Jun 17th, 12:00 AM

Code, Decode, Recode: Constructing, deconstructing and reconstructing knowledge through making

Anna Piper
Nottingham Trent University

Follow this and additional works at: https://dl.designresearchsociety.org/drs-conference-papers

Code, Decode, Recode: Constructing, deconstructing and reconstructing knowledge through making

Anna Piper

Nottingham Trent University
anna.piper@ntu.ac.uk

Abstract: In craft practice, embodied knowledge is constructed ('coded') through the hands-on experience of making and application of technical rules, subsequently deconstructed ('decoded') through reflection and analysis, before being rebuilt ('recoded') to further develop practice and outcomes. In this paper practice-led PhD research into the development composite woven garments is used to demonstrate the vital role that process and object analysis play in the advancement of creative practice and a successful transition from hand to digital production. Drawing parallels between hand weaving and computer use, it explores how the 'digital thinking' inherent in weaving can facilitate a productive relationship with digital weaving technologies. Presented as a 'visual essay' this paper aims to bridge the gap between implicit and explicit knowledge, using a predominantly visual method to maximise the reach of the research, communicating implicit and explicit knowledge with equal clarity and offering an alternative approach to the dissemination of practice-led research.

Keywords: embodied knowledge; composite garments; hand weaving; digital production

Introduction

Constructing, Deconstructing and Reconstructing Knowledge

This paper builds upon Ulrich Lehmann's assertion that analysis of existing techne (craftsmanship/making) can lead to innovations in practice and the creation of episteme (knowing/true knowledge) (2012, p.151), and Lambros Malafouris' Extended Mind Theory - gaining knowledge of the mind by understanding the physical object (2013, p.9). In craft practice, embodied knowledge is constructed ('coded') through the hands-on experience of making and application of technical rules, subsequently deconstructed ('decoded') through reflection and analysis, before being rebuilt and reconfigured ('recoded') to further develop

practice and outcomes (Lehmann, U, 2012; Dreyfus & Dreyfus, 1986; Polanyi, 1966). This is a complex process where the brain, body and material (the internal and external) intertwine (Malafouris, 2005), and the application of rules and tools provokes a cognitive process where memory, experience and intuition converge (Ibid.), enabling creativity and innovation to advance material outcomes.

I use my own craft practice and PhD research, into the development of a Composite Garment Weaving system (CGW), to highlight the vital role that process and object analysis, along with technical documentation, play in the advancement of creative practice and a successful transition from hand to digital production. The CGW system is an innovative method of garment production whereby garments are constructed and integrally shaped on the loom. This involves adapting and challenging conventional fashion design and weaving techniques to design and simultaneously construct textile and garment (Townsend, 2004). My research explores the garment shaping capabilities of craft weaving techniques by developing 3D woven garment prototypes produced on hand and digital Jacquard looms.

In describing the development of the Jacquard loom by Joseph-Marie Jacquard in 1801, Braddock, Clarke and Harris state, "The codification of the human weaver's actions was converted to binary form" (2012, p.8), pattern data was transferred onto punched cards that facilitated the lifting and lowering of the warp; an operation that is now controlled digitally. The Jacquard loom, with its binary coding system and punched card mechanism, was the forerunner of modern computing (Kopplin, 2002, online). By drawing parallels between the embodied act of hand weaving and the "disembodied" (Philpott, 2012) experience of computer use, I explore how the 'digital thinking' inherent in weaving can facilitate a productive relationship with digital weaving technologies.

Visual Communication of Practice-led Research - Rationale

"we can know more than we can tell." (Polanyi, 1966, p.4)

Knowledge has been categorised as - learned explicit knowledge as articulated verbally or textually (e.g. theory, rules, facts), and knowledge acquired through experience (e.g. intuition, understanding, 'knowing') (Niedderer & Imani, 2008; Polanyi, 1966;). This experiential knowledge derived through experience can be impossible to articulate and therefore remains "largely tacit" (Niedderer & Townsend, 2014, p.633) – embodied in the craftsperson.

"Verbal description, however detailed, can hardly capture the phenomenological perturbations of real activity." (Malafouris, 2005, p.59)

The growing body of practice-led craft-based research has highlighted the complexities of communicating craft knowledge (particularly experiential knowledge) within the constraints of the traditional academic written format (see for example Niedderer & Imani, 2008). Barrett, amongst others suggests, "there is a need for new ways of representing ideas and of illuminating the world and domains of knowledge." (2007, online). Ann-Sophie Lehmann asserts that the image is capable of mediating "between the domains of implicit and explicit

knowledge." (Lehmann, A, 2012, p.13), whilst Pedgley cautions that visual outputs, such as sketches, prototypes and visualisations, "rarely provide a clear account of design thinking" (Pedgley, 2002, p.466).

In response to this, I present my paper as a 'visual essay', using images to "capture the complexity and simultaneity of making" (Lehmann, A, 2012, p.13) and knowing. Quotations, captions and reflective journal excerpts are used to support the 'visual' narrative, as well as to guide the reader through the discussion. In doing so, I aim to bridge the gap between implicit and explicit knowledge, using a predominantly visual method to maximise the reach of my research, communicating implicit and explicit knowledge with equal clarity. My intention is not to devalue or underestimate the importance of the written word or to suggest that this method of visual communication can (or should) operate autonomously - the textual narrative (the contextualisation above, and the positioning discussion below) is vital to the understanding of the subsequent 'visual' narrative. The 'visual essay' simply offers an alternative and flexible approach to the dissemination of practice-led research to function alongside other forms of presentation.

Code, Decode, Recode: Positioning the discussion

> This paper uses coding as a metaphor for the construction, deconstruction and reconstruction of knowledge through making; reflecting the parallels drawn between weaving practice and computer use, and the assimilation of hand and digital production and processes in my practice.

The first section 'Coding' begins by discussing the acquisition of experiential knowledge and its relationship with explicit knowledge and the senses in the context of hand weaving. It then explores the notion that the weaver is primed to 'think digitally' by the experience of hand weaving (Piper & Townsend, 2016, p.2). 'Decoding' investigates the transfer and translation of established fashion and knitwear processes for application to CGW, before describing the vital role of analysis and technical records (and the deconstruction of knowledge and techniques) in this process. Finally 'Recoding' focuses on the reconfiguring of 'decoded' knowledge and understanding, as well as the integration of hand and digital processes as a platform for innovation; explored through CGW's simultaneous construction of fabric and garment and the integration of textile and fashion processes.

See Visual Essay *(Appendix)*
References

Albers, A. (2000) *Anni Albers: Selected Writings on Design*, University Press of New England.

Albers, A. (1961). *Anni Albers: on designing,* Wesleyan University Press.

Barrett, E. (2007). Studio Enquiry and New Frontiers of Research, *Studies in Material Thinking, 1 (1)*, pp 1–3.

Csikszentmihalyi, M. (2008). *Flow: The psychology of optimal experience*, Harper Perennial.

Dant, T. (2008). The Pragmatics of Material Interaction. *Journal of Consumer Culture*, 8 (1), pp 11–33.

De Freitas, N. (2002). Towards a definition of studio documentation: working tool and transparent record, *Working Papers in Art and Design*, *2* pp 1–10.

Dormer, P. (1994). *The Art of the Maker: Skill and its Meaning in Art, Craft and Design*, Thames and Hudson.

Dreyfus, H, L., Dreyfus, S. (1988). *Mind of Machine: the power of human intuition and expertise in the era of the computer*, Free Press.

Harris, J. (2013). Digital Skin: How developments in digital imaging techniques and culture are informing the design of futuristic surface and fabrication concepts, *Textile*, *11(2),* pp 242-261.

Holyoke, J. (2013). *Digital Jacquard Design*. London: Bloomsbury.

Kane, F. (2013). Publication Review: Digital Visions in Fashion + Textiles: Made in Code, Sarah E. Braddock Clarke and Jane Harris 2012, *Craft Research, 2(4), pp* 289-292.

Kopplin, J. 2002. *An Illustrated History of Computers Part 2*, http://tinyurl.com/ycjvvjg (Accessed 13 March, 2016).

Lehmann, A. S. (2012). Showing Making: On Visual Documentation and Creative Practice, *The Journal of Modern Craft*, *5(1),* pp 9–23.

Lehmann, U. (2012). Making as Knowing: Epistemology and Technique in Craft, *The Journal of Modern Craft, 5(2*), pp 149-164.

Lindqvist, R. (2013)*. On the Logic of Pattern Cutting*, http://tinyurl.com/qdzcuou. (Accessed 21 July, 2015).

Malafouris, L. (2013). *How Things Shape the Mind: A Theory of Material Engagement*, The MIT Press.

Malafouris, L. (2005). The Cognitive Basis of Material Engagement: Where Brain, Body and Culture Conflate, in De Marrais., E. Gosden, C., Renfrew, C. (ed.) Rethinking Materiality: The Engagement of Mind with the Material World. Cambridge: McDonald Institute for Archaeological Research.

McCullough, M. (1998). Abstracting Craft: The Practiced Digital Hand, in Adamson, G. (ed.) *The Craft Reader*, Berg, pp 310-316.

McNiff, J. (2013). *Action Research: Principles and practice (3ʳᵈ Edition),* Routledge.

Niedderer, K. & Imani, Y. (2008). Developing a Framework for Managing Tacit Knowledge in Research Using Knowledge Management Models, http://shura.shu.ac.uk/507/, (Accessed: 01 August, 2014)

Niedderer, K. ,Townsend, K. (2014). Designing Craft Research: Joining Emotion and Knowledge, Design Journal, 17(4), pp 624-647.

Parry-Williams, T. (2015). Made-by-hand: [Re]valuing traditional (Japanese) textile practices for contemporary design. *Craft Research*, *6(2), pp* 165-185.

Pedgley, O. (2007). Capturing and analysing own design activity, *Design* Studies, 28(5), pp 463–483.

Philpott, R. (2012). Crafting Innovation: The intersection of craft and technology in the production of contemporary textiles, *Craft Research. 3(1),* pp 53-74.

Piper, A., Townsend, K. (2016). Crafting the Composite Garment: The role of hand weaving in digital creation, *Journal of Textile Design Research and Practice*, 3(3), pp 1–24 (forthcoming).

Polanyi, M. (1966). *The Tacit Dimension*, University of Chicago Press Ltd.

Richards, A. (2012). *Weaving textiles that shape themselves*, Crowood Press.

Schon, D, A. (1991). *The Reflective Practitioner: How professionals think in action*, Ashgate Publishing Limited.

Smith, T. (2014). *Bauhaus Weaving Theory: From feminine craft to mode of design*, University of Minnesota Press.

Townsend, K., Goulding, F. (2011). The Interaction of Two and Three Dimensional Design in Textiles and Fashion, in Briggs-Goode , A., Townsend, K. (eds.) *Textile Design: Principles, Advances and Applications*, Woodhead Publishing.

Townsend, K. (2004). *Transforming Shape: A simultaneous approach to textile and garment design (synthesizing hand and digital methods),* PhD Thesis, Nottingham Trent University.

About the Authors:

Anna Piper is a postgraduate researcher, textile designer and lecturer at Nottingham Trent University. She is currently undertaking a practice-led PhD into 3D and composite garment weaving, integrating hand and digital weaving technologies.