



Sustainable Craft Design Approaches: Materiality as an Antidote for Materialism

Laura Quinn

Introduction

I am a glassblower. I am a maker. I am a thinker. I am a designer. I am guilty.

It is difficult to make an argument for glassblowing as a sustainable craft practice. Hand making a drinking glass takes three kilns heated between 500-1200°C. It is an energy guzzling making method. Recognising this problem, however, allows artisanal glass to become a space to explore key problems in the relationship between the ethical and aesthetic dimensions of neo-artisanal practice.

Because it relies on a different kind of engagement between consumers and the material world, there is an understanding that craft, and 'slow' production is an antidote to the climate crisis caused by industrialisation and mass manufacturing (Adamson, *The Invention of Craft*, 140). This position is important, but as the example of artisanal glass shows, some craft production cannot easily defend itself against the accusation that it is highly energy inefficient.

For makers concerned with sustainability, we face a conundrum, and an ethical question - are we being sustainable by creating material objects? 'If we are truly concerned about sustainability, we should just stop making things' (Proctor, *The Sustainable Design Book*, 6). Proctor's question is indeed one we should consider as makers; however we must also question whether our greater contribution to sustainability will come from refraining from 'making things', or could it be from a continuation of creating material objects that encourage a closer consumer-product relationship, which affects the sustainability of the complete life cycle of the object? I will argue that it is not the things, themselves as Proctor put it, that are the issue, it is us as producers and consumers, and our relationship to these things that is the problem. I will argue that it is not the energy intensive production of artisanal glass that is the issue but that neo-artisanal practice makes possible a reflection on the relationships that link the object, its production, and its consumption. Although it is important to consider efficient use of energy, it may be equally important to consider the invisible dynamics of consumer culture that influence how we use and reuse material objects. I will discuss how the problematic symptoms that have contributed to the current environmental crisis came from a focus on extrinsic characteristics of materialism rather

than intrinsic characteristics of materiality. I will build the argument that the solution is in the problem and that indeed a possible antidote to materialism is in materiality - in exploring the relationship between the material and the producer and consumer.

Through case studies of my glass practice, I will illustrate how the use of digital design with traditional glass processes can affect the efficiency and sustainability of artisanal glass production and consumption. Turning to David Pye's theories (Pye, *The Nature and Art of Workmanship*) on risk and certainty in making, I will discuss how the risk associated with handmade production can be influenced by the certainty associated with mass automated manufacturing to create a middle ground where artisanal making can become more sustainable.

My research is practice-led, and my understanding of it has come through daily material engagement, and reflective journaling. Therefore, this piece of writing will use examples of my material research, as well as drawing upon my reflections of theory from the fields of sociology, craft, design, pedagogy and environmentalism. This article will present a critical analysis of the research I conducted as part of my postgraduate research in 3D design crafts. This body of research output has been analysed in this text as it gives an account of the evolving human-material relationship throughout some of the most pivotal years of my glass practice.

Research Question

In September 2019 I presented to the Making Futures audience and posed the question that has been an underlying theme in my practice. I will now use this question as a critical design thinking tool to form the basis of this research article.

How can the relationship between humans and materials be understood and designed upon to create a more sustainable artisan glass practice?

My design practice intervenes at three stages of the product life cycle: production, use, end of life/recycling. Using the research question as a reflective tool, I have divided this text into three sections that examine each of the design interventions and human-material interfaces. Using examples from the glass designing and making process I undertook during my master's I will present the relationship between the digital and the handmade. Like the example I will discuss further in this text of handmade neon, I will discuss craft dualities such as the perception of the machinist and the handmade aesthetic. I will present the argument for the importance of acquiring material and process knowledge through hand manufacturing when digital manufacturing continues to grow in popularity and accessibility.

This research paper is written in the first person, as it is an account of my own craft practice and subsequent research. It will reflect upon and showcase my artisan glass practice outputs which despite not being very energy efficient in their production, can give a valuable insight into sustainable consumption and offer alternatives to materialism, a disengaged consumer relationship and its symptoms of waste, and throw-away mindset.

Section 1

Production - The Maker and the Material

Andrew Simms and Ruth Potts consider how a difference in the relationship between the consumer and the product can have an impact on the sustainability of materialism.

The challenge, then, is to define a 'New Materialism' [...] at the heart of this new relationship, encoded in a different attitude toward making, owning, sharing and caring for things, lies both much greater potential human well being, and lifestyles that are far less damaging to our life-supporting biosphere. [...] The green movement, which works to save conditions for life on the planet, has perversely been made synonymous with a rejection of the material world.

(Simms, Potts, New Materialism. How Our Relationship with the Material World Can Change for The Better, 8-9)

In their writing *The New Materialism: How Our Relationship with the Material World can Change for the Better*, Simms and Potts discuss how within the green movement there can be a viewpoint to reject materialism. Production and consumption happen, to reject a lifestyle that has produced and consumed goods is not a solution to the current environmental crisis we are finding ourselves in because it is not realistic to how we live now. For the majority, complete self-sustainable living by consuming only what we produce, is not possible in its entirety. We must consume in order to exist, and we rely on others who produce to do the same. So instead, as Simms and Potts discuss, rather than focusing on the rejection of consumption in the material world, the solution, or at least working towards a solution will instead come from an examination of the sociological and anthropological relationship with material goods.

As a designer, it is imperative to examine all aspects of this relationship, including my own relationship to the material and making process. Within an artisanal craft practice like glass making, there can be a tendency to view the artisan as opposing industry and consumer culture. This belief that craft is opposing industry is something Glenn Adamson discusses in his book *The Invention of Craft* (2013), and how it is a hindrance to continue to perpetuate this standpoint, he argues persuasively that this influential craft ideology misrepresents the relationship between craft and industry, creating a false binary between them. In order to continue to exist artisanal craft relies on consumers investing in small scale industries. However, there is a space in which craft can still be grounded in a rich historical tradition, without opposing innovation and industry. 'Craft's claim to cultural memory can be retained, without fixing it as backward looking or conservative.' (Adamson, *The Invention of Craft*, xiii). A concern would be whether or not the neo-artisanal sphere is an area for the romantic veneration of traditional craft practices, or is it instead an area where craft practitioners can innovate and evolve their practice? If the latter is the case, and I believe it can be, how will the craft audience's and consumer's notion of handmade authenticity change with the introduction of digital manufacturing processes? There is an opportunity to continue the romantic veneration of craft, which often is an essential selling quality of the crafted object, without it obscuring attempts to become more sustainable through innovation.

It is this very duality of old and new, traditional and innovative that initiated my practice-

led research. Rather than seeing handmade craft, and industry as opposing modes of manufacture, I have used the industrialised glass process as inspiration for developing my small batch making methods in my artisan glass. David Pye who was a furniture maker and craft theorist has, prior to Adamson's writings, elaborated on the idea that there is a blurred area between the certainty that comes from automated production, and the risk involved in the handmade (Pye, *The Nature and Art of Workmanship*). It is in this relationship that I seek to explore not only to change my manufacturing methods, but also to encourage the audience's acceptance of the use of mass manufacturing methods in small batch production. Educating the audience's taste is not a contemporary occurrence, however it can be used to move beyond a romantic fixation on the handmade which threatens to stifle innovation within the craft industry. By embracing this crossover, by both audience and maker craft design can move forward and thrive within neo artisanal manufacturing (see figure 1).



Fig 1. Laura Quinn, 2019. Risk and Certainty. Slide for Glass Art Society 2020 Conference Submission

The work I have produced over the course of my postgraduate research has taken some inspiration from modes of mass production of material goods - namely glass goods, in order to create more efficient making systems at the small scale, artisan level. There are many ways small batch production within the crafts mimic large scale modes of manufacturing, however the most influential example for my practice has come from working with Fab Lab Plymouth and communications with overseas material and fab labs - working specifically in eco design. Fab Labs are local digital manufacturing spaces that are linked by common digital manufacturing tools and a shared bank of experience and knowledge within a global platform. Though linked through the global Fab Lab Network, each lab acts independently of each other and does not have one single governing body (Fab Foundation UK, "What is a Fab Lab"). This network of experience and knowledge, with the ability to adapt to suit localised situations has been in itself hugely

influential in understanding my practice, which I will explain further in this reading.

In a bid to add more certainty to my craft practice at the beginning of my postgraduate research I sought to transcend the implicit, unquantifiable knowledge of the handmade by making it more explicit, and certain. This viewpoint however was naive, and underestimated the nature and importance of implicit knowledge within craft. This unquantified and silent information shared between person and object is something Michael Polanyi discussed in his book *The Tacit Dimension*, where he pioneered the term for the information as 'Tacit Knowledge'. This term, I believe is crucial to understanding the relationship between the producer and consumer with the object in artisanal production and consumption. 'Physiologists long ago established that the way we see an object is determined by certain efforts inside our body, efforts which we cannot feel in themselves.' (Polanyi, 1966, in reprint, 2009, *The Tacit Dimension*, 13).

By its nature of implied information sharing as opposed to explicit information sharing, tacit knowledge cannot be easily rationalised (Polanyi, *The Tacit Dimension*). This is something to consider in the relationship between the maker and their chosen material. How does implicit knowledge share, which is difficult to make explicit affect communication between makers, manufacturers, digital technicians, audiences, and users?

It seems, my own inability to explicitly articulate some of my material language throughout my postgraduate project has been both inhibitive of the design process, but equally as enlightening of the hidden material language. The process and material understanding that makers have as a result of this language is something that makes craft methods absolutely still necessary in a world where their inefficiencies could make the argument for their obsolescence. For this reason, I argue that artisanal makers are in a strong position to engage with new and alternative manufacturing methods due to their embedded understanding of material processes.

In order to explore this argument, I set about planning an artisanal glass making process which confronted my lack of tacit knowledge in one particular area: neon making. I chose to explore and engage with how neon lighting is made. Though out of the numerous associations, neon lighting is not necessarily associated with being artisanal, however it is a highly skilled hand making process. In this line of material and process enquiry I also wanted to explore lighting and glass, with a particular interest in exploring optical aesthetic as function, and luminous forms within my work. In a convergent line of enquiry into the problematic linked binaries in craft, which Glenn Adamson discusses such as hand/machine, tacit/explicit, craft/industry (Adamson, *The Invention of Craft*, p xiii), due to its associations, neon making was an opportunity to research a method of artisanal production which passively deconstructs linked binaries such as natural and synthetic. In his article *Tomorrow's Neon: A History*, Christoph Ribbat discusses handmade neon's ability to exist in both sides of linked binaries.

On the one hand, the flashing tubes strike us as quintessentially urban. [...] On the other hand, glowing tubes never really shaped cities in the way that steel, concrete or giant LED screens have done. Neon tubes are much too small and brittle to take on this kind of force. Filled with natural gas and fashioned by diligent craftsmen, the glass tubes embody an elegant fragility at odds with metropolitan monumentalism.

Thus, neon has always flickered on both the inside and the outside of urban cultures.
(Ribbat, Tomorrow's Neon: A History)

Further along in the article he deconstructs another linked binary, artificial/organic, which relates to the ones mentioned by Adamson. 'Neon makes up 0.00046 per cent of the atmosphere. There is nothing synthetic about it. [...] Neon, often used as a metaphor of artificiality, began its career as an organic product.' (Ribbat, Tomorrow's Neon: A History).

With associations in urbanity and synthetics, it is interesting for me to note that compared to my usual making practice of glass blowing which has associations of the romantic, nostalgic days of old, neon making is, in actual fact, more handmade. Unlike my glass blowing process, neon making does not use jigs or moulds but rather a keen eye and a knowledge of where to heat the material, and for how long before bending it to resemble the chosen design. In order to produce a design from which a neon sculpture could be made, I decided to explore the forms and drawings that appear throughout my practice. It became apparent that the feeling of flow, and weight were a common theme in my work (see figure 2).

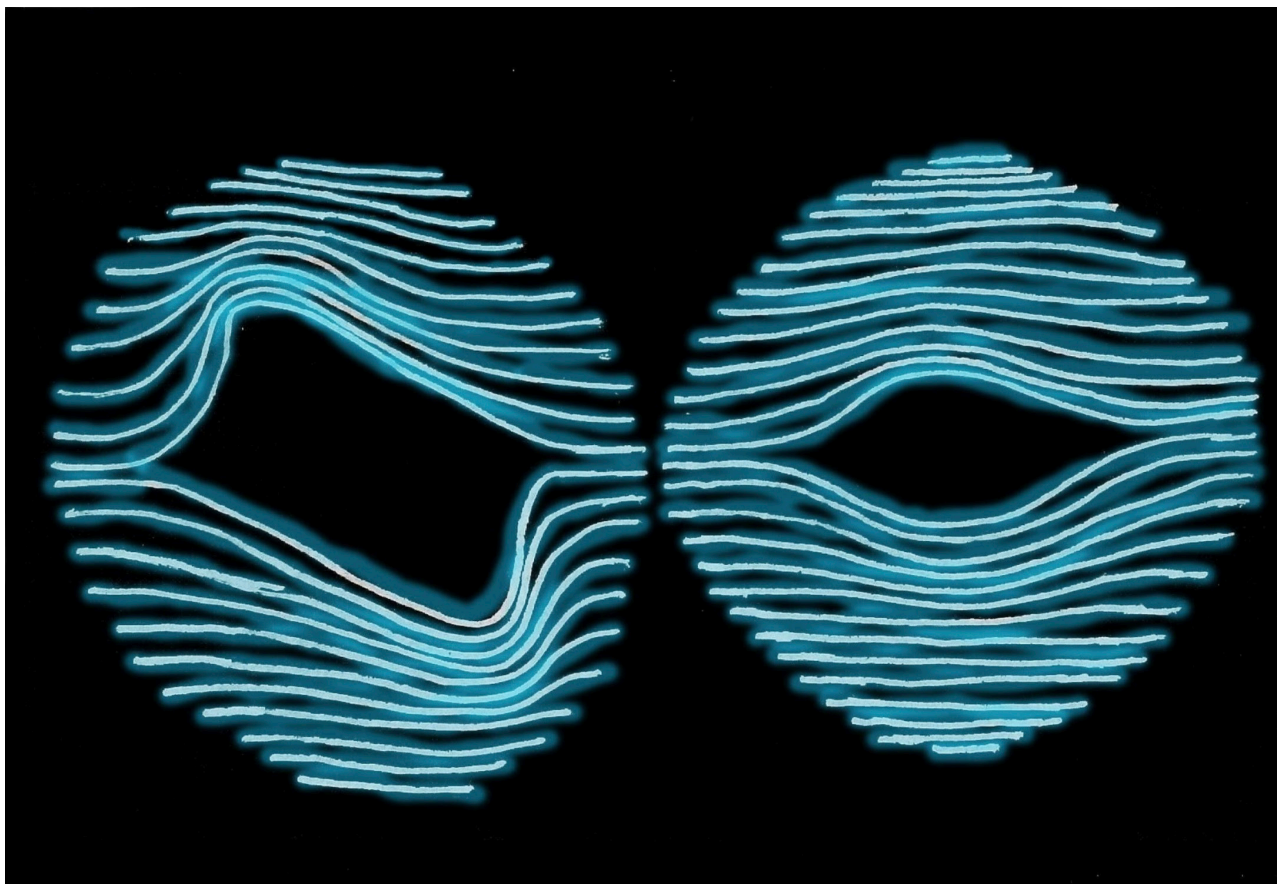


Fig. 2 Laura Quinn, 2019. Original Neon Design. Digitally Manipulated Hand Drawing

This can be experienced through the sweeping curves, change of glass density and form thickness (see figure 3). The designs mirror the glass blowing process that uses gravity and

the molten glass' own weight to dictate the form. The material and glass making process dictate the form. I set about trying to transcribe this same feeling into a neon design. However, when I attempted to bend the glass tubes to make the neon sculpture, this particular glass sculpting process made long sweeping curves very difficult to achieve.

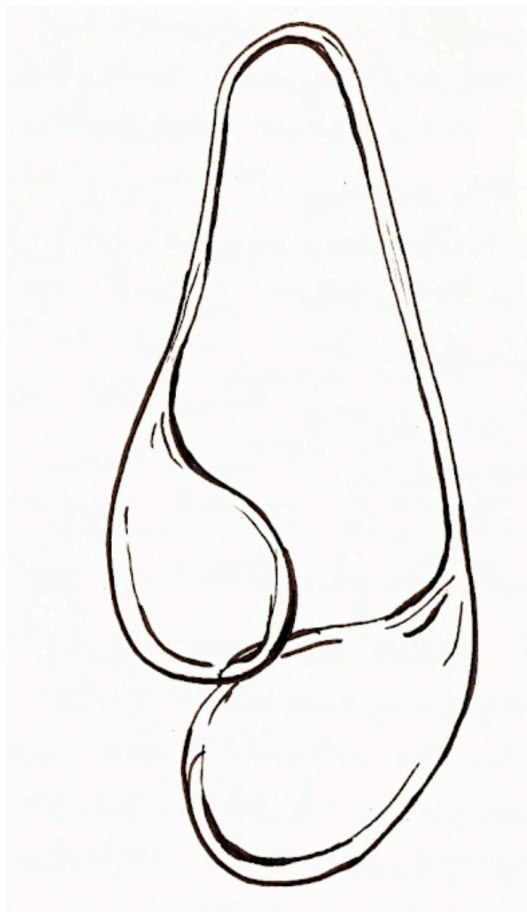


Fig. 3 Laura Quinn, 2019. Establishing Design Aesthetic

The resulting form appears forced and does not embody the feeling of movement, weight, and grounding that my other work does (see fig 4). Though the experience was not entirely in vain: taking a risk and failing, and the desire to still return to the neon making process later in order to gain more tacit knowledge, has highlighted for me the importance and place for the workmanship of risk as Pye would describe hand making (Pye, *The Tacit Dimension*). This was also an attempt in understanding the agency of materialism and process by allowing the material to lead the process. As it turned out, the agency I was looking for is not easy to achieve - instead an approach that may have offered more success would have allowed the particular process to lead the design.

Subsequently, and unexpectedly this making experience allowed me a greater understanding of my own relationship with the material and my practice, something which was essential in order to redesign the users experience of the material object. Having taken the decision not to outsource this manufacturing, attempt myself, fail, and continue to want to explore it as a process, is for me encouragement that my



Fig. 4 Laura Quinn, 2019. Completed Neon Sculpture

practice is grounded completely as a materials led, making informed, design practice, underpinned by theoretical discourse. This experience highlighted that though familiar with the basic principles of a process, first-hand experience of it provides a different type of relationship with the material and knowledge gaining experience. This builds the argument that even with the advances of digital manufacturing, or digitally aided making, there is a necessity for gaining tacit, implicit knowledge of the process and developing the relationship between the maker and the material.

Eroding the essential space and time required to build up tacit and explicit knowledge through direct experience of real materials can leave so many design and applied arts students with superficial and lightweight comprehension of real-world constraints and affordances of materials and processes'.

(Shillito, Digital Crafts; Industrial Technologies for Applied Arts and Designer Makers, 27)

Though important to examine my own relationship with the material and put it under the sustainable design scrutiny I have set myself, I also have an audience to consider as it is also their use of what I create that helps to determine the overall sustainability of the object. During a lecture on Eco Design in the University of Gijon, Ramón Rubino discussed

the complete life cycle of a product and the stages at which it could be redesigned to have an impact on the sustainability of the product. 'The biggest effect we can have as eco designers is to re-design how our products are used by the consumer' (Rubino, Eco Design). With this in mind, makers who look to make their practice more sustainable must consider how what they create is used. The audience I engage with through my public profile is the perspective/potential user of what I produce, and they will have their own relationship to the material that is different from mine. The next section will detail how I have aimed to design how the audience sees my relationship to my material by designing my public profile, and how I aim to redesign their relationship through tactile engagement.

Section 2

Use - The Maker and The Audience

'In a world that is increasingly interconnected, the successful are those who can react flexibly. And a flexible person is someone who has mastered many tools' (Klein, "What Design Can and Should Be Doing in the 21st Century: Ten Proposals", 30). I believe the future of artisanal production lies in the ability to become a multi-faceted maker. Applying this approach to my practice has allowed me to produce work in collaboration with other crafts people, developing my digital manufacturing abilities, and work with a multitude of materials. During my master's research I have aimed to develop my skills in another tool, that perhaps may have one of the largest impacts on my practice: profile design.

One of the advantages in including profile design as a distinct skill set within my practice is to develop the notion of authenticity. Through public profile platforms such as Instagram (see figure 5), Facebook business accounts, and my website, I am designing a narrative for my products that I hope will intervene in the relationship between the user and the material, as well as the user's view of my relationship with the material. By developing a narrative, I hope to imbue my work with emotional interest from the user, encouraging sales, and use of my goods, and longevity through the care taken with the material by the user. This narrative has been built using a variety of material, process, product shots and videos on my public profile, as well as including myself, as the maker in the images to add autonomy to the production process.

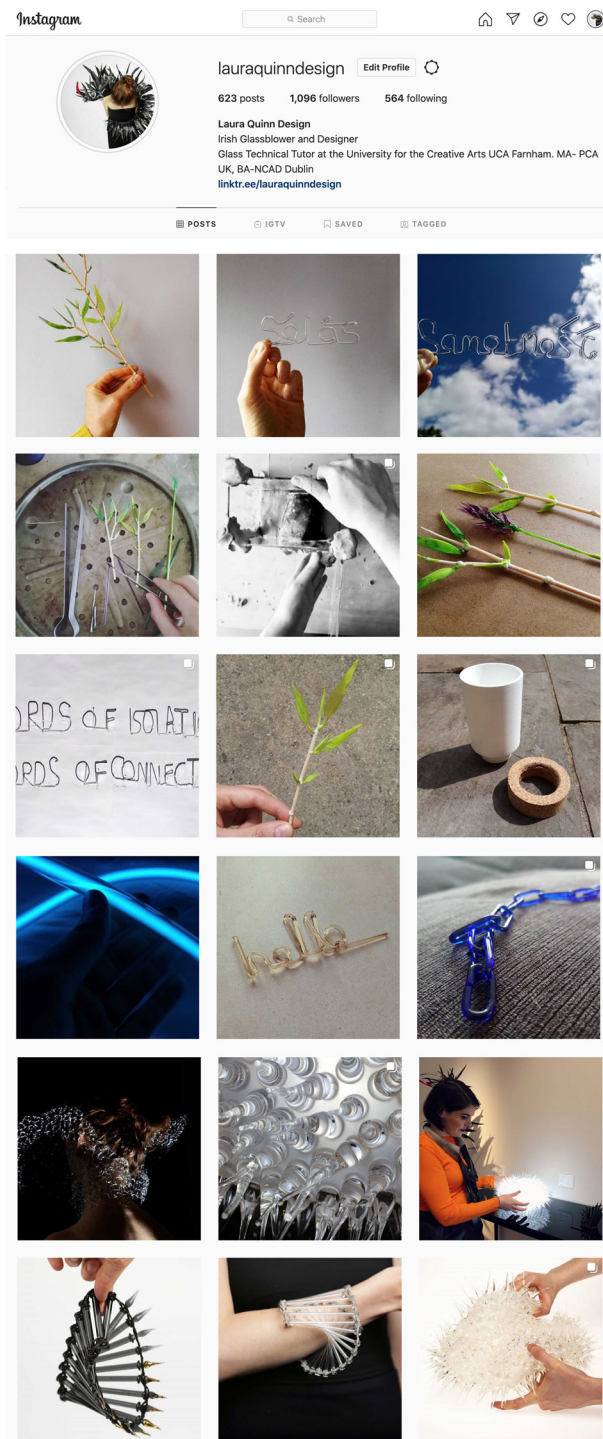


Fig 5. Laura Quinn, 2019. Sample of Instagram Laura Quinn Design Profile

I stress the word notion when discussing authenticity within the context of my profile building, Authenticity building in profile design is used to build trust with my audience. Partially this sustainable design strategy does feel Machiavellian, but it would be ignorant to say that it is not a tactic used by so many businesses. If something is authentic, then it is inherently good because it has truth and integrity, which

Richard E. Ocejo acknowledges when discussing a small-scale whiskey distillery.

Along with their small size, businesses like craft distilleries have a number of attributes. They have respect for handmade products and all the subtle variations they contain. They promote a strong sense of localness in terms of where they source their ingredients, the regions where they sell their products, and/or how they use place as a basis of their brand's identity. Perhaps most importantly, they create and promote a sense of authenticity, or the idea of a product as full of integrity, truth, and real-ness as markers of its quality. (Ocejo, Masters of Craft, Old Jobs in the New Urban Economy, 54).

As I have experienced through developing the public profile for my work, the notion of authenticity is not only a complex thing to design, but the idea in itself to design authenticity seems paradoxical. If it is designed, fuelled with agenda, reshaped to suit different audiences can it really be authentic? 'It (authenticity) is one of the central notions of modern moral thought. Yet it is a puzzling and paradoxical notion. Surely I am always myself and necessarily so? How can it be otherwise?' (Sayers, The Concept of Authenticity, 2).

As interesting as this moral debate may be, for establishing my profile I have been designing the notion of authenticity with tenacity throughout my research. It is a marketing tactic, but I have also used it as a sustainable design tactic. I hope that the authentic nature of the product will encourage care from the user, as well as an emotional connection. This method of attempting to understand and design the communication to the audience has led me to research writings from a sociological point of view, embedded in artisan craft production, looking particularly to writings from sociologist Richard E. Ocejo.

In his book Masters of Craft (2017) Ocejo discusses the type of trust relationships that exist between small scale independent businesses and their audience/user, compared to large manufacturers and their audience/user. Ocejo discusses how typically in artisan industries it is not the best makers that thrive, but rather it is the ones who can make, but who also have exceptional interpersonal and communication skills to make connections and build trust with their audience through public profile, referring to them as 'new elite culture workers' (Ocejo, Masters of Craft, Old Jobs in the New Urban Economy, 8).

A way of developing the trust and authenticity with my audience is by using my social media platforms to perform what Ocejo calls 'Service Teaching' (Ocejo, Masters of Craft, Old Jobs in the New Urban Economy, 209). Service teaching is a method by which the artisan guides their customer through the making process - thus providing an entertainment service in itself. In doing so, artisans aim to develop the vocabulary and taste of the customer as well as trust (Ocejo, Masters of Craft, Old Jobs in the New Urban Economy, 209). The Did you know? posts on my public profile platforms contribute to the service teaching between me and my audience, as well as developing a public image of me making the work myself (see figure 6).



Fig 6. Laura Quinn, 2019, Service Teaching through Social Media

I also design my profile to be a tool in re-engineering how my audience then physically engages with glass as a material. Hands feature widely throughout my profile for this reason. I aim to communicate tactility and usability through their presence. Perhaps this is the reason I continue to create work that teeters into jewellery. By relating glass to the body, I hope I can encourage a deeper relationship between the audience and the material, the user and the object.

A counter argument for profile design is that it risks placing the agenda of the maker too closely to that of large international corporations which seeks to sell and profiteer at every opportunity. As mentioned earlier in this article, artisans exist through consumer engagement, however profile design can allow artisans to design the way that the consumer develops their relationship with the material object that is more concerned with the ethics of its consumption.

This chapter has outlined how I develop interest and care from my audience through profile design. However, this is window shopping of sorts, luring the customer in, providing the back story of how it's made and building authenticity for a product people want to buy. Now I will discuss the next stage of the human material relationship; use and reuse. This leads onto the final chapter of my journal article which explores this relationship,

and how I have intervened with my product mechanisms to alter the way in which people react and interact with my work on a physical and emotional level.

Section 3

End of Life and Recycling - The Audience and the Object



Figure 7. Laura Quinn, 2019. Building Tactility Through Relating Glass to the Body

Artisanal products tend to exist beyond a transactional process of produce and consume. 'Designers, as opposed to artists, aim not to create artifacts as ends unto themselves, but artifacts-as-means. Judging the value of a design means judging the value of what it enables more than the artifact itself' (Tonkinwise, "Design Away", 203). The function of glass in our everyday life is not purely utilitarian. The material and sensory qualities of glass must be considered as integral to its place in a sustainable cycle of production.

By designing mechanical connections that allow the glass to become moveable, flexible, wearable, interchangeable and recyclable I hope to extend the life of my products with physical and emotional durability design, as well as designing how the products can be repaired, redesigned and recycled. The purpose of this is to actively oppose the throw-away culture associated with materialism. This chapter will discuss these design interventions, paying particular attention to the buttonhole design that has had

such a large influence on my final body of work presented for my master's degree.

The design challenges I face by making my glass wearable provides design solutions that make my glass more durable, and easy to use which has transcended throughout my design outcomes in lighting and homeware products. Figure 7 illustrates this point, that a component of my Sisyphus Light Piece (seen further in this article) can be worn, felt, and moved easily by the person. An overarching theme that seems to connect the work is the human centred design.

In 2019 some completed objects from this research body of work went on show at New Designers in London. All items were designed and made using sustainable tactics and using a combination of digital manufacturing and hand making. This included the Vortex Whiskey Tumblers whose form was designed using computer aided design and 3D printed as a prototype and subsequently acted as a mould positive from which a glass blowing mould was made. Wearable pieces that combined 3D printed ball and socket joints with hand blown glass to allow movement and durability were also shown. An unplanned chance to conduct field research in the form of audience/material interactions occurred. Without knowledge of my observations, the audience members generally tended to pick up and feel the Vortex Whiskey Tumblers (see figure 8) which I included in the show. It is this interaction that has encouraged me to explore the interesting duality of glass. Why does the audience member not hesitate to pick up and feel the whiskey tumblers, yet are too nervous to try on the wearable glass with 3D printed components because they are worried it is too fragile? I believe this is due to object familiarity. The audience knows how to hold and use a whiskey tumbler, this is a confidence I believe when transferred to a variety of glass objects will encourage the audience/user to take authority over the object and material. There is a duality here that must be maintained however, fear of use must be reduced, but care for the material object maintained in order to add to the longevity and ultimately sustainability of the piece.

It is my intention to subvert the commonly conceived restraints of glass as a material. The idea that it is too fragile to use, I feel, is incredibly wasteful. For me, I believe to use is to be sustainable. Not to let the glass products become shrouded in preciousness to a level where their intentions are lost.

From viewing the work, to purchase to use, I hope to design care from the user for the material object. 'To extend the life of an object, the owner would know how to polish, adjust, oil and repair it.' (Potts, Simms, *New Materialism. How Our Relationship with the Material World Can Change for The Better*, 10).

My consumer will not be able to repair the glass themselves, but through the mechanical fixings I have created, most particularly in the Sisyphus series of wearable and lighting pieces, easy interchangeability will lend itself to repair. The consumer will be able to contact me to send spare parts for easy interchangeability if breakages occur.

The physical outputs of this research body can be seen within the Sisyphus Light (see figure 9). The glass can be easily slotted into the laser etched holes created in the leather, and easily removed. This enables each glass component to be repaired. It is my hope that through service teaching as Ocejo has termed it (Ocejo, *Masters of Craft, Old Jobs*



Fig. 8 Laura Quinn, 2018, Vortex Whiskey Tumblers in Hands

in the New Urban Economy), I will be able to inform my audience that this product, and others like it are repairable. Not only that, but that they enable co-design, and can be interchanged and grow with the user. I look to companies such as Niche Modern (see figure 10) producers of hand blown glass lighting, who advertise a mix and match approach to ordering lighting from their website. I too, have designed this lighting series to be modular, and easily interchanged to be made bespoke for the user and the space. 'Much is written about the benefits of participative design where end users form part of the stakeholder team' (Day, Design Error. A Human Factors Approach, 55).

My marketing for these pieces will also encourage my clients that these designs can be mix and match and can be co-designed between them and me. Allowing the user some authority and authorship will, I hope imbue the object with more emotional durability which Jonathan Chapman describes is a key sustainable design tactic in his book Emotionally Durable Design.

The issue now becomes the sustainability, or life cycle, of that crucial emotional response [...] Most design researchers agree that it is desirable to create products that sustain their emotional content throughout the entire span of their physical life.

(Chapman, Emotionally Durable Design, 101)



Fig. 9 Laura Quinn, 2019. Sisyphus Modular Light 'Mix and Match' Enabled

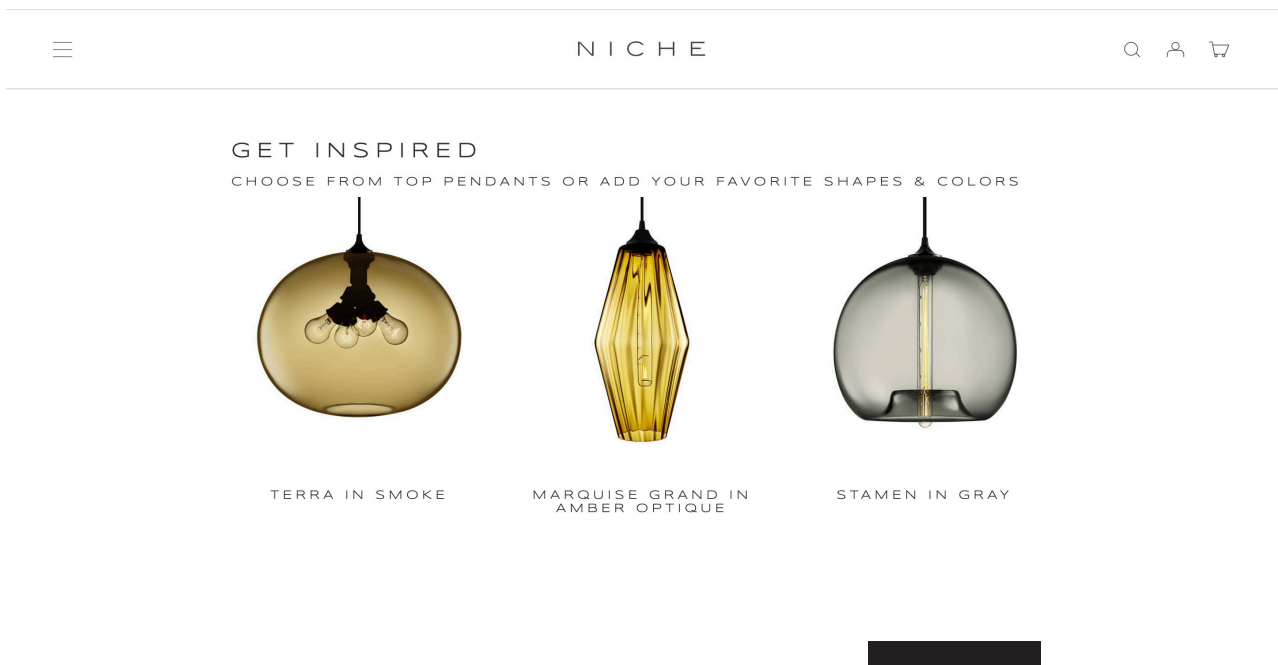


Fig. 10 Nice Modern, 2019. Customisable Multi-Pendant Chandeliers

I hope to promote the use and care through a closer engagement and relationship between the user and the object. It is this relationship that I have established with the Vortex Whiskey Decanter Set that I intend to foster in the lighting and jewellery designs. The traditional and primary identity of 'glassblower' was too restricting for the practice that I want to foster. Instead, I have attempted to adopt the terms

of thinker and designer. The work I have created throughout my master's degree is reflective of that. It is not a line of enquiry into glass design, but rather a line of enquiry into design, with a glass practice as a provider of material knowledge.

It seems this emigration from the traditional glass blower status has started to be received by my audience, evidenced in being featured in the online jewellery magazine Benchpeg, and on their homepage (see figure 11), and to be listed as one of 'six exciting new jewellery designers to watch from New Designers 2019' (Benchpeg, 2019).

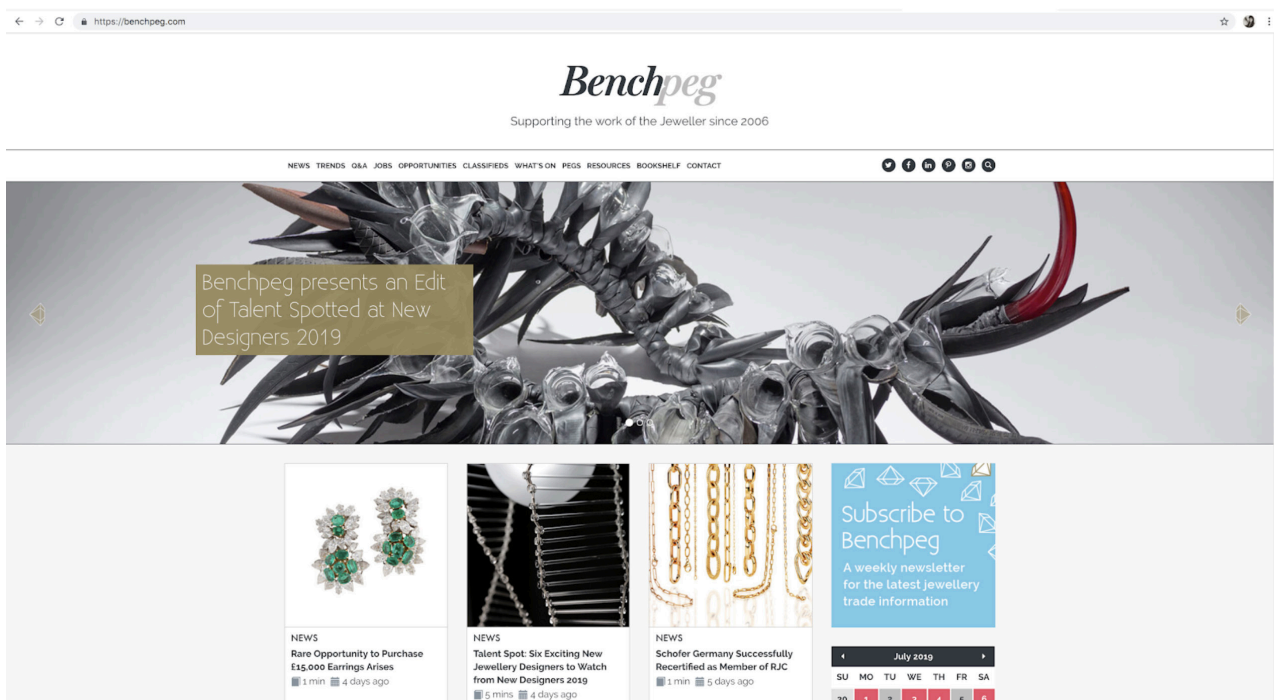


Fig. 11 Benchpeg, 2019 Homepage for July and August

It is one thing to develop an array of products people want, but I wish to develop products people want to care for, and evolve with, and seek to repair if damaged. By engaging the consumer beyond the materialistic window-shopping stage of my artisanal glass practice, I have designed ways in which they can engage with the materiality of the objects to add longevity to its life.

Conclusion

As neo-artisans we are in a unique position to explore sustainable manufacturing methods. Artisanal practice allows for a complex dialogue in relation to the ethical demands of sustainability, because of the scale at which it operates.

'Smaller decentralised units in large-scale networks can react with greater success to complex problems than large, singular, centralized ones. Dinosaurs are not as nimble as shoals of fish' (Klein, "What Design Can and Should Be Doing in the 21st Century: Ten Proposals", 30).

A simple example that could evidence this statement would be the use of the custom designed, laser cut acrylic and rubber washers and grommets made through co-design processes between myself and Owen Groombridge in the FabLab Plymouth (see fig 12). These fixtures and fittings were made to fit the Sisyphus Light Pieces, in a modular, and interchangeable way. They are stackable, which means that they can be built to suit whatever the thickness of the glass they fit through.



Fig. 12 Laura Quinn, Owen Groombridge, 2019 Laser Cut Acrylic Washers and Grommets.

Being able to make quick solutions to design problems, and fabricate them on site, and at a rapid rate means the project can continue to evolve without being slowed down by the lack of small, but crucial mechanical parts. The nature of this quick, responsive dialogue between me as the maker and the digital fabrication workshop FabLab Plymouth has contributed greatly to my ability to bring glass objects to a product design standard, where its components are more sustainable based on their modular, and interchangeable nature. The immediateness of this relationship in some ways mimics that of shaping the molten glass, it is quick, responsive and the results can be altered or redesigned.

Craft demands proximity - the material to the maker, the tool to the work [...] Digitization is too sweeping in its effects to be ameliorated by simply digging in and sitting tight.[...] Digital instruments have their own limits. They do not yield the nuanced control or satisfaction that even the simplest hand tool provides, and that has a constraining effect on the product.
(Adamson, *The Invention of Craft*, 165-167)

By the sample I have just provided, I would argue Adamson's point. I believe it is a

combination of nuanced control and material knowledge, as well as processes in both the handmade and digitally made worlds that can create a beautiful, craft product.

We have a material relationship and skill set embedded in traditional making methods, and the ability to adapt it to use new design technologies. As was demonstrated in developing various designs throughout my master's degree with clients using computer aided design programmes, it is possible to explore the overlap into the workmanship of certainty in digital design, and the workmanship of risk in handmade glass, to develop design objects that are imbued with intrinsic qualities not only for the audience, but for me as the maker also, and for the people I have worked with to create these objects. It is this genuine emotional investment that I have in my work that I believe has been communicated to my audience, and to the users in my social media, direct correspondence, and hopefully in the aura of the objects themselves.

It has been very necessary and rewarding to dedicate a large proportion of my research time into innovating and developing the way the glass objects can come together and come apart. As intended, this has given movement, flexibility, interchangeability, repairability and recycling capabilities to my work.

My practice will continue to grow, I hope I will grow to understand the relationships that I have been able to develop during the duration of my master's research.

In his book *Emotionally Durable Design*, Jonathan Chapman discusses how ineffective sustainable design that focuses on the symptoms of the problem, will have no great effect. He suggests, rather, that by looking at the underpinning drivers that shape the way we as humans consume, there can be real potential to design social change. (Chapman, *Emotionally Durable Design*, 10).

In a marketplace of relentless product obsolescence, the notion of consumer satisfaction will continue to remain a tantalizing utopia until product values diversify to incorporate factors beyond technical modernity-enabling consumers to transcend the temporal urgency of technocentric design and engage with their possessions over greater periods of time, and on a diversity of emotional and experiential levels.[...] objects provide conversation pieces that link consumers with manufacturers, facilitating upgrade, servicing and repair.

(Chapman, *Emotionally Durable Design*, 16-18)

Yes, it is difficult to make the argument for glass blowing as a sustainable design practice in itself. However, by using handmade glass objects to connect to, and better understand the human relationship, and the way we consume, we can begin to create a sustainable, human centred, materials led design practice. Developing an invested interest, care and love of material objects is an antidote to the negative non sustainable consequences of materialism.

I am a glassblower, I am a maker, I am a thinker, I am a designer, I am responsive.

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