JAPANESE WOOD CRAFTSMANSHIP

The tools, techniques and philosophies that make Japan's unique woodworking culture so special, and the lessons that can be learnt by makers in the UK

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Timber elevation in the Gion district of Kyoto

"Masonry and steel are 'building' materials. Wood is a 'thinking and building' material"

Fukushima Katsu, 2015

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Abstract:

In November and December 2015 I travelled to Japan on a Winston Churchill Memorial Fellowship in order to uncover what it is that makes wood craftsmanship in Japan so special.

From their unique set of tools, to the many obscure techniques that have been developed, to the philosophies that guide decision making, there is something different about Japanese woodworking.

This study aims to decode the mysticism of Japanese wood craftsmanship, understand the effect that Japanese society has on the craft culture there, and establish if the practical, philosophical and cultural landscape of woodworking in Japan contributes to a national aesthetic identity.

In response to the experience and knowledge gained, I hope to develop ideas for how craftspeople in my own sector, furniture making, might learn from our Japanese counterparts for the benefit of our professional community and for UK craft as a whole.

Key Themes & Findings:

Japanese society has developed some specific characteristics that foster craftsmanship. The necessity for craft in everyday life, and a progressive attitude to passing on the 'flame' of tradition, are vital to this. Just as important, however, is the veneration for the skill and experience of elders, especially males. It makes the process of passing craft skills on a duty to be honoured, rather than a convention to be resisted.

The tools of Japanese woodworking are vital to the formation of Japan's unique carpentry aesthetic. The consequences of seemingly esoteric differences, like the use of tools on the pull-stroke, cannot be underestimated.

The extensive use of hand planes, and the modification made possible by their wooden bodies, is a fundamental aspect of how these tools encourage a rich craft culture. This is one aspect of the more widespread use of hand skills in woodwork in Japan, which seems to result in a closer connection between maker and material.

The widespread use of water and fire as tools shines a light on the depth of knowledge Japanese woodworkers have for their material. The properties of wood, such as how it expands with moisture, are positively embraced with as much enthusiasm as they seem to be avoided in western woodworking.

The making philosophies which craftspeople in Japan adhere to have the most profound effect on the work they create. The most noticeable of these philosophies are the 'absence of noise' and the 'search for lightness'. Noise is reduced by keeping visible jointing spare to avoid distracting from the form of the piece or beauty of the natural wood. Lightness of weight, of touch, and of impact on surroundings is achieved through quiet, slim detailing and the use of carefully selected timbers and bamboo.

The tools, techniques and philosophies of Japanese making, and the reverence in society for the skill and experience of craftspeople, have created a 'Japanese contemporary vernacular aesthetic'.

Summary of Recommendations:

- Establishment of nonprofit, professionally managed and marketed, regional makers' associations, with the specific purpose of exhibiting and promoting their members' work. ***Based on the example of Asahikawa Furniture Industry Co-Operative.***
- Creation of clean, comfortable, warm gallery spaces within individual makers' workshops, where costumers can view work without appointment, and see pieces being made. ***Based on many examples, specifically Daimon Takeshi, Suda Shuji and Fujinuma Noboru.***
- A progressive approach to apprenticeships, where experienced makers coming to the end of their careers provide expert tuition in exchange for free labour. ***Based on the apprenticeship program practiced by Izaki Masaharu.***
- Promote the making of small items as a matter of course. These small pieces act as a low-cost introduction to a maker's work, they can be made from off-cuts that would otherwise go to waste, and they are easy to transport and exhibit. ***Based on the example of Tanno Norio, who makes card holders in Hokkaido.***
- Develop more strategic approaches to showing and exhibiting work - in less conventional, higher-traffic spaces. ***Based on the example of Sugawara Hiroyuki.***
- Creation of 'Living Legend' style honours system for top makers in specific craft disciplines, with the express purpose of promoting craft to a wider audience in the UK and overseas. ***Based on Japan's 'Living National Treasures' honours program***.
- Establish craft as a gallery-worthy artform, championed and exhibited by our national institutions of art. ***Based on many examples, specifically Santaro's retrospective at Hokkaido Museum of Modern Art.***

About the Author:

I am a furniture designer and maker, and I work from my studio in central Liverpool, North-West England. I specialise in contemporary hardwood furniture, dividing my time between producing collections for sale and exhibition, and creating bespoke commissions for private clients.

Before starting my furniture studio, I studied architecture at Newcastle University, graduating in 2006 with 1st class honours. I gained my Masters in Architecture from the University of Sheffield in 2009. My architectural training is intrinsic to every item of furniture I make, and I see my work as small pieces of architecture. The rigours of the architectural design process carry through into my woodwork, and I pay special attention to the articulation of my pieces in the way they are joined and connected.

It was during the writing of my undergraduate dissertation that I first became interested in Japanese design. I was studying the American Arts & Crafts architects Greene & Greene, who cited Japanese design motifs as a key influence on their work. Their extensive use of timber and exposed jointing motivated me to seek out the source of their inspiration. It is with some irony that I have come to understand that Greene & Greene, so formative in my own interest in Japan, in fact exhibited very little of the philosophy, subtlety and care that is intrinsic to Japanese making.

My time in Japan conducting the research for this study has had a profound influence on my design and making, and has only strengthened my respect and admiration for this extraordinary craft culture. This report is an important marker in what I expect to be a lifelong study of what make Japanese craftsmanship so special.

Hugh Miller

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Images and Illustrations:

Front cover, images, photos and illustrations by the author, unless otherwise noted.

Introduction:

Detail from Sunnyhills Bakery, Roppongi Hills, Tokyo.

Furniture making and wood craftsmanship in the UK seems to be at a crossroads. Although we have a rich and enviable woodworking tradition, it can sometimes feel as if the introduction of processes such as CNC milling, laser cutting and mass production techniques are distancing the craftsperson from their material. This, it can be argued, results in a loss of integrity and authenticity - what the great American maker James Krenov would call an absence of the makers 'fingerprints' on the finished work.

Japan feels like an antidote to such frustrations. The unique woodworking hand tools, upon which Japanese makers still heavily rely, viscerally connect the maker to their timber. The use of techniques like charring, wetting and bruising the wood, largely avoided in western making traditions, are widespread in Japan and allow for new paradigms and styles of making to develop. The philosophies of making that underpin Japan's world-renowned craft traditions appear to place authenticity in technique, in material, and in utility at the centre of the craftsperson's decision making.

But how do seemingly esoteric idiosyncrasies, like Japanese woodworking tools being used on the pull-stroke, effect the work that is produced? How do the techniques practiced by Japanese craftspeople change their approach to the material? Are woodworkers in Japan restrained by a strict philosophy of making, or does each generation contribute to an evolving ethos of craftsmanship? Does all this result in a collective national craft identity in Japan, and what part does Japanese society at large play?

These are some of the questions I hope to shed light on in the course of this study. Armed with these new ideas about wood craftsmanship, I hope to identify how UK furniture makers, woodworkers, and the crafts sector in general can benefit from following the examples set by our Japanese counterparts.

The Anatomy of this Study:

Structure:

The body of this study is set out in four sections. The first details the wider societal reasons why craftsmanship is so strong in Japan; the second focuses on the tools and techniques of Japanese woodworking; the third explores the philosophies of making which guide makers; and the fourth seeks to establish how these factors contribute to a national aesthetic identity for woodworking in Japan.

One of the most important features of craftsmanship in Japan is that the practitioner is venerated above the objects they make. This tradition is honoured within the structure of my report. Each theme discussed is supported by a 'craftsman study', which details how a specific practitioner contributes to, is influenced by, and exemplifies that theme.

Although the majority of this report is written in the 3rd person, the 'craftsman study' sections, and some footnotes, are written in the 1st person. This reflects my personal connection to the subject, and attempts to differentiate between conclusions drawn from the research gathered, and my own personal perspectives on what I saw.

Scope and Duration:

My study was funded by the Winston Churchill Memorial Trust, and was six weeks in duration, taking place in November and December 2015. Due to time limitations, the scope was restricted to best-in-class examples of wood craftsmanship, including three 'Living National Treasures', two award-winning and widely published architecture practices, and two internationally recognised academics.

The result of this may be that my study is not reflective of the sum average of Japanese woodwork, and instead represents the high water mark of wood craftsmanship in Japan. However, the purpose of my Fellowship is to draw out paradigms of how we in the UK craft sector can learn from our Japanese counterparts. In this way, seeking out the best-in-class examples of wood craftsmanship is fully justified.

Although the training and apprenticing of those entering craft professions was beyond the scope of this study, two excellent paradigms for learning became apparent. These examples, although not the main thrust of this study, were too important to leave out.

Methods:

My study was carried out using a 'grounded theory' approach to qualitative research. Themes became apparent through the perspectives and experiences of the craftspeople who participated, and not through a predefined set of ideas or philosophies of making.

This was important, as there is a huge amount of tradition, mysticism and spiritualism associated with Japanese craftsmanship. Whilst this certainly came out in the research, it was important to avoid imposing western stereotypes onto the subject. The craftspeople and others who were interviewed, themselves, define the landscape of this study.

The result of this is that some often-cited aspects of Japanese philosophy, such as WabiSabi, are not included. That is because they were not cited by the participants. It is quite possible, even expected, that many important ideas about making and craftsmanship were not communicated within the interviews, and so this study should not be seen as an exhaustive account of what motivates woodworkers in Japan. Just as craft is a personal endeavour that means something different to each practitioner, so this study explores the individual priorities of each of the participants.

Craftsmanship & Society in Japan:

It is immediately apparent, as an outsider in Japan, that handmade crafted objects and architecture occupy a special place in Japanese society. But why, and how? This is a complex question that six weeks of on-site study can perhaps only scratch the surface of. However there are a number of themes that became apparent, and it is important to understand these in order to set the context for the more specific woodworking topics of this study.

Contemporary Japanese tea service. [Image from Adam Marelli 's 'The New Kyoto crafts Movement']

Craftsmanship in Everyday Life:

There are some specific features of Japanese daily life that give craftsmanship a special platform in society. The most visible of these might be the ritual of the tea ceremony, and its more informal variants, which are practiced across society. The process of heating water, mixing the powdered tea, and serving it in bowls requires the wares of a plethora of different craft disciplines.

Blacksmiths, lacquer artists, woodworkers, bamboo weavers, textile artists, paper makers, and of course ceramicists, are all required to make the implements which allow tea to be served. The requirement for all these items, and the veneration for them not only within the context of the tea ceremony, creates a sustainable market for craft items.

Similarly, the tradition of having a shrine in the home is widespread.[i] This is true despite Japan's increasingly secular society. The shrine, most commonly a Butsudan (佛壇) requires a number of crafted items, not least the wooden cabinet that the altar sits in.

The important process of gift-giving in Japan is another avenue by which craft is consumed. Gifts, which are given far more frequently than in the UK, are often sourced from the region of the giver, making local crafts an obvious choice.

In order to satisfy society's requirement for crafted objects, there are many craft festivals in Japan where makers sell their work directly to the public. These take place across the country and throughout the year. In the course of this six week study there were five advertised in the Tokyo and Osaka regions alone.

i. Hirochika Nakamaki; Japanese Religions at Home and Abroad: Anthropological Perspectives, (Routledge, 2006) p24-25

Craftsmanship study: Tomoshibito no Tsudoi Craft Festival

In November every year 100 craftspeople from all disciplines exhibit handmade items under tents in Daisen Park. The two-day event is called Tomoshibito-no-Tsudoi, and is organised by volunteers.

The festival is one of the most important events for designer/makers in Japan, and is heavily over-subscribed. Around 500 people apply for the 100 places available, and the quality resulting from the selection process is extremely high. Selection is decided by the core organising group which is made up of craftspeople, shop owners, curators and other people involved in the promotion of craft in Japan. The group changes every year in order to prevent nepotism and increase variety. A number of the craftspeople I met in Japan have exhibited at the festival in the past, and it is widely regarded as one of the best and most important craft festivals of the year.

The highly popular event is a launch pad for many new and established makers to sell directly to clients, and also get picked up by galleries and shops. The modest 20,000 yen (£100) exhibition fee is in stark contrast to the prices charged at UK craft exhibitions and festivals, and ensures a meritocractic selection process..

I volunteered to help put up the tents for the 2015 event, and I spoke with the chairman of the organising group, a successful glass blower and teacher named Takeshi Tsujino. He was the person who first articulated the idea described above about how the ceremonies of Japanese daily life require a lot of craftsmanship within their performance, It could be argued that the sustainable market this societal requirement produces is a driver for why Japan's craft culture is so vibrant and rich.

Opposite: a woodworker's stall at Tomoshibito Craft Festival

Tending the Flame of Tradition:

'Tradition is tending the flame, it's not worshiping the ashes' [i.]

In the preparation for this study, and during the research trip itself, a theme that became apparent was the way traditional craft knowledge - tools, techniques and materials - is passed down through the generations.

There is a marked difference in how craft 'traditions' are responded to in Japan as opposed to the UK. Whereas we in the West make every effort to preserve the original fabric of our history, in Japan it is the skills and knowledge that are preserved.

An example of this is the routine demolition and rebuilding of major shrines. The most famous of these is the Ise Shrine in Mei Prefecture, 100km south of Nagoya, which is rebuilt every 20 years.[ii.] In terms of passing on the knowledge required to build these shrines, the twenty year time frame is crucial. It allows for three generations of craftspeople to undertake the work. The most experienced Miyadaiku (宮大工) (shrine carpenters) oversee the project, whilst practiced carpenters execute the work, and apprentices learn the techniques.

It may seem like a ludicrously cavalier suggestion, and it is, to propose the demolition and rebuilding of our great monuments such as the medieval cathedrals of England. Indeed, the stonemasonry involved would take centuries to complete, making the twenty-year cycle impossible. However, it is an interesting thought experiment in establishing what we as a society are interested in preserving. Is it the fabric of our history that is worthy of protection, or is it the skills and knowledge that allow that fabric to be created that should be sacrosanct?

i. Gustav Mahler, Austrian composer, 1860 - 1911
ii. Neil Stevenson, Architecture, the worlds greatest buildings explored and explained, (Dorling Kindersley, 1997) p16-17

The benefits of this approach are clear, not only in the preservation of traditional skills, but in the adoption of craftsmanship in contemporary architecture. Japan arguably leads the world in this, with proponents like Kuma Kengo, Sato Jun and Shigeru Ban at the forefront of the field.

The 'Chidori Experiments' by Kuma and Sato, which are featured later in this study, are an example of how traditional Japanese jointing techniques can be incorporated into contemporary design (p86-87).

Veneration of the Practitioner over the Object:

In the UK the structure of appreciating and venerating craftsmanship is built around the objects themselves. In museums, galleries and exhibitions, it is the products of craftsmanship that are valued. The equivalent of these displays of the stuff of craftsmanship are certainly provided in Japan as well. There are possibly more opportunities to see craft in a curated setting in Japan than in the UK, as there are a huge number of local craft-specific galleries dedicated to the purpose.

However there is second, more interesting, facet to the veneration of craftsmanship in Japan. It appears that the practitioner is even more highly venerated than the objects they make. The most distinctive example of this is the Kogei Association of Japan, which honours the best practitioners in each traditional craft discipline with the title 'Preserver of Important Intangible Cultural Properties (重要無形文化財保持者). These craftspeople, usually numbering under ten in each discipline, are popularly known as 'Living National Treasures'. The role of a 'Living National Treasures' is to further the national and international appreciation for their craft, and act as a touchstone for the highest level of skill and quality achievable. Three such makers were interviewed in the course of this study and their profiles are included in later pages.

Odate Toshio, woodworker and writer, in his studio. [Image from Scott Landis; The Workbench Book; Taunton, 1998, p150]

This formal system of honouring the most highly-skilled makers in society is a symptom of a much wider appreciation of craftspeople. Another example is the honorific terms used to describe the most skilled carpenters in various specialities. These include the previously mentioned Miyadaiku（宮大工）shrine carpenters[i]; sukiya-daiku（数奇屋大工）tea house makers; sashimono-shi（指し物師）furniture makers; and tateguya（建具屋), interior carpenters. Each term carries with it a heavy dose of respect and societal veneration.

The term of 'shokunin'（職人）meaning artisan craftsperson, is a demonstration of how the respect for craftspeople is compounded by the duties the shokunin accepts as part of his job. A well known Japanese woodworker and writer, Odate Toshio, now living in America describes the role of the shokunin thusly:

> *'Shokunin means not only having technical skill, but also implies an attitude and social consciousness... a social obligation to work his best for the general welfare of the people, [an] obligation both material and spiritual.'*

I think this demonstrates a symbiotic relationship between society and craft in Japan. The craftsman acts as society's repository for heritage and traditional skill, and is venerated as such, but carries the responsibility of practicing his craft with a social awareness that contributes to the wider benefit of society.

i. For more information, there is an excellent book which follows the rebuilding of a shrine from foundations to roof and contains many illuminating diagrams and photos - Azby Brown, The Genius of Japanese Carpentry: Secrets of an Ancient Craft, (Tuttle Shokai, 2014)

Craftsman study: Katsushiro Sōhō

Katsushiro Sōhō's spritely energy belies his 82 years. A Living National Treasure in Bamboo arts, Katsushiro still works 10 hours a day on the floor of his Tochigi studio. I visited Katsushiro the day after watching him give the keynote talk at the National Bamboo Competition in Otawara's Nasunogahara Harmony Hall.

Katsushiro started his career by making agricultural baskets for local farmers. This utilitarian work gave way to the more arts-focused pursuit of making flower baskets and items for tea ceremonies. It was a change in direction that was not necessarily comfortable for Katsushiro, a humble farmer at heart. But the necessities of making a living, and the mass-produced alternatives to utilitarian baskets forced his hand. In a humorous aside, Katsushiro mentioned that his wife's family had only ceased their calls for him to get a 'real' profession when he was made a Living National Treasure at the age of 71.

Katsushiro's training was very much in the spirit of the strict Japanese apprenticeship. He lived in the master's home and was required to look after the master's children and do the housework. Only late at night, and of his own volition, could he inspect the master's work from the day and tentatively practice the craft with bamboo in hand.

His master Kikuchi Yoshii, a well respected bamboo artist, did not give any verbal instruction, and so Katsushiro had to glean lessons in bamboo weaving from watching his master at work and scrutinising the pieces as they took shape. Any inaccuracy in the young maker's work resulted in it being put on the fire.

This tough apprenticeship is not lamented by the celebrated craftsman and artist that Katsushiro has become. Quite the reverse is true. In a similar way to his master, Katsushiro is reticent to give too much 'feedback' preferring for students to figure things out for themselves.

Katsushiro Sōhō describing the properties of different bamboo species in his studio in Tochigi

I asked if he had any advice for me, as a young maker wanting to further my own craft. Looking through the photobook of my work that I'd given him at the start of our meeting, he flicked to a side table with prominent dovetail corner details. For Katsushiro, it had 'too much noise', it was 'showing off'. This sentiment, correct in my view, has become a cornerstone of my study into Japanese making philosophy. It is a philosophy that I've termed 'an absence of noise', and is discussed in more detail later in this report.

Age and Gender in the Order of Precedence:

Although Japan has led the world in technology and electronics, it can sometimes feel as though fewer gains have been made in terms of social progress. Precedence in Japan is still largely a factor of age and gender, with older males being the most highly respected.

Conformity to gender roles within a largely patriarchal system is in evidence in many facets of daily life in Japan. Servers in restaurants and cafes are invariably female, and the youngest female in an office will likely be the member of staff required to make tea for visitors. There is an expectation (maybe less so in the younger generation) for the female partner in a relationship to do the majority of the household chores and child care.

This subject is far too large for the scope of this study, but the themes of age and gender precedence in Japan have important ramifications for craftsmanship. The obedience and respect conferred on older, experienced craftsmen (and they usually are men)[i]

i. It is important to note that there are many highly respected female craftspeople in Japan, including 'Living National Treasures'. However, they tend to be represented in craft disciplines which conform to traditional gender roles, such as textile working.

is palpable, and for good reason. The skill and quality of these craftspeople is world-renowned and is what lead me to Japan for this study.

The effect of this reverence is that traditional ways of thinking and making are observed with little dissent. This allows for the passing on and enriching of traditional craftsmanship, and is surely the reason why hand skills, in particular, are so fantastic.

It would be possible to view this as a stifler of creativity, with new ways of doing things shunned in favour of honouring the methods of the previous generation of masters. There was some evidence of this, however it could be argued that creativity often takes place within tightly defined parameters. Just like the rigid structure of a Shakespearian sonnet challenges the poet to exercise increasing control over language, so the confines of tightly defined making traditions can breed ingenuity.

The reverence for older male craft masters engenders a veneration for traditional craft paradigms, and the system is self perpetuating as one generation of apprentices become the next generation of masters. It would be unpalatable to advocate for returning to a more patriarchal system, but the distilling effect this has on traditional craft is difficult to overlook.

Suda Shuji in his workshop, converted out of a school gymnasium, on the outskirts of Sapporo.

The 'Pressure Cooker' Effect:

On the face of it, the UK and Japan might seem like similar countries. Both are island nations, social democracies with strong economies, and both border huge economic markets in Europe and China respectively. However the differences, especially in terms of nationalism, are stark.

One of the most interesting themes to come out of this study is the difference in attitude between the UK and Japan towards accepting international influence in terms of aesthetics, design and methods of making. If the UK could be described as a 'melting pot' of cultural influence within craft disciplines, Japan might be described as a 'pressure cooker', where a national vernacular style is distilled and made more powerful with each generation.

In the UK society in general, and craft as a constituent part, is the result of millennia of invasion, international trade, conquest and exploration. The result is a melting pot of artistic and creative influence. In Japan, the reverse is true. Japan has, in both active and passive ways, shielded itself from outside influence.

The most obvious iteration of this would be Sakoku (鎖国), a term used to describe the almost complete isolationist foreign policy of Japan in effect until the mid 19th century. The policy dictated that no person was allowed to enter or leave the country, under penalty of execution. The term literally means 'national isolation' and was only lifted when the American Navy, under commodore Matthew C. Perry, engaged in the forcible opening of Japan to foreign trade at Tokyo Bay (then known as Edo Bay) in 1853.[i]

Although Japan is a much more open society today, there are some interesting remnants of Sakoku that linger, and which I think contribute to its rich craft culture. This is best described through the example of the craftsman featured on the following page.

i. Mayumi Itoh; Globalization of Japan: Japanese Sakoku Mentality and U.S. Efforts to Open Japan; Palgrave Macmillan 1998

Craftsman study: Suda Shuji

Suda Shuji is a furniture maker whose workshop is based in a disused school building in a small village to the north of Sapporo in Hokkaido. His work is careful, practical and has a distinct Japanese aesthetic.

His philosophy of making is based around a book by Michio Hoshino, its title translating loosely as 'Journey of the Tree'. It tells the story of a tree which falls into a river, and floats to the other shore where it is seen as rare and exotic by the wildlife that congregates around it. Suda sees this story as a metaphor for his own work, where he uses the tree to make his furniture, and it is then gathered around in the home like a rare object.

He often makes maquettes during the design process. His signature chair, a beautifully joined piece in walnut, was the result of three maquettes which he progressively pared down until he was happy with the form. In the design, the finger-jointed corners are left proud and the arms gently curve between back rest and front leg. It looks contemporary but very Japanese.

I asked Suda if he tries to design in a Japanese style. His answer centred around the idea of Sakoku. He said that he actively avoids reading western design magazines or looking at western design references. His concern was that these could start influencing his work and he would no longer be able to truly think of his own designs. There was a sense of vernacular pride to his thinking. He expressed that his designs come from his upbringing, from the environment which surrounds him, and from the people in his life.

Opposite: armchair in walnut by Suda Shuji
Below: Suda Shuji's maker mark, an inlaid stripe of contrasting timbers, which is added to all his pieces

Sakoku, and the 'pressure cooker' effect make the traditions and motifs of Japanese design seem undiluted, as if distilled through the generations resulting in a rich vernacular pallet of details. Suda is working very much within this tradition, and is actively perpetuating it in his own design process. He exemplifies a theme that is explored in much greater detail later in this study, and which is entwined with the 'pressure cooker effect' - that of a Japanese contemporary vernacular aesthetic (p96).

Tools & Techniques of Japanese Woodwork:

Opposite: tools hang on the wall in Suda Kenji's studio in Gunma

The Control of the Pull-Stroke:

It is well documented that Japanese tools are used largely on the pull stroke, rather than the western-favoured push stroke. Kanna (鉋), wooden bodied, hammer adjusted planes, are pulled towards the user to make a cut. Similarly, nokogiri (鋸), Japanese saws, have teeth angled towards the user so that they engage with the timber fibres on the pull stroke.

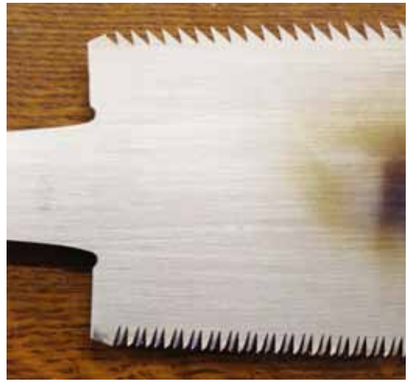
Saws:

In the case of saws, the pull stroke has profound effects on the anatomy of the tool. Western saws must resist the buckling forces of cutting on the push stroke through thicker and more malleable blade and a heavy spline added to the top edge (see image - this page bottom right). The act of pulling a Japanese saw through the cut, however, results in the blade naturally tensioning itself. The benefits are eloquently described by Toshio Odate:

> *'The pull stroke prevents the blade from bowing, so a thin, brittle steel can be used; because the steel is so thin, the blade cuts a narrow kurf, and the saw cuts down the wood fast. The thin blade also enhances accuracy - just as people often react to the sensitivity of a fine pen point by writing smaller, more delicate letters, a fine blade encourages delicate, precise cuts.'* [i.]

The speed of Japanese saws, combined with the precision of the cut, promotes the wider use of hand-sawing in Japan. The flexibility of cutting joints by hand is infused through Japanese making, and often leads to more intricate jointing and quirky details.

i. Toshio Odate; Japanese Woodworking Tools: Their Tradition, Spirit and Use, (Linden Publishing, Fresno, CA, 2006), p39



Planes:

Japanese planes are very special pieces of technology, and various aspects are discussed in more detail elsewhere in this report. However, the act of pulling the plane towards the body is fundamental to its success as a tool.

Japanese woodworkers traditionally worked on the floor, and pulling tools were preferred as it allowed the maker to generate more power from a seated position.[ii.] However, it also fosters a more controlled, careful engagement with the timber. The act of pushing a tool through a material requires an explosive burst of force. As the plane moves away from the body, the control the user has over it diminishes. It also becomes harder to physically see what shaving is being created - an invaluable measure of the quality of cut being achieved. As Japanese planes are drawn towards the body, the cut is under ever-increasing control, and the shaving is constantly visible.

The wooden body of the plane also provides tacit knowledge[iii.] to the user. Chatter, density, and difficult grain can all be sensed more viscerally through the body of the plane.

ii. Odate; Japanese Woodworking Tools, p34
iii. 'Tacit knowledge' - haptic knowledge, gained only through hands-on experience. The idea is discussed at length by Richard Sennet in his seminal work, 'The Craftsman', (Allen Lane, London, 2008)

Top left: Japanese ryoba saw, with rip teeth on the top edge and cross-cut teeth on the bottom edge. Both edges designed to cut on the pull-stroke
Bottom left: Western tenon saw with teeth designed to cut on the push-stroke
Top right: Suda Kenji demonstrating plane technique in his studio.
Bottom right: Sugawara Hiroyuki shaping a spoon with a wooden bodied spoke-shave

Knives:

Although Japanese saws and planes are well documented, it was a surprise to see the same pull-stroke employed in the use of knives. A technique used extensively in the preparation of bamboo for basket making requires the knife to be held still against the user's knee while the bamboo is pulled past the blade. A block of wood is used to support the bamboo, and helps to maintain a constant thickness in the resulting stock.

This most traditional of techniques has influenced a whole suite of processes that are combined in preparing bamboo lathes for weaving. Having tried these techniques first hand, I can say that there is something very different about pulling the material through a blade, rather than pushing a tool over it. For a start, it allows for thinner, more delicate material to be processed. Secondly, it focuses the user's attention on the exposed blade edge where all the action is, rather than on the inert body of the tool. Lastly, by holding onto the material, the maker can feel the stresses and strains that it is being subjected to, and alter their technique accordingly.

Opposite: Fujinuma Noboru demonstrating the technique of pulling material passed a knife blade.
Below: dovetailed corner detail from a bench in Santaro's retrospective exhibiton at Hokkaido Museum of Modern Art, Sapporo.

The pull-stroke is one of the key differences between Western and Japanese woodworking. It is all-encompassing in its ramifications - in the anatomy of the tools, in how the tools are used and experienced, in what kind and size of wood can be processed, and in what information is fed back to the maker during use.

Having now experienced the Japanese 'pull' techniques, I have been convinced that the pull-stroke allows for more control, offers increased accuracy, requires less effort, and provides more nuanced feedback.










Craftsman Study: Sagawa Takehiko

Sagawa Takehiko is five years into his training as a bamboo artist. He studied architecture prior to starting his apprenticeship, and is learning bamboo under his father with mentorship from master bamboo artist and Living National Treasure, Katsushiro Sōhō.

I spend a day with Sagawa at his studio in Tochigi Prefecture, where he demonstrated the process of turning lengths of bamboo into a weaved bamboo basket.

The process starts by cutting the bamboo to length, a decision requiring a combination of measurement and experience. The bamboo is then split length-ways with a thick knife, and divided in half again and again until the required size is reached. The bamboo is then trimmed to width with a set of steel blades, and the sharp corners are removed with a pair of crossed knifes clamped in a vice. Once the bamboo has been soaked to give it more flexibility, it can be thicknessed in an ingenious planer-blade contraption and weaving can begin.

The respect and deference Sagawa displays for the material, for the processes used in it's preparation, and for the masters who he is learning from, are signs of the formidable craftsman he will certainly become.

Sagawa is also an excellent communicator, involved in the creation of a book called 'Second Nature' that shows how nature was the inspiration behind many of Katsushiro's most celebrated pieces. My visit to his studio is an example of his desire to reach a wider audience, and teach people about the incredible craftsmanship involved in bamboo working, and the beautiful pieces that result.

Opposite: The process of preparing and weaving bamboo, demonstrated by Sagawa Takehiko
This page: detail from a basket by Sagawa Takehiko father, Sagawa Motomine

Use of Water:

A 'tool' used with surprising frequency in Japanese woodworking is water and moisture. In Western woodworking, water is usually considered the enemy - something to be expunged, avoided and guarded against.

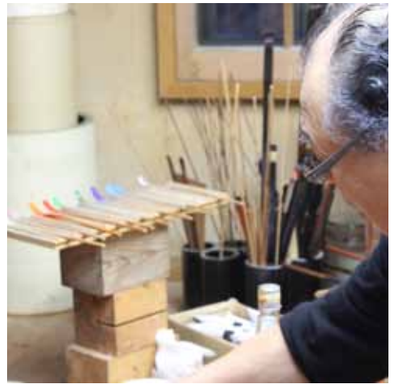
For the uninitiated, wood can be imagined as a bundle of tubes running lengthways up the trunk. These tubes contain a lot of water, equating to a huge percentage of the weight of a newly felled tree. For internal use, this moisture must be removed in order to obtain strong, stable timber, and this is done in a carefully controlled way through air or kiln drying. However, the tubes in the wood never lose their ability to reabsorb moisture. Dry timber, if left in wet conditions, will take on moisture until it is at equilibrium with the surrounding environment. In the case of furniture, this could mean cracks developing, glue lines breaking and joints working loose - all things to be avoided. For this reason, woodworkers generally try to reduce the moisture that their work is exposed to.[i.]

In Japanese workshops, water plays a much more harmonious role. The first hint of this to Western woodworkers would possibly be the use of waterstones in the sharpening process, where water lubricates the abrasive particles of fine-grained sedimentary rock. These have been adopted full-scale in Western workshops, and synthetic water-stones are even available in circular forms for use on electrical rotating sharpening machines.

However, the use of water and moisture in Japanese workshops can be found in far more involved processes than sharpening. In this section, a number of techniques involving water and moisture will be examined. Some resemble Western steam-bending processes, others are a little more obscure and unexpected.

i. The intricacies of moisture movement in timber is outside the scope of this report, but a fantastic resource for learning more is a book called 'Understanding Wood' by R. Bruce Hoadley (Taunton Press, 2nd Edition, 2000)

Above: Tazawa Yusuke with his waterstones in his studio in Tokyo.
Below: bamboo soaking, after being split and sized
Opposite top: Sugawara Hiroyuki's microwave-steamed tray.
Opposite bottom: Fujinuma Noboru's heat-bent urushi pigment spoons.



Stream-bending - The Three-Minute Method:

Many woodworkers in Japan make small items as a matter of course. They act as a low-priced introduction to the style and quality of a maker's work, and are often made from the off-cuts of larger projects. One such item is a serving dish made by Sugawara Hiroyuki. The oval shaped piece of timber is soaked in water for three days until saturated. The timber is then put in a standard microwave for three minutes. This turns the water to steam, and makes the timber very pliable and bendy. It is then put into a former which holds the piece in a shallow curve. When the timber is dry, the shape is fixed.

This simple process belies a huge amount of experience and experimentation by Sugawara. The thickness of the timber, the soaking time and water temperature, the time in the microwave and the power setting used, and the amount of bend obtainable and time given for drying are all finely balanced. Too thick - and the timber cracks; too short a time in the former - the timber springs back. These metrics are all but hidden in the final item - a rather delightful urushi-lacquered dish.

Raising Difficult Grain During Planing:

A more everyday use of water is in the planing of difficult grain. It is always desirable to plane in the direction that the grain is lying so as to avoid tear-out[ii.], in a similar way to stroking a cat in the direction its fur grows, But what if the grain is lying in different directions within a single piece of timber? This common problem has many remedies - closing up the mouth of the plane and using a chip breaker; using a thicker, sharper blade; and skewing the blade to artificially lower the cutting angle.

ii. Tear-out is small pieces of timber that are ripped out when planing against the grain, and leave a rough, pitted appearance to the surface of a panel.

A beautifully simple and quick technique practiced in Japan is to spray the surface of the timber with water and leave it to soak in for a few minutes. This plumps up the wood fibres on the surface, and makes them easier to slice, in a similar way that it is easier to cut hair when it is wet.[i]

The objection to this method, aside from adding moisture to the dry timber, might be that it would rust the steel bodies of Western planes. Japanese planes have wooden bodies and so do not suffer from this problem. However, by dusting the western metal plane after use with an oil-soaked wad of leather, the issue of rust can be mitigated.

Magic Bucket Base:

An ingenious use of water can be seen in the assembly method of Nakagawa Shuji's cedar buckets. Staves of wood are joined together to form the sides of the bucket, and the base is inserted at the end. These buckets are used to carry water and rice, and so must be watertight. A base tacked onto the bottom would leak and so it must be jointed into the construction in a tight-fitting groove. However, if you attempt to insert a bucket base sized to fit perfectly into a groove inside a pre-assembled bucket , the base will foul on the inside faces of the bucket before it can get into that groove.

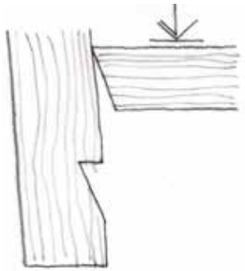
The way of achieving this seemingly impossible bucket-and-base assembly is to utilise woods ability to expand when moisture is introduced. A hammer is used to compress the fibres all around the edge of the base. This makes the base slightly smaller than it's natural size, and so allows it to be positioned into the groove in the bucket sides. The base of the bucket is then soaked in warm water. This plumps up the compressed fibres, expanding them into the groove in the bucket side. When dried, the wood will remain in it's expanded state, creating a sealed base in the bucket whether wet or dry. The diagrams to the right describe the process of assembly.

i. I have been using this technique successfully for a few month now in my own workshop, and I can attest to it's effectiveness.

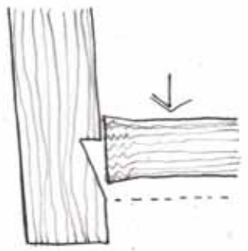
Above: Oil-soaked leather wad used to prevent freshly sharpened irons from rusting
Opposite top: experiments and trails in Nakagawa Shuji's studio near Lake Biwa, Kyoto
Opposite bottom: the assembly process of Nakagawa's ki-oke bucket base.

This seemingly simple technique hides a wealth of tacit knowledge that is required to make a watertight base that is capable of assembly. For a start, the cedar used is a low-density softwood that can be compressed and expanded more than a hardwood like oak. This means that the cedar expands deeper into the groove and creates a more reliable watertight seal.

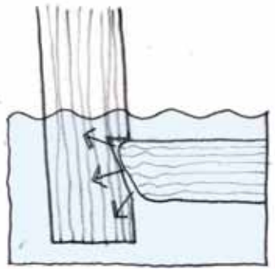
The amount of compression on the base edge, and how it is administered, must not degrade the fibres of the wood. If the edge is beaten too hard, the fibres could break apart when expanded with the water, and shards could become loose and fall away., resulting in leaking. Lastly, the precise dimension and shape of the base edge and matching groove, a 4mm sideways 'v' shape, is crucial. Under-sizing the base edge could result in gaps and leaks; over-sizing could mean too much expansion and cause a split in the bucket side. Despite some jeopardy, this assembly technique is an elegant, mechanical solution that harnesses the often-feared effects of moisture movement.



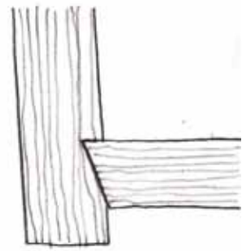
The bucket base is sized to fit the groove, and so is too large to be slotted into place inside the bucket.



A hammer is used to compress the fibres and allow the base to be positioned in the groove.



Warm water plumps the fibres back to the natural position, expanding the base into he groove



The resulting fit is watertight when both wet and dry.

Craftsman Study: Nakagawa Shuji

Nakagawa Shuji is a designer, master craftsman and Ki-oke bucket maker, whose studio is on the shores of Lake Biwa in central Japan. His father, Nakagawa Kiyoshi, is an eminent cedar bucket maker and Living National Treasure in woodworking. However, Nakagawa Shuji's story is not one of inheriting the family business and making the same products. Nakagawa Shuji is an innovative and independent thinker.

He had been around the workshop all his life, and was taught the process of bucket making by his father and grandfather. However, he wanted to forge his own path, and decided to study metal work and sculpture at university - a decision which caused tension between father and son.

Nakagawa Shuji was a successful sculptor, and exhibited widely. However, he was drawn back to woodwork after university. Not wanting to be the 'son of the Living National Treasure', he founded his own studio, and started to experiment with new shapes for these traditional buckets. (Various aspects of his buckets are discussed elsewhere in this study. See the previous page, and p51, p69 and p84)

As the founder of a successful craft business, I asked Nakagawa for his advice on how to build from a sole-practitioner to employing other makers. His reply was that you need to have two product lines: A set of repeated pieces which employees can learn to make efficiently; and a bespoke range which you make yourself, and which allows you room to innovate and experiment.

I asked Nakagawa his opinion on one of my main research themes: Why is craft so strong in Japan, and how do Japanese designers and makers seem to be able to create contemporary work with such a strong Japanese vernacular aesthetic?

His thought, and it has been confirmed to me a number of times since, is that in Japan 'craft' and 'art' are not separate things. 'Kogei', the Japanese word for such activities, loosely translates as 'art-craft'. In fact, Japan only realised that other societies

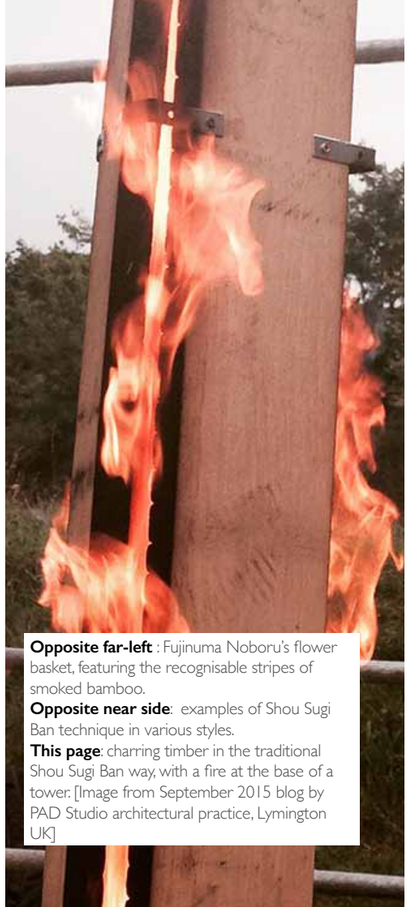
Opposite: Nakagawa Shuji demonstrating the process of planing the inside of a curved bucket at his studio.
Left: Nakagawa's meeting room, full of finished work, ideas, experiment and trials
Above: curved draw-knifes, which Nakagawa has specially made for him by a local tool maker

distinguished between these two disciplines when it exhibited at the World Expo, Paris in 1867. A translation had to be made for the description of their work. 'Kogie' was found to require both art and craft in its translation.

This is symptomatic of the Japanese attitude to art-craft. Art should have utility like craft, and useful things should have simple, functional beauty in the way they are designed and made. A fantastic example of the Japanese concept of Kogie - Art+Craft - is Nakagawa's buckets - beautiful, functional pieces of vernacular art.

Use of Fire:

Fire and heat are used in some interesting ways in Japanese making. The surface created when timber is burned has some special properties. Not only is it a rich, deep black colour, but the charred face also provides protection again water. For this reason, charred timber is sometimes used as an exterior cladding board, as it is in the UK. In this section, three innovative ways of using fire are examined, one external and two internal.



Opposite far-left : Fujinuma Noboru's flower basket, featuring the recognisable stripes of smoked bamboo.
Opposite near side: examples of Shou Sugi Ban technique in various styles.
This page: charring timber in the traditional Shou Sugi Ban way, with a fire at the base of a tower. [Image from September 2015 blog by PAD Studio architectural practice, Lymington UK]

Shou Sugi Ban: (焼杉板)

This is the traditional process of charring cedar cladding to protect it from the elements, and is still hugely popular in Okinawa, south of Kyushu Island. In this process three planks are stood on-end and pinned together to form a tower. A fire is started at the base of the tower, which chars the inner faces of each plank. Once charring is complete, the fire is put out by conducting what is known as a 'controlled collapse' - pushing the tower over and flattening it so no oxygen can get in.

The depth of charring required is largely up to personal taste. However, in order to provide protection from the elements, a rule of thumb is for the entire surface to be completely black, with no partially burned timber visible.

A wire brush is then used to sweep out the soft spring growth. This removes any loose char, and leaves a slightly undulating surface with a deep purple-black appearance. The same process can also be applied to carved or undulating surfaces, and to timber shakes or shingles.

The surface is then washed down with water to halt the burning process and remove any dust. When dry, a coat of natural mineral oil is applied. Advantages of this surface finish, as well as its beautiful appearance, are that it resists water and insect damage, and is protected from fire due to the insulating effect of the char. The finish is said to last up to 80 years, significantly elongating the life of the cladding.

Charred Internal Finish:

A lovely variation of a Shou Sugi Ban finish can be applied to any flat internal panel. The process differs from the external version in that a pad of iron, heated in a fire to around 400-500°C, is used to apply heat to the timber in a controlled way.

Once the charring is complete, a brush made of straw is used to sweep out the loose particles and soft spring growth, creating an undulating surface that highlights the grain of the timber. The straw also burnishes as it cleans, leaving a glint in the blackened surface. When cool, oil is applied as normal.

Smoked Bamboo:

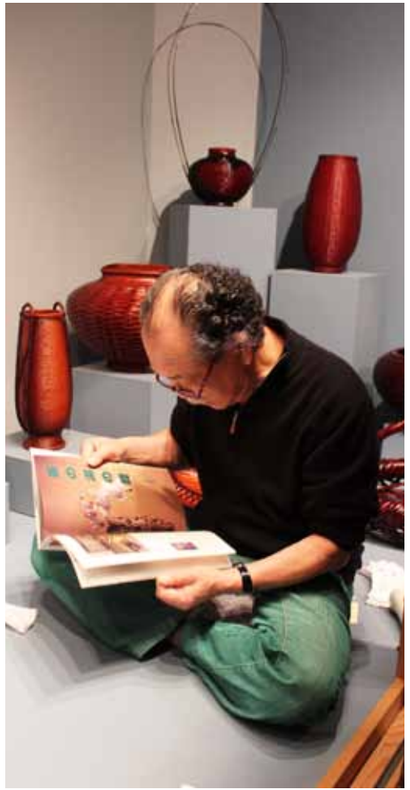
A very different appropriation of fire in Japanese making is the use of 'smoked bamboo'. Originally, this material was sourced from the ceiling above the fire in a traditional Japanese kitchen. Smoke and heat from the fire would gradually dry and harden the bamboo that made up the roof structure. This smoked bamboo is a highly prized and sought-after material, and is used for items such as chopsticks and kitchen ware, where the increased hardness and rigidity are useful.

In appearance, the smoked bamboo takes on a rich, brown tone, and is slightly more brittle and tough to work. It is easy to tell if a piece of smoked bamboo has come from a traditional source as it will have tell-tale marks from the kitchen roof. Where one piece of bamboo overlaps another, the smoking around the area where they touch will be reduced resulting in a lighter colour. This gives traditional smoked bamboo a slightly stripy appearance.

Craftsman Study: Fujinuma Noboru

Fujinuma Noboru, born in 1945 in Tochigi, is one of only two Living National Treasure in bamboo art. His work has been exhibited around the world, and a large collection is housed in the Arts Institute of Chicago.

Although Fujinuma practices one of the most traditional of Japanese crafts, his entry into this work was anything but ordinary. Having studied engineering at school, and having grown up in the post-war electronics boom of Japan, he started his career at the camera company Nikon.



However, a three-week trip to Europe changed Fujinuma's outlook. On seeing the bastion of Western art, the Louvre in Paris, Fujinuma began to consider his own culture and traditions more deeply. Two years later he left Nikon and began to pursue bamboo, a diminishing art form in the 1970's and one he felt a certain duty to sustain.

Tochigi, where Fujinuma was born, is famous for its bamboo arts, and hosted the annual National Bamboo Competition in 2015 during my visit. Fujinuma trained for two years under his bamboo master, Mr. Yagisawa, however it took 16 years of continual work and personal development before he felt he had confidently mastered this art form.

Whilst showing me one of his smoked bamboo baskets (pictured on p44) , and using the coloured buttons on my otherwise plain suit as an example, Fujinuma expressed his desire to hide the most complex, skilfully made parts of his baskets on the inside or base. Just like my coloured buttons, the details should not overpower the quiet, harmonious form of the piece as a whole.

In fact, Fujinuma's work has a wealth of beautiful complexity, but I thought it was interesting that this was such an important principle for him. It's certainly true that his baskets are a pleasure to behold, becoming more interesting the more they are studied.

Opposite: the technique of charring a timber panel, and using a straw brush to sweep out the softer spring growth. [Images from Dong Ju Kang demonstration videos]
This page: Fujinuma Noboru in his gallery at his home and studio in Tochigi

Flexibility and Modification of Tools:

It is very common when looking through a Japanese maker's tool cabinet to find a tool, or a version of a tool, never seen before. The modification and personalisation of tools in Japan is widespread and has important ramifications for the work produced.

Some of these modifications are simple additions to make the tool more comfortable to use, like adding a sheath around the burred hoop of a chisel to allow it to be pushed with the palm of the hand rather than struck with a mallet.

When buying a good quality hammer head in Japan it is usual to buy an oak blank to make a handle for yourself. This allows the maker to fit the handle to their own hand shape, and adjust the distance between hand and strike-face, thus changing the power that can be applied.

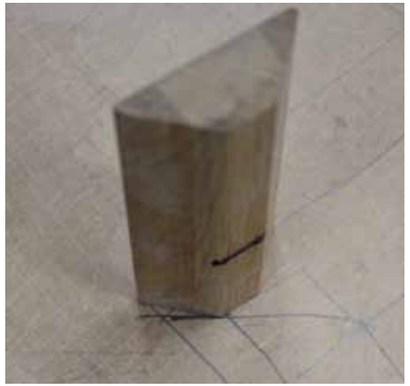
The place where modifications in tools is most apparent is in kanna (wooden bodies planes). This is surely due to the wooden bodies that hold the blade in place. A woodworker is uniquely placed to make accurate, personalised adjustments to these plane bodies. And they do, constantly.

For a start, the process of flattening a kanna is a much more individual process than flattening a western plane. Seemingly flat kanna actually have a slight convex shape cut into their soles[i], with a flat point at the front edge, another just behind the blade, and possibly a third at the foot. These convex furrows in the sole allow the plane to skip over bumps and inaccuracies in a rough-sawn surface, allowing it to be flattened more quickly.

The amount that is removed from the kanna sole is tailored by the maker for the task that specific plane is intended for. For 'herashi-kanna' or 'ara-shiko' (roughing planes), it may be quite a large furrow - around 1mm or more. For a 'jo-shiko' (smoothing plane),

i. This concave furrow is created with a negative-angle scraper plane called at 'dai-ba-kanna'

This page: Rokuro tools, made by Izaki Masaharu at the furnace in his workshop.
Opposite: various wooden bodied planes, modified for specific tasks.



it could be very slight, maybe 0.25mm. The point is that the maker decides what suits them, and so kanna become personally calibrated.

Things get a bit more interesting when it comes to other planing operations. If a maker wants to produce the small 45 degree lip on a hidden dovetail, they can make a plane for that; If it's a particular corner radius, bevel, rebate, moulding, or profile that's needed, they can make a plane for that too.

To create these shaped planes, the wooden body is machined to the precise curve or profile required, and then the square blade is knocked into position. A line is scribed onto the blade so that it matches the newly shaped body, and this is then ground and sharpened to size. It's not a hugely difficult process, and one plane and blade pair can be modified again and again, as long as there is enough material left in the plane body, and enough length remaining in the blade.

As well as woodworkers having the requisite haptic skill to do the work of adjusting kanna bodies, another reason that they are so frequently modified may be necessity. When the masters of today started out in the 50's and 60's, tools were hugely expensive. Additionally, many of the blacksmiths who could produce good quality items were drawn away from tool-making and into Japan's burgeoning mass-production industries where they were highly useful and so well compensated. This led woodworkers to develop their own metal-work skills. Some makers, such as Izaki Masaharu, even learned to forge and harden gouges and chisels in their own on-site furnaces (see image on previous page). The legacy of this additional facet to the woodworkers skill-set is being passed on, through apprenticeships, to the younger woodworkers of today.

But how does the ability and desire to modify tools play out in the work created? -The answer is texture and detail. One of the ways that interest and articulation is added to woodwork in Japan is through the addition of edge details and surface textures, and these are invariably added with planes or gouges.

A master of texture is the chair designer and maker, Santaro, who cuts surface undulations into his seats and benches. The precise radius and dimension of these cuts is down to Santaro, and some chairs are grooved deeply, others are pitted, yet others have shallow longitudinal cuts. It gives his chairs an individual, personal aesthetic, which is one of the reasons his work is in such high demand[i].

Similarly, the cuts and slices that form Sugawara Hiroyuki cutlery are a carefully considered and adjusted formula to suit their purpose.. The added texture gives grip to the utensils, and the undulations on the inside of his spoons, made using a modified gouge, are a unique and rather delightful experience when in use.[ii].

A final example is Nakagawa Shuji's new bucket forms. The teardrops, ellipses and triangles he produces are made possible, in part, because he has a relationship with a master blacksmith in Kyoto called Imai Yoshinobu Seisakujyo. Nakagawa has tools made specially to his own profiles, so that the staves of each bucket can be accurately cut.

The modification of tools is a fascinating and intriguing aspect of Japanese woodworking that has huge scope for makers in the UK.

i. I met Santaro whilst a retrospective of his life's work was on show at the Hokkaido Museum of Modern Art in Sapporo
ii. I have used Sugawara's cutlery when I had lunch at his exhibition in Tokyo, and so this assertion is very much from personal experience.

Opposite top: cutlery before and after shaping with knifes, chisels and planes. The marks of the tools are visible on the finished items
Opposite bottom: texture created with small curved planes on the seat of Santaro's 'Ray' chair.
This page top: three tear-shaped buckets, ready for their metal bands to be attached
This page middle: checking the angle of the sides of each bucket stave. If no light is visible between guide and stave, the angle is correct.
This page bottom: Nakagawa's draw knives, made to his own design to suit the curvature of his buckets.

Slice over Scratch:

Sandpaper is a vital tool in many western workshops. It allows panels, corners and components to be smoothed and prepared ready for finishing. However, it's a tool that was barely used in the Japanese workshops visited in the course of this research. It is much more common to see makers using planes and blades to flatten and smooth the timber to its final finish.

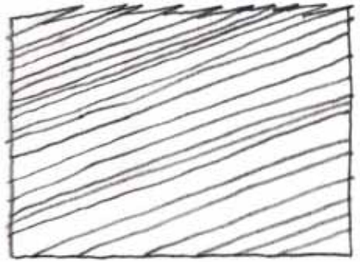
There is a movement of this style of finishing in Western woodwork as well, with its most prominent proponent being the American furniture maker James Krenov (1926-2009). In fact, Krenov was sited as an inspiration for many of the makers who were interviewed. This is not wholly surprising as Krenov's sensibilities in woodwork were very much in tune with Japanese making philosophy. Common threads include designing in harmony with the wood, seeking well-made functionalism over 'originality', and using machines and power tools only for the gruelling processes of dimensioning and thicknessing in order to retain the craftsperson's 'fingerprint' on the finished work.[i.]

The process of finishing timber without the use of sandpaper requires ever-finer planes, which remove successively thinner shavings. There is a certain amount of jeopardy involved, as going over a difficult bit of grain in the wrong direction may lead to some nasty tear-out. This can be avoided, as is discussed in other parts of this study, through the application of water to the surface and through a very sharp blade, a chip-breaker, and a tight mouth on the sole of the plane.

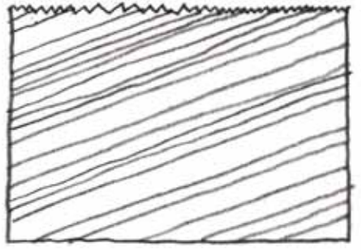
It should be noted that sandpaper was not totally shunned, and was often used sparely in the final stages, for taking off sharp edges from finished pieces. Izaki Masaharu uses sandpaper for smoothing turned pieces made on the rokuro.[ii.] However, Izaki

i. Krenov wrote a number of books on his furniture making philosophy and techniques, all of which are required reading for anyone interested in studio furniture making. The place to start is A Cabinetmaker's Notebook (Linden, 2000)
ii. Japanese 'rokuro' used in the same way as a western woodturning lathe.

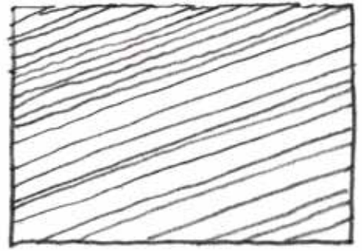
Opposite: A James Krenov cabinet, with hand carved coving that glints in the light and has a very different quality to the same shape made with a router. [Image from 'The Fine Art of Cabinet Making', by James Krenov].
This page top: Dining Table by Suda Kenji, showing the different tactile qualities of a planed-smooth finish and a planed-textured finish. [Image from 'Japanese Fine Woodwork: Pure and Refined Elegance', by Suda Kenji].
Below: the difference between a sanded finish and a planed finish



Sawn timber starts out rough with splintered edges, and must be smoothed.



This can be done with sandpaper (course on the left, fine on the right), but the remaining surface is 'scratched'.



A planed surface 'slices' the fibres of the timber, and leaves a silky finish.

intentionally rubs new pieces of sandpaper against each other in order to reduce their sharpness, and turn them into what Izaki terms 'old' sandpaper.

There is also a very traditional version of sandpaper used in Japan made from the rough horsetail plant (equisetum hyemale). The abrasive surface of the boiled and dried stalks act like a fine polishing sandpaper.

The effect of slicing the timber to create the finished surface, rather than scratching it, has some interesting ramifications. Firstly, the physical process of passing a sharp, heavy blade over the surface creates a burnished, silky appearance that is easily recognised when compared to a sandpapered finished. Secondly, it is quicker, as there is no need to go through the laborious process of sanding with successively finer grits of paper. It creates less dust, which avoids lengthy clean-up if an oil finish is to be applied , and it's kinder to the makers lungs in this respect as well. Lastly, it promotes the adding of texture to the surface, through the use of profiled planes, rather than simply applying a smooth, flat surface as a matter of course.

As many woodworkers will attest, there is something quite special about a totally planed finish. This may be because makers viewing such a piece understand the skill required to create it, but I think there's something more. In a similar way that handmade glass has a swirl in its complexion that indicates its crafted provenance; so the slightly undulating, silky, reflective sheen of a planed finish has a special, haptic quality that is not achievable with more mechanised processes. Maybe this is an example of the craftsperson's 'fingerprints' that Krenov was so keen to preserve.

This page: Sugawara Hiroyuki's carved urushi lacquered cutlery.
Opposite top: Sugawara Hiroyuki demonstrating his 'slicing' technique;
Opposite bottom: finished items ready to be sent to an online shop based in the UK.

Craftsman study: Sugawara Hiroyuki

Sugawara Hiroyuki and his wife, Wakako, work from their studio on Tokyo's western fringe. His work is a beautiful example of spare, careful Japanese design, and he is a maker who embraces the mantra of 'slice over scratch' wholeheartedly.

His work includes cutlery, bowls, plates and trays, and some pieces are available through web shops in the UK. Each piece is made by hand and finished with Urushi lacquer. There is a patina that unifies his work, where the shallow undulating hollows that remain from the tooling are highlighted by the earthy tones of the urushi.

Sugawara is a furniture maker by training, working in the traditional Japanese style, going to great lengths to hide his jointing. He now specialises in smaller pieces of kitchen wear, and exhibits widely.

His most recent exhibition, which I visited with Sugawara and his wife, was at a cafe in west Tokyo. There was an area of traditionally-curated pieces in one part of the cafe, but this was complemented by the cafe using his cutlery and bowls to serve their food.

Customers came into the cafe, ordered, looked at the exhibition whilst they waited, experienced using the items, and bought a piece on their way out. I saw this happen twice during my visit. Sugawara couldn't make spoons fast enough to satisfy the demand, and his cutlery sold out on the first day.

This, I think, is a lesson for those of us in the UK wanting to show our work to a wider audience. This cafe may not have seemed like a conventional space to exhibit, and the idea of letting the cafe use the pieces could appear foolhardy. But giving prospective costumers the opportunity to feel and experience the quality of the work made this a very successful sales avenue for Sugawara. This sort of dynamic approach to marketing could be essential if we are to open craft up to a wider audience and create sustainable income streams for craft professionals.

Philosophies of Making:

Sagawa Takehiko at a shrine under construction in Tochigi prefecture.

An Absence of Noise:

A noticeable difference between Japanese and Western woodworking is the attitude towards showing or hiding the joints. Many woodworkers in the UK choose to show the joints as a demonstration of skill, in order to articulate the processes of making, to add interest to the piece, and to distinguish their work from mass-produced alternatives.

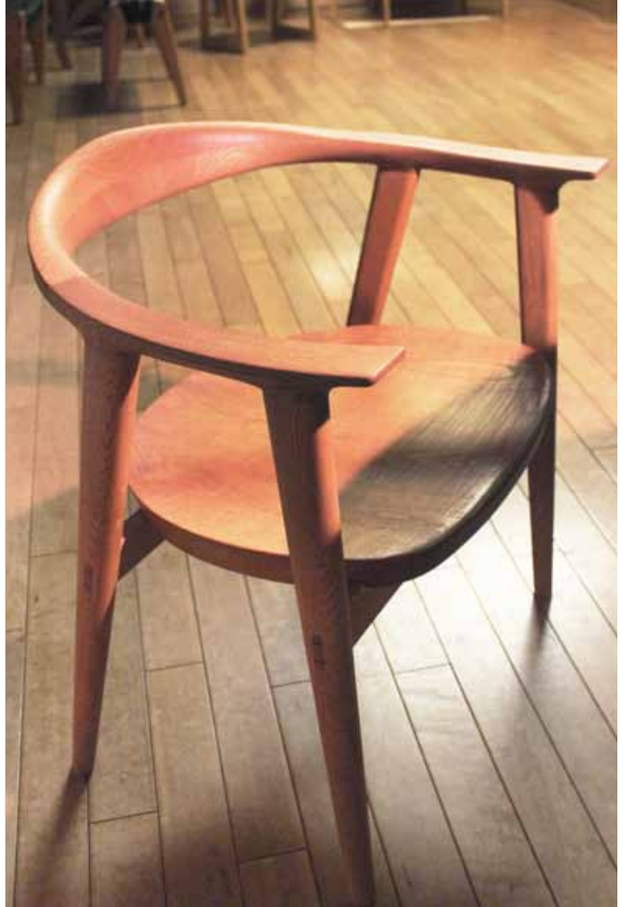
The interviews conducted during the course of this study offered three distinct philosophies that contribute to the Japanese sensibility to hide or mute the visibility of jointing - what I refer to in this study as 'an absence of noise'.

The first reasoning was given by chair designer and maker, Santaro. His work is heavily influenced by Scandinavian design but retains a distinctive Japanese aesthetic. Santaro uses dovetails and wedged tenons as a means of expressing the structure of his chairs. The tenons on his 'Ray' chair are a good example of this. The only exposed joints are visible where the horizontal seat rails are fixed to the front and rear legs. This equates to four visible joints in the entire chair.

The reason Santaro exposes this joint is to emphasis that these structural members are doing the work of holding the sitter off the ground. There are many other areas where the joint could have been exposed, but they are not essential to the telos[i] of the chair - that of supporting the sitter's weight in a comfortable posture away from the ground.

The second reason was given by Suda Kenji, a master box maker (指物). Suda was brought up in the Edo tradition of hiding the joints as a demonstration of skill, and so that the beauty of the wood is paramount.

i. 'Telos' is an Aristotelian philosophical idea referring to the purpose of an object or pursuit. Establishing the telos, or purpose, of a thing is one way to evaluate the moral worth or virtue in those striving for that thing.



Opposite page: a carved, shaped through-tenon, wedged in walnut, by Santaro.
This page right: 'Ray' armchair by Santaro, with an 'absence of noise' in the jointing.
Above: Oak tray with 'quiet' contrasting corner detail by Izaki Masaharu

However, Suda has other reasons for hiding the joints in his pieces. The drawers in his boxes are all jointed with hidden, mitred dovetails. A fiendish joint to cut, that leaves no trace once assembled. He uses this joint because, if the drawer sides were jointed with half-blind dovetails, as in the Western style, changes in moisture content could result in the joints protruding slightly from the side on wetter days. This, Suda said, is no good. The slightly swelled joint could momentarily catch on the sides of the box. By hiding the dovetail in the mitre, the fit of the drawer is far less susceptible to changes in humidity, and will run smoothly all year round.

Craftsman Study: Suda Kenji

Suda Kenji is a woodworking genius, perhaps known best for his incredibly intricate boxes made in rippled sycamore. The boxes, quite small in size, are a treasure trove of incredibly precise, perfectly executed detail. In 2014, Suda was made a Living National Treasure by the Minister of Education, Culture, Sports, Science and Technology of Japan.

I visited Suda on a wet November day at his home and studio in Gunma Prefecture, two hours to the north of Tokyo. He is a warm, humble man, who has craftsmanship running through his veins, and comes from a long line of woodworkers.

On his dining room table, Suda unwrapped a long, slim box with an abrupt 20 degree angle in its plan, a third of the way along its 50cm length. It sounds quite an odd shape to describe, but is instantly charming in real life. At the point where the angle changes, the box hinges open to reveal two drawers each side.

The box is made of the most beautiful ripple sycamore which glints in the light, and is contrasted with a central strip and corner detailing of a black-coloured timber that I can't pronounce. Inlaid into the black timber, are circles of gold and silver.

Suda Kenji adjusting a plane in his studio in Gunma

As well as being a woodworking master, Suda taught himself to work with precious metals, and makes all the metal work on his pieces himself. This includes the hinges and the exquisite 'shrimp' lock that secures the box when closed.

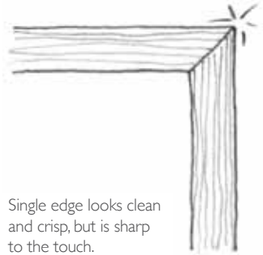
The drawers inside the box are made from cherry, and are also inlaid with silver. There is not a single visible joint on the entire piece, however this is no veneered block of MDF. This is a solid ripple maple box, with perfectly cut hidden mitred dovetails on every corner. The same joint is used on the corners of the drawers, and every one of these fiendishly difficult joints is perfect.

There is a very special piece of construction inside the walls of the box. In order to prevent the timber around the drawers from swelling and shrinking with changes in humidity, a cross grained piece of sycamore is carefully inserted into a groove in each wall. This construction is hidden by a capping piece of the black timber. (see photo on p63)

Another detail is that the drawers are set into their boxes with a 0.5mm rebate taken out of the box wall thickness where the drawer pulls out. This ensures that the drawers, as they are used, do not scratch the surrounding aprons of timber. It's a very small detail and, as with every other part of Suda's work, is perfectly executed.

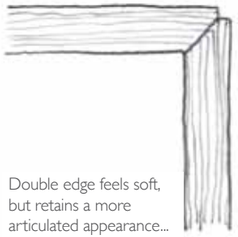
Suda is fastidious about moisture content, and conditions the timber he uses constantly. He has a dehumidifying room where he takes air-dried timber down to around 11%. Each component, when not being worked on, is placed in specially made peg stands and put back in the dehumidifier.

Another example of Suda's brilliant joint cutting is a sake (Japanese rice wine) cup that is stored as five beautifully jointed pieces of sycamore. He assembled them into the cup and poured water in to demonstrate that it was water-tight, which it was. The jointing was perfectly hidden within mitres on all sides and faces, including the bottom, and no glue or clamps were required. It was just perfect.

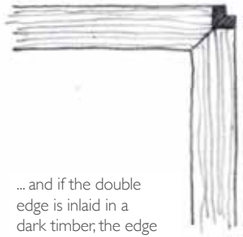


Single edge looks clean and crisp, but is sharp to the touch.

Radiused edge feels soft, but has an unarticulated appearance.



Double edge feels soft, but retains a more articulated appearance...



... and if the double edge is inlaid in a dark timber, the edge appears even sharper.

When commenting on my work, Suda was struck by how many large dovetails I leave exposed. Suda mentions that the name for a dovetail joint in Japanese is 'ari tsugi', literally translated as 'ant joint' in reference to the widened portion at the rear of an ants body. As a description of the different ways he and I, East and West, use this joint he says 'there is a great deal of difference in scale between a dove and an ant.'

Towards the end of my visit, Suda explained why he uses a special animal liquid glue in his projects, which he imports from North America. It is because, with the application of heat, the glue can be softened and his pieces can be taken apart. This means they can be repaired easily. The timber used in his projects has taken maybe 200 years to grow and, with his work, he hopes he has given it another 200 years of life. Making the repair easier to complete means that his work may last far longer than this.

The legacy of his work is a serious consideration for Suda. Pieces are now held in collections around the world, and one of his boxes has just been purchased by the British Museum. His dedication to quality and precision extends far beyond the bounds of his studio and even beyond his own mortality. He is quite simply the best maker I have ever met.

Opposite page top: ripple sycamore box with contrasting edge details by Suda Kenji
Opposite page bottom: The soft, clean, crisp aesthetic of Suda's double-edge corner detail
This page top: hidden mitred dovetails joint this sake cup, by Suda Kenji, with no glue or clamps required
This page middle: hidden mitred dovetails with contrasting tongue and groove beading,
This page bottom: precious stones, sliver and gold, inlaid into Suda Kenji's box. Once assembled, this part is smoothed with waterstones rather than sandpaper.

The third reason for hiding joints was given by Izaki Masaharu, an expert wood craftsman with over five decades of experience. He eloquently described the hiding of joints like this:

> *"Too much joinery is too 'noisy' - there should be just enough to show the structure. Japanese thinking is like this - 'just enough'."* [i.]

The idea of 'noise', and how a furniture designer might try to reduce it, is a compelling argument in support of the Japanese way. It is a rule, a filter, that can quickly expose flaws in a design or concept and offer more elegant solutions[ii.]. It is also a rule that allows for personal expression, which is essential to any creative endeavour. This is evidenced in the different ways the three makers discussed in this chapter interpret the idea of 'reducing noise'.

i. Izaki Masaharu, quote from interview with author, 8th December 2015
ii. I have been applying the idea of 'reducing the noise' in my own design work since returning from Japan, and it has had quite a profound, focusing effect on what I make.

Below: Izaki Masaharu demonstrating the 'rokuro' - the traditional Japanese wood turning lathe.
Opposite top: Sharpening the rokuro tools on waterstones in Izaki's workshop
Opposite below: a rokuro-made bowl, in chestnut.





Craftsman Study: Izaki Masaharu

Izaki Masaharu is a well known and highly respected craftsman, who is based in a large workshop in the town of Gamagori, 60km south east of Nagoya. I first met Izaki and his wife at an exhibition of five seasoned makers near Tokyo Station. This group of makers have been exhibiting together for many years, and the quality of their work is exemplary even by Japanese standards.

Izaki apprenticed in the rokuro, a traditional Japanese form of wood turning, before becoming a furniture maker. This was a formative experience, which included such diverse knowledge on how to forge his own cutting tools, and how to use water on a wood chuck to hold work steady on the rokuro.

These lessons, as well as his huge experience in woodworking, are now being passed on to five young makers in an innovative and impressive apprenticeship program at Izaki's workshop.

Having worked in wood for over five decades and having run a successful business, at one point employing over 30 makers, Izaki has turned his attention to the next generation. Concerned with what he sees as a proliferation of lower quality making and a loss of traditional skills, his apprentices are taught from first principles.

The curriculum is heavily based on hand skills - planes, saws, chisels, and sharpening. His apprentices start at 8:30am, and work until 12pm. They have an hour for lunch, and then work on until 6pm, when they all spend half an hour tidying. They then work on until 9pm. These are long hours, and by all accounts take a bit of getting used to, but the quality of teaching is unquestionable, and the quality of making that is exhibited by the apprentices is very high.

The special thing about Izaki's apprenticeship program, however, is that no money changes hands. The apprentices work four or five days per week on their own designs. One day per week they make work for Izaki. The apprentices can show their own work

in the on-site gallery, and keep the money from any sales. Izaki dips in when needed to teach, demonstrate technique or offer advice, but the apprentices largely support each other, and Izaki works on his own pieces the majority of the time.

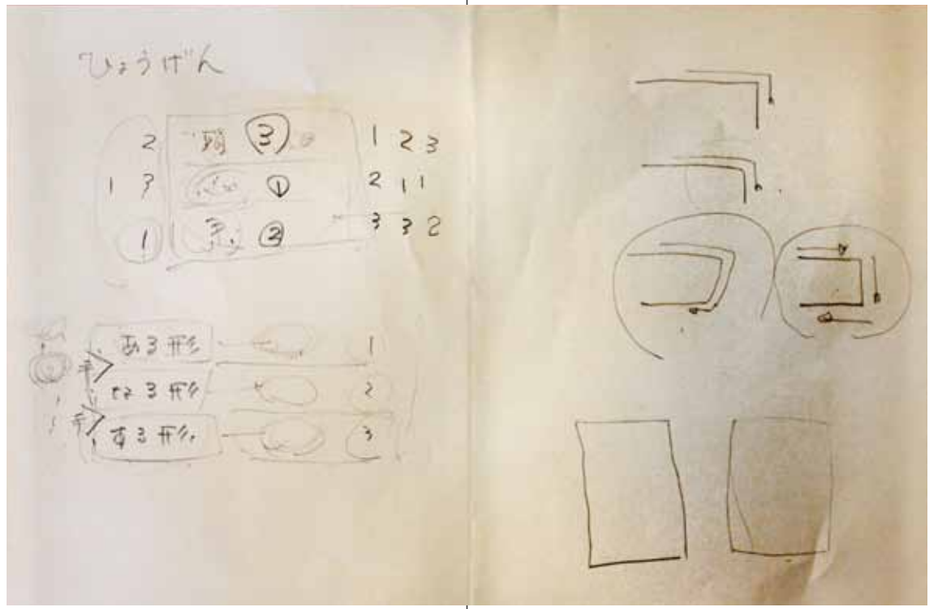
Izaki puts specific emphasis on teaching his students business skills and the philosophy of making, delivered partly through the practical curriculum, and partly in lecture-style talks given in the evenings. It was from Izaki that I first heard the term 'noise' in reference to the excessive visibility of jointing.

One of the most interesting ideas Izaki talked about was a way of categorising the intent of a craftsman or artist. By his account, the three constituents of any endeavour of making are the 'head', meaning intellectual thoughts and ideas; the 'heart', referring to the visceral meaning and purpose that a maker holds dear; and the 'hand', meaning the haptic skills needed to realise the concept in physical materials.

Izaki offers an order of precedence for these three components, 1st, 2nd and 3rd, for different types of creative people. The craftsman (shokunin) would maybe be hand first, heart second, head third. The artist might be head first, heart second, hand third. It's an interesting way of assessing the relative priorities of different creative personality types.

Illuminatingly, when I asked Izaki how he would classify himself, he assigned the hand and heart as equal 1st, and the head as 3rd. I think, in expressing his own overlapping priorities, Izaki hit on the most compelling lesson from his system of categorisation - it is when the priorities of head, heart and hand are in balance, each elevating the others, that truly great craftsmanship is possible.

This is how I see Izaki's apprenticeship program - a perfect balance of the head - business, exhibiting and selling skills, and no tuition fees or wages from either side; of the heart - through learning the philosophies of making; and through the hand - in how the students connect with and understand their material through hand-based techniques.



Above centre: Izaki Masaharu diagrams describing how the priorities of makers can be categories in terms of head, heart and hand.
Right centre: Izaki avoids the three square faces of a table edge, and instead creates a 'single surface' that effortlessly wraps round the edge. The same detail is used at the end of a samurai sword.

Top right: the apprentices work at their benches in Izaki's workshop
Right: small figure made by one of the apprentices, articulated with contrasting timber.
Far right: beautifully cut double haunched tenon, made by another apprentice, to connect a stool leg to its seat.

Maintenance Over Robustness:

The idea of maintenance appears ingrained in Japanese craft culture and is an art in itself. Outside of woodwork, this can be seen in the Kintsugi process (金継ぎ), where broken ceramics are repaired with gold and other precious metals[i]. Another example is the maintenance of traditional shoji screens (障子), where tears in the washi (paper) are repaired by covering the hole with a Maple leaf, which then appears as a silhouette on the paper when light shines through.

How does the idea of 'maintenance over robustness' foster craftsmanship in Japanese culture? I think this happens in two ways. Firstly, accepting the need for continual maintenance allows for more delicate, elegant detailing. Secondly, requiring continual maintenance to be performed necessitates the passing on of craft skills through the generations.

i. A good source of information on Kintsugi is Churchill Fellow, Clementine Nuttal, who travelled to Japan in 2015 to research this specific technique.

This spread: the process of making a timber ki-oke bucket, demonstrated by an apprentice at Nakagawa Shuji's studio.

Woodwork, due to its susceptibility to water damage, has a rather unique position in terms of maintenance. In this section, two variations on the theme of maintenance over robustness will be explored. These are the maintenance of ki-oke (timber buckets); and the maintenance of timber buildings.

Ki-Oke - Wooden Bucket Maintenance

Wooden buckets have been used extensively in the home, and in traditional tea ceremonies, for over 700 years[ii]. The buckets are used for holding rice, miso, and water, and so are subject to moisture cycling[iii]. Even with the most careful construction detailing, over time these buckets can crack and so need to be maintained.

Nakagawa Shuji, a master bucket maker who is profiled on p42 of this study, described how the glue used in the construction of his work is specifically chosen for its weakness and flexibility. Where as Suda Kenji uses a hide glue that allowed his boxes to be refurbished long after he is gone, Nakagawa's glue selection allows for his buckets to be used every day and maintained frequently. By using weaker glue, he can ensure that any splits that develop in the bucket do not degrade the timber itself., they merely split the glue line. When a bucket is returned to him for maintenance, he is then able to splice in additional staves of timber easily, and ensure the bucket can continue in useful service.

Nakagawa has a two-year waiting list for repairs to his buckets, which goes some way to describing the cultural acceptance of maintenance in Japan. He also has a similar waiting time for new buckets, which has caused him to take on three new apprentices to keep up with demand. These apprentices, in time, will perform maintenance on Nakagawa's buckets and so the cycle continues, and the skills are passed on.

ii. Adam Marelli; The New Kyoto Crafts Movement; photobook published by Marelli in 2012
iii. Moisture cycling is the physical expansion and contraction of timber as its moisture content changes due to variations in humidity or application of water or other moisture rich substances.

Timber Building Maintenance:

It can strike the foreign woodworker to Japan as unusual, even alarming, how much untreated and unprotected timber is used in the elevations of traditional houses. Two of the most visible examples of maintenance over robustness come in the form of the slim staves of timber that add privacy and shade to washi-screened windows, and the timber posts that are sculpted to sit perfectly on riven stone foundation pads.

The slim elements of timber that line the outside of traditional timber buildings in Japan are a highly distinctive feature of the architecture there. The way these timbers are affixed, and the protection they are given by overhanging eaves, are key to avoiding rapid degradation, and also aid in their speedy replacement.

In order to help air to circulate and prevent mould and insects from congregating, the staves are held away from the glass or washi on spacers. These spacers serve a second function in that they allow for a group of staves to be removed and replaced without any damage to the remaining building fabric. The timber choice here is also crucial, as the cedar or sweet chestnut used in much of this work contains natural resistance to fungus and insects.

The bay windows that these slim staves cloak are often supported on stout timber posts. These rest on stone foundation pads, and are held in place by little more than a carved base to the post which perfectly matches the undulations in the stone. Timber in this situation is highly susceptible to rot due to a continual process of wetting and drying. However, there is a lovely piece of detailing which counters the problem.

By elevating the bay window off the ground, a 50cm section of post is left easily accessible. When this section rots and needs replacing - around every 15 years - it is spliced out and a new base section is added. A special diagonally assembled joint is used that makes the newly spliced post more resilient to any movement in the joint.

Neither of the details described here are practical unless regular maintenance is an accepted part of the owners' duties. Narrow staves and posts sitting directly on stone pads are two sure ways to reduce the longevity of external timber. However, by accepting the need for regular maintenance, the payoff is an added elegance and detail in the elevations of these buildings.

Opposite: the bottom of this post has been replaced, with the join clearly visible.
Left: slim lathes of timber cover the window and door of this Gion residence.
Below: layered thresholds give privacy to the internal environment of the dwelling as in this image, where a fence, screens, overhanging eaves, and translucent glass protect the occupiers from prying eyes.

Craftsmanship Study: Gion (祇園), Kyoto

The Gion district on the east of Kyoto is a famous example of Japanese traditional timber housing. It is also a very visible instance of the idea of maintenance over robustness in traditional architecture. The many long, narrow, winding streets are full of timber detailing and craftsmanship and is a treasure trove of interesting precedents for a woodworker.

Many of the timber buildings in Gion date from the middle of the 19th Century, and it is unusually well preserved: many areas like this did not survive the bombings of WW2, or the many fires and earthquakes that wreak havoc in tightly grained urban districts such as this. The area is possibly best known for its tea houses and geisha, making it highly popular with tourists. It's also close to many of Kyotos most beautiful shrines.

The thing that struck me when walking around Gion was the density of texture and detail. Every surface seems to have been thoughtfully considered. The woodwork is possibly the most visible element, but the same consideration is given to the textured stone paving and curbs, and the tile-work and metal flashings that cloak the roofs.

Having trained as an architect, it was also interesting for me to see how thresholds have been introduced to add a level of privacy to the residences. The stone paving changes shape and level as you get close to the line between 'public' and 'private'; large sloping aprons, placed to protect foundations from the weather, act to hold people at arms length; textured, tightly-spaced fence posts add an extra layer of intimacy; and over hanging eaves protect from the glare of both eye and sun.

Opposite far left: beautifully articulated elevation in Gion, Kyoto.
Opposite centre: Careful detailing and quiet textures adorn every surface.
Left: the narrow streets of Gion are unusually well preserved, and are a fine example of 19th century traditional Japanese timber architecture.

In Search of Lightness:

A theme present in the philosophy of many of the makers interviewed for this report was a search for lightness in their work. Sometimes this was through the materials used, sometimes it was due to the construction details employed, and sometimes it was a careful arrangement of form that achieved the desired effect.

Lightness has an important role for makers in Japan. It is, in part, a show of respect for the value of the material - making things as light as possible leads to a more efficient, economical use of timber. It also speaks to the sensibility in Japan of having a light touch on one's environment. This can be seen in the formality and respectfulness shown in many social interactions, but is also evident in the making. A common thread was that the craftsmanship should add to a client's home in a harmonious way, rather than stand out from it. The search for lightness, in this context, is the search for a harmonious complementary addition to a space. (This is discussed in more detail on p89)

A fantastic example of this concept of lightness is embodied in a chair by master furniture maker, Daimon Takeshi. The piece, called 'Wood Spring Chair', was designed in 2002, and beautifully combines lightness of weight, lightness of touch, and master craftsmanship within a single design.[i.]

i. Photos and information from interview with author, 2nd December 2015

Right: 'Wood Spring Chair' by Daimon Takeshi.

Lightness in Material Choice:

The chair is made of two types of wood. The frame is of maple, a strong and hard timber with tight grain and blond colouring. The tightness of grain is important here as the components within this chair are delicately proportioned, so a less dense timber could crack around the joints. The seat is made of Kiri (桐) otherwise known as Paulownia, a very light[i], fine-grained, timber. Making this part of the seat from Maple would have doubled the physical weight of the chair.

Kiri is an interesting choice as it has a special place in Japanese society. It is the symbol of the office of the Prime Minister, and a dresser made of the timber is a traditional gift at Japanese weddings. The choice of Kiri could also be a show of deference to Japan's heritage. Within the context of a contemporary chair, itself a relatively recent addition to the Japanese home, the choice of Kiri is respectful to Japans woodworking traditions.

Lightness in Construction Details:

The master stroke of this chair is the way that the natural flexibility of the timber is used to strengthen the joints. The rails between the legs are constructed of impossibly slim 30mm sections of maple, insufficient if used as a single piece. But here, saw cuts have been made which allow small lathes of timber to be bent away from the main stock. This makes the timber act like a piece two or three times as thick, in a similar way to how the webbing in a steel I-beam prevents it from bending.

The separated lathes are then jointed independently, reducing the pressure on the mortise within each leg. A circular hole drilled at the terminal of each cut prevents the rails from splitting along their length under the tension.

i. Density of Kiri is 280kg/m3, as apposed to Maple at 705kg/m3. For reference, European Oak is around 750kg/m3

A variant of this style of joint is used to create the backrest, where saw kurfs[ii] are used to make a kind of finger joint. The back legs are bent at the top during the glue-up stage which angles the backrest to a comfortable sitting position. This bend also acts to put the back legs in tension, and so reduces springiness when the chair is in use.

Lightness in Form:

The choice of materials and masterful detailing make this chair impossibly light. It weighs maybe one third or one half of a traditional timber chair. However, it is also the form of this chair that lightens its appearance.

Reducing the backrest to a slim bar allows the spaces between the timber to take precedence. These gaps and spaces are continued into and through the joints, as can be seen in the side rails and at the top of the back legs. The careful notching and carving in the seat panel make this a reductive element rather than the slab of wood it can so easily become. The small radius at the base of each leg is the final move, appearing to float the chair just above the surface of the floor. It is almost as if the timber elements in this chair frame the air that surrounds it.

ii. Kurf is the width of the saw blade, which is removed as waste from a piece of timber during the sawing process. A handsaw might leave a kurf of 0.5-2mm, where as a circular power saw could leave a kurf of 3mm or more.

Opposite: the backrest of the 'Wood Spring Chair' is slotted into saw cuts in the top of the back legs.
Left: lathes of timber bent away from the main stock of the side rail make this chair incredibly stiff and light.

Craftsman Study: Daimon Takeshi

Diamon Takeshi and his son, Kazuma, work from their purpose built studio near Asahikawa in Hokkaido. Daimon is a master of articulation, and the furniture in his gallery is full of innovative, careful, unusual details. He's a woodworker's woodworker, in that there is a playfulness in his pieces that reveal the enjoyment had in the making. This playfulness, however, cannot disguise the level of skill demanded to produce his work.

Along with the chair profiled above, there are carved boxes made to look as if they have fabric draped over them; chests of drawers made from 20 different types of timber; waney-edge benches, and beautiful, simple ripple sycamore tables.

Diamon's detailing is possibly at the more elaborate end of the scale in Japan, but this may be due to his placement in Hokkaido. Having met a number of makers in Japan's most northern island, it does appear to me to have its very own sense of style. The influence here is more Hans Wagner than Edo-ear shokunin. Many of the makers I met had taught in Sweden and Finland, and the snowy, mountainous landscape shared more than a passing resemblance to Scandinavia.

Daimon's Wood Spring Chair, as a case study, might appear an odd choice for this report. It is a far cry from traditional Japanese woodwork, and might appeal more to European tastes than those in Japan. However, I think it perfectly embodies the combination of careful material selection, master craftsmanship, and lightness of touch that weaves through so much of the making in Japan. It is also, in my view, a piece of world-class design that deserves international recognition.

Right: Daimon Takeshi at his studio in Asahikawa
Opposite centre: 'Twenty Trees' chest of drawers
Opposite top centre: hand-carved drawer pull detail from 'Twenty Trees' cabinet
Opposite top right: split through-tenon, held in palace with a contrasting dovetail wedge
Opposite bottom right: waney edge Oak bench with contrasting wedge-tenoned legs.

Experimentation and Innovation:

An unexpected finding from the research carried out for this report was the extensive use in Japan of experimentation in the design and making process. During the planning of this project, it seemed almost counter-intuitive that experimentation or innovation would play a major role, considering the deference to tradition and the quest for simplicity that runs through so much of Japanese design and making. This was revealed as a naive assumption as, in fact, experimentation is the basis for much of the work featured in this study.

In this section, three strands of the topic are explored. Innovative use of machines and tools; experimentation in the use of materials; and innovative use of tradition skills.

Above: Tanno Norio at the milling machine which he uses for all his pieces.
Below: exquisite wooden catch on Tanno's card holder - his signature piece.
Opposite: card holders and other items in Tanno's on-site gallery.

Innovative use of Tools: The Foot-Pedal Milling Machine

Milling machines are the forbearers of modern-day computer-controlled (CNC) routing machines. They are best described as a powerful multi-directional drill mounted on a heavy steel bracket. The table where work is milled is adjustable in terms of depth and lateral position, and repeatability is made easy with the use of stops.

Although these machines are available in the UK, there is a key difference between Western milling machines and their Japanese cousins - The Japanese version has a foot pedal. This allows the quick, accurate presentation and pull-back of the work to the cutter, avoiding the issue of burn. Burn, as well as being unsightly, also creates inaccuracy. If the cutter is left running in a stationary position, the heat created singes the timber fibres surrounding it. This can result in the cut in that area being deeper or wider than parts not subjected to burn, and so lead to inaccuracy. This is more important than it may sound and the foot pedal, in avoiding burn, has allowed the machine to become an essential piece of equipment for some makers in Japan

Tanno Norio is a woodworker based on the outskirts of Asahikawa in Hokkaido. Having worked in larger furniture workshops in his early career, he set up his own studio and now makes a range of products including his signature card holders. These card holders are made entirely from wood with the foot-pedal milling machine.[i.]

The accuracy of the machine has allowed Tanno to innovate with the mechanisms that make his card holders and other products work. He has developed hinges, catches, and even combination locks, made entirely out of timber. These are only possible through harnessing the accuracy of the milling machine in combination with the makers knowledge of timber and the process of machining, and the foot pedal is the secret weapon.

i. Interview with author, 2nd December 2015

Craftsmanship Study:

Asahikawa Furniture Industry Co-operative

Asahikawa has a disproportionately large number of woodworking and furniture making companies. This is partly due to the large timber reserves in Hokkaido, and woodworking being the traditional industry in the area, providing a skilled workforce for companies to recruit from.

The Asahikawa Furniture Industry Co-operative was established in 1949 to represent the interests of the furniture making industry in the local area, and has grown into a membership of over 100 woodworking companies, from large multinationals to sole traders. The association is supported by a membership fee proportionate to the size of the company. Large companies pay more, small businesses pay less.

The association has a huge Ikea-sized showroom on the outskirts of Asahikawa, where all 100+ members can display their furniture. The biggest members have the most space, but the showroom acts as a leveller in that small makers can compete with the largest companies for a customer's attention.

The co-operative organises many exhibitions and events, including Asahikawa Design Week, an annual, professionally-curated design show, giving members a chance to display their wares to an international audience.

The benefits offered by the Co-operative are clear for both large and small members. Smaller companies and sole traders benefit from having access to the showroom and design week, and in the overall marketing of Asahikawa as a furniture destination. They also pick up a lot of sub-contracting work from the larger members. The larger members, in turn, benefit by being surrounded by a highly-skilled workforce. It allows them to be flexible and respond to demand in a more dynamic and rapid way. I suspect that the larger members, who generally use more industrial making processes, also gain by being associated with the integrity of the lone-craftsperson, making by hand.

Opposite: display cabinet at Asahikawa Furniture Industry Co-operative, which can be reconfigured to suit the costumers needs.
Above: oak dining table with wedged tenons in contrasting walnut
Left: corner detail from cabinet on opposite page. The small clefts, cut into the join between the radiused corner piece and the verticals and horizontals, disguises any moisture movement in the solid timber

Experimental use of materials: Ki-Oke Bucket Making

When Nakagawa Shuji began making buckets in his studio north of Kyoto, he had an issue. The twisted copper wires which circle traditional buckets in Japan, and give strength to the staves of timber, were not fit for purpose.

Nakagawa was developing new bucket shapes - tear drops, ellipses and triangles - which required the medal band to do more work than had previously been expected of it. The problem was that the buckets are used to hold water or hot rice. They expand in use, then contract when dry. The traditional copper bands were expanding with the wood, but there was insufficient spring-back when the buckets dried. This led to cracks developing over time.

Nakagawa had trained as a sculptor at university, developing an extensive knowledge of metals in the process, and so set about creating his own alloy that would have the perfect spring-back qualities.

After experiments with mixes of silver and stainless steel, he eventually found the perfect balance. An alloy of copper and nickel allowed the metal to stretch, but crucially to then spring back to the bucket's dry dimensions.

This experimentation process is part of what makes Nakagawa so special, and why his services are in such high demand. Collaborations with European designers, a TED talk[i]. and inclusion in the Victoria and Albert Museum collection are testament to this.

i. TedX Kyoto talk about ki-oke buckets, delivered by Nakagawa in October 2014

Above: Nakagawa Shuji's ki-oke buckets on show in his gallery on the shores of Lake Biwa, north of Kyoto
Right: Nakagawa has experimented with a number of metal alloys for the rings which circle his buckets.
Opposite: the traditional Japanese chidori joint used in the contemporary Prostho Museum by Kuma & Sato.

Innovative Use of Traditional Skills: The Chidori Experiments.

Sato Jun and Kengo Kuma are at the forefront of their respective fields of engineering and architecture. Both are internationally recognised, published and celebrated designers, and both teach in Japans most prestigious design school at Tokyo University. However it is their 'Chidori Experiments' that are of particular interest here.

Sato and Kuma have collaborated on three buildings (with two more to follow) which utilise a traditional Japanese joint called a chidori. This joint allows three timber members running along x, y and z axes to pass through the same point. Crucially, it allows for an unlimited three-dimensional grid of these joints to be assembled.

The use of this traditional joint within a contemporary piece of architecture is noteworthy in itself. The Prostho Museum and Research Centre, Nagoya, was the first Chidori Experiment, and the internal atmosphere is like a cathedral of craftsmanship.

However, it is how this idea has been developed that is so impressive about the Chidori Experiments. The next iteration was a cafe in Fukuoka, Kyushu, where a parallelogrammed version of the chidori was used to provide the structure and bracing to a portal frame. Again, the resulting internal space is magisterial.

The third iteration, SunnyHills Cake Shop in Roppongi Hills in Tokyo, moves the chidori into a whole new realm. The orthogonal grid of Prostho is compressed in both lateral dimensions. This compression of the structure allows for more net internal space, and creates the most beautiful dappled shade in the first floor cafe. The interlocking, jointed structure also achieves the stability required to satisfy the arduous Japanese building codes in respect of resistance to earthquakes.

These buildings, although highly contemporary in form, are based on traditional Japanese carpentry. In fact, the complexity of the build was only achievable through the use of 'Miyadaiku' (宮大工), shrine carpenters, the most highly skilled carpenters in Japan who are usually employed in the building and maintenance of holy sites.

Sato explained that the 'Miyadaiku' were the only craftsman with the requisite skill to make the buildings. Although the roughing-out of the joints is done by computer-controlled milling machine, the joints are fitted and adjusted by hand. In this way, the Chidori Experiments are a microcosm of how Japan's traditional woodworking heritage is combined with innovative and experimental practice.

Craftsman Study: Sato Jun

It may sound odd to use the word 'craftsman' to describe Sato Jun. He is, by training and profession, an engineer. However, I think it is appropriate because of the way in which he works. He, like all craftspeople, designs through the understanding of materials and how they can be manipulated.

His office in Tokyo is full of physical models, made to test ideas. A section of SunnyHills was built by students from his unit at Tokyo University, and there's also an illuminating model that demonstrates how a tradition chidori is assembled.

Sato has a scientific understanding of the stresses that structures are subject to, and has coded his own computer programme to make the calculations required for his buildings. This level of control is very craftsman-like, in that Sato knows the nuts-and-bolts of his projects like a furniture maker knows the intricacies of each joint. In Sato's case, this goes down to the software that makes the calculations.

I'm not sure if buildings like the Chidori Experiments could have been built in the UK. I'm not sure if there is a contactor who would take it on, or the carpenters who could build it. I'm not sure if it would get through the planning process. We should try to foster such projects, however, as Sato and his work are a testament to the quality that can be achieved when tradition and innovation are combined in the hands of a craftsman.

Opposite: the three completed 'chidori experiments' by Kuma and Sato. Top - Prostho Museum, Nogoya; far left - Starbucks cafe at Dazaifu near Fukuoka; bottom right - SunnyHills Bakery, Tokyo.
Above: scale model of the façade of Sunnyhills bakery at Sato's office in Roppongi, Tokyo
Left: modelled chidori lattice showing how horizontals can be weaved into verticals to create a more rigid structure.

Left: box by Suda Kenji exemplifies the quiet but complex detailing of Japanese design.
Centre: detail of Daimon Takeshi's 'Wood Spring Chair' demonstrates the 'lightness' he, and other makers in Japan, strives for.
Opposite: Fujinuma Noboru hides the most complex construction, as well as his makers mark, on the base of his baskets.

A Contribution to Harmony:

An over-arching theme that has emerged from this study is the idea that a maker's work should contribute to the harmony of the space it goes into. In a noteworthy parallel of its own meaning, this hypothesis is contributed to by the other philosophies of making that have been discussed in this section.

The first of these contributing philosophies is that the piece should avoid being too 'noisy'; of drawing attention to itself in the fussiness of its construction or jointing. If the piece is to contribute to the atmosphere of the space as a whole, it should not try to immediately grab attention.

A lovely example of this is Suda Kenji's boxes. The joints are skilful hidden in order to allow the beauty of the timber, the glint of the metalwork, and the quiet perfection of the form to be paramount. These boxes do no shout, they quietly await inspection.

The second is that the piece should search for lightness. This might take the form of being physically light but, more importantly, it means to have a lightness of touch on its surroundings.

Daimon Takeshi's 'Wood Spring Chair' achieves this lightness through the slender elements of its construction, and the chair appears to float off the ground by a careful radius applied to the base of each leg.

The third is that the piece should retain its most precious elements, its best quality jointing or its most skilful piece of construction, for its less visible parts. This inconspicuousness makes the piece appear effortless, as though not attempting to dominate.

Fujinuma Noboru's bamboo art is a fantastic example of this, where many of his baskets exhibit their most exquisite weave pattern on their base or inside. There's a modest yet alluring character to his baskets that makes them more pleasing the more they are studied.

Craftsman study: Takahashi Shinji

Takahashi was born in 1972, and trained as a lawyer. After working for a number of years in Tokyo, he became disillusioned with city life and decided to retrain as a furniture maker at Hanno Vocational Training School. He started Rascal Furniture Factory in 2007, and is based in Tsukuba, 70km north-east of Tokyo. The workshop is surrounded by farmland, and cows roam in the nearby fields. It is an idyllic setting, and very much the antidote to what Takahashi disliked about Tokyo.

Takahashi is a charismatic and affable man. He clearly enjoys his work and doesn't take himself too seriously. He was intrigued to know how I had found his website - his was one of the few websites that had English wood-related terms in its text.

On the day I met Takahashi, he was in the process of making a chair out of some very nice walnut. His style is best illustrated by the mantra in the masthead of his website: 'Keep it simple.' This is very important to Takahashi, and he was keen to make sure I understood what he meant.

> *'I think furniture is a tool for living. It should not be art. It should have utility. I think a lot of people in Japan care more about design than about utility. I make furniture that is useful.'*

Below: the view Takahashi Shinji's workshop. [Image from Rascal Furniture Factory website]
Opposite centre: Takahashi adjusts a plane with a hammer in his workshop.
Opposite far right: Takahashi swapped a corporate life in Tokyo for a more idyllic existence making furniture.

Takahashi was using the word 'design' here to mean aesthetics. Coming from an architecture background myself, I feel a kinship with this 'form-follows-function' philosophy.

This was one of the early conversations in my study about the nature of craftsmanship, design, and art. This 'keep it simple' mantra feeds into a theme that emerged strongly from subsequent interviews - creating pieces of furniture that are harmonious, even homogenous, additions to a client's home, and avoiding the accusation of showing off or standing out.

It is important to understand that the strands that make up 'Harmony' as described in this section are not introverted, individualistic things. They are specifically implanted into the process of designing and making so that a piece adds to its surroundings in a harmonious way. It is about making the work contribute to a person's home, rather than stand out from it, so the whole space is lifted.

This has parallels with the a common mindset in Japan of being one of the team rather than an outlier. People, in their daily lives, try to reduce their impact on those around them. It was described succinctly by a Japanese-born translator I spoke to as:

> *'If you can do something that makes life easier for someone else, then you're expected to do it.'*

But this requirement is not about loudly proclaiming servitude or offering assistance. It is about quietly anticipating how one's actions can contribute to the smooth running of society. In this way the place of craftsmanship has a very different purpose in Japan to that in the West. It is less a signal of good taste, of respect for skill and quality, or as a marker for wealth. It is part of the fabric of a harmonious society.

This may be why Japanese design has such an arresting quality when viewed alongside its Western counterparts. The assertive simplicity that comes from its forms and textures often lies in stark contrast to the more bombastic British Art & Crafts from which much furniture design in the UK derives.

If Europe had an answer to this Japanese design sensibility, it would possibly be in the Scandinavian mid-century cleanness of form as exemplified by Hans Wagner et al, or maybe the functional simplicity of the Bauhaus.

Below: 'The Chair', Hans Wagner's most iconic design, and a key influence for many chair makers in Japan, especially those in Hokkaido. [Image by Hans Wagner]
Opposite near: Santaro's 'Ray' chair
Opposite middle: Daimon's 'Wood Spring Chair'
Opposite far right: Nendo's 'Cord-Chair'

The question of whether this is something to emulate is quite another matter, and possibly beyond the scope of this report. I think there can be a homogeneity that comes with this quest for harmony, and it may not be conducive to the more individualistic approach to craftsmanship exhibited by makers in the UK. However the idea of thinking how a piece will contribute to, or standout from, or sit in harmony with, its context is an important factor for any designer-maker to consider.

Craftsman Study: Santaro

Santaro, a chair designer and maker based in Sapporo, might be a strange choice for a section on harmony, in that he is very much the charismatic outlier rather than the placid team-worker. However, I think that there is a beautiful sense of harmony in his chair designs that speaks of the Japanese sensibility for quiet, careful, unassuming beauty.

Santaro was born in Nagoya, and moved to Sapporo after a formative trip around Europe and Israel in his late 20's. Whilst travelling, Santaro discovered the chair designs of the Scandinavian modernists, and this has been influential in guiding the direction of his own design work.

> *"It is about trying to get to that simplicity of the four legs, a back, and a seat"*[i].

At the time I visited Santaro, a retrospective of his work was being exhibited at the Hokkaido Museum of Modern Art. A really inspired curatorial decision, requested by Santaro, was that visitors be able to sits on and touch the chairs. And why not - they are for sitting on, after all. This allowed people to feel the textures, jointing and fit of the chairs in a visceral way, rather than peering at the pieces through a glass box.

It was interesting to see how Santaro's work has changed over his life. His early work is heavier, more angular, the backrests are square and stiff, and the timber is thick and hard-edged. His later work is softer, more tactile, and quieter. I feel the same pull taking hold in my own work, so it was fascinating to see how this had manifested itself over Santaro's career.

It speaks of Japan's attitude to craft that Santaro's work was chosen for this exhibition. Around a hundred pieces of his furniture occupied the prime, ground floor gallery space of Hokkaido's premier art institution. [ii]

i. From interview with author, 3rd December 2015
ii. Another huge chair exhibition featuring various makers was taking place in Asahikawa, 130km north of Sapporo, at the same time.

Opposite: Santaro, in his design studio on the outskirts of Sapporo.
Below: a bench by Santaro at his retrospective exhibition at Hokkaido Museum of Modern Art.

Santaro's newest project is a collection of chairs designed for mass-production. Isu Works is a collaboration between Santaro and Yamagami Mokko, a large woodworking firm based in Tatsumi, Hokkaido. The chairs are absolutely from the Santaro stable of design, but are pared back, slightly simplified iterations of his work.

Interestingly, Santaro says that the mass-production techniques can only do so much. Each chair is assembled by hand, with textures and details added by trained craftspeople. In order to guarantee quality, Santaro drives five hours each way to the factory every month, taking samples and templates to check on the accuracy of the work. The Isu Works chairs are gorgeous, but I still want an original made by the master himself.

A Japanese Contemporary Vernacular Aesthetic:

Opposite: Boxing Club at Kogakuin University in west Tokyo, by FT Architects

During the preparation and execution of this study it became clear that there were specific identifiers or markers that, when combined, produced a recognisable Japanese style. The name I have given this style is the 'Japanese Contemporary Vernacular Aesthetic', and it is a key finding of this study.

The phrase 'Japanese Contemporary Vernacular Aesthetic' may seen a little esoteric on first reading, so it is useful to break the term down into its constituent parts. The first and last words are easiest to define, so we will start there.

'Japanese', is obvious. It refers to the Islands of Japan. However, 'Japanese' is not a single style. There are wide differences between the woodwork of Kyoto, of Hokkaido, and of Kyushu. 'Japanese' means this collected group of woodworking traditions. These various styles have been combined into a single term because of the Japanese isolationism described as sakoku (p27). If the UK is a melting pot of a mass of influences, Japan is a pressure cooker, where the national style is condensed, and enriched over time.

'Aesthetic' is concerned with appearance, and specifically the search for beauty. In a Japanese sense, this beauty might be defined in terms that have been discussed previously in this report - lightness, absence of noise, and a certain modesty in its detailing.

Now comes the part of the phrase that, in this context, is more difficult to define. 'Contemporary' means 'occurring in the present'. In this context, 'contemporary' contrast from the word 'modern' in paying homage to the traditions that inform Japanese craftspeople today. This is particularly important in Japan, as there is such a deference and respect for traditional craftsmanship. 'Contemporary' is used here very much in the vein of the quote on p21 of this study:

'Tradition is tending the flame, not worshipping the ashes'.

Above: sweet chestnut bowl by Izaki Masaharu, made on the Japanese rokuro
Below: Flower basket by Katsushiro Sōhō
Opposite: Koyasan Guest House, by Alphaville Architects is a demonstration of the Japanese Contemporary Vernacular Aesthetic in architecture. [Photo by Alphaville Archiects]

'Contemporary' also refers to the tradition in Japan of constantly evolving and honing the practice of woodwork., which seems to create more clarity and purity with each generation.

Finally, the equally slippery term, 'Vernacular'. Here I am referring to the architectural usage of the word meaning the use of local materials and local knowledge to satisfy local needs and requirements. In Japan, this is hugely influential, and is best described with reference to a maker cited in this study - Shuji Nakagawa and his Ki-Oke buckets. They are made from the locally grown cedar and cypress; their construction relies on passed-down knowledge of how to work and join the timber for maximum strength and flexibility; and their use is for the specifics of Japanese home life, holding water, carrying cooked rice, and serving miso soup.

In this chapter, the 'Japanese Contemporary Vernacular Aesthetic' will be discussed with particular emphasis on how the tools, techniques and making philosophies in Japan contribute to it.

The second part of the chapter looks at how the 'Japanese Contemporary Vernacular Aesthetic' informs and is informed by timber architecture in Japan. This may appear like a side note from the main thrust of this report, but there are three main reasons to include it.

The first reason is that there are some fantastic examples which illuminate the theme of this chapter. The second is that woodworking skills and details in Japan are so fluid between the difference scales - details and textures on the smallest items can be seen reflected in large-scale carpentry. Lastly, and possibly most importantly, architecture has a democratising effect on craftsmanship. Where high quality furniture making is expensive and out of the reach of the majority, the embedding of craftsmanship in the architecture of publicly accessible buildings allow all to experience and benefit from the richness it embeds.

A Maker's Guide:

So how is the 'Japanese Contemporary Vernacular Aesthetic' created, and how do the tools, techniques and making philosophies described in this study inform and contribute to it?

In terms of the tools of Japanese woodworking, the most influential contributor to the Japanese Contemporary Vernacular Aesthetic is the Kanna (hand plane). The infinite personal modifications that are possible, and the preference of using planes rather than sandpaper to finish the timber, are a huge contribution to the 'Japanese-ness' of Japanese woodwork. The textures, facetted edges, and glinting panels that are created with the hand plane are a major indicator of the Japanese Contemporary Vernacular Aesthetic.

A great example of this is the urushi-lacquered cutlery and bowls made by Sugawara Hiroyuki detailed on p55. The texture in the cupping of his spoons, and the long, facetted reeding of the handles are unmistakably Japanese.

Some of the more esoteric techniques of Japanese woodwork are also intrinsic to the creation of the Japanese Contemporary Vernacular Aesthetic. The control of the pull-stroke, and the use of charring are two fine examples. However, the contribution of the use of water as a tool is the most assured example of how specific woodworking techniques contribute to a Japanese Contemporary Vernacular Aesthetic.

To cite Nakagawa Shuji's Ki-Oke buckets again, the process of expanding the compressed fibres of the base into the grooved bucket sides with warm water demonstrates a masterful understanding of material and technique. It also allows for the creation of an incredibly elegant, deceptively simple-looking bucket which seems to embody the effortlessness of Japanese design.

Above: Santaro's mass-produced and handmade chairs sit side-by-side at his retrospective exhibition at Hokkaido Museum of Modern Art
Opposite:: Sugawara Hiroyuki hand-carved, urushi-lacquered spoon.

Possibly the most intrinsic of all the factors that contribute to a Japanese Contemporary Vernacular Aesthetic are the philosophies of making, some of which have been examined in this study.

The 'harmony' that is created by a quiet understated design language, the national isolation (Sakoku) leading to the pressure-cooker effect, and the marginal gains of experimentation and innovation within the traditions of Japanese woodworking are fundamental to the creation of the Japanese Contemporary Vernacular Aesthetic.

Santaro's chair designs, which beautifully adhere to the mantra of 'an absence of noise' show how the philosophy of Japanese making informs a national style. Santaro's work is an interesting example of this, as chairs are a relatively recent introduction to Japanese furniture, and he is heavily influence by Scandinavian designers like Hans Wagner. However, even with these European influences and the comparatively youthful tradition of the craft of chair making, there is an unmistakable Japanese-ness to his work. I think this is because he is embodying the philosophy of Japanese making, which is visible even when applied to this new discipline.

A Japanese Contemporary Vernacular Aesthetic in Architecture:

During the course of this research, I visited a number of prominent architects and architecture schools in Japan. Having trained in architecture myself, and with it providing the most important influence on my own furniture making, I was intrigued to see if the reverse was true in Japan. How does Japan's unique woodworking heritage inform contemporary wooden architecture? This is important fort he reasons described on p99 of this study.

In order to describe how the Japanese Contemporary Vernacular Aesthetic translates to architecture, it is easiest to refer to a specific example. A precedent which beautifully delineates how craftsmanship, contemporary timber architecture, and Japanese traditional building paradigms can be combined, is an archery hall by Tokyo practice, FT Architects.

This project, on the campus of Kogakuin University in west Tokyo, demonstrates a mastery of timber composition, and embodies many of the philosophies that have been described in this study. If there were to be a poster-child for the Japanese Contemporary Vernacular Aesthetic, this project would get my vote. But what gives it its Japanese-ness? What makes it contemporary? What vernacular materials does it use, and what local conditions does it satisfy? And how are these elements combined into an aesthetic which embodies the spirit of Japanese design and making? The labelled section, across, puts forward a set of details which might make this image appear 'Japanese'...

But I don't think these details are what make this space special or Japanese. I think it is the quiet, crafted detailing. I think it is the absence of noise. It is the delicate search for lightness in the structural components. It is the quite contribution of the black and white decoration which contrasts with the elegant joinery so beautifully. It embodies the philosophies of Japanese craftsmanship that have been discussed in this study.

Key features of a Japanese Contemporary Vernacular Aesthetic

1. Indirect light admitted to space via north-facing windows, translucent shoji screens or, as here, via high level openings.

2. Exposed primary structure is indistinguishable from secondary aesthetic elements. In this example the lateral trusses bear weight, and the longitudinal purlin-type members are non-structural.

3. Use of cedar, which is light, easily worked, and is naturally resistant to insects and the weather. The ease with which cedar can be carved may be a reason why such complex jointing developed in Japan.

4. Low, over-hanging eaves create threshold to increase privacy, and provides shade for the interior - important during Japan's hot humid summers. This is also achieved on traditional Japanese buildings with lathes of tightly spaced timber, called koshi.

5. Light, reflective flooring bounces indirect sunlight into the space, and avoids the overhanging eaves making the space to dark.

Archery Hall by FT Architects
Photograph by Shigeo Ogawa..

Craftsmanship Study: FT Architects

In preparing for my study in Japan, a project which galvanised my perception that there was something special about Japanese woodworking was the archery hall (featured on the previous page) by a small Tokyo-based practice called FT architects. The 'F' and 'T' stand for the two principles and founders - Fukushima Katsu and Tominaga Sachiko.

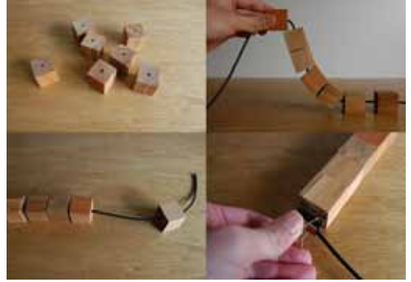
Although FT have been widely published around the world, they were an office of only two for the first ten years of the business. In the last three years their number has risen to four. In a similar way to a lot of the best craftspeople and designers I met in Japan, the smallness of the team allows for the work to be focussed on quality.

There is a direct link between their practice and their teaching duties at Kogakuin University School of Architecture. Each informs the other, and ideas seem to flow freely between the two. Their teaching style involved lots of modelling, experimentation and making details at 1:1 scale. Wood is often the material chosen for these studies, and it's an inclusive material that the students can tackle without a lot of specialist knowledge.

This use of wood continues into their practice due to it's low cost, there being many good carpenters in Japan, and the fact that clients like it. However, Fukushima offers up a more prophetic reason:

> *'Masonry and steel are 'building' materials. Wood is a 'thinking and building' material'*

And there is evidence of this all around their meeting room, where models of construction details and experiments sit on shelves around the central table. One example is a set of wood blocks, with a string running through holes in the centre. Fukushima demonstrates that if you pull the string taut and push the blocks inwards, the friction between each block creates a type of beam. It's a lovely, simple, elegant idea, and this experiment became the exact detail used on the roof of a large commercial office project they designed. This is what Fukushima means by 'thinking and building'. Wood has the workability to allow ideas to be tested, but it also has the strength to be constructed into the full-scale detail.



Above: An example of the separation of structure and interior aesthetics in a Japanese shrine. [Image provided by FT Architects]
Opposite: Aichi office building, completed 2004 by FT Architects. The beams which make up the ceiling were the result of experimentation. [All photos from FT Architects.]

The archery hall, and the boxing club which is its sister project (pictured on p97), are clearly the result of this hands-on experimentation with timber. I was lucky enough to visit the projects with Tominaga Sachiko, and in real life they are even more majestic than the photos would suggest. It was quite alarming to find out that these buildings were constructed for approximately half of the square meter budget a normal construction project in Japan would cost. They came in around 200,000 yen/m² (£1000/m²) which is cheap.

I asked Tominaga and Fukushima for their thoughts on my hypothesis about a Japanese Contemporary Vernacular Aesthetic. They agreed that it was a real thing, but that it was devilish to define.

Fukushima's take was that the first Japanese architectural style was heavily influenced by traditional Chinese timber shrine construction, and that this still has influence today. Japanese carpenters did not have the large timbers or building technology to make the superstructures that are the hallmarks of Chinese shrine construction. Whereas a Chinese shrine's interior would be dictated by the timbers used in its structure, Japanese carpenters were forced into separating the structure from the internal aesthetic. This effectively created a double skin construction, where the interior fabric of a building mimics the structure behind (see image top-left of this page).

The remnants of this idea, according to Fukushima, are evident in the archery hall. The gridded trusses which do the structural work of holding up the roof are connected together with horizontal purlin-type lathes which are non-structural. This style of structural members combining with aesthetic detailing, where the divide between the two is intentionally blurred, is something at which FT excels.

Craftsmanship Study: School of Architecture, Osaka Institute of Technology

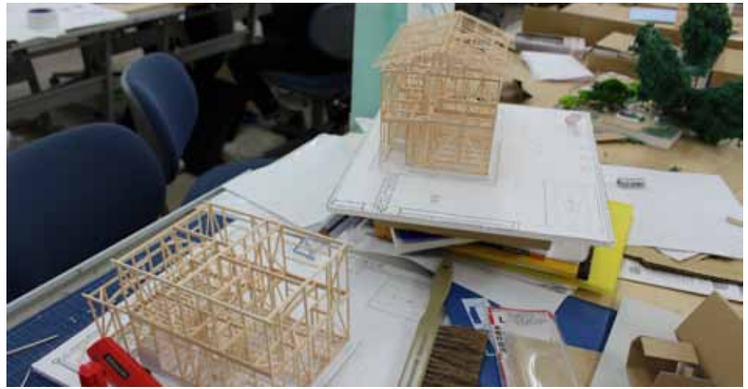
I am fascinated by how craftsmanship can be embedded into architecture. This is important because, as previously stated, handmade pieces of craftsmanship and art are expensive and out of the reach of many in society, but embedding it into civic architecture bridges the gap.

But how can craftsmanship be taught in the context of an architecture school? I think it is through exposing students to craft processes, techniques, materials and precedents, and through actively encouraging students to make and model in the course of their studies.

It was the combination of making and architecture that attracted me to meet Professor Miyagishi Yukimasa, of the School of Architecture at Osaka Institute of Technology. The holistic programme of traditional and contemporary architectural tuition, model making, and constructing full-scale installations, was quite amazing. I think this style of education is a way of perpetuating a Japanese Contemporary Vernacular aesthetic.

Each year, the new intake of students draw and build models of traditional Japanese timber houses. The models include the specific details of timber construction, such as ventilation under the ground floor, and a stiffened central column around the stairs to resist earthquakes. This knowledge of vernacular building paradigms is then combined with tuition in contemporary design later in the course.

The school will move to a new, purpose built campus in the centre of Osaka in a few years, and the students are involved in designing chairs for the new department. When I visited, a class of one hundred students were working in teams to create stool designs from corrugated cardboard. This hands-on designing and making is, I think, the key to embedding craftsmanship into the design vocabulary of the next generation of architects.



Opposite: students at Osaka Institute of Technology learn the process of making by weaving lathes of timber, and casting aluminium drawer handles.
Right top: first year students tackle the intricacies of a traditional Japanese dwelling by modelling the timber frame
Right: designing stools in corrugated cardboard without glue or fixings.

Conclusion:

Japanese society has developed specific characteristics that foster craftsmanship. The necessity for craft in everyday life, and a progressive attitude to 'tending the flame' of tradition are vital to this. Just as important is the veneration for the skill and experience of elders, most evident in the respect given to older males. It makes the process of passing on craft skills from one generation to the next a duty to be honoured, rather than a convention to be resisted.

The most lucid example of this is the honorific title of 'Living National Treasure' bestowed on the best practitioners in traditional craft disciplines. The reverence and respect given to these makers is palpable, and they act as ambassadors for their craft on a national and international stage.

The tools of Japanese woodworking are vital to the formation of Japan's unique carpentry. The consequences of seemingly esoteric differences, like the use of tools on the pull-stroke, should not be underestimated. As Odate Toshio so eloquently described, fine tools promote precise joint cutting like a fine pen promotes more delicate lettering.

The extensive use of hand planes, and the modification and personalisation made possible by their wooden bodies, is another fundamental aspect of how Japanese tools encourage a rich craft culture. This is one aspect of the more widespread use of hand skills in the production of furniture and wooden items in Japan, which seems to result in a closer connection between maker and material. As James Krenov put it, it allows the user to see the makers 'fingerprint' on the finished work.

The use of water and fire as tools shines a light on the depth of knowledge Japanese woodworkers have for their material. The properties of wood, such as how it contracts and expands with moisture, and the effect of charring the surface, are

Above: Suda Kenji (left), Living National Treasure in woodwork, explains the anatomy of Japanese kanna (wooden-bodies planes)
Opposite: Nakagawa Shuji's ki-oke buckets on display at his Lake Biwa studio.

positively embraced with as much enthusiasm as they seem to be avoided in western woodworking. Nakagawa Shuji's ki-oke buckets are a fantastic example of this deeper understanding of wood. The buckets can only be assembled by exploiting the way that compressed timber fibres respond to the expanding properties of warm water.

The making philosophies which craftspeople in Japan adhere to have a profound effect on the work they create. The most noticeable of these philosophies is the 'absence of noise', and the 'search for lightness'. Noise is reduced by keeping visible jointing spare so as not to distract from the form of the piece or the beauty of the natural material. Lightness of weight, of touch, and of impact on surroundings is created through quiet, slim detailing, and through the use of carefully selected timbers and bamboo.

Fujinuma Noboru's bamboo basket weaving is a brilliant example of how these philosophies combine to create quiet but complex pieces, where their special qualities emerge the more attentively they are studied.

Although training and apprenticing in craft was outside the scope of this study, two paradigms of learning that I saw in Japan were impressive and worthy of note. The first is Izaki's apprenticeship program where five young makers are given tuition and a space to exhibit and sell their work in exchange for a proportionately modest donation of labour. This was an excellent program, and was clearly producing excellent makers. It is a system that could, and should, be emulated in the UK.

The second learning paradigm was seen at Osaka Institute of Technology School of Architecture. The school places particular focus on making in it's curriculum, and it was interesting to see traditional vernacular construction explored with as much intensity as contemporary ideas. In terms of fostering an appreciation and understanding for the national and local vernacular, and in how this might be embedded into contemporary design, the curriculum at O.I.T. demonstrates how this can be accomplished.

From the interviews conducted in the course of this study, and in the woodwork and architecture of the craftspeople who participated, it is clear that there is a Japanese

contemporary vernacular aesthetic. With a more focussed study, I think it would become clear that there were, in fact, more distinct local vernaculars within Japan.

The Japanese contemporary vernacular is born from the tools, techniques, and philosophies of making, and survives due to the reverence for the skill and experience of elders. The vernacular is made contemporary through the Japanese sensibility of tending the flame of tradition, rather than worshiping the ashes. The skills and practitioners of Japanese craftsmanship are revered more highly than the fabric of their creation, resulting in craftsmanship living in the present rather than being a relic of the past.

The Japanese contemporary vernacular aesthetic is a vital part of Japanese design and making and, I would argue, one of the things that makes it so special to outsiders. However, the UK is not in a position, nor would it be appropriate, to attempt to emulate it with a 'British contemporary vernacular aesthetic'. Design and making in the UK is the result of the 'melting pot' of international influence, and is a factor in how the UK has established itself as a hub of innovation and creativity. In contrast, the Japanese contemporary vernacular aesthetic is the result of isolation from external influence and the distilling and enriching of style from within- the 'pressure cooker' effect.

At the outset of this study I posed a question: why does Japan have such a unique and rich woodworking craft culture? I think it is because of the societal veneration of the practitioner over the objects of their creation. This is fundamental because skills and knowledge don't live in things, they live in people. This veneration is a vehicle for passing on skills and haptic knowledge down the generations from person to person.

The isolationist tendencies in Japan act like a pressure cooker on craftsmanship and design traditions, which has distilled them into a potent, rich, vernacular pallet of references. The result of this is projects like FT's archery hall, and Daimon's 'Wood Spring Chair'. They tend the flame of tradition, rather than worship the ashes. They are standard bearers for the Japanese contemporary vernacular aesthetic.

In this FT Architects designed boxing club, punching bags and towels hang from the shrine-inspired timber structure. It is an example of how contemporary architecture, made for the users of today, can be perfectly combined with traditional Japanese design motifs.

In this study I set out to meet, interview, and learn from the best designers, makers and craftspeople in Japan. This includes three Living National Treasures and many other makers who are at the forefront of their discipline. Also included are a number of the very best architects and academics. This leads me to question how representative they are of Japanese craftsmanship as a whole.

Even if the limited sample discussed in this study represents the highlights of Japanese craftsmanship rather than the collected average, I would argue that it illuminates an integrity that makers in the UK could benefit from taking heed of. The honesty inherent in Japanese craftsmanship is born out of the connection between maker and material, which is itself the result of the tools, techniques and making philosophies utilised by the makers in their work.

A reliance on machines over hand skills, and the use of computer controlled routers are examples of how a maker can be distanced from their material. The proliferation of these making paradigms in the UK is a worry to me, and the antidote would appear to be the example set by the Japanese craftspeople featured in this study.

In the spirit of this honesty and integrity, it is important to reference the elements of Japanese society that are difficult for a western observer to wholeheartedly accept. The progress made in the UK to defeat patriarchy seems all but absent in Japan. Similarly, the reverence for elders can sometimes feel like creativity and innovation are subdued. I also wonder how the opportunities I was so generously afforded in Japan might have been different had I not been white, English, and male.

To finish on a personal note, the effect that this study trip has had, and continues to have, on my own work and practice has been immense. The guiding principles of 'the absence of noise' and 'search for lightness' are now cornerstones of my design work, and my use of hand tools has increased exponentially. My work has become more adventurous in concept, yet my detailing is quieter and more subtle. The two months I spent in Japan were a formative experience that has left an indelible and positive mark on my life as a designer and maker.

Recommendations:

The cavenous showroom at Asahikawa Furniture Industry Co-Operative

This study has highlighted a number of ways in which the UK craft sector could benefit from following the examples of our counterparts in Japan. Although many of the techniques and philosophies of making described in this report could be adopted by specific makers, I think this is a personal choice for each maker, and so it would not be appropriate to recommend any particular type or style of making.

The recommendations set out below are best-practice paradigms that I believe could benefit furniture makers and those from other craft disciplines, in the promotion of craft in the UK.

Regional Maker's Associations:

The Asahikawa Furniture Industry Co-Operative, profiled on p82-83 is an excellent precedent in how furniture makers can combine their resources and create a sustainable market for their work.

As well as the huge showroom where the makers show their work, the co-operative also organises prestigious international events such as Asahikawa Design Week.

As described previously, the symbiotic relationship between the larger and smaller members, where the big companies subcontract work to sole-traders, and in turn gain from being surrounded by a highly-skilled workforce, was impressive to see, and worthy of further study.

The UK's existing networks, such as the Northern Contemporary Furniture Makers and others, could emulate associations like that in Asahikawa by combining resources to create a dedicated exhibition spaces and annual events. Just as in Asahikawa, larger furniture companies need not be excluded, with reciprocal benefits for all.

Workshop Gallery Spaces:

Almost every single workshop that I visited as part of this study had a warm, comfortable, clean gallery attached to the workshop. Customers were able to visit the maker and see, touch, smell and try out the furniture. In some cases, the area of the workshop was smaller than the area of the gallery, demonstrating the importance of showing the finished work.

Although some of the larger workshops in the UK have their own galleries, their use is much less widespread than in Japan. The importance of having a dedicated gallery space was made clear by Suda Shuji, a sapporo-based maker -

> *'If people cannot see and try the furniture in the flesh, they will not buy.'*[i]

As well as demonstrating the quality of making to customers, galleries also serve as a destination for visitors, and increase the awareness of a maker. Izaki Masaharu had over 50 people visit his gallery on the Tuesday afternoon that I was at his workshop.

An Apprenticeship Paradigm that Works for Master and Apprentice:

The apprenticeship program created by Izaki Masaharu at his workshop near Nagoya is not a widespread practice in Japan, but it is a fantastic paradigm for how such a program can work for all those involved.

i. Suda Shuji; interviewed by author., 3rd December, 2015

Opposite top: Suda Shuji's gallery of finished pieces is an example that makers in the UK should emulate.
Left: An apprentice at Izaki Masaharu's workshop displays her washi lamps in the gallery space.

The combination of design, technique, business and philosophy of making provide a rounded education which gives graduates of the scheme a fighting chance of making a career in what is a tough market to survive in.

It also avoids the exclusivity of the £15,000+ price tag attached to many of the workshop-based fine-furniture courses offered by established workshops in the UK.[ii]

Izaki's apprenticeship program is a brilliant way for older, established makers coming to the end of their careers to pass on skills to the next generation. Their wealth of experience, and their large well-equipped workshops, can provide a rounded education to younger makers in a meritocratic system without the excluding effect on either side of large fees or wage bills.

The Making of Smaller Items:

Possibly due of the pressure on land in Japan, meaning smaller houses and smaller workshops, the making of small handheld items of utility is common. Wooden items such as cutlery, bowls, card holders, puzzles and trays are made as a matter of course, and serve a number of important functions.

Firstly, they are cheap to make, as they can be batch-produced and made from the off-cuts of larger projects. Secondly, they serve as a low cost introduction to a maker's work, possibly encouraging future or larger purchases. Thirdly, they are much more easily accommodated in small spaces, meaning there are more opportunities for makers to show their work.

ii. In the last 10 years in the UK there has been a rise in the number of 1-2 year courses offered by established and respected makers. The education offered is great, but the price tag surely excludes some of the most promising students in preference for those with the ability to pay.

In the UK, smaller items seem often to be restricted to chopping boards and jewellery boxes, but the example set by Japanese makers is that, as well as the advantages listed above, these items can form an important part of the profit of a business. Tanno Norio, and his card holders, are a great example of how a small product can be developed into a sustainable income stream.

The Unconventional Showcase:

A number of the makers visited in the course of this study were showcasing their work in unconventional places. The best example of this was Sugawara Hiroyuki, who specialises in wooden cutlery, trays and bowls. In his most recent exhibition at a cafe in west Tokyo, the traditionally-curated exhibition of his work was complemented by the cafe using his cutlery and bowls to serve their food.

As previously described, Sugawara simply couldn't make spoons fast enough to satisfy the demand, and his cutlery sold out on the first day.

Another example is chair maker Santaro Takeshi's retrospective at Hokkaido Museum of Modern Art. Santaro specifically requested that visitors to the exhibition be allowed and encouraged to touch and sit in the chairs. Rather than the pieces being seen as fragile artworks to be protected, they were beautiful pieces of useful furniture, to be experienced. It is too soon to say what effect this decision might have on Santaro's order book, but I would wager that the direction of travel will be north rather than south.[i]

i. It should be noted that Celebration of Craftsmanship and Design, one of the largest exhibitions of designer-maker furniture in the UK, allows visitors to touch the furniture, sit in chairs, and open drawers. It is a style of exhibition that should be adopted more widely, and in galleries as well as showcases.

Above: Lunch is served in Sugawara's bowls and with his cutlery at the cafe where he is exhibiting his work.

It is these kinds of marketing paradigms, where the quality and craftsmanship can be experienced as well as seen, that is so powerful. It is a lesson we in the UK craft sector could learn a lot from.

Establishment of 'Living Legend' Honours System:

The Living National Treasures system in Japan is fantastic at promoting craftsmanship both domestically and internationally. It is a huge honour to be awarded such a title, and the selected makers set the bar for quality and integrity, and act as ambassadors, for their craft discipline.

The title also attracts collectors from highly venerated institutions: a piece by Suda Kenji has recently been purchased by the British Museum, and Nakagawa Shuji has work in the Victoria and Albert Museum collection.

A similar system of 'Living Legend' status, bestowed on the top makers in UK craft disciplines, seems like a low-cost and easy way to promoting British craftsmanship to a wider audience at home and overseas. The Crafts Council, with central funding, huge influence, strategic partners, and existing avenues for marketing, seems like the perfect body to take on the role of administrating such a system.

Establishing Craft as a Gallery-Worthy Artform:

It is a symptom of Japan's reverence for its craft traditions that the word 'Kogei' means both craft and art. Art should have utility like craft, and useful things should have simple, functional beauty in the way they are designed and made.

Seeing craft as an artform is important. Santaro's chair exhibition at Hokkaido Museum of Modern Art is an example of how craft is treated as a gallery-worthy art-form in Japan. With notable exceptions such as the V&A and 'Collect' at the Saatchi Gallery, craftsmanship in the UK does not get the national institutional exposure that it should.

This, I think, has a devaluing effect on craftsmanship. Instead of craft being seen as a contemporary applied art, it is seen as utilitarian. It is seen as comparable not with sculpture or painting, but with the mass-produced, throw-away items for which it is, in fact, the antidote.

There are numerous examples in this study which demonstrate the high level of respect that craft is given within Japanese society. One of the ways this might be achieved in the UK is though greater representation of craft in our national institutions of art, so that craft is seen as the artform that it is.

Retrospective of Santaro's work, a chair maker and designer, at Hokkaido Museum of Modern Art

Dissemination Strategy:

Talks and Lectures:

I am speaking at a number of architecture schools and other institutions about my experiences in Japan. It is very important to me to embed a knowledge of craftsmanship in architecture students, due to its democratising effect. Rather than craftsmanship just being for those who can afford it, it can be woven into our civic architecture for all to experience and enjoy.

Talks are arranged at:

Liverpool University,
School of Architecture
Newcastle University,
School of Architecture
Glyndwr University,
Creative Futures annual event
Heritage Crafts Association,
annual conference, London

Activities at my Studio:

Open Studio Day: This event will be advertised to my network of clients, suppliers, contacts and students in Liverpool. It will be held on a weekend afternoon, so that families with children can attend. I will be demonstrating Japanese tools and techniques, showing furniture from my Japanese-inspired collection, and presenting a photo diary from my trip, as well as a printed version of this report.

Maker's Seminar: This seminar is specifically for professional makers and craftspeople, as well as students who plan to make a career in craft. In this session, I will be discussing the more esoteric aspects of the tools and techniques of Japanese making, and allowing people to try the tools for themselves.

Confirmed Exhibitions:

Bluecoat Display Centre,
Liverpool.
Designer Crafts at the Mall,
London
Made,
London
Good Life Experience Festival,
Chester

Planned Exhibitions:

London Craft Week, 2017

Report Distribution:

Craft Council
HCA
Carpenters Company
WCMT
Japan Foundation
Diawa Japanese Foundation
Japanese Embassy
+ contacts and study participants in Japan

Exhibitions:

In response to my experiences in Japan, I am developing a collection of furniture and wooden items which I will be exhibiting in 2016 and 2017. Embedded within this collections are the lessons I learned in Japan.

Online:

I am publishing blog posts about my study on a biweekly basis on my website, and these are being serialised by the WithLove Project, a website focusing on craft stories. The blog posts are available to read here:

www.hughmillerfurniture.co.uk

I am also posting one photo per day from my Fellowship on my social media accounts:

www.twitter.com/hm_handmade
www.facebook.com/hughmillerfurniture
www.instagram.com/hughmillerfurniture

Report Distribution:

I will be distributing a printed version of my report to interested parties in the UK and in Japan. Specific recommendations have relevance to particular organisations and institutions, and so these will be communicated individually.

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Sapporo:
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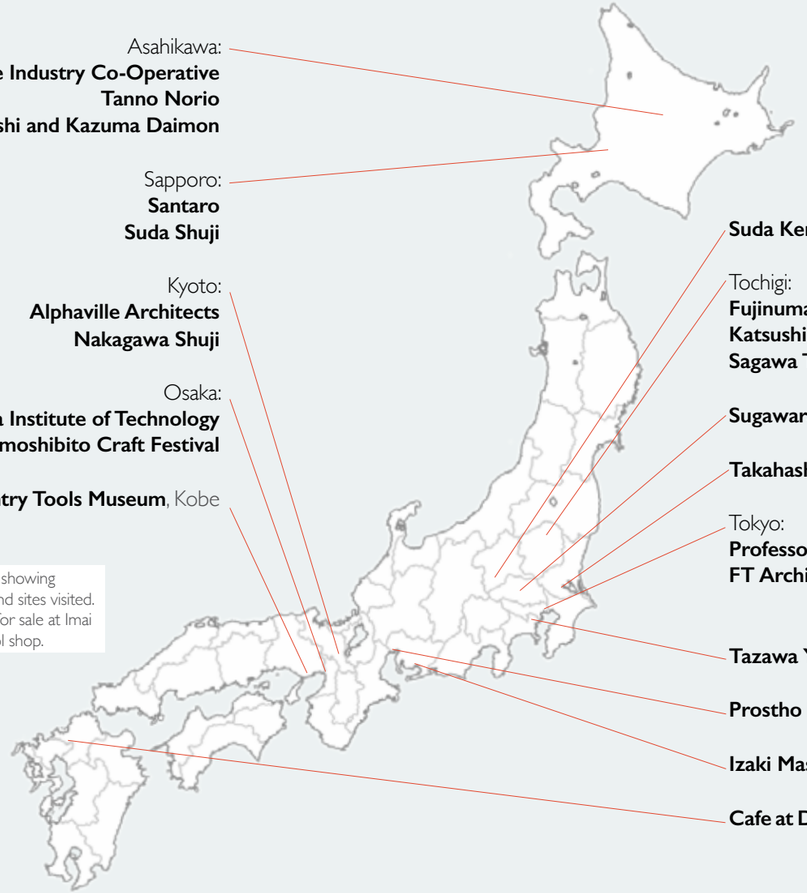
Nakagawa Shuji

Osaka:
Osaka Institute of Technology
Tomoshibito Craft Festival

Takenaka Carpentry Tools Museum, Kobe



Suda Kenji, Gunma

Tochigi:
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Sugawara Hiroyuki, Saitama

Takahashi Shinji, Tsukuba

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Professor Sato Jun
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Tazawa Yusuke, Kanagawa

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Izaki Masaharu, Gamagori

Cafe at Dazaifu shrine, Fukuoka

This page: map of Japan showing location of participants and sites visited.
Opposite: chisels ready for sale at Imai Yoshinobu Seisakujyo tool shop.

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