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Translation in Transition: The Cabinet of Curiosities

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Working collaboratively: digital and analogue, artist and machine, artist and artist is a constant activity of negotiation and translation – between code, language, process, matrix material and metaphor. The CFPR's Artist in Residence programme aims to explore methods of translating between craft and the multiple, interactive fundamentals of ink on paper, digital modelling and 3D printing. The result is The Cabinet of Curiosities – a bespoke multifaceted, self-contained and portable travelling exhibition that, when unfolded, can be transformed into a wall-free exhibition space. The bespoke wooden Cabinet showcases a range of original multiples made using cutting-edge technologies. The following case studies are some examples of novel and unique artworks that span a range of digital and analogue tools as a transition and translation between artist and audience and a means to explore and discuss themes around digital, technology and creativity.

CNC. Robotics. 2D and 3D manufacturing. Print. Printmaking. Digital. Analogue. Cabinet of Curiosities. Materiality.

1. INTRODUCTION: THE NEED FOR A CRAFT AND DIGITAL SKILLS TRANSLATION

The Cabinet of Curiosities is a collaboration and exploration of materials combining computer numerically controlled (CNC) and traditional skills. It is motivated by a greater interdisciplinary digital skills economy, where traditional training routes for already skilled creative practitioners are difficult to come by and time-consuming. Because digital tools and creative practice constantly evolve, the potential to catalyse creativity through technology can lag behind innovation. This causes lost research potential and inhibits sustainable digitally driven growth in a fast-changing environment (UKRI 2023). Academic quality research and cross-disciplinarity are fundamental for robust research practice and opportunities for new routes to research and impact. However, evidence in REF 2021 noted a decline in discipline-based practice submissions since 2014 (REF2021 2023). Transferring from traditional practice to a digital skillset and adapting digital tools and related digital skills remain a fundamental challenge. Digital skillsets are needed at all career stages to address barriers to collaborative working and career progressions presented by Data Analytics, Machine Learning/Artificial Intelligence, CNC, robotics, and 2D and 3D manufacturing capabilities.

Over the last century, crafts have evolved as a way of thinking about making things (Harrod 2018). It has been a crucial bridge between art, design, industrial design, and digital technologies, and its applications and products can be seen in the home, in a gallery, in the factory, or in a hospital ward (Kneebone 2020). Craft practice represents age-old techniques and materials tradition demonstrating fundamental benchmarks in material culture that are the foundation for today's high-quality printing and fabrication methods.

Craft has also been framed by making things by hand and the tools to make them. Tools are crucial to making, but knowing how to use them is essential. In response to a quote by Abraham Lincoln, "Give me six hours to chop down a tree, and I will spend the first four sharpening the axe", a project organised by Sofie Boons, researchers at the CFPR were given a challenge (https://cfpr.uwe.ac.uk/lets-talk-tools/); members were asked *what three tools are essential to their practice?* What was interesting to note about the group is that although they work with a range of digital tools, many practices are embedded in handling analogue tools alongside digital ones and transferring across both.

In the exhibition, The Power of Making (2011), the V&A reintroduced the term 'craft' into the public consciousness by celebrating the role of craft in contemporary practice and showcasing the relationship between material, hand tools and tacit knowledge. In collaboration with The Crafts Council, the curators asked visitors to consider what craft is in the 21st century and why it is still essential. Daniel Charney in the exhibition catalogue (2011) describes making as critical for survival or a learning method. Thomas Thwaites, writer of *The Toaster Project: Or a Heroic Attempt to Build a Simple Electric Appliance from Scratch (2011)*, asks if we know how things are made. Robert M. Pirsig, the writer of *Zen and the Art of Motorcycle Maintenance* (1974), asks how to fix things if they are broken. Furniture maker Peter Korn, in his book, *Why We Make Things and Why it Matters* (2017), believes that caring about what you do is a moral imperative; Richard Sennett, author of *The Craftsman* (2009), suggests it is an enduring basic human impulse, the desire to do a job well for its own sake. Of course, Sennet also says that doing a good job is not related to craft but to any field. Korn describes his motivation for accomplishment as gaining a sense of meaning and fulfilment. Making is also loaded with human values, such as pride, problem-solving, self-transformation, and the desire to do well for its own sake.

2. COLLABORATIVE CASE STUDIES

Working collaboratively: digital and analogue, artist and machine, artist and artist is a constant activity of negotiation and translation – between code, language, process, matrix material and metaphor. Many fascinating manipulations, decisions and translations must be addressed for a successful print.

The Centre for Print Research's (CFPR) Artist in Residence Programme, funded by Expanding Excellence in England (E3) grant, brings renowned international academic and professional practitioners to co-create new work at CFPR studios, exploring methods of translating between craft and interactive prints, digital modelling and 3D printing, the fundamentals of ink on paper. During their residency, the artists aimed to explore the many opportunities for translation and collaboration, working with novel and traditional printmaking methods to produce an edition of work. The resulting body of work has evolved into a Cabinet of Curiosities that has become a repository for the collective and as a transition and translation between artist and audience, partially as an installation and a way to explore and discuss barriers between technology and creativity.

The CFPR is a distinctive multidisciplinary group that combines knowledge and skills across traditional and digital techniques to reflect on, innovate, and find creative solutions for the future of print. As co-authors and case study artists, the following collaborations between Matt Smith, Tracy Hill, Alicia Paz, Chuck Elliot and CFPR celebrate each extraordinary practice and collaborative exploration for new and unique artworks.

2.1 Collaborative case study: Matt Smith

Matt Smith wanted to explore the manipulation of porcelain figurines through scanning, digital manipulation and 3D printing. As a ceramicist, Smith worked with and manipulated found figurines in his studio practice, but there are limits to what one can do with fired clay.

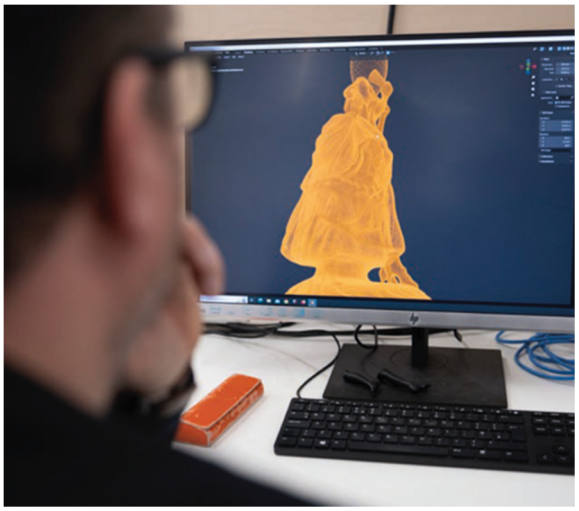

Figure 1: *Digital modelling. Photograph by Simon Regan.*

He was keen to see what the languages of digital processes might bring to this investigation. Diminutive, marginal and ridiculous as they may seem today, figurines are powerful signifiers. First developed in the early eighteenth century at Meissen, porcelain figurines were produced for dessert tables to replace a centuries-old tradition of sugar sculptures.

Porcelain figurines are made in moulds. Usually, they are made from many moulds whose casts are assembled before firing in the final form of the figurine. To make new moulds from a complex figurine is often impossible without destroying the original figure. Smith was interested in how digital scanning and printing could enable distortion and reproduction without affecting the original objects.

Figure 2: *Digitally manipulated, 3D printed PLA figure. Photograph by Simon Regan*

Smith came to the residency with a knowledge gap about 3D printing, digital design, and manipulation. Therefore, a significant part of the residency involved upskilling in both hardware and software.
The process started with scanning figurines. Some were relatively expensive historical examples, and others were low-value figures from the 1970s and 80s. The shine from glazed porcelain causes distortions in the scanning process, so the matting spray was required to dull the surface before scanning. The scans were then digitally stitched together to form a final digital mesh. These digital meshes were then manipulated, combined, stretched or mirrored using 3D animation software and printed. The printing was done using PLA, a plastic polymer heated until soft and built in layers to create the desired form. The limits of the printers constrained scale, and following printing, the pieces required laborious cutting and finishing by hand.

Distortion crept in at each stage of movement from 3D to screen and back to 3D. The inherent visual languages of the technologies each left their mark, thus echoing the translation from drawing to figurine to etching that occurred in the eighteenth century: drawings by Boucher were adapted into porcelain figurines, and these figurines were then drawn to produce etchings and engravings.

Figure 3: *Digitally manipulated, 3D printed PLA figure. Photograph by Simon Regan*

> The figurines' digital manipulation drew on existing works he had made by hand in the studio but also allowed for distortions that would be very difficult to replicate using traditional ceramic techniques (Smith).

One of the most visually beautiful things that happened while working with the digital manipulation of the figurines was the imagery created in the software. Usually a catalyst or by-product in the process of 3D printing, these images had an alluring visual language, possibly more so than the actual 3D prints. These digital mesh drawings were perfect; there were no printing flaws, and they were constantly changeable. Their meshes of vertices, edges and faces glow an orange gold.

These images formed the basis of a series of plates. The 3D porcelain plates act as carriers of 2D digital images of distorted 3D porcelain figurines. Using the digital decal printer in the studio allowed for the rapid production of decal images, allowing experimentation and trial. The digital images also formed the basis of the edition of prints being produced at CFPR. Through a decimation of detail,

the rococo figurines triangulate into abstract figures reminiscing works by mid-twentieth-century artists.

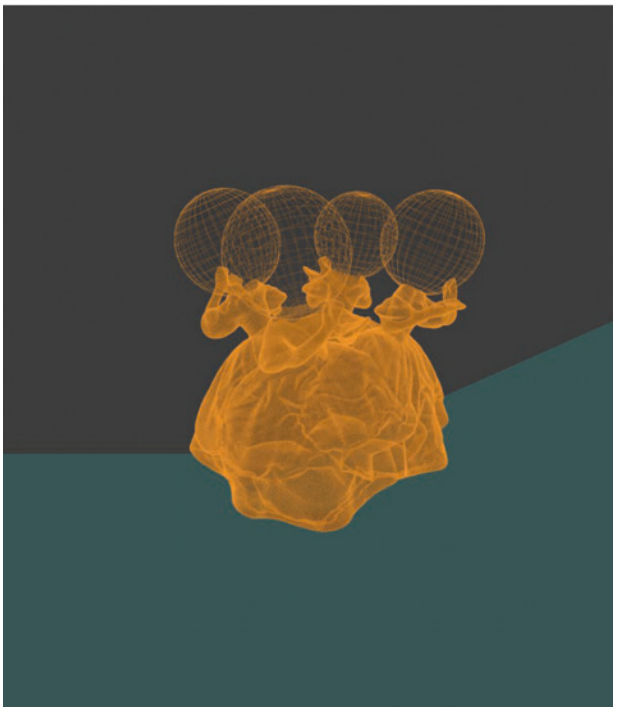

Figure 4: *Digital Print*

> This interests me: how a visual language from 50 years ago is recreated by reducing difference and individuality and what this might speak to in terms of mid-century homogenisation (Smith).

Taking digital meshes and placing them in landscapes, the prints are screenprinted to lay the background colours and then relief printed to press the figures onto the image plane. In hindsight, that a project exploring the representation of eighteenth-century identities in porcelain figurines should move so frequently between binaries is to be expected since neither the 'critical history of camp [which] is the story of dichotomies' (Cleto) nor the rococo which 'hovers between the serious and the playful, the deep and the shallow, the domestic and the foreign…' (Alayrac-Fielding 2012) ever settle in one final position, but instead rely on the vibration of opposites to exist.

> Sliding between the 3D, the digital and the 2D, these objects – to me – are always in transition, never finished, forever in process (Smith).

2.2 Collaborative case study: Tracy Hill

Tracy Hill worked with the team at CFPR to undertake innovative material and technological investigations to combine traditional printmaking with the super-conductive possibilities of Graphene. The aim was to create a print that could conduct energy when touched by a human hand, with the potential to engage a viewer through visual, sonic and sensory experiences.

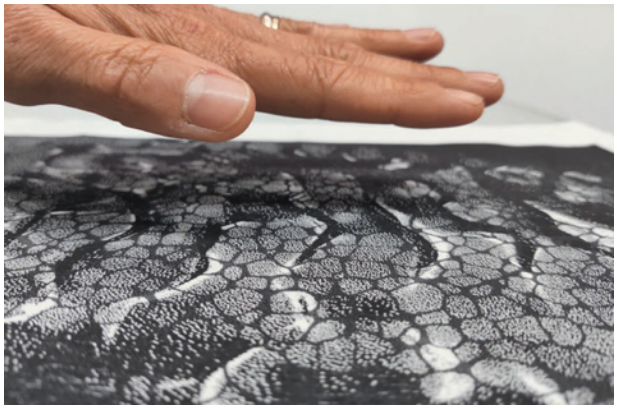

Figure 5: *Process of testing images. Photographs by Tracy Hill.*

The expanded facilities and specialist knowledge of technical staff at CFPR and musician Phil Phelps, enabled Hill to integrate and incorporate new processes and materials into her practice. Through conversation and knowledge exchange, the traditional processes of screenprinting and intaglio were expanded to accommodate innovative materials such as Graphene, laser-cut wood and solar photogravure. The ideas that were the starting point of the residency were the beginning of a more comprehensive conversation. The residency enabled multiple fields of investigation, leading to image and material developments in an almost constant shifting of understanding. The traditional printed surface became a matrix of multiple possibilities by taking critical ideas into other fields, such as working with novel print processes, photography and sound.

By working with Cymatics and photography the edition image evolved beyond the materials. The resulting images forced a change in her approach. To preserve the rhythmic velvet patterns and sensory flow of the captured liquid sound, it was necessary to move away from woodblock, as initially planned, to photogravure. Traditional hand printing would combine screen and intaglio layers, making visible the unseen structures and material presence in a physical exchange process.

> The traditional printed surface became a matrix of multiple possibilities by taking key ideas into other fields, such as working with novel print processes, photography and sound (Hill).

Cymatics was first used in 1967 by Hans Jenny, a physician and natural scientist who used the term to describe the study of wave phenomena and vibration. This simple method of playing sound through a vibrating membrane makes it possible to hear and see sound simultaneously. Current research indicates that similar, much smaller vibrations are happening in our bodies. Inside each of our cells, molecules vibrate at their characteristic resonance.

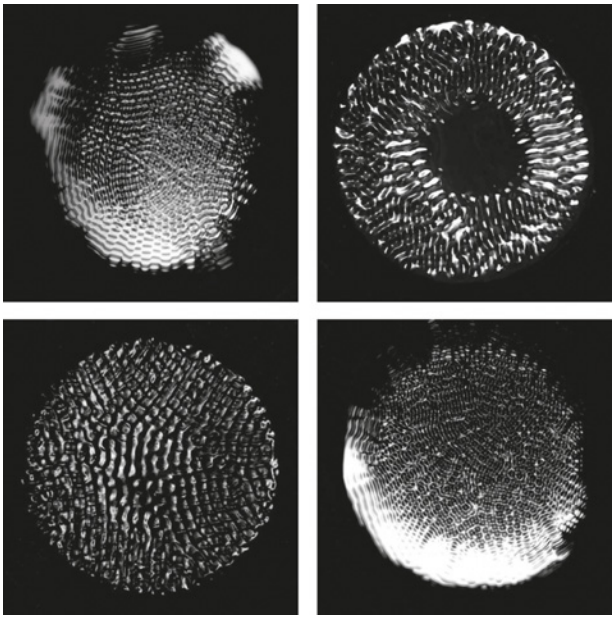

***Figure 6**: Cymatics images. Photographs by Frank Menger and Tracy Hill.*

> Working on and across different matrices: paper, film, and plate combining, connecting above and below the surface (Hill).

The final edition print, at first glance, shows no apparent signs of what lies below the surface. However, almost invisibly, it carries the potential to reveal the unheard in an exchange of energy between the body and ink. So, when wired and connected to a touch board and speaker, as a hand passes in proximity or touches the print's surface, the performative exchange of energy triggers sound. The unseen reveals the unheard.

Learning to combine processes and materials from different fields was the biggest challenge in creating the edition. Listening to and observing researchers working in those fields and learning the points at which those fields or processes overlapped enabled a point to begin testing the idea for the print. Keeping the conversation open and honest about what was working and what was not built a new knowledge that encouraged approaches from new directions.

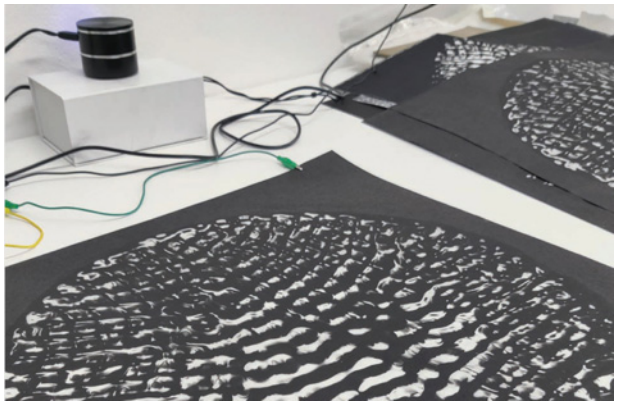

***Figure 7:** Testing conductivity of final proof prints for Sonorous. Photograph by Tracy Hill.*

> Accepting the restrictions outside of my control as invisible energies from known and unknown sources contribute to the print and its sensitivity when wired (Hill).

The edition demonstrates the potential of combining traditional and novel print processes to challenge perceptions of the printed image as purely visual. It proposes that vision should be regarded as an extension of touch, in collaboration with other senses, as a way to understand the world fully.

2.3 Collaborative case study: Alicia Paz

Arriving from a recent residency at S1 Artspace in Sheffield, Paz had the opportunity to access the historic collections of Chatsworth House in Derbyshire. In consultation with their expert curatorial team, Paz had access to an extraordinary collection of paintings, sculptures, textiles, decorative arts, archival material, and the Chatsworth House Theatre. Access to the archive inspired a new body of work in photography, using the camera-less technique of photograms.

Continuing to develop this project in partnership with the residency at CFPR, Paz explored other material translations of these photographic images by scanning them in high resolution and using different printing methods such as photopolymer photogravure and screenprint to create a rich dialogue between painting, photography, print and sculpture. These images were printed onto silk and, using the translucency of the material, resembled the overlaying of the photograms.

> The photopolymer photogravure was completely new to me, and I was immediately drawn to how faithful it was to the subtle intricacies of a photograph, and yet looking more ‘embodied’, like a print (Paz).

Figure 8: *Baroque Lady, dye sublimation on synthetic chiffon. Photograph by Alicia Paz.*

Developing sculptures from 3D-scanned objects, Paz was also interested in making a three-dimensional edition, reflecting on costume and attire. Approaching the project almost as the creation of a theatrical set, Paz wanted to use contemporary materials that could reference a complex history, incorporate various forms of ornamentation, and present versatile possibilities for inhabiting a space.

Figure 9: *Crystal Slipper sculpture. Formlabs Grey V4, resin, painted and gilded in 22k gold leaf. Photograph by Alicia Paz.*

Reflecting on Chatsworth's rich material collection, a second edition component was a 3D-printed shoe adorned with crystal shapes. The crystals refer to Georgiana Cavendish, who lived at Chatsworth and was a keen collector of crystals. The print was made from a 3D scan of a rococo-esque velvet slipper, which was 3D printed and covered in 22-karat gold leaf.

> As a painter accustomed to working in isolation, it has been fascinating to observe at CFPR how printmakers work, seeing how printmaking in its many forms is an inherently collaborative field (Paz).

2.4 Collaborative case study: Chuck Elliot

Elliot's practice explores the effects of line, volume, colour and light, which, as he describes, are *visual art's most fundamental building blocks*. His digital drawings comprise a fluid, interlocking geometries based on the Golden Section.

> My core practice over the past twenty-plus years has revolved around drawing sculptural forms on CAD systems, with the expectation of outputting singular framed views as abstract, editioned prints (Elliot).

In Elliot's traditional practice, image files are exposed onto metallic photographic paper using laser light to produce large-format colour prints. Many works are large-scale, drawing the viewer into a complex, restless, faceted field of colour.

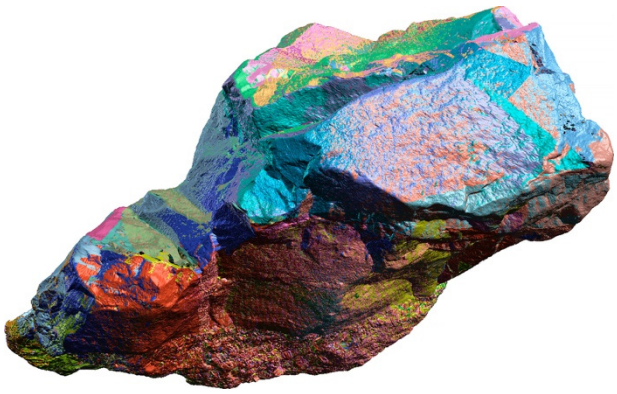

Figure 10: *Rock Singularity, Chuck Elliot*

In response to his residency at CFPR, in addition to exploring new techniques and approaches to making, Elliot decided to talk more directly about the climate crisis and the impact of his day-to-day practice in the studio. Elliot wanted to translate from 2D to 3D, taking himself out of his comfort zone to work with possibly one of the more complex materials to manipulate – glass. To do this, he worked with specialist glass maker Dr Angela Thwaites. Her research explores digital/physical approaches to designing and making (2018, 2011).

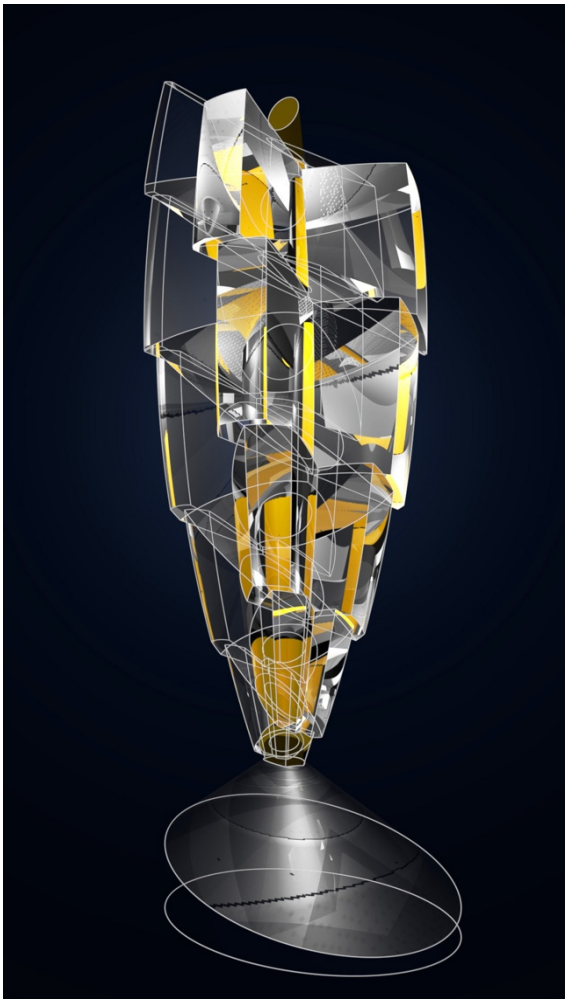

Figure 11: *Glass Vessel Visualisation, Chuck Elliot.*

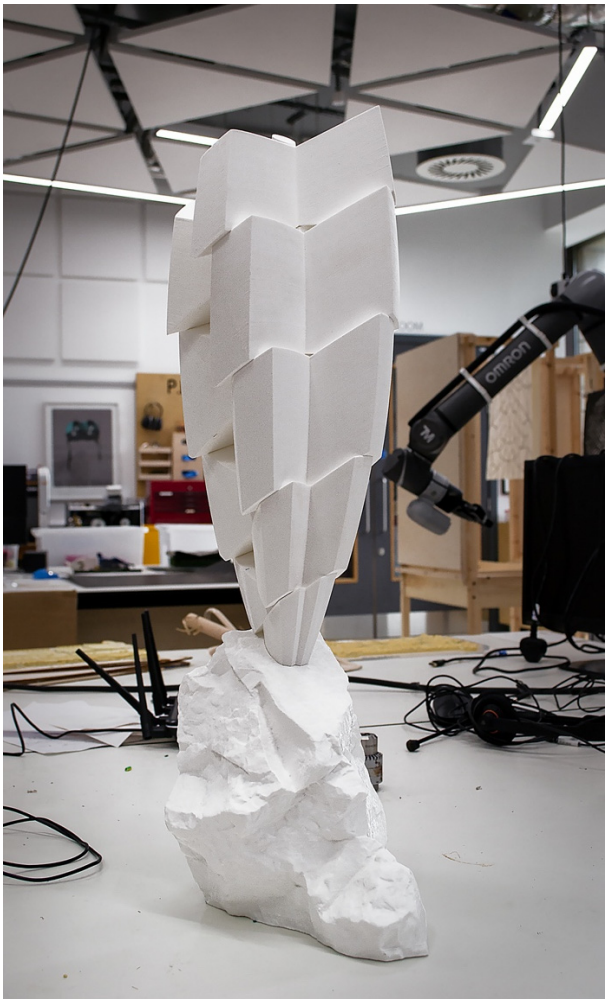

Figure 12: *Glass Vessel printed in PLA, Chuck Elliot.*

> The opportunity to draw and print in 3D was always going to be fundamental to my residency, alongside a deep desire to integrate haptic mark-making with digital processes and to create hybrid works that speak of traditional printmaking as much as they do about the digital age we live in (Elliot).

Like the work of Smith, the translation from a drawing or scan on the screen to a physical manifestation is bound by the materials and processes of translation – from scan or CAD drawing to 3D print in PLA, casting in refractory plaster, which is then burnt out and cast into the glass, or from drawing to photopolymer plate, which is then inked and printed.

> There's some fascination with where we are now, on the verge of an AI revolution. The significant amount of tech that I have used to create these rock images, both in 2 and 3D, seems to me to create a rather lovely juxtaposition between something very hi-tech and lab-based, the digital, and something resolutely of this earth, the rock (Elliot).

> For me, it's really important to use tools that are of this moment and make works that look forward, but also evidence this time. I think engaging art almost always does that, providing us with a reflection of ourselves, perhaps that's why the history of art, and the progress it depicts, is so compelling (Elliot).

Elliot's residency edition involved three parts: a scanned rock from his garden, of which the surface was highly colourised and printed as a digital print; a 3D drawn *Vessel* that at its core is a golden seed – a palimpsest for the idea of nature, the source of all plant life, natural, agricultural and horticultural; and a range of haptic ink lines using laser cut Perspex combs and translated into a series of photopolymer etchings onto into a chine collé digitally printed gradient background. These lines were photographed at high resolution, processed digitally and mapped into six new 3D drawings about nature using sculpted form and line.

Figure 13: *Glass Vessel, sections cast in glass, Chuck Elliot.*

3. THE CABINET OF CURIOSITIES

The Royal Society used the concept of a Cabinet of Curiosities to share knowledge, demonstrate, or entertain, facilitating opportunities for introducing new ideas (Taylor 1988). Likewise, our multifaceted Cabinet invites an audience to engage with and explore artworks as a sensory, visual, and tactile experience.

For our purposes, the Cabinet needed to be portable, travelable, and adaptable to any space. Therefore, it needed to be self-contained and not reliant on a wall or hanging system other than our own. The resulting Cabinet was custom-created at the CFPR to incorporate all the specifications and requirements of the artworks, including glass sculptures, hanging silks, book works, prints, and folded maps.

When opened, the Cabinet of Curiosities can be transformed into a wall-free exhibition space, an installation or an engaging experience. It also includes an explanatory tear-off sheet that directs visitors to the website to explore further. It contains more information about the artists, films and images, and artist booklets that reflect each artist's practice.

The aim is to overcome conversation barriers by inviting audiences to engage and share their experiences and thoughts. Each print demonstrates the collaborative nature of printmaking, emerging print technologies and novel materials in the field of printmaking. The artworks are intended as points of departure and to encourage audiences to weave their own stories into them. The Cabinet taps into our understanding of materiality and tactile engagement, the urge to handle and explore, and the power of the visual to create and share narratives (https://cfpreditions.uwe.ac.uk).

4. ACKNOWLEDGEMENTS

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