Romans had a particular fondness for emeralds, sapphires and pearls while the Anglo-Saxons produced amazing jewellery featuring red garnets and blue enamel. Magnificent mediaeval jewels, mostly royal status symbols, incorporated rubies, emeralds, sapphires and diamonds with fine enamels. By the eighteenth century new sources of gemstones, particularly from S America, made jewellery more affordable and subject to changes in fashion. Over the ensuing decades fashionable jewellery veered from almost monochrome, diamond-set designs to multi-coloured, multi-gemstone pieces. The Victorians used an amazing array of gemstones, with rare and unusual species particularly prized.

The mid-twentieth century saw the introduction of metals that could be coloured such as anodised aluminium and a new metal, titanium, which enabled jewellers to produce multi-coloured pieces without the use of gemstones or enamel.

KEYWORDS

colour, jewellery, gemstones, titanium, aluminium

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Lynne Bartlett is a jewellery designer/maker. Having originally studied chemistry and worked for many years in the Chemical Industry, jewellery is her second career. The use of colour in jewellery has been a dominant theme in her work and she currently uses titanium and dyed anodised aluminium. Her doctoral thesis at the University of the Arts London (2010) studied the surface of coloured titanium.

1. INTRODUCTION

From ancient times rare and beautiful coloured materials have been prized and worn as personal adornment, indication of status and/or for supposed protective or amuletic purposes. This paper outlines the ways in which colour has been incorporated into jewellery from the earliest times to recent decades. Consideration is given to the colours of the most commonly used metals, gemstones in various forms, vitreous enamel, anodised aluminium and, finally, the interference colours of titanium. However as an overview it is not possible to include information about the cultural significance of the colours used, the sources of the gemstones or more modern coloured materials such as plastic.

Of all the elemental metals only two, gold (yellow) and copper (red) are intrinsically coloured. All the others such as silver, iron, nickel, etc. are white or rather various shades of grey. Regardless of the workability, strength or cost, the aesthetic appearance is equivalent. Whether the yellow was high purity gold or bronze, or the white was silver, platinum or a base metal alloy, the visual impact was essentially the same. Gold may be manipulated by alloying to produce a range of colours namely white, yellow, red and green but the variations are subtle. Vibrant colours can only be introduced by the incorporation of other materials in a piece of jewellery and it is the range and use of these coloured materials such as gemstones and enamels that are the focus of this paper. But to cover such a vast subject means that only a glimpse of the methods and materials that have been used can be provided. Examples have also been limited to Europe and the ancient civilisation of the Middle East that have most influenced the development of European jewellery.

2. EARLY ADORNMENT

In early societies *'found'* objects such as shells, seeds and coloured stones were used as adornment and examples have been found in graves dating back to 30,000 BC (Phillips, 1996). Necklaces from ancient cities in what is now Iraq illustrate how the materials were fashioned and drilled so that they could be worn. In later periods found objects were augmented by beads fabricated from ceramic and glass. Coloured beads with varying degrees of shaping have continued to be a significant jewellery item over the centuries.

With technological advances metals began to be used extensively. Gold was particularly prized for its colour, immutability and the relative ease with which it could be worked. Highly sophisticated gold jewellery has been excavated from Sumerian tombs dating from 2500 BC in ancient

Iraq. This jewellery also incorporates coloured gemstones such as lapis lazuli, garnet, turquoise and cornelian, which were fashioned into both simple and complex shapes as shown in Figure 1. For example from 3000 BC turquoise beads were combined with garnets and gold. Typically beads were fashioned into biconical shapes but there are also examples of more elaborate gem cutting from Ur where gemstones were cut and polished to set as inlay into metal brooches (Tait, 2006) The gemstones were mostly opaque and surely prized for their intense colours.

The Ancient Egyptians used turquoise, lapis and coral to produce vibrant multi-coloured jewellery and also created beads with similar appearance from glazed composition and faience, Figure 2. As glass became more available in the Egyptian New Kingdom (ca 1567-1085 BC) it was used to imitate natural stones as well as in fine inlay, which could be argued as the precursor to true enamel. Jack Ogden (Ogden, 1982) gives a good overview of ancient sources of metals and gemstones and how they were worked.

3. GREEK AND ROMAN JEWELLERY

Gold working spread around the Eastern Mediterranean and examples of fine gold work are known from Crete, Mycenae and Etruria. The emphasis in this work was in the many sophisticated techniques that were used to embellish the gold surfaces. Gemstones are relatively rare but examples of an early type of dark blue enamel have been found in Mycenaean tombs in Cyprus dating from the thirteenth century BC (Tait, 2006).

Greek jewellery, drawing on this legacy of fine workmanship, is characterised by the use of gold. Only in the Hellenistic period (from 325 BC) is there an increased use of coloured gemstones with fine quality cabochon cut garnets and transparent gems such as amethyst and emerald (Higgins, 2006).

The Roman conquest of the Hellenistic world and establishment of the Empire (27 BC) resulted in jewellery in a similar style with the accent on gold work. But this developed into a much more polychrome style.

The Romans had a particular fondness for emeralds (in crystal form), sapphires and pearls as shown in Figure 3. Mummy portraits show how these items were worn. Almost all the forms of jewellery that are worn in the twenty-first century had their origin in the Roman period. Romano-British jewellery reflects a merging of the 'standard' Roman jewellery with the added influence from the strong Celtic metalworking traditions. In particular colour was incorporated

not only from the example of Roman gemstone use but also from the Celtic technique of enamelling on bronze, Figure 4.

4. ANGLO-SAXON AND BYZANTINE JEWELLERY

The colour palette changed over the centuries and between different cultures. As shown in Figure 5, the Anglo-Saxons produced amazing jewellery featuring red garnets and blue enamel (Care Evans, 1989). The technique of inlaying thin slices of garnet into cells of gold, backed with textured gold foils, is thought to have its origins in Southern Russia around 300 AD and to have spread with migration of the Gothic tribes throughout Western and Northern Europe (Kidd & Webster, 2006). These jewels show a great

sophistication in gem cutting and gold working. In Northern Europe during the ninth and tenth centuries there is an increasing use of silver but in the Eastern Mediterranean the rise of a particular Byzantine style of highly coloured jewels featured gold cloisonné enamelled work, Figure 6.

5. MEDIEVAL JEWELLERY

In the early thirteenth century gold was used to set polished gemstones of different colours in simple brooch forms, which also had a practical purpose. Subsequently goldsmiths demonstrated their skill by creating intricate high-relief gold work which was covered in enamel and enhanced with gemstones. These highly decorative jewels were particularly



(1)



(2)



(3)



(3)



(5)



(6)

Figure 1 - Carved lapis and gold beads from Ur, 2500 BC.

Figure 2 - Collar of glazed composition beads from Egypt, 2020 BC.

Figure 3 - Gold bracelet with emeralds and pearls from Roman Egypt, 1st century AD.

Figure 4 - Copper alloy brooch with red and blue enamel Faversham, UK, 1st-2nd century AD.

Figure 5 - Gold shoulder clasp with garnet inlay and blue enamel Sutton Hoo Treasure England 7th century AD.

Figure 6 - Gold reliquary cross with cloisonné enamel Constantinople, 11th century AD.

All images in Figs 1-7 courtesy of the British Museum, London

Figure 7 - Enamelled gold hat badge with rubies and diamonds Spain or Italy 1526-75.

Figure 8 - Enamelled gold pendant with baroque pearl, pearl drop and emerald Europe late 16th century.



(7)



(8)

Figure 9 - Brooch with diamonds set in silver and Hessonite garnets set in gold Europe ca 1700.

Figure 10 - Base metal earrings with Blue Creeper bird heads England 1872.



(9)



(10)

Figure 11 - Anodised and dyed aluminium earrings Jane Adam ca 1995.

Figure 12 - Heat-coloured titanium neckpiece Lynne Bartlett 2013.



(11)



(12)

All images in Figs 8-10 courtesy of the V&A Museum, London

important as hat badges worn by men, Figure 7. Such magnificent mediaeval jewels were mostly royal status symbols, indications of piety or princely gifts (Somers, 1980). The allegorical

scenes depicted in the chased and engraved gold were embellished with rubies, emeralds, sapphires and diamonds and with fine enamels. Even pendants that incorporated imitation

gemstones are finely enamelled on the reverse. Unusual materials and large gems were particular prized and baroque pearls (Philips, 2000) were often used as the bodies of animals Figure 8. In the early fourteenth century gem cutting became more elaborate and faceted stones started to be used extensively. There are examples of other styles of gem cutting such as amethyst and agate cameos.

Much more information from the fifteenth century onwards can be gleaned from the portraits of the period. Many artists were also jewellery designers and faithfully represented the jewels worn by their sitters. In London we have a fine collection of jewellery from the late sixteenth and early seventeenth centuries in the Cheapside Hoard (Forsyth, 2013). The Hoard includes many finished pieces incorporating enamelled gold chains set with sapphires, emeralds, garnets and diamonds, carved amethysts and emerald earrings and gold rings set with rubies and other gemstones. It also contains many unset gemstones with a particularly large number of cabochon garnets. The range of materials used shows how extensive the trade in coloured gems had become and indicates the popularity of multicoloured jewellery in the period.

6. EIGHTEENTH AND NINETEENTH CENTURY

By the eighteenth century new sources of gemstones, particularly diamonds, emeralds and topazes from S America, were extensively used as in Figure 9. The increased availability and hence reduced price of these gemstones made jewellery more affordable, especially for the growing affluent middle class, and designs and materials became much more subject to changes in fashion. Over the ensuing decades fashionable jewellery veered from almost monochrome, diamond-set designs to multi-coloured, multi-gemstone pieces and this cycling of styles has continued through the twentieth century.

The Victorians used an amazing array of gemstones, enamels and other materials, with rare and unusual species particularly prized Figure 10.

In the late nineteenth century new metals such as platinum and aluminium were increasingly used but both were essentially white metals. The strength of platinum made it an ideal material for 'invisible' settings in which the gemstones played the major role in the design of the piece. Initially the whiteness of the metal and its relative lack of tarnish meant that it was used as a setting for diamonds replacing the mixed gold and silver settings of early diamond-set jewels but designers at the prestige fine jewellery

houses such as Cartier increasingly used multi coloured gemstones.

Aluminium, when it was first produced in the mid-nineteenth century, was treated as a novel material set in gold mounts. The isolation of the pure metal was very difficult and small ingots of the purified metal were shown at the Paris exposition in 1855. It is perhaps not surprising that the modernising nephew of Napoleon Bonaparte, Napoleon III, ordered the fabrication of aluminium utensils and is reported to have eaten from an aluminium plate in preference to a gold one (Venetski, 1969). Other special uses for aluminium included the cap on the top of the Washington Monument which was cast from aluminium in 1884 because of its whiteness and resistance to tarnish (Dix, 1934). The statue of Eros at Piccadilly Circus was cast in aluminium in 1893.

As new processes for aluminium production were developed, the metal became readily available and was used for general construction and the growing aeronautical industry in the twentieth century.

7. TWENTIETH CENTURY

Metals that could be coloured were introduced in the twentieth century.

In 1923 anodising of aluminium was developed to provide protection from corrosion of seaplane parts. The process thickened the natural aluminium oxide layer on the surface to provide a durable hard layer. When first created the thin porous oxide layer on the surface of the metal is very receptive to dyes and a wide range of patterning techniques can be used to produce what is effectively a coloured metal surface. Dyed anodised aluminium jewellery was probably first produced in the USA but of particular note is the work of the UK jeweller, Jane Adam an example of which is shown in Figure 11.

Colours may be bright or subtle and, as the pigments are fixed in the thin adherent oxide layer on the surface of the metal, they are very durable. The lightweight of aluminium and the broad range of decorative possibilities have made it a significant material for the twentieth century jeweller.

An area of colour that has not been covered so far is patination. Examples exist from antiquity of metal sculptures that have been coloured in this way and historic armour used 'bluing' to provide multicoloured surface decoration (Tellez, 2011). However, as much historic jewellery has been buried, it is often not possible, even if the underlying metal has survived, to be sure if the whole surface was coloured.

The twentieth century saw the introduction of a new metal, titanium, whose colour could be said to be produced by a form of patination, i.e.

oxidation. Industry values titanium for its unique combination of high strength and low weight, and although this has been exploited by a few designer/makers, it is titanium's colour potential that most attracted jewellers to the material and led to its expanding usage through the 1970s and 1980s. The thin oxide layer produced on the surface of the metal by heat or anodising resulted in a wide range of interference colours. Various ways of preventing oxygen reaching the surface by masking were used to produce stunning optical effects. Research has established (Bartlett, 2009) that the use of titanium for designed jewellery was a technical innovation, pioneered in the UK and instigated by the titanium metal producers.

Early users of titanium tended to use coloured pieces in a similar way to gemstones by setting them in silver frames or fixing them with silver pins. However the strength of titanium meant that very thin sections could be cut as integral pins. Its biocompatibility also meant that integral ear wires could be produced without the problems that have been associated with the use of non-precious metals for such a purpose.

One of the pioneer jewellers who first used titanium at Birmingham (1965-1968) was Ann Marie Shillito. The first identifiable piece of designed titanium jewellery is a belt buckle. Another artist of note in the early decorative use of titanium was Pietro Pedeferra, a University researcher in electrochemistry in Milan, he was inspired by the colour possibilities of the metal to produce wonderful compositions on titanium. In this case he used flat sheets of titanium as a canvas.

By the early 1970s titanium had become a regular product used in Jewellery courses. However its popularity peaked in the late 1980s and it is only in recent years that its use has been revived, Figure 12.

8. CONCLUSION

This rapid survey has provided an outline of various materials and methods that have been used to incorporate colour into jewellery over many centuries. Jewellers have been shown to readily incorporate new materials and exploit new sources of valued gemstones as they become available while building on the legacy from previous periods. Precious metals and gemstones continue to provide the most desired raw materials for the manufacture of jewellery but whatever the material, colour continues to be a major factor in jewellery design and new coloured materials are eagerly adopted.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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