



University of Brighton

GARETH NEAL

THE CERTAINTY OF UNCERTAINTY

An enquiry into contemporary notions of
craftsmanship through digital manufacture

RESEARCH OUTPUT



Certainty: Twisted Vessel
Gareth Neal

The Certainty of Uncertainty comprised two collections of furniture and products: the 'Hack' series of chairs and the series of vessels, 'Certainty'.

The experimental production of these series, using two different digital methods, sought to test the boundaries to traditional ideas of 'craftsmanship' and extend the understanding of the term as applied to practices in contemporary digital manufacture.

Hack Series 2017

Each carved by a programmed robotic 6 axis CNC arm from green-oak, and given traditional Shou Sugi Ban charring.

Hack Chair
width: 37 cm,
depth: 40 cm
height: 97 cm,

Hack Chair II
Width: 48 cm
Depth: 40 cm
Height: 97 cm

Certainty 2019

Each designed then 3D printed using sand, 2019.

Mirrored Pair
3D printed sand
height: 90cms

Twisted Pair
3D printed sand
height: 65 cm

Twisted Vessel
3D printed sand
height: 40 cm

The Certainty of Uncertainty



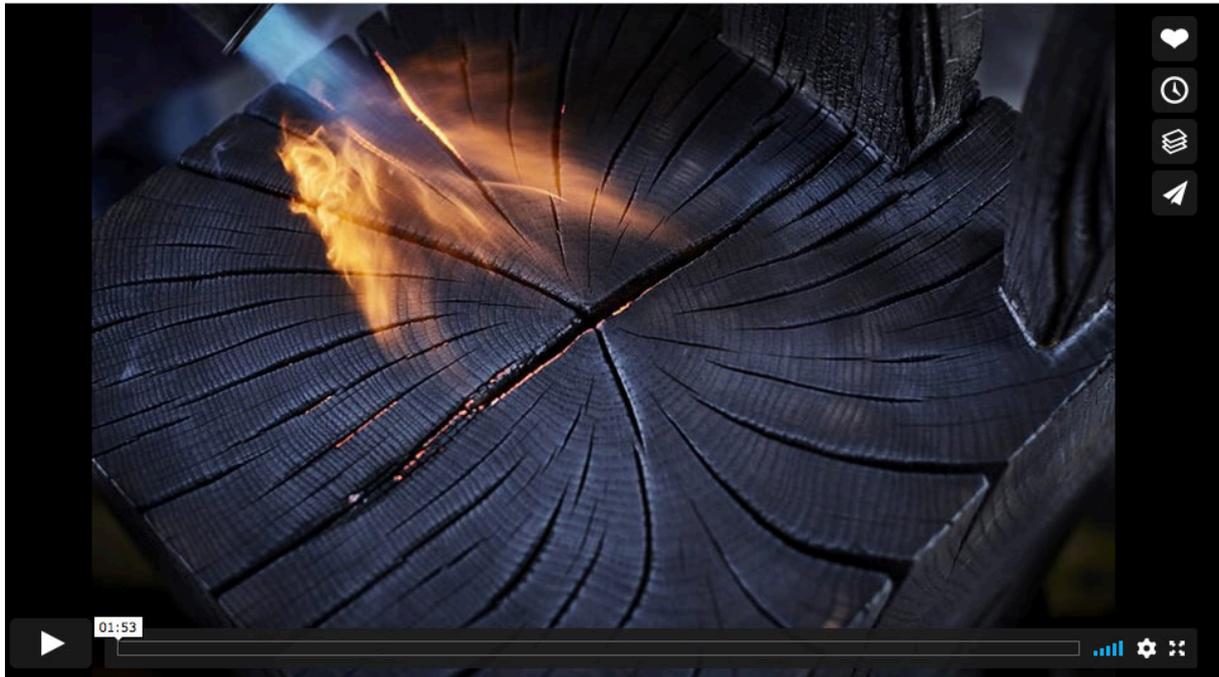
Hack Chair
Gareth Neal
Photograph Petr Krejčí

The Certainty of Uncertainty



Hack Chair II
Gareth Neal
Photograph Petr Krejčí

The Certainty of Uncertainty



Hack Chair

Gareth Neal

A film by Petr Krejčí

Carved green-oak, traditional Shou Sugi Ban charring. A robotic 6 axis CNC arm, an extension of the craftsman's hand and tactile knowledge, is programmed to hack in a block of oak. By exploring the weaknesses, glitches, fractures, splits and rings of time stored within, a distorted Georgian archetype is extracted. Carving an artefact, a render that could never have existed until the moment it was hacked. Charred to preserve it for another century.

Film available at

<https://vimeo.com/317487000>

The Certainty of Uncertainty



Certainty: Mirrored Pair
Gareth Neal

The Certainty of Uncertainty



Certainty: Twisted Pair
Gareth Neal

The Certainty of Uncertainty



Certainty: Twisted Vessel
Gareth Neal

RESEARCH QUESTIONS



Hack Chair (detail)
Gareth Neal
Photograph Petr Krejčí

The research interrogated the meaning and understanding of craft and craftsmanship. Neal conducted experimental design and crafting in the context of an ongoing set of questions as to the place and value of contemporary tools at the disposal of craftspeople and what we understand by the term 'handmade.'

He articulated two overarching questions:

- Can craft values be maintained in objects created using computer-mediated manufacturing processes?
- What alternative framings of craft can be offered to capture the role of 'workmanship' in digital manufacture?

RESEARCH CONTEXT

The Certainty of Uncertainty investigated the term 'craft', which has acquired a dual meaning - denoting both bespoke luxury, and romanticism/nostalgia.

The rapid development of manufacturing technologies and digital production techniques has driven new methods of making and manufacturing that enable the production of high-quality, high-precision making in an almost limitless range of materials. The prevalence of these technologies brings into question the authenticity and role of 'crafts and craftsmanship' as a contemporary practice. There is a need for 'craft' to redefine its processes, practices, and values and this debate is ongoing.

Neal, in an article for the Crafts Council website, debated the value of the term and the relationships that are inspired between commerce, the public and the craft industries and craftspeople: 'Will craft suffer when the big brands and glossy magazines tire of images of makers' tools and workshops? Will it meekly take its place back in line behind those perennial favourites art and design - or are we seeing the birth of a new triumvirate, where making is valued equally?' (Neal, 2015)

The debate spans several decades, and Neal draws on the evolution of the word in his own experiments, noting for example the *New York Times* in 1981 on the language used around the term 'craft':

This is a plea against the dreadful word 'crafted', writes Joseph Alsop, the retired columnist. 'Crafted' is meant to imply that porcelain, glass, furniture or metalwork has been largely handmade by a skilled craftsman. This always is a lie, unless the thing described is one of the inferior peasant manufactures which are still cheaper than machine products.

(Safire, 1981)

The crux of the debate lies in the notion of 'handmade' and how far the tools of a craftsperson are an extension of that hand, and where the understanding of production, particularly machine production, might detract from that sense of the 'crafted'. The handmade versus digital manufacturing has been part of international cultural discourse for some time as we re-evaluate what is considered as handmade.

Neal has dealt with this question throughout his career. A furniture designer, craftsman and educator whose furniture design practice was established in 2002 he has since gained international recognition with a list of clients, sponsors and associates which includes: Zaha Hadid, LG; Aesops; The Victoria and Albert Museum, The Arts Council; The Crafts Council; Heals; The New Craftsman and Sotheby's.

His practice-based research investigates the intersecting point between art, design and craft and combines 3D computer drawing and CNC processes with the intricacy of professional craftsmanship, joining the debate on digital fabrication and sustainable making practices.

His work has received international critical acclaim and has featured in numerous publications, public collections and exhibitions, both in the UK and internationally, including the Victoria and Albert Museum and the Museum of Arts and Design, New York.



TV ADVERTISEMENT FOR KETTLE CHIPS, CREATIVE AGENCY 101 AND BARE FILMS, DIRECTED BY JOANNA BAILEY, 2013

WHEN THE WORD 'CRAFT' LOSES ITS MEANING

Furniture-maker Gareth Neal asks whether craft can survive current trends

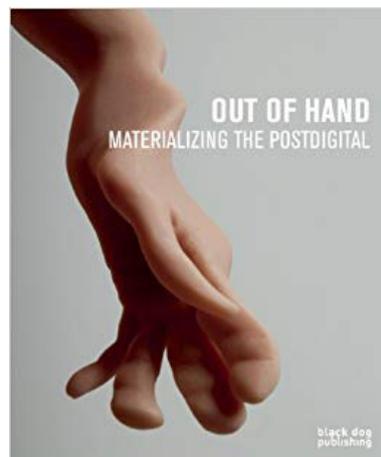
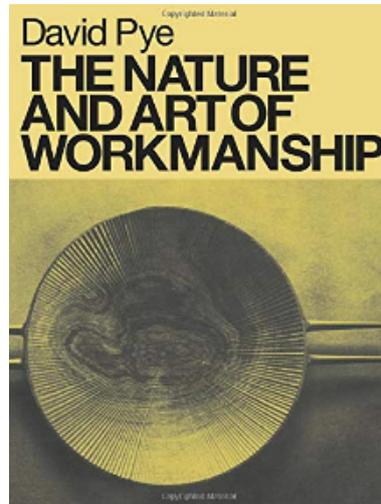
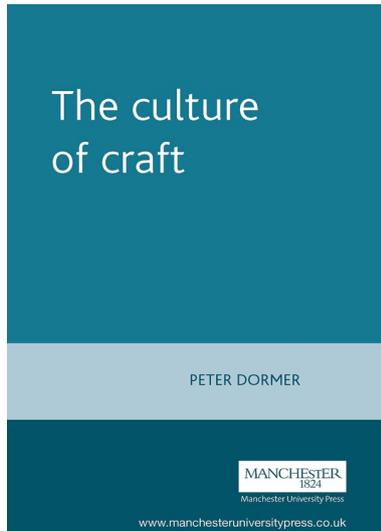
Posted by
Web Team

Published
05 June 2015

Crafts Council website

The understanding Neal has gained through practice and reflection on the term and relative meaning of the word 'craft' resulted in a written piece for the Crafts Council. (Neal 2015)

The Certainty of Uncertainty



Specialist crafting publications

As an internationally acclaimed craftsperson, Neal joins a dialogue that has evolved over several years in print during the era of mechanical crafting and through the growth and development of digital manufacture.

RESEARCH PROCESS

Neal's practice-based research led to the development of two bodies of work. Each series explores, tests, and challenges David Pye's distinction between the 'workmanship of risk' and the 'workmanship of certainty'.

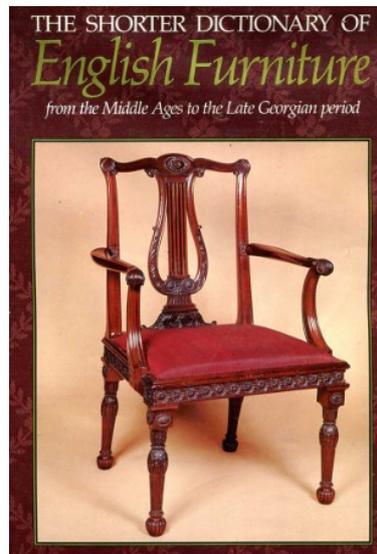
The Hack Series used a six-axis robotic arm to carve one-off furniture pieces from waste, 'green' timber. The volatility of unseasoned 'green' wood, and the complexity of the design, sought to examine the role and value of risk in digital manufacture. By exploring the weaknesses, glitches, fractures, splits and rings of time stored within, a distorted Georgian archetype is extracted.

The vessel series, Certainty, was developed through a process of drawing, digital modelling, prototyping, and 3D printing to create objects that seek to embody an optimised manufactured output, with a visual balance of complexity, individualism and beauty.

THE HACK SERIES

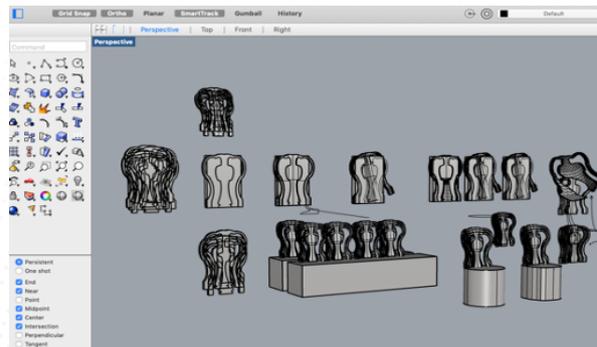
Understanding historic approaches

Neal begins the process through a consideration of historic design and craft principles and the making traditions that underpin them. It is important that this history is visibly represented in the design, encouraging an anchor to the evolution of the term alongside changing technologies.



Digital design

The design is digitally developed, with a consciousness of how this process may be part of the crafting or making as understood by David Pye.



Experimental milling

After much experimentation six-axis CNC machines mill a solid block of green oak, the wet wood moves and distorts as it is milled, after milling it then dries and cracks. Through reversing the normal procedure of using kiln dried timber, the digital process invites deformation and risk.



Comparison with handcrafting

Neal's reflections on what is learnt from this process include the similarities and differences between the technique he has used and those used in the earlier history of furniture making.



Risk: Hack Chair 2018

First presented in the form of the Hack Chair (December 2017), the Hack series combines Computer Numeric Control (CNC) technologies with traditional carving techniques. Each piece presents an original furniture form inspired by an iconic eighteenth century archetype. Designs are cut, three dimensionally, into individual single sections of waste timber. Through milling in the green they invite risk and distortion, the drying process then invites further unknowns.



CERTAINTY

Understanding historic approaches

Common to the enquiry which motivates these two craft projects, Neal develops his understanding of the history of production and crafts practices in the design and making of vessels.

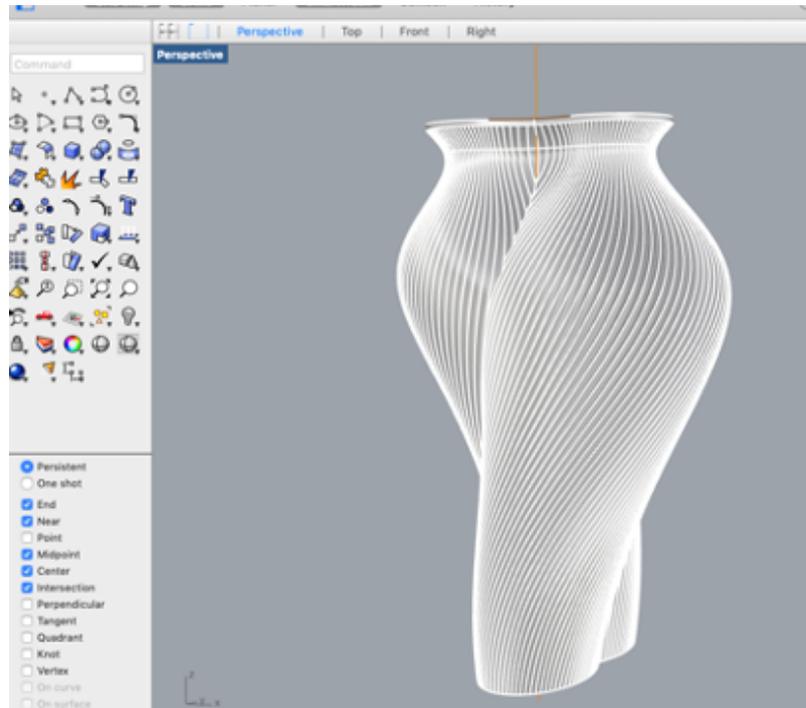


Research into form and problem solving

The craftsperson's practice develops in the solution of design problems and options such as shape and texture.

The research process initially uses firsthand and secondhand visual research methods and both traditional and digital sketching processes.





Computer assisted design (CAD) and 3D printing technologies

Raw material of sand printing



**Certainty: Sand printed
Vessels: 2019**

Neal uses machine technologies to redefine the handmade. In exploring the possibilities of 3D printing, he tests his theory that the machine is an extension of the human hand, and that risk will always be present. He steps away from his expert material, wood, and pushes the boundaries of his craft, both in materiality and human perception.



RESEARCH INSIGHTS



Certainty: Sand printed Vessels: 2019

The Certainty of Uncertainty challenges the boundaries of the term craft by considering it in the light of an expert craftsperson's engagement with newly available tools and engaging with the definitions that have been formed before these technologies were available.

The process brings both traditional and digital design to bear upon the making of machine-tooled craft objects. This allows for a testing of David Pye's framings of craft - 'workmanship of risk' and 'workmanship of certainty' - and brings experimentation to the understanding of whether these notions are still applicable.

Neal demonstrates that the elements of risk and certainty can still apply and, moreover, can be understood in new ways. Neal's artefacts open up the debate on craftsmanship and authenticity, demonstrating the ways in which craftsmanship can be integrated with new methods of making and manufacturing, demonstrating, both through his practice and in his writing, that whilst these enable the production of high-quality high-precision making they can also incorporate a level of risk and uncertainty into their processes.

By combining new materials and a high level of ambition with digital manufacturing Neal produces pieces that are recognised as the product of craftsmanship: 'crafting or manufacturing at the far boundaries of ability, of skill, with new or unexplored processes or ideas. As opposed to the workmanship of certainty, which applies to tried and tested methods where results can be assured and risk can be minimised.' (Neal, 2018)

David Pye suggested that, 'With the workmanship of risk we may contrast the workmanship of certainty, always to be found in quantity production, and found in the pure state of full automation.' (Pye, 1968)

Neal's work, however, proposes a new definition of craftsmanship; simply workmanship using any kind of technique or apparatus, in which the quality of the result is not pre-determined but depends on the judgement, dexterity and care which the maker exercises as he works.

DISSEMINATION



(top)
Blame the Tools symposium
Camberwell College of Art, 2020

(bottom)
International KOGEI Award
Toyama Prefectural Museum of
Art and Design
Japan 2021
Publicity photograph

Neal's research into the shifting meaning of craft in a digital age was disseminated widely both in the specialist and mainstream media.

Insights were disseminated through international exhibitions, [a short film](#), talks, symposia and published conference papers.

'Hacking Craft Symposium'. New Design University, Austria, 4 May 2018. <https://esel.at/termin/96484>

Collect 2019. Saatchi Gallery, Sarah Myerscough Gallery. 28 February – 23 March. <https://www.sarahmyerscough.com/exhibitions/20-collect-2019-art-fair/>

'Material Matters Talks'. Clerkenwell Design Week, 22 May 2019. <https://www.eventbrite.co.uk/e/material-matters-live-tickets-59944246856#>

'Technology in Contemporary Craft'. Collect 2019 Art Fair. 1 March 2019. <https://www.archipanic.com/collect-2019/>

Scorched at London Craft Week, 8-12 May 2019. <https://www.dezeen.com/2019/05/06/london-craft-week-2019-events-guide/>

PAD Art and Design Fair 2019, 30 September – 6 October. <https://enkimagazine.com/gareth-neal-pad-art-and-design-fair/?v=79cba1185463>

'Blame the Tools' Symposium, Camberwell College of Art, 8 October 2020. <https://soundcloud.com/ccw-research-events/blame-the-tools-online-symposium-8-october-2020-panel-one-risk-1>

International KOGEI Award, Toyama Prefectural Museum of Art and Design, Japan: Winner, Grand Prize 2021 (Twisted Pair). <https://kogeiaward.jp/en/news.html>

Public dissemination included:

Abrams, C. (2019) Collect 2019: The only gallery-presented art fair dedicated to modern craft and design. *The Design Edit*, 1 May. <https://thedesignedit.com/collect-2019/>

Neal, G. (2018) 'Risk assessment: Are David Pye's definitions of craft still relevant today?' *Crafts Magazine*, May/June 2018.

Enki: *Maker of the Month, Master of Experience*. 2018.

Myerscough, S. (2019) 'Is technology the future of craftsmanship?' *Financial Times*, 28 November 2019. <https://www.ft.com/content/7d8c5c4a-0a09-11ea-8fb7-8fcec0c3b0f9>

OPINION

Are David Pye's definitions of craft still relevant today? Designer Gareth Neal reappraises them 50 years on

Risk assessment

Rather remarkably, David Pye's seminal book, *The Nature and Art of Workmanship*, is 50 years old this year. The woodturner and educator never used the term craft but, for many, his phrase 'the workmanship of risk' – which he used in opposition to 'the workmanship of certainty' – has become a neat term to define the field. As he wrote: 'With the workmanship of risk we may contrast the workmanship of certainty, always to be found in quantity production, and found in its pure state in full automation.

In workmanship of this sort the quality of the result is exactly predetermined before a single saleable thing is made.'

Later he adds: 'If I must ascribe a meaning to the word craftsmanship, I shall say as a first approximation that it means simply workmanship using any kind of technique or apparatus, in which the quality of the result is not pre-determined but depends on the judgement, dexterity and care which the maker exercises as he works.'

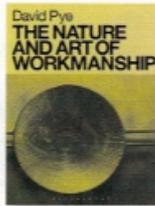
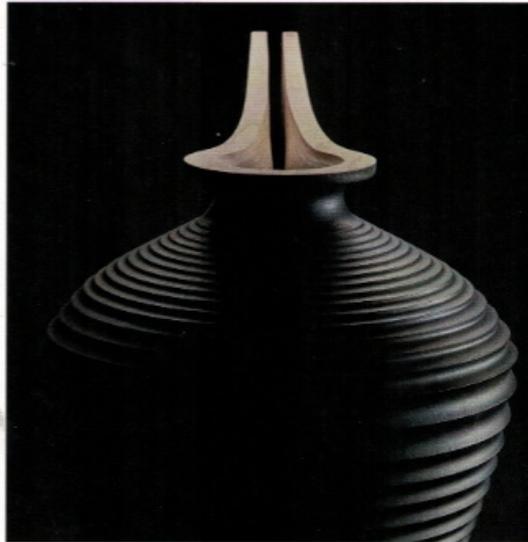
However, half a century on, and in an era of digital technology, are these definitions still relevant? And is risk the sole province of the crafts? If you're experienced, for instance, then throwing a pot is relatively certain. The best craftsmen work with authority, intuitively and instinctively and with the consistency of their automated counterparts. It's possible to argue that there is little risk within their approach and near-perfection can be achieved with regularity.

In my experience, working with a range of processes and techniques as well as in a variety of different environments, risk has often been involved. But its presence alone does not make it the defining characteristic of the craft-making process.

In 2018 craftspeople in the UK have access to some of the most advanced tooling and machinery, in digi labs, maker hubs and universities. They may even have them in their own workshops as the prices of this kit have fallen dramatically.

However, to achieve certainty as Pye defines – 'in which the quality of the result is predetermined and beyond the control of the operative' – is simply

Right: *Ves-el*, 2014, a collaboration between Gareth Neal and Zaha Hadid. Opposite: a CNC router used by Neal to create his designs



impossible. To assume that by setting up a machine or outsourcing to a technician and pressing a button on a digital process or mass-production method you are eliminating risk is misguided. No matter the scale of the production process there will always be an element of risk.

Since first engaging in digital manufacturing tools at university in 1995, the results of using them have always presented problems and I know to expect diverse outcomes. In many ways, these hi-tech processes present greater uncertainty, particularly when manufacturing small quantities, as you are often entering the unknown and commitment is required from the very start.

Many of us will have experienced getting the most simple things back from a CNC machine or a laser cutter, knowing that in theory they should be the same, but it is not always the case. Sometimes it seems as though the machine stopped mid-process for some unknown reason and daydreamed.

During The Wish List project, which launched at the London Design Festival in 2014, I sat up for five days in front of a flat bed CNC machine, holding an emergency stop button in a complete state of anxiety as I lived and breathed every movement of the tool as it cut across the surface of the *Ves-el* I designed in collaboration with

Zaha Hadid. It might as well have been the end of my finger.

Surely it's time to accept that engaging in the use of digital tools is just an extension of our hands? Yes, it is divorced from touch and the sensory evaluation process during its conceptual meaning extra caution needs to be applied, but it is craft nonetheless.

I believe risk is related to ambition, and ambition to making new discoveries. It is about finding new insights within processes and materials. Risk is research and the failures that come with risk are the process. Ambition pushes ideas, materials and process into new undiscovered territory, directions and forms. So I would like to argue strongly that risk is an approach to materials.

I agree with Pye that when we engage in risk we engage in uncertainty but uncertainty does not necessarily define craft. Half a century on from his definitions of 'workmanship of risk' and 'workmanship of certainty', perhaps they should be adapted to say something like this:

'The workmanship of risk means crafting or manufacturing at the far boundaries of ability or skill with new or unexplored processes or ideas. As opposed to the workmanship of certainty, which applies to tried and tested methods where results can be assured and risk can be minimised.'

Surely it's time to accept that engaging in the use of digital tools is just an extension of our hands?

22 May/June 2018 Crafts

2018 Crafts Magazine
Risk assessment: Are David Pye's definitions of craft still relevant today?

Hacking Craft Symposium
New Design University,
Austria 2018



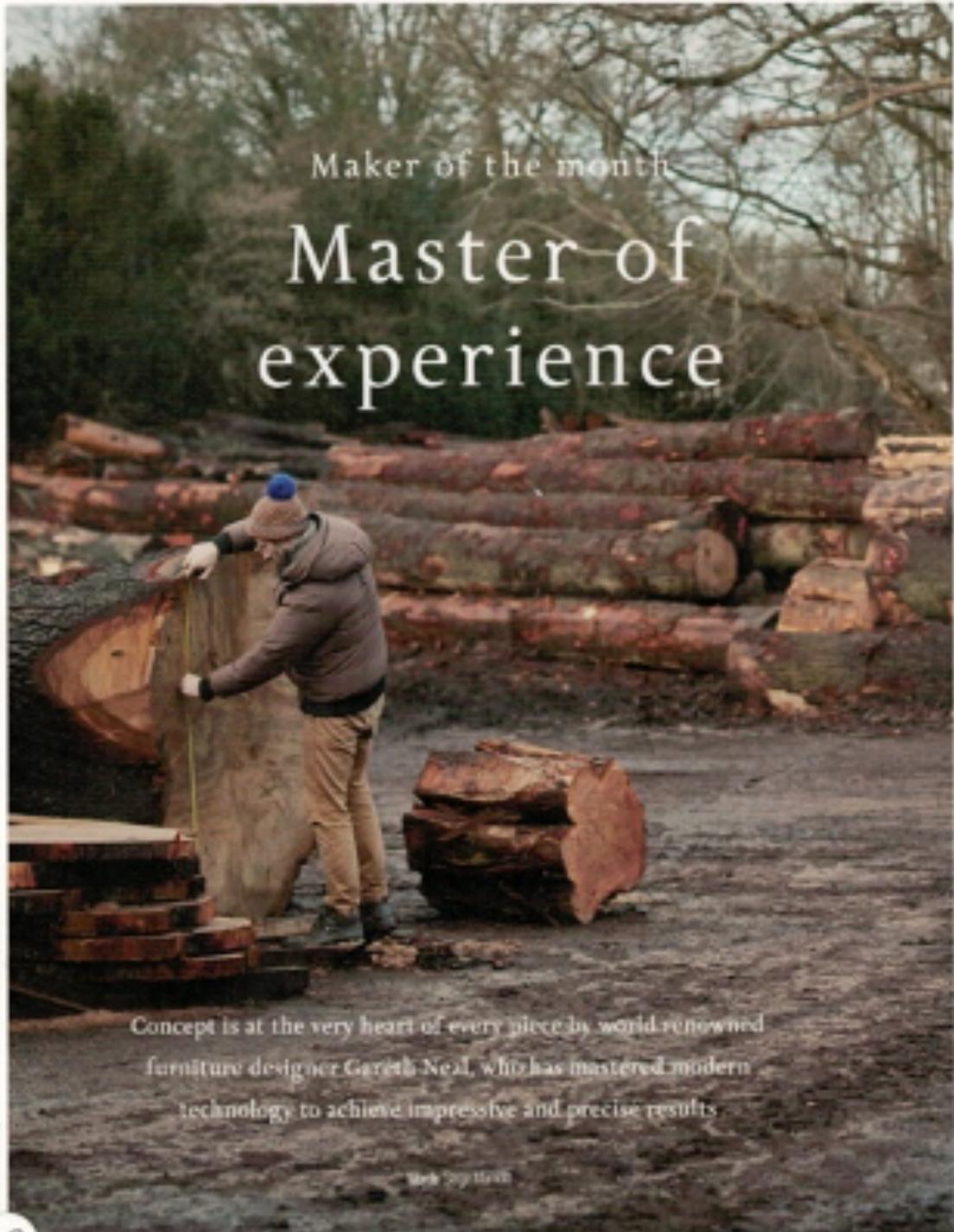
COLLECT 2019
Technology in contemporary craft
discussion with Jon Makepeace
and Gareth Neal.



As part of COLLECT 2019, the international art fair for modern craft and design, British furniture designers John Makepeace and Gareth Neal came together for a discussion about the current nature of craftsmanship and technological innovation. It was chaired by Sarah Myerscough, the London gallerist renowned for being one of the first to give contemporary crafted objects a fine art exposure. With great passion and energy she supports

The Certainty of Uncertainty

life & style | 2018



Concept is at the very heart of every piece by world-renowned furniture designer Gareth Neal, who has mastered modern technology to achieve impressive and precise results

Photograph: Peter Gandy

98

enki | the love of design and architecture

Enki
Maker of the Month,
Master of Experience, 2018

The Certainty of Uncertainty



The screenshot shows the top of a Financial Times article page. At the top, the 'FINANCIAL TIMES' logo is centered. Below it is a navigation bar with links for 'UK', 'COMPANIES', 'TECH', 'MARKETS', 'GRAPHICS', 'OPINION', 'WORK & CAREERS', 'LIFE & ARTS', and 'HOW TO SPEND IT'. A teal banner below the navigation bar contains the text 'Get a fresh start.' on the left, a coffee cup and smartphone icon in the middle, and a 'Choose your FT trial' button on the right. Below the banner, the article title 'Is technology the future of craftsmanship?' is displayed in a large serif font. To the left of the title is a 'Collecting' label and a '+ Add to myFT' button. Below the title is a sub-headline: 'London gallerist Sarah Myerscough on her installation at Design Miami and how to keep craft and design relevant'. The year '2019' is partially visible on the left side of the page.



Financial Times article by
Sarah Myerscough, (2019)

(below)
Scorched at London Craft Week,
8-12 May 2019

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(overleaf)
Hack Chair
Gareth Neal
Photograph Petr Krejčí

The Certainty of Uncertainty

