



2014 Manufacturing Skills Australia Overseas Fellowship Report

# Jewellery Manufacturing Futures

**Halina Kaufman**

**An ISS Institute Fellowship sponsored by**

Funded by Manufacturing Skills Australia



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Published by International Specialised Skills Institute, Melbourne

Published on [www.issinstitute.org.au](http://www.issinstitute.org.au)

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## i. EXECUTIVE SUMMARY

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Currently in Australia the training opportunities for jewellers wishing to develop their technical skills in advanced setting or engraving through further training are quite minimal. The Certificate III in Jewellery Manufacturing course (MEM 30605) for indentured apprentices covers the basics of these skills but there are no courses teaching engraving or advanced setting and pave using a microscope and pneumatic hand-piece. This has created a deficit of highly skilled engravers and setters within Australia, with very low numbers being trained each year.

It is important to promote national awareness of the superior quality of local hand crafted jewellery and to influence consumer practice away from the increasing trend of purchasing cheap imported jewellery online. Online internet buying has become a serious problem in the industry; with poor quality diamonds and gold flooding the market, and falsified grading reports accompanying internet and overseas sales becoming more common. The industry needs to ensure that Australian jewellers are adequately skilled and the best training options are available to maintain a niche market in local jewellery manufacturing thriving.

In June 2014 Halina Kaufman undertook intensive two-week training in hand engraving with Sam Alfano in Louisiana (United States of America). Kaufman then travelled to Utrecht (The Netherlands) to JURA's Training Centre, where she completed his course on Advanced Micro-Pave Diamond Setting. Both trainers work with a microscope and pneumatic hand-piece and use video output to show the work being demonstrated under the microscope.

Kaufman aims to continue to develop her skills using the microscope and pneumatic hand-pieces for engraving, setting and other jewellery manufacturing applications. Kaufman intends building upon her competency in these areas until she is at a level sufficient to transfer these skills and provide much needed training to current and emerging jewellers in Australia. Kaufman anticipates that this knowledge transfer will create industry development and training opportunities for jewellers who otherwise would not have the opportunity to learn or enhance these technical skills.

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## ii. ABBREVIATIONS/ACRONYMS

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<b>BBM</b>	Big Brother Movement
<b>CAD</b>	Computer Aided Design
<b>GSGA</b>	Gold and Silversmiths Guild of Australia
<b>ISS Institute</b>	International Specialised Skills Institute
<b>JAA</b>	Jewellers Association of Australia
<b>MP</b>	Melbourne Polytechnic (formerly NMIT, Northern Melbourne Institute of Technology)
<b>MSA</b>	Manufacturing Skills Australia
<b>MP</b>	Melbourne Polytechnic (formerly Northern Melbourne Institute of TAFE)

## iii. DEFINITIONS

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### **Computer Aided Design**

Computer programs for designing jewellery which can then be produced in wax and cast.

### **Graver**

Hardened steel or carbide tool which comes in varying shapes and degrees for engraving into metals.

### **GraverMax**

The air powered hand engraving tool manufactured by GRS tools.

### **GRS**

American company that produces tools for engravers and setters.

### **Meiji**

A Japanese brand of microscope.

### **Micro-pave**

Pave setting using diamonds so small that a microscope is needed to create the claws between the stones for setting.

### **Pave**

A style of setting stones, where many small stones are all set very closely together creating a sparkling surface covered in stones.

### **Power hone**

Sharpening system manufactured by GRS Tools for re-shaping and sharpening of gravers.

### **Pneumatic hand-piece**

A hand-piece that is power assisted using compressed air.

### **Practice plates**

A practice piece made using non precious metals such as brass or copper for training purposes.

### **Stone lay-outs**

Various formations that stones can be placed in which will create different patterns.

# 1. ACKNOWLEDGEMENTS

Halina Kaufman thanks the following individuals and organisations that have generously given of their time and their expertise to assist, advise and guide her through this Fellowship program.

## Awarding Body – International Specialised Skills Institute (ISS Institute)

The International Specialised Skills Institute (ISS Institute) is an independent, national organisation. In 2015 it is celebrating twenty-five (25) years working with Australian governments, industry education institutions and individuals to enable them to gain enhanced skills, knowledge and experience in traditional trades, professions and leading edge technologies.

At the heart of the ISS Institute are our individual Fellows. Under the Overseas Applied Research Fellowship Program the Fellows travel overseas. Upon their return, they are required to pass on what they have learnt by:

- Preparing a detailed report for distribution to government departments, industry and educational institutions
- Recommending improvements to accredited educational courses
- Delivering training activities including workshops, conferences and forums.

Over 300 Australians have received Fellowships, across many industry sectors. In addition, recognised experts from overseas conduct training activities and events. To date, 25 leaders in their field have shared their expertise in Australia.

According to Skills Australia's 'Australian Workforce Futures: A National Workforce Development Strategy 2010'.

*Australia requires a highly skilled population to maintain and improve our economic position in the face of increasing global competition, and to have the skills to adapt to the introduction of new technology and rapid change. International and Australian research indicates we need a deeper level of skills than currently exists in the Australian labour market to lift productivity. We need a workforce in which more people have skills and knowledge, but also multiple and higher level skills and qualifications. Deepening skills and knowledge across all occupations is crucial to achieving long-term productivity growth. It also reflects the recent trend for jobs to become more complex and the consequent increased demand for higher-level skills. This trend is projected to continue regardless of whether we experience strong or weak economic growth in the future. Future environmental challenges will also create demand for more sustainability related skills and knowledge across a range of industries and occupations.*

In this context, the ISS Institute works with our Fellows, industry and government to identify specific skills and knowledge in Australia that require enhancing, where accredited courses are not available through Australian higher education institutions or other Registered Training Organisations. The Fellows' overseas experience sees them broadening and deepening their own professional knowledge, which they then share with their peers, industry and government upon their return. This is the focus of the ISS Institute's work.

For further information on our Fellows and our work see <http://www.issinstitute.org.au>.

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## 1. ACKNOWLEDGEMENTS

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### Fellowship Sponsor: Manufacturing Skills Australia (MSA)

Kaufman particularly thanks to Bob Paton, the CEO of Manufacturing Skills Australia, for recognising Kaufman's passion for jewellery manufacturing and skill progression and supported her goals for training overseas by providing funding support for this special award.

### Supporters

- Andrew Rose, Program Coordinator, Jewellery Department, Northern Metropolitan Institute of Technology (NMIT) (now Melbourne Polytechnic)
- Darren May, State Manager, Palloys (Jewellery Manufacturer), Perth WA
- Desma Noble, National Council Member, Gold and Silversmiths Guild
- Ian Haddasin, CEO, Jewellers Association of Australia
- Rachel Sullivan, Chairperson, WorldSkills Tasmania
- Leone Scrivener, Halina Kaufman's Grandmother

### Employer Support

- Tony Harrison, Owner, For the Love of Gold - Jewellery

### Organisations Impacted by the Fellowship

- Jewellers Association of Australia
- Gold and Silversmith Guild of Australia
- TAFE Institutions offering Jewellery courses

### Trainers

This Fellowship would not have been possible if not for the wonderful people willing to teach their skills. The Fellow would like to acknowledge both of these highly talented people and their families.

- Sam Alfano, Master Engraver, Louisiana, USA
- JURA, Owner - JURA Training Centre, and Diaset BV



## 2. ABOUT THE FELLOW

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### **Name**

Halina Kaufman

### **Employment**

For the Love of Gold – Jeweller

### **Qualifications**

Certificate III Jewellery Manufacturing, NMIT - 2008

### **Training**

Le Arti Orafe, Florence, Italy

- Hand engraving
- Stone setting

### **Biography**

Halina Kaufman trained as a jeweller for four years at Joyce Jewellers in Burnie (Tasmania), completing her apprenticeship in 2008. Kaufman has always had a strong interest in developing her skills and challenging herself. This led Kaufman to be awarded the National Gold Medal at the 2010 WorldSkills Australia National Competition for Jewellery Manufacture. WorldSkills Australia granted Kaufman a scholarship to undertake a team leadership challenge in Wales, United Kingdom. During this overseas visit Kaufman also studied at Le Arti Orafe, a private jewellery school in Florence (Italy), completing a short course in traditional hand engraving techniques and basic stone setting.

Kaufman developed a passion for high quality jewellery manufacturing early in her career and has been a finalist in numerous jewellery design awards. Kaufman has always challenged herself to achieve greater skills and adopt new techniques within her work.

Kaufman continues her involvement with WorldSkills Australia as a national and regional Project Designer and Judge.

### **Industry Awards**

- 2014
  - » International Specialised Skills Institute, Fellowship
  - » Jewellers Association of Australia (JAA) Design Awards, Finalist
  - » WorldSkills Australia (National Competition), Project Designer and Judge
- 2013
  - » Worldskills Australia (Regional Competition), Project Designer
  - » Diamond Design Awards, Participant
- 2012
  - » Worldskills Australia (National), Judge
  - » JAA Design Awards, Finalist

## 2. ABOUT THE FELLOW

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- 2011
  - » Big Brother Movement Scholarship, Team Leadership Challenge (United Kingdom)
- 2010
  - » JAA Design Awards, Participant
  - » WorldSkills Australia (National Competition) – Jewellery Category, Gold Medallist
- 2009
  - » WorldSkills Australia (Regional Competition) – Jewellery Category, Gold Medallist
- 2008
  - » WorldSkills Australia (National Competition) – Jewellery Category, Participant
  - » Peter W Beck Design Awards, Participant
- 2007
  - » World Skills Regional Competition – Jewellery Category, Gold Medallist
  - » Showcase Design Awards, Finalist
- 2006
  - » JAA Design Awards, Finalist

## 3. AIM OF THE FELLOWSHIP PROGRAM

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The Fellowship provided Kaufman the opportunity to complete training in hand engraving and advanced micro-pave techniques using new technology, in particular:

- Set-up and use of a microscope
- Set-up and use of pneumatic hand-piece
- Graver sharpening systems
- Hand engraving techniques
- Advanced micro-pave techniques.

## 4. THE AUSTRALIAN CONTEXT

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Jewellery manufacturing is a very old traditional skill that has existed for centuries. Adorning ourselves with different forms of jewellery was one of the first ways that humans chose to express themselves. Since then, the art and skills in jewellery manufacture have developed significantly; resulting in the incredible industry it is today. New technologies are currently creating considerable changes within the industry; with traditional hand manufacturing techniques now being overtaken by Computer Aided Design, wax printing and casting processes. This means that the hand manufacturing of quality jewellery items has become a niche market for clients who value the personalised process involved in creating an heirloom or bespoke piece.

Kaufman believes that, despite the increasing popularity of new technologies, there is a significant training gap in the Australian jewellery industry for highly skilled engravers and diamond setters to learn to use new equipment and techniques efficiently. Within Australia the number of jewellery apprentices is in serious decline; meaning that there are fewer skilled jewellery manufacturers joining the industry every year. In some states the first year jewellery apprenticeship intake for 2014 was as low as two students; 1(2014 State of Training Report) a critical situation necessitating evaluation of the way that jewellery training is delivered. The Australian TAFE Institutes and the jewellery industry organisations are currently working together to develop new methods for the training of qualified jewellers. This situation is outlined in the 2014 State of Training Report prepared by Australian TAFE jewellery departments, and included as Appendix 9 at the conclusion of this report.

It is important that there are highly qualified jewellers who have these advanced specialised skills and in situations where their skills can be passed on to apprentices. Kaufman believes that Australia has a market for highly skilled jewellers within the manufacturing industry and, to keep this niche- market thriving, it is important to show Australia and the world that we can produce high-end, top quality pieces of jewellery. Online internet buying has become a serious problem in the industry; with poor quality diamonds and gold flooding the market, and falsified grading reports accompanying internet and overseas sales becoming more common. Given that Australia produces high quality Argyle diamonds, Australian sapphires and the best gem grade opal in the world, we have every opportunity to compete with some of the finest jewellery producers in the world. Without the highest skills in local jewellers we cannot reap these opportunities and reach this local and global potential. Computer Aided Design (CAD) technology is becoming ever more popular around the world, but even CAD is unable to produce beautiful engraving due to the procedures involved in making an item using CAD processes. There are some areas of manufacturing that still need to be completed by hand to achieve top quality jewellery finishes.

It is this standard of finishing and quality that sets high-end hand-made jewellery manufacturers apart from, generally mass produced, CAD jewellery.

## 4. THE AUSTRALIAN CONTEXT

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### SWOT Analysis

#### Strengths

- Using a microscope allows for finer and more accurate work than is achievable with the naked eye or 10 X magnification.
- Using a microscope reduces eye-strain and promotes better body posture.
- Use of pneumatic hand-pieces allow for expedited learning in engraving and setting.
- Use of pneumatic hand-pieces improves the quality of work and finishes.

#### Weaknesses

- Limited microscope and pneumatic hand-piece utilisation training opportunities in Australia.
- Lack of mentors, skilled in the use of microscope and pneumatic hand-pieces for jewellery production, in Australia.
- Limited availability of these tools within Australia.
- Cost of equipment creates a pricing disadvantage between Australia and overseas production.
- Larger space, to accommodate the size of these tools, needed within the workshop.
- An unwillingness to share skills within industry.

#### Opportunities

- Enabling Australian jewellers a chance to learn new technology.
- Provision of future training options for current and emerging Australian jewellers.
- Providing an edge over competitors.
- Reducing the need to out-source specific jewellery techniques overseas.
- Increased number of local skilled jewellers available to mentor others in use of these jewellery techniques.
- Encouraging higher standards of work amongst industry members.
- Broadening the skills of current and emerging jewellers in Australia.

#### Threats

- Mass production techniques can lower the quality of work.
- Microscope and pneumatic hand-piece techniques result in better quality jewellery products, these approaches are slower than other techniques and may result in slower output.
- Jewellers using more time-consuming and more expensive hand-made techniques may be disadvantaged by competitors using equipment that can more swiftly replicate cheaper products.
- By not offering local training opportunities in modern hand-made jewellery technologies, the Australian industry risks being at a technological disadvantage to competitors overseas.
- Without advancements and ongoing invigoration of the Australian jewellery industry, we will likely see an increase in cheap imports flooding the market.

## 5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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There is a significant training gap within Australia for jewellers wishing to further their skill development in hand engraving or setting. In order to explore these techniques and identify their applicability to the Australian context the skill enhancement areas investigated during this Fellowship were:

- Hand engraving
- Advanced micro-pave diamond setting
- Set up and use of microscope, pneumatic hand-piece and sharpening systems for increased accuracy, productivity and learning of these skills.

The Fellow undertook specific overseas training in hand engraving and micro-pave techniques to broaden her skills and identify means by which these could be utilised within the Australian jewellery industry.

### **Hand engraving training:**

Private instruction on hand engraving jewellery techniques were undertaken with Sam Alfano, a Master Engraver, at his home studio in Louisiana (U.S.A). A personalised training program focusing on specific jewellery engraving techniques took place during this time. This training enabled the Fellow to develop a broad range of the relevant skills for jewellery engraving which will provide the foundation for expedited learning in this art. This training also facilitated an opportunity for the Fellow to practice use of a microscope, pneumatic hand-piece and sharpening system; approaches that are growing in popularity but lack associated training options in Australia.

### **Micro-pave training:**

A one-week training course in micro-pave was undertaken with JURA, a Netherlands-based world leading trainer who develops high-end jewellery tools and trains jewellers in use of these. During this training the Fellow had the opportunity to use JURA's specially designed tools for micro setting and learn ways of making tools used for setting, drills, beadlers and stone pushers. This training enabled the Fellow an opportunity to produce practice plates with commonly used stone lay-outs using a microscope and pneumatic handpiece.

# 6. THE INTERNATIONAL EXPERIENCE

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## Destination 1: Covington, Louisiana, USA

**Contact:** Sam Alfano (Master Engraver)

### Objective:

Complete an intensive two-week private training course in hand engraving, tailored specifically to suit jewellery skill requirements, using a microscope and pneumatic handpiece.

### Outcomes:

The Fellow developed skills in an array of areas during the training course, all of which are outlined in detail below.

### Line engraving

Most of the engraving that was covered during the course used a 120 degree graver. This angle cuts a fine line and, with only a small movement to either side, can create a bright cut that is much more pleasing and characteristic than a straight 'up and down' cut.

The first cuts to be learned are curved lines, and are actually easier to cut than straight ones. Learning to cut curved lines also teaches the student how to turn the piece of work into the graver.

Cutting straight lines is harder than it would seem. It actually requires minute up and down movement of the graver to keep a consistent and even depth, otherwise the tool seeks to dig in too deep or slip out and cut too fine. To achieve the best results when engraving a straight line, the jeweller must cut to the scribed line and not on it. It is much easier to deviate when cutting on the scribed line, whereas if you cut to the line you have a constant guide. Straight lines are very unforgiving and any variations in depth or width are easily noticeable.

The next line engraving technique covered during the training was the cutting of a simple leaf pattern. The purpose of cutting a leaf pattern is to enable the student to learn how to control the graver and guide it around a pattern. When using a pneumatic hand-piece with a foot pedal it is only a matter of taking the foot off the pedal to cease the cutting. If more power is used the tool will move more quickly and cut deeper into the metal. The next step to basic outline cutting is learning to slightly roll the 120 degree graver to the inside of the element (the pattern being produced) to widen the cut and give it more life and character. A wider line, which is different to a deeper cut, will catch the light to a greater degree than a fine line.

### Borders

Bordering is often used in engraving and is an attractive way to decorate the side or shank (The band section that supports the central settings and goes around the finger) of a ring. Borders are a series of simple repetitive cuts that create a pleasing pattern. The 'running leaf border' is a commonly used decorative border (which is a continuous pattern that appears to be leaves growing from within each other in a line) as it can fit into narrow spaces, which is very effective for jewellery engraving.

### Lettering

Lettering is considered the 'bread and butter' of the hand engraver. During her training the Fellow practiced three different styles - bright cutting, ribbon cutting and stippled lettering. Decorative letter engraving is effected using same principal as calligraphy; where a letter of the alphabet would have wide strokes in calligraphy, in engraving the lines are widened.

## 6. THE INTERNATIONAL EXPERIENCE

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When bright cutting, the graver is used to create a wide bright cut that leads to the formation of the wider section of the letter. When bright cutting a series of cuts are used that allow the engraver to complete the whole alphabet, using only these cuts and joining lines (known as 'hairlines'). Bright cutting is underpinned by guidelines that need to be followed in order for this technique to be implemented correctly. Ribbon cutting is a method of achieving wide shade strokes in script lettering, whereby three or four lines are placed very close to each other. In stippled lettering the outlines of the widened section are engraved and the inside is stippled to appear black.

Each of these techniques result in very different looks, take varying lengths of time and require different engraving skill levels; and as such the selection of a technique may be influenced by the length of time it will take to complete.

### Scrolls

Scrolls are frequently seen in engraving as they are the basis for firearms engraving and, when done well, are very beautiful. Although artists may create their own designs and styles, there is a set of rules to follow that facilitate consistently appealing scroll designs.

Scrolls are like a living aspect; they grow from somewhere or from themselves, always flowing in the one direction and are loosely based on a highly stylized acanthus leaf. The 'golden spiral' is the rule to follow when drawing the spiral back bones as these are the main structure of the scroll before detailed elements are added to fill spaces. It is important to start engraving scrolls by learning the basic leaf structures and develop from there, with leaf elements able to become more interesting by adding leaf fold-overs and overlapping elements.

To be a truly great engraver requires creativity and drawing skills, although it is possible to be a very efficient engraver without such skills. However, it is this difference that collectors look for in work. Drawing scrolls requires an understanding of the scroll and the leaf elements that decorate it, and there needs to be an even consistency to the foreground and background elements to create balance. Studying other engravers' works can assist aspiring artists to learn the different ways certain areas and elements are dealt with to create this balance. There are also a handful of instructional books and DVDs that can assist learners to develop these skills.

### Shading

Shading is the shading lines inside the individual leaf and scroll elements, as well as a good definition between the foreground and background, which really enable a design come to life. Shading is an essential part of scroll design as the shading will define overlapping sections, break up wide elements, and create flow and direction in the design. Shading also makes each element more interesting and realistic.

Learning to shade lines can be quite difficult to learn. Not only must the student learn correct placement of the shading lines, and how different placement can create very different looks within the leaf elements, but the student must also learn how to cut them using the graver. Graver control is very important for shading. The shading lines need to start out as a very fine line, then slowly become deeper and wider so as to create the look of white through grey and then black. The lines must have correct placement in relation to the edge of the element being shaded, as well as in relation to each of the shading lines. The lines must have uniform spacing, gentle gradient through thin to thick, and curve nicely to complement and flow with the design. Fine crossing lines can also be added to make an area particularly dark; with this especially useful to define an area that is behind an overlapping element, such as a leaf or scroll cross over.



## 6. THE INTERNATIONAL EXPERIENCE

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When shading there a much accuracy and practice required. The amount of shading lines used on a design will depend on the job and how much the client is willing to pay. More often fewer lines are seen as this is quicker and cheaper to execute.

### Relief engraving / background removal

There are a few ways to effectively manage background spaces when engraving. Background spaces need to be stippled and blackened or removed and then blackened to make the engraved elements come to the foreground of the piece. Doing so allows the piece to stand out and create definition between the two areas.

The background can be stippled so that the whole area is darkened. When doing this it is very important that the entire surface area is covered and no spots are left un-stippled. Failing to do so will result in the area not having a consistent black area. This process, which was once quite time consuming when done with a punch and hammer, is much quicker to execute using a pneumatic handpiece. The tool that applies the stippled effect is sharpened to a very sharp point so the stippled dots are very tiny and create a nice deep dark stippled area without large noticeable individual dots.

The background can also be removed so that it is cut in relief; an approach that requires considerable skill and graver control, as well as knowledge of sharpening gravers and heels to avoid damaging the side wall of the engraving that is being cut around. To cut in relief the engraver must initially cut around the outside of the design quite deeply, being careful not to damage the lines already cut or to overcut the lines and damage the design. The engraver must then continue cutting deeper for approximately three or four cuts, being constantly aware of the heel to ensure it is not leaving ragged heel drag marks across the attractive deep surfaces that have been cut. Once the outline has been very carefully cut to an appropriate depth, approximately half a millimetre depending on the job, the remaining background material can be removed. This can also be done in various ways, but the fastest way is through use of a very small round burr 0.5mm in a micro-motor. Once the entire background material has been removed, the side walls of the raised, engraved section can be cleaned up and bright cut before stippling the removed surface. Once removed and stippled the engraving will have a nice contrast between the foreground and background areas. This type of finish is considered more valuable due to the time and skill required to execute.

### Sculpted Engraving

Sculpted engraving is generally considered the finest style of engraving and, consequently, is also one of the most expensive types. This style differs greatly from engravings that use shaded lines to show shape and depth.

Sculpted engravings see the background removed, in the same manner used when relief engraving, so that the piece is left raised in the centre and the entire surrounding area removed in deep relief. Once the background is removed the scroll or leaf pattern is sculpted to allow the piece show life, character and form. The pattern is created using punches that press and push the metal around; starting in one section of the design and maintaining a consistent slow movement of the punch to form the metal into the desired shape. Rounding the edges of the design creates the look of a rounded stem emerging from the background. When addressing wider sections it can help to study the high and low spots on a real leaf to assist in identifying sections where metal should be beaten down and sections that should be raised.

Sculpted engraving is exactly as it suggests, miniature sculpting in metal for engraving purposes. It is very beautiful and the surface can be left rough with small hammer marks showing where the tool has been. Indeed, this is how Alfano prefers to like to leave his mark on pieces, whereas other engraving

## 6. THE INTERNATIONAL EXPERIENCE

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artists may elect to leave the surface smooth and polished. Every engraver develops their own design style and personal traits; little details that make it possible to separate one artist from another. These traits may show through in the way they accomplish their scroll designs, certain ways they execute cuts, choice of tools and many other defining points.

### Bullino

Bullino engraving is the ancient Italian style of engraving, and is executed using thousands of tiny dots rather than lines. The number of dots, their proximity and their depth allow the engraver to create all shades of black, grey and white. This style is used to achieve the incredible pictorial scenes that adorn firearms and knives. It is very delicate engraving and one accidental scratch can destroy many, many hours of work. It is the slowest style to execute, requiring drawing abilities as well as sound graver control. Study of Bullino work highlights that that very accomplished artists are able to depict full landscape scenes in the background; for example a lion scene will show the full African savannah behind the lion.

### In-lays and overlays

In-lays are another way by which the quality of an engraver's work is judged and generally 22ct gold is used because of its softness and beautiful colour. An inlay is exactly as it sounds, an area of metal that is laid into the surface of the surrounding material.

When completing an in-lay, firstly the parent metal needs to be prepared. For example, if a straight line border was to be in-laid the process would involve the cutting of two lines a tiny bit narrower than the piece of wire to be in-laid; with the cuts deepened to approximately two thirds the thickness of the wire.

The next step is to cut the channel using a flat graver that will fit in between the two already cut walls, without widening or damaging the cuts. Once the channel has been cut to the correct dimensions of the wire to be in-laid the walls need to be carefully undercut. Undercutting is done using a flat graver, and involves the careful creation of a groove on either side of the channel wall into which the soft wire metal is forced and secured. This groove then works as a plug so that the wire metal is wider at the base and thus not easily removed. When undercutting, it is important not to damage the original wall as any imperfections in the cut will easily show up in the finished product. Once the channel and groove are prepared for the gold wire, the wire is then laid into the channel resulting in a snug fit. If there is movement between the wire and the side walls a larger piece of wire needs to be used, and it should sit one third above the surface of the area prepared. Using the pneumatic handpiece with a flat punch, where the face has been roughened for grip, the soft metal is then forced down into the channel. It is acceptable if there is some overlapping metal on the outside of the surface, as it can be removed and cleaned up afterwards. Once the length of the channel has had the gold wire forced down into the channel any excess wire from the end must be removed and carefully smoothed, generally using a fine emery paper. The surface over the in-lay must be smoothed with the fine emery paper until the in-laid metal and parent metal are smooth and flush with each other. The piece is ready for engraving once all the in-lay is complete and the surface prepared. If a larger area is being in-laid, in addition to the undercutting, teeth need to be raised onto the bottom surface, to provide a stronger hold. The teeth are made by raising sharp beads into the metal, close together and in opposing directions. Once the softer metal is forced into the area it will shape around the teeth as well as into the undercut groove.

This 'raising teeth' method is also used when creating an overlay. An overlay sees 22ct gold laid over the surface, creating a raised section, which can then be engraved. It is important when creating an overlay that the teeth don't emerge through the top surface of the gold. A typical overlay may be the creation of an animal head or deer antlers on a piece.

## 6. THE INTERNATIONAL EXPERIENCE

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### Design transfer

Good engraving commences with a good design and lay-out and, quite often, the design will need to be transferred from either a drawing or copied so that it is symmetrical or a perfect reverse image. There are many ways to transfer a design and most engravers have developed techniques that work best for him or herself.

One technique involves transfer of a design from a laser printer using acetone. This technique leaves a reverse copy of the image on the metal and is a quick easy way of transferring designs. Another approach is use of transfer wax. An example of this is where an engraver wants to duplicate an exact image of half of their engraved design. In this instance the engraver uses transfer wax and clear sticky tape, rubs a small amount of wax onto their finger and gently taps it over the surface of the design to be copied, careful not to push the wax into the engraved lines. The sticky tape is then carefully laid over the area covered with the transfer wax, upon which the tape is removed and the copied image should then be clearly visible. The tape is then placed on to the surface upon which the image is to be copied, the surface is then gently rubbed transferring the wax impression onto the metal. Once the tape has been removed the image should be seen as the areas where there is no wax. This exact same process can also be used if the image requires mirroring, simply by transferring the wax image onto a second piece of tape. By placing this second piece of tape over the first, the image will be left on the metal in reverse. If a good transfer has occurred the engraver will then be able to cut straight over the image, although there may be a need to touch up areas or repeat if necessary. If the image risks being rubbed off when engraving then it can be scribed over before cutting. There are many other ways of design transfer but these were the methods that the Fellow was exposed to during Alfano's training course.

The Fellow recognised Alfano as an excellent teacher possessing a great sense of humour, and found that he and his wife Abigail Alfano were an absolute pleasure to train with. Alfano has worked with some of the best international engravers and jewellers in the industry and his skills and knowledge of engraving are considered by the Fellow (and others) to be truly masterful. Alfano's willingness to share and impart his knowledge through online forums (such as The Engravers Cafe), training at the GRS training centre in Kansas or at his home studio in Louisiana is inspiring and evident of someone keen to keep this art form alive.

## 6. THE INTERNATIONAL EXPERIENCE

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### Destination 2: Utrecht, The Netherlands

**Contact:** JURA, Owner JURA Training Centre and Diaset

(Note that JURA is actually the owner of the JURA Training Centre and the Diaset Company. He simply refers to himself at all times as JURA)

**Objectives:**

Complete JURA's one week Advanced Micro-Pave Diamond Setting training course, using tools specially designed by JURA for micro-pave as well as gain skills in use of a microscope and pneumatic hand-piece.

**Outcomes:**

The Fellow developed skills in an array of areas during the JURA training course, all of which are outlined in detail below.

Setting is the process of seating a stone, such as a diamond or gems into metal and then pushing metal over the stone to secure it in place. There are very many different types and styles of settings. Pavé, a French word meaning pavement, is a style of setting where many little stones are set next to each other with the excess metal removed and then shaped to create a beautiful sparkling finish over the whole surface.

JURA has developed his own range of tools, specifically designed for micro-pavé diamond setting, which allow for different methods of holding work pieces and also result in more efficient practices.

The steps in micro-pave setting work are:

1. Marking out
2. Drilling
3. Widening the holes
4. Bright cutting the edges
5. Removing the metal in between to create the prongs
6. Cleaning up the surface with a rubber wheel
7. Placing the stones
8. Setting and beading



Figure 1. Settings covered during Jura's Advanced Micro Pave Basic course ([www.jurasettersschool.com](http://www.jurasettersschool.com))

JURA has invented and manufactured many of his own tools including beaders, stone pushers and drills, and he trains students in the use of these tools and associated techniques to his students. When one is making a beader or a stone pusher the process is actually very similar. To make a beader, use an old broken burr (not tungsten carbide) and cut down the end until it is ground flat, then use a carbide drill bit to drill into the centre of that flattened end at a depth of a quarter millimetre. This is the main

## 6. THE INTERNATIONAL EXPERIENCE

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difference between making the two tools (apart from the diameter). A low profile reamer made from carbide is then used to open up the hole and create a low-profile dome.

Once JURA has demonstrated use of his specialised tools, and the student has made their own beading and stone pushing tools, he then begins to teach the micro-pave setting process. Initially, students begin with training in micro-pave using 1.1mm cubic zirconia, and it is this sizing used throughout the training process. Effective micro-pave requires a perfect layout, and the holes for the stones must be drilled and burred with precision. This is the foundation and, although each following step is equally important, if the holes are not correct from the outset it will lead to problems such as uneven prong sizes, too much or not enough metal in an area, and large gaps between the stones. Although minor positioning errors can be corrected during the setting process it requires significantly more time to achieve a satisfactory result, than it would if the layout was accurate during this foundation stage.

The following outlines each step of micro-pave setting, as taught to the Fellow by JURA.

### 1. Marking out

The layout of a single row of stones in the centre of a ring is done firstly by finding the true centre line of the ring and scribing this line the whole way around. It is important to be careful not to tilt the angle of the tool when scribing as this will result in the line not being centred correctly. Once the true centre line is scribed three other guide lines need to be scribed on either side. These lines will indicate the outside diameter of the stones, a guide line for the outside of the bright cut edge (0.2mm from the stone diameter line) and a line for the inside of the bright cut. For a 1.1mm stone the internal bright cut line will be drawn in at the diameter of 0.95mm. Once the lines are scribed the stones need to be spaced which, in this case of 1.1mm stones, the vernier callipers must be set to 1.1mm and mark made around the entire ring, following the centre line. If a certain number of stones are required, then it is important to mark points as necessary.

### 2. Drilling

The pilot holes must then be drilled between each of the marked points. Drilling allows the dividing marks to stay in place instead of being drilled away. Once the pilot holes have been drilled each then need to be widened to the correct size of the stone.

### 3. Widening the holes

The widening of holes is done gradually by opening holes - firstly a 0.9mm burr, then a 1.0mm burr and finally the 1.1mm burr. One must continually check that each of the holes are correctly spaced and within the lines. JURA uses an approach where burr holes are made skipping every second hole and then coming back to it, as he believes this assists in training the eye to be aware of the spaces around and between each stone. Sometimes drilling and burring is done without any marking out and training the eyes is advantageous in these situations.

### 4. Bright cutting the edges

Once all of the holes are opened to the correct diameter of the stones, the next step is to bright cut the edges using a sixty degree graver in the pneumatic hand-piece. On a ring a heel would not be required for the cutting as the surface is rounded already; however on a flat piece a heel would be needed. JURA modifies the gravers he uses and may have four or five sixty degree gravers all with different heels, cut outs and finishes for different purposes (such as straight lines and curved lines or cut out gravers to avoid damaging the surface of the metal behind the graver). The bright cut line needs to be even in depth and width, and the outside of the cut should come to the widest scribed line 0.2mm outside the diameter of the stone. The inside of the bright cut should come to the inside line scribed at 0.95mm diameter. These measurements are extremely important and there is a formula to work out the measurements for different size stones.

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### 5. Removing the metal in between to create the prongs

Once the external bright cut is completed the excess metal needs to be removed, leaving the prongs for setting. A flat graver is used to cut the prongs along the bright cut. Depending on whether the setting will be done with a single shared claw, or whether the claw will be split so that each stone has four individual claws, will determine the claw size used. Uniformity in the claw size and symmetry in spacing is essential for an even looking finish. When setting, the same size beader should be used for each prong, because if one prong is much larger this will cause mushrooming of the metal when pushed over the stone.

Once the outside prongs inside the bright cut are prepared the metal between the stones need to be removed. This is achieved using a fine tapered burr, carefully cut down through the wall of metal left between each stone. When this is done the prongs should be neat and appear uniform in size and symmetry, after which the holes for the stones to be set into must then be cleaned. To do so, one must drill down into the centre of the hole, using a burr 0.1mm smaller than the original size to clean up any excess metal that may have been pushed into the seat, while simultaneously making the hole a little deeper. It is important to ensure that all holes are cut to the same depth, so it helps to keep an eye on the depth of metal that the ball burr goes into as a useful guide.

### 6. Cleaning up the surface with a rubber wheel

At this stage the jeweller must use a fine polishing rubber wheel to carefully clean the surface around the bright cut and the tops of the prongs. It is easy to accidentally round edges when cleaning in this manner, making it important to always bring the rubber from the outside in towards the bright cut thus avoiding the risk. When polishing the tops of the prongs it is important to only gently move the rubber across the tops without applying pressure, so as to polish slightly without removing any height.

### 7. Placing the stones

At this point the piece should now be ready to set; with all prongs the same size and symmetrical, the holes of even depth and cleaned of any excess metal, and featuring clean bright cut edges. Firstly the stones need to be positioned in the seat; (the holes that the stones will sit into for setting) ensuring that all the tables, which are the top facets of the stone, are at the same level and angle before setting. Each stone is then picked up and placed into the seat one at a time after which a stone pusher, that is the correct size, is used to gently push the stone into the correct position.

### 8. Setting and beading

Once all stones are seated correctly the prongs are pushed over the stone to secure it in place, using the specially prepared beader that is the correct size for the claws. The tool should be placed over the top of the claw and with a very slight movement the prong should be pushed over the stone. The process to set different layouts is very similar, although there will be variations in the metal between the stones which will require different ways of dealing with each. For example, when using four individual prongs on a stone (rather than a shared prong) all of the previous steps are the same except that the prongs between the stones are divided into two using a splitter before setting.

JURA has a drive for perfection which is why he is considered a leader in the global jewellery industry. JURA has an engineering background, something that has equipped him with the knowledge to develop his range of specialised micro-pave tools which are practical, simplified, aesthetic and beautiful to work with. Kaufman was privileged to train with him and, not only did she learn an incredible amount in such a short period of time, she also thoroughly enjoyed her time there. Kaufman would recommend the JURA training to anyone wishing to learn this style of diamond setting and hopes to travel to his training facility in the future to complete the second week of training in Advanced Micro-Pave Setting.

### Description of Specialised Equipment used during the Fellowship

The Fellow utilised a range of specialised equipment during the course of her fellowship. These key pieces of equipment, critical the work and study undertaken by Kaufman, are described and discussed below.

#### Microscopes

There are many different brands of microscopes available on the market. The training Kaufman undertook was conducted using the Meiji brand, a Japanese made microscope which can be purchased one for around eighteen hundred dollars. If purchasing a microscope, it is recommended to research which brand will best suit individual and task needs, as there are binocular and trinocular versions available. A binocular has two eyepieces and a trinocular has a third piece that allows for the setting up of a camera to view the work being done through the microscope.

Microscopes have a specific working distance; this being the distance between the lens and the work piece that allows it to be in sharp focus. Setting and engraving requires a greater working distance than is required for viewing specimens, because setting and engraving requires an ability to work with one's hands under the lens. The working distance can be changed by adding auxiliary lenses with varying objectives, for example a 0.5 objective lens will double the working distance. There are also options for the eyepiece magnification, with Meiji microscopes having options for 10X, 12.5X, 15X, 20X and 30X. The 10X eyepieces are quite suitable for setting and engraving.

#### a) Microscope set up and usage

Once the correct working distance is established for the particular microscope and auxiliary lens, heighten or lower the microscope until the distance from the lens to the height of the piece of work is appropriate. Once the distance is set the microscope must then be focused. Firstly the pupillary distance must be adjusted until only one clear circle is in view, which is done by checking that the eyepieces are both set on 0 then zoomed in as far as the microscope will allow and finally focus the image. The view is focused by turning the knob, on the back of the microscope body, up or down. When the image is sharp at maximum magnification zoom, back out to minimum magnification and if required adjust each individual eyepiece one at a time until the image is as clear as possible. At this point, the microscope is now set up to start working.

The working distance is very important and requirements will differ depending on the work being completed. JURA uses the Meiji EMZ-10 which has a working distance, with no auxiliary lens, of 110 mm. This allows just enough room (working distance) to be able to work with one's hands underneath the microscope, however it has a very small range of view and therefore the microscope needs to be refocused frequently to ensure that the work piece stays in focus.

Alfano's students use a Meiji EMZ-5 with a 0.5 auxiliary lens which has a working distance of 148mm. When engraving, a greater working distance is required to keep the piece in the field of view, as when curved lines are engraved the piece (rather than the hand) is rotated. Given that engraving involves a smaller field of work, if a shorter working distance is set on the microscope it will result in the piece frequently moving out of vision and thus harder to engrave.

#### (b) Benefits of using microscope

There are a number of benefits that use of microscopes present, including:

- Using a microscope changes the focus of the eyes and reduces straining to view small work pieces, as the eyes are focused in the middle distance.

## 6. THE INTERNATIONAL EXPERIENCE

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- High quality results with incredible precision can be achieved when using a microscope, as the tool allows the user to see minute details clearly.
- The height of the microscope promotes correct work sitting posture, thus reducing related occupational health and safety risks in the workplace.



Figure 2. A Meiji EMZ-10 set up with 10 x eye pieces LED ring light and JURA's microscope stand ([www.juratools.com](http://www.juratools.com))

### GRS GraverMax / Pneumatic Handpiece

The Gravermax is easy to set up and operates through use of an air compressor. There are many options available for air compressors, varying in price from approximately six hundred dollars for a reasonably quiet machine to two thousand dollars for a silent compressor. Choosing an air compressor depends greatly on an individual's budget, but Kaufman recommends that if it is going to be used frequently or in a shop environment the silent models are most suitable. When selecting an air compressor Kaufman believes it is also important to ensure it has a good quality compressor and is an oil free model.

#### a) GRS GraverMax / Pneumatic Handpiece set up and usage

The air compressor is connected to the GraverMax unit by running it through the air filter, supplied with the GraverMax, and then in to the back of the machine. Some hose and connections may need to be purchased to connect the compressor to the unit. Once the compressor is attached and both machines are plugged in the machine can then be turned on. There are a few handpiece options available for use with the GRS GraverMax, with differing power output required for heavier or finer work. The GraverMax AT model supports the palm controlled handpieces which enable the user to choose between palm control or foot pedal. The handpiece is connected into the auxiliary outlet on the front of the unit, and is then adjusted by hand holding the tool upright and turning the bias knob until a tapping (rather than fluttering noise) sound is heard.



### b) Benefits of using GRS GraverMax / Pneumatic Handpiece

There are a number of benefits that use of GRS GraverMax / Pneumatic Handpiece present, including:

- When using a pneumatic hand piece the engraver is guiding the tool, rather than pushing it, which allows for fast and efficient graver control to be achieved.
- Use of this tool reduces strain on joints, in particular the elbow and wrist, thus reducing related occupational health and safety risks in the workplace. The tool allows for the excavation of larger amounts of metal, in a faster and cleaner manner.



Figure 3. GRS GraverMax G8 with foot pedal ([www.grstools.com](http://www.grstools.com))

### GRS Power Hone / Sharpening System

Engravers use hardened steel or carbide tools, called gravers, for making the cuts into metal. These tools are quite often modified and personalised by each individual engraver for specific jobs or preferences. Gravers used for engraving will differ from those used for setting, and the choice of which will generally be influenced by job requirements and personal preference. Engraving requires a heel to be cut behind the face (approximately a quarter of a millimetre) and helps to give the tool a surface to glide on through the metal; resulting in cutting rather than digging in to the metal. Gravers can be purchased in many different shapes, angles and widths or there are tools and templates that allow cutting of blanks to any requirement.

### a) GRS Power Hone / Sharpening System set up and usage

GRS' sharpening system is called the 'Power Hone'. This machine has rotating plates in varying grades for cutting, sharpening and polishing. The dual angle sharpening fixture allows any angle to be set for shaping the tool, sharpening the face and the heel. There are also easy sharpener fixtures for 120 degree and 105 degree angles, which are the most commonly used engraving angles.

The cutting wheels that are available for this machine are 240, 600 and 1200 grit. There are also ceramic and cast iron wheels for polishing, and diamond spray or powder can be applied onto the surface to achieve a greater polish on the tool.

### b) Benefits of using GRS Power Hone / Sharpening System

There are a number of benefits that use of the GRS Power Hone / Sharpening System present, including:

- Ensuring the exact angles are being cut every single time the tool is sharpened which greatly decreases learning time.
- The shaping of tools from blanks into any shape is made fast and efficient.
- The resulting work is more accurate.



Figure 4. The complete GRS power hone sharpening system with dual angle sharpening fixture, ceramic wheel, diamond wheels and diamond spray ([www.grstools.com](http://www.grstools.com)).

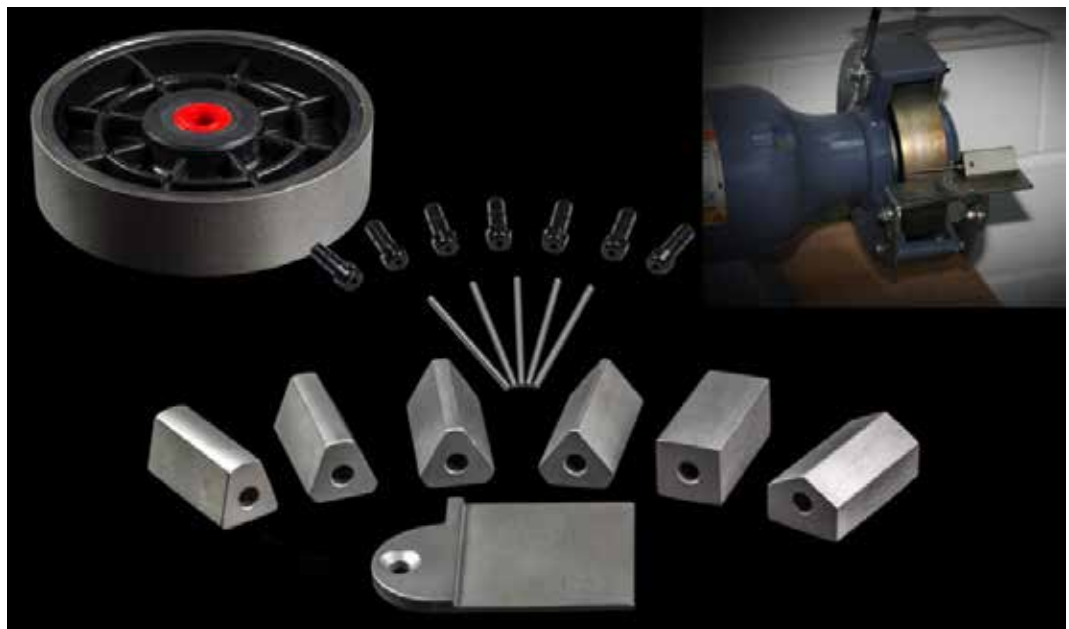


Figure 5. JURA's sharpening system using templates and diamond cutting disc ([www.juratools.com](http://www.juratools.com))

## 7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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This Fellowship has assisted Kaufman to not only travel overseas and train in these specific fields of study but also to identify the appropriate equipment necessary to continue to professionally practice and implement these skills.

The Fellow has now purchased the tools for a fully operational setting and engraving work bench comprised of a Meiji EMZ-10 microscope, GRS GraverMax G8, GRS Power Hone and Saeshin micro-motor. This will allow Kaufman to continue to build upon the learnings and techniques she acquired during her overseas Fellowship training. Through development of these skills, the Fellow aims to provide future training options and mentoring opportunities to local current and emerging jewellers who desire to enhance their skills via use of these specialised techniques.

## 8. RECOMMENDATIONS

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### Government – Federal and State

- Recognise that the jewellery industry is experiencing a skill shortage and provide financial supplements to jewellery apprentices for the purchase of tools, as is already offered in many other trade areas.
- Rescind the recent funding cuts to the TAFE jewellery courses, so that the course is not priced out of the market and remains a viable training option for those seeking to enter the profession.
- Provide funding to TAFE Jewellery Departments for the purchase of new, or upgrade of existing, microscopes and pneumatic tools for student training purposes.

### Industry

Unfortunately fellows have previously offered to run an industry awareness session demonstrating skills and equipment at NMIT (Fairfield Campus). This received a very poor response from the industry when requesting assistance for loaning of equipment and use of facilities, in light of this, it is recommended that:

- The industry should welcome and consider the suggestions and advice from ISS Institute Fellows who are keen to transfer knowledge and skills with their professional colleagues.
- The industry should encourage a more open approach to skill sharing and development from within its ranks as doing so would likely result in greater numbers of highly skilled individuals willing to mentor and impart their skills and knowledge with current and emerging local jewellers.

### Professional Associations

The JAA and GSGA must continue to support the ongoing high-level skill development of Australian jewellers through provision of up-skilling master classes. Unfortunately very few master classes are currently made available through these associations. In light of this, it is recommended that the professional associations consider:

- Providing access to facilities required for master class courses.
- Setting up new, or utilise existing, facilities with microscopes and pneumatic tools so that small group training in these techniques can be delivered to industry members.
- Recognise the training talents of Australian jewellers and support them to deliver master classes for colleagues in the profession.
- Investigate industry interest in members paying to attend a master class delivered in Australia by an overseas expert, such as JURA or Alfano, thus reducing the need for local jewellers to travel overseas for specific training.

### Education and Training – TAFEs

If TAFEs receive funding to set-up microscopes and pneumatic tools for engraving and setting within their facilities, it is recommended that:

- The Fellow could assist program co-ordinators to advocate for these skills to be included in the nationally recognised training package for jewellery apprentices.
- TAFE's offer short courses in diamond setting and engraving, using the microscope and pneumatic hand-pieces, and provide up-skilling opportunities to local jewellers.

## 8. RECOMMENDATIONS

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- TAFEs could offer 'come and try' days to secondary school students as a way of promoting training and employment in the industry to young people and providing students already interested in the field with a chance to learn basic jewellery skills.

### Community

It is important that the Australian community support local businesses and assist growth within the jewellery industry as a whole, and it is recommended that:

- An industry-led campaign promoting the benefits of purchasing good quality Australian made jewellery with Australian consumers, emphasising the economic and employment benefits of doing so.
- Australian consumers are assisted to understand the value of purchasing local diamonds and jewellery before immediately purchasing overseas.
- Awareness of the superior quality of hand crafted and Australian made jewellery is generated within the community.

### International Specialised Skills Institute

It is important that we have suitably qualified jewellers in Australia who are enthusiastic about assisting colleagues to develop new skills. As such, it is recommended that the ISS Institute should continue to provide fellowship opportunities to other jewellers wishing to complete training in advanced jewellery skills. This would grow a pool of trained industry personal who could then deliver training to others, whether that is via adequately equipped professional bodies or through the Australian TAFE sector.

## 9. ATTACHMENTS

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### 9.1 Jewellery Training 2014

Report by Desma Noble, Peter Keep, Jacques Fabian, Jane Foster, Lee Pownall

*In 2013 the spotlight in the jewellery industry was very much on the shaky future of training options.*

*Funding cuts for TAFEs in most states and diminishing numbers of apprenticeships being offered had most industry sectors looking hard for answers. So, a year down the track, how are we faring?*

The options are vastly different for each State! Most jewellery making training in Australia is still delivered by TAFEs. These courses are nationally accredited, so that each course, like the Certificate three or Advance Diploma, has a reasonably common curriculum, with fairly restricted variability within each individual TAFE. The funding for them, however is from the State Governments, some are faring vastly better than others. Here's a State by State summary of the courses offered and enrolments as of end of January for 2014.

#### 9.1.1 VICTORIA by Desma Noble, Melbourne Polytechnic (Previously Northern Melbourne Institute of TAFE (NMIT))

Apprentice Certificate III Jewellery enrolments:

- 9 First year
- 15 (combined class) Second and Third year

Advanced Diploma

- 40 First year
- 36 Second year

Part-time "Fee for Service" Courses

- 6 Silversmithing, one evening for 8 weeks
- 14 Computer Design (CAD) for 10 weeks

There is reluctance from employers to take on apprentices due to costs of training, but the threat of the apprenticeship stream being discontinued last year resulted in some rallying of support. First year enrolments for the Certificate III have gone up from 6 first year apprentices to 9 this year. Overall numbers are down though, as the larger third year class graduated. Standards are more difficult to maintain now that classes are combined with teacher delivering to larger multilevel combined classes.

At NMIT the Certificate III course has been opened up this year to students without apprenticeship positions, known as a "Non-indentured" Certificate III. These students undertake their own workplace experience, and then hope to secure employment once they have begun to show some ability and commitment. This opening up of training is in response to the fact that Industry shows strong demand for jewellers, even unqualified ones, they just don't want to engage them in that early training phase.

The Advance Diploma Course at NMIT is more popular than ever with maximum enrolments!

In 2013 enrolments were 32

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### 9.1.2 QUEENSLAND by Lee Pownall and Jane Foster, South Bank Institute of Technology (Southbank)

Southbank's Jewellery Department has a total of 19 benches and is run by two part-time teachers (With time allocation of 0.8 each)

Apprentice Certificate III Jewellery Manufacture- (all block delivery)

- 7 First Year
- 13 Second Year
- 9 Third Year
- We are also offering "drop-in" classes to fill the spare benches in the apprentice blocks (non-accredited training) on a daily "Fee for service" basis

Part-time Fee for Service courses

- 3 x 1 week (30 hours) beginners' courses

2013 Apprentice numbers 25

The Southbank Cert II course (pre-apprenticeship) has been axed this year due to low numbers. This is not due to lack of interest but lack of marketing and a very late registration. Teachers Jane Foster and Lee Pownall ran it for 2 years and only had 5 or 6 students enrol each year. From this course, 5 have gone on to gain an apprenticeship.

In 2014 Southbank will be running 3 x1 week "Fee for service" courses. Two are for adults/hobbyists and one aimed specifically at school leavers.

They are offering the projects taught to apprentices to "drop-ins" This will be FFS (Fee for Service), charged at a daily rate. Most projects will take a couple of days. To give you an example – if the apprentices are learning how to make a claw set cluster then members of the public can pay to come and learn that too.

This opens the possibility of opening the Certificate III to non-indentured students who will pay fees. These students would have to have full-time access to a bench at home or in a workplace to practice between blocks.

### 9.1.3 SOUTH AUSTRALIA by Jacques Fabian, (?? Institute Name ??)

Apprentice Certificate III

- First, Second and third Years have a total 6 students attending

Diploma and Degree courses

- (12 and 40 respectively)

2013 Apprentice numbers were 16

Jacques Fabian is now overseeing the apprenticeship TAFE training.

Last year there were 16 apprentices on college books, approximately half were "On the Job" (OTJ) and had little or no TAFE attendance.

Because of recent graduations and limited apprenticeship vacancies there are now only 6 apprentices enrolled in SA.

South Australia also run two design classes, an Advanced Diploma and a Degree, These courses are run by John Campbell who claims high numbers but exact numbers are unconfirmed.

### 9.1.4 WESTERN AUSTRALIA by Peter Keep, Central Institute of Technology

Apprentice Certificate III

- First Year total 2
- Second Year total 13
- Third Year total 5

Diploma

- First year 13
- Second year 5
- Third year 5

2013 Apprentice were numbers were 27.

There has been a sudden drop off for the apprenticeship. Employers are unwilling to invest the time necessary for initial training. Over the last three months I have re-placed 3 second year apprentices who lost their jobs or decided to move. This happens quite often and validates the fact that there are positions for pre-trained apprentices.

"I have had my hours cut again, so I have limited time with the apprentices".

All regional apprentices are now OTJ, which means they have no TAFE attendance.

I send assessments to them via post and email, and then visit them as often as possible. The latest sign up is from Port Hedland so the distance makes things difficult. I am not confident that OTJ training will meet the expected standards.

I have started a private trade training course at 'Contemporary Metal' (a new private jewellery school which normally caters for hobbyists) This new course has been very well received. Of the 13 enrolled there are at least 5 potential apprentices. Linneys and Smales are likely to take on apprentices, and could cherry pick from this pool.

The course is not funded and is not accredited. This does not affect interest.

Classes run one day a week for 10 weeks. There are six stages, each stage is one term, the approximate cost per stage is \$1200 - \$1400

Student numbers for the Diploma course has been halved due to funding cuts (Students now pay 3



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times more for their course fees) Three students have also enrolled in the private course as they see this being the best option to secure a job.

### 9.1.5 NSW Enmore

(No Information provided at date of publication) Jacques Fabien is also trying to make contact. Darren May has also not had success getting information.

2013 Apprentice numbers approx. 31 (no indentured students included)

### Summary of Current Training

Overall apprentice numbers are continuing in a general decline. Employment opportunities, however, do exist for skilled and semi-skilled jewellers. TAFE's field enquiries from potential employers wanting to hire third year apprentices. This indicates a need for workshop staff who is not beginners, due to the expense involved in basic skill training.

### Improvements

This supports a very strong case for TAFE's in all States to deliver the Certificate III in Jewellery Manufacture (the same curriculum as the apprentices) to Non-indentured students. People who are keen to start a jewellery career can sign up and start learning without having to secure the apprenticeship jobs that don't exist. Then when they have acquired some skill, proven their ability and commitment they can look for employment, at a point when industry is more willing to hire.

There is a Certificate IV Course in Jewellery Making, which is Nationally accredited, but not currently delivered by any TAFE in Australia. This course would be placed between the Certificate III (apprenticeship) and the current Diploma and Advanced Diploma Courses. The introduction of this course would give practicing craftspeople the chance to enhance their skill range, and give graduates of the Certificate III an opportunity to gain the higher qualification, before seeking employment. Whichever TAFE embraces this course could find their jewellery departments boosted with jewellers from all over Australia.

### Benefits

Initial training to be more accessible and NOT at the cost of small businesses by providing Certificate III - Non-indentured.

Certificate IV course introduced would "bridge the gap" between the "trade-type" jewellers and the "craft/design" trained jewellers. Introduction of this course would improve the currently irregular employment path. Currently most people attempt to use the Diploma courses as an entry point into the industry because it's a full time course and not employment dependant. Employers, however complain this is too design focused with lower hand skills.

The entry point to the jewellery industry needs to revert back to being Cert III (without the need for the job place), then the Cert IV for those wanting a higher qualification, still with a trade focus. The Diploma / Advance Diploma courses can then be placed more appropriately where they should, with stronger design and research emphasis, as the more academic qualifications.