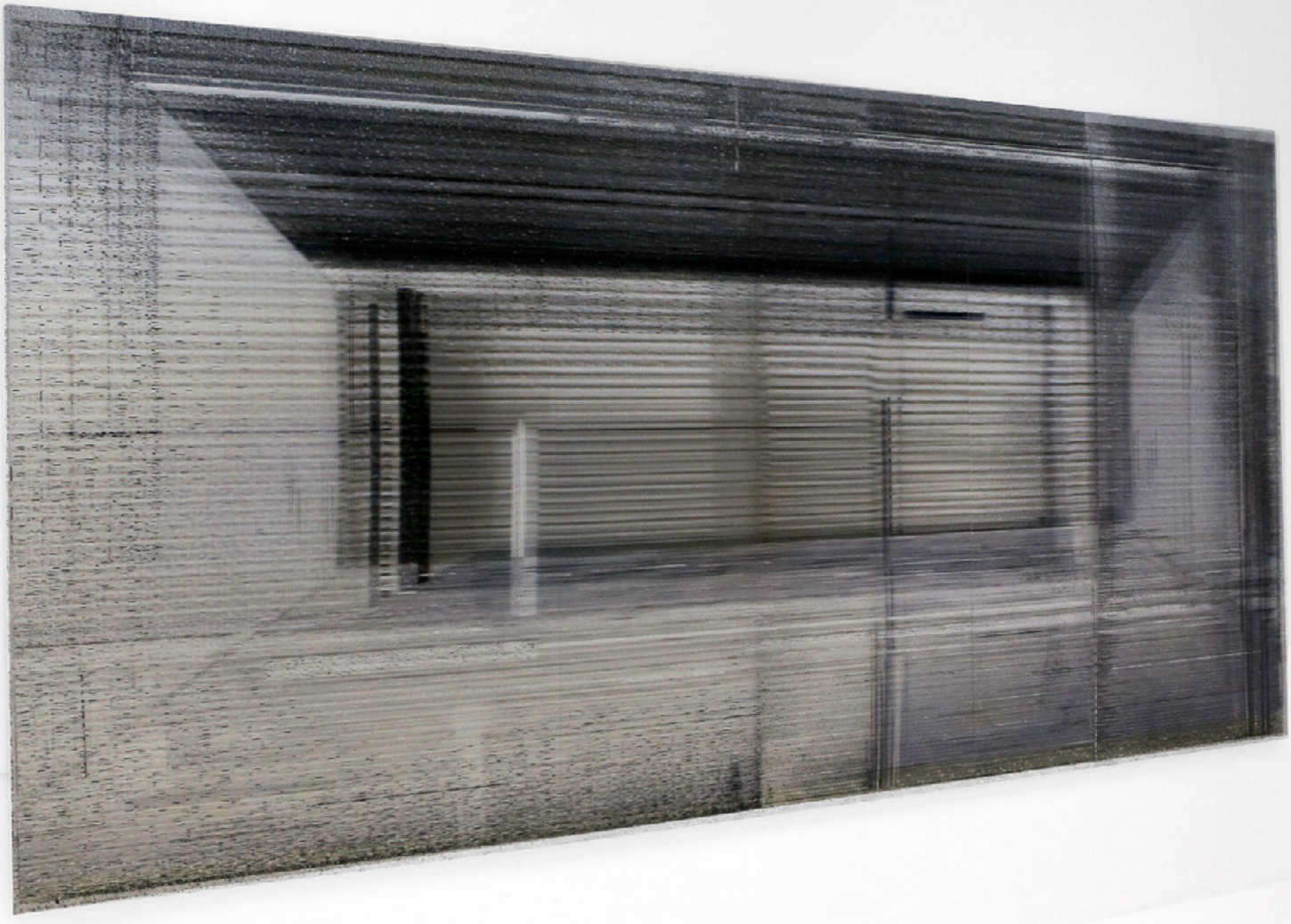

TRANSMEDIAL

EXPANDING TECHNOLOGIES IN CONTEMPORARY PRINTMAKING

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Curated by Monika Lukowska and Sarah Robinson

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TRANSMEDIAL:
Expanding Technologies in Contemporary Printmaking
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PS
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Introduction to TRANSMEDIAL

Monika Lukowska and Sarah Robinson

TRANSMEDIAL: Expanding Technologies in Contemporary Printmaking originates from our shared interest in contemporary printmaking; years of studio practice that began by specialising in traditional forms of etching and lithography and then a growing curiosity about rapid changes in print media caused by inclusion of new technologies. The rational for the exhibition held in 2021 at PS Art Space,[1] 22-26 Pakenham St Fremantle, Western Australia was coined in 2018 while working on a joint article 'Bringing the World to its Senses'[2] questioning the abundance of printmaking techniques driven by technology and its impact on conceptual aspects of print.

Developing *TRANSMEDIAL*[3] offered an opportunity to expand on our research, capture creative dialogues and examine work by Paul Catanese (USA), Deborah Cornell (USA), Susanne Klein (UK), Ingrid Ledent (B), Santiago Pérez (AU), Marta Pogorzelec (PL), Magda Stawarska-Beavan (UK), and Jo Stockham (UK) who explore the continuing impact of digital technologies on the printmaking field. In bringing together eight international creative practitioners and five essay writers: Rebecca Beardmore (AU), Ruth Pelzer-Montada (UK), Adam Romaniuk (PL), Santiago Pérez (AU) and Paul Uhlmann (AU), *TRANSMEDIAL* investigates the expanded printmaking practices and associated themes of digital materiality, matter, and various iterations of the matrix. The aim is to initiate a conversation about the conceptual challenges, trajectories and future of the print medium. The work exhibited in *TRANSMEDIAL* offers immersive, multi-sensory experiences, encouraging the viewers to touch, listen, and interact. This exhibition promotes the use of innovative printmaking techniques and their relation to form, process and ideas, highlighting the multidimensionality of printmaking, its vitality and strong position within contemporary art.

TRANSMEDIAL's premise evolved in response to themes discussed in Ruth Pelzer-Montada's anthology, *Perspectives on Contemporary Printmaking*.[4] Since its invention printmaking has been known as an ever changing medium; always closely linking with the technological development of the times; printmakers have embraced new technologies with alacrity and employed them to innovatively push the boundaries of the medium. In the 1970/80s the rapidly developing computer technologies were adopted by printmaking in a process that art historian Ernst Rebel calls 'transmedialisation'.[5] The established relationship between materials, tools, matrix and the form changed significantly as matrices became immaterial, embedded in computer's binary codes. As a result, prints took many forms including projections, animations, virtual reality and arguably even soundscapes. What does all this then mean to the print medium and its materiality? What are the implications to the traditional processes and the notion of layering, physical matrices and edition? Is digital technology a threat to the materiality of printmaking or just a part of its momentum towards diversity?

On one hand, computing and aesthetics expert Frieder Nake suggests that while using a computer instead of working by hand on a traditional printmaking plate '[a] concept is described rather than work being performed'.[6] Technology frees artists from physical studio constraints and potentially encourages delving deeper into ideas without being preoccupied by the technical aspects of the process enhancing 'the mental, conceptual level'.[7] The investigation of technology is especially evident in the exhibited work of Santiago Pérez who explores interdisciplinary design practice rethinking fabrication technologies and materials using robotics. Similarly, in the work *Stones & Drones* (2014) Paul Catanese employs drone technologies in conjunction with traditional printmaking techniques in order to create print matrices. In both cases the mark is generated by the machine yet guided by the artists' programmed algorithms in the first place. The work created by machines and the now ubiquitous presence of technology is sometimes seen as a threat to tradi-

tional processes by them becoming 'outdated' mode[s] of technology'[8] where the sense of touch and artist's hand will be replaced by a machine.

The work presented in the exhibition has clearly emerged from a discourse between traditional and digital printmaking, questioning the qualities of both and interweaving digital layers with physical matrices. An example of this is evident in the work of Susanne Klein to whom the Nineteenth Century Woodbury Type process is paramount to her critical investigations into digital image aesthetics through re-inventing the technique seen in her sixteen prints at the exhibition. While drawing upon the unique qualities of lithography, Ingrid Ledent's installation *Mindframe* (2018) questions the notion of reproducibility and repetition creating a multi-layered work that involves video, lithographs, sound and digital prints. Similarly, Deborah Cornell's digital mural *Eclipse Phase* (2018) encompasses projection, print and sound. The projection combined with prints bears the strong printmaking aesthetics of layering, working with transparencies and scale; the addition of sound and the moving image 'opens a depth of experience of the image'[9]; each layer is indispensable and contributes to the perception of the work. The method of layering is also employed in the sonic work of Magda Stawarska-Beavan *Resonating Silence I & II,* (2019). The artist is 'interested in how the visualisation of sound can affect image-making and how the ephemeral qualities of sound and memories translate into printmaking forms'.[10] Using the commercial technique of lenticular prints, Marta Pogorzelec's artwork challenges the two-dimensional surface of print and its materiality creating an optical illusion of depth. Jo Stockham is fascinated by the relationship between realities and representations as her work *BotSelf contolled from the back* (2018), lies in the virtual and material world. Influenced by different scopes of space and time, Stockham asks how individuals see and signify the world in their varied ways.

Cornell comments that 'Technology is the lens through which we now view the world. Digital media can reflect complex levels of experience and environment'.[11] Changes in media, art forms and techniques are symptoms and causes of changes in how we inhabit and experience the world, which we see mostly through the digital lens. This is especially true during the ongoing COVID-19 pandemic with lockdowns and restrictions being imposed around the world. The situation that caused many of us to being involuntarily forced to view things digitally in an online world. Technology, Zoom, virtual gallery tours or even virtual walks undertaken in quarantine has enforced us to rethink communication; the way we see, connect and describe our surrounding environments. Printmaking studios have been locked and studios moved to alternate physical spaces in garages and sheds or within digital platforms with renewed interest in traditional techniques and collaborative processes that printmaking offers. In the times of a pandemic technology is seen as an inseparable part of our lives; another tool that can be used by artists to respond to changes in the modern world.

The selection of essays included in the catalogue offers a critical outlook on various aspects of contemporary printmaking drawing from the writers' diverse geographical perspectives. The inference of commercial print technology into fine art print practice is reflected in Rebecca Beardmore's and Adam Romaniuk's essays, questioning the identity of the medium. Santiago Pérez, proposes new conceptual and material modes of practice relating to painting and printmaking processes that incorporate robotic control and production. Ruth Pelzer-Montada highlights how the recognition of 'transmediality of print opens up possibilities for artists and viewers'[12] whilst our essays investigate the effect on printmaking materiality caused by digital technologies and its immaterial and sensorial attributes. Finally, Paul Uhlmann's essay underpins the origins of the curatorial rational of *TRANSMEDIAL* by contextualising dynamic changes within the print medium through a conceptual lens of phenomenologist Villém Flusser to comment, in the broader context, on how all artists use technology to frame wider issues pertaining to the contemporary world.

Ultimately, we were pleased that despite many changes to the original program with the COVID-19 challenges the project has been able to come to fruition. In 2003, Rebel had called out that computers were responsible for the third, current transmedialisation[13]; we ask what will become the fourth in light of COVID-19? Due to the pandemic the exhibition was postponed by a year, however the positives lie in re-evaluating, not what is lost but what has been gained through *TRANSMEDIAL*. We hope it will trigger consideration about what printmaking might develop, albeit in a new form–a proposition for new printmaking terms beyond hybrid, post-digital, post-disciplinary, toward temporal and transmedial materiality that moves the representation methods inherent by digital technologies into a new exciting space. A renewed thinking space has been offered within all that is *TRANSMEDIAL*.

[1] PS is in a Heritage listed former Federation Style warehouse on Packenham Street, near Fremantle Port, WA. The historical use of the building reflects the changing commercial expansion of the area since the Nineteenth Century having been used to store general imports, wool and fruit. It was chosen for TRANSMEDIAL because of its unique character and recent development as an innovate and experimental project space that also supports artists' studios.

[2] Monika Lukowska and Sarah Robinson, 'Bringing the World to its Senses'. *Imprint*, vol. 54, 2019, pp. 9-12.

[3] Transmedial as a term draws on transmedia studies, science, contemporary art, and anthropology.

[4] Ruth Pelzer-Montada. (ed), *Perspectives on Contemporary Printmaking: Critical Writing Since 1986,* Manchester University Press, Manchester, 2018.

[5] Ernst Rebel, 'The Technical Gaze: The Parallel World of Photography' (2003). In Ruth Pelzer-Montada *Perspectives on Contemporary Printmaking: Critical Writing Since 1986,* 2018, pp. 24-32.

[6] Frieder Nake, 'Printing Plates and Pixel Matrix: The Mechanisation of Memory' in *Perspectives on Contemporary Printmaking: Critical Writing Since 1986,* 2018, p.180.

[7] Ibid.

[8] Ruth Pelzer-Montada, *Perspectives on Contemporary Printmaking: Critical Writing Since 1986.*

[9] Deborah Cornell, TRANSMEDIAL pers. comm., 15 January 2020.

[10] Magda Stawarska-Beavan, TRANSMEDIAL pers. comm., 15 January 2020.

[11] Deborah Cornell, 2020.

[12] Ruth Pelzer-Montada, 'Transmedial: Hype or Hope?', TRANSMEDIAL, 2021.

[13] Ernst Rebel, 'The Technical Gaze: The Parallel World of Photography.' In *Perspectives on Contemporary Printmaking: Critical Writing Since 1986*, 2018, p. 30.

Rebecca Beardmore

Commercial Technology and Print: A Collaborative Kinship between Art and Industry

Print continues to be a much larger experiment that morphs and reveals itself.
Derek Besant

I was invited by the organisers of this international exhibition, *TRANSMEDIAL: Expanding Technologies in Contemporary Printmaking,* to comment on the role of commercial technology in contemporary printmaking from my perspective as both an academic engaged in teaching and research in this distinct disciplinary field as well as a practicing artist who frequently collaborates with the commercial print industry in the production of artwork. The question prompted me to reflect on printmaking's problematic artistic identity within contemporary art its adaptable yet elusive nature that is both enriched and complicated by the long and contentious relationship it has with its industrial lineage.

When I started my undergraduate studies in the mid 1990s at Sydney College of the Arts, the studio disciplines of Photography and Printmaking had just undergone a change in nomenclature to Photomedia and Printmedia. On the surface, the shift from *making* to *media* appeared to project the radical developments occurring in these two areas as a result of the digital. The growing affordability of desk top printers, scanners and image editing software were providing artists, and students access to tools and effects once solely in the domain of publishing houses and commercial print operators. Around this time I first started working with Photoshop 1.0 in the small underground computer lab at the historic Rozelle campus, a minimally altered sandstone former-asylum better suited to more physical and space-hungry arts. It proved a tediously slow and solitary activity. Despite the alluring potential heralded by these new tools, the computer processors in those early days struggled with even the simplest of tasks, and the scale and quality of printing was expensive and limited. In hindsight, the impact provoked through these digital investments proved more overtly transformative in the study of photography than printmaking. For the photography student, the move to digital imaging and print technology brought the photograph out of the darkroom where the material substrate was limited to pre-coated paper stock, resin or fibre and into closer alignment with both print and screen based arts–at least in production. For print however, the digital was just another development in the continuum of evolutionary practices and processes that had shaped its historical trajectory and thus did not replace but merely enhanced the ever-expanding repertoire of reprographic possibilities. A decade on and the term *media* might just as well be applied to all studio disciplinary titles given the infusion of the digital across all areas of artistic production.

If the term *printmaker* evolved from a decisive move to distinguish the artistry of print from its commercial counterparts, the term *media* was introduced to mark a further shift away from the artisanal connotations evoked through the craft of its making. Up until the introduction of industrial halftone printing, the traditional (hand-crafted) processes of engraving, etching, woodcut and lithography, now celebrated for their skillful refinement and sensual material properties were once considered standard methods of commercial illustration. In industry, speed and efficiency drive invention and succession. As practitioners of a tradition that defines itself according to technologies of image reproduction, printmakers have been quick to co-opt any transformations afforded by development in the commercial print industry.

But artists interested in harnessing the creative potential of commercial processes have also sought to inherit the corporate models of mass production and distribution. The Big Fag Press, an artist-run print collective now based in the Inner West Sydney suburb of Glebe was founded in 2004 by four artists, none of whom had any experience with printing. At the heart of this communal enterprise is the F.A.G. OP-104, a large Swiss made offset proofing press that was acquired–on a bit of a whim, so the tale is told, at a liquidation auction for a small commercial printing firm.[1] Although offset (lithographic) printing is still the industry standard for large volume high quality print runs, offset proofing presses like the big F.A.G., have been replaced by much more cost-effective digital alternatives. For the four artists more closely aligned with immaterial participatory art practices, it was the structure of the commercial publishing trade proposed in this obsolete piece of equipment that was the initial attraction. They wished to explore the interactive aesthetic possibilities for social exchange provided through the humble print. The organisation has since grown in membership and technical proficiency, developing a cooperative model perhaps more akin to former poster collectives, such as Earthworks and Redback Graphix than the machine's original commercial operation.[2] However, by reinvesting the outdated and outmoded with new aesthetic frameworks, artists like those at Big Fag Press, ensure the value of former industrial print operations are not divested of their technical and material knowledge.

Printmaking is often tagged with a legacy of collective engagement even if the cooperative relationship is largely framed around the necessity for shared workshop resources. Access to commercial print technology however, requires a particular kind of collaborative partnership between artist and industry not afforded in the standard bureau/client transactional model. Finding industry allies and fostering enduring, sympathetic and cooperative working relationships motivated by mutually beneficial interests is a necessity when experimenting with sophisticated and expensive industrial equipment. Canadian artist, Derek Besant has been creating large-scale photographic installations and urban art projects since the 1980s. Besant was the head of the drawing department and taught printmaking at the Alberta College of Art and Design in Calgary between 1977-1993. He is well known for his site-specific installations along public thoroughfares in civic centres from Calgary to New York.[3] Working with corporate partners in outdoor signage, advertising and urban planning, his ambitiously scaled projects combine light, image, text, street and architecture to spark human interaction with a transient and often unsuspecting audience. Besant has long been intrigued by the possibilities opened up by the commercial print industry and advertising, as sites for public engagement and new material forms of visual imaging that connect people to place. His excitement was palpable in a recent email exchange, listing off a series of recent projects and research collaborations with manufacturers at 3M™ to advance material applications for new vinyl thermal film laminates (used in architectural glazing to trap or repel heat). *I AM RIVER* (2011), was a public commission consisting of thirteen monumentally scaled photographic images of figures immersed in water, mounted onto concrete bridge abutments along Calgary's Bow River corridor. It was produced using a similar vinyl-based matrix combining UV cured high pigmented commercial vinyl inks and clearcoat UV anti-graffiti film onto vinyl laminate. Professional 3M™ installers applied the printed laminate to the concrete surface by hand, using blowtorches at 1200 degrees Fahrenheit. Moving the heat continuously, the top layer of the film melts enough to embed the image into the cracks and crevices of the concrete wall and create an outer protective patina in the process. The resulting larger-than-life figures appear submerged within the structure of the built environment. Besant's career has spanned significant evolutionary developments in computer assisted print technology providing him with a depth of knowledge to adapt processes and materials to suit specific contextual conditions. In his email he writes, 'Working with the billboard industry and associated technicians, they expose me all the time to different materials and applications. My ideas come first conceptually … but then researching what options might present themselves–I consult with these resources, but often come up with unorthodox treatments of materials intended for altogether other applications than art. I am like a fish swimming upstream to where the industry is flowing, looking at how some of these intended methods or materials might be repurposed as art methods.'[4]

With the relentless expansion in material products, applications and scale opened up through digital innovations in UV flatbed printers, inkjet pigment printers, 3D printing, digital engravers, sandblasters and vitreous enamel kiln transfers, the commercial print industry has diffused into a host of analogous yet disparate operations and specialisms. Perhaps it would be more pertinent in this essay to consider the role of commercial *print* technology in contemporary art. If we extend the lexicon of print to include all forms of commercial outputs and allied agencies of communication, print media casts a significant presence across all facets of contemporary art even if prints have yet to stamp their authoritative voice. Print media is, at once everywhere

and–due to its ubiquitous nature–it is nowhere. It is a master of mimicry that deflects attention away from itself, in the service of other media.

Back in August this year, the billboard above St Kilda's intersection between Grey and Fitzroy Streets, projected a work by Melbourne based indigenous artist and photographer, Kent Morris.[5] His digital photomontage, *Never Alone* (2020), projected a hopeful catch cry with double connotations in 2020s harrowing COVID-19 conditions, at once a message reflecting the cultural unity of life and land in indigenous philosophies whilst addressing a global population alienated by a viral pandemic. In the ostensibly sculptural work, *Dear Sincere Friend* (2018), Sydney based artist, Andrew Christie, 3D printed facsimiles of the lost Parthenon (Elgin) marbles from reconstructed imagery of the originals he covertly scanned on a visit to the British Museum's Duveen Gallery.[6] Motivated by the political capacity for aesthetic interventions, his forensic act of cultural reappropriation engages directly with print's intrinsic reproductive character and in so doing, (perhaps unintentionally) recalls the role of print as document, as artifact, as archive. Even within the context of contemporary art, print continues to wrestle with its dual status as an autonomous medium of aesthetic investigation and its intrinsic reproductive sensibilities.

Perhaps printmaking's critical profile lies in this ambiguity and fluidity; its utility and influence in so many arms of contemporary art. Propelled by the reprographic initiatives of commercial publishing and mass communication, the medium of print is in a constant state of reinvention and renewal. Print's technical heritage has imbued it with unique and exciting graphic material possibilities, conceptual strategies and modes of exposure that continue to shape its cultural currency in the contemporary. Printmaking cannot, should not, divest itself of its commercial allegiance; commercial tools in the hands of the artist spark innovation and cultural reflection. Above all, prints are mediators of visual information. This is their essential character: A malleable material identity that continues to morph and reveal itself.

[1] The F.A.G. OP-104 is a Swiss made offset proofing press released in Sydney in 1977. It was capable of printing sheet sizes up to 100 x 70cm. http://www.fag.ch/products/pdf/FAG%20OP-104.pdf

[2] Earthworks (1972-79) and Redback Graphix (1979-2002) were print collectives in NSW known primarily for their vibrant socially engaged screen printed posters advocating for fair work, gender and race equality. Michael Callaghan, who worked at Earthworks in the 1970s, established Redback Graphix in his hometown of Woollongong and later moved the factory to Sydney.

[3] Key public projects by Derek Besant include: *Daydream* (1996), etched glass along the +15 walkway system in downtown Calgary; Flatiron Mural (1998), painted panels mounted to the west side of the Gooderham Building in downtown Toronto; *Train of Thought* (2019), 37 large-scale portraits digitally printed onto 5-faceted lenticular lenses in the underground concourse of the Ottawa light rail station.

[4] Derek Besant, e-mail message to author, March 19, 2020.

[5] The Australian Centre for Contemporary Art commission this work by Kent Morris: *Never Alone*, 2020, digital billboard, https://acca.melbourne/kent-morris-never-alone/

[6] The Elgin Marbles (properly titled the Parthenon Sculptures) are a collection of stone sculptures that form part of a marble frieze in the Parthenon Temple. They were acquired by Lord Elgin (under suspect conditions) at the turn of the Eighteenth Century during the Ottoman occupation and later sold to the British Crown in 1815. They are currently held in the custom designed Duveen Gallery (built in the 1930s to house the marbles) in the British Museum. Debate continues regarding the repatriation of these artefacts to Greece.

Monika Lukowska

Beyond Physicality: New Modes of Materiality in Contemporary Printmaking

Contemporary printmaking is a medium that is not easily defined. In the past printmaking was described by the unique features of the processes such as lithography, etching, woodcut, and mezzotint whereas nowadays the purity of the techniques has faded and its identity has become porous.[1] Following tendencies seen in international printmaking triennials, conferences, and exhibitions,[2] it is easy to observe that the medium spans a diverse range of forms and formats such as 3D printing, sound, installation, virtual and augmented reality and animation to name just a few. The amalgamation of techniques and forms is a sign of our times where the surrounding world is in a constant flux and where the real world blends with the digital realm (perhaps during a pandemic more than ever). Prints that in the past relied on materials, tools and artists' skills are steering away from the required physical presence of the matrix and the tangible surface, thus opening doors for new debates and discourses around materiality, edition, authenticity, authorship, craft, and artists' labour. The focus of this essay is the materiality of print of which we often think of as matter, a physical substance. The notion of materiality changed significantly due to inclusion of new technologies which brought along sound, moving image, interactions, and immersive installations–all vital to the artworks but yet intangible and impossible to physically grasp. Reflecting on the work by Deborah Cornell and Marta Pogorzelec, artists exhibited in *TRANSMEDIAL: Expanding Technologies in Contemporary Printmaking* exhibition, this essay will consider printmaking materiality not only through the physicality that is traditionally offered via the printed surface but in the expanded sense through an anthropological framework and by acknowledging its sensorial properties.

In the most straightforward definition, materiality relates to things that are composed by matter, objects, artefacts and surfaces. When discussed in the context of print, especially traditional printmaking processes, materiality is often linked with its surface, created by the combination of ink and paper. The surface is responsible for the visceral appeal of the work; its tactility, as well as acting as the conveyer of artists' ideas and the carrier of artists' touch. The physicality of the surface depends on the technique, number of layers, viscosity of the ink and its opacities as well as the type of matrix, it holds the essence of the print both technically and conceptually. Ruth Weisberg in her seminal essay 'The Syntax of the Print: In Search of an Aesthetic Content' points out that 'each of the printmaking media has its own distinctive ink layer, varying from the raised lines of intaglio to the silky veils of lithography, they are more subtle and nuanced than is the surface of most paintings'.[3] The complexities of the printed surface requires close attention and intimate encounters to experience the print materiality. Printmakers, working with traditional techniques are striving for a perfect impression on the surface, spending laborious hours polishing matrices and printing multiples to achieve the right tones, spotless registration and identical edition; materiality is a result of labour, skills, knowledge of chemistry and tools and materials and in the traditional context clearly linked to matter.

However, in contemporary printmaking this view on materiality cannot be easily applied, as the initial parameters and the relationship between the paper, ink, matrix and artists' hand has changed. Professor Marylin S. Kuschenr points out that '[n]ew technology demands new parameters of definition and a print does not *need* a fixed matrix nor does it need to be a piece of paper physically pressed against a template. Indeed, in this new technology often no machine even touches the surface of the print.'[4] The advent of new, commercial printing technologies adapted by printmakers, triggered discussion on how the surface of digital prints is flat, cold, mechanical, and bland; lacking the traces of artists hand in comparison to the traditional impressions.[5] Going further, print became animation, an installation, or a video projection with immaterial matrices embedded within computer programs, initiating multi-sensory experiences and new modes of communication with

the images. Examples of these changes are evident in the work presented at *TRANSMEDIAL*, works such as Paul Catanese's auto-generative computer drawings or in Ingrid Ledent's installation that encompasses digital print, video, sound, and lithography. The question that arises is how can we then consider printmaking materiality when the actual 'prints' are often intangible? One answer, is to perhaps look at the materiality through anthropological lens, thinking about it more as a result of processes and engagements rather than physical matter.

Anthropologist Tim Ingold argues that materiality is a vague term and hard to define. He points out that in many theoretical understandings, materiality is recognised not as tangible elements but as a concept relating to abstract and philosophical ideas.[6] Following on that, Manuel Arroyo-Kalin proposes a distinction where materials comprise of diverse types of substances, forms of landscape, live organisms, and objects, whereas materiality emerges from the human engagement with matter. He suggests that: '[a]s a surrounding world, materiality is peculiar: it is a subset of matter that I instantiated through engagement, it is an ongoing outcome that is transformed through the objectification of relations.'[7] Both authors share a common stance that materiality is more complex than a physical matter of things; it is constituted by the close interactions between the body and surrounding materials and infused by potential outcomes of such processes.[8] Thinking about contemporary printmaking through Kalin's and Ingold's notion of materiality there is a potential to move beyond its physicality and look at engagement, sensorial properties and interactions that prints aided with technology can trigger.

Eclipse Phase (2018), work by Deborah Cornell, a digital mural comprising of digital prints, video projection and sound is an example of an artwork where materiality is a result of diverse forms, mediums and viewers interaction. This large scale, multidimensional work encompasses references to 'water, voices, solar wind, the Van Allen radiation belt that surrounds the earth, and the wings of birds in migration. […] The visual environment is paralleled in digital sound that enhances the sense of spatial immersion and connection to immensity'.[9] Cornell comments that each element of the work is closely connected and contributes to the whole perception of the work 'My own video process involves methodically adding and adjusting layers to build my images, and to respond to the underlying print. Though not print in substance, the video work could not exist without the embedded platform (and actuality) of print'.[10] It is evident that the projection itself bears strong printmaking aesthetics of layering, there is a sense of texture and mark-making that corresponds with tactility of physical prints, while the scale, the sound and the moving image 'opens a depth of experience of the image'.[11] The layering occurs on many levels, there are multiple layers compressed within digital prints, the overlapping projection and the sound waves, and the viewer's experience of being within the work. The environment created by the work activates the senses as we move through its space triggering multi-sensory experiences. In that process the viewer's body becomes a surface for the moving images, 'a printed surface' and thus becomes a part of the work. In line with Kalin's remarks, the materiality of the work is generated by being immersed, experiencing, sensing, attuning to and absorbing the sensorial properties of the work.

In the similar vein, the perception of *Refugium* (2017) by Marta Pogorzelec is contingent on the viewer's physical engagement with the work. The work was made using a lenticular print technique which creates an illusion of depth. In this work, the specificity of the lenticular lenses allow the creation of imaginary three dimensional spaces, voids, tunnels, interiors that the viewers is drawn into; a retreat to stop and contemplate. Formally the prints appear quite simple with their geometric shapes and subdued palettes of greys and blues that create a specific refuge evoking associations to the work by geometric abstract painters. However upon closer inspection, the viewer can observe the density of the surface created by multiple lenticular lenses and overlapping images broken into small elements. The richness of the printed surface contradicts the common accusation of the surface of digital prints being flat. The perception of the work depends on our standing point and the viewing angle, seeing how the image is changing within the lens. The work is very physical and takes a traditional 2D form, however the imagery is hard to grasp due to the illusions of the lenticular lens and the changing of colors and shapes. It is the illusion that makes the work highly atmospheric, drawing the viewer close to inspect and engage with its surface and contemplate its meditative space.

The materiality of both artworks depends on their intangible aspects–the beams of projection, the weave of sound, the illusion of depth, and the moving images travelling across viewer's body. Professor Juhani Pallasmaa suggests that ephemeral and emotive atmosphere is often more important to our perception than formal features of objects.[12] The matter provides the point of reference but it is in conjunction with immaterial aspects of technology employed in the work that initiates the sensorial experience of the viewers, triggers imagination and constructs narratives of the work. The strength of the work lies in the fine balance between the material and digital, visible and invisible, static and moving, from which the materiality of contemporary prints emerges.

Thinking about print in this broader way and moving away from traditional notions of the 2D, creates an opportunity to engage with the underlying concepts of materiality. Moving beyond the notion of the print as a tangible, physical object, presents an opportunity to examine it through a new lens, focusing not only on the technical side of it but also on sensorial experience that it triggers and the modes of engagement that it generates. The mindful use of new technologies enriches the field and allows the medium to evolve and to question the existing discourse of materiality that can no longer fit within a simple definition that limits its intangible potentiality to a physical substance.

[1] See Barbara Balfour, 'The What and the Why of Print' (2016) in Ruth Pelzer-Montada (ed.), *Perspectives on contemporary printmaking Critical writing since* 1986, Manchester University Press, Manchester, 2018, pp.114-126.

[2] For example International Print Triennial in Krakow.

[3] Ruth Weisberg, 'The Syntax of The Print: In Search of an Aesthetic Content', *Tamarind Papers*, vol.9, 1986, p. 60.

[4] Marilyn S. Kushner, 'Surfacing the Image: Digital Arts and its Antecedents in the Nineteenth and Twentieth Centuries' in Paul Coldwell (ed.) *The Personalised Surface, New Approaches in Digital Printmaking,* 2009, p. 27.

[5] For discussion about printed surface in the context of digital media see Ruth Pelzer-Montada, 'The Attraction of Print: Notes on the Surface of the (Art) Print', *Art Journal,* vol. 67, 2008, pp. 74-91, and Paul Coldwell *The Personalised Surface, New Approaches in Digital Printmaking.*

[6] Tim Ingold, 'Materials against Materiality', *Archaeological Dialogues,* vol. 14, 2007, pp. 1-16.

[7] Manuel Arroyo-Kalin, 'An Ongoing Outcome, a Surrounding World: Materiality, Agency and History', In *Rethinking Materiality: The Engagement of Mind with the Material World*. Elizabeth DeMarrais, Chris C. Gosden and Colin Renfrew (eds.), McDonald Institute for Archaeological Research, Cambridge, 2004, pp. 73-81.

[8] I discuss the notion of materiality from the anthropological perspective in my Phd thesis, *Encountering Place: Investigating the Materiality of Place Through Printmaking Practice,* Curtin University, 2018.

[9] Deborah Cornell, pers. comm., 15 January 2020.

[10] Ibid.

[11] Ibid.

[12] Juhani Pallasmaa, 'Matter, Hapticity and Time Material Imagination and the Voice of Matter', *Building Material*, No. 20, 2016, pp. 171-189.

Ruth Pelzer-Montada

Transmedial: Hype and Hope?

'Hype', the abbreviation of 'hyperbole', entails exaggeration but also excitement that attaches to news and events as portrayed in the media, now specifically social media.[1] Hype has the potential to infiltrate almost anything, from the most mundane to the most elevated. It carries an element of deception but also a stimulating energy to which few of us seem to be immune, even if we are loathe to admit it. The politics of hype is enormous: what exactly gets hyped, where and when; what does not? Hype does not differentiate, but focusses on the most common denominator, the most spectacular or bizarre, not the most relevant. 'Hope' with its long history of religious, political, economic, social and personal promise, even in a crisis as recent months have shown, seems at first glance to be the opposite of hype. But even the politics of hope gets hyped; just think Barack Obama. In other words, hype **and** hope rather than hype **or** hope.

Similarly mixed associations attach to new technologies; remember the discourses that accompanied the emergence of digital technologies in wider culture at large, but also in printmaking during the 1990s. These were by turns ecstatically utopian and bleakly dystopian–characterised by hype and hope.

I would like to suggest that these terms may also be allied to the term 'transmedial.' The prefix 'trans' reminds me of artist and writer Barbara Balfour's observation about another prefix which is often used synonymously with 'trans', namely 'inter'. Any term they precede and the object or concept signified are regarded as somehow 'more advanced', 'more sophisticated'[2] or, to stay with the present argument, more 'hypable'.

But I do not wish to get into a tedious explication of definitions regarding artistic media and their recent pre-fixes ('post', 'inter' and 'trans' foremost among them), attempting to explain the multitude of options within, cross-overs between and amalgamations of media in recent art and printmaking. Largely, while arguing the passing of certain genres of visual art, such definitions paradoxically end up focussing on the specifics of and demarcations between different media –which the prefix 'trans', as an 'across or beyond' media nevertheless implies.[3] Instead, I would like to highlight several aspects regarding media (or mediums) and technology that strike me as crucial with regard to current practices in art, and especially printmaking.

Quite apart from the thorough permeation of even the most ancient techniques in art by digital technologies, be they stone carving or indeed woodcut, at various levels of preparation and/or production, there is now wide-spread acknowledgement, furthered by philosophical debates in the context of new materialism, that no historically established medium, including printmaking, should be regarded as fixed or immutable.[4] While certain protocols may have been established centuries ago, it would be a fallacy to assume that they have unequivocally remained the same. Such an assumption is as misleading as the belief that by playing a historical musical instrument it is possible to align the player and listener with the playing and listening practices of the instrument's origin in any straightforward manner. Moreover, each artist 'translates' the medial conventions in her/his own way and develops their own specific protocols and variations in response to, or dialogue with their materials and tools, be it a special way of wiping the etching plate, or use of digital software like Photoshop. In addition to prints' inbuilt mobility with regard to potentially varying locations and contexts–think of the multiple instantiations of a single print in an edition for example–they are furthermore subject to numerous changes in presentation, function and perception by being copied, historically through printmaking itself, or later by means of reproductions in books and newspapers and now online.[5]

Add to this the breadth of techniques that print has accumulated over centuries and it is no surprise that print/making has been claimed, in Balfour's words, as one of the most diverse or 'multifarious and multitudinous' art forms which 'could … easily be championed as one of the least medium-specific set of media'.[6] Balfour also talks at length about print's 'shape-shifting' nature due to its incorporation into so many material aspects of everyday life (think stamps, think shopping receipts) as well as other art forms. These factors lend it a remarkably 'porous' quality that paradoxically makes it both 'ubiquitous' and 'obscure', in other words, not readily perceived as such.[7]

It is therefore no surprise that already in 1999 Kathryn Reeves reminded printmakers of the relational nature of their discipline.[8] More recently, Balfour has echoed and reinforced this view: '[w]ith print as with other media, it seems more empowering to think less in terms of a set of defining forms and attributes and more in terms of capacity and mobility […] of a medium as an enabling agency […]. I am […] interested in working toward a relational understanding of print vis-à-vis other media'.[9]

As to the question of technology it is worth considering the complexity of even the most simple tool or technique–against an oversimplified view of anything technological as a mere transparent tool, however this may appear so to an artist or user at an immediate pragmatic level. Art historian Georges Didi-Huberman, following Marcel Mauss, has emphasised that 'any 'technical dispositive' (or technical apparatus) quite independently of its technical sophistication–or lack thereof–has to be conceived in terms of a subtle tension between its material and symbolic effects and effectiveness: its physical structure only exists in connection with its linguistic or verbal structure'.[10]

Hence, as has been pointed out, by art critic Claire Bishop among others, recent artistic engagement with technology is not necessarily fixated on the digital as such, but with life that is permeated by the digital, where the digital is a given condition.[11] Such art does not inevitably employ primarily digital media (although it may do so), but uses both old and new, digital and analogue.[12]

Mentioning technology today seems, almost automatically, to imply or equate with the digital and be coupled with a future-orientation. But it should be stressed that technology moves in both directions–into the future **and** the past.[13] The importance of this double orientation lies in the critique it can provide of the dominant narratives of mainstream techno-discourse with its teleological, simplistically progress-oriented or one-dimensional conception of technology that is seen as either wholly utopian, for the better of humankind, or as its diametrical opposite.[14] This is where media with a long history and openness to new technologies like printmaking, despite being regarded as obsolete by some, come into their own, as the resurgence of woodcut and letter press among others–either on their own or in combination with digital technologies–has shown.[15]

But does the always already transmutative or transmedial nature of print/making and its more specific 'expansion' of recent years[16] mean, as chief curator of drawings and prints at MOMA, New York, Christophe Cherix approvingly suggested in 2012 that print may disappear in favour of or into 'art' in general?[17] On this matter, I am with Balfour again who argues–vis-à-vis the persistent lack of institutional acknowledgement of print in the context of contemporary art–for the recognition that 'what makes certain work interesting is connected to its printed nature'[18] or 'what could be called its "printness"'.[19] In other words, Balfour highlights senso-material discursive properties or a print aesthetic that could not be achieved otherwise.[20]

I now want to highlight works by two younger artists that straddle different positions, or points, on the trans-medial axis or on the continuum between employing (and changing) established historical techniques and newer, digital ones and which exhibit 'printness' in Balfour's sense, each in a different way.

Rachel Adams is a British artist based in Glasgow with a wide-ranging interest in how culture, technology and nature intersect–including the politics of labour and gender in the history of computing. *Ponics (Cabbage Patch)* was part of a multi-medial installation *Noon* (2018) that explored these themes.[21] The piece consists of a rectangular assemblage or 'field' of equally spaced and distributed translucent cabbage-shaped sculptur-

al objects, joined by white plastic pipes and raised on slender metal stilts. The whole–with its implied suggestion of a continuation of self-same assemblage ad libitum beyond its current form–is reminiscent of hydroponic and/or industrial cultivation methods.

Adams has used shop-bought and custom-made fittings to fabricate the construction in addition to an array of technically complex, as well as simple manual processes to create the three-dimensional cabbage sculptures, namely screen printing in conjunction with laser-cutting, heat-moulding and shaping by hand. [22]

The printed surfaces display a coarse application of the most common method of commercial photographic reproduction until the arrival of digital printing, namely the half-tone grid; while artistic screen printing, as is well known, was adopted and adapted from commercial printing by artists in the course of the Twentieth Century.[23] They therefore echo commercial print processes with their large-scale reproductive operations. This reproductive aspect, in combination with the newer technology of laser-cutting but also making by hand, conjures up associations of the mixed methods and types of labour of industrialised and scientifically engineered large-scale farming, supported by and realised through both technological as well as manual labour. The apparent 'look' of the installation of both laboratory and agricultural field reinforces these associations.

Print in *Ponics* may be the obscure phenomenon it is so often in the everyday, but in its amalgamation with highly technologized materials and processes it also draws attention to the–often unacknowledged–embeddedness of print in industrial, scientific and other commercial fields, including fashionable design.

Finally, the specific quality of print as imprint onto a surface in *Ponics* (the ink 'sitting' visibly on the Perspex) and the man-made automatism of the grid on the 'natural', 'organic' leaves, invokes the popular conflation of surface with the superficial as well as the habitual dichotomy of culture and nature.[24] For me, printmaking always offers the opportunity to challenge the easy (and false) supposition implied by the former.[25]

If Adams represents one of the ways in which many artists employ print which might appear 'casual' but is, as can be seen on closer inspection, far from it, Spanish artist Inma Herrera's work can be read as highlighting the malleability of the established and often jealously guarded protocols, or the apparatus of printmaking itself as multimedial and/or transmedial.

In the multi-medial exhibition *Transitional Magnetism*, 2017, Herrera, who has a thorough training in the historical techniques of printmaking,[26] reflects on the materials of intaglio and the making itself, the question of visual representation, and the artist's as well as the beholder's bodily engagement.[27] For the piece *The Decision*, 2017, Herrera created an etched copy of a page on how to hold a burin in creating an intaglio plate from the famed Seventeenth Century etching instruction manual by French printmaker and theorist Abraham Bosse.[28] In the two-dimensional copy of Bosse's image by Herrera the burin's space is left empty. Instead, it is rendered three-dimensionally, as an object rather than image, in the truncated represented form of its appearance in the original print by means of 3D printing, positioned on a gleaming copper etching plate.

The conventional shape of the 3D burin with one side flattened to permit the artist's hand to 'hug' the plate while lifting off traces of the metal surface rather than gouging into it–as a non-expert might imagine–attaches smoothly to the copper plate. Its precise, if reduced, 3D reproduction almost appears something that the plate has begotten. At the same time, strong shadows complete its 'lost' parts and recreate, as it were, the full tool–yet, the inevitable distortion that the shadow creates, together with the reflections from the surrounding space, produce an uncanny sensation in the viewer as to what is real and what is not … the object that is created by the plate-cum-burin appears to take on a life of its own.

Herrera's intensification and dramatisation of the means and protocols of historical printmaking in combination with newer technologies, such as video[29] and 3D printing, the creation of objects or the application of processes hitherto unseen is looking ahead and back in time. As indicated earlier, this is important as resistance to the mainstream teleological and triumphal assumptions of (especially) new technologies. Such an artistic methodology also demonstrates palpably that technologies need not be the way they are, thus problematizing the self-evident chronological narrative of mainstream technology discourse and demonstrably extending their future possibilities.

Both artists create forms of excitation and stimulation–or hype–through transmutation of materials, processes and objects, that–independently of the degree of the involved technical sophistication–are the result of but also a provocation to experimentation and change, thus constituting the potential, or hope 'to create a better world than the one that exists', in the words of one of the most prominent theorists of media, Helmut Zielinski.[30] Even if the former values have also become the mainstays of neo-liberal economies world-wide, including the development and research that supports them, the ultimately humble means of print/art can provide a necessary, alternative vision. Hype **and** hope then.

[1] Stack Exchange English Language and Usage: "The origin of 'hype'" *Stack Exchange*. Last modified 15 June 2020 https://english.stackexchange.com/questions/253983/origin-of-hype

[2] '…it has also come to suggest that 'inter' is somehow more advanced, more evolved, more sophisticated–and that it's a bit retrograde or anachronistic to focus on merely one medium'. Balfour, B. 'The What and Why of Print' In *Printopolis*, edited by Tara Cooper and Jenn Law, Open Studio, Toronto, 2016, pp. 142–57. Re-printed in: Pelzer-Montada, R. *Perspectives on contemporary printmaking*., Manchester University Press, Manchester, 2018, p. 121.

[3] This can be seen in the phrasing of *across & beyond*, employed in 2016 as the title of a publication by the long-established Berlin media art festival *Transmediale*. Edited by Ryan Bishop, Kristoffer Gansing and Jussi Parikka the full title is: *across & beyond–transmediale Reader on Post-digital Practices, Concepts, and Institutions*. Sternberg Press, Berlin, 2016.

[4] 'The "technicity" of a work of art is in other words not a given derived from a determinate set of features associated with an already existing apparatus or technology. It indicates, rather, a set of complex feedback relations between a range of elements—technical, environmental, intellectual, sensorial…'. Blom, I. 'Inhabiting the Technosphere: Art and Technology Beyond Technical Invention' in: Alexander Dumbadze, and Suzanne Hudson (eds). *Contemporary Art: 1989 to the Present* John Wiley & Sons, Incorporated, Chichester, 2013, p. 151.

[5] Art historian Lisa Pon's fascinating study of an early Italian print demonstrates how this mobility attaches to the print from its beginnings. Its last chapter, pertaining to the present state of the print, is fittingly entitled: 'Multiplied: The Madonna of the Fire in Forli and beyond'. In: Pon, L., *A Printed Icon in Early Modern Italy: Forlì's Madonna of the Fire*, Cambridge University Press, Cambridge, 2015.

[6] Balfour in Pelzer-Montada, p. 121.

[7] Ibid., p. 119.

[8] 'Can we now theorise a space for printmaking practice that, quoting Foucault, "is one in which space takes for us the form of relations among sites"? (23). The great challenge for printmakers will be to determine the sites with which to engage and what form the relations among sites will take.' Reeves, K 'The Re-vision of Printmaking' in In: Parraman, Carinna and Brewer, Emmeline (eds), *IMPACT International Multi-disciplinary Printmaking Conference Proceedings.* Impact Press, Bristol, pp. 69-75. Re-printed in: Pelzer-Montada, R. *Perspectives on Contemporary Printmaking : Critical Writing Since 1986.* (Manchester University Press, Manchester, 2018, p. 79.

[9] Barbara Balfour in Pelzer-Montada, p. 122.

[10] Georges Didi-Huberman. *Ähnlichkeit Und Berührung. Archäologie, Anachronismus Und Die Modernität Des Abdrucks.* (Köln: DUMONT Literatur und Kunst Verlag, 1999), p. 16 (my translation).

[11] Claire Bishop. 'Digital Divide'. *Artforum International*, vol. 51(1), 2012, pp. 435-441.

[12] Similarly, Ina Blom has pointed out that recent artworks frequently 'do not even necessarily come across as "technologically oriented" in any very emphatic or explicit sense. Instead they express a sensitivity–to what we might call "general mediality," a type of focus that ultimately draws attention to the human as a biotechnical form of life'. Blom in Dumbadze, p. 151.

[13] As the editors of the 2016 *transmediale reader* put it in their discussion of the term 'post-digital': 'A speculative stance toward the future is complemented with speculations about the past.' Bishop, Ryan, Jussi Parikka, and Elvia Wilk. 'Introduction' in: *across & beyond a transmediale Reader on Post-digital Practices, Concepts, and Institutions.* Sternberg Press, Berlin, 2016. N.p. https://transmediale.de/content/across-and-beyond-post-digital-practices-concepts-and-institutions/

[14] 'The multiple temporalities suggested in the "post" of post-digital show how transversality allows for alternative ways to undercut simplistic linear causality in narratives of technological and medial triumph or catastrophe…' (ibid). The result of 'such complex material settings or assemblages do not fall in neat categories of digital or non-digital, and involve sets of agencies, institutions, infrastructures, operations, signs, and meanings across multiple scales of interaction.' (ibid.)

[15] See Rebel, Ernst 'The Technical Gaze: the Parallel World of Photography' in: Pelzer-Montada, R (ed). *Perspectives on Contemporary Printmaking : Critical Writing Since 1986.* pp. 25-32. See also Alessandro Ludovico's essay on re-emerging practices like zine culture and analogue printing techniques, in *the transmediale reader*.

[16] See Pettersson, Jan Stefan et al. *Printmaking in the Expanded Field : a pocketbook for the Future: collected texts and thoughts*, Kunsthøgskolen Oslo, Oslo, 2017.

[17] Christophe Cherix, et al. *Print/out: 20 Years in Print*, The Museum of Modern Art, New York, N.Y, 2012, p. 26.

[18] Balfour in Pelzer-Montada, p. 118.

[19] Ibid, p. 120.

[20] In light of the frequent argument of the undoubtedly greater virtuality of contemporary life and a concomitant lack of the 'real' (with the implication of an, albeit problematic, 'immateriality'), it is also worthwhile repeating, as Julia Bryan-Wilson and Glenn Adamson have argued, that contemporary art is far from devoid of material, physical making. On the contrary, the 'sheer proliferation' of methods within current art practice means that the question of 'making' has instead 'deepened and expanded'. In printmaking this can be observed in the renewed popularisation of analogue printing techniques with their supposedly –greater application of labour alongside the development of digital techniques. Rebel, in Pelzer-Montada, especially p. 31, and Ludovico, see endnote Nr 15). In the wider socio-cultural context printmaking has become part of what has been termed 'maker culture', 'a blanket term, encompassing myriad approaches and positions, from craft and design practices to cooperative and collective methods, to DIY (Do-It-Yourself), DIT (Do-It-Together) and hacker mindsets.' (Theresa Dillon 'Why we make', essay for *Anxious to make,* exhibition for *Transmediale* 2016, Berlin, n.p. https://transmediale.de/content/why-we-make) Printmaking in form of public access and education programmes, as delivered by print workshops across various parts of the world, has fitted easily into this trend and has in some ways anticipated it for years.

[21] David Dale Gallery, Glasgow, Scotland. http://rachel-adams.com/noon/

[22] A 'real' cabbage was scanned leaf by leaf; the resulting digital images were then screen printed onto acrylic; the outline of each leaf image was then laser-cut to achieve the ragged outline; subsequently each 'leaf' was heated and hand-modelled into the familiar convex shape, to be assembled into the 'cabbage head'.

[23] See for example, especially on the former, Rebel in Pelzer-Montada, pp. 25-32.

[24] The subject of the surface has become quite prominent in the Humanities. The 2020 anthology by anthropologists Anusas and Simonetti is only one of recent publications on the subject: Anusas, M. & Simonetti, C. *Surfaces transformations of body, materials and earth* (Abingdon, Oxon; New York, NY: Routledge, 2020). See also Bruno, G. *Surface, Matters of Aesthetics, Materiality, and Media.* University of Chicago Press, Chicago: 2014.

[25] See my essay: Pelzer-Montada, R., 'The Attraction of Print: Notes on the Surface of the (Art) Print'. *Art journal,* vol. 67(2), 2008, pp. 74-91.

[26] From Complutense University of Madrid.

[27] http://www.inma-herrera.com/Transitional-magnetism

[28] Seventeenth Century French printmaker and writer, who wrote a controversial treatise on perspective and said *Traité des manières de graver en taille-douce* [or sometimes rendered as: *à l'eau-forte*], English: *Treatise on intaglio* (1645). He is said to have popularised Jacques Callot's innovative use of etching and moreover perfected it to simulate engraving, thus facilitating the process while maintaining the appearance of the more laborious and difficult engraved line.

[29] Herrera frequently uses video which due to space cannot be discussed here.

[30] From media theorist Jussi Parikka's blog: Jussi Parikka 'How to practice variantology of media?' December 17, 2019. https://jussiparikka.net/2019/12/17/how-does-one-practice-variantology-of-media/

Santiago Pérez

The Space Between

It is limiting to reduce the concept of printmaking down to a set of technical procedures. Exploring the relationship of thinking and making allows a re-examination of the traits that define print practice.[1]

Introduction

The goal of this essay is to propose new conceptual and material modes of practice relating to the 'space between' painting and printmaking processes, considering embodied versus mediated practices, incorporating robotic control and production. New modes of practice influenced by the confluence of computational design and robotics, are examined in relation to established (non-digital) modes of production. Trained in architecture and design, the author brings an outsider's view towards mark-making in the fine arts. An ongoing theme in the author's teaching and published research, involves the relation between embodied practices, utilising direct contact with material, and mediated practices distancing the body from direct contact with the work.[2]

Robotic Mark-Making in the Expanded Field

The precision afforded by robotics is coupled with the imprecision and unpredictability of fluid mediums, material behaviour, and physical processes. This loss of control is a primary aspect of the author's research, and continues to inform an emerging body of work. The possibilities for expanding art-making practices in the context of emerging technologies, explores the space between intuition, procedure, and control. The 1979 essay by Rosalind Krauss titled 'Sculpture in the Expanded Field' provided a basis for examining the relation between sculpture and related fields of operation, notably landscape and architecture.[3] Krauss utilised a conceptual diagrammatic approach towards unpacking sculptural practices, using the Klein or Piaget Group diagram. Using this diagrammatic technique, we may begin to expand the field of possible operations, practices and resulting works of art in the context of mark-making or print-making.

Early proponents of computational experimentation in art, in the 1950s and 60s, were known as the Algorists. They wrote basic computer algorithms, translated into physical mediums for output, utilising early pen plotters.[4] These artists were trained in mathematics and programming and experimented with these early digital processes to produce two-dimensional artwork by attaching various brushes and mark-making tools onto 3-axis plotters. On a more conceptual level, artists including Manfred Mohr, Frieder Nake, Roman Verostko and others, pioneered the use of algorithmic processes to study the relation between (scripted) geometric composition and randomness, and the development of agency or emergent behaviour.

In an effort to understand the technical and artistic context of the early algorithmic pioneers in art, I directed a seminar in 2017, titled 'Making Drawings'. We examined the work of the Algorists, and constructed unique drawing machines, coding the algorithmically derived patterns, at a low level of control, bypassing any contemporary scripting or graphic tools. This initiative opened new insights towards possibilities for rethinking the relation between artist and machine, and provided a basis for ongoing experiments in design robotics at the UWA School of Design, Perth.

Beyond the Physical Matrix: Precision, Procedure + Embodied Intuition

The concept of the generative matrix is a fundamental concept underlying established printmaking practices.[5] The material and conceptual flexibility afforded by the physical qualities of a printing plate or similar matrix, gives rise to a great range of experimental procedures in both conventional and non-traditional art-making. The term generative is used to describe the physical matrix as a starting point for multiple states of an artwork, within the context of serial and sequential thinking, as described by Fick and Grabowski.[6]

In the world of algorithmic or computational art, the term generative takes on a more fluid, immaterial meaning, describing the potential of code to produce variation, emergent behaviour, and unanticipated effects. By combining generative contexts, from the physical world of printmaking, and the (virtual) world of computation, we arrive at a new definition of the generative matrix that is at once both physical and dependant on materiality, and at the same time denoting the application of digital processes unhindered by the weight and stability of a physical medium.

In the early 1960s, Donald Judd, known primarily for his exacting precision and minimalist sculptures, initiated a series of woodblock prints. These works exemplified precise control, repetition and exactitude possible when a medium is reconsidered in terms of contemporary material processes. Repetition and seriality were made possible by this mechanical printing process, and the plate itself acquired the status of an art object in its own right. The body is mediated or distanced by the printing process, while maintaining the 'workmanship of certainty' derived from the mechanical, repetitive print using a physical matrix.[7] By contrast, the embodied physical contact with tool and medium, illustrated in the abstract paintings by Gerhard Richter, utilise a large paint blade or scraper, to physically move large volumes of paint across a plate. Richter's paintings are unique, singular works of art, combining intuitive bodily movements with the artist's evolving engagement with the artwork in real time.

How can we combine the exactitude of Judd's printmaking process, with the embodied intuition deployed by Richter? What types of conceptual and technical processes can be derived by combining the precision of the tool, with the fluid movement of the body? Studying the movement of Richter's painting blade, we understand that the body imposes spatial and geometric limits or 'procedural influences' based on the range of the artist's reach, and the force needed to move the blade loaded with paint.[8] The encounter between procedural precision and intuitive control requires a shift in thinking, from geometry to choreography. Comparing the body and the machine, two overlapping concepts may be derived; exact, procedural control of a geometric schema or framework, versus incorporation of intuitive, improvisational embodied processes.

This dynamic relation is further complicated by the encounter with material, or more generally material behaviour, as a complex, changing variable that is difficult to master or control. While the body responds to material in real-time, as a function of direct engagement, robotic motion must be explicitly programmed, anticipated and controlled. To overcome this rigidity, robotic artists are increasingly by-passing the procedural control of the tool, embedding feedback loops for indirect control of machinic processes by the spectator through the use of sensors, cameras or similar devices. This secondary level of control invites the viewer or participant to act as an agent, influencing the otherwise explicit control of the machine. Within the disciplinary boundaries of printmaking, the choreography between the viewer, the machine and material, may be observed in the large scale acid-etched metal plate by Rhys Himsworth, in his work titled *The Panopticon,* (2010).[9]

Expanding Disciplinary Boundaries

Blurring the distinction between painting and printmaking, we can expand the domain of 'printing' to include 3D constructions or assemblages, moving beyond disciplinary constraints. Recalibrating procedures and frameworks away from physical and institutional boundaries, the expanded field of processes combines embodied, computational and robotic methods of experimentation with materials, tools and mediums. One of the primary distinguishing characteristics of printmaking, is the ability to transfer the artist's 'original' marks (produced by hand or machine) onto a plate, screen, or other matrix, for serial production. While contemporary mixed-media processes may transcend this limitation, it is nevertheless a disciplinary boundary distinguishing serial production or printmaking.

By reconceptualising the physical matrix and disciplinary framework, we can re-situate the plate, screen or printing device, from a fixed substrate, towards a dynamic, algorithmic control process. Serial repetition and variation with various physical printing mediums, may now be translated as code, with multiple tools or processes, within an expanded field of operations transcending the constraints of a fixed substrate or framework. The repeatability and transfer of information using a physical medium, may now be encoded within a (non-physical) linear procedure, directing the movement of the robot. In addition, we may introduce (nonlinear feedback) noise, external or environmental perturbations, etc. increasing the range of procedures for mark-making, serial production and a continuous variation of artwork, embedded with both encoded and unanticipated effects.

The drift between the idealised, diagrammatic pattern, the simulated movement of the robot, and the actualized interaction with physical materiality, creates a gap or 'space between', to reinsert intuitive control of material processes. It is this unpredictable zone, between idealisation and actualisation, that provides a means for reasserting intuitive, embodied control within an otherwise explicit robotic workflow. This gap or conceptual work-space, provides a means to extend robotic workflows beyond reproduction of an 'original' or master imprint. The fidelity of information transfer is contained within the merger between computational or procedural codification, choreography of movement, and finally, the empirical testing or real-time intuitive control of material-effects.[10]

Material as a Verb

Sculptor Richard Serra began his career by following a series of embodied actions designated by his well-known 'Verb List'. Terms such as to 'spray', to 'bend', to 'crease' may be re-appropriated as tooling procedures for multiple, richly layered effects informing the development of robotic workflows.

Blurring the layering of multiple tooling processes, workflows may now be controlled through intuitive algorithmic interfaces controlled by the artist. By examining iterative prints in series, the artist builds up an implicit understanding of material behaviour, comparing the simulated pattern and robotic choreography with the physical result. While not directly engaging with mark-making, the embodied process of understanding material is maintained.

While the understanding of specific material properties is essential to any artistic process, it is helpful to think of material not as a fixed state or noun, but as a fluid material-process, capable of taking on different characteristics, more 'Verb' or 'Action-State'. This way of thinking is usually applied to digital processes, in what the theorist Bill Mitchell termed 'State-Spaces'.[11] Material may be reconsidered as an instantiation of form through a series of transformations, using the concept of an 'operator' to change from one state to the next. This concept, applied from the logic of computer science, may serve as a means to rethink 'material' within the context of art-making and thinking.

Three Dimensional Printmaking

The application of Robotic 3D Printing processes, utilising paper pulp or polymer clay mixtures, provides another means for exploring three dimensional generative matrices, beyond the limitations of standard 3D printing techniques. We can continue to expand the field of operations by encoding the manipulation of viscose or paste materials, associated with both fine arts (impasto) and construction techniques (plaster, ceramics, etc.). Material can be deposited on a physical substrate in complex patterns by a robotic arm. Moreover, the (two dimensional) layering methods described earlier, can be extended to conform to complex 3D shapes. The capacity of robotic arms to move with six degrees of freedom greatly increases the range of possible geometric and modular forms and assemblages.

This shift from 2D to 3D printmaking is the goal of the current research, and is still in its infancy. By applying techniques borrowed from two dimensional art-making (scraping, pigment deposition, etching, stamping, etc.) towards 3D processes, new forms engaging seriality, repetition and variation are possible. These processes combine precision and intuition, by incorporating the confluence of computation and robotics with the "intelligence of the hand".

[1] Bell Fick and Beth Grabowski, *Printmaking: A Complete Guide to Materials and Processes,* second edition, Laurence King Publishing, London, 2015, p. 7.

[2] Santiago Pérez 'Loss of Control: Error, Glitch and Imperfection in Architecture,' in *Lineament: Material Geometry and the Physical Figure in Architectural Production*, Gail Borden and Michael Meredith (eds.), Routledge, New York, 2017, pp. 156-173.

[3] Rosalind Krauss, 'Sculpture in the Expanded Field', *October,* vol 8., 1979, pp. 30-44.

[4] Roman Verostko, "The Algorists," accessed January 17, 2021, http://www.verostko.com/algorist.html

[5] Fick & Grabowski, pp. 8-16.

[6] Ibid.

[7] David Pye, *The Nature and Art of Workmanship, Cambridge University Press,* Cambridge, 1968, pp. 30-37.

[8] Refer to the 2012 video of Richter at work in his studio, for a look at his various techniques: "Gerhard Richter Painting Official Trailer #1 (2012) HD," accessed January 25, 2021, https://youtu.be/jF4SAmtCyLg

[9] Rhys Himsworth, *Panopticon*, accessed January 17, 2021, https://www.rhyshimsworth.art/work/panopticon

[10] For an in depth understanding of this topic, refer to Branko Kolarevic and Kevin Klinger, *Manufacturing Material Effects,* Routledge, New York, 2008.

[11] William Mitchell, *The Logic of Architecture*, MIT Press, Cambridge, MA., 1990.

Sarah Robinson

Exchanges with Technology: Materiality in Transmedial Printmaking

This non-digital-centric approach surpasses simply asking how new technologies impact on a supposedly pre-existing world, to instead investigate how the emergent forms of digital materiality are part of ongoing changing configurations of 'things' that inevitably leak into each other.[1]

Introduction

The effects of exchanges with technology in printmaking is exponential, a ubiquitous component within the contemporary printmaking field where artists are continuously finding ways to connect digitalised data with matter in the physical world. This essay is a brief examination of digital materiality effects on art practice within the conceptualisation strategies of artists Jo Stockham, Magda Stawarska-Beavan, Susanne Klein, and Santiago Pérez when they employ digital technologies in their different responses to the world through print. My thoughts for this essay emerged after an initial examination of their work and through interviews with the four artists as a result of co-curating *TRANSMEDIAL: Expanding Technologies in Contemporary Printmaking* (TETiCP).[2] This analysis indicated many printmakers worldwide expanding their links with technology through practice that implicated the possible danger of using 'technology for technologies sake'.[3] In exploring this concern I start by outlining ideas of transmedial curiosity (the desire to consider multiple things) in conceptualising exchanges with technology and digital materiality through the lens of entanglements with a physical matter where error and mistake are often what matters most. This can be seen particularly in Pérez's use of robotics and Klein's analysis of image aesthetics through reinventing Nineteenth Century Woodbury Type. Furthermore, drawing on Frieder Nake's and anthropologist Sarah Pink's writings the role digital materiality plays in Stockham's 3D prints and Stawarska-Beavan's visual and sonic cityscapes is examined. Crossing digital divides to enhance conceptualisation, interests all four artists in creating physical objects that are as conceptually varied as their selected use of digital tools are. This is my attempt to respond to the consequent question I ask; how does working with digital technologies to capture digital data, and the subsequent transformation of digital data back into material artefacts, conceptually benefit these four artists?

Transmedial Curiosity

Transmedial curiosity interrogates the technological shift from the tactility of traditional printmaking toward a virtual world of digital images and back to material outcomes as a form of rebuke to the dominance of digital visual modalities. Nake warned us in 2010 of the potential danger of printmaking being visually driven by algorithms that might lead artists to unknowingly subscribe to the 'horrors of computability'.[4] As Nake contends, inevitably, the ease with which digital computation can create images has increased; creating a place where lifeless images emerge through the uniformity of the digital in the flat terrain of everyday mass culture.[5] Furthermore, rather than the physicality of a technique *being* just a technique a renewed interest in the printed digital image via a traditional tactile printmaking process has returned. Techniques through which the image retains a sense of physical, aesthetic, and sensory materiality that enhance the concept. It appears, based upon Nake's warnings, that we have reached a significant point in the contemporary printmaking field where we are 'clawing back' a sense of materiality into print. To reiterate, within contemporary printmaking there seems to be a necessity for a renewed critical stance to combat the overuse of digital visual modalities and determine where concepts of materiality might lie (Here, I can't help but wonder how the post-COVID-19 world will play its part in printmaking's developmental trajectory. Has it increased our capacity to accept the digital experience?). Recognising all eight international artists who have contributed artworks, TETiCP offers a valuable resource to consider ways in which 'the digital materiality of our everyday worlds is continually emergent'.[6] Their work shows that digital data captured from real-world spaces elicit dynamic

links between data and materiality far exceeding the post-hybrid print.[7] Glitch and error within a pixel matrix are manifesting the material transformation that underpins the TETiCP works in complex ways.

Digital Materiality

The significance of the term 'digital materiality'[8] is being recognised by contemporary printmakers in the way that physical materials entwine with the digital to occupy a different dimension...a transmedial space. Moreover, taking a 'non-digital-centric' approach Pink[9] recognises the digital materiality of our everyday worlds to be continually emergent, shaping the way phenomena change with the capacity to 'leak' into one another. The leaking between old and new print techniques certainly intrigues in the work of colloid chemistry expert Klein and through the unpredictability found in approaches to digital materiality by design architect Pérez's robotics. Arguably, for both artists navigation of the digital to drive specific material innovation is where the enmeshment of different material properties emerges in a new space challenging approaches to physical matter. Pérez's algorithmic codes drive a robotic arm for controlling physical matter; cement and paper-pulp have been extruded into 3D patterns where themes of uncontrol and unpredictability lie between a digital process that translates paint as a print. The link between Pérez's use of robotics via design manufacturing reminds us of Klein's suggestion that manufacturing and 'artistic printing' have become too disconnected from each other. To ascertain the contemporary aesthetic of digital images Klein pushes original Nineteenth Century Woodbury Type, collotype, and photogravure processes beyond their historic invention 'since the physics and chemistry behind the plate and print production [are] better controlled'[10] Klein employs the modern materials silicon and photopolymer and technical analysis from examining electron scanning micrographs. Purposefully employing analogue printmaking technologies that allow greater command from the perspective of chemistry and physics, alongside the digital mechanisation of preparing print plates. It appears that for both artists a conversation of ideas emerges between the focus on technique and process, pushing each to the limits to assess the physical aesthetic of digital matter. An exchange takes place focusing on content and application, rather than a purely artistic concept, that nevertheless, through the experimental nature of it, creates diverse meanings, asking significant questions of new ways of seeing and purpose.

Conceptualising Exchanges with Technology

When we consider how TETiCP artists conceptualise digital materiality in exchanges with technology it is the anomalies and artefacts 'of any way of making' creating 'fault lines'[11] that concern Stockham most. Digital anomalies reside in her work *BotSelf controlled from the back* (2018) an exploding/glitching motorised self-portrait signifying a bothead with a benevolent plastic consistency, inherent with 3D printing. To clarify, this refers to the plastic *feel* or visual aesthetic of a digital 3D print; typically supported by Stockham's recognition of a 'flattening of form and intensifying colours' which she uses as an example of how digital media worry her because 'they conceal their formats and rules…'[12] For this troublesome reason, Stockham's haptic control of digital tools explore how error and practice of the accidental conceptually '[i]nterrupts' as 'the image breaks a certain illusion'. The artist's work conceals a stern warning in deciphering representations of realities in time and space. 'The image producing machines we now use, track our use of them unlike the printing press'.[13] Moreover, in contemporary printmaking practice we might find that 'These days, it is the hand that helps thought to find its *algorithmic* formulation'[14] conversely, 'we are drained of our data by parasitic keyboard trackers' as Stockham's artist's interview revealed.[15]

Anthropologists are positioning digital media as being part of an everyday experience 'Thus, its recordings are themselves part of entanglements with other technologies, things, processes and people'.[16] Equally this idea of digital complexity, in our exchanges with technology is witnessed in TETiCP through digital and material exchanges of algorithmic data and sonic signals employed by multi-disciplinary artist Stawarska-Beavan into an aesthetic form that appeals to our senses through 'non-sonic materialisations of sound'.[17] In her work *Resonating Silence I* (2019) lie sonic cityscapes skillfully embodied within the form of a vinyl record as Stawarska-Beavan creates 'interwoven forms speaking'.[18] Likewise within an intimate library space in *Resonating Silence II* (2019) video, sound, and a screen-printed artists book mirror the transformation back and forth amongst a digital-material space occurring through 'connecting traditional printmaking processes with digital audio' that employ multisensory approaches 'destined to be read outside of their own boundaries'[19] This marks a significant point of relations between algorithmic programming of moments in making visible the invisible or the liminal line between altering the image from its algorithmic intention and re-defining the original software's executed codes. Each object in Stawarska-Beavan's installations brings us to the visually-tactile experience embodied within a binaural soundscape conveying a sense of presence, where something else happens. A manifestation is created where the viewer becomes immersed in becoming an implicit object themselves, temporarily embedded in the PS gallery space. Indeed, the concept of a sonically touchable entity is revealed in examinations of a person identifying virtual objects through tactile experiences via sonic feedback loops. Drawing on the premise that a computer-generated object (even sound) can reveal itself through sound recording that presents as a concrete interaction in a real space contextually positions Stawarska-Beavan's silkscreened artists book and vinyl record as becoming physically 'Sonically Tangible Objects'.[20]

Conclusion

A thinking space has been offered within the *TRANSMEDIAL* exhibition to critically challenge the reasons why printmakers might manipulate digital data and return it into material artefacts in the first place. I have reflected upon the navigation of physical and material digital data by the TETiCP artists embracing the problematic flow of information, that is either physically, intentionally or un-intentionally interrupted. As can be seen by navigating both digital and material worlds these artists have benefited from their transmedial space, it seems to be where the conceptual rewards lie. Klein and Pérez's conceptual space has at some point passed through algorithmically driven technologies and manifested as printed outcomes. The material and technological restrictions of past traditional and industrial printing methods are replaced with the help of digital technology are where Klein sees the value of resurrecting old printmaking processes for modern methods in the contemporary, expanded field of printmaking. Thinking is shaped and subsequently morphed through the various applications of digital technologies in the processes of creative practice. This suggests that digital materiality can be seen to lie in a space where artists resist disengagement with the physical world increasingly implicit in digitalisation.

Stockham's conceptual breaking of technological illusions and Stawarska-Beavan's external multisensory experiences devoid of limits consider themes of digitally controlled and uncontrolled intersections. Given the complexities in a perpetual toing and froing via the digital, embedded into their art practice, there is a move by artists to seek sensory responses from audiences embedded in or expressed through, materiality in transdisciplinary printmaking. It can be concluded that a result of this perpetual movement through innovative exchanges with technologies demonstrates the capacity for artists to delve deeper into thought. It is evident from the depth of the works in this exhibition that artists use digital technology not for its own sake but for its capacity to expand ideas exponentially. Finally, TETiCP calls for critical conversations to question what digital materiality might offer to the printmaking field in the future. Investigating digital matter calls for a renewed critical engagement within emergent transmedial configurations to ask what digital materiality is as investigated by not only artists but also through transdisciplinary practice with the sciences. Growing transmedial configurations is after all, exactly what expanding technologies in contemporary printmaking achieves.

[1] Sarah Pink, Shanti Sumartojo, Deborah Lupton & Christine Heyes LaBond, 'Empathetic technologies: digital materiality and video ethnography', *Visual Studie*s, vol.32: (4), 2017, pp. 371-381.
[2] Monika Lukowska & Sarah Robinson 'Transmedial: expanding technologies in contemporary printmaking', 2021.
[3] Ruth Pelzer-Montada, *Perspectives on contemporary printmaking. Critical writing since 1986*, Manchester University Press, Manchester, 2018.
[4] Frieder Nake, 'Printing Plates and pixel matrix: the mechanisation of memory' (2010) in Ruth Pelzer-Montada (ed.), *Perspectives on contemporary printmaking: Critical writing since 1986*, Manchester University Press, Manchester, 2018, pp. 174-183.
[5] Glenn W. Smith, 'An Interview with Frieder Nake by Glenn W. Smith' *Arts 8*, no.2. 2019, p. 69.
[6] Sarah Pink, et al. 2017, p. 9.
[7] Paul Catanese & Angela Geary, *Post-digital printmaking: CNC, traditional and hybrid techniques*, London: A&C Black Publishers. 2012.
[8] Sarah Pink, Elisenda Ardèvol & Débora Lanzeni, 'Digital Materialities: Design and Anthropology': Bloomsbury Publishing, 2016.
[9] Ibid. p. 6.
[10] Susanne Klein, TRANSMEDIAL pers. comm.,15 January 2020.
[11] Jo Stockham, TRANSMEDIAL pers. comm.,15 January 2020.
[12] Ibid.
[13] Ibid.
[14] Frieder Nake, 2010, p. 179.
[15] Jo Stockham, 2020.
[16] Sarah Pink, et al. 2017, p. 23.
[17] Magda Stawarska-Beavan, TRANSMEDIAL pers. comm., 15 January 2020.
[18] Christine Eyene, 'Sounds Like Her: Gender Sound Art & Sonic Cultures'. (1st ed.). English: Beam Editions, 2019.
[19] Magda Stawarska-Beavan, 2020.
[20] Hanna K. Schraffenberger & Edwin van der Heide, 'Sonically Tangible Objects' in Alison Clifford, Miguel Carvalhais & Mario Verdicchio (eds.), *xCoAx 2015: Proceedings of the Third Conference on Computation, Communication, Aesthetics and X*, 2015, pp. 233-248.

Adam Romaniuk

My Dialogue with a Digital 'Shadow'

In the second part of the Twentieth Century we observed a rapid development of new commercial printing techniques including digital printmaking; more closely linked with information technology and data processing than with printmaking in its traditional form. Direct data processing without the use of a matrix (in the physical sense) has become for many experts, specialising not only in the field of printing something that has exceeded their imagination.

At this time, the printing industry decided that digital printmaking is indeed one of the printing technologies; along with offset, contemporary gravure printing, flexography and screen printing. In fact, digital printing involves too many technological possibilities to put it into a single category. It has therefore been deemed to be a separate technology and due to its properties and the possibilities it offers, digital printing has became a printing method in its own right. Its availability, in turn, created a new cultural perspective for each computer user.

These new technologies revealed the broad spectrum of their applications when being used outside their standard purposes intended by their designers and manufacturers. Thus, printmakers following the development of these new techniques, almost immediately commenced to investigate their potential for broadening the spectrum of print medium. The emergence of easy access to a computer, printers and wide format printing plotters aroused interest in these devices not only among young people, but also amidst famous leading artists in Poland, whose artistic output was well-established, including Jan Pamuła, Krzysztof Kiwerski, Tadeusz Dominik, Zdzisław Beksiński, Wojciech Miler, Aleksander Olszewski, Barbara Bałdyga, Tomasz Struk, Mirosław Pawłowski, Waldemar Węgrzyn or Darek Gajewski.

Jan Pamuła, the professor of the Academy of Fine Arts in Kraków, painter, printmaker, designer and creator of pioneering computer graphics, said in the interview conducted at the beginning of his artistic activity in the field of computer graphics and digital printing: 'It was already in the seventies, while creating systems and geometrical constructions, that I was considering the use of a computer. At the end of the sixties, the computer art was known to and created by specialists, science side- by-side with art. It was shown in wide-ranging exhibitions, so I myself, moving from romantic-metaphorical paintings to the geometric ones, and to systemic activities, immediately started to think about a computer. It was a natural craving to use it and I managed to do that in 1980 in Paris, in the Centre Pompidou. There, in Atelier des Recherches Techniques Avancees, I had an opportunity to avail myself of the aid of an IT specialist, a computer designer who created the appropriate program which made it possible for me to produce the first series of computer drawings on a digital printer'. The first works of Professor Jan Pamuła still resonates today, they haven't lost any of their printmaking charm or amazing simplicity. More names of prominent artists could be listed here, still it would not even come close to showing the size of the group and the scale of interest in this printing technique.

Printmakers who create their works by using a computer as a tool usually recognise the implications it may have for some milieus and groups of artists. We are perfectly aware that not all artists totally approve of digital 'formations' as the elements of printmaking. But the fact that computer creations seems to be easy does not mean that the role of a creator has become inessential. Multiplicity and availability of tools, various filters and graphic programs should not be seen as a promise that a random user would be able to create anything original. Awareness, intuition and artistic vision are required to the same extent as in the case of other more traditional tools e.g. burins, chisels, pencils or brushes. Is it actually the intention of an artist for his works to be read as the result of applying a specific filter? Or for a computer software used to create the work to be recognised? An artist developing the work

of art creates it in the mind and attempts to make it real in the best possible form. A computer with a suitable software serves only as a setting–a scene for the creation with the use of tools, insofar as it is necessary, without exaggerated erudition or fancy fireworks.

In a time of new technologies, printmaking has tackled this challenge and has been forced to define itself anew. The first stage of this process involved understanding the software, i.e. what was offered to us by a company (software producer), and these were used in the first attempts to create an image. We can distinguish two groups of printmakers who work with digital technologies. The first one uses the possibility to digitally process an image to its maximum, this process includes for example image histogram, segmentation, filtering, binary images, geometrical transformation, colour space transformations, coding, compressions and applying mathematical morphology. The other group is moving towards multimedia activities, since DIP (Digital Image Processing) is a part of DSP (Digital Signal Processing), which also includes: audio signal and speech processing. The second group experiments with new digital tools, and adjusts it to their own visions. We can say today there are quite a number of printmakers, with a very evident studio background, who use almost none of the pre-defined tools. Most of these printmakers claim that the digital tools leave a 'mark' that is far too mechanical, a mark being mathematically generated; a mark void of the unstated artists' feelings which are necessary in the creation of art. The artist constructs their own 'mark' aided by new technology but based on their personal experiences. They underline how 'phenomenal' the digital tools are with their unlimited possibilities exceeding those they already know and eagerly use based on their prior traditional studio practice. A digital image has many practical features, for example, it is possible to restore any of a previous phases of creation preceding the current one, at any stage of a piece's development, which would be impossible when creating a traditional print. Of course, this has its pros and cons. An artist has to make decisions at each stage of creation. In a traditional printmaking studio, the role of the risk was much more important. Each decision made was final and irreversible. Currently, within the digital frame, this question remains open, which means one can return to previous 'steps' and choose to take different actions. A very important point must nevertheless, be underlined: the question of an identity of printmaking considered through the matrix since the substance of matrix has changed. It used to be a physical object (a zinc, gypsum or wooden plate, a lithographic stone or linoleum), however here we deal with a digital matrix, that is information saved as a code. The question that seemed to have been answered twenty years ago, arose again: what is an image of a print matrix and its specificity? It has evidently been accepted that the matrix represents the 'unpresentable', that is, for us, the viewers, it does exist, although in fact it is 'non-existent' in the physical form. In digital printmaking the matrix is finalised when printed as opposed to traditional printmaking where print was the result of work performed, with a physical matrix present in the studio; currently, a data file or a code within computer serves as a matrix.

There is also one more (important) difference, a crucial one–in the case of a traditional matrix, a number of corrections are made during the printing, some accidental elements are included and each print is independent. When it comes to digital printing, after setting the mode and profile, identical copied prints will be produced, from the very first to the last one. This is exactly one of these elements which should be brought to artists' attention upon creating an image, since if one wants to, for instance, 'cure' a fragment of an image. The unpredictable outcome which frequently happens without the awareness of the artist during a traditional etching process, with a new technology being used, must be properly initiated while envisioning its final result. Starting the adventure with digital printmaking without any required studio experience means that there is no choice but to use computer tools programmed by an IT specialist and not by an artist, tools which are offered by a software producer–relying on marks which are totally anonymous. This can be identified only by those printmakers who have previous experience in working with traditional matrices. An average viewer will fail to spot the difference of quality between the marks on the work. In this context, an artist once again becomes the specialist or 'outsider'.

This problem is common today. It does not only concern printmaking, but art in general, since all arts have to face new technology and embrace the fact that it takes over our life and absorbs us. All spheres of our lives are digitalised and the possibility to manipulate this reality is enormous. The question should be asked then: whose approval will be important? Artists with the awareness that we discussed here, or alternatively the evaluation of those who create digital art merely fascinated with possibilities to quickly process an image in order to gain audience's approval? Who is to decide and what would be the implications? It is important that artists who deal with digital printmaking creating multimedia messages keep in mind creators such as Jerzy Panek, Marian Malina, Stanisław Gawron, Mieczysław Wejman, Andrzej Pietsch, Victor Pasmore, Joan Hernández Pijuan, Antonio Saura, Albin Brunovsky, Maurice Pasternak, Leonardo Lasansky and many others to whom we owe our printmaking sensitivity and awareness.

Digital printmaking art has reached a pinnacle; ideal printing qualities can be achieved using all possible types of a surface, however still many artists consider digital to be a part of commercial not fine art printing. Exceptional quality of printing, ability to print colours which could not be achieved previously has mitigated our need to explore and experiment. The specific character of a digital image and the physics of printing itself tend to be forgotten. Manufacturers of the majority of plotters do not reveal the mechanisms inside them, neither do they inform us about the mechanism of image processing performed by a device which controls the print heads. An error in a file caused by the plotter's 'technical issues' can reveal that specific nature of a digital images –this is how the printing plotter software interpreted an image on its own when an error occurred, and what could be seen then? The accidental digital marks that appeared encourage the artists to think about the ways of familiarising them. However, it can be done only by a number of acute minds who can afford to conduct permanent experiments.

Coming back to the core problem of the discussion–we ask ourselves today if it is possible to provide a definition of printmaking? Professor Dorota Folga-Januszewska suggests that: 'printmaking today is no longer a discipline of the arts, but a way of thinking, an attitude, technologically unlimited. Graphic art, which was firstly determined by the act of copying, in its new contemporary meaning lost [its] raison d'etre, since copying is not at all a crucial criterion'. The fact that printmaking today is characterised with a strategic way of visual thinking, both from the technological and formal point of view, should not be undermined; since it all comes from matrices and technology. Technology made us think with the use of subsequent overlapping layers, and as such it is intertwined with the point at which the world is right now. When creating an image, in the case of traditional printmaking, we have to separate it into different matrices in our head or in case of digital printmaking into layers created in cyberspace. It is all to do with layers. For many years artists have been creating three-dimensional images using a variety of methods, often in a very simple way; by projecting onto clouds, water screens, steam, smoke or fabric which–despite being transparent–hold an image. Today, the marvellous world of the virtual image is accessible to everyone, we can enter into the space of an image, between its layers, stay inside it, create it, save it (on a hard drive) and get back to reality by leaving this illusion at any time. Moreover, currently a new interactive technology HoloLens is available, it is called a mixed reality enabling the creation of a virtual image in the real world. If you put on a HoloLens 2 headset, you can find out which direction this incredible project is moving towards and where it creates a place for a printmaker.

Coming back to the question already asked: what does printmaking mean today? Undoubtedly, it is a way of thinking, a manner of constructing an image. Would it be appropriate to replace the term 'print' with just the word 'image'? It is beyond doubt that we are dealing with print images everywhere–starting from a cup to the internet, television, movies, publishing houses, leaflets, projecting in urban space, computer games, digital interactive tools, and virtual publications.

Paul Uhlmann

Examining the Collision of the Technical Image and Embodied Perception

This essay will be a meditation on select artworks of the unique collaboration between artists Sarah Robinson and Monika Lukowska. The essay will aim to develop a pathway to reveal the intentions behind the embodied artworks of these international artists who focus their questioning on key sites within their immediate landscape of Western Australia. Both artists emerge from a European heritage steeped in traditions of Printmaking–Robinson was trained in London at Royal College of Art and Lukowska was trained in Poland at the E. Geppert Academy of Fine Arts and Design, and subsequently at the San Francisco Art Institute, USA. However, both artists share a fascination in new media and folded into their collective obsessions are questions involving testing the truth, scope and validity of new media through their respective subjects. In an attempt to understand their concerns this catalogue essay will also examine their work which relies on digital images and complex contemporary scanning techniques through the conceptual lens of phenomenologist Villém Flusser. Flusser's account of photography as a 'technical image' will be examined against the artists embodied methodology so that a conceptual collision occurs, and potential insights revolving around perception arise.

Flusser and the Technical Image

In his odd, insightful book, Villém Flusser compresses millenia of human culture into two separate turning points–the first around the middle of the second millennium BC with the invention of linear writing and the second, the one we are currently experiencing, with the 'invention of technical images'[1] The invention of technical images threatens literacy as we know it–photography fundamentally changes the manner in which we communicate and store information. For Flusser, images were once a source of magic however since the advent of photography we are experiencing a process of 'progressive disenchantment'[2] unfolding within the way we encounter the world; as these images, in the manner in which they are made, are more removed from the world; the technical image is produced by apparatuses indirectly informed by scientific texts. 'This gives them, historically and ontologically, a position that is different from that of traditional images'.[3] Photography is programmed through scientific theories and these theories not only give form to the apparatus of the camera but programme the type of images produced which are many times removed from the concrete world. These images are not 'reality', not the 'world out there' but rather a sequence of theoretical images on flat surfaces which can be read, but need decoding. The subject taking the photograph within this schema runs the risk of making predictable images and being a mere 'functionary' with the real power belonging to the makers of the apparatus and the controllers of the software. In a society which is swamped with images of this kind there is a devaluing of information at work which threatens to create a predictable society of sameness. This book is a provocation to artists to become active agents who must find ways to work against this mechanistic process in order to recapture magic within the image directly informed by the world. However, it is impossible to return to a time before technical images so the artist must work to disrupt technical images in order to see anew.

This background is useful for the purpose of this essay as it highlights the inherent problem of working with digital software and contemporary scanning devices; it underscores the conceptual opposition required within the practices of Robinson and Lukowska in their complex use of digital media. However, their approach to embodied practice, in many ways, collides with the technical image to produce new and unusual works.

The site: the challenge to truly 'see'

In 2019 Robinson and Lukowska were part of a project which aimed, through their practices, to understand a local wetland situated just outside of Perth, Lake Walyungup.[4] Occasional signs around the site ("Unexploded Ammunition Risk Area") indicated that they must tread the ground with great care as this had been a testing ground during WWII and there are still unexploded bombs under the earth.[5] The site is pockmarked with craters and this became a source of great fascination for Robinson. While Lukowska became interested in how wetlands were seen by colonial settlers as 'waste spaces'.[6] Upon first encountering the threshold shores of this moonlike landscape they both concealed private fears that this site was so foreign as to be difficult to really 'see'. Not being able to truly 'see' the landscape is something that haunts the first impressions of many European encounters, indeed, according to writer Rod Giblett, many early colonial explorers did not mark wetlands on their maps as 'they were not worthy of consideration let alone conservation'[7] and this inability to truly see the value of wetlands continues to this day amongst developers.[8]

Sarah Robinson: Testing New Forms of Technical Perception

As part of her process, Robinson employed sophisticated technical equipment including drones and state-of-the-art LiDAR similarly used in the mining industry.[9] The LiDAR laser beams were able to scan the surfaces of the topology to create detailed images. To map a location was a first step within any colonial intervention towards ownership of place; Robinson was deeply aware of this history which is continuous and on-going however she aimed to 'tread lightly'. In the early stages she also sent a drone high into the heavens to take aerial photographs; the resulting images give a sense that the human presence is minute and insignificant. The images which drew Robinson were of the kind that a mining firm would reject–she was drawn to images where the LiDAR had scanned both the *clouds* and earth. Later she had the problem of trying to make sense of the excess of captured terrestrial and skyward information within these 'technical images'. To counter this, she developed a process linked to her early career in Intaglio workshops. At first, she created a grid from a manipulated LiDAR scan, and then printed the images through her small home digital printer. These prints were later suspended upside down and a thin film of carbon dust was applied to the surface of the paper by smoking the paper using wax tapers. This is an alchemical process usually applied to intaglio etching plates which are traditionally smoked so that the wax ground melts together with the carbon to produce a strong surface for drawing to facilitate ease of rendering the lines to be etched. Robinson's process involved working to reveal and conceal through intuition. Once the prints were smoked, they were fed back through her printer so that the image was printed once more over the initial image. Just as the land was a strata-layered surface so too were her prints. The resulting work titled *It RE-mains to be Seen* (2020),[10] visually recalls a human retina. The concept of the land looking back at the viewer whilst humanity maps its surface for 'use value' is striking.

The site, as mentioned, was a former testing ground for missile operations. To mark this, Robinson also made small 3D bombs made from the casting of a toy-bomb originally sourced from Laos, the toy-bomb itself a memento made from unexploded bomb canisters from the Vietnam war. Robinson's research enabled access to classified files, held at The State Records Office of Western Australia, which she was not allowed to publicly reveal; she worked around this by coding the information of the files. Her work is deftly aware of the political manner in which a site is contested with layered histories. She reveals hidden information about place by concealing that information through layers of code and carbon dust thus challenging initial first impressions and disrupting inherent flaws of the technical image.

Monika Lukowska: Process and Embodied Practice

On her research trips to the site, Lukowska took many images with her digital camera and walked and took notes. Her process involves walking as a form of active meditation. The unusual nature of the landscape for Lukowska meant that she had to find other phenomenological means to experience the place–'the place could not only be understood through sight, it had to be touched, walked and felt'.[11] An unusual feature present were the strange mound-like forms that emerged from the wetlands–the stromatolites. Although somewhat unremarkable to look at stromatolites are remarkable indeed, for they consist of microbialites a name given to structures built mainly by cyanobacteria, which are thought to be the earliest living forms of existence on earth[12]–these living fossils are both biological and geological. These forms are significant for all life on earth

as scientists believe that they were common 3.5 billion years ago and that their photosynthesising activity slowly released oxygen to the atmosphere which enabled life to evolve.[13] Therefore, to study these forms through heightened perception is to look back through a portal of deep time. Indeed, for local Noongar people these forms are eggs of serpents–which are not to be disturbed.[14]

In working towards her interpretations of place she felt that the works had to be produced at scale. She felt that the singular images of the digital prints did not give enough sense of scale. As technical images they were too limiting and so she followed a simple process of layering the images on Photoshop 'hundreds of times'. However, she also had taken drypoint plates to the location and made images by scratching the plates 'randomly without following a precise plan' over the surface of rocks and ground. These images were printed, and the scratches were layered into the Photoshop images thus combining a layer of her body interacting with and meeting the land. The phenomenological works produced held a kind of unearthly, ghostly appearance–works that were the result of many different views and sightlines from her walking. She favoured a panoramic scene and so for two key works[15] she opted for rolls of Japanese paper; the paper has a skin-like translucent quality and it holds the greys and blacks as if in suspense. These prints resemble drawings made with very fine pencils; distance is incorporated using layers and a subtle tonal gradation is achieved which is meditative and sublime. The sublime in art intersects with Eastern and Western ways of knowing the world through rendering the landscape through the body but often omitting the representation of a human subject. The key challenge presented to Lukowska was to override the mechanical tendency within the digital media in order to reinscribe a sense of 'magic', as Flusser would describe it, that she had experienced through walking and being affected by the site. By developing an approach which merges traditional printmaking practice through layering she was able to overcome initial cultural barriers to introduce new ways of seeing place.

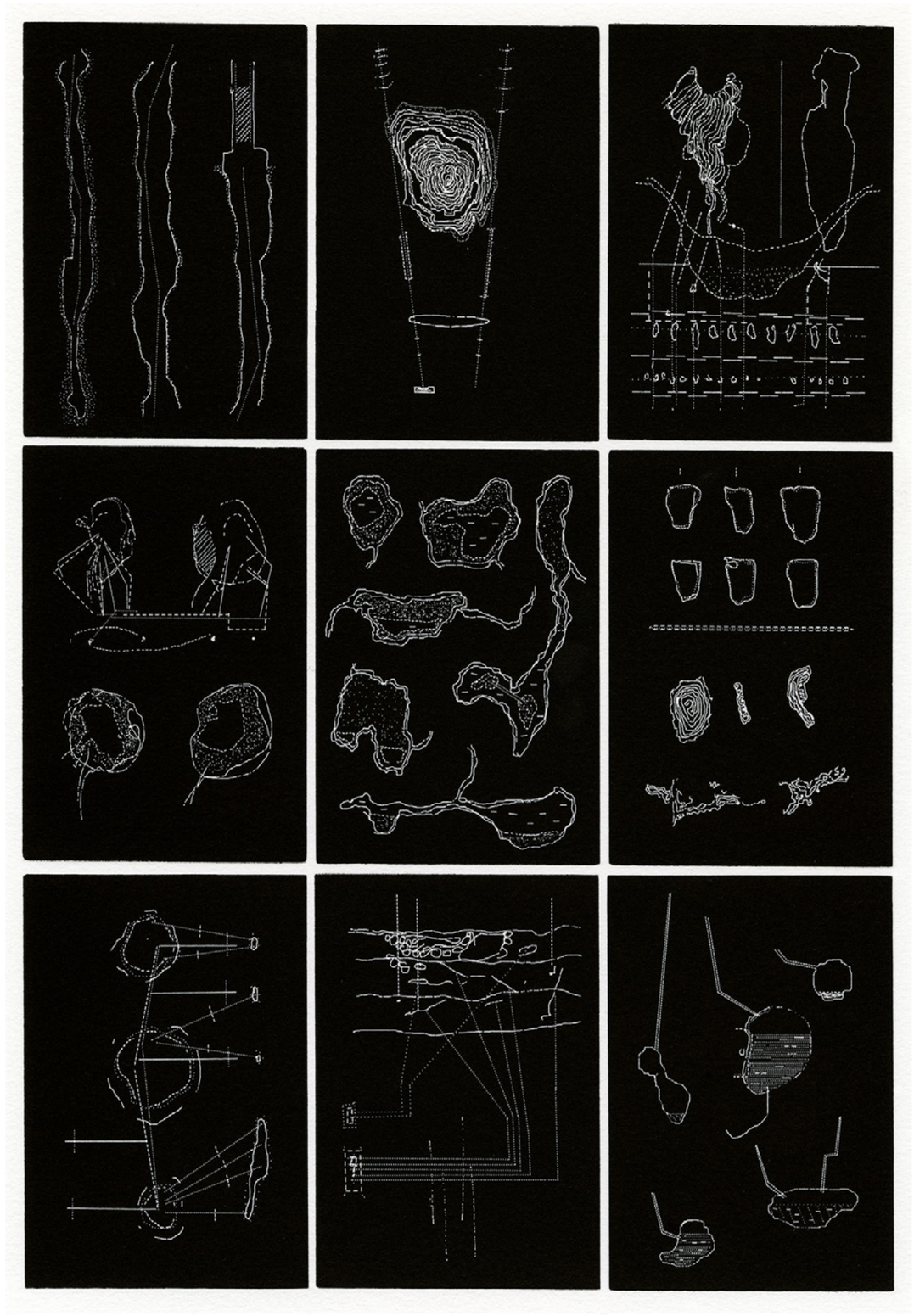
[1] Vilém Flusser. *Towards a Philosophy of Photography*. Reaktion, London, 2000, p. 7.
[2] Ibid., p.13.
[3] Ibid., p.14.
[4] The resulting exhibition *Talking Place: Emerging Connections* with artists Monika Lukowska, Annette Nykiel, Sarah Robinson and Jane Whelan was exhibited in Gallery 25, Edith Cowan University 11th August-23rd September 2020.
[5] Interview with Sarah Robinson with the author 9am-11am 1/12/20.
[6] Interview with Monika Lukowska with the author 9am-11am 1/12/20.
[7] Rod Giblett, "Reimagining Perth's Lost Wetlands". *Western Australian Museum*. Access 16/12/2020. https://museum.wa.gov.au/explore/wetlands/city-development/postmodern-wetlands
[8] For more detailed information see: Danielle Brady, Rodney James Giblett, Christopher Kueh, Philip Jennings, and Jeffrey Murray. 2020. *Australian Wetland Cultures: Swamps and the Environmental Crisis*. Edited by John Charles Ryan and Li Chen. Environment and Society. Lanham, Maryland: Lexington Books.
[9] Robinson acknowledges artist Tracy Hill, (UK) and C.R. Kennedy-Company Pty. Ltd Laser Scanning Consultant, Joel Woodage for their support in providing and using LiDAR technology, 2020.
[10] Sarah Robinson, *It RE-mains to be Seen*, (2020), lidar scan, individual layers of digital print, traditionally smoked with etching wax tapers, cold pressed Arches, 121 x 164.5 cm.
[11] Interview with Monika Lukowska with the author 9am-11am 1/12/20.
[12] Government of Western Australia. 'Stromatolites and other early life' *Department of Mines, Industry Regulation and Safety*. Access 16/12/2020. http://www.dmp.wa.gov.au/Stromatolites-and-other-evidence-1666.aspx
[13] Bush Heritage Australia. "Stromatolites". *Bush Heritage Australia*. Access 16/12/20. https://www.bushheritage.org.au/species/stromatolites?gclid=EAIaIQobChMI6YzaypjP7QIVRDUrCh13wgPzEAAYASAAEgLdvfD_BwE
[14] Interview with Monika Lukowska with the author 9am-11am 1/12/20.
[15] Monika Lukowska, *Encounter I and Encounter II*, 2018.

EXHIBITING ARTISTS

Paul Catanese

As a hybrid media artist, my work operates at the intersection of performance, live cinema, experimental sound practices, installation, print media, science, and technology. Creating images is an important aspect of my practice. Especially when pushing into uncomfortable or new terrain outside of my expertise, image making plays the role of keeping me in motion, helping me to understand and shape my ideas. Print media is one of the approaches I use to realise my images, and this often intersects with technological tools and methods that I am shaping within the studio. In my current practice, I'm working to connect the science of sleep, consciousness, vocal performance, and virtual reality. Working with research scientists at the University of Michigan, I've been learning about the history of sleep science, as well as the evolution of diagnostic instruments and research methods such as electroencephalography (EEG) and polysomnography (PSG). I became the subject of a sleep study designed for investigating this artwork, and even purchased an analog EEG machine that I have been refurbishing in an effort to better familiarize myself with the methods used to observe, measure, and interpret physical and bioelectrical signals throughout the body and brain.

1. *Stones & Drones,* (2014). Studio experimentation. Image courtesy of the artist.
2. (next page) *Aquifers (CNT02B),* (2008). Nine-Block Relief print, 38 × 55.8 cm. Image courtesy of the artist.



Deborah Cornell

I'm interested in the interactions of human culture and environment and the complexity of interrelated natural systems. Currently I'm working with digitally supported forms of the print, extending their motifs into video for its time-based elements as well as elements of light-based colour and movement–and collaborating on works with a sound artist to concurrently extend and augment the works. I use digital means to invoke a transformative visual language, whereby a single idea can be realised in cross-media, often at immersive scale. The various forms I use are in fluid communication with one another. Both print and video give a sense of transmutation–of nuanced images cast from a remote source. This works the same for sound as well. The tactile and aesthetic conversation is present in colour, time and movement, iteration, remoteness, and interrelationship. Digital media support the complex layered content of the works. Technology is the lens through which we now view the world. Digital media can reflect complex levels of experience and environment. The coded language of digital information allows the translation of visual images into different media platforms, which also enables varied contexts and settings. (Some of my works have appeared as print/video, 3D VR, or have been used in choreography, for example). For me colour has been particularly transformed through this crossover of media. Colour is in dialogue with paper/pigment and light waves simultaneously–each mode of colour enhances the other, to create a powerful imagistic colour space that is not of either element but of both.

One challenge is the redefinition of the fine art multiple, now that replication of everything is ubiquitous. In the sea of printed images, the fine art 'print' needs a clear distinction from the copy, the giclée, the replica or the reproduction, and this re-education is an enormous challenge. There needs to be a shift to a new notion of what original means and how we value it. This is especially true of original digital printmaking.

1,2,3. *Eclipse Phase,* (2018). Digital mural on Angelica, with single channel video and sound. Collaboration with composer Richard Cornell. 259 x 396 cm. Video stills. Images courtesy of the artist.

Susanne Klein

I am examining how photographic and photomechanical processes invented in the Nineteenth Century can be transformed into Twenty-first Century technologies, for both artists and industry. Woodburytype is one example. Patented in 1864, Woodburytype was the first commercially successful photomechanical mass reproduction of photographic images but became obsolete when photolithography allowed the reproduction of text and images at the same time. A simplification of the Woodbury process and the use of modern photopolymer flexo plates allow me to resurrect the method not only in black and white but also in colour. Colour is another of my research interests; I am especially interested in 'Colour without Colour', that is the colour recording and reproduction without dyestuff by exploiting structural colour as in butterfly wings (Lippmann photography and RGB printing), the recording of colour as black and white intensities and the reproduction by non-traditional colour combination via photolithography or photogravure. I am currently expanding my printing practice by exploring the interaction between the object, materiality, and maker.

1. *Fragment 3* (2020). Woodburytype printed on Plike Black by G.F. Smith. The ink is gelatine with Spectraval white, made by Merck. Prints are either 12.5 x 9.7 cm or 7 x 9.7 cm. Image courtesy of the artist.
2. *Fragment 4* (2020). Woodburytype printed on Plike Black by G.F. Smith. The ink is gelatine with Spectraval white, made by Merck. Prints are either 12.5 x 9.7 cm or 7 x 9.7 cm. Image courtesy of the artist.

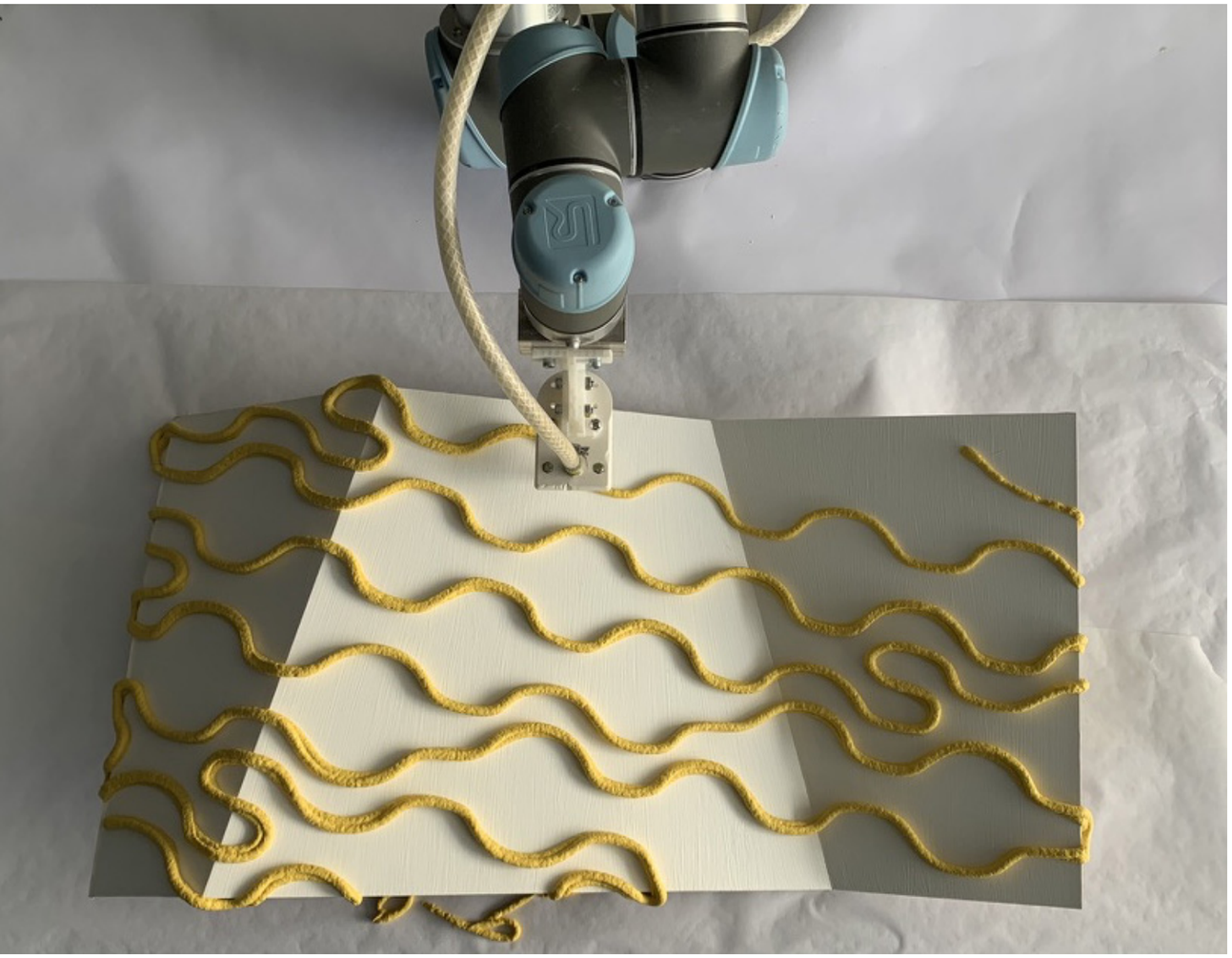
Ingrid Ledent

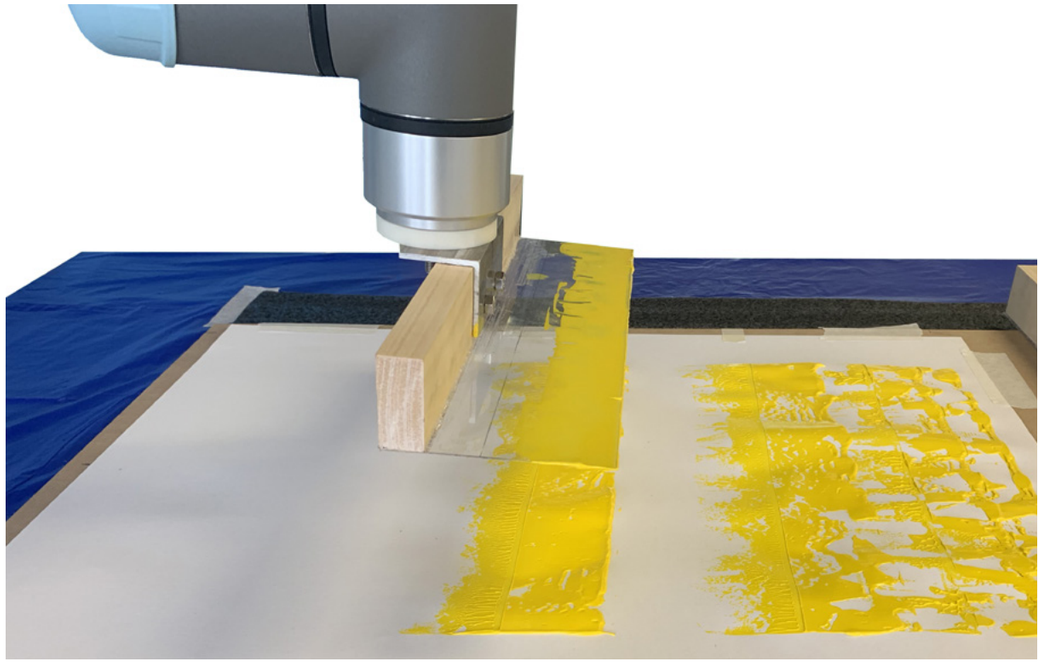
Process influences the content and the content influences the process. Content = Process = Content = Process = Content = Process. My work evolves on my press by printing layers on top of each other, in a fluent working process. Time, as it is also in a process, is the basic theme in my work. I am strongly influenced by Henri Bergson's idea of time, especially his philosophical thinking about 'durée', the continuous living of a memory which proceeds the past into the present. Emerging out of the manner in which I experience time, I highlight what cannot be interpreted as concrete, within measurable time, for the soul is not able to comprehend the experience as a phenomenon within the limits of time. This is a foundation for my images, a non-transparent, archaic tissue of frequently recurring forms. Also important in the content are processes of manipulation, the phenomena of the matrix and the controlled coincidence or serendipity.

I augment the use of traditional printing techniques (lithography) combining them with computer print, video and audio. Conceptually, the process of printmaking is quite significant and has become a part of the content of my work. I am mainly fascinated by one of the characteristic attributes of printing techniques, reproducibility. I use reproducibility not to make editions, but as a generating element. During the printing process, the 'repetitions' get layered on one another creating new visual forms.

1. *Mindscape IV,* (2020). Lithography and digital print on Zerkall paper, 65 x 160 cm. Photographer: Ivan Willemyns. Image courtesy of the artist.

Santiago Pérez





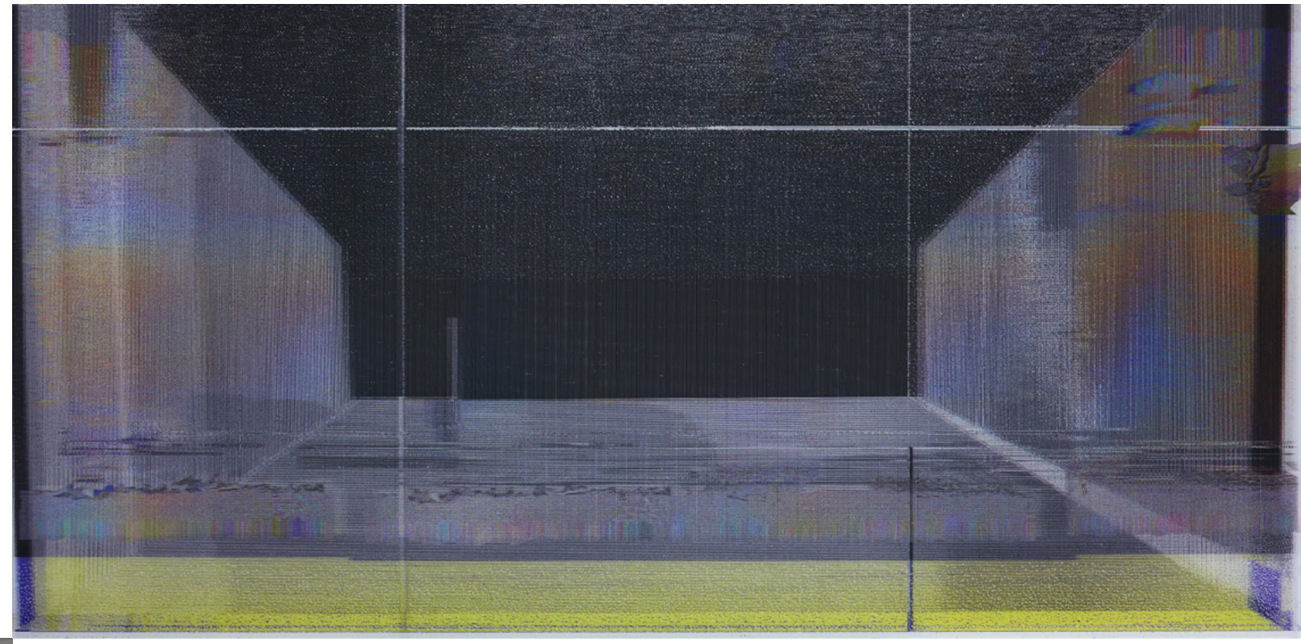
This emerging body of work utilising Robotic techniques for painting and printmaking, explores the "Space Between" within a conceptual and technical framework or context. Paper-Pulp Robotic printing on three-dimensional folded substrates, and a variety of tools and scripted workflows for deposition and manipulation of pigment on 2D surfaces are explored. The conceptual subtext for these explorations references the line as an act of distancing, in an era of great social change and isolation.

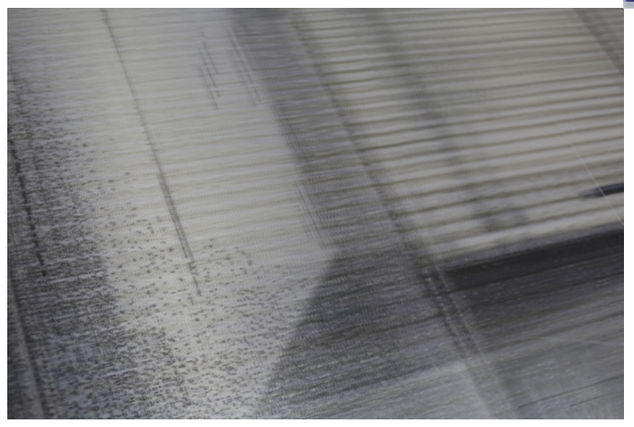
1. 3D *RoboPrint Fold Series 01,* (2021). Robotically extruded pulp and acrylic on MDF board, 37.0 x 49 cm. Image courtesy of the artist.
2. *Social Distance Series 01A,* (2021). Acrylic on paper, robotic blade-painting process test, 42.2 x 59.5 cm. Image courtesy of the artist.
3,4. *Social Distance Series 01A,* (2021). Acrylic on paper, robotic blade-painting, 42.2 x 59.5 cm. Images courtesy of the artist.

Marta Pogorzelec

My current artistic activities are driven by psychological motivations. At some point in time, a need appeared inside me to start looking for values which liberate us from chaos of visual sensations, the cacophony of everyday life, a need to run away from the world of phenomena to something timeless, absolute. In my attempt to analyse my own artistic work, I used the hypothesis of Wilhelm Worringer, which assumes that there are some mental pre-conditions causing 'some artists, in certain circumstances, not to reproduce reality, but create new geometrical elements'.[1] Worringer shared the view with Carl Gustav Jung who claimed that a lot of types of behaviours of contemporary humans are rooted in certain patterns that were formed a long time ago. 'These patterns, which constitute the deepest layers of our psyche, are passed on from generation to generation and influence our acts in situations of homeostatic imbalance in an individual or collective life'.[2] The outside world which is in political, economic, climatic and spiritual chaos makes me feel like moving towards the metaphysical stability achieved by rejecting the reality and devoting oneself to creating abstract compositions of geometrical elements (for instance, the construction of the space within the *Refugium* series was, to put it metaphorically, sinking into the oneiric world, during which a vision of absolute, passage, transgression was emerging). Apart from a personal kind of escapism, which I identify in my artistic work, my intention is to offer the recipient a possibility to interact with a piece that magnetises, absorbs, and provokes, to ignite experiences, thoughts and knowledge which are deeply hidden. As well as the emotions which in every day life, we conceal rather than face outside judgement from the world around us.

[1] Sztabiński, G. *Dlaczego geometria? Problemy współczesnej sztuki geometrycznej. (Why geometry? Problems of contemporary geometric art).* Wydawnictwo Uniwersytetu Łódzkiego. Łódź 2004, p. 9.
[2] Ibid., p. 10.





1. (image on the left), *Refugium IV,* (2017), detail. Image courtesy of the artist.
2. *Refugium V,* (2017). Lenticular print, 58.5 x 120 cm. Photographer Piotr Pajak. Image courtesy of the artist.

Magda Stawarska-Beavan

I am a multi-disciplinary artist whose practice is primarily concerned with the evocative and immersive qualities of sound. I am interested in how a soundscape orients us and subconsciously embeds itself in our memories of place, enabling us to construct personal recollections and offering the possibility of conveying narrative to listeners who have never experienced a location. I work predominantly with sound, moving image and print, often connecting traditional printmaking processes with digital audio. My projects reveal intimate glimpses of the singular urban soundscapes of places while interrogating their cultural complexities, exploring the blurred boundaries between public and private and probing the notion of physical and political borders as points of connection and signifiers of separation. Through collaborations with other artists and writers and their 'retelling' of my audio collages, the work explores the process of 'inner listening'. I examine how one method of creative technological practice informs and translates to others, for example how working with printmaking can influence the way artists approach sound or music and vice versa, how working with sound, deep listening, can change the way we create and read the visual image. Elements of printmaking techniques such as layering, transparency, and viscosity can readily be recognised in the creation of sound compositions but equally the rhythm, passage of time and performance can also be read in examples of printmaking where moving image qualities flow back and feed into the works on paper. In particular, I am interested in how the visualisation of sound can affect image-making and how the ephemeral qualities of sound and memories translate into printmaking forms.

1. Resonating Silence II, (2019), detail. Video Installation; split screen projection onto screenprinted book, place on the table. Sound on the headphones.

Jo Stockham

I have always worked with a mix of media, a method of bricolage, collage and juxtaposition, mainly through installations but also in publications and prints. My current practice is in a state of flux much like the wider world. For the last ten years I have run the Print Program at the RCA and that has had a huge impact on my work. My creative focus has morphed into a process of writing research papers, teaching, managing, supervising others research and curating. My previous work was often site-specific and grew from residencies and commissions over time, now I have had to rethink what my process is; now the site may be an image or a request to respond to a theme that needs a digitised response.

Researching scanning as a tool and a way of seeing has preoccupied me for ten years. Recently my first solo show for eighteen years gave me the chance to properly test out 3D printing for the first time and bridge the worlds of print and sculpture within which I have often taught. Of course these boundaries are artificial and what really fascinates me is the relationship between realities and representations and different dimensions of time and space. In what way are all forms of representation a translation and a fiction? How can people view and represent the world so differently? How is this further complicated by Photoshop, VR and the shaping of algorithms? Where is the temporality of the lived body located? How is it shifted by the constant distraction of phones and screens? How do we stay in touch and engage with our everyday and each other, in our present situated space, the one in which we co-exist?

1. *BotSelf controlled from the back,* (2018). Detail: 3D printed figure, shelf, and motor. Photography, Jonathan Bassett, courtesy of the artist and Matt's Gallery, London. Copyright: Jo Stockham.
2. *On Not Knowing, Supported by Flying Witches* (2018). Powder 3D printed figure, digital print, metal rods, 180 x 70 x 32 cm. Edition of 3 with 1/ AP. Photography and Copyright: Jo Stockham.

BIOGRAPHIES

Rebecca Beardmore grew up on the east coast of Canada. Born to Australian parents, she moved to Sydney for her BVA and later returned briefly to Western Canada to complete her MFA in the department of Art and Design at the University of Alberta, a Centre for Excellence in Printmaking. She has been living in Sydney for the past twenty years and is a lecturer at Sydney College of the Arts, The University of Sydney. Through an innovative and experimental approach to materials and techniques, Beardmore seeks to expand the rhetoric around image perception and disrupt the image as an object of representation evoking tensions between reading, seeing and perception. An accomplished print artist, Beardmore is at the forefront of practice and innovation in her field. The artist is a previous winner, has been an invited judge in Australia's most prestigious print prize, The Fremantle Print Award. She exhibits internationally and is represented by Artereal Gallery, Sydney.

Paul Catanese is a hybrid media artist who blurs the lines between the fine, performing, and media arts. Creating installations, performances, videos, sound installations, projections, net.art, and print media, Catanese has exhibited at numerous institutions including the Whitney Museum of American Art, Chicago Cultural Center, New Museum of Contemporary Art, SFMOMA Artists Gallery, La Villette, China Academy of Art, Frankston Art Center, Ann Arbor Film Festival, and the International Symposium on Electronic Art. Collections include the Robert and Elaine Stein Galleries at Wright State University, the Center for Art + Environment Archives at the Nevada Museum of Art, and the Whitney Museum. Catanese is the author of Director's Third Dimension (2001), a book on real-time three-dimensional programming techniques for interactive multimedia, and the co-author of Post-Digital Printmaking: CNC, Traditional, and Hybrid Techniques (2012), a book that examines the rapid evolution of traditional printmaking to incorporate computer controlled industrial tools such as laser cutters & CNC routers. He earned an MFA from the School of the Art Institute of Chicago in 2000. Currently, Catanese serves as Director of Graduate Studies and Professor of Art and Art History at Columbia College Chicago.

Deborah Cornell's work in installation, printmaking, digital media, VR, video, and collaborative multimedia is presented both nationally and internationally. Recent solo exhibitions and presentations include Krakow, Dubai, Istanbul, Melbourne, Buenos Aires, and presentations in New York, Los Angeles, Dallas, and San Francisco. She was awarded the Grand Prix D'Honneur by the Krakow Print Triennial for her contributions to the discipline, and the Grand Prix of the Triennial for her prizewinning multimedia work *Reflecting Place*. She has also a Grand Prize from the LA Center for Digital Art among others. She has received support from the Radcliffe Institute at Harvard and the Massachusetts Cultural Council, and artist residencies in Buenos Aires, Belgium, and Venice. Her work is in the collections of Boston Museum of Fine Arts, Hangzhau Art Academy and Yinchuan Art Museum China, Turku Art Museum Finland, Purdue University Museums, RISD Museum, Boston Public Library, RMIT Melbourne, Weisman Art Museum, IBM, and others. Cornell lectures widely and has curated international exhibitions in Havana, Abu Dhabi, Wroclaw, and Spain. She is Head of Printmaking at Boston University's School of Visual Arts. Previously she was Founding Director of the Experimental Etching.

Susanne Klein is an EPSRC Engineering and Physical Sciences Research Council Manufacturing fellow and an Associate Professor at the Centre for Fine Print Research. She is a physicist by training and has lived and worked in the UK for the last twenty four years. She studied physics in Germany and came as a Royal Society Research fellow to the University of Bristol where she worked on Nineteenth Century optics. In 1998 she joined Hewlett Packard Labs and specialised in liquid crystal display technology, new materials for 3D printing and optical cryptography. Her research interests now are Nineteenth Century photomechanical processes and their Twenty-first Century incarnations, from Woodburytype to photo lithography, from Lippmann photography to photogravure and everything in between and beyond. She is also exploring the interaction and feedback between maker and the materiality of the creation and how colour is generated in the brain.

Ingrid Ledent studied at the Royal Academy of Fine Arts Antwerp, the UMPRUM in Prague and the National Higher Institute Antwerp where she obtained her MFA in printmaking in 1981. Since 1984 she has been professor at the Royal Academy of Fine Arts Antwerp. Since In September 2017 she was made a distinguished professor at the Shanghai Academy of Fine Arts. She has given workshops and lectures at many international institutions. Most resently at the Katowice Academy of Fine Arts, 2017 (Poland), the Musashino Art University in Tokyo, 2016 (Japan), the Tianjin Academy of Fine Arts, 2016 (China), the University of Alberta in Edmonton, 2016 (Canada), the Indiana University in Bloomington, 2015 (USA), the E. Geppert Academy of Fine Arts in Wroclav, 2015 (Poland). Her work has been exhibited worldwide in over twenty solo exhibitions and many group exhibitions. She received twelve national and fourteen international awards in the field of printmaking including the Grand Prix at the 3rd International Triennial in Prague 2001, the 8th International Biennial of Drawing and Graphic Arts Györ 2005, the 5th International Lithographic Symposium 2006 in Tidaholm, the International Print Triennial Krakow 2006, the 5th Splitgraphic International Biennial 2011, the Imprint International Triennial in Warsaw 2014 and an award at the Guanlan International Print Biennial in 2007 and 2017. She is chairman of the International Adviser Board of IPOA (International Printmaking Organisation Alliance) based in Guanlan, China.

Monika Lukowska is an artist and academic from Poland currently based in Perth, WA. She obtained her MA from the E. Geppert Academy of Fine Arts and Design in Wroclaw, Poland in 2011, MFA in Printmaking from the San Francisco Art Institute, USA in 2014 and PhD from Curtin University, Perth in 2018. Lukowska's artworks have been exhibited internationally in China, Poland, Romania, Sweden, the United States, Germany, Spain, Japan, Turkey and Australia. She is a recipient of a Minister of Culture and National Heritage Award for the Best Graduate Diploma in Poland (2011), Fulbright Graduate Student Awards (2012), Murphy and Cadogan Contemporary Art Awards for the Best Graduate Students in the Bay Area (2013), and Curtin Strategic International Research Scholarship (2015). Lukowska has presented her research both nationally and internationally including AAANZ Conference (2017), Southern Graphic Council International (2014) and Impact 9 and 10 (2015, 2018). Lukowska participated in several residencies including Kala Art Institute, Berkley, USA, Fremantle Arts Centre, Fremantle, and at the Australian National University in Canberra. In her research, she examines the ways in which the materiality of place can inform art practice and explores how printmaking methods might be deployed to develop artworks that embody the experience of place. Through her practice she questions how the sense of place, atmosphere, and sensations can be embedded within the printed surface. She specialises mostly in lithography and digital print, investigating the potential of merging digital and traditional printmaking processes. She currently works as a sessional academic and research assistant at Curtin University.
www.monikalukowska.net

Ruth Pelzer-Montada, PhD, is an artist and lecturer in the School of Art at Edinburgh College of Art, The University of Edinburgh. She has exhibited her work locally in Scotland and internationally and curated exhibitions in Scotland and Ireland. Ruth has been external examiner for Printmaking at NCAD, Dublin; the Royal College of Art, London; The Académie Royale des Beaux-Arts, Brussels, Belgium, and taught in the printmaking departments of the University of the Arts (Uniarts) Helsinki, Finland; Oslo National Academy of the Arts (KHiO), Norway and the Royal Academy of Fine Arts, Antwerp, Belgium. She frequently contributes to national and international conferences and symposia and her essays on contemporary printmaking and art have appeared in both general art and specialist publications, such as *Art Journal, Print Quarterly, Art in Print* and *Printmaking Today* as well as conference proceedings, for example, 'Intersections and Counterpoints' published by Monash University Publishing, Melbourne. Her critical anthology *Perspectives on Contemporary Printmaking* was published in 2018. Ruth is a peer-reviewer for IMPACT Printmaking journal and on the conference committee of the 2021 International Mokuhanga Conference. For further information, see Ruth's research profile: https://www.eca.ed.ac.uk/profile/dr-ruth-pelzer-montada

Santiago Pérez is a Senior Lecturer at the School of Design, University of Western Australia, focused on the convergence of Architecture + Design with Experimental Materials, Digital Fabrication and Robotics in Education. Since joining the UWA School of Design in 2018, Pérez has initiated new cross-disciplinary initiatives, exploring "Post-Digital" Representation + Making, in a variety of media, incorporating both 2D artwork and 3D experimental fabrication, combining mark-making and robotic workflows. Recent exhibitions include *Making Drawings,* at the Big Omaha Technology Conference, 2017 and PostDigital Matters Exhibition and Lecture, both at UWA, 2019. Pérez has incorporated Experimental Material Practices in his teaching and research since 2004. These initiatives have incorporated processes of abstracting both natural patterns and computationally derived patterning, as integral components of built work. A primary outcome of this research has been the development and installation of multiple large-scale architectural "Design-Fab" and "Robo-Fab" projects in collaboration with Universities, Art Museums and Public Agencies in the United States. These include a visitor pavilion for the Bachman Wilson House by Frank Lloyd Wright, at the Crystal Bridges Museum of American Art in Arkansas; the RoboFAB Bike Trail Pavilion in Fayetteville, Arkansas, and large scale installations sponsored by the Buffalo Bayou Partnership and Lawndale Art Centre in Houston, Texas. Pérez holds a Master of Architecture with Distinction, from the Harvard Graduate School of Design, and a Bachelor of Architecture from the Boston Architectural College. He is the recipient of a post-graduate research fellowship, focused on studying the work of Japanese Architect Tadao Ando.

Marta Pogorzelec was born in Poland (Gliwice) in 1981. In 2008, she graduated with distinction from Professor Adam Romaniuk's Digital Techniques Studio at the Academy of Fine Arts in Katowice. Since 2010 she has been an assistant in the Digital Graphic Studio and in the Composition Studio at her home university. Curator of exhibitions at Galeria Koszarowa 19 and Galeria 302 at the Academy of Fine Arts in Katowice, For example: *Ingrid Ledent Passage Through Time,* 2017. In 2017 she received a PhD degree. Author of a research / scientific project–The Third Dimension–that explored the possibility of obtaining three-dimensional image in artistic graphics using modern technologies UV digital printing. Laureate of awards for artistic achievements, participant of many international exhibitions. The author of individual exhibitions at the Art Gallery Wozownia in Toruń and in the Arsenal Municipal Gallery in Poznań. Selected awards: 2018 10th Polish Print Triennial–Rector's Award of the Academy of Fine Arts in Wrocław, 2017 Artists' Award, 8th Splitgraphic International Graphic Art Biennial, Split, Croatia, 2016 Grand Prix, 5th International Biennale of Digital Print, Gdynia 2016, 2012 Award of the Rector of the Academy of Art in Szczecin, 8th Polish Print Triennial, Katowice 2012, 2010 Scholarship of the Marshal of the Silesian Voivodeship in the field of culture, 2009 President of the City of Krakow Award, International Print Triennial, Cracow 2009, 2009 Award nominee (Grand Prix), 7th Polish Print Triennial, Katowice 2009, 2009, Grand Prix, 6th Students' Print Biennial, Poznań 2009, Scholarship of the Minister of Culture and National Heritage for outstanding achievements in science 2008.

Adam Zbigniew Romaniuk b. 1949 in Gliwice. He graduated from the Graphics Department of the Academy of Fine Arts in Krakow in Katowice (1968–1973). He obtained his diploma in the Workshop Graphics Studio with prof. Andrzej Pietsch. Since 1974 he has been a lecturer at the Academy of Fine Arts in Katowice and additionally since 2008 at the University of Technology and Humanities in Radom. Currently, he is the head of the Digital Graphics Laboratory at the above-mentioned universities. In the years 1978-91 he ran the Typographic Design Studio and the Book Design Studio. From 1991 to 1997, he was the head of the Flat Printing / Lithography Studio. In 1997, he launched the first Digital Graphics Studio in Poland, at the Academy of Fine Arts in Katowice, with an artistic profile. For over twenty years he has been conducting research on the use of digital printing in the practice of artistic graphics. Prof. Adam Zbigniew Romaniuk organized ninety-two individual exhibitions and participated in over two-hundred and ninety exhibitions in Poland and abroad. At the Academy of Fine Arts in Katowice, he was the head of the department, vice-dean and vice-rector for student affairs and research. In the years 2006-2011 he was a member of the Board of the International Print Triennial in Krakow. In the years 2006-12 he was the curator of the Polish Print Triennial in Katowice. From 2008-16. he was a member of the Polish Accreditation Committee in Warsaw. In 2011, he received from the Minister of Culture and National Heritage–the Silver Medal for Merit to Culture–Gloria Artis. He has been the promoter of over one-hunderd and ninety master's and over one-hundred and ten bachelor's diplomas.

Sarah Robinson is an artist and researcher from the United Kingdom based in Perth, Western Australia. She was awarded her MA from the Royal College of Art, London in 1989, and her PhD was conferred by Edith Cowan University in 2017. Robinson has lectured in colleges and universities and exhibits internationally. Solo Exhibitions: *Potentially Dangerous (*2019), The Lobby, Perth, *Eyes Open (i) Drawing in The Dark* (2014), Crystal Cave, Yanchep National Park, and *Imperceptible Realities* (2015), Spectrum Project Space. Selected Group Exhibitions: *Fremantle Print Award* (2021), *Talking Place: Emerging Connections*, Gallery25, Perth, (2020) *Talking Place: Unfolding Conversations* (2019), The Alcoa Mandurah Art Gallery, *Talking Place* (2018), The Palacete del Embarcadero, Spain, *Thresholds and Thoughtscapes* (2017) Bunbury Regional Art Galleries and *Destabilising Walls* (2017), PS, Fremantle. Robinson is a recipient of three DLGSC creative research and development grant awards, an Australian Postgraduate Award and Edith Cowan, University Excellence Award (2017), Highly Commended, Print International (2013) UK, Digital Print Award, PAWA Print Media Awards (2012). She currently works as an independent artist and researcher, having founded the NeoEvolution Print Space to develop her research curiosity that is drawn to the possibilities invigorated by the divisive relationship between digital and traditional printmaking. Works are held in collections in the UK, WA and China.

Magda Stawarska-Beavan was born in Poland, she lives and works in the UK. She works predominantly with sound, moving image and print, often connecting traditional printmaking processes with digital audio and video. Amongst Stawarska-Beavan's recent projects exploring the shifting sonic and visual identities of cities are *Translating the City* (2019), *Resonating Silence* (2019), *East {hyphen} West; Sound Impressions of Istanbul* (2015), *Seas Apart–Bosphorus* (2018), *Who/Wer* (2017), and *Kraków to Venice in 12 Hours* (2013). Recent exhibitions include: *Reduce the Time Spent Holding*–Commission of 8 min sound piece for headphones and soundtrack for Lubaina Himid's exhibition *Work from Underneath*, New Museum, New York, USA (2019); INVISIBLE NARRATIVES; New Conversations about Time and Place, Newlyn Art Gallery, UK (2019); Tales from Water Margins; 4th International Biennial of Casablanca, Morocco (2018); The International Print Triennial, Kraków, Poland (2018), Sounds Like Her, New Art Exchange, Nottingham and UK touring (2017-2019); Guanlan International Print Biennial, China (2017, 2015).

Jo Stockham was educated at Hertfordshire College of Art & Design, Falmouth School of Art (BA Painting/Fine Art) and Chelsea School of Art (MA Sculpture). Her own practice is installation-based, often dealing with the histories of a site, its environment and surrounding community, using sculpture, sound projection, found materials and archive sources. A recent show at Matt's Gallery London comprised of new work using 3D print. Commissions for public works include a permanent site specific work for LIPA Liverpool (with Darrell Viner), a lottery commission "If Not Now, When?" in 1999 which resulted in an installation and catalogue for CGP London and three bodies of work made for *Triplicate* shown at Tate St. Ives, Southampton and Eastbourne City Art Galleries. Jo has exhibited widely in Group exhibitions in the UK and internationally Collections and private collections in Europe and the UK. She has taught throughout London and the UK and in Weimar and Berlin. She has also undertaken educational work for major galleries including the Tate, Whitechapel and Serpentine Galleries and been resident in several primary schools and Universities. Currently Professor of Print and Head of Department, School of Arts and Humanities, Royal College of Art, London.

Paul Uhlmann is a Fremantle based artist whose work strives to question and translate philosophies of impermanence. He works experimentally across the mediums of painting, printmaking, drawing and artists' books–at times employing the mechanics of simple cameras obscura. Paul studied art in Australia and Europe on two year-long scholarships–DAAD in Germany (1986-87) and Anne & Gordon Samstag International Visual Arts Scholarship in Holland (1994-95). In 2012 he was awarded a practice-led research PhD at RMIT. He has exhibited nationally and internationally since 1983 and his work is held in many prominent collections. His recent solo exhibition *Land of Smoke* (2020) was held at the Art Collective WA. *Land of Smoke* was a meditation on Australia's intense brushfires (2019-2020) and the apparent enduring colonial failure of collective vision. When James Cook first encountered this Great Southern Land, he described it as a 'continent of smoke'. Such a perceptive image is enduring but changes meaning through time. Recent international exhibitions include; IMPACT 9 (China 2016); IMPACT 10 (Spain 2018). He has published essays and papers on embodiment and creative process. He is Senior Lecturer and Coordinator of Visual Arts at Edith Cowan University in Perth, Australia.

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Monika Lukowska and Sarah Robinson

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TRANSMEDIAL would like to acknowledge that this exhibition is being held on the traditional lands of the Noongar people and we pay our respects to the Elders past, present, and future.

Essays: Rebecca Beardmore, Monika Lukowska, Ruth Pelzer-Montada, Santiago Pérez, Sarah Robinson, Adam Romaniuk,Paul Uhlmann
Artworks: Paul Catanese, Deborah Cornell, Susanne Klein, Ingrid Ledent, Santiago Pérez, Marta Pogorzelec, Magda Stawarska-Beavan, Jo Stockham

Image credit p. 33: Susanne Klein, *Work in Progress* (2020). Image courtesy of the artist.
Image credit p. 34: *In the Studio*, Magda Stawarska-Beavan, Ingrid Ledent, Deborah Cornell, Paul Catanese. Images courtesy of the artists'
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