



Shifting Horizons: Exploring the intersection of landscape & human experience in the evolving realm of sustainable glassmaking

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Abstract: Within the field of glass art, it is evident that there exists a shared collective interest in exploring the interplay between landscape and human experience, within sustainable glass practice. Many makers are driven by a deep connection to place and a belief that the place where something is made can influence the production of a crafted object. These objects often carry embedded knowledge, reflecting the environment from which they emerge and are inherently linked to the natural world. This paper aims to reveal a deeper understanding of the interconnectedness between humans, nature, and the things we create. Reviewing crafted objects not just as isolated artifacts but as objects intimately linked to the contexts from which they emerge. Amidst the currents of change that define our current context, it is imperative that as makers we carefully examine and renew our own creative craft practices. In our post-industrial era, the world has undergone profound changes marked by instability and uncertainty. The conceptual framework of the Anthropocene states that human activity has fundamentally influenced and irrevocably changed our climate and environment. Industrial practices such as glass making can be viewed as a form of extraction (and exploitation) of natural resources and materials. This issues a serious call out to for makers to demonstrate the urgent need for new sustainable and alternative methodological approaches to glass making.

As a sustainable material, glass stands out in terms of its material properties, it is infinitely recyclable when appropriately cleaned and sorted. As a material recycled glass can offer sustainable solutions that actively reduce environmental impact. A movement towards more sustainable and locally sourced materials is apparent in the work of many glass makers who work to reduce, reuse or recycle glass. However, makers are not just driven by ecological concerns but also by an acknowledgement of the unique qualities of the materials and resources they use. Makers are increasingly seeking to imbue their work with a sense of place, exploring the inherent properties and origin stories of the materials they use. In turn, many glass makers are inspired by darker histories, linked to past historical and cultural events - such as colonialism, material extraction, deforestation, and the exploitation of natural resources. The production of new and emerging glass works that respond to this theme will be discussed as a series of case studies within this paper. Glass artists Gregory

Alliss, Carrie Fertig, Sean Fraser, Jessamy Kelly, Inge Panneels, Pinkie McClure, and Jeff Zimmer will be introduced. Glass makers who explore human experience and the impact of humanity on the natural world through their creative glass practices. Finally, this paper will examine how creative expression can amplify voices and inspire meaningful change in our approaches and relationships to glassmaking. It will also highlight the profound role of glass as a medium for makers to articulate their environmental concerns and the impact of their work as a powerful form of craft activism, particularly in advocating for climate action.

Keywords: Glass Art, sustainable, glassmaking, landscape, sense of place.

Introduction

This paper explores the relationship between landscape and human experience in the evolving realm of sustainable glassmaking. The relevance of this paper is set out within the conceptual framework of the Anthropocene (Crutzen, 2000), a period that describes when human activity started to have a significant impact on the planet's climate and ecosystems. The discussion will be extended to how this has had a wide-ranging influence on material culture, including creative craft disciplines such as glass art. The case for sustainable glass making will be set out and discussed and a series of selected glass makers and their works will be showcased to demonstrate a response to this theme. Finally, this paper will be summarised by drawing upon these selected examples to express a series of key findings. In amplifying these works and voices it is hoped that this paper can stimulate meaningful discussion around sustainable approaches to glass making, as well as highlighting, the important role of glass art as an important medium for environmental commentary.

The connection between place, the natural world and landscape within art glass practice is an important driver for many glass makers, who are driven by a deep connection to place and a belief that the place where something is made can influence the production of a crafted object. These objects often carry embedded material knowledge, reflecting the environment from which they emerge and are inherently linked to the natural world and the landscapes in which we inhabit, works made in this way can issue a collective commentary on the impact of humanity on our natural world.

This paper will discuss the interconnectedness between humans, nature, landscape and crafted objects - that can be created to illustrate this relationship. Crafted objects are intimately linked to the contexts from which they emerge and have the ability to tell the story of their origins through the materials they are made from. Firstly, it is important to acknowledge that our environments and landscapes have always changed and are constantly in a state of flux. We are all painfully aware of the impact of climate change on our natural world, melting polar ice caps, sea levels are dramatically changing and rivers and seas that are cutting through, creating erosion and the deposition of land, causing widespread flooding and damage. In turn, the issues of forest fires, adverse weather events and other natural disasters are dramatically changing our landscape. The impact of manmade interventions, and deforestation for industrial and agricultural developments continue to damage our natural world – we are most definitely living through a climate crisis. It is important and evident that makers carefully examine their own creative craft practices in consideration of this, and in a direct response to climate change.

Methodology

This paper employs a methodological approach that is influenced by two critical elements, the conceptual framework of the Anthropocene as defined by Crutzen, in 2000 and the United Nations Sustainable Development Goals established in 2015. However, it is important to firstly draw upon the definition and notion of landscape which has inspired this paper, the writings of Tim Ingold will be used to initially frame this approach. In his text on *The Temporality of the Landscape*, Ingold (1993) adopts a dwelling perspective of landscape, to view it as an: *enduring record of – and testimony to – the lives and works of past generations who have dwelt within it, and in doing so have left there something of themselves* (Ingold,

1993, p.153).

Ingold describes how: *the landscape tells - or rather is - a story. It enfolds the lives and times of predecessors who, over the generations, have moved around in it and played their part in its formation. To perceive the landscape is therefore to carry out an act of remembrance, and remembering is not so much a matter of calling up an internal image, stored in the mind, as of engaging perpetually with the environment that is itself pregnant with the past (Ingold, 1993, p.153).*

It is important to extend this by connecting this to the approach of makers who choose to tell the stories of the landscape that we inhabit through their work. And who in turn acknowledge the impact we have on our landscape and the responsibility we have to climate action. As discussed, the Anthropocene *is a conceptual framework that states that human activity has fundamentally influenced and irrevocably changed our climate and environment.*

Climate change has brought into sharp focus the capability of contemporary human civilization to influence the environment at the scale of the Earth as a single, evolving planetary system... The concept of the Anthropocene, proposed by Paul Crutzen was introduced to capture this quantitative shift in the relationship between humans and the global environment (Steffen, Grinevald, Crutzen, McNeill 2011, pp.842-843).

In turn, the concept of the Anthropocene is deeply interconnected with the United Nations (2015) Sustainable Development Goals (SDGs), addressing many of the most critical challenges our planet faces today. The concept of the Anthropocene directly impacts several SDGs, particularly those related to the environment, in particular SDG Goal 13: Climate Action. In addition, the Anthropocene underscores the unsustainable nature of current production and consumption patterns. SDG 12 which focuses on ensuring sustainable consumption and production patterns, which directly relates to creative craft practice and making - this is a crucial goal to use to mitigate the impacts of the Anthropocene. The recognition of the Anthropocene highlights the extensive human impact on the planet and urges the immediate implementation of the SDGs.

Since their publication in 2015, the world has reflected upon and used the UN Sustainable Development Goals as a target to revise our actions and to direct our research drivers with an aim to implement them by 2030. This call to action is a collective, universal wake-up call: to end poverty; protect the environment; achieve gender equality; ensure health and well-being and ensure peace and prosperity for all. But what does this mean in terms of Art Glass? The far-reaching effect of these goals when viewed through the lens of the international Art Glass movement is an engaging and exciting space to examine. Understanding how the goals can or have been applied to contemporary Art Glass practice, education, and community is an important inquiry for the sector (Rothwell, Kelly, 2023, p.183).

This is an engaging and exciting space to examine within the field of glass art. With climate change and action at the forefront of our minds, it is apparent that this subject is a motivation to glass art. In 2021, we witnessed the *European Glass Context* theming its celebration of art and studio glass around the UN Sustainable Development Goals and citing sustainability as its main theme. And in 2022, the *Power of Glass Craft Scotland* conference was held in Edinburgh, it focused on the SDG's and discussed a range of sustainable practices in glass art. This event was a landmark for the sector and has fuelled further debate

and study around sustainability in glass art.

When it comes to material extraction and exploitation, it is important to discuss the methods employed by many glassmakers, who wish to explore material reuse within their creative practice. It is apparent that there is a collective approach, which is drawn into focus when a maker selects their materials. For example, when a maker compares (in terms of carbon footprint) virgin glass to recycled glass the environmental impact benefit of reused or recycled glass is an essential material for sustainable creative production. Great care, consciousness and critique are needed when selecting materials and techniques to work with especially as glass and the process of glassmaking is not always an easy companion for ecological debate. The primary ingredients in virgin glass, such as limestone, silica sand and soda ash, are indeed natural.

Although most people think of glass as a man-made material, it is found in many forms in the natural world. Volcanoes spew molten rock, lightning strikes desert and beach sands, meteorites pound the earth, and sea sponges and microscopic organisms inhabit the waters. All of these things—and even lunar soils—are materially related to the man-made glass that we use every day (Corning Museum of Glass, 2024).

However, the glass type that is most commonly used in creative practice is generally a manmade material. The industrial production of virgin glass can be viewed as a form of extraction (and exploitation) of natural resources and materials. As discussed by Ravenhall (2020): *Heating sand to its very high melting point of 1,700 Celsius takes a lot of energy.* Additionally, the process of making virgin glass uses a significant amount of water and contributes to air pollution. Sulphur oxides are emitted during melting, and if gas is used for heating, nitrogen oxides are also released. All these factors, issues a serious call for glass makers using virgin glass to consider their actions. Demonstrating the urgent need for new sustainable and alternative approaches to glass making and highlights the importance of using recycled glass in creative practice.

As discussed by Rothwell and Kelly: Historically, glass recycling can be traced back to the First Millennium AD. Today, glass is viewed as a sustainable material as it is made from naturally occurring materials, and if properly cleaned and sorted can be infinitely recycled. Unfortunately, the recycling and processing of glass is complex. Contamination and sorting are a huge problem; most glass is only considered for single-loop recycling, with the majority becoming aggregate within road surfaces. When processed and disposed of in the right way, glass can offer a viable alternative to synthetic materials, offering sustainable products that actively reduce our impact on the environment.... Though glass is inherently recyclable, it is, however, an energy-expensive industry, that often relies on imported raw materials, and thus requires reconsidering to make it a viable outlet for creatives of the future (Rothwell, Kelly, 2023, p.183).

Recycled glass addresses many of the environmental concerns associated with virgin glass production. Since glass can be recycled indefinitely without any loss in quality. This means fewer natural resources are extracted from the environment. In regions where coastal erosion is a concern, this reduces the need to remove sand from beaches to make glass. As discussed by Ravenhall: *“Recycling glass is more efficient at every step along the production process. Every 1,000 tonnes of glass that gets recycled can lead to savings of: 1,000 tonnes of waste diverted from landfill, 1,200 tonnes of raw materials saved, 314 tonnes less of CO2 emissions*

and 345,000 kWh of energy savings. It can be hard to picture what 1,000 tonnes of recycled glass would look like. Instead, think of one glass bottle. Recycling that alone can save enough energy to power a 100W lightbulb for nearly an hour, or a typical computer for 20 minutes” (Ravenhall, 2020).

Although concise, this section has clearly outlined the methodological approach of this research paper and has set out clear research methods, stages, and techniques that are prevalent within the field of glass art. The next section builds on this foundation and will discuss the key findings synthesised in this study. This discussion will not only present the results but also analyses their implications and relevance to both the academic community and the broader field of glass art.

Results: Key findings

In recognising sustainable models of practice are evident in glassmaking and in discussing their importance within the field of Art Glass, it is clear that a key finding is the variety of glass artists that choose to prioritise sustainability in their work, through the reuse or recycling of glass or the use of low impact processes or techniques that are more sustainable. As previously discussed, sustainability is gaining considerable ground within the glass art community and many makers are pioneering the use of recycled and sustainably sourced materials to make their work (a range of whom will be discussed in this section). In addition, is evident is that many glass makers also draw upon their deep connection to place or landscape as a means to illustrate this approach. Exploring the inherent properties and origin stories of the materials they use (glass), as well as drawing upon distinct social, political and/or environmental commentary through the medium of glass

The small batch, limited edition and one-off production runs of art glass making are not over-consumed, they are a conscious, deliberate and intentional acts. Production is closely connected to the maker and they often make to order and take great care and time over their work. glass art inherently contributes to the slow movement, as many glass artists are genuinely interested in how to reduce their studio waste and save money, especially given the current energy crisis. glass art production creates artefacts of legacy that will outlive their owners but most importantly, it can become activated as a vehicle for glassmakers to voice their concerns of the sustainability issues we face, in the form of craft-activism. Sustainable art glass production can be viewed as a vital antidote to the environmental issues we face, in the form of craft-activism. However, glass makers are not just driven by ecological concerns but also by an acknowledgement of the unique qualities of materials and resources sourced from specific regions and places. Often inspired by darker histories, linked to past historical and cultural events - such as colonialism, material extraction, deforestation, and the exploitation of natural resources. In order to explore the impact of humanity on the natural world through glass making practices. A series of short case studies will now be discussed, all of the selected glass makers explore human experience, landscape and the impact of climate change on the natural world through their glass work.

Jessamy Kelly (the author of his paper) is a glass artist and educator based in Edinburgh, Scotland. Her work is concerned with the conceptual framework of the Anthropocene, acknowledging that human activity has fundamentally influenced and changed our climate and environment (see Fig. 1).



Fig 1. Dr Jessamy Kelly (2019) *Waste Glass Landscape*. Recycled bottle glass, kiln cast glass.

Kelly (2024) describes her work: *In our experience of place and landscape there is an immediacy to what we believe is a natural view and we are in awe. However slowly over time this landscape has been changed, deforested, developed, scarred, melted and altered. Landscape is in a state of constant flux, ever changing, yet a sense of place remains with us in our minds. Through the medium of glass, I use this approach to represent the changing state of landscape. This work asks us to view a moment in time to question and capture what we have lost through human activity.*

Kelly aims to represent how landscapes are constantly changing, her work inspired by glacial, melting ice forms is a direct environmental commentary on climate change. This work presents the land moving as the glacial landscape is formed and then set, it continues to reset and move as the earth moves very slowly over time, referencing the melting of the polar ice caps. Her series of fused glass work entitled *Coast* is based on the tidal lines created by the sea, they change every day with the rhythm of the sea, this series draws on the idea of climate change and rising sea levels.

Gregory Alliss is a PhD candidate at Edinburgh College of Art examining contaminated glasses such as recycled CRT glass from Cathode Ray Tubes, the main component of older style televisions. He creates eerie cloud-like formations which feature a stormy horizon line or captures manmade patterns into the surfaces of his kiln cast glass work. These patterns embody the movement of molten glass and the intricate information that flows across the object's optical boundary (see Fig.2). Gregory's work invites exploration, serving as a portal to a realm where the subtle nuances of the material can be closely examined. He has since broadened his investigation to include the creation of glass art using unconventional raw materials such as fluorescent tubes, container glass and window glass.



Fig 2. Gregory Alliss (artist) and Shannon Tofts (photographer) (2023) *Downburst*. Recycled CRT Glass, kiln cast glass.

Carrie Fertig is a Scottish based performance artist that primarily works in glass. She is a member of Applied Arts Scotland Closing the Loop – working group centred around zero waste, the circular economy, alternative sustainable materials and the application of sustainability tools and practices in the studio toward zero carbon. One of the ways Carrie works sustainably is by making multiple artworks out of the same materials. She works in performance and video (as well as sound, virtual reality, installation, and sculpture).

Much of Fertig's practice is about place making, creating safe environments for her audiences where they can reflect upon themselves, she uses frameworked glass as a medium to create these spaces, which can be seen in her work. Her project, the Health of the Sublime (2024) is a Creative Scotland funded project that maps the lived experience of wellbeing through the lens of climate change and is partnered with Mearns and Coastal Healthy Living Network a charity whose remit is to support wellbeing for participants aged over 50+ in and around Kincardineshire, Scotland. Her aptly named project: Plummet (2021) was commissioned by the UNFIX Festival an online climate crisis performance and art festival that happened simultaneously in Glasgow, Tokyo, Barcelona, and New York in 2021. She created a live performance with her glass that included an ending credit soundscape was comprised of crowd sourced sounds from around the world including a Sri Lankan rainstorm, French geese, Maryland bees, German frogs, and many others (see Figure 3). She describes in detail her glass work created for this performance: *To ensure the work inspired by my experience is less impactful upon the planet, most of the components were recycled. Thousands of hollow glass musical icicles made for a previous project were transformed into a plummet of symbolic melting of ice.*



Fig 3. Carrie Fertig (2021) *Plummet*. Recycled flameworked Glass.

Shaun Fraser is a Scottish artist based in London, his work comments upon notions of identity, links to landscape and connections with place. The Scottish Highland landscape in which he was brought up is a source of inspiration for his work, he views landscape as a part of his notion of self. Within his work there is a certain sense of devotion which he attaches to this topographic work which is elemental. His practice questions how the landscapes, spaces and places which we inhabit form us and can be translated through personal engagement, using one's own memory as a principal source. Through this he acknowledges that memories of landscape, recalled with clarity when first encountered, can over time shift to become completely obtuse and non-linear, they become part-remembered-part-imagined places. Much of his most recent work is an attempt to recall a fleeting sense of a specific place and time that he has experienced. In discussion of his work, he describes his approach (Fraser, 2024): *I often find that I am as interested in the idea of a place as the place itself and think the actual and the imagined versions are equally valid. What I attempt to do through my practice is to tap into some of that disposition. Including peat and local soils into my sculpture gives the work an innate link to the landscape, something which I believe to be very important in my practice, the ability to evoke that sense of place.*

Inspired by the Flow Country, a protected peat bog area in the Scottish Highlands. Fraser has been working with the Flow Country Partnership, to create work that visualises the damage that has been done to Scottish peat bogs. The Flow Country Partnership is preparing to apply for world heritage status for this site (People Are Culture, n.d.).



Fig 4. Shaun Fraser (2020) Moine, Flow Country, Caithness & Sutherland. Kiln cast glass.

Pinkie Maclure is a multidisciplinary Scottish artist, who believes that our present is haunted by our past and we have more in common with our ancestors than we may know. Using stained glass installations, she makes intimate work that examines today's big issues, such as addiction, insomnia and our relationship with nature. Maclure (2024) describes how she uses glass as a metaphor for darker histories in her work: *the distinctively chaotic nature of stained glass to express deep anxieties - often with dark humour - exploiting the tension between the sacred and the unexpected, at a time when the end of the world feels closer than ever.*

Through her work she explores issues relating to addiction, insomnia, women's rights, sustainability and environmental issues. Pinkie sees the unique medium of stained glass as fragmented and uses this to express the deep anxieties and tensions present a range of socio-political narratives in her work (see Fig.5).

Maclure (2018) describes the inspiration for her artwork Self-Portrait Dreaming of Portavadie: *We used to spend our summers at my grandad's cottage in Portavadie, a little-known, idyllic and remote corner of the west coast of Scotland. There was no electricity or running water, but I remember those days as the best of my childhood. In the mid-1970s, the government sold the surrounding land to a company for the building of oil rig platforms. Portavadie was completely destroyed. The company was heavily subsidised, but their designs were outdated, and no orders came. The company went bankrupt, leaving the taxpayer to pick up the repair bill of many millions of pounds. Portavadie was left derelict for decades, described in the press as: the most expensive man-made hole in Europe.*



Fig 5. Pinkie Maclure (2018) Self-Portrait Dreaming of Portavadie. Stained Glass in Light Box.

Inge Panneels is a glass artist and researcher based in the Scottish borders; she is also a Lecturer in Digital Media at Edinburgh Napier University. Her research is based on an interest in 'mapping in art' which prompted a theoretical investigation in how artists are charting climate change in the Anthropocene, the subject of her PhD research project (2019). Her work entitled *Claude Glass*, references a technique invented by the French painter Claude Lorrain (2021), who used black glass, or mirror to frame the landscape and was used by many landscape painters (see figure 6). A further series of work, entitled the *Buchan Way* was informed by the work of Scottish writer John Buchan.



Fig 6. Inge Panneels (2021) Claude Glass. Kiln cast glass.

With an avid interest in mapping, she created a published paper and case study of place-based material craft practices, as a way of Mapping the Anthropocene. She created a study on Atelier NL, a creative design studio based in the Netherlands that is focused on the connection between materials and their source of origin. In this paper, Panneels (2019) argues that: *mapping* as a methodology can support localised production, as exemplified in the case study of the design studio Atelier NL which marries contemporary design sensibilities with traditional glass and ceramics craft-making techniques. The paper puts forward the argument that by paying attention to local ecosystem services through mapping,

place-based design solutions can be developed.

Jeff Zimmer is Scottish based glass artist, he creates works that explore the complexity in human connections, that engage with the material and symbolic properties of glass. He is interested in the sensual experiences of mystery, light and shadow and often creates work that respond to the Scottish landscape. After returning from a residency at North Lands Creative Glass, he started making work that looked like *Interventions in Landscape*, this became the title of a series of work that used many layers of glass that captured a sense of the volume of open space that he had encountered during his residency in the broad, open expanses of the highland landscape. He describes the ideas behind this series: *This work deals with the history of interventions in the Scottish landscape. At the time the then-novel and controversial wind turbines started to make their presence known in the Scottish landscape. People would look past fields dotted with sheep and complain about the wind turbines in the distance and how they were ruining the landscape. It made me think of how the imposition of large-scale sheep grazing has had significant negative effects on soil quality and biodiversity and led to the devastation of swathes of Scottish communities in the Highland Clearances. Yet today, we view the sheep as a beloved symbol of Scottish rural life.*

In juxtaposing the sheep in the foreground with the wind farm in the background (see 7), he highlights the continual human reshaping of the Scottish landscape and question where we place value on what we see and experience.



Fig 7. Jeff Zimmer (2006) Interventions in Landscape. Painted sheet glass.

Discussion: Contribution and impact

This paper has discussed and showcased a range of glass makers and artists whose creative practice collectively responds to the interplay between landscape and human experience. Using the framework of the Anthropocene and the impact of humanity on our world, to illustrate a range of glass art works that respond to the natural world we inhabit. The contribution and impact of this paper is twofold in sharing the work of these artists

collectively in this paper it aims to amplify their voices, to inspire a meaningful discussion on sustainable approaches to glass making as well as revealing a deeper understanding of the interconnectedness between humans, nature, and the things we create.

It is important within this final discussion to consider the rich fertile ground and shared context for many of these Scottish based glass artists, who have studied, worked or lived in Scotland. The work of Craft Scotland, a national agency for the development of craft is key to this final discussion. Irene Kernan (2014) the director of Craft Scotland states: *The climate change crisis needs urgent attention and action. Individually at Craft Scotland we all share a commitment to creating a working environment and culture that will reduce our environmental impact. As a national agency we also have an important role in raising wider awareness of the innovative and effective working practices of makers from across Scotland and showing where they have impact.*

Through their collaboration with Creative Carbon Scotland, Craft Scotland have founded: The Green Crafts Initiative (GCI) in 2014. Makers and craft organisations across Scotland can join the Green Crafts Initiative, which offers support and guidance to those committed to minimising their environmental footprint. The impact of this initiative on Scottish based craft practice has had a clear and evident impact on the creative craft community in Scotland.

In summary, to draw together this paper, it is important to highlight the profound role of glass art as a medium for glass makers to articulate their environmental concerns. In addition, the impact of their work is a powerful form of craft activism, in its strong advocacy for climate action. This approach, particularly through creative glass practice, represents a powerful intersection of art, craft and environmental advocacy that emphasises climate injustice. Finally, this article leverages the unique capabilities and characteristics of glass art to communicate and urges an immediate action to the field and beyond to respond to creative practice through climate action.

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