



INNOVATIONS IN KNIFE MAKING:

the fire, the edge, and
creating a meaningful
workspace

An International Specialised Skills Institute Fellowship.

AIDAN MACKINNON

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i. Executive Summary

This report outlines the purpose of ISS Fellow Aidan Mackinnon's work with established and pioneering United States bladesmiths, and documents the findings of his time with each of these individuals. Finally, it outlines his recommendations for enhancing and furthering the Australian knife making community within the broader Australian context of both a growing food culture and increasing demand and appreciation of handmade consumer products.

The Fellowship enabled Aidan to train one-on-one with Master Smiths and established bladesmiths, including Bob Kramer, Mareko Maumasi, Bill Burke, Walter Sorrels, Kevin Cashen and Mark Weinstock. With each trainer, he focused on a different element of bladesmithing, from folding steel to pushing the definition of what is "sharp", and understanding the intricacies of the thermal changes in steel as it heats and cools.

Aidan was in the USA for the month of April 2017. The Australian bladesmithing community is vibrant and collaborative, but small and relatively new; this Fellowship presented Aidan with the opportunity to bring industry-leading knowledge back to Australia with the goal of both passing on that knowledge and developing Australia as an internationally recognized destination for great culinary tools.

Recommendations for how this can be achieved include:

1. Using new and existing contacts to establish ongoing international collaboration. This could include bringing Master Smiths to Australia for workshops, symposiums and master classes.
2. Establishing an Australian accreditation system to expand recognition of expertise in the bladesmithing community in Australia.
3. Enhancing communication with local and state governments with the purpose of lobbying for support of small business, particularly those that exist within the culinary and handmade spaces.
4. Presenting to culinary schools, highlighting the importance of buying local and choosing and maintaining high-quality knives.
5. Work with small-scale engineers to create a broader ecosystem of support for Australian bladesmiths and other artisans.

1. About the Fellow

Food has always been a significant part of Aidan's life. He sees cooking for others as a gift, and one that transcends culture, language and nationality. After completing a Master's degree in International Development, and time spent working in the non-profit sector in Israel, Denmark, Switzerland, New York and Malaysia, he moved back to Australia where he saw how much – and how fast – the Australian understanding of food and its contribution to culture had evolved.

This inspired him to get involved, and in 2014 he launched Cut Throat Knives, with the goal of celebrating and contributing to a burgeoning culture of handmade products and food, and showcasing the beauty of Australian woods and craftsmanship.

Now, Aidan is part of a new generation of knife makers, focusing on creating high-end bespoke kitchen tools for avid home cooks and chefs. He is one of fourteen full time bladesmiths in Australia and the only one focused entirely on kitchen tools. Aidan handcrafts all the knives in his shop. Starting with a hunk of steel and a slab of wood he works to create beautiful knives that perform at the very highest level for a lifetime of service and enjoyment.

He has won numerous awards for his work, including the inaugural Delicious Award for Outstanding Design, the Gold Melbourne Design Awards prize, and Finalist at the Victorian Craft Awards. He has also been featured in TimeOut Melbourne, the Design Files, Smith Journal, Delicious and GQ.

He is a member of the Australian Knife Makers Guild and the American Bladesmith Society.



2. The Australian Context

The knife is the oldest tool in a chef's armoury – older even than the management of fire, by somewhere between a million and two million years. Even at the earliest stages of human tool making, man was not randomly slashing at his food, but making careful decisions about which cuts to make with which tools. Knives are often our primary interaction between ourselves and our food – it is with this in mind that a great blade does not only cut, it enhances the cooking experience.

This adds a satisfying and personalised dimension to the vitality of the Australian produce and hospitality industry, which is world renowned for its quality. From Wagyu beef to award winning spirits and wines and a vibrant barista and chef culture, there is a huge level of respect nationally and internationally for the fine products made in Australia.

While the produce and hospitality industry has cemented itself in the zeitgeist of the international foodie world, there is still a huge opportunity for development of the broader ecosystem of the food industry. To have a truly deep food and produce community, there needs to be a vibrant community of satellite industries from bladesmiths, clay casters, metal spinners to coopers, glass blowers and copper smiths.

There are currently fifteen fulltime bladesmiths in Australia, with ISS Institute Fellow, Aidan Mackinnon, being the one of three who are dedicated solely to the crafting of kitchen knives (one of the others is employed by the Fellow). In the context of the growing food and produce industry, this creates an enormous opportunity for Australia to develop these satellite industries and position itself as not only a destination for fine food but also for the highest grade of culinary tools in the world.

This shift is not without its hurdles.

Firstly, the knowledge base, while vibrant, is small and insular. This means that although there is strong communication and support within the community, it can be difficult to penetrate as an outsider.

Secondly, there is a broader shift that needs to be overcome on a societal level, namely to change the understanding of the value in handmade products. There is a nobility in restoring our understanding of the value of workmanship, rather than measuring “productivity” only by quantity and profit. Sadly, this value has been eroded by the overwhelming market mentality of “as much as possible as cheap as possible”.

The ongoing challenge of this Fellowship will be to help propel this shift in attitudes towards a handmade culture, to build the understanding that quality has no substitute; throwaway culture deserves disposal; and time-honoured skills are worthy of recognition.

3. Fellowship Aims

The goals of the Fellowship were threefold:

1. The Fellowship was undertaken with the goal of enhancing the Fellow's skills as a maker. The principles of heat treatment and a molecular understanding of the impact of fire on steel are key to the creation of lasting and robust tools, and giving a knife an edge that sings is crucial for communicating quality to the market and consumers.
2. The Fellowship was undertaken for the development and maintenance of a thriving business, which is crucial in further contributing to Australia's food and handmade cultures. A visible, active and on-brand company has the capacity to carry messages about buying local, the job creating value of small businesses, appreciating handmade rather than disposable goods, and the importance of food as mechanisms for connection with our families, neighbours and communities.
3. The Fellowship was undertaken to position the Fellow as a lynchpin for international communication, collaboration and learning. Having made initial connections with some of the world's preeminent bladesmiths, Aidan is now well-placed to maintain and build on these connections, encourage further international support between bladesmiths, and to lobby governments and industry groups to support initiatives to bring international smiths to Australia.

4. The International Experience

The Fellow's learning focused on hands-on training and directed conversations with a number of American Bladesmiths and Master smiths. These learnings covered a number of topics but can broadly be broken down into a number of core themes.

Themes

1. Mastering Basics

Mastering the basics of knife making is critical to success. Many new bladesmiths want to rush through the basics to get to the more "interesting" techniques. This mentality can arise from a number of assumptions, but most importantly, it has a foundation in the belief that the more advanced work is where real power lies.

The single piece of advice consistently paraded to new bladesmiths centres around the concept of "the fundamentals".

Every professional bladesmith will recommend that new knife makers start by first learning their fundamentals. These include steel choice, heat treatment, design, and understanding and mastering your tools. These terms appear overly broad at first glance, but are the building blocks for a strong foundation for understanding your knife making.

i. Steel Choice.

Some good starting steels for beginners are:

1080, 1075, 15n20 and 1084.

These are excellent for beginners, as they are easy to heat treat and will perform as well as a more complex steel if they were to be heat treated badly. These steels will work well while the beginner is trying to master basic forging, grinding and finishing.

These steels also excel over cheaper "mystery" steels, as, while they have an increased initial cost, they come with a significant amount of knowledge about how best to heat treat them, and therefore get the most out of them.

Having a good understanding of how these steels are used, but more importantly how they move under the hammer and react and change with heat, stand the knife maker in better stead for trying more advanced pattern welding techniques.

ii. Pattern welded steels; San Mai and 'Damascus'

Pattern welded steels have become a main stay offering of most professional knife makers. While there is still an element of mystery to pattern welding, and some patterns remain tightly guarded secrets, overall the knowledge on how to make pattern welded steels is well known and documented.

Discussions with bladesmiths indicated that the importance of correct forge atmosphere is paramount. Having a good atmosphere and ensuring that the smith is forging at the right temperature will greatly increase the likelihood of successful work.



A Pattern Welded Blade or "Damascus" blade being made.

2. Sharpening

The difference between a "sharp knife" and a "dull knife" is more subtle than many people assume. There's more to sharpening than a fine edge. Good sharpening takes into account whether the knife is Japanese or Western, its material (stainless or carbon steel), and how the knife is used (slicing meat or fish, chopping vegetables, paring). Finally, the user's own preference should be factored into the finish the blade will get.

The majority of kitchen knives are utilised in situations where they will not need to cut like a razor or a plane iron on the push stroke. A kitchen knife is most often

designed to be used with a slice cut. A properly sharpened knife is honed to a fine edge, yet has an appropriate roughness so that it has bite, or an ability to sink into the cut.

There are multiple paths to achieve a fine edge on a blade, and there is ongoing conversation about the benefits of machine-finished edges versus hand-finished edges.

The key issue with machine-finished edges is specific area friction heating. Further research in this area would be beneficial, and specifically on the issue of whether machine-finished edges can be achieved without overheating the blade edge.

While this theme was touched upon during the Fellow's time in America, it is clear from conversations with Mastersmiths and Expert Sharpeners that this is a great area for further exploration and systematic study.

3. Metallurgy

This theme is a direct outcome of the Fellow's time with Mastersmith Kevin Cashen. Cashen is a member of the American Blade Smiths Board of Directors. He is a highly regarded authority within the ABS on metallurgy and heat treatment, and regularly lectures on the good principles of heat treatment.

The best resource for understanding metallurgy for a bladesmith is the work by J D Verhoeven, and the time with Cashen acted as a primer for a deeper understanding of this work.

Verhoeven's Steel Metallurgy for the Non-Metallurgist is an invaluable resource for those of us who make knives and other cutting tools. Manipulating the crystalline structure of the steel with heat accounts for at least 75% of the eventual finish of a blade: steel selection, good geometry, forging and grinding carry less weight by comparison with this foundational skill.

The book provides a robust in-depth overview of what steel and other ferrous alloys are, what their properties are, and how those properties can be used and manipulated. It gives the reader an understanding of what is happening to the steel at a molecular level, rather than simple “cookbook” style instruction of how to get from the starting point to the finished product. It allows the reader to understand what to do when the cookbook fails, and how to modify the instructions to improve outcomes. It allows technique to evolve into art.

4. Workshop

After a visit to Mark Weinstock, owner and Bladesmith for Prick Blades, the importance of workshop design and function became apparent. Weinstock runs a small forge and workshop in the industrial area of inner Chicago, where he makes camping and hunting knives.

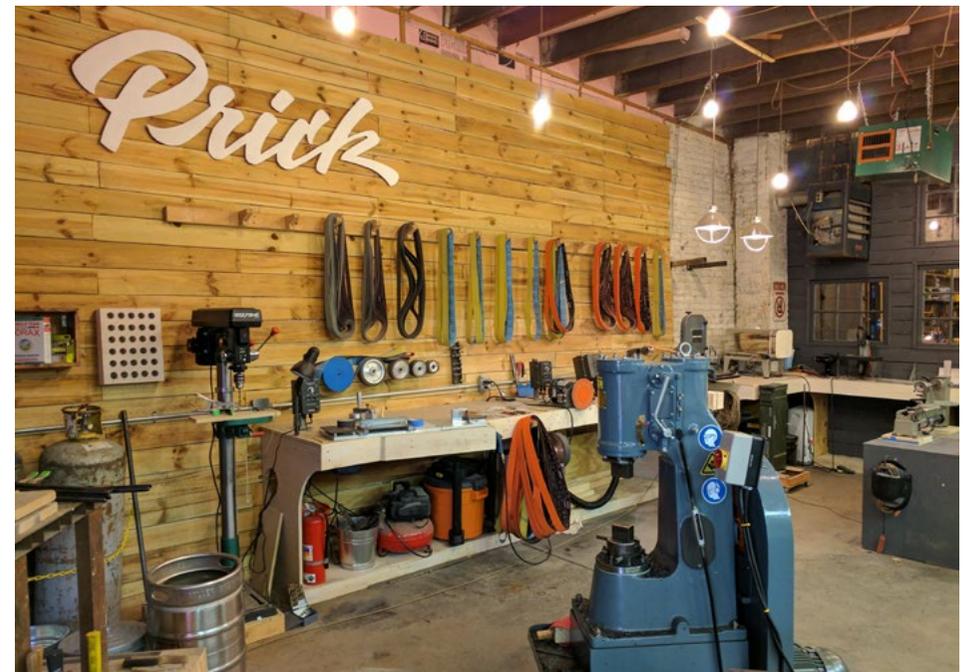
The meeting with Weinstock was primarily to explore his workshop and to discuss the importance of seeing the workshop as a continuation of the brand itself. Weinstock comes from an advertising and marketing background, having run a small firm in Chicago for 10 years prior to becoming a full time bladesmith.

The workshop is a natural extension and embodiment of the brand, with the aesthetics and design choices reflecting the aims of the makers. It is more than just a place where work is done and knives are made. In this way, the workshop is seen as its own product, with the same amount of care and attention put into it as the rest of the products. With the rise of handmade culture in Australia, and consumers increasingly wanting to understand how and where their products are made, a workshop with a coherent aesthetic can be an important part of building confidence in the brand and its integrity.

However, it is also important that the workshop design should marry form to function. The design must also be suitable for everyday use. While a well-organised workshop alone will not improve outcomes, it will improve output, streamlining the production process, allowing the maker to meet demand and, hopefully, drive sales.

This experience provided crucial insight for the next stage in the development of Cut Throat Knives’ long-term goals: the creation of a comprehensive industry hub, including a workshop, a full scale commercial kitchen, kitchen garden, and bespoke knife design space. The aim of this space will be to place food culture at the heart of Cut Throat Knives, provide a platform for chefs to teach culinary workshops, and build a socially conscious space for a range of community and non-profit groups to create new and dynamic programs and opportunities for those they support.

This enterprise represents a significant undertaking, and a strong grasp of efficient use of space and the importance of an aesthetically pleasing branded environment will be crucial in furthering the Fellow’s plans in this arena.



Mark Weinstock's workshop – Prick Blades

5. Recommendations and Considerations

Based on the experience gained by the Fellow, the following recommendations are proposed to link the skill enhancement areas identified with outcomes that will increase knowledge and learning opportunities in the local market.

1. Utilise the experience of international bladesmiths and their approach to knife making as an education opportunity for local students and graduates.

- i. There should be a concerted effort to bring more expert Master smiths to Australia as part of the blade symposium, and other events to encourage knowledge growth within the Australian knife making community. The openness of the knife making community worldwide and the willingness to share knowledge and experience should be shared to inspire new generations of knife makers to continue the craft.

Aidan has been in touch with each of the bladesmiths he worked with in the United States since completing his Fellowship. He considers it vital to keep the lines of communication open to ensure opportunity for future learning, and he will propose to the Australian Knife Makers Guild that invitations are extended to international bladesmiths to attend and speak at future Australian Blade Symposium events.

Further travel to Japan and Germany is planned within the next 12-18 months, with the aim of building similar links with knife makers in these countries.

- ii. A program of scholarships for local knife makers to study internationally would go a long way to further growing the Australian community. This can be supported in part by the Australian Knife Makers Guild, the Knife Art Association, but also more broadly by groups such as Craft Victoria.

Working with existing contacts within Craft Victoria, as well as organisations within the knife making community, Aidan will develop and propose a platform for providing support and subsidisation for young knife makers to travel internationally to learn with experts.

2. Establish an accreditation system that is equivalent to the American Bladesmith association with their Journeyman and Master smith accreditation.

Currently, there are avenues for joining the Australian Knife Makers Guild as both a probationary member and full member, with the quality of an individual's work being the metric for assessment. This could further be expanded to have higher levels of accreditation.

Aidan has initiated preliminary discussion with the Guild and the Knife Art Association to expand existing recognition platforms. In the long term, Aidan also plans to undertake the Master smith qualification himself, which will not only place Australian knife making on the international stage but provide the Australian knife making community with the insight and support to develop a similar process for assessment.

3. Lobby state and local governments to support small-scale makers and artisans.

There are very few small-scale (\$10k-70k) grants available in Australia for artisans and makers, and there is a significant barrier to entry with the cost of establishing a top-level artisan workshop. Creating these support mechanisms would significantly accelerate the abilities and productivity of artisanal makers in Australia.

Fiona Patten MP, leader of the Reason Party, is strongly supportive of the artisan community of Victoria; she recently toured the Cut Throat Knives workshop and has since placed Cut Throat products (knives and leather aprons) on display in her constituency. This opportunity has broadened the Fellow's links to governing bodies and provides a strong platform from which to continue to encourage the support of small business.

Further, the opportunity has arisen for Aidan to write a book about knife making. He envisages this as an accessible and appealing addition to knife making literature, which is largely male-centric and overly technical. This will be an important advocacy tool in Aidan's aim to encourage support of small businesses.

4. Undertake presentations to local culinary institutes about what to look for in high-end knives and the importance of buying local.

Aidan is currently collating research about local institutes, including collecting points of contact and information on institutional principles and ethos. He is developing a program of education based on this research, ensuring that the presentations can be appropriately tailored to the audience. He plans to begin to propose this program to institutes over the next 12 months.

5. Work with small-scale engineers to create a broader ecosystem of support for Australian Knife Makers and other artisans. To an extent, this has already begun, with 84 Engineering and Fire Pants Fabrications both making world-class multi-tooled belt liners designed for knife grinding.

The fellow has already been a core part of developing and testing 72" Belt Grinders that have now entered the market more broadly for knife makers.

At the time of this publication the fellow is working with Fire Pants Fabrication on the development of a top end gas forge aimed at knife makers, blacksmiths but would also be appropriate for glass blowers as well.

There is still a large amount of scope for developing the satellite industries that support bladesmiths and there is room to develop wet wheels, high-end rolling mills, vacuum chambers and hot spark extraction.



72" Gibson Grinder Developed

by 84 Engineering (Left)

Forced Air "BeeHive" Forge Developed

By Fire Pants Fabrication (Right)

Both of these were developed in consultation with Cut Throat Knives.

6. Acknowledgements

Awarding Body – International Specialised Skills Institute (ISS Institute)

The ISS Institute exists to foster an aspirational, skilled and smart Australia by cultivating the mastery and knowledge of talented Australians through international research Fellowships.

The International Specialised Skills Institute (ISS Institute) is proud of its heritage. The organisation was founded over 25 years ago by Sir James Gobbo AC CVO QC, former Governor of Victoria, to encourage investment in the development of Australia's specialised skills. Its international Fellowship program supports a large number of Australians and international leaders across a broad cross-section of industries to undertake applied research that will benefit economic development through vocational training, industry innovation and advancement. To date, over 350 Australian and international Fellows have undertaken Fellowships facilitated through ISS Institute. The program encourages mutual and shared learning, leadership and communities of practice.

At the heart of the ISS Institute are our individual Fellows. Under the International Applied Research Fellowship Program, the Fellows travel overseas and 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.

The organisation plays a pivotal role in creating value and opportunity, encouraging new thinking and early adoption of ideas and practice. By working with others, ISS Institute invests in individuals who wish to create an aspirational, skilled and smart Australia through innovation, mastery and knowledge cultivation.

For further information on ISS Institute Fellows, refer to www.issinstitute.org.au

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In 1972, George Alexander AM (1910 - 2008) set up an independent philanthropic foundation as a way of sharing his wealth and giving back to the community. Today, the main focus of The George Alexander Foundation is access to education for promising young people, particularly students with financial need and those from rural and remote areas.

The George Alexander Foundation (GAF) Scholarship Programs form the core of the foundation's work, operating in partnership with major tertiary institutions,

while our Fellowships and other Education grants provide a variety of other unique and challenging educational experiences. George Alexander believed in the notion of 'planting seeds and hoping they grow into pretty big trees'. The programs supported by the Foundation endeavour to support this ideal and as GAF students graduate and go on to contribute to the community, George's legacy and spirit lives on through their achievements.

George Alexander came to Australia as a child migrant, and went on to become a mechanic, an entrepreneur and a businessman and later, a generous philanthropist, who held that you do not own the possessions you have, 'you're just minding them'. This philosophy guided him to give during his lifetime and to hope that through his example, he might inspire others to do the same.

Fellowship Supporters

The Fellow also acknowledges the following individuals who have played important roles in the development and execution of this Fellowship.

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- » Mareko Maumasi, Maumasi Fire Arts
- » Mark Weinstock, Prick Blades
- » Kevin Cashen, Cashen Blades

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