

Training Nature

Transforming Reduction into  
Multi-Plate Relief Prints

Artistic Research and Development  
KUF Report

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A leylandii. How do I value the original? When it comes to suburbia, does the coniferous evergreen in urban development undermine the genuine thing? As a native to North America, its global export and propagation has advanced suburbia's boundaries of exclusion. The act of focusing attention on my neighbour's hedge is in recognition of the everyday partition demarcating land ownership. I could be anywhere.

A remix. How do I value the original? When it comes to electronic music, does Berlin-based Tale Of Us' remix *Gosh* by Jamie xx undermine the genuine thing? As a standard activity in recording, one sample can be applied to multiple compositions; one track can be remixed as endless re-interpretations. The act of downloading the music onto my laptop is in recognition of the Net's file sharing; blurring the lines between ownership, authorship and copyright. I could be anywhere.

In Nicolas Bourriaud's *Post-Production*, the culture of use implies a profound transformation of the status of the work of art: beyond its traditional role as a receptacle of the artist's vision, it now functions as active agent, a musical score, an unfolding scenario, a framework that possesses autonomy and materiality to varying degrees, its form is able to oscillate from a simple idea to a sculpture or canvas.

How can I apply the activity of post-production in music-making to print-making?

The culture of use has previously relied on print's imitating properties to reproduce, repeat and

multiply the original as copy material. Today in an era of post-production, my artistic practice attempts to re-interpret this definition; to master the qualities innate in print as a medium of creative expression and of recontextualisation.

By adopting digital scanning and CNC routing into the print-making studio, the research project incorporated new technologies into the craft tradition; by splitting a hand-carved reduction relief block into codified vector graphics and transformed into machine-carved multi-plate relief blocks.

Theories of formalism in painting were applied to the printing process, by referencing George Seurat's *Pointillism* and by sampling Bridget Riley's *Colour Harmonies*. In 1959 Riley made a copy of Seurat's *Le Pont de Courbevoie* from a printed reproduction. Historically, 'Doing the same' was a way of getting closer than simply observing. One of colour's mysteries is that it can do two contradictory things at the same time: each individual hue can contribute to the overall sensation, and yet still can remain itself. For example, in the five colour sources to Seurat's method; 'solar orange' for sunlight, and its 'complementary' strong blue in the shade: greens and yellows as the 'local colours' of the vexation; fleeting reds and violets as 'ambient complementary colours' (*The Eye's Mind: Bridget Riley, 1999*).

By remixing in colour, in three beats, in five beats, seven beats, twenty-four beats, the research led to new print-making idioms re-interpreted by post-production in music-making, generating a new methodology to my artistic practice.

Process

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In 2012, I exhibited *Training Nature* a series of reduction relief prints; a technique loosely attributed to Pablo Picasso. Four years later as Associate Professor in Print & Drawing at KHIO, KUF research funding enabled me to re-evaluate this process and to re-examine the formalism of print. In addition to this, I drew upon Bridget Riley's collected writings, in which she reflects on her own practice-based knowledge and historical references to painting, giving insight into my own artistic methodology.

The viscosity and overlay of ink, the registration of the block and the pressure on the press are all intrinsic qualities of print-making. It is in the plasticity of ink on paper and the integration of digital technology that is leading print into an expanding field of material- and medium-based art.

The purpose of the research was to revisit the process of carving the block and apportion more time in the studio to printing; to explore colour's interdependence between static and active as an expressive form of perceptual dynamism.

Reduction relief is a process composed of repeatedly cutting from one block to achieve a multi-layered print. The ink is rolled onto the surface and printed in registration over the previous layer of colour before removing further material from the block. Carving the plate by hand stimulates a haptic activity; from a gestural and spontaneous indentation to a more controlled and deliberate sculptural formation. When applied to reduction relief printing, the process supports multi-colour combinations varying in tone, hue and luminosity.

The printer's creative development is activated from within the process, similar to the painter applying paint to canvas.

However, the repeated cutting inevitably destroys the block on completion and it is impossible to retrace previous steps or explore alternative multi-colour combinations. The edition must be printed in its entirety, reducing both the time and spontaneity to experiment with carving the plate and overlaying colour - and so in turn, limiting the creative potential of print as a medium.

With the advent of Computer Numerical Control (CNC) milling, digital technology can perform similar tasks to traditional hand tools. The intention was to expand on current academic research and apply CNC milling already available at KHIO to the process of reduction relief printing, with the objective of digitally scanning, vectorising and CNC routing a replica plate for each layer of colour. Thereby splitting the reduction into a multi-plate printing process.

### Colour Mixing

I prepared different swatches, each consisting of five colours sampled from a printed reproduction of the painting *From Here 2* by Bridget Riley (1994), sourced from the catalogue *Bridget Riley, Recent Paintings and Gouaches*, Waddington Galleries, Karsten Schubert (1996). The reduction relief was printed in different colour combinations by referencing the swatches ranging from light to dark in tone.

I relied on Cranfield Caligo and Intaglio Printmaker

litho/relief inks, hand rollers including a Takach 6.75" x 20.74" (35 durometer) hand roller, KHIO's 4.75" x 14.75" hand rollers of different durometers and a selection of Essdee brayers. The challenge was not in colour matching the ink on the glass, but in colour matching the ink when transferred from the block and overlaid on paper.

There were a number of problematics on the press to overcome: the size and weight of the press' roller stretched the linoleum and the pressure had to continually be re-adjusted in order to preserve an accurate registration, the low lighting in the studio emitted a yellow glow and I had to view the swatches in natural daylight to determine an accurate colour match on the print.

The concave levelling of the glass table tops built up irregular layers of ink with the large hand roller, creating an unknown variable in the ink's viscosity; however this could potentially be exploited in combination with the technique rubbing to vary the transference of ink to paper.

### Scaffolding

My primary source material was gathered in the field by observing, documenting and recording a leylandii hedge located on Solveien in Nordstrand, Oslo; as chiaroscuro and line drawings on paper, photographs captured on a tablet computer and digital montages edited in Photoshop.

The scaffolding was drawn with charcoal freehand from a photomontage on an iPad and traced in reverse onto a 450x450mm hessian-backed battleship grey

linoleum block (3.2mm), before proceeding to be carved by hand.

### Carving

The one month studio-led research, completed between August 2016 and January 2017, began as five consecutive days in the print studio to achieve a five-colour reduction relief print.

For the first stage, the lightest tone was relief rolled onto the uncut linoleum block with Takach Hand Inking Rollers of different sizes and printed in registration onto Hahnemuhle Etch 300g paper on a Ateljé Sjöström etching press.

For the second stage, I traced the scaffolding and relied on Photoshop Express, an App on the tablet computer, to divide the photomontage into sections; to zoom in or out and occasionally invert colours to inform both the quantity and gestural variation of the carving. I relied on two different size Japanese Komasuki (woodcut gouges) to express both form and rhythm.

For the third, fourth and fifth stages I retraced the scaffolding and continued to carve the block and print, in registration, each time in a darker tone to create a five-colour reduction relief print.

### Post-Editing

The transformation from reduction to multi-plate began by scanning a print at each stage of the reduction carving and converting it into a digital image. Each print was scanned in four parts, due to

the size limitation of the A3 Epson scanner, before being re-assembled and re-registered in Photoshop. The resultant bitmap files were auto-traced and converted into vector files in VectorMagic. This process required more RAM to calculate the tracing than I had available on my personal computer. I resolved the problem by splitting each bitmap in two parts before converting to vectors files.

An underestimated and extensive amount of time was required to post-edit in Adobe Illustrator, for the purpose of re-assembling, re-registering and compounding paths before exporting as .dxf files.

#### CNC Routing

Linoleum, also called lino, is made from organic materials such as linseed oil (linoxyn), pine rosin and calcium carbonate. It was developed in 1855 as floor covering but it also became synonymous in the Twentieth Century with European linocut prints.

The Verksmester in the CNC studio provided technical expertise in post-editing the .dxf vector files in Rhino 3D CAM software. Prior to milling the linoleum, we performed several tests to compare the vector files on the Multi-Cam 3000 CNC Router, with an equivalent bitmap file on the lasercutter.

It was necessary to adhere the linoleum onto a 15mm sheet of MDF to prevent warping from the PVA glue, for sufficient vacuum on the router and to ensure an even surface for the machine milling.

At this stage, I had to defer to 'known unknowns'

but only later did I fully appreciate the 'unknown unknowns' of the CNC milling process and the informed decisions made by the Verksmester to execute an accurate carving on the block; including the digital presets in Rhino, the choice of tool bits and the manual set up on the routing machine.

The multi-plate blocks (45cmx45cm) were carved to the depth of the linoleum on the CNC router and cut out from the parent block (72"x36") for accurate registration with a 90 degree V-carve bit at a speed of 18000 rpm at 8000 mm per minute. The process took between 90-180 minutes to complete each block, depending on the the complexity of the milling and the size of the calculation.

There were a number of problematics on the CNC router to overcome: the heat and speed of the milling tool bit encouraged linoleum to build-up in the carving. The debris could only be removed laboriously with the use of an air jet cleaning machine and an etching needle. And although the CNC router accurately carved at a steeper sweep than carving by hand, it was necessary to remove larger areas by detaching the glued linoleum from the MDF support with an etching needle.

The height of the milling tool bit was set by eye on the router, creating a potential variable on the accuracy and depth of the carving. It was therefore advised to mill all the blocks at the same time for consistency; however this could be applied as a 'sharpening' effect of the original hand carving's scaffolding or to develop contoured carvings of different depths from the same digital file.

Outcome

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I returned to the studio with five multi-plate relief blocks and began working in a more intuitive manner within the print process. I explored variations on techniques of rubbing, rolling and block printing. The paper could be re-registered at 90 or 180 degrees or fixed at an obtusive angle to the transposed block, creating a dynamic that would otherwise be static.

I became aware of new insights to supplement my knowledge of painting; by differentiating the viscosity, by interjecting opaque grounds and by building up a transference of colour.

The relief blocks performed the role of the “beat” but the sampling of colour led to new re-mixes of the original “track”. For example, I no longer prepared colour swatches in advance, but worked implicitly on the block and in reaction to the outcome on the press. Each “chord” derived from the same colour harmony sampled from Riley’s paintings *Reflection 2* 1994 or *August* 1995, but each print varied in its “intonation”.

The transformation process retraced my steps to proceed beyond the scaffolding of the relief block to focus on the ‘plastic’ issues of print, as abstract relations of form and colour; suggesting a range of qualities in weight, density, brilliance, opacity, open space and shallow recession.

Moving from the known to the unknown, I have adopted new creative strategies to fold back into my post-digital practice by integrating CNC routing into studio-led activities for future artistic research.

## Dissemination

[http://www.victoriabrowne.com/  
trainingnature\\_instagram/](http://www.victoriabrowne.com/trainingnature_instagram/)

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[http://www.victoriabrowne.com/  
trainingnature\\_opensource/](http://www.victoriabrowne.com/trainingnature_opensource/)

Instagram  
@victoriabrowne\_

The research project was chronologically documented on Instagram, a mobile photo-sharing application and service that allows users to share photographs, videos and live broadcasts publicly or privately. Between August 2016 and January 2017, I uploaded 250 posts; of data gathering in the field, reference material at exhibitions that I visited, documentation of my progress in the studio and the research presented as lectures and an exhibition. I followed 140 Instagram accounts including; fellow peers in print-making, CNC artisans, academic researchers, KHIO staff, international artists, music DJs and Norwegian galleries & museums. The research attracted 130 Instagram followers and an unknown number of unique viewers.

My smartphone became an invaluable tool for documenting my studio-based practice, and to contribute to this report; recording my insights, demystifying the post-digital print process and disseminating my progress to an international audience. I primarily relied on photography, but I also learnt to express my thoughts as hashtags or emoticons, more often than not for my own immediate points of reference or idioms.

I relied on Instagram to research other artists or researchers working in a similar field and to transform my experience in the studio from isolation to engagement. Staff & students at KHIO benefited both from my visibility in the studio and my personal updates on Instagram.

## Exhibitions

The outcome of the research was presented as an exhibition in the reception gallery during the inaugural Artistic Research Week at KHIO, for five hundred staff and students and an additional estimated two hundred international visitors over five days. #GOSH comprised of wall-mounted prints, an audio track, a sketchbook, a pamphlet publication, print blocks, video documentation and reference books.

A selection of these prints will be exhibited as part of a group exhibition at West Yorkshire Print Workshop in May 2017.

## Lectures

The exhibition opened with an Artist's Talk attracting thirty staff and students at KHIO.

I also presented my artistic research as a slide presentation to fifteen students and staff at University of the Fine Arts Helsinki and ten students and staff on the Post-Digital course at KHIO.

## Open Source

I created digital print samples in different formats and sizes to download as 'wallpaper' on smart devices for the future dissemination of my artistic research. Open source file sharing is a self-publishing activity, free of copyright or authorship and a method of engaging a material-based practice with society's digital screenship experience.

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## Publications

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*Woodblock printing as a means for  
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## Paintings

*Copy after Seurat's Bridge at Courbevoie* (1959)  
*Pink Landscape* (1960)  
*Tremor* (1962)  
*Late Morning 1* (1967)  
*Ecclesia* (1985)  
Bridget Riley: Learning from Seurat - 2016  
The Courtauld Gallery

*A Sunday on La Grande Jatte* (1884)  
*Final Study for "Bathers at Asnieres"* (1883)  
*Oil Sketch for "La Grande Jatte"* (1884)  
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Art Chicago Institute

*Gray Weather, Grande Jatte* (1886)  
*Final Study for "A Sunday on La Grande Jatte"* (1884)  
*Circus Sideshow (Parade de cirque)* (1887)  
George-Pierre Seurat  
Metropolitan Museum of Art

*Evening, Honfleur* (1886)  
*Grandcamp, Evening* (1885)  
Georges-Pierre Seurat  
MoMA

## Music

*Gosh*  
Jamie xx, 2015

*Gosh (Remix)*  
Tale of Us, 2015

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Documentation accompanying this research report is online at [www.victoriabrowne.com](http://www.victoriabrowne.com) and available in PDF and ePub formats. It is also published in Norway's Information Research System CRISTin, KHIODA and Journal for Artistic Research.