

Level 6 – Research Framework Document

NAME - Elliott Beaumont

DATE – 6th/05/2019

Summary Sentence or Research Question:

I would like to explore the aesthetic potential of pattern welded metals through developing an understanding of the forge welding process, with the end goal of using the practical yet beautiful material to create utilities/knives/jewelry

Summary Statement:

To begin the project I will focus on creating Damascus steel, a pattern welded stack of contrasting steel. This will be the foundation for learning how to forge weld metal, the process used to produce most pattern welded metals. Once the process has been understood, it can begin to be applied to a product, the steel required for a knife for example would require a different forge weld process than a steel for a ring as the surface area and shape is varied. It is important that the pattern within the metal does not reduce the integrity of the product, and instead attempt to enhance it. Weak forge welds could result in a product breaking throughout time instead of remaining homogenous, this could suggest there are more advantageous patterns which interlock the layers more. Exhaustive testing is required to find the variables required to make a strong and stable knife, furthermore after the steel has been forged it must then be treated via heat treating process which will need to be understood in order to create a usable product, things such as hardening, tempering and normalizing. I would like to explore the potential of using Damascus steel for jewelry and knives, however generally steel is better suited for the knives, for the jewelry Makume Gane may be better suited. Besides pattern welding steel, I am also interested in recycling and reusing scrap material ranging from cutting scrap to restack and weld. Over the summer I have accumulated various scrap and rusty old tools to play with

Key Words:

Forge welding
Damascus steel
Makume Gane – copper, nickel, silver, gilding
Knifemaking – ikon knives, Robert Mulluer, Alex Steele
Jewelry – wedding ring, signet ring
Coal forge – gas forge?
Hand finishing – sanding, polishing, shaping

Research Methods:

Youtube – making tutorial, material breakdown

- <https://www.youtube.com/watch?v=cDJJxNx13Kc>
- <https://www.youtube.com/watch?v=2o71DbuFj6E>
- https://www.youtube.com/watch?v=63e9tugS_ts
- <https://www.youtube.com/watch?v=bPsNJAluvFk>

Bladesmith contacts – ikon, mulluer, steele

Museum – fire and iron gallery

Craft shops – Bury St Edmunds craft

Damascus steel – history and theory (book) – Gunther Lobach

Knife (book) – Tim Hayward

Intuitive approach – developing an understanding of the practice and material through making and working with metal

Medium for Research: mind mapping, process diagrams, technical drawings, photograph development, physical trial and error

Material and Technical Investigation:

- explore the aesthetic potential of Damascus steel through developing forge welding understanding
- Make several billots of Damascus steel, cut up and use to determine the 'completeness' of the forgeweld
- After intense practice, make seamless Damascus billots, which can be used for products which have no voids
- Make prototypes of products jewelry/knives out of lesser material to test shape/function before final
- To develop pattern, several basic billots of steel should be made all similar
- Twist, fold and manipulated the billots in equal and opposite ways, cut and etch the billots comparing the consistency of the multiple patterns created
- This way the manipulation of the steel internally can be recorded and visualized how the twist effected the pattern

Timescale of work across the year:

2018 June – research and begin practicing pattern welding process

2018 July – September – working to collect funds and materials

2018 September – begin honing blacksmithing skills

2018 august – begin forging Damascus billots for wedding ring

2018 November – finish ring for wedding day

2019 – begin developing steel patterns and making end products

2019 January – February – honing Damascus making skills

2019 march – attend knifemaking workshop

2019 march – may – making final pieces (ring and knives)

2019 may – finalise practical work, create pdf

Identify potential professional contexts for your work:

Damascus steel knifemaker – the largest market for Damascus steel is within knives, they are also very enjoyable to make. Forging and selling Damascus steel chefs knives, selling and advertising products around the country at trade shows and craft events
Makume gane jewelry – sideline to the Damascus this material offers itself better to jewelry than knives, however is equally as desirable within jewelry

3D Outcomes:

- Steel and makume gane wedding rings
- Large chefs knife from kingdom forge workshop
- Petty knife
- Yanagiba fish knife
- Deba all metal knife

Presentation & Display:

- Acrylic topped cabinet covering blades and jewelry
- Arrangement stands for jewelry

Portfolio / Publication:

Journal of work, highlighting trail and errors. Focusing on honing skills towards making the final knives and jewelry

Ethical considerations – If you answer YES to any of these questions then email Patrick IMMEDIATELY

Will you be asking anyone questions (interviews and or questionnaires)?

Will you ask people to test or physically evaluate your work for you?

Do you intend to run a workshop that involves a group of people?

Do you intend photographing, videoing or sound recording anyone?

Does your work involve children?

Brief outline of ethical considerations:**BA(hons) Dissertation Title / MDes Essay Titles:**

How significant was technology in the development of 'Damascus steel'?