

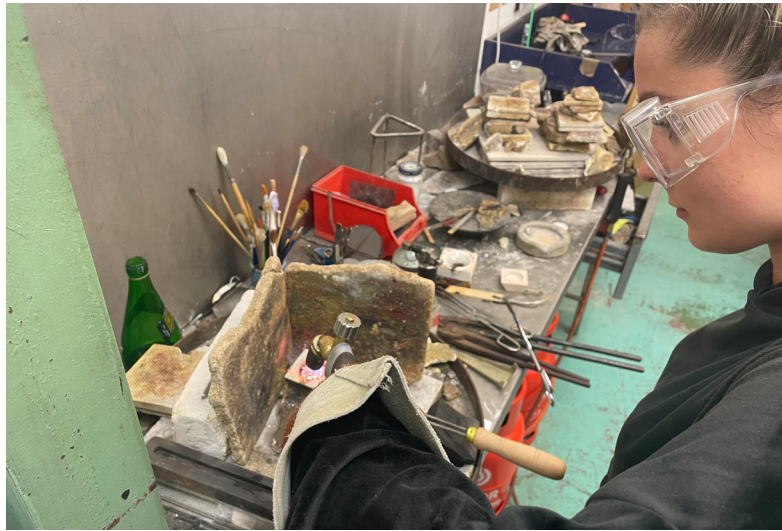
INCORPORATION OF HAMMERMEN OF EDINBURGH

Charter Granted 1483

Hammermen Award for Edinburgh College of Art

Jewellery & Silversmithing graduate 2020

Daniela Groza



BACKGROUND:

As part of my 2020 graduate jewellery collection, I developed a body of work entitled “Modern Venus”. The ethos behind the pieces revolved around creating inclusive jewellery that match all skin tones and speak of important feminist matters. Ideas of self-love, diversity and the cherishment of bodily imperfections were portrayed using mixed metals (yellow gold, silver, red gold, etc) alongside a Japanese technique called Mokume-gane. This approach consists of blending and laminating different metal alloys to create marbled patterns on the metal surface.

Given the impact of the Covid19 pandemic and the workshop closure, at the time of applying for The Incorporation Of Hammermen Award I only had a few metal prototypes and mostly digital designs. Nevertheless, this past year I had the chance to be an Artist in Residence at The Precious Metals Workshop in Edinburgh, ran by Ethical Goldsmith Ian Nicholson, where I had my own workshop space and have successfully managed to make my jewellery designs reality. There, I refined my making skills and incorporated the Mokume-gane technique into finished jewellery items. I also experimented with recycling some of my family 9ct gold heirlooms.

Here is a video from July 2021 detailing my work and techniques developed up to then: [CLICK HERE](#)
Website: [CLICK HERE](#)

AIMS:

The choice of taking the Mixed Metals Workshop by Patrick Davison was intended to expand upon my knowledge of using different metal alloys together with the aim of obtaining beautifully intricate patterns on the metal surface. The objective was to feel inspired by Davison’s fascinating works and to become aware of different approaches he used for making his pieces, being provided with tips on better ways of working, manipulating the alloys more efficiently and getting desired pattern results.

COVID IMPLICATIONS:

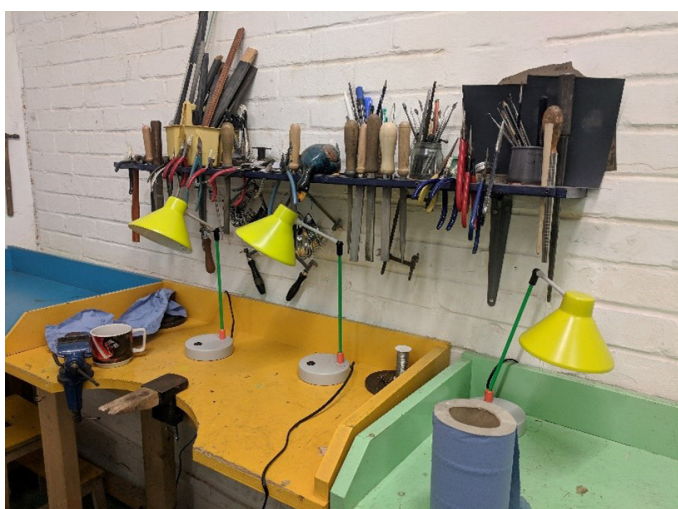
Initially, the class was intended to take place in the beautiful city of Florence, Italy, at Alchimia School of Jewellery. I had visited Florence before, but I had always wished to go to Alchimia, after having heard wonderful things about their reputable courses hosted by some of the most highly skilled craftsmen worldwide. The workshop was intended to take place in October 2020, but due to Covid19 it was postponed for January 2021. The second date was unfortunately also cancelled.

This situation made me rethink my options. I got in touch with Patrick Davison expressing my interest in the workshop and kindly asking for alternatives. He offered to do the workshop in London as he was aware of my moving to the city and he was also based in the area. After some months of pondering, we managed to set the workshop dates as follows: 22-23rd of September.

However, a great benefit of this workshop was that it turned out being one-on-one instead of a group class, as it would have been in Florence. This way, I got the chance to make more prototypes than normal and to ask all my desired questions.

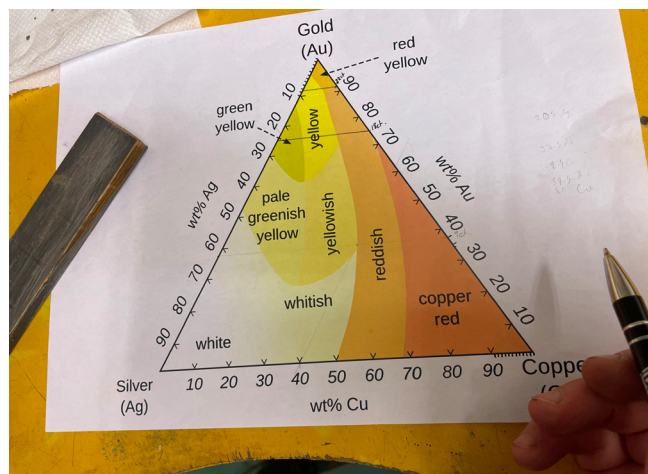
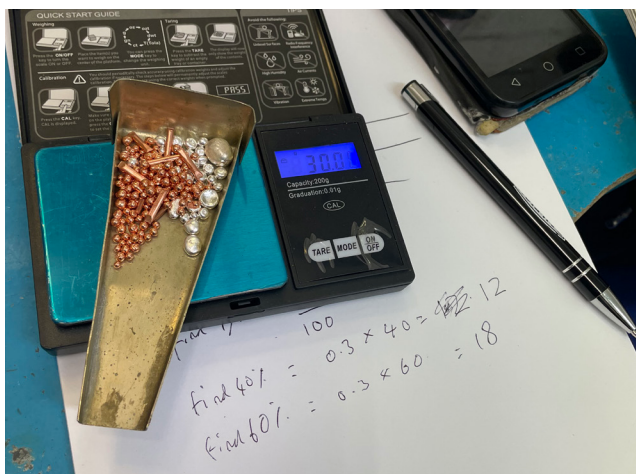
LOCATION:

Davison also suggested the workshop takes place at Made By Ore studio, space ran by jeweller Lucie Gledhill near Blackhorse Road station in North-East London, about 1 hour commute from the area I am based in. The commute was well connected via trains and so it was just ideal. The workshop was spacious and fully equipped. I also had the chance to meet a few jewellery students working alongside some accomplished jewellers, assisting with their work for the famous Goldsmith's fair, where I dream to exhibit one day.



TECHNIQUES & MAKING PROCESS:

Day 1 of the workshop started off with a summary of how different carats of gold are produced by altering the percentage of copper and silver that is mixed with pure gold. For example, the UK hallmarking system is done in a very logical manner: 9ct gold is hallmarked as 375, meaning that this type of gold contains only 37% pure gold, the remaining constituent being copper, silver, zinc or palladium. Similarly, 18ct gold hallmarked as 750 is made up of 75% pure gold, 12.5% Copper and 12.5% Silver. However, 24ct gold is considered the same as fine/pure gold. I was asked by Davison to buy 5 grams of pure gold for this class, my first ever ingot purchased. I was introduced to a diagram illustrating how different percentages of copper, silver and pure gold can be combined to get different colour results. We started off by mixing 60% copper with 40% of silver, which based on the diagram would result in a pinkish-yellowish alloy, that we then turned into a sheet material as seen below.



We also made a different sample this time using 80% copper and 20% silver, with the outcome of a coppery alloy with silver reflections from which we drew down some wire.

Using some 9ct gold family heirlooms such as chains and rings, we also melted them down into ingots that can be used in my future projects.

One of my favourite colour results was a greenish gold obtained from combining 75% pure gold with 25% silver, resulting in a 18ct gold alloy.

See the experiments just presented pictured below.



In order to find out how many grams of each metal percentage need to be used, the size in grams of the final ingot needs to be determined. For example, if I want to create a piece weighing 10 grams made from 18ct green gold to do so I need to make the following calculations:

Find % = $10/100 = 0.1$

Find 25% Ag = $0.1 \times 25 = 2.5 \text{ g}$

Find 75% Au = $0.1 \times 75 = 7.5 \text{ g}$

Therefore, to obtain a green 18ct gold weighing 10 g, we need to add 2.5 g Ag and 7.5 g Au.

Patrick Davison also advised that when weighing the metals, the less precious metal should be added first because gold has a higher density and therefore weighs more, this therefore reduces gold waste.

For the making of the above, metal scrap/grain is used and weighed on a scale. This is then fused in a crucible. When the metal is molten it is poured hot into a steel ingot mould. The result is instant, the ingot being instantly ready. The cast metal is left to cool down naturally for around 15 minutes. A tip for red/rose gold given by Davison is that it always needs to be quenched, immediately after heating. If red/rose gold is left to cool down naturally, it can become too brittle to work with and form cracks.

While doing the casting process, I was given a series of valuable tips that I never thought of before which made the process more fast and smooth:

- the steel ingot mould for casting must be lightly heated inside using a candle before the casting process begins
- the crucible must be heated before the metal is put in it, until it has turned red
- when the metal is inserted in the crucible, it has to be covered in a layer of a thick powder flux, for the metal to be as clean as possible making it easier to melt.

After the desired ingots have been produced, it is time to think about their further shape we want it to take. For sheet, the ingot needs to be hammered and rolled down until the desired thickness is obtained. When inserted in the rolling mill, for the ingot to become a neatly formed sheet it should not be put in and rolled straight. The piece of metal should be tilted sideways, left and then right, constantly alternated when introduced into the rolling mill.

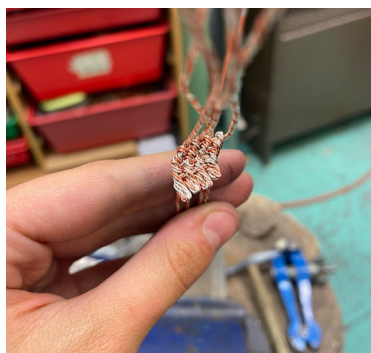
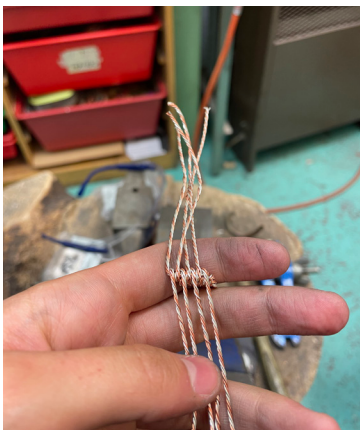
For the making of wire, the metal is drawn down using specific steel plates depending on the desired wire shape (round, square, triangular, etc) until the desired thickness is resulted. A valuable tip learnt during the course is that metals can be rolled/drawn down up to at least 50%, becoming double in size, only then being the time to anneal and pickle them again until they can be further reworked.



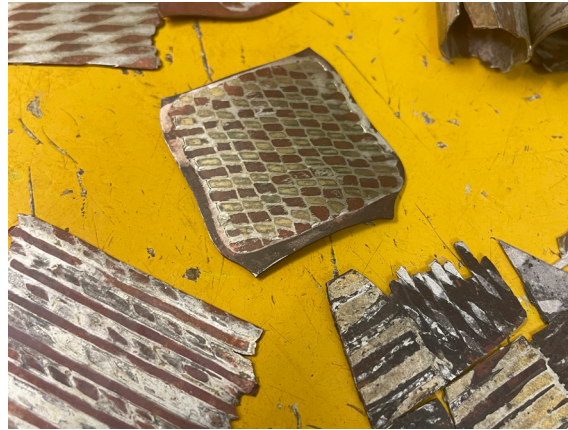
Day 2 of the workshop involved learning Patrick Davison's speciality technique of knitting. This was done using a variety of different wires that we had drawn down, focusing on mixing varied colours. To start with, 2 wires of alternating colours are twisted together using a hand twister that works by turning a handle constantly until the 2 wires become twisted together neatly. Once happy with the overall look and tightness of the wires, they are snipped at both ends tidily.

This wire piece is then heated gently by slowly adding solder pieces, guiding the flame from one end to the other. Four wires containing 2 alternating wires of different colours were made in this way. They were then bend midway and fixed in a vice allowing for the knitting process to begin. Depending on the desired thickness of the sheet end goal more wires can be used to widen the piece.

This knitting method is the same as the one used for scarves. The wires are knitted by being held in a vice. After every 4 rows are knitted, the piece is taken out and hammered on top, keeping the wires as tight and close together as possible. Once the desired length is achieved, a knot is created at the end of the last row so that the work does not come apart. After this, the piece is fused with solder that is melted all around it. After the piece has been quenched, it is hammered, this being how the metal is turned into sheet. An interesting tip was that for soldering to be done more easily, solder wire can be used in the knitting process, this way, when the piece is fused the solder wire melts and fuses the piece together.



PROTOTYPES:



CHALLENGES:

The biggest challenge I have overcome by doing this workshop was my fear of pouring the metal in the mould too soon, when it is not hot enough. The tips explained above regarding efficiently melting metal have really been a game-changer allowing me to work in a more effortless manner.

The knitting technique learnt had to be done as tightly as possible or else, the gaps in between the wires could become holes in the final metal sheet. It has been tricky understanding this part and been made clear that it all takes practice.

The technique presented above is only a small part of what can be done with mixed metals. It is up to me to find other creative alternatives for it in the future by using the wires in different ways. For example, another way would be soldering the twisted wires together and then rolling them, this creating a very different outcome than the knitting technique.

WORKING WITH PATRICK DAVISON:

Working with Patrick Davison has been very eye opening and I am thankful for the chance to have gotten a one on one workshop where I was able to learn about new ways of working and obtain valuable insights. He has been so open and easy to approach with questions. I also had the chance to discuss with him ways of succeeding in the field of jewellery and tips for approaching jewellers or potential companies I would like to work for. He has also shared his experience starting off and and besides his techniques he has really shared some of his important life lessons that have got him to where he is today.

COST BREAKDOWN:

- Travel: 50 GBP
- Materials such as 5g pure gold ingot, fine silver grain, solder tools: 500 GBP
- Cost of Workshop + rental of space: 600 GBP
- The costs have been significantly lower than initially predicted given that going to Florence would have also consisted in the purchase of a flight, accommodation, although the remaining sum of 850 GBP will be put towards the purchase of a few more professional pieces of equipment that I was missing during the workshop: surgical forceps, powder borax, hand dremel, crucible, hammers, alongside the purchase of fine gold that will be a significantly higher amount than the one experimented with during the workshop.