

***Designing 21st Century Standard Ware: The Cultural
Heritage of Leach and the Potential Applications of
Digital Technologies***

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Abstract

This practice-based research investigates the potential applications of digital manufacturing technologies in the design and production of hand-made tableware at the Leach Pottery. The methodology for the research establishes an approach grounded in my previous experience as a maker that is informed by an open, experimental, emergent, and responsive framework based on Naturalistic Inquiry.

A critical contextual review describes the cultural heritage of Leach which, for the purposes of the research, is developed through the Leach Pottery as a significant site, the historical production of the iconic Leach Standard Ware and the contemporary production of Leach Tableware. This is followed by an examination of Potter's Tools in the Leach production environment, and a review of makers' digital ceramic practice.

The contextual review is followed by an explication of 'standards' presented through visual lineages of Standard Ware and Leach Tableware to define 'standard' at a design (macro) level, followed by an examination of how 'standard' operates at a making (micro level) level. This chapter presents new knowledge in relation to defining the visual field of Leach Pottery tableware production and its standards of design.

A chapter focussed on practice presents the outcomes and analysis of my engagement with digital manufacturing technologies which resulted in the development of new tools to support Leach Tableware production and the interrogation of Leach forms, in different mediums, which led to the creation of Digital-Analogue Leach forms. The practice culminated in the design and development of new 21st century Standard Ware: a range of 9 forms, called Echo of Leach, that were developed by myself using digital and analogue methods: the designs were realised by myself, the Leach Studio, and a further four makers. The outcomes of the research were presented in a three month exhibition at the Leach Pottery in 2013.

The conclusions of the research draw on the key points raised in the analysis of the practice and relate these to the approaches to making pottery that are highlighted in the cultural heritage of Leach in the contextual review. These are also discussed in relation to ways in which these findings could be taken forward into development of knowledge about Standard Ware, especially in a broader studio pottery context.

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Thesis keywords: DIGITAL, CRAFT, DESIGN, POTTERY, CERAMICS, STANDARD WARE, LEACH POTTERY, LASER CUTTER.

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Chapter 1: Introduction

This research is concerned with the creative use of digital manufacturing technologies to design and make a new range of Standard Ware for the Leach Pottery. Standard Ware was the Pottery's range of domestic tableware made over several decades. These technologies, especially the laser cutter and Computer Aided Design (CAD) software, introduced a contemporary technological element to the designing and making of new Standard Ware.

This research is practice-based: the 'Cultural Heritage of Leach' is considered significant in the context of the Leach Pottery's tableware and associated means of production, including the historical Standard Ware and the contemporary Leach Tableware. This research establishes the cultural heritage of Leach, using it as a creative impetus for practice to inspire the designs for new 'Echo of Leach' Standard Ware that was ultimately produced by the Leach Pottery, other potters, and myself.

Section 1.1: Background & Research Rationale

Here, the rationale for the research is considered from the institutional positions of the key partners: the Leach Pottery and Autonomic. This is followed by my rationale for engaging with the research and a statement of the research questions.

1.1.1: Institutional Background: The Leach Pottery, Autonomic, and the European Social Fund

This research is the result of a joint initiative between the Leach Pottery, St Ives, and Autonomic of Falmouth University. The Leach Pottery, originally established in 1920, is now:

...managed by the Bernard Leach (St Ives) Trust Ltd., a registered charity, founded in 2005. The primary purposes of the trust are to advance the education of the public in the life and work of Bernard Leach and his circle, and the development of studio pottery (see 'Appendix 5.3: Definition: Studio Pottery'), and to provide training in the art, craft and making of pottery (Leach Pottery n.d.)

The three main aspects of the Pottery are its Museum, Gallery, and Pottery Studio (Twomlow 2010), which deliver making and educational activities (Leach Pottery n.d.). The Pottery now also engages with research, currently being the focus of four PhD projects.

Autonomic is a Research Group of design and craft practitioners with a range of making, materials, and research knowledge engaging with 3-D digital production and distributed

technologies:

Our research builds and reflects upon the revolution in digital manufacturing which is gaining pace through new business models and production systems that can be aligned with the flexibility and individuality of the craft workshop. Our open and experimental approach to the use of digital technologies, often in conjunction with traditional tools and methods, is central to the innovation we achieve in both process and product (Automatic 2011).

Dr Katie Bunnell, Automatic Group Leader, is Director of Studies to this research project. The experience and interests of this Research Group meant that it was an ideal environment to provide a basis for this innovative research with the Leach Pottery.

This research was made possible through European Social Fund (ESF) investment which aims to improve employment opportunities in the European Union. It was part-funded under project #09099NCO5 as Cornwall and the Isles of Scilly, in the 2007-13 funding tranche, are the only areas of England subject to the ESF Convergence Objective which ‘...aims to develop areas where the economy is lagging behind the rest of the European Union’ (Department for Work and Pensions n.d.).

1.1.2: The Researcher’s Rationales & Research Questions

As a ceramic practitioner, I bring to the research over a decade’s experience of making, a Master of Ceramics, and two years’ experience of full-time self-employed practice (see also ‘Section 1.5: Researcher’s Previous Experience & Relationship to Standard Ware’).

The appeal of the research lies in my interest in designing and making new work, the Leach Pottery, and a recognition of the potential value of digital design tools in my practice. I want to develop new methods, challenge my practice, and possibly locate models of designing and making that can form the basis of a financially sustainable practice. I wanted the opportunity to try ‘digital’. My approach is outlined in ‘Chapter 2: Methodology & Methods’. The following research questions are posed:

- what is the Cultural Heritage of Leach, especially in relation to the practice?
- how can digital manufacturing technologies be used in a creative dialogue between practice and the Cultural Heritage of Leach?
- how can this practice be used to develop new Leach Pottery Standard Ware?

Section 1.2: Aims & Objectives

The aim of the research is to design and make a new range of Leach Standard Ware through an understanding of its cultural heritage and developing new practices with digital technologies.

The research objectives are to:

- develop an understanding of the cultural heritage of Leach
- establish the significance and values of the contemporary Leach Pottery
- critically review contemporary ceramic practice that uses digital technologies
- creatively explore digital manufacturing technologies through practice
- undertake exploratory practice-led investigations, with digital manufacturing technologies, to design and make objects that embody an essence of 'Leach'
- design and make new Standard Ware using previous methods and findings and additional investigations as necessary.

Section 1.3: Thesis Structure

Chapter 2: Methodology & Methods

This Chapter introduces my methodological approach to the research based on the characteristics of my personal practice and a methodological framework grounded in the principles of Naturalistic Inquiry: open, experimental, emergent and responsive.

Chapter 3: The Critical & Contextual Review

This Chapter begins with a definition of the cultural heritage of Leach then examines facets of that heritage, including the significance of the Leach Pottery and the historical Leach Standard Ware, before considering contemporary Leach Tableware. This is followed by an exploration of tools and their relevance to Leach Standard Ware and Leach Tableware production, which also includes an examination of how Bernard Leach related to tools and technology. The review then examines digital ceramic practice, including critical frameworks relating to digital craft and how individual practitioners engage with digital technology.

Chapter 4: Leach Pottery Standard Ware & Tableware: Lineages of Forms & Standards

This Chapter extends the findings of Chapter 2 by developing visual knowledge about Leach Standard Ware and Leach Tableware. This is achieved through the presentation of visual lineages that show examples of tableware in scale to one another and demonstrate how the

forms developed over time presenting a macro/design standard. The Echo of Leach range, developed as the culmination of the practice-based research, is also presented here. Individual Standard Ware pots are then examined to develop knowledge about how a standard operates at a micro/making level.

Chapter 5: Practice

This Chapter presents the main body of the research. This is broken down into four main sections: an overview of my initial introduction to digital manufacturing technologies; an identification of digital tools that could facilitate the design and production of contemporary Leach Tableware; the development of my practice through a series of digital-analogue experiments in acrylic, wood and eventually clay; and the culmination of this development work into the use of digital manufacturing technologies to design new Echo of Leach Standard Ware. This Chapter concludes with a review of an exhibition of work at the Leach Pottery that includes interpretations of Echo of Leach forms by myself, the Leach Pottery, and a selection of makers.

Chapter 6: Analysis, Conclusions & Future Research

This Chapter provides an analysis of the research project, presenting conclusions and suggestions for future research. The conclusions of the research draw on the key points raised in the analysis of the practice, relating these to the approaches to making pottery that are identified in the cultural heritage of Leach in the contextual review. The outcomes of the project are also discussed in terms of future research and their application in a broader studio pottery context.

Section 1.4: Initial Definitions of Terms

The thesis introduces several crucial terms which are initially defined here and further sign-posted as appropriate.

Leach: ‘Leach’ is mentioned throughout the text and can be used in reference to a member of the Leach family, like Bernard, or, for example, a pot originating from the Leach Pottery. In each instance, I specifically define the intended meaning of ‘Leach’ before subsequently referring to it as the singular ‘Leach’. It is recognised that ‘Leach’ is a complex and interchangeable term at the heart of the thesis, so it is therefore defined more explicitly in ‘Appendix 1.1.3: Leach’, acknowledging how it encompasses references to Bernard, the Pottery, ceramic artefacts, a style of making, and also ideas about making in a particular way.

Cultural Heritage: this term is based on individual appraisals of ‘culture’ (see ‘Appendix 1.1.1: Culture’) and ‘heritage’ (see ‘Appendix 1.1.2: Heritage’) which are further developed as a term, particularly with reference to the research title, in ‘Section 3.1: The Cultural Heritage of Leach’. Cultural heritage, in its most basic definition, is: ‘A collectively recognised intellectual and artistic culture, originally established and propagated by Bernard Leach, to which Leach’s relatives, and a wider body of apprentices, makers, thinkers, collectors and users of pottery, are heirs’ (see p.40).

Standard Ware: this was a type of domestic tableware pottery made at the Leach Pottery after 1937 until Bernard Leach’s death in 1979. It was typically made by a team of production potters under the guidance of either senior potters or members of the Leach Pottery. See ‘3.1.3: Leach Standard Ware’ for a fuller explanation and exploration of the topic.

Section 1.5: Researcher’s Previous Experience & Relationship to Standard Ware

I began this research with a varied academic and vocational background, achieving a BA (Hons) in Communication Studies with a Minor Award in Professional Writing (First Class) in 2002, a PGCE (PCET) in 2007, and an MA in Ceramics in 2008. I became interested in pottery around 1996, attending evening classes and establishing my first studio in 2004.

My early practice engaged with materials and process, making Eastern¹ bottle and yunomi forms with tenmoku² and ash³ glazes (Figure 1 and Figure 2). Much of the work was in the Leach-Oriental (see 'Appendix 5.2: Definition: Leach-Oriental') envelope, being especially influenced by William Marshall and the aesthetics of Leach Standard Ware whose forms broadly took their influence from Japanese, Chinese and Medieval European pots. Before the research, I knew Standard Ware as a collector but had not engaged with the 'new' Leach Pottery.



Figure 1: Matthew Tyas, Thrown and Turned Bottle with Ash and Nuka Glaze, image M. Tyas 2008



Figure 2: Matthew Tyas, Thrown Bottle with Slip and Finger Wipe Decoration, image M. Tyas 2008

I was first introduced to Standard Ware, and Studio Pottery, after purchasing a Lowerdown Pottery General Purpose (GP) Bowl in the late 1990s. I found its handmade tactility remarkable: the bowl had a rough unglazed exterior, in the style of a Standard Ware GP Bowl, contrasting with its softly glazed interior. I had no previous knowledge of handmade pottery, so it was my first experience of this kind of object: it was a revelation that started a journey of collecting and making which led me to this research.

My MA work was more conceptually focussed, investigating themes and metaphors around

¹ Especially Japanese, Chinese and Korean pots.

² A generic name for an iron-rich glaze derived from Japanese aesthetics and often associated with Japanese and Chinese pottery – often brown to black in colour.

³ The use of ash, often from wood, in the glaze formula – informed by Japanese aesthetics, often leading to a fluid and variable glaze surface.

landscape and the potter's wheel (Figure 3 and Figure 4). This training in thinking and making encouraged me to more readily ask 'why' of practice, rather than 'how'.



Figure 3: Matthew Tyas, Spring Landscape, image M. Tyas 2008



Figure 4: Matthew Tyas, Autumn Landscape, image M. Tyas 2008

In 2008, I established a new studio on the periphery of the Yorkshire Sculpture Park, working as a full-time maker for two years. This was a challenging period balancing development, making, teaching, and business skills, to try and establish a sustainable living. I undertook commissions (Figure 5) and developed collections around my interests in landscapes and seasons (Figure 6, Figure 7, and Figure 8).



Figure 5: Matthew Tyas, Porcelain Platter Commission for Cannon Hall Museum, image M. Tyas 2009

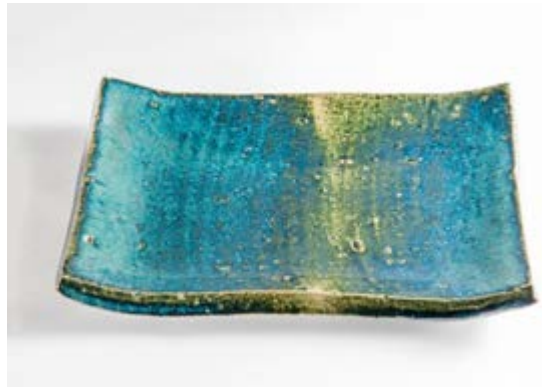


Figure 6: Matthew Tyas, Summer Woods Wire-Cut Rectangular Plate, image M. Tyas 2010



Figure 7: Matthew Tyas, Autumn Fields Carved Box, image M. Tyas 2010



Figure 8: Matthew Tyas, Swirling Snow Bowl, image M. Tyas 2010

A dichotomy, between operating a sustainable business and developing new work, soon emerged. I increasingly realised, when pitching for commissions and developing work, that 3-D modelling software would support the design and development of ideas and the promotion of work: I had no resources to support this.

Chapter 2: Methodology & Methods

A survey of practice-based UK theses, in the field of studio ceramics, was undertaken to provide an overview of the field and the methodological approaches used (see Table 1).

Year	Title	Methodology
1993	The Monitoring and Control of Specialist Ceramic Kiln Atmospheres and Emissions (Malins 1993)	Articulated as series of methods relating to glaze and kiln technology and a perceptual study of glaze tests.
1996	The Role of Architectural Ceramics in Contemporary Site-Specific Art: An Analysis from the Perspective of the Art Practitioner Through Four Case Studies of Commissioned Artworks (Wheeler 1996)	Naturalistic Inquiry.
1998	The Integration of New Technology into Ceramic Designer-Maker Practice (Bunnell 1998)	Naturalistic Inquiry.
	The Evolution of a Range of Salt Glaze Teapots: An Investigation into the Philosophical Technical and Aesthetic Possibilities of Salt Glaze using the Teapot as a Model (Meanley 1998)	Not stated in Abstract.
1999	The Role and Significance of CAD/CAM Technologies in Craft and Designer-Maker Practice: with a Focus on Architectural Ceramics (Marshall 1999)	Multi-method approach using Grounded Theory.
	Water-Based Ceramic Transfer Printing: The Development and Creative use of a New On-Glaze Screenprinting System (Petrie 1999)	Practice led.
2002	Autoreductive Glazes – A Systematic Practical Exploration (Slade 2002)	Data unavailable.
2004	An Investigation into the Potential of Ceramics to Expressively Render Flesh and Skin on the Human	Articulated through theories of expression providing an account of

	Form (Mayo 2004)	artworks: a methodology for analysing aesthetic properties.
2006	Action/Reflection [Multimedia]: A Creative Response to Transition and Change in British Ceramic Manufacture (Brownsword 2006)	Not stated in abstract.
	Medium as a Process: The Role of the Medium in the Making Process and its Impact on the Development and Expression in Figurative Ceramic Artwork (Martini 2006)	Uses the phenomenological approach of Merleau-Ponty for analysis.
2007	Shattered: A Practice Based Investigation of Contemporary Women's Stories of Surviving Sexual Violence, Mediated Through Ceramic Material Metaphor (Clare 2007)	Data unavailable.
2008	An Investigation into the Potential Creative Applications of Refractory Concrete (Bremner 2008)	Developed '...a method of triangulation that involves a mix between the scientific method and the more subjective method of radical humanist theory as promoted by Feyerabend'.
	Evoking Intimacy: Touch and the Thoughtful Body in Sculptural Ceramics (Kemske 2008a)	An evolving methodology: resulting in the development of an 'integrated practice/theory model'.
	The Authenticity of Clay and its Re-definition Within Contemporary Practice: Ceramic Familiarity and the Contribution to Expansion (Livingstone 2008)	Engages with practice and theory: states methods involved in these areas.
	New Ash Glazes from Arable Crop Waste: Exploring the use of Straw from Pisum Sativum (Combining Pea) and Vicia Faba (Field Bean) (Metcalf 2008)	A 'composite' methodology, rooted in art practice, employing multiple methods.
2009	The Combination of Glass and Ceramics as a Means of Artistic Expression in Studio Practice (Kelly 2009)	A 'multi-method technique' using 'emergent Art and Design research methods'.

	Ceramics Landscape Memory and Confection (Scott 2010)	Methodology articulated through description of methods.
2010	The Ways in which Arrangements of Colour Interact and Manipulate Spatial Perception of Three-Dimensional Ceramic Forms (Moorhouse 2010)	Data unavailable.
2011	The Poetics of Glaze: Ceramic Surface and the Perception of Depth (Boos 2011)	None stated.
	The Physicality of Print (Brown 2011)	Develops a 'thinking-through-making' methodology.
2012	The Creation of Illusory Depth and Movement on the Surface of Ceramic Artworks (Graham 2012)	Data unavailable.
	The Ways in which Surface Marks and Tone may Manipulate Perception of Three-Dimensional Ceramic Artworks (Kim 2012)	Data unavailable.
2013	Innovation in Paperclay Ceramic Arts (Gault 2013)	Contribution to knowledge through existing publication: methodology articulated through description of methods.
2014	The Possibility of Risk: An Exploration of Failure as Success Through the Creation of Contemporary Ceramic Artwork Based upon the Korean Moon Jar (Kim 2014)	Methodology articulated through description of methods.

Table 1: Practice-Based UK Theses in the Field of Studio Ceramics: Methodological Approaches

In all, 24 theses were found and the methodological approaches were identified using the abstract and/or thesis when available. In 5 cases, data was unavailable. In 4 cases, the methodological approach was either not stated in the abstract and/or thesis. In 4 cases, it was difficult to ascertain a methodology which was interpreted as a description of methods. In 2 cases, the project methodology was defined as 'thinking-through-making' or as being 'practice led', while a further 2 theses note a relationship to art practice. Two theses identified methodology with their analysis, by using theories of expression to provide an account of artworks or through a phenomenological approach. Two theses were clearer in their ambitions

to develop hybrid methodologies by combining scientific and subjective methods, or developing a model of integrated practice and theory. Two theses used a multi-method approach and a further 2 specifically state Naturalistic Inquiry in their methodology.

Clearly, the methodological approaches vary greatly: in some cases, methodology was of little significance, and at the other end of the scale it became an active concern of the research process. The same understanding of 'methodology' was not widely shared and there was a general tendency towards researchers establishing a bespoke solution.

The methodological approach to this research is naturalistic, being adapted from the action research methodology of the Social Sciences where improvement of and involvement in the research environment are paramount, as is a close and collaborative relationship between the researcher and the researched, and a flexible approach to the design of the research is necessary (Robson 2011, pp.188–192).

The methodological model of this research is based on Naturalistic Inquiry. A closer look at Wheeler (1996, pp.95–96) demonstrates an acknowledgment of how Naturalistic Inquiry supports the chosen case study method, however this research draws more on Bunnell's (1998) adaption of Naturalistic Inquiry. Gray & Malins (2004, p.72), note how the characteristics of this form of inquiry have been adapted by Bunnell '...for ceramic design research providing a helpful example of how an artist or designer can relate these concepts to practice-based research' (ibid). Bunnell also interprets some of the key characteristics of Naturalistic Inquiry in a more visual way through the use of '...an engaging flower image as a metaphor for the 'natural'' (ibid).

Studio practice is at the core of the methodology, enabling the development of new digital skills and a response to Standard Ware from the informed perspective of the maker. For example, my previous practice instils sensitivity to the Studio Pottery production context which has different philosophical and production aims to mass-manufacture. Likewise, an understanding of Leach Pottery domestic ware, from a maker's perspective, means that pots, material and processes can be appreciated and engaged with for what they are rather than what they might represent from, for example, a historical perspective. The application of practice acknowledges these facets and provides the flexibility to explore them in a sensitive and unfolding dialogue to engage with Leach domestic ware in the context and medium of its creation.

This Chapter continues to present Lincoln & Guba's (1985) characteristics of Naturalistic

Inquiry then selects and adapts these characteristics for undertaking the research at a macro level. These selected characteristics of Naturalistic Inquiry are then adapted at a micro level for the purposes of practice: this includes a visualisation of the methodological model of my practice. The final Section of this Chapter provides an outline of the methods used in the research.

Section 2.1: Naturalistic Inquiry

2.1.1: Characteristics of Naturalistic Inquiry

The methodological approach uses a research design that is open, experimental, emergent and responsive. It is based on Naturalistic Inquiry, a human and qualitative approach to research developed by Lincoln & Guba (1985), allowing the research question to be approached through a combination of methods e.g. from employing a more traditional contextual review to engaging with practice to triangulate a position on Leach Standard Ware. Lincoln & Guba's (1985) characteristics of Naturalistic Inquiry are paraphrased below:

1. Natural Setting: research is carried out in the natural setting or context of the study.
2. Human Instrument: the researcher is the primary data gathering instrument.
3. Use of Tacit Knowledge: tacit (intuitive, felt) knowledge is a legitimate addition to other types of knowledge.
4. Qualitative Methods: preferred, over quantitative, because of their sensitivity, flexibility and adaptability.
5. Purposive Sampling: increases the scope or range of data exposed increasing the probability of identifying emerging themes.
6. Inductive Data Analysis: preferred, making it easier to give a fuller description of the setting and facilitates interactions between inquirer and respondents.
7. Grounded Theory: preference for theory to emerge from the data.
8. Emergent Design: research design emerges from the interaction with the study as it is unlikely that enough will be known in advance about the realities that might emerge.
9. Negotiated Outcomes: negotiating meanings and interpretations with participants.
10. Case Study Reporting Mode: preferred for its analysis of context.
11. Idiographic Interpretation: tendency to interpret data idiographically (particular to the case) rather than nomothetically (making generalisations).
12. Tentative Application: need for tentativeness in making broad applications of findings.
13. Focus-Determined Boundaries: boundaries established on the scope of the enquiry to

determine inclusion/exclusion of new information.

14. Special Criteria for Trustworthiness: credibility, transferability, dependability, and confirmability established using specific research techniques depicting the context's complexity.

2.1.2: Adapting Naturalistic Inquiry

The following characteristics of Lincoln & Guba's (1985) Naturalistic Inquiry were selected and adapted for undertaking the research at a macro level:

Natural Setting: the research is context-specific and mostly conducted at Falmouth University and the Leach Pottery, St Ives. Both sites offer unique and rich qualities to the research: the University environment encompasses various CAD/Computer Aided Manufacturing (CAM) and ceramic production facilities, traditional resources like the library, and access to specialist staff and researchers like the members of Autonomic.

The Leach Pottery is an historical site and the place of new tableware production, presenting the possibility for a rich immersion in its history and philosophies, access to real-world pottery production, and the opportunity to talk to current and visiting potters who have been involved with the Pottery and have unique insights relating to it. This facilitates the development of rich and responsive research in relation to Standard Ware and practice.

Human Instrument: as a practice-based researcher, I am the primary data gathering instrument of the study's practice and its participants. I aim to develop relationships with participants and staff at both organisations in order to facilitate and enrich the research. Whilst I have a background in practice and understand some aspects of the Leach Pottery and its tableware, I also approach this context as an outsider and seek to do this in a sensitive and responsive manner.

Tacit Knowledge: my practice often uses tacit knowledge (the five senses and intuition) to gather data, analyse, and develop new realities. I also use this knowledge in the Natural Setting and in the inter-personal contexts of being a Human Instrument. Tacit knowledge is individual and cannot be readily communicated through text: it can be responsive and unanticipated.

Emergent Design: as the study progresses and I become increasingly involved as a Human Instrument in the Natural Setting, different problems and opportunities will arise. It is not possible to establish foreknowledge about the different realities of the study, its practice, and how they will evolve: I will be working in a real-world environment where things might not go

as planned. It is anticipated that the Natural Setting of the Leach Pottery will introduce new material to the contextual review and the practice. Likewise, the setting of the University and engagement with practice will result in unpredictable outcomes that will inform the research.

Negotiated Outcomes: where possible, I seek to negotiate outcomes with research participants. This might include discussing my practice, and Leach Pottery practice, through open dialogue at the Leach Pottery, or exhibiting the outcomes of the research to open-up the possibility of new interpretations and further dialogues. However, I also refer to my Human Instinct as a decision making mechanism, in the context of Emergent Design, which means I reserve the option to pursue outcomes that feel 'right' as a maker. As my practice is also a research method (see p.37), Negotiated Outcomes occur with non-human elements like materials, methods, and process.

Idiographic Interpretation: the data will be interpreted in terms of the research context, especially the Leach Pottery and its practice, and potentially in the wider genre of Studio Pottery practice.

Special Criteria for Trustworthiness: this will involve Prolonged Engagement in the research contexts over an extended period of time in order to understand the nuances of the research topic and develop its scope through Persistent Observation. I will attempt to triangulate the inquiry using a combination of methods like the contextual review and practice.

Section 2.2: Practice & Naturalistic Inquiry

This Section uses selected characteristics of Lincoln & Guba's (1985) Naturalistic Inquiry to position my practice, and its inter-related components, as a research method at a micro level.

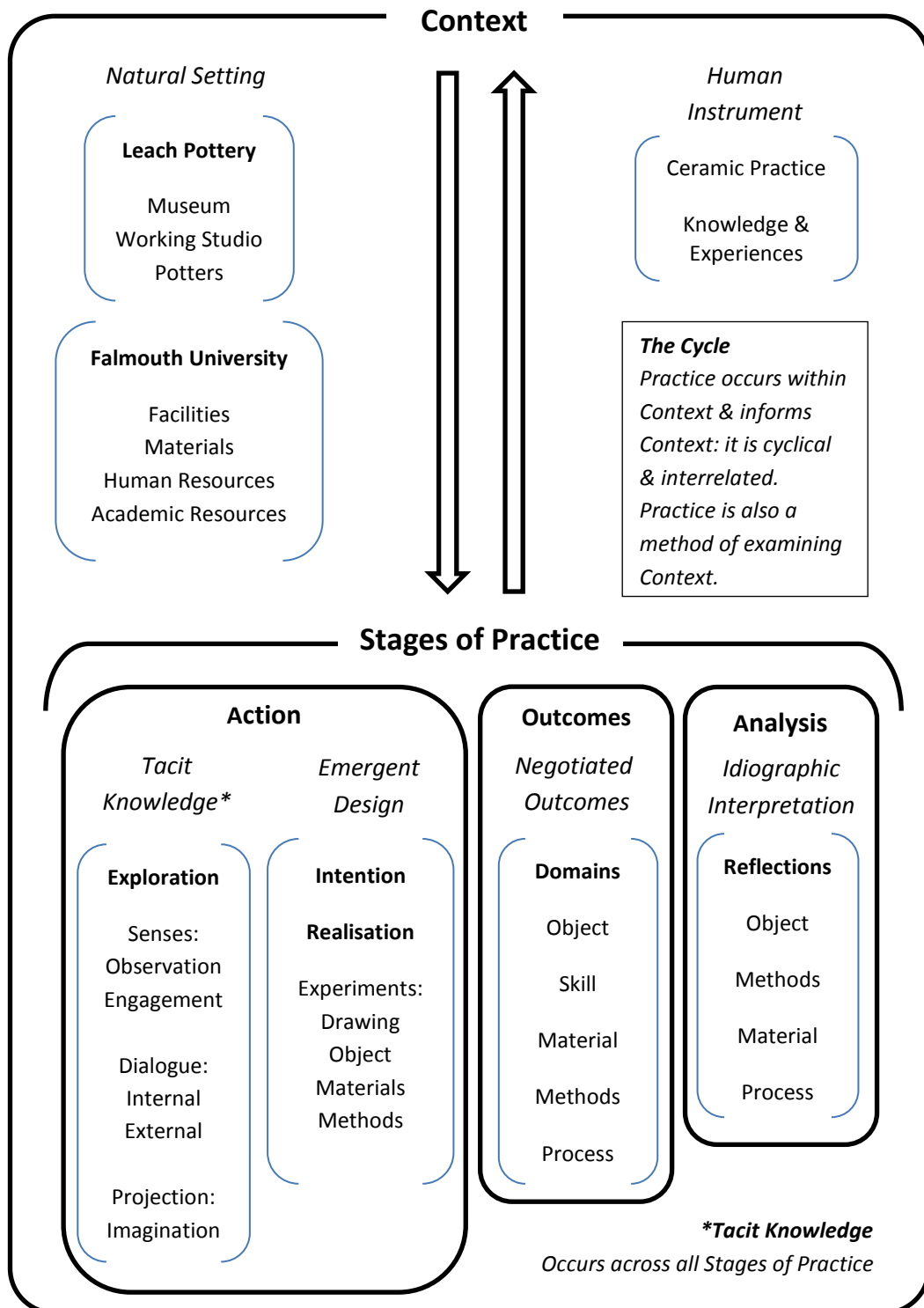


Figure 9: Naturalistic Inquiry: Model of Researcher's Practice

My approach to practice is grounded in over 15 years' experience which is contextualised in the spectrum of Studio Pottery practice. My practice encompasses many facets including the exploration of objects and context, imagining, making, testing, failing, recording and reflecting. Practice is a systematic inquiry and this is demonstrated using the previously selected characteristics of Naturalistic Inquiry to develop a model of my practice (Figure 9).

Section 2.3: Outline of Methods

This Section outlines the methods of the research. The primary methods are the contextual review (see p.40) and practice (see p.140), which comprise of further secondary methods listed below.

2.3.1: Research Management

- Activity, reflections and methods recorded on a self-customised private blog (available to supervisors)
- Activity recorded and planning managed through a digital mind map: SciPlore, later upgraded to Docear
- Zotero used for reference management.

2.3.2: Searches & Networks

- Theses searches undertaken using ETHOS and ProQuest for meta searches
- The Art Full Text (H.W.Wilson) & Art Index Retrospective (H.W.Wilson) and Design & Applied Arts Index mainly used for literature searches
- General Internet searches undertaken with Google search engine
- Collection of organisational documentation: publicity, price lists, and internal documents
- Use of local (St Ives) and online networks (Studio Pottery enthusiasts).

2.3.3: Data Gathering & Recording

- Unstructured and semi-structured interviews
- Observation: often participant as observer
- Field trips: to potters and Crafts Study Centre, University for the Creative Arts
- Audio and/or video documentation
- Photography
- Written and typed notes

- Sketching: analogue and digital
- Scanning: 2D and 3D.

2.3.4: Practice

- Ideas generation and visualising: using 2D and 3D sketching
- Experimental making
- Experiments: material, process, and methods
- Software for vector and bitmap editing, and design work: Rhinoceros 3D, Maya, Pepakura, Adobe Illustrator, Photoshop and InDesign, and CorelDRAW
- Software for writing and project management: Microsoft Word, Excel, and Scrivener
- CAM methods: CNC 3 axis milling machine and laser cutters
- Mechanical tools: band saws, a power saw, a belt sander, grinders, pillar drills, a clipper saw, glass cutters and grinders, a vac former, and a plaster lathe.
- Material methods: plaster casting and cold rubber working
- Ceramic methods: the potter's wheel, modelling, mould making, hand-building, slip casting, glazing, and firing work in electric and soda kilns.

2.3.5: Exposition

- Open dialogues
- Academic papers
- Exhibition of work.

Section 2.4: Summary of Chapter

This Chapter began by outlining the methodological approach, which is naturalistic and based on the principles of action research from the Social Sciences tradition. The methodology is further informed by an adaptation of Naturalistic Inquiry (Lincoln & Guba 1985), which is used to place practice at the core of the research.

The characteristics of Natural Inquiry are then established, selected from, and adapted to the purposes of the research at a macro level. This methodology is also applied at a micro level by describing how it is adapted for the purposes of practice. The Chapter finishes by listing the various methods used during the research.

Chapter 3: The Critical & Contextual Review

The contextual review begins by defining and populating the cultural heritage of Leach in order to develop a framework on which to base the practice. Particular focus is given to the research context of the Leach Pottery site, and the tableware production of Leach Standard Ware and Leach Tableware.

Potter's tools are then examined to understand how pots are made, especially in the context of Leach Pottery practice. The final section examines some of the critical frameworks around digital crafts practice before examining the practice of digital ceramic practitioners.

Section 3.1: The Cultural Heritage of Leach

The following definition of the 'Cultural Heritage of Leach' was developed (see 'Appendix 1.1: Initial Definitions') to assist with framing the review:

A collectively recognised intellectual and artistic culture, originally established and propagated by Bernard Leach, to which Leach's relatives, and a wider body of apprentices, makers, thinkers, collectors and users of pottery, are heirs. The tangible objects of this heritage are physically manifested in books, pots, drawings and the fabric of the Leach Pottery. There are also non-tangible aspects to this heritage in philosophies and methods of pottery making that have subsequently been adopted and reinterpreted by makers and writers. This legacy continues being generated today through the activities of the Leach Pottery, the people associated with it, and through the historic and contemporary Leach diaspora that is evidenced in national and international connections to the Leach Pottery.

This section begins with an examination of Bernard Leach's significant contribution to cultural heritage as an author, artist, and as the subject of research and other authorial works. The nature of the research environment is then established through an examination of the Pottery's contribution to cultural heritage which provides a context to the practice through its training, activities, and ambitions today. Leach Standard Ware and its contribution to cultural heritage is then examined: the periods of production are defined and the record of Standard Ware is surveyed, especially the catalogues, and the potters' perspectives, which are vital to understanding what Standard Ware was. Finally, contemporary Leach Tableware and its contribution to cultural heritage is examined through ideas about its design, its making, and retail. It is also considered from the Leach potter's perspective to reveal the importance of skill and the ideas behind it, thus providing an understanding of contemporary practice at the Pottery.

3.1.1: Bernard Leach: An Overview

This section provides an overview of Bernard Leach who, after studying under the sixth Kenzan in Tokyo in 1912 (Leach Pottery 1937, p.2), returned from Japan, with Shoji Hamada in 1920, to establish the Leach Pottery. His creative output spanned several disciplines: he published books, and produced drawings, prints, and pottery (Waal 1998; Olding 2010; Wingfield-Digby et al. 1998; Cooper 2003). He stood astride two centuries, was a conduit between Eastern and Western pottery cultures (Leach 1976a) (Leach 1978), is associated with the beginnings of the UK Studio Pottery movement, was highly influential in post-war handmade pottery (J. Jones 2007; Rice 2002; Dormer 1988), and is the subject of several texts. He also introduced, through the Leach Pottery, new firing techniques to the West, including low temperature raku and the high temperature climbing kiln.

3.1.1.1: Leach the Author

A Potter's Book (Leach 1976a), first published 1940 and re-printed as recently as 2011, is Leach's most significant contribution to cultural heritage. It is a 'how-to' manual and often considered a spiritual guide for the potter, outlining standards of beauty that should be strived for e.g. the 'Sung standard' (Leach 1976a, p.5) and the importance of living with beauty (1976a, p.7). It is not as technical as Michael Cardew's *Pioneer Pottery* (Cardew 2002), but its influence and popularity is 'colossal' (Waal 2003): a '...manual and a polemic... (2003, p.93).' It '...is Leach at his strongest and most focused, speaking from undisputed personal knowledge both as a potter and commentator on pots in modern society' (Cooper 2003, p.212). For aspiring potters like Warren MacKenzie, it was the only rich expression of what it is like to be a potter (Gross 2012), generating a significant following at the time. See Jones (1999, pp.197–201) for a more detailed consideration of the book and its context.

A Potter's Book was preceded by the less well-known, and briefer, *A Potter's Outlook* (Leach 1928) where Leach surveys industrial manufacture and the role of the potter in often challenging tones: 'Granting then the need of industry and the function of the machine to reproduce with fidelity, the first necessity in pottery is obviously to reproduce good pots. This simply is not done (1928, p.1).' Like *A Potter's Book*, its arguments can be contradictory and fragmented, but Leach is beginning to establish his ideological agenda of the potter.

Leach authored further publications: *A Potter's Portfolio* (1951) developed themes from *A Potter's Book* with a strong pictorial and explicative element about pots he regarded. It was edited and re-published for the American market as *The Potter's Challenge* (Leach 1976b)

(Cooper 2003, p.352). A Potter's Work (Leach 1967), also strongly illustrative, contextualises his practice. Leach wrote about other potters, notably Shoji Hamada (Leach 1975) and introduced Japanese potter Kenzan to a wider Western audience (Cooper 2003, p.324) (Leach 1966) along with Soetsu Yanagi's ideas about craft and beauty in *The Unknown Craftsman* (Yanagi & Leach 1972). Leach's last major work, *Beyond East and West: Memoirs, Portraits and Essays* (Leach 1978) is his most autobiographical work.

3.1.1.2: Leach the Artist

Leach is most recognised for his pottery which features in international private and public collections. Significant collections like those of Wingfield Digby (Wingfield-Digby et al. 1998) and Milner-White (Riddick 1990), contain examples of Leach's work alongside contemporaries like Shoji Hamada and Michael Cardew. The Victoria and Albert Museum (Watson 1993) possess a wide collection of Leach's early, though not necessarily adept, pots.

Leach bequeathed some 15000 items to the Crafts Study Centre (2008a) to form a collection of drawings, photographs, correspondence and pottery. He was a '...consummate draughtsman, producing accomplished drawings, etchings and decoration on pots and paper, which are fluent, relaxed and confident' (Cooper in Olding 2010, p.3). *The Etchings of Bernard Leach* (Olding 2010) demonstrates his early involvement, and ability in, printing techniques.

3.1.1.3: Leach the Subject

Leach has been written about at length in Cooper's (2003) detailed biography. Waal's (1998) equally insightful but briefer biography found itself attracting criticism from potters like MacKenzie (1998, p.103): '...there seemed to be a hidden agenda. This was to praise Leach but at the same time to slant as many references as possible to denigrate the man and his contributions to the art of ceramics'. Jones' (2007) book on twentieth century studio pottery, based on his earlier thesis (Jones 1999), provides a consistently referenced insight into Leach and the studio pottery context, more so than Rice's (2002) similarly aimed book. Harrod (1999, pp.141–3, 257) gives some attention to Leach, but is more useful for its wider contextualisation of studio pottery and the crafts movement. Watson (1997) provides good coverage of Leach, especially as a visual resource.

There are limited theses on the topic of 'Bernard Leach'. EThOS and ProQuest returned 0 title results. ProQuest returned 2 abstract results where Leach is cited, but is not a significant amongst the topics of mid-temperature glazes (Englund 1993) and the aesthetics of Collingwood (Kavanagh 1990). Of further note is Jones (1999) who provides a detailed account

of the rise of studio pottery and the role of Leach and the Leach Pottery within this, positioning Leach as the leader of the early British studio pottery movement. Stair (2002) examines the critical framework for the appreciation of Leach and his peers, especially his early critical profile, which he struggled to maintain in the 1920s, before charting his position in the 1930s and then examining critical responses to *A Potter's Book*. Moon (2006) examines post-war Australian craft pottery using *A Potter's Book* as a critical lens. Less significantly, Persick (1964) considers Leach alongside the potters Charles Binns and Arthur Baggs to try and reach an understanding of the reasons behind their work.

3.1.2: The Leach Pottery

The Leach Pottery site and buildings, which Bernard Leach began establishing in 1920, closed in 2005 before reopening, in 2008, as a museum, working pottery and educational resource (see 'Appendix 1.2.1: The Pottery's Recent History, Continued Significance & Reopening'). It is where numerous potters have trained and worked, producing thousands of personal pots and tens of thousands of Standard Ware items, being:

...established on the principles and practice Leach had experienced in Japan and the Far East. It is thought to be the first pottery in the western world to have a Japanese climbing kiln which was built in 1923 by Matsubayashi Tsurunosuke. The kiln is still there today having been in continuous use for over 50 years until the mid-1970s. (Twomlow 2014a)

As a research topic, the 'Leach Pottery' has no detailed thesis coverage: both EThOS and ProQuest returned 0 results for titles and abstract searches. However, the Pottery makes a significant contribution to cultural heritage and the context of practice through the potters it has trained. This topic is explored below, as is the Pottery today, to provide an understanding of the research context, specifically the Pottery's organisational ambitions and activities, and the significance of the Pottery from the Director's perspective.

3.1.2.1: The Pottery's Influence: Training & Dispersal

The Leach Pottery is the progenitor of intangible assets in the potters it trained who dispersed regionally, nationally and internationally, often promoting the Leach tradition or its essence in their work. Alex Lambley, in her on-going PhD, is researching 'Mingei and its Transnational Reception: The Translation and Appropriation of Mingei Theory and Practice by Bernard

Leach's four Vancouver Apprentices (1958-1979)'⁴.

This dispersal of potters took place through Leach family members who worked directly at the Pottery or were associated with it e.g. David (Cooper & Niblett 2003), Michael (The Pottery Studio 2014), Philip (Springfield Pottery n.d.), John (Muchelney Pottery n.d.), Jeremy (The Pottery Studio 2012), and Simon Leach (S. Leach n.d.) and through non-Leach potters like those exemplified in Whybrow's (2006) story of the Pottery and its students.

After a forward by John Bedding, recounting his experiences of training and working at the Pottery, and a historical biography of the Pottery by Whybrow (2006), there follows individual details of the potters associated with the Pottery. Included are many established names of twentieth century studio pottery e.g. Shoji Hamada, Michael Cardew, Katharine Pleydell-Bouverie, Harry Davis, William Marshall, Geoffrey Whiting, Warren MacKenzie, Robin Welsh, Derek Emms, Richard Batterham, Gwyn Hanssen Pigott, and Byron Temple. The Pottery Director summarises the diaspora's scale:

It is estimated that over 200 potters have worked and trained at the Leach Pottery over the years. These potters...continue to travel from every corner of the world, often returning home to set up their own studios and train their own apprentices...they have created an international diaspora of literally thousands of potters who trace their lineage back to the Leach Pottery and St Ives. (Twomlow 2014a)

3.1.2.2: The Pottery Today

The Leach Pottery continues contributing to cultural heritage, even though its site is small:

... with only four designated parking spaces and situated at the top of a steep hill on the outskirts of St Ives. Nonetheless we routinely attract around 11,000 to 12,000 visitors per annum to the main site...Visitor numbers have been steady over the last four years...In 2013 visitors to the site were up by 10%. (Twomlow 2014a)

However, its small footprint belies its contents:

- an historic workshop with climbing kiln, iconic fireplace and potter's wheels
- two new museum exhibition spaces
- a purpose-built modern studio making new tableware
- Pottery Cottage: once Bernard Leach's home, now retailing Leach Tableware and works by other potters
- Beagle Cross: the Clore Learning Studio working with schools and families, adult

⁴ Title correct as of April 2014

education, professional workshops and residencies

- Beagle Cross: accommodation for students and potters and a new library and research space to house PhD students and visiting researchers
- a Museum collection comprising nearly 400 pieces from artefacts, tools and equipment through to Leach Standard Ware and individual pots.

Adapted from Twomlow (2014a)

3.1.2.2.1: Organisational Aims & Activities

The following is a summary of the Leach Pottery's current aims and activities based mostly on its 2014-2018 Forward Plan (Twomlow 2014a).

3.1.2.2.1.1: *Leach Pottery Aims*

The Pottery's Mission '...is to promote excellence in the practice, study and appreciation of pottery in the context of Leach' (Twomlow 2014a). The charitable objectives are, in essence, a re-statement of the Objects of the Memorandum of Association (Anon 2005b). Of note are the organisation's ambitions in regard to studio pottery:

To provide an inspirational hub for studio pottery, supporting, encouraging and facilitating advances to be made in improving the quality and practice of studio pottery production, research and education in the South West and beyond. (Twomlow 2014a)

3.1.2.2.1.2: *Leach Pottery Activities*

The Leach Pottery identifies several areas of activity: 'The Leach Pottery today combines a museum and heritage site with a contemporary gallery space and shop, working production pottery and more recently, a training and research facility (Twomlow 2014a)'.

Continuing pottery production includes tableware and decorative tile making, providing '...a training vehicle for potters to develop their skills, a commercial income stream and a marketing opportunity as the pots all bear the well-known Leach Pottery mark' (Twomlow 2014a).

In addition to Lambley's previously mentioned PhD and this research, the Leach Pottery is also supporting the doctoral research of Julia Twomlow: 'Alternative Potters: the Pots and Politics of Harry and May Davis, 1934 to 1986' and Kat Wheeler: 'The Value of Locally Sourced Glaze

Materials in Studio Pottery Practice'⁵.

Further activities of the Pottery are outreach work through exhibitions, fairs, talks, demonstrations, lectures and events, and partnerships and collaborations in the museum, Higher Education, and private sectors, and in the cultural industries. This includes wider community projects like the Cornwall Ceramics Trail (Twomlow 2014a).

Further details of visiting students/potters can be found in 'Appendix 1.2.2: Students & Potters at the Leach Pottery: 2008-2013'. See 'Appendix 1.2.3: Exhibitions at the Leach Pottery: 2008-2013' for an overview of how the Pottery contributes to cultural heritage through its exhibitions.

3.1.2.2.2: The Leach Pottery's Continuing Significance: The Director's Perspective

The following examines the Leach Pottery's significance from the perspective of its Director, Julia Twomlow (2014b) who believes the Pottery remains significant as a museum and because of its role as a heritage site in the local and international community. It tells '...the story of the arts of St Ives – without it I think that story is incomplete'. The Pottery also has significance beyond a museum as a working pottery: '...we were missing something if we didn't try and make the most of the role it had in peoples' hearts and minds as a studio pottery' (ibid): there was also a pragmatic imperative to develop pottery production and establish a cash flow, but Twomlow believes that this venture '...wouldn't have worked if people hadn't actually valued and wanted the [contemporary] Standard Ware...' (ibid).

Pottery production is a significant driver of interest in the Pottery: 'The more demand there was for it, the more it caught peoples' imagination'(Twomlow 2014b). This interest in contemporary Standard Ware exemplifies what Twomlow feels is a '...swell of interest that was coming from the ground', countering the decline in ceramics seen in the education environment. Twomlow believes the Pottery has a place in peoples' imaginations, with a strong brand that promotes pottery production and interest in it. This area of the business is 'experimental' and 'organic' as evidenced in the Pottery's recent collaborations with Seasalt⁶ which takes Leach pottery into a 'mainstream setting'. Twomlow feels there are parallels between today's climate and the post-war environment where the Leach Pottery thrived:

⁵ Both titles correct in September 2014.

⁶ 'a Cornish fashion company. Women's and men's clothing, footwear and accessories inspired by the creative and maritime heritage of Cornwall'. See <http://www.seasaltcornwall.co.uk>

‘...we might be riding on a similar tide of people looking for something else, looking for something that has some kind of meaning for them’ (ibid).

3.1.2.3: Summary: The Leach Pottery

This Section sets the scene and demonstrates the Pottery’s contribution to cultural heritage. It was established over 90 years before closing and then reopening, with £1.7 million of support, as a museum. The Pottery was deemed important to save because of its potential to train ceramicists, its historical significance to the town and because it is part of our national ceramic cultural heritage.

The Pottery demonstrates significant intangible assets through the potters it trained and those who worked there. This tradition continues, and it is estimated that over 200 potters have direct experience of training and/or working in the Studio and, as a consequence of these potters moving away or returning abroad, thousands of potters can trace an influence back to the Leach Pottery. The Pottery may be a small site but it contains historically significant features like the kiln and building, and a collection of artefacts and pots. It also has a new production and education studio, gallery and retail space, accommodation for potters, and specialist research space. The Pottery also contributes to cultural heritage through its clearly articulated Mission Statement and its public and professional-focussed activities in the fields of education, training, masterclasses, and the production of tableware.

The Pottery’s Director believes the Pottery remains significant because of its role in the local and international community and that it is part of the story of St Ives. The continued production of tableware is seen as a significant indicator of its value, in that it remains in demand and presents a model of production and consumption that reflects the way people want to live. The Pottery is seen as having a strong brand and is prepared to engage with the market in new ways, as reflected in the collaboration with Seasalt.

3.1.3: Leach Standard Ware

This Section begins with an introduction to Standard Ware through Leach’s preoccupation with the idea of ‘standard’, and by setting-out the broader context of Standard Ware. The review then proposes two main periods of Standard Ware production and then examines the record of Standard Ware largely based on materials from the Crafts Study Centre: especially focussing on the Pottery’s catalogues to identify key characteristics and production periods. Standard Ware is then examined from the Leach potters’ perspective to understand its definitions, purpose and the training involved.

3.1.3.1: Standard Ware: An Introduction

Standard Ware describes the domestic tableware the Pottery began making after 1937 and ceased making after Bernard Leach's death in 1979. It was the Pottery's first and, so far, most significant period of tableware production. Bernard Leach provides only piecemeal references to 'Standard Ware' in his writing. Whybrow (2006) offers the first text providing an overview of many of the potters associated with its production, yet only briefly engages with the Standard Ware that the apprentices and students made.

One of the richer records of the Pottery and its production is presented in a visually edifying film from 1952 with two narrated versions: one by Warren MacKenzie, the other by Bernard Leach (Gross 2012). The film features clay making, pots being thrown by David Leach, William Marshall, Kenneth Quick, Bernard Leach, and the glazing and firing of Standard Ware. MacKenzie's narration provides an overview of staff in the footage, giving a sense of production and the teamwork that existed alongside a division of labour in tasks like clay preparation, glazing, and kiln packing. While MacKenzie describes the events unfolding, Leach talks more of the poetics of making, skill, appreciation and connections with the East. The DVD features a second film with footage shot and later narrated by MacKenzie, originally envisaged as a training resource for his return to America: it emphasises process, especially Marshall making a teapot and demonstrations by Quick and David Leach.

3.1.3.1.1: 'Standard': A Pre-Occupation

Leach was preoccupied with the idea of 'standard'. In *A Potter's Outlook* (Leach 1928) he refers to a 'classic standard' of pottery, or the mean 'standardised' ware of industry, or 'eastern classic standards'. In *A Potter's Book* (Leach 1976a), Leach dedicates its most influential chapter to the idea of 'standard' in 'Towards a Standard'. He pushes the reader to adopt a universal standard of good pottery based on Song Dynasty pottery (Leach 1976a, p.5). He was not arguing for imitation but to adopt an approach or standard to process, materials, forms and an 'un-selfconscious workmanship' (Leach 1976a, p.6).

3.1.3.1.2: Standard Ware: A Context

Walter (2002, pp.37–51) offers an alternative understanding of Standard Ware in the context of studio pottery's relationship to domestic tableware, approaching the topic through handmade cooking pots. The chapter 'Studio Pottery: the Legacy of Bernard Leach', traces the legacy of tableware production and training through Michael Cardew, the Winchcombe Pottery, Harrow School of Art, the Dartington Pottery Training Workshop, then chronicling the shift, in the 1980s, to more individual and expressive functional ware, as well as the

continuation of John Leach's tableware making at Muchelney Pottery. In this context, Leach resurrects affordable, usable, country pottery that also served as a template for potters:

'...[Bernard Leach] resurrected the tradition of the country pottery to produce a range of usable and affordable domestic pottery as a part of a pottery's output. The pots illustrated in the Leach Pottery's standard ware catalogue provided templates for potters who followed...' (Walter 2002, p.51).

Jones (2007) presents a more detailed examination of Standard Ware, noting the Leach Pottery's transition from slipware (Edgeler 2010) production in the 1920s and 30s. David Leach says: in around 1939 '...a range of domestic stoneware designed by my father and myself for a guided production by the team...' was initiated (J. Jones 2007, p.87). Bernard Leach (1978, p.221) also agrees that Standard Ware was introduced before the start of World War II, and the cessation of hostilities brought fortuitous conditions for the Pottery as it moved from ticking over to 'finding a ready market for its work' (J. Jones 2007, p.88). The Pottery's fortunes improved, with David proposing that 1945-55 were the best years in relation to '...production, economic success and consistency of purpose...' (ibid).

From Bernard Leach's perspective, the purpose was not just the production of tableware 'to supply household articles both for enjoyment and use at a reasonable price as possible (Gross 2012)' but to move towards working as a group and engaging as part of a wider community:

There is a Cornish expression a 'we job' in contrast to an 'I job' which sums up the idea which we believe in and the direction in which both as craftsman and ordinary members of community we are attempting to find a way in which the function of art can find its modern expression in closer contact with life. (ibid)

The introduction of Standard Ware, and David's effectiveness as manager, was such that the Pottery achieved financial stability, although once David left it was suggested that Bernard's pots generated the majority of income:

Under David's management the Pottery did run a balanced budget although it was found out when Bernard married Janet Leach that the balance of the income, the major portion of the income, was from Bernard's very expensive individual pots not from the hundreds, even thousands you would say, of inexpensive Standard Ware pots that we were cranking out for sale in the shops. (Mackenzie in Gross 2012)

Oliver Watson, of the V&A, considers Standard Ware to be the most significant English studio pottery ever made and a direct result of David's industrial training:

This feat was the prelude to the development of St Ives standard ware, which in its style, methods of making, marketing and selling has been perhaps the single most important and influential type of English studio pottery ever made. (Watson in Cooper

& Niblett 2003, p.8)

3.1.3.2: Periods of Production

Through analysis of the contextual field, I locate the beginning of rudimentary tableware production to the late 1920s (Leach 1946) in the form of domestic slipware which continued into the mid-1930s in the absence of Bernard (travelling in the East) and David (training in Stoke) when Laurie Cooke and Harry Davis continued its production (ibid). Davis, arriving in 1932, is credited with teaching David professional throwing techniques and instigating technical improvements that shifted the Pottery towards profitability (Cooper & Niblett 2003, pp.21 & 23). David undertook a Pottery Manager's course with the aim of returning to St Ives and solving further technical problems (Fournier 1977, p.10) in 1937 (ibid p.29). David is credited with reinvigorating the Pottery with new machinery, modifications to the kiln, co-designing the kick wheel, and initiating the apprenticeship system (Cooper & Niblett 2003, p.23).

I propose two main periods of Standard Ware production as outlined below. The first phase runs from approximately 1937 to 1955 and is associated with the leadership of David Leach in '3.1.3.2.1: Authorship & Early Production'. The second phase runs from approximately 1956 to 1979 and examines the leadership of '3.1.3.2.2: Janet Leach & Later Production'. I do not claim a full historical account of Standard Ware production and further recommend resources like the NEVAC audio recordings of David Leach interviews (University of the West of England 2000), which are not referenced here, for a richer understanding of the topic.

3.1.3.2.1: Authorship & Early Production

Standard Ware authorship is complex with Bernard claiming the designs, measurements, and even the handing out of work (J. Jones 2007, p.89; Leach 1978, pp.221–2 & 258), conflicting with David's statement claiming the co-design of the ware (J. Jones 2007, p.87). David also adopted a position which occupied the ground between authorship and interpretation: 'He [Bernard] was always the artist, creator and inspiration. I was the right hand man. Bernard would make the first pot and I would make the first interpretation. I taught the team of people' (Whybrow 2006, p.42). Jones (2007, p.89) positions David as Bernard's partner and the Supervisor of production. Niblett (2003) suggests that David devised the range and that the ideas for items came from both he and Bernard, with his father often sketching the shapes and David developing them. The idea of a clear and distinct authorship is further obscured by John

Bedding⁷ who made Standard Ware as a student apprentice. He suggests that the Standard Ware was evolved and perfected by William Marshall, the Pottery's main thrower at the time: '...originally designed by Bernard and his son David, but over the years it had been evolved and perfected through the hands of the main thrower William Marshall' (Whybrow 2006, p.8).

Cooper & Niblett (2003, p.23) evidence David's recognition that there was a requirement for new hardwearing stoneware which was devised under Bernard's guidance: 'After his father had drawn the shapes David made prototypes, which were discussed and, when the final forms agreed, the dimensions, weight and shape of each pot were recorded as a guide for future reference' (ibid). John Leach (2014a) suggests a similar scenario where David had input but also saw that the pots were executed from Bernard's 'masters', and that David believed he was responsible for the '...technical side and the pottery training, in the workshop, but granddad was basically the artist, the one who was more commercially viable to use, because he had a reputation...' (ibid).

Bernard did not appear to step back from the Standard Ware, even when the Pottery was under David's watchful eye, as noted by MacKenzie (Gross 2012) who describes how, in 1952, '...Bernard insisted on doing all the decorating, even the Standard Ware'. At the same time, Bernard seemed active in Standard Ware development e.g. Mackenzie notes, during tea break, that

...Bernard came from his studio and that was a time when we discussed the Standard Ware that was being produced and whether we were keeping up to the quality that he felt was desirable in the studio – discussions about varieties in the Standard Ware, what was considered to be exactly the right shape which varied from year to year. (ibid)

Bernard's intervention continued even into his later years at the Pottery: Bedding recalls Leach visiting his wheel, in the afternoon, to check the quality of his work as well as selecting and pricing individual pots for the showroom (Whybrow 2006, p.12).

If Bernard was the contemplative and artistic heart of Standard Ware, then David was its practical hands and the driver of change at the Pottery. Cooper (2003, pp.206–7) portrays David in an active role, at the late 1930s Pottery, through his modernisation of facilities, process, labour through apprenticeships, and instigating a '...radical overhaul of the kiln that involved converting it from wood to oil and the introduction of a new range of wares'. It is, again, impressed how David undertakes the designing of tableware through Bernard's

⁷ Was Deputy Chairman of the Leach Pottery Board of Trustees, now Honorary Lead Potter.

direction and that in the immediate pre-war period a consolidated range of tableware begins to take shape (Cooper 2003, pp.207–8) with pots ‘...sufficiently uniform to enable them to be ordered from a catalogue, became known as Leach Standard Ware...’ (Cooper 2003, p.208).

MacKenzie’s comments (Gross 2012) present the possibility that David’s involvement with the Pottery, and Standard Ware, was beyond a manager and business partner: the Pottery was his inheritance and he returned to the Pottery, from Stoke-on-Trent, with a desire to secure the future of the enterprise: this meant managing it, establishing the catalogue and producing repeated items, while maintaining quality:

Bernard had given David the Pottery as his inheritance and David had been sent off to Stoke-on-Trent to learn how to run a Pottery and he came back with the idea of managing it, and it was under David’s influence, I believe, that they first established the catalogue where they had standard things which they repeated again and again and people could order them by mail or shops could order so much of this and so much of that for their stock. So David was involved really in managing the work, making sure that we made enough pots to fulfil the orders and that people made pots which were credible enough to be sold under the Leach Pottery name. (ibid)

In terms of productivity, Bernard states (Gross 2012), in 1952, that between 7 to 12 staff are involved, making around 18000 Standard Ware items per year:

Today our team varies in number between 9 and 12 and we turn out about 20000 pots per annum of which some 18000 catalogued articles are domestic stoneware bringing us about 5 shillings net a piece and only 2000 are individual pieces selling in exhibitions etc at much in higher prices. Our team has a permanent nucleus of 7 or 8 who have been drawn from the locality and trained in our workshops.

This contrasts greatly with Bernard’s recollection of early production at the Pottery when 4 to 5 potters produced a total of 2-3000 pots per year, with only 10% being of show quality (Leach 1946).

3.1.3.2.2: Janet Leach & Later Production

David Leach left the Pottery, in 1955, partly in anticipation of Janet Darnell’s arrival in 1956 (J. Jones 2007, p.90) (Fournier 1977, p.14). Janet, also a potter, became Bernard’s third wife and took over management of the Pottery. The use of local apprentices, of which William Marshall was the first, was abandoned (J. Jones 2007, p.92), a decision Bernard claimed joint responsibility for (Leach 1978, p.259). Janet impressed the importance of the skill of batch making but also the need for individual development (Leach 1972, p.5). Standard Ware was not just about making repeatable shapes, but also ‘...training the eclectic group who came’ (Waal 2003, p.152). Janet was perhaps not interested in the ideology of Standard Ware

production: she described a 'stewpot psychology' at the Pottery (Leach 1972, p.5).

The quality of the Standard Ware fluctuated as production required technical skills and knowledge of forms that Janet was unfamiliar with, being '...unable to assess whether they were well or badly made' (Cooper 2006a, p.66). Although William Marshall is identified as being the leader of the 'crew' and helping to '...teach the apprentices and students, was also responsible for maintaining the quality of the ware...' (Cooper 2006a, p.68). The Pottery had size guides for the Standard Ware (Cooper 2006a, p.69) and Janet was involved in the adjustment and development of existing and new forms (Cooper 2006a, p.70), although she did not wish to make it (Cooper 2006a, p.66).

John Bedding identifies Janet's concern with the continuity of standards which resulted from a 'constant flaw in the system' (Whybrow 2006, p.9) which occurred when too many new students required training to make the tableware alongside William Marshall: the only remaining experienced staff potter. Janet sought to remedy such difficulties by employing an additional staff potter (Whybrow 2006).

Janet attempted to bring new managers into the Pottery to supervise and make Standard Ware in the early 1970s, in John Reeve, and in the late 1970s, in Byron Temple, but both attempts failed (Cooper 2006a, pp.120 & 123). Janet's attitude towards Standard Ware is described as ambivalent, yet she rejected an approach, in 1975, '...by the newly formed Dartington Training Workshop to take over production...' (Cooper 2006a, p.126). Janet's opposition was based on the belief that it would undermine the Leach Pottery's financial viability (Cooper 2006a, p.127).

After Bernard's death, in 1979, the production of Standard Ware ceased (J. Jones 2007, p.97; Cooper 2006a, p.133), though Cooper (2006a, p.114) indicates that the market for Standard Ware was declining in the mid-1970s with quality being variable and stores sometimes returning pots. However, in 1970, the Pottery still produced over 15000 Standard Ware items and 4000 to 5000 individual pots (Leach 1972, p.6): the overall productivity of the Pottery had slightly declined from 1952, the volume of individual pots increased, while Standard Ware production decreased. This system of making personal pots alongside domestic ware became a model that emanated into wider studio pottery production: 'Such a system became the model for many studio potters throughout the world, and continues to be accepted as a sound, workable basis for a small pottery, amalgamating art and skill, spanning the gallery and the craft shop' (Cooper & Niblett 2003, p.24).

3.1.3.3: The Record of Standard Ware

The record of Standard Ware further contributes to cultural heritage and is evidenced in surviving pots, in the sketches and photographs documenting the ware, and in the catalogues. The physical pots are not dealt with here as their physicality is not readily adaptable into words, but the forms are investigated in 'Chapter 4: Leach Pottery Standard Ware & Tableware: Lineages of Forms & Standards'.

'Standard Ware' has no thesis coverage: both EThOS and ProQuest returned 0 results for titles and abstract searches. A scarcity of topical material was available through St Ives sources: the Leach Pottery possesses no catalogues, the St Ives Archive (Taylor 2011) has two catalogues⁸, and Tremayne Applied Arts⁹ has four. Two enthusiasts¹⁰, found through online searches and social networking sites, provided high-resolution scans of catalogues. Mike Sanderson's website (Sanderson n.d.) illustrates three catalogue covers (Sanderson n.d.) alongside the images of pots and their catalogue number, description, size and prices in 1946 (Sanderson n.d.), 1952 (Sanderson n.d.) and the 1970s (Sanderson n.d.). Sanderson calculates the retail value of 1946 and 1952 Standard Ware in 2008 prices (Sanderson n.d.) while providing updated images of some pots. Thus, the information available on Standard Ware is limited in publications and online resources: it is probable that further resources exist in the public domain, but I focussed my activity on the Crafts Study Centre archive.

The Crafts Study Centre (2008a) possesses the largest archive of Leach material with approximately 15000 items related to Bernard Leach and the Pottery. I interrogated its database for 'Standard Ware' using the recommended links to the VADS (Visual Arts Database) (Crafts Study Centre 2008c), which returned only 15 results, while the Archives Hub (Archives Hub n.d.) returned 1 meta result referencing the Crafts Study Centre archive. The most effective search of the Crafts Study Centre archive was attained through the Leach portal page (Crafts Study Centre 2008b) using the Bernard Leach Archive Catalogue (Jones 1985; Jones 1987; Jones 1989; Crafts Study Centre n.d.). Subsequent searches for 'standard ware' returned articles, drawings, catalogues, and photographs, prompting a research visit where I identified three main categories of material: sketches, photographs, and catalogues. Relevant materials were photographed, including catalogues and price lists. See 'Appendix 1.3.1: Sketches &

⁸ Diane Callicot, of the Archive, loaned a personal copy

⁹ Street-An-Pol, St Ives

¹⁰ Tim Caulton & Mike Sanderson

Photographs for an overview of associated sketches and miscellaneous photographs. The catalogues also present a narrative that provides an insight into production and those involved in it: an analysis of this can be found in 'Appendix 1.3.3: Standard Ware: The Narrative'.

3.1.3.3.1: Standard Ware Catalogues

Leach Standard Ware catalogues present a photographic record of the ware alongside catalogue numbers, descriptions, dimensions, glaze finishes and retail prices. The Crafts Study Centre archive held broadly three types of catalogue: one promoting the Leach Fire Place and tiles, a bridge catalogue sitting between tile promotion and tableware, and a significant number of tableware catalogues. I also examined the wider use of Potters' Catalogues in the context of UK Studio Pottery, but did not consider it relevant to the narrative of Standard Ware (see 'Appendix 1.3.4: Potters' Catalogues: Their Wider Use').

The Leach catalogues were conceived as a way to provide the Pottery with '...bread and butter throughout the year' (Leach 1978, p.259). Bernard, in 1952, also recognised the significance of the catalogue:

...which has made a great deal of difference to the economics of the Pottery, selling as much as we're able direct to the customer...Perhaps a quarter of our ware goes out by post to customers and for the rest we either send some abroad or on the main send or sell through agencies up and down the country. (Gross 2012)

MacKenzie (Gross 2012) suggests different proportions of sales: '...about one-third in the pottery showroom, about one-third through catalogue sales, and about one-third through gallery sales, or shop sales, or it was wholesaled'. Like Leach (1978, p.259) and Oestreich (2014a), MacKenzie (2013a) also believed that Standard Ware '... was something which I think did put the Pottery on its feet financially'. John Leach (2014a) says that the catalogue created the possibility of having wholesale accounts with Liberty and Heal's in London: '...buyers in the various departments could order from a list knowing more or less what they were going to get within the scope of things being made by hand'. Indeed, the success of the post-War Pottery is attributed to these buyers:

When the war was over we were in a very favourable position being almost alone as a craft Pottery. It was an extraordinary situation where the big London stores-Liberty's, Heals, and so on,-who had been used to buying industrial products from Stoke, couldn't get them any more...I don't know whether it is realised how great a chance this gave to craft pottery. Previously it had been very difficult to get an entry into these big selling houses but after the war they were begging for the full output of a Pottery like St. Ives. (David Leach in Fournier 1977, p.12)

Early catalogues featuring tiles and fireplaces were identified (see 'Appendix 1.3.2: Circa 1930:

Tiles and Fireplaces') but the focus of this section are those relating to Standard Ware production.

3.1.3.3.2.1: 1937: A Pamphlet of Intention

This brief pamphlet outlines the aims and the commercial and strategic interests of the Pottery and its wares (Leach Pottery 1937). Of interest is a notice to cease slipware production in the summer of 1937 and the 'wish to make stoneware on a larger scale and for more general use' (Leach Pottery 1937, p.3). This signals the beginning of domestic stoneware production and the eventual birth of Standard Ware. The pamphlet also indicates that the Pottery still sells stoneware tiles and that the 'cost is reasonable' with an 'illustrated catalogue' available on request (Leach Pottery 1937, p.3). There is no indication that a catalogue of Pottery is available.

3.1.3.3.2.2: Circa 1939 to 1976

A wider selection of tableware catalogues was found dating from World War II to 1976, providing a significant source of data about Standard Ware. There is no known record of when catalogues were printed, so there are potential gaps in this knowledge.

In analysing the catalogues, I sought to build a picture of Standard Ware over the decades and was more concerned with dated and illustrated catalogues: two undated and unillustrated catalogues (Leach Pottery n.d.; Leach Pottery n.d.) and two catalogues with hand-written dates, which were similarly unillustrated (Leach Pottery 1962; Leach Pottery 1964), were largely omitted from analysis as they offered no visual insights into the tableware that could be corroborated with other catalogues. An exception was presented in an undated catalogue with hand-drawn illustrations whose text located it to World War II (Leach Pottery n.d.), suggesting this was the first illustrated tableware catalogue pre-dating what is generally assumed to be the first illustrated tableware catalogue (Leach Pottery 1946). Leach (1946) also attests that by late 1940 the Pottery had published its first domestic stoneware catalogue.

3.1.3.3.2.3.1: A Typical Catalogue

The typical catalogue format comprises a cover page, sometimes illustrated (Figure 10), a range listing (Figure 11 and Figure 12), information about the Pottery (Figure 13) and images of the pots (Figure 14 and Figure 15).

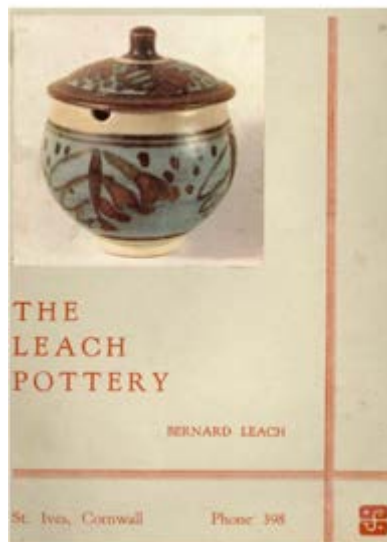


Figure 10: Leach Pottery, 1957 Catalogue Cover Page, scan courtesy of T. Caulton 2013

(Leach Pottery 1957)

Item No.	Description	Price
1	Egg jar in cream	10/-
2	Egg jar in blue	10/-
3	Egg jar in green	10/-
4	Egg jar in red	10/-
5	Egg jar in yellow	10/-
6	Egg jar in black	10/-
7	Egg jar in white	10/-
8	Egg jar in brown	10/-
9	Egg jar in grey	10/-
10	Egg jar in pink	10/-
11	Egg jar in purple	10/-
12	Egg jar in orange	10/-
13	Egg jar in silver	10/-
14	Egg jar in gold	10/-
15	Egg jar in platinum	10/-
16	Egg jar in diamond	10/-
17	Egg jar in emerald	10/-
18	Egg jar in sapphire	10/-
19	Egg jar in ruby	10/-
20	Egg jar in garnet	10/-
21	Egg jar in amethyst	10/-
22	Egg jar in topaz	10/-
23	Egg jar in aquamarine	10/-
24	Egg jar in peridot	10/-
25	Egg jar in tourmaline	10/-
26	Egg jar in zircon	10/-
27	Egg jar in opal	10/-
28	Egg jar in malachite	10/-
29	Egg jar in jasper	10/-
30	Egg jar in agate	10/-
31	Egg jar in obsidian	10/-
32	Egg jar in onyx	10/-
33	Egg jar in nephrite	10/-
34	Egg jar in jade	10/-
35	Egg jar in turquoise	10/-
36	Egg jar in lapis lazuli	10/-
37	Egg jar in malaya	10/-
38	Egg jar in carnelian	10/-
39	Egg jar in smoky quartz	10/-
40	Egg jar in smoky topaz	10/-
41	Egg jar in smoky amethyst	10/-
42	Egg jar in smoky garnet	10/-
43	Egg jar in smoky sapphire	10/-
44	Egg jar in smoky ruby	10/-
45	Egg jar in smoky emerald	10/-
46	Egg jar in smoky peridot	10/-
47	Egg jar in smoky tourmaline	10/-
48	Egg jar in smoky zircon	10/-
49	Egg jar in smoky opal	10/-
50	Egg jar in smoky malachite	10/-
51	Egg jar in smoky jasper	10/-
52	Egg jar in smoky agate	10/-
53	Egg jar in smoky obsidian	10/-
54	Egg jar in smoky onyx	10/-
55	Egg jar in smoky nephrite	10/-
56	Egg jar in smoky jade	10/-
57	Egg jar in smoky turquoise	10/-
58	Egg jar in smoky lapis lazuli	10/-
59	Egg jar in smoky malaya	10/-
60	Egg jar in smoky carnelian	10/-
61	Egg jar in smoky smoky quartz	10/-
62	Egg jar in smoky smoky topaz	10/-
63	Egg jar in smoky smoky amethyst	10/-
64	Egg jar in smoky smoky garnet	10/-
65	Egg jar in smoky smoky sapphire	10/-
66	Egg jar in smoky smoky ruby	10/-
67	Egg jar in smoky smoky emerald	10/-
68	Egg jar in smoky smoky peridot	10/-
69	Egg jar in smoky smoky tourmaline	10/-
70	Egg jar in smoky smoky zircon	10/-
71	Egg jar in smoky smoky opal	10/-
72	Egg jar in smoky smoky malachite	10/-
73	Egg jar in smoky smoky jasper	10/-
74	Egg jar in smoky smoky agate	10/-
75	Egg jar in smoky smoky obsidian	10/-
76	Egg jar in smoky smoky onyx	10/-
77	Egg jar in smoky smoky nephrite	10/-
78	Egg jar in smoky smoky jade	10/-
79	Egg jar in smoky smoky turquoise	10/-
80	Egg jar in smoky smoky lapis lazuli	10/-
81	Egg jar in smoky smoky malaya	10/-
82	Egg jar in smoky smoky carnelian	10/-
83	Egg jar in smoky smoky smoky quartz	10/-
84	Egg jar in smoky smoky smoky topaz	10/-
85	Egg jar in smoky smoky smoky amethyst	10/-
86	Egg jar in smoky smoky smoky garnet	10/-
87	Egg jar in smoky smoky smoky sapphire	10/-
88	Egg jar in smoky smoky smoky ruby	10/-
89	Egg jar in smoky smoky smoky emerald	10/-
90	Egg jar in smoky smoky smoky peridot	10/-
91	Egg jar in smoky smoky smoky tourmaline	10/-
92	Egg jar in smoky smoky smoky zircon	10/-
93	Egg jar in smoky smoky smoky opal	10/-
94	Egg jar in smoky smoky smoky malachite	10/-
95	Egg jar in smoky smoky smoky jasper	10/-
96	Egg jar in smoky smoky smoky agate	10/-
97	Egg jar in smoky smoky smoky obsidian	10/-
98	Egg jar in smoky smoky smoky onyx	10/-
99	Egg jar in smoky smoky smoky nephrite	10/-
100	Egg jar in smoky smoky smoky jade	10/-

Figure 11: Leach Pottery, 1957 Catalogue Price List 1, scan courtesy of T. Caulton 2013

(Leach Pottery 1957)

Item No.	Description	Price
1	Egg jar in cream	10/-
2	Egg jar in blue	10/-
3	Egg jar in green	10/-
4	Egg jar in red	10/-
5	Egg jar in yellow	10/-
6	Egg jar in black	10/-
7	Egg jar in white	10/-
8	Egg jar in brown	10/-
9	Egg jar in grey	10/-
10	Egg jar in pink	10/-
11	Egg jar in purple	10/-
12	Egg jar in orange	10/-
13	Egg jar in silver	10/-
14	Egg jar in gold	10/-
15	Egg jar in platinum	10/-
16	Egg jar in diamond	10/-
17	Egg jar in emerald	10/-
18	Egg jar in sapphire	10/-
19	Egg jar in ruby	10/-
20	Egg jar in garnet	10/-
21	Egg jar in amethyst	10/-
22	Egg jar in topaz	10/-
23	Egg jar in aquamarine	10/-
24	Egg jar in peridot	10/-
25	Egg jar in tourmaline	10/-
26	Egg jar in zircon	10/-
27	Egg jar in opal	10/-
28	Egg jar in malachite	10/-
29	Egg jar in jasper	10/-
30	Egg jar in agate	10/-
31	Egg jar in obsidian	10/-
32	Egg jar in onyx	10/-
33	Egg jar in nephrite	10/-
34	Egg jar in jade	10/-
35	Egg jar in turquoise	10/-
36	Egg jar in lapis lazuli	10/-
37	Egg jar in malaya	10/-
38	Egg jar in carnelian	10/-
39	Egg jar in smoky quartz	10/-
40	Egg jar in smoky topaz	10/-
41	Egg jar in smoky amethyst	10/-
42	Egg jar in smoky garnet	10/-
43	Egg jar in smoky sapphire	10/-
44	Egg jar in smoky ruby	10/-
45	Egg jar in smoky emerald	10/-
46	Egg jar in smoky peridot	10/-
47	Egg jar in smoky tourmaline	10/-
48	Egg jar in smoky zircon	10/-
49	Egg jar in smoky opal	10/-
50	Egg jar in smoky malachite	10/-
51	Egg jar in smoky jasper	10/-
52	Egg jar in smoky agate	10/-
53	Egg jar in smoky obsidian	10/-
54	Egg jar in smoky onyx	10/-
55	Egg jar in smoky nephrite	10/-
56	Egg jar in smoky jade	10/-
57	Egg jar in smoky turquoise	10/-
58	Egg jar in smoky lapis lazuli	10/-
59	Egg jar in smoky malaya	10/-
60	Egg jar in smoky carnelian	10/-
61	Egg jar in smoky smoky quartz	10/-
62	Egg jar in smoky smoky topaz	10/-
63	Egg jar in smoky smoky amethyst	10/-
64	Egg jar in smoky smoky garnet	10/-
65	Egg jar in smoky smoky sapphire	10/-
66	Egg jar in smoky smoky ruby	10/-
67	Egg jar in smoky smoky emerald	10/-
68	Egg jar in smoky smoky peridot	10/-
69	Egg jar in smoky smoky tourmaline	10/-
70	Egg jar in smoky smoky zircon	10/-
71	Egg jar in smoky smoky opal	10/-
72	Egg jar in smoky smoky malachite	10/-
73	Egg jar in smoky smoky jasper	10/-
74	Egg jar in smoky smoky agate	10/-
75	Egg jar in smoky smoky obsidian	10/-
76	Egg jar in smoky smoky onyx	10/-
77	Egg jar in smoky smoky nephrite	10/-
78	Egg jar in smoky smoky jade	10/-
79	Egg jar in smoky smoky turquoise	10/-
80	Egg jar in smoky smoky lapis lazuli	10/-
81	Egg jar in smoky smoky malaya	10/-
82	Egg jar in smoky smoky carnelian	10/-
83	Egg jar in smoky smoky smoky quartz	10/-
84	Egg jar in smoky smoky smoky topaz	10/-
85	Egg jar in smoky smoky smoky amethyst	10/-
86	Egg jar in smoky smoky smoky garnet	10/-
87	Egg jar in smoky smoky smoky sapphire	10/-
88	Egg jar in smoky smoky smoky ruby	10/-
89	Egg jar in smoky smoky smoky emerald	10/-
90	Egg jar in smoky smoky smoky peridot	10/-
91	Egg jar in smoky smoky smoky tourmaline	10/-
92	Egg jar in smoky smoky smoky zircon	10/-
93	Egg jar in smoky smoky smoky opal	10/-
94	Egg jar in smoky smoky smoky malachite	10/-
95	Egg jar in smoky smoky smoky jasper	10/-
96	Egg jar in smoky smoky smoky agate	10/-
97	Egg jar in smoky smoky smoky obsidian	10/-
98	Egg jar in smoky smoky smoky onyx	10/-
99	Egg jar in smoky smoky smoky nephrite	10/-
100	Egg jar in smoky smoky smoky jade	10/-

Figure 12: Leach Pottery, 1957 Catalogue Price List 2, scan courtesy of T. Caulton 2013

(Leach Pottery 1957)

HARD PORCELAIN

The pottery was founded by Bernard Leach in 1900 after 10 years study in Japan, where he was a pupil of the famous potter, Shoji Hamada. The pottery was founded in St. Ives, Cornwall, and it is a 'hard porcelain'.

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Figure 13: Leach Pottery, 1957 Catalogue Description, scan courtesy of T. Caulton 2013

(Leach Pottery 1957)



Figure 14: Leach Pottery, 1957 Catalogue
Illustrations 1, scan courtesy of T. Caulton 2013

(Leach Pottery 1957)



Figure 15: Leach Pottery, 1957 Catalogue
Illustrations 2, scan courtesy of T. Caulton 2013

(Leach Pottery 1957)

3.1.3.3.2.3.2: Overview of Available Catalogues

Table 2 provides an overview of the catalogues mainly found in the Crafts Study Centre archive. The first column 'Catalogue Title', groups the catalogues by their title. The third column 'Grouped into Production Periods Based on Pots Illustrated' groups catalogues on the basis of their illustrations.

Catalogue Title ¹¹	Date Period	Grouped into Production Periods Based on Pots Illustrated	Bibliographic Reference
Catalogue and Price List of Handmade Fireproof Stoneware: The Leach Pottery	1939-45 ¹²	Period 1	(Leach Pottery n.d.)
The Leach Pottery: Handmade Fireproof Stoneware & Hard Porcelain: Catalogue	1946-51	Period 2	(Leach Pottery 1946; Leach Pottery 1949; Leach Pottery 1951)
The Leach Pottery: Catalogue: Bernard & David Leach	1952-54		(Leach Pottery 1952; Leach Pottery 1954)

¹¹ The selection of the catalogues' titles referring to dates and locations: 'Cornwall' omitted for clarity.

¹² Estimated date based on reference to 'war-time needs' in the catalogue.

The Leach Pottery: Bernard Leach	1957	Period 3	(Leach Pottery 1957)
The Leach Pottery: Catalogue: Bernard Leach	1959-60		(Leach Pottery 1959)
The Leach Pottery: Bernard Leach: Catalogue	1960-61		(Leach Pottery 1960)
Leach Pottery: Standard Ware	1972-76	Period 4	(Leach Pottery 1972; Leach Pottery 1973; Leach Pottery 1974; Leach Pottery 1975; Leach Pottery 1976)

Table 2: Overview of Standard Ware Catalogues

The catalogues' titles changed over time, beginning as 'Handmade Fireproof Stoneware', to gaining 'Hard Porcelain' in 1946, to becoming a 'Catalogue of Bernard and David Leach' in 1952. From 1957 until 1961, it becomes a catalogue of the 'Leach Pottery and Bernard Leach'. It is only from 1972 onwards that the catalogues become known as 'Leach Pottery Standard Ware'.

An undated catalogue¹³ title referenced both Bernard and Janet Leach: 'The Leach Pottery Standard Ware: Bernard Leach and Janet Leach' (Leach Pottery n.d.), using images from Period 4 alongside pre-decimalisation prices: it is assumed to predate the 1972 catalogue but is not included in the table as it cannot be used to categorically extend the date range of Period 4.

The catalogues, when grouped into periods of production based on the illustrations and images of pots contained within, relate four main periods of production: Period 1: circa 1939-1945; Period 2: 1946-54; Period 3: 1957-1960; Period 4: 1972-76.

3.1.3.4: Standard Ware: A Potter's Perspective

Here, Standard Ware is examined from the perspective of the maker: insights are provided by potters with direct experience of making Standard Ware, including John Bedding who was a student apprentice at the Pottery from 1968-70 and returned as a member of staff from 1972-78¹⁴, Jeff Oestreich who was at the Pottery from 1969-71 (Whybrow 2006, p.204), John Leach who trained from 1960-63 (Whybrow 2006, p.164), and Warren MacKenzie who trained from 1949-52 (Whybrow 2006, p.128). The material has been gathered from existing contextual resources and personal contact.

¹³ Sourced from Mike Sanderson.

¹⁴ Dates confirmed with Bedding after discrepancies identified in Whybrow (2006, p.198)

3.1.3.4.1: Definitions

Bedding (2013) considers 'standard' to carry two meanings relating to the consistency of the product and an implied communal production separate to personal pieces: '...a standardisation of a shape and size. The word Standard Ware separated their [the potters' personal] work from the standard line of the Leach Pottery'. To Oestreich (2014a), Standard Ware is more readily recognised as 'production ware' in North America and associated with volume making. To MacKenzie, it was a technical standard facilitating the production of pots for the catalogue, so that '...people could buy them without actually coming to the Pottery' (MacKenzie 2013b). To Leach (2014a), Standard Ware is 'repeat ware', which by its very nature, is more affordable. It was also an aesthetic standard that came from tradition, like medieval pitchers and something that was wholesome and unpretentious: 'I think he wanted something that was wholesome – unpretentious from a point the view of decoration' (ibid).

On the origins of the term 'Standard Ware', Oestreich (2014a) adds: 'It is an unusual term and I think Bernard coined [it]. The only time I have heard it, here in America, is by Byron Temple who trained at the Leach'. Oestreich makes a connection between the term and the opening chapter of A Potter's Book:

I began to think of Bernard's first book and the opening starts with 'Towards a Standard'...I somehow think his calling it Standard Ware is tied into this first chapter title and idea. He was trying to raise the standard of good pots through producing it. (Oestreich 2014a)

John (2014a) believes the idea of Standard Ware came from both Bernard and David, although the idea was probably more driven by Bernard who had not had access to a traditional apprenticeship training. Richard Batterham (2014), present at the Pottery from 1957-58 (Whybrow 2006, p.148), also offered illuminating insights into the purpose of Standard Ware and its qualities but, bound by the restrictions of ethical research, they cannot be included here.

3.1.3.4.2: The Purpose of Standard Ware

Standard Ware served several purposes: for example, to Bedding, it taught every aspect of the pot making process:

It was the tool that trained us. That is the real value of it in those days - it was used to train us in everything concerned with throwing, handle making, and making a domestic pot: whether it be teapots, or mugs, because before I'd worked in potteries where you had specific jobs. You just took one part of the job and didn't see it all the way through...I learned the complete process of making. So to me that was the most important thing about Standard Ware. (Bedding 2013)

Oestreich (2014a) corroborates Standard Ware's role as a training tool for apprentices.

Standard Ware's purpose also extended beyond training, providing Bernard with a philosophical and practical influence over potters who left the Pottery as his disciples:

It evolved into the way of training potters. By training potters Leach gained huge influence because potters came to him to learn how to make – they learnt his philosophy and his processes so when they went out into the world they were basically converts to his thinking and his disciples. (Bedding 2013)

Oestreich (2014a) attests to this influence, recounting a failed attempt at designing and selling a range of Standard Ware in the early 1970s. Mackenzie (2013b) returned to North America, like Oestreich, and continues to produce his own interpretation of a Standard Ware which is uncatalogued, loosely interpreted, changes 'from year-to-year', and includes forms like the Leach GP Bowl. MacKenzie's ware is '...sold at rock bottom prices so that people can buy and use them without worrying about the use' (ibid). In teaching, MacKenzie passed on the knowledge he gained at the Leach Pottery about making utilitarian pots:

If you're going to earn a living as a potter, make utilitarian pots – make them well, and I tried to teach them what I had learned through Bernard, working here at St Ives, about form, about proportion and all. (MacKenzie 2013a)

Leach (2014a) also testifies to the strong influence of the Standard Ware pots that '...had the impingement of flame from the wood part of the firing of the kiln'. Leach also published a catalogue for his own tableware and recounts a story of talking to Byron Temple who worked with him at the Leach Pottery, noting also that they had similar statements in their catalogues: 'I said "look, we've got a statement that says variations normal to hand production must be expected because that's part of human nature" and he said "oh no, what I put is variations normal to hand production must be accepted!"' (ibid).

Bedding was not certain that Leach intentionally sought to produce disciples, but he did use Standard Ware to introduce people to handmade pottery and introduce art into the home:

I'm not sure how self-conscious Leach was about that [proliferating an ideology] but it happened anyway and he saw it happening and he could see that by training potters he was spreading his word, and his word was producing pots for use, to try and train - introduce people to handmade pottery when they've been so used to industrial pottery and hopefully they would use it in the home and just be warmed by it so that they would eventually choose the handmade piece rather than the industrial piece. So it was bringing art into the home, in a way, that's how he saw it. (Bedding 2013)

Oestreich also proposes that Leach was working towards a larger vision through Standard

Ware, which was to raise the standard of work and promote himself, and his ideas, to a wider audience using a Japanese approach to making. This desire, coupled with David's technical training, introduced stability to the Pottery:

I think Bernard's motivation for the Standard Ware...was a part of a greater vision he had. We all know he had a huge ego (after all he published many books, lectured around the world etc.) and it was his attempt to raise the standard and broadcast his name and ideals to a larger audience. By 1946 he had weathered a lot of financial difficulties and I assume maybe he wanted to adopt the Japanese approach to training and making via the Standard Ware. Combined with him sending off his son David to study pottery production in Stoke-on-Trent, this move put the Pottery on sound footings. (Oestreich 2014a)

MacKenzie (2013a), also recognised that David, as Pottery manager, decided to produce 'simple pots' as '...the way of putting the Pottery on its feet financially because in the early days, when Bernard and Hamada started it, I guess if Bernard hadn't had an inheritance which he drew heavily upon, why they might have gone under'.

For MacKenzie, Standard Ware was a way of producing pots efficiently and therefore more cheaply than making one-off pieces: a method of making apprentices productive and teaching skills:

Standard Ware, for the Leach Pottery, meant that things could be made fairly easily and quickly and consequently could be sold at a lower price than if you kept inventing the pot every time you sat down at the wheel. And it also meant that someone like my wife and myself could be brought into the Pottery as apprentices and we could be held to a standard that was fairly quickly established, whether we knew how to throw or not, and that was where we learned to throw was making Standard Ware. (MacKenzie 2013b)

Leach (2014a), believes Bernard saw Standard Ware as a way of training people to become proficient repetition throwers as a response to his own lack of technical training and that the production of pots in this way allowed people to experience the '...personality, a maker, a designer, an artist-craftsperson behind that artefact, who minds and cares about the way he produces it.' Ultimately, there is an enriching experience in using a pot handmade by a potter in everyday life. Leach (ibid) also believes that Standard Ware was about employing people in a 'friendly group' who were 'empathic with some of the ideas of my grandfather...a social atmosphere of producing by hand and training at the same time' (ibid).

Leach (2014a) suggests that Bernard '...wasn't trying to stem the natural creative urges of the potters – the students, because they were encouraged to make their own pots in their own time, but this was the day job and it was good for training and the camaraderie was good'. For

his part, Bernard (1946) saw himself as an 'artist-craftsman' who had inaugurated an experiment in group craftsmanship that offered work which was financially robust and rewarding:

We have aimed at a high common denominator of belief and in the sharing of responsibility and profits. By accepting the Cornish motto 'one and all', and making the workshop a 'we job' instead of an 'I job' we appear to have solved our main economic problem as hand-workers in a machine age and to have found out that it is still possible for a varied group of people to find and give real satisfaction because they believe in their work and in each other. (ibid)

3.1.3.4.3: How Makers Were Trained

MacKenzie began his training with the half-pint mug, using the drawing of the form for its clay weight and measurements: 'So I looked at the drawing we had of them and it told the weight of clay it should take to make them and it told the size it should be, the width at the mouth and the height of the pot – all these things were indicated on the drawing' (MacKenzie 2013a). His own assumed skills then faced critique through the assessment of his first boards of work – it took a further two to three weeks to resolve the form:

I said 'sure I can make those', I wasn't a very good thrower, 'but I can make those' and I made about three boards of them and called Bill over to check them out and he looked at the first one and said, well, 'that one's too tall' and put his finger in it, and he pointed at the next one and said, well, 'that one's too wide' and put his finger in it and he destroyed every one of the pots I'd made because there's was something wrong with all of them and I thought I was going great. That was when I knew I didn't know how to throw. (MacKenzie 2013b)

MacKenzie then moved onto the more complicated soup bowl before he '...went through the whole Standard Ware thing, one after the other' (ibid). This acquisition of skill meant steady progress: 'It took me and Alex maybe two months to come up and be able to make some of the simpler pots that we were making at the Pottery and do it halfway decent' (MacKenzie 2013a).

Bedding's training involved being responsible for a particular item all the way to the biscuit firing, with the secretary dictating orders. Shapes were allocated to experience:

New arrivals would usually start with egg bakers, eggcups, and small dishes, then progress to lidded soup bowls, small gp (general purpose) bowls and small casseroles. The next progression was the larger casseroles, medium and large bowls and jugs. (Whybrow 2006, p.15)

Marshall threw the largest pots and supervised the training process of making and re-making forms until they were acceptable (ibid). Oestreich recalls the use of drawings, prototypes,

direct instruction, and a basic toolkit, to achieve the forms:

Bill would coach, and he would take off the card and there was an ink drawing of the form with the weights and the dimensions and he would pull from above him – he had a prototype that was leather-hard or greenware stage and then he would say: ‘this tool’s used for this, this is used to do the undercut, this is also used to do lines around the soup bowls’ for instance, and we would just work with these tools. So we had these standard 5 tools and he would just show how to use these various tools – there were no shapes that would require anything beyond this and so it was a very simple toolkit then. (Oestreich 2012)

Leach (2014a) also notes the use of a making list, notated diagrams, and the role of Marshall in training, form observation and form correction.

3.1.3.4.4: The Impact of the Training

For Oestreich, the effect of training was to improve the ‘eye’, discipline, and to make potters equals while uniting them in the production of work for a larger cause:

...the making of standard ware was eye training and the discipline to sit on the wheel for 8 hours a day. What it also did was put all of us on a level playing field and we were united on the mission of producing the best work possible. It united us and this was paramount to me. We were all a part of a greater mission. (Oestreich 2014a)

Oestreich also recalls the mental freedom achieved through making repetitious ware, the subsequent engagement with material, and the romance around the idea of this:

It’s odd how I yearn for those days when I was cranking out Standard Ware here, where your mind can wander, there was really beauty in just...it had to do with, and I felt this when I made that one soup bowl the other day. It was about feeling the material, it was just the joy of the act of throwing, and the feel - the physicality of clay. My work isn’t about that now, it’s all up here – it’s about design, design, design, and I really miss that delight of just that fluid clay pulling up and that next bowl same - I just love that tempo of rhythm, there’s so much romance in that but I can’t do that in my work. (Oestreich 2012)

For Bedding, repeat throwing also imbues the maker with the skills to make thus freeing the brain to consider other aspects of the pot:

It was an excellent education as repeat throwing teaches you so much. You have to concentrate all the time on achieving the shape until it becomes automatic; this allows another part of your brain to be able to concentrate on other aspects of the pot. (Whybrow 2006, pp.15–16)

For MacKenzie, even the observation of skill being exercised by other potters created the realisation that, through the attainment of skill, one could achieve the freedom to be creative:

Still there was an awareness in looking at Marshall and looking at Kenneth quick and

looking at Walter Firth throwing there, there was an awareness that here was a control of clay that would give you the freedom to create even as you broke away from a desire to make things that which might conform very closely to a given pot. (Gross 2012)

For Leach (2014a), it affected his further choices in training to include working for potters that had repeat ware production lines: David Leach, Colin Pearson, and Ray Finch. He also acknowledges the strong influence of Standard Ware had on his own repeat ware at Muchelney:

...people could say, quite easily, “I see where you’ve been influenced”. I’m not ashamed of that, I’m not ashamed of it one bit: I like the process, I like the wood fire, I like the unglazed exterior and some of my shapes are unadorned – they’re not ever over-decorated I don’t think...it’s just that I like it. It’s what’s in my blood and what I first saw. And when I got there, what really got me excited was the way the shapes took on a bloom, which was evidence of wood fire in a draught kiln.

3.1.3.5: Summary: Leach Standard Ware

This Section examines Leach Standard Ware’s contribution to cultural heritage, developing the existing context of Standard Ware through Leach’s fascination with ‘standard’ and the context of production. Two main periods of production are identified under David and Janet Leach. David’s period is largely associated with making the Pottery productive and financially viable. Under Janet’s management, Standard Ware production continues, but there is a shift away from the apprenticeship system towards more individual development and the belief that Bernard’s pots, not Standard Ware, made the Pottery viable. The consolidation of this knowledge provides a richer historical context, but is not as significant to the research as proceeding catalogues and potters’ perspectives.

The record of Standard Ware is mainly developed through access to Crafts Study Centre resources, especially the Pottery’s catalogues which provide a visual resource of the forms which support the identification of four significant periods of production dating from around 1939 to 1979. The term Standard Ware first appears in the 1957 catalogue (see ‘Appendix 1.3.3: Standard Ware: The Narrative’) and is first used in the title in 1972. Exposure to these materials and visual forms of Standard Ware inspired me to further develop this knowledge in ‘Chapter 4: Leach Pottery Standard Ware & Tableware: Lineages of Forms & Standards’.

Standard Ware is then examined from the potters’ perspective, who provide these understandings of it: consistency of product, communal production, volume making, affordable repeat ware, basic activity of the Pottery, financial stability, a tool for training and influence, a way of introducing art into peoples’ homes, and a way of promoting Leach and his

ideas. It was found that there were different methods of training, but it often involved tool making and the constant repetition of forms, starting from basic shapes like the Egg Cups. William Marshall played a central role in the training and supervision of potters and their work. The training and acquisition of skills improved the students' hand and eye skills and often imbued them with the sense of mental and creative freedom

The significance of tools particularly caught my imagination: they help train the potter as a maker, support a degree of standardisation in workshop production, and often remain part of a potter's repertoire many years after they have left the Pottery. These findings lead me to examine historical and contemporary tool use at the Pottery in a separate Section.

3.1.4: Leach Tableware

The review now examines the contemporary production of Leach Tableware which also contributes to cultural heritage: the focus is solely on the soda fired Leach Tableware that heralded the beginning of a second period of tableware production after the Pottery's 2008 re-opening. It is a new body of work drawing a line under the earlier Standard Ware with distinct aesthetics and different firing process. It was named Leach Tableware to demarcate it from the Standard Ware (Twomlow 2010) and designed by the Pottery's Lead Potter, Jack Doherty who left the Pottery in early 2013 (The Cornishman 2013), after which tableware production moved into a new period of development under Roelof Uys, the new Senior Production Potter in 2013.

This Section begins with an introduction to Leach Tableware design development and its documentation. The context of production and retail is then examined before approaching Leach Tableware from a Potter's perspective, looking at the role of skill, the ideas behind it, and the methods of training. The Section closes with a summary of the cessation of Leach Tableware.

3.1.4.1: Leach Tableware: An Introduction

Leach Tableware was produced at the Leach Pottery using a new studio and kiln, a local stoneware body from Doble's Clay Pit in St Agnes, decorated with slips, and soda fired. Its production began after a cessation in making tableware of nearly 30 years.

The core of the ware comprised cups, mugs, plates, bowls and pouring vessels executed in a colour palette including oranges, yellows, blacks and greys. The pots were made, in the early stages of the research, by the Leach Apprentice Potters (Leach Pottery n.d.) Kat Wheeler, Ella

Phillips and Britta Wengler. 'Appendix 1.2.2: Students & Potters at the Leach Pottery: 2008-2013' provides an overview of students and potters who have recently worked at the Pottery. Leach Tableware was seen as an '...educational vehicle for potters and an income stream for the Pottery and them' and also acted as an advertisement (Twomlow 2010) and by 2013 Leach-produced tableware made a 30% contribution to the Pottery's annual income (Twomlow 2013, p.17).

3.1.4.1.1: Leach Tableware: The Design

For the first two years of the research, few stylistic developments were noted in Leach Tableware: the pots were made to Doherty's designs with minor tweaks sometimes observed in the production of the wares: the essence of Doherty's designs remained. Doherty's departure from the Pottery saw him commit the final iteration of his designs to diagrams (see Appendix 1.4.2: Final Diagrams of Forms).

Doherty (2011b; 2011a) explained that the Leach Tableware design was based on Bernard Leach's idea that: 'We must make pots which show the nature of the clay' and Doherty developed this idea through the work, so that the pots express the 'nature of fire and firing' (Doherty 2011a). Lambley (2013, p.31) notes: 'The Leach Pottery Tableware, designed by Doherty, adheres to the aesthetic principles propounded by Leach'. The early forms were driven by Doherty's desire to produce utilitarian pots that he would like to use at home and considered how they should look in contemporary life: 'I was concerned about blandness that you see in a lot of things today and this was a reaction against it, using iron clay and gritty textures' (Doherty 2011b). Overall, the '...effect should be casual enough that pieces work with one another. It's also pleasing when people pick it up and engage with it' (Doherty 2011b).

3.1.4.1.2: Leach Tableware: A Record

There is little available formal information about Leach Tableware: there are a small number of price lists but no catalogues (see 'Appendix 1.4.3: Price Lists'). A written narrative of Leach Tableware can be found in the Leach Pottery Newsletters (see 'Appendix 1.4.4: Leach Pottery Newsletter Narrative').

3.1.4.2: Leach Tableware: Making & Retail

Throughout the research, I visited the Leach Pottery to develop a sense of its activities and to formulate my response to it. I observed and recorded Leach Tableware during production, often discussing its making with the Potters and sometimes recorded these encounters with photographs. I also observed Leach Tableware in the Shop and Gallery, to consider how it

looked.

3.1.4.2.1: Leach Tableware: In the Studio

General observations of the Studio environment continued throughout the research. This is not a 'how to' guide of Leach Tableware production, but an overview of some of the methods and processes (also see 'Appendix 1.4.5: Methods of Making').

In the early stages of the research, I sought to better understand production methods and observed throwing, handle making, slip application, and various biscuit and glost firings. I did not consistently photograph and record making: my decision to photograph was based on whether I thought the scene revealed something new to my understanding and if it seemed appropriate. Initially, the Studio was the holding place for pots in all stages of making, and completion: in 2012, a storage and packing shed, for glost fired work, became available.

I observed clay preparation activities like wedging and kneading, throwing on the potter's wheel (Figure 16), and turning (Figure 17). Once dry, the pots were prepared with wax resist (Figure 18) and decorated with slips (Figure 19) in preparation for biscuit firing (Figure 20). The potters appeared to learn through the repetition of their own practice which was guided by a degree of direct instruction (see 'Appendix 1.4.5.1: A Training Session with Jack Doherty 13/01/11') and feedback on the finished forms. Diagrams of the forms, and measuring tools, were repeatedly used for guidance even after shapes were learnt. Each Potter exhibited a different approach to similar methods based on their preferences.

A small selection of tools were used to assist in making the forms. For example, in the early stages of the research the forms, sometimes noted in diagrams that the Apprentice Potters had developed (see 'Appendix 1.4.1: Initial Diagrams of Forms'), were thrown to specific dimensions using callipers (e.g. Figure 230, Figure 233, Figure 250, Figure 251, & Figure 252) to check widths and heights. Once the proportions of the forms were established using the first pot on the wheel, a pointing tool (Figure 255 & Figure 256), fixed to the frame of the potter's wheel, was set to where the rim of the form finished, so preparing the wheel for repeat production. It could take time to find the form's measurements and some potters kept their own diagrammatical notes. Callipers were then set to the desired measurements but were prone to slipping out-of-gauge and required re-adjusting for each form. During the process of throwing tools, like throwing ribs and kidneys, were used to aid the forming of internal curves (Figure 253) and external profiles (Figure 254). Further tools like needles, chamois leather, turning tools, and a wire were also used at different stages. Specific making observations can

be found in 'Appendix 1.4.5: Methods of Making'.



Figure 16: Leach Studio, Freshly Thrown Beakers (lower) & Part-Dry Beakers (upper) , image M. Tyas 2012



Figure 17: Leach Studio, Pouring Bowls Awaiting Turning , image M. Tyas 2012



Figure 18: Leach Studio, Plates with Applied Wax Resist, image M. Tyas 2012



Figure 19: Leach Studio, Greenware Post-Slip Decoration and Prior to Firing, image M. Tyas 2012

I attended several glost soda firings: earlier firings were largely led by Doherty (Figure 21) and the task of spraying the sodium bicarbonate into the kiln was, over time, increasingly shared between the Apprentice Potters (Figure 22). I undertook spraying (Figure 23) on a small number of occasions.



Figure 20: Leach Studio, Shelving Containing Glost Fired and Biscuit Fired Work, image M. Tyas 2012



Figure 21: Leach Soda Firing, Jack Doherty Spraying Soda, image M. Tyas 2011



Figure 22: Leach Soda Firing, Britta Wengeler Spraying Soda, image M. Tyas 2012



Figure 23: Leach Soda Firing, Matthew Tyas Spraying Soda, image I. Hyde 2012

Tableware was assessed as it was unpacked from the kiln (Figure 24) and gathered on a table next to the kiln, providing an opportunity to reflect on the firing, the overall quality of the body of work, and the individual pieces. Some pots were deemed seconds as a consequence of the firing process and most pots required post-firing fettling to remove excess wadding¹⁵ (Figure 25) or to smooth-down areas of rough glaze. This process of assessment and finishing took place outside (Figure 24) and in the Studio (Figure 26 & Figure 27).

¹⁵ Usually a mixture of alumina & china clay that resists vitrification, during firing, and prevents pots sticking to shelves or other pots.



Figure 24: Leach Studio, Post-Soda Fired Pots Fresh from the Kiln, image M. Tyas 2012



Figure 25: Leach Studio, Post-Soda Fired Large Tall Mugs (lower) and Espresso Cups (upper) With their Wadding Removed (circular marks on bases), image M. Tyas 2012



Figure 26: Leach Studio, Post-Soda Fired Tableware, image M. Tyas 2012



Figure 27: Leach Studio, Post-Soda Fired Large Tall Mugs (note different sizes), image M. Tyas 2012

I also noted that Apprentices often worked at the Pottery for relatively short periods of time (see 'Appendix 1.2.2: Students & Potters at the Leach Pottery: 2008-2013'), being expected to learn forms and add them to their repertoire. Having embodied some of this knowledge, the potter rarely remained for more than two years.

3.1.4.2.2: Leach Tableware: The Pottery's Shop

I regularly handled pieces of Leach Tableware in the Leach Shop – my critique of the pots being made through hand and eye, evoking responses that can be described as certain 'instincts' for the pieces which cannot readily be explained in text. Leach Tableware was always available in the Shop, and the following analysis is based on photographs that record the Tableware exhibited in the Shop Gallery during 'Setting the Place; An Exhibition of New Leach Pottery Tableware', which ran from 11 December 2010 to 11 February 2011.



Figure 28: Leach Pottery Tableware exhibition, image M. Tyas 2011



Figure 29: Leach Pottery Tableware exhibition, image M. Tyas 2011



Figure 30: Leach Pottery Tableware exhibition, image M. Tyas 2011



Figure 31: Large Tall Mug, Leach Pottery Tableware exhibition, image M. Tyas 2011

This exhibition presented the main Leach Tableware wares of late 2010 and early 2011. There is a tendency towards open forms like the Deep Stacking Bowl, the Shallow Stacking Bowl and different style of Plates (Figure 28, Figure 29 and Figure 30), as well as a proliferation of mug forms, notably the Large Tall Mug (Figure 31 and Figure 30) and Espresso Cups.

The general impression of the space was one of scarcity: see, for example, the empty shelf (middle top) and the presentation of three Pourers (mantelpiece) in Figure 28. I was struck by the difference between some stock items, as I anticipated more similarity between them to reflect the precise lines of Doherty's forms. Figure 31 shows Large Tall Mugs which, to my eye, have stylistic and size differences: the piece on the left has a slight curve to the outer wall and the angle and width of the inner lip, which runs around the rim, looks different to the piece on the right. The piece in the middle-background appears to have a warped rim which does not flair as widely as the other two pieces in relation to the base. A similar phenomenon can be seen in the work of later firings (Figure 27) and across other pieces in the Leach Tableware

range. Warping can be attributed to the firing process and the need to use wadding to separate pots from the kiln shelves.

3.1.4.3: Leach Tableware: A Potter's Perspective

Britta Wengeler and Kat Wheeler made a significant contribution to this research and the production of Leach Tableware as Leach Apprentices: they both joined the Studio with previous training and/or education in pottery and now make new Leach Standard Ware as Leach Potters. Both potters bring an international perspective to the Studio: Wengeler is from Germany and Wheeler from America.

3.1.4.3.1: The Significance of Skills

John Bedding (2013) suggested, within months of Doherty's departure, that the act of production making in the Studio served the same purpose as Standard Ware making, by providing a training in 'workshop practices' that instils structure and discipline, and giving potters the skills to leave the Pottery and establish their own domestic range:

If you open a workshop and you've got the skills, the easiest way to start making money is to produce a range of domestic ware. It's a lot easier to sell online because you can catalogue it, whereas if you're making your own individual work it's very difficult to catalogue because it varies so much. (ibid)

This focus on skill, and its associated value to the contemporary studio potter, means the Leach Pottery remains a significant place for training as there are limited opportunities in education:

Unfortunately, if you're coming out of college, not many people have those skills – they don't teach. It's all about repeat throwing: you've got to be able to intuitively make 100 mugs that are similar and that's a difficult task if you've never been taught it. (ibid)

3.1.4.3.2: Skills and the Contemporary Leach Potter

3.1.4.3.2.1: Levels of skills

Both potters (Wengeler & Wheeler 2014) described levels of skills associated with being a Leach Potter, which can be categorised at a High, Medium and Low Level (Table 3):

Skill Level	Characteristics
High	Throw any shape to given measurements and interpret forms: large and small pots. Handle any amounts of clay: large and small.

	<p>Make with multiple methods like throwing off the hump, and undertake lip, spout, and handle making.</p> <p>Able to fulfil a task without having to practice for a long period.</p>
Medium	<p>Takes a little bit longer to get into a shape than a potter with high skills.</p> <p>Less experience of larger or difficult pieces. Can throw simple or medium size shapes without difficulty.</p> <p>Starting to attain consistency of height and width every time you throw.</p>
Low	<p>Learnt to centre clay and starting to throw but not consistently.</p>

Table 3: Characteristics of Leach Tableware Skill Levels

Both suggested that a potter with medium skill levels could produce Leach Tableware (ibid). Although the Tableware could be made with medium skills, Wengeler, a trained production potter, considered handle making unproductive (see 'Appendix 1.4.5.2: Approaches to Making Handles') and that Doherty chose a straight line for the walls of the mugs because they were easy to learn, requiring no interpretation, but were challenging to master: '...a straight line will always show where you're not straight – you'll see it immediately' (Wengeler & Wheeler 2014).

3.1.4.3.2.2: The importance of skills

Wheeler believed that contemporary craft and art training in Britain 'is not very skill focussed' with the focus being on ideas. Against this background, the value of skills learnt at the Leach Pottery, through practice and repetition throwing, are that they enable the proficient execution of your own ideas when you are ready to work on them, as opposed to having ideas but not the skills to achieve them (Wengeler & Wheeler 2014). Wheeler sees their skills as valuable, not just monetarily, or because there is '...so much time and energy invested...' in them, but views them against a background where they are not appreciated, so it is '...important to keep them going' (ibid). The manifestation of skill is also important, to any discipline, as the piece is stronger in the execution of concept. Wheeler associates a frustration with not being able to execute an idea, and a satisfaction with reviewing a batch of skilfully executed work.

Wengeler comes from a country where pottery is a trade, '...where being a tradesman, being a good craftsman, is something to be really proud of and producing quality is an expression and the actual design is less important – it's the technique' (Wengeler & Wheeler 2014). Wengeler

describes this expression of skill as a 'craftsmanship pride' that needs to be fulfilled by being 'a good worker making good work' (ibid). Skills are increasingly important for Wengeler in a world that she perceives to be losing them. A consequence of Wengeler's valuation of skills meant that working on Leach Tableware was sometimes problematic as she was unable to 'live-out' her skills because taller jugs and lidded pots were not in the range: 'I couldn't actually really live-out my skills – I couldn't really do everything I could do, because we had a lot of forms not present in the tableware' (Wengeler & Wheeler 2014). Wengeler also takes satisfaction from exercising her skills to make an idea.

3.1.4.3.3: What was Leach Tableware?

Wheeler suggested Leach Tableware '...was less a standard form of making but more a standard way of working...' (Wengeler & Wheeler 2014) to produce work that fitted into a style of pots designed by Doherty. There was less emphasis on how the pots were made and more on what was being made.

Wengeler believed that Leach Tableware was not informed by the Arts and Crafts movement and the idea of making handmade tableware affordable to less affluent people, but more linked to the commercial value attached to studio pottery. As a body of work, Leach Tableware was self-consciously distinctive from Leach Standard Ware, which Wengeler found, '...to a certain extent, quite positive because it didn't try to...imitate Bernard Leach. It was Jack's interpretation of what modern tableware should be like' (Wengeler & Wheeler 2014). Wheeler recalled Doherty's narrative to the work, and that the range was designed to meet his domestic needs after moving to Cornwall.

3.1.4.3.4: The idea behind Leach Tableware

Wheeler believed that Doherty was trying to contemporise the philosophies of Bernard Leach and Standard Ware to make '...urban pots instead of country pots' (Wengeler & Wheeler 2014), reflecting contemporary tastes where the emphasis does not necessarily have to be on volume production but making something more slowly, carefully, and ultimately more expensive.

Wengeler believed the design to be good, creating 'very beautiful tableware' through the surfaces, colours and textures but not for use in daily life as, for example, the handles were uncomfortable and the flatware heavy. She argues that the handles were '...not made in the right craftsmanship', being attached in the manner of porcelain production and were problematic to make using the prescribed method (see 'Appendix 1.4.5.2: Approaches to

Making Handles'). Wheeler considered the surfaces of the bowls problematic to use and clean.

3.1.4.3.5: Leach Tableware Training

As part of her training, Wheeler would be shown a form 'once or twice' and then expected to make it 20 to 50 times. Doherty returned to the Studio to decide if they were correctly made: sometimes he would throw them away or retain them but advise that an aspect of them that needed making differently. Overall, the training was independent and self-directed. Wengeler noted that Doherty also gave demonstrations at which the potters '...would gather around him making notes and would watch him' (Wengeler & Wheeler 2014). During these observations, the potters would make their own notes about the forms and their measurements, eventually deciding to produce their own 'communal design folder' (ibid). Doherty and the potters would sometimes source examples of pots from the Gallery as a making guide: there was no dedicated set of examples.

3.1.4.4: Leach Tableware: The Changing Future

After Doherty left the Leach Pottery, changes to the Studio's operations/structure, like introducing Senior Production Potter and Honorary Lead Potter roles, were mapped-out in the draft Forward Plan (Twomlow 2013, p.26) to improve production and profitability. This included developing: '...a new range of tableware which is more efficient to make and more effective as a training vehicle for new potters. (The current tableware will become a collectable 'boutique' range)'. Also, at this time, it was anticipated that this research could form a basis for '...investigating structures for extended and distributed production under a Knowledge Transfer Partnership with Falmouth University (ibid)'.

By the 2014 Forward Plan, Leach Tableware was no longer referred to: tableware became Standard Ware, with the anticipation of the development of a new glazed range during 2014: 'We anticipate that this will improve profitability but will also facilitate web sales' (Twomlow 2014a). There is also an acknowledgment of working with Seasalt Cornwall Ltd to develop a bespoke range of tableware and the possibility of working on commissioned ranges for external clients is seen as a model that will be further explored into 2015 (ibid). Leach Tableware had ceased to be made after the first half of 2014.

3.1.4.5: Summary: Leach Tableware

This Section shows how cultural heritage continues to be constructed through the production of Leach Tableware which was designed by Doherty as a response to blandness and a desire to produce utilitarian pots. An understanding of how Leach Tableware is made in the Studio,

including tools and process, is also developed: potters adopted their own approach to making and the results exhibited in the Studio and Shop were sometimes varied in their proportions and shapes.

The potters' perspective shows how valuable skills are to tableware production and the potters themselves. The potters also provide their own definition and understanding of Leach Tableware: as commercial, modern pottery, that was self-consciously different to Standard Ware, reflecting contemporary tastes: it is beautiful but not always practical. The production of Leach Tableware provided training for potters, but was gradually phased-out of production during 2014. The variability of the resulting pots, and the absences of a shared Studio method, encouraged me to examine the role of tool use more specifically in 'Section 3.2: Potter's Tools & The Leach Pottery'.

3.1.5: Summary for Section 3.1

This Section of the contextual review offers a definition of the cultural heritage of Leach and presents how this heritage is constructed through Bernard Leach, the Leach Pottery, and the production of Leach Standard Ware and Leach Tableware.

Bernard Leach contributed to cultural heritage through his writing, and positioned himself as an authority with a unique perception and appreciation of Western and Eastern culture and ceramics. Leach is survived by a wide body of work that demonstrates a sustained engagement with pottery. Leach's significance is further cemented by the authorial interest in his work, ideas, and his standing in relation to the wider studio pottery movement.

The Leach Pottery, established over 90 years ago by Leach, demonstrates significant intangible assets through the potters associated with it. It is estimated that over 200 potters have direct experience of training and/or working in the Studio and thousands of potters can trace an influence back to the Pottery. The site contains historically significant features like the climbing kiln and building, and a collection of artefacts and pots. It also has a new production and education studio, gallery and retail space, accommodation for potters, and specialist research space. The Pottery's Director believes the Pottery remains significant because of its role in the local and international community and that it is part of the story of St Ives. The continued production of tableware is seen as a significant indicator of its value. This knowledge helps set the scene of the research project.

Leach Standard Ware, produced during two key periods at the Pottery, also contributes to

cultural heritage. Using Pottery catalogues, four significant periods of production dating from around 1939 to 1979, were identified. Standard Ware is also examined from the potters' perspective, providing several understandings of it. Different methods of training were identified, but it often involved tool making and the repetition of forms which improved skills and often imbued students with a sense of mental and creative freedom. William Marshall played a central role in the training and supervision of potters.

Cultural heritage continues to be constructed through Leach Tableware production. An understanding of how Leach Tableware is made in the Studio, including tools and process, is also developed with potters tending to adopt their own approach to making: the resulting pots were sometimes varied in their forms. The potters also offer a perspective of production and stress the value of skill. The potters provide their own definition and understanding of Leach Tableware whose production provided training for potters but was phased-out during 2014. Overall, I was struck by how Standard Ware and Leach Tableware is not only aesthetically different but also produced differently. As Leach Tableware was the 'live' range I was more exposed to its pots and their inherent variations. This galvanised me to look at Standard Ware and Leach Tableware production more comparatively, especially in the use of tools as examined in the next Section.

Section 3.2: Potter's Tools & The Leach Pottery

This Section examines how tableware is produced at the Leach Pottery, especially through the use of potter's tools. This part of the review could be conceived as a further extension of cultural heritage, however it is compiled as a separate section to facilitate a more direct comparison between the different approaches the Leach Pottery has taken to tableware production. This understanding of Leach Pottery tool use is further nuanced by an examination of Bernard Leach's relationship to tools and his wider ideas about the role of technology in pottery production.

Tool use and tool making is also a significant aspect of wider studio pottery practice: their use is often intrinsic to the method of making and aesthetic expression. An overview of potter's tools from a Western and Eastern perspective, and coverage of the role of tool making can be found in 'Appendix 2.1: Potters and Tools: An Overview'.

3.2.1: Tools & Leach Standard Ware

An important feature of Standard Ware production was the use of dedicated tools to make it and teaching apprentices and student potters how to make the tools. Decades after completing their training at the Leach Pottery, some potters still have a relationship with the tools they used, make new versions of them, and even still possess them.

Jeff Oestreich, during his 2012 residency at the Leach Pottery, arrived with a selection of his



Figure 32: Jeff Oestreich with a Selection of his Personal Tools Including Tools Originally Learnt at the Leach Pottery, image M. Tyas 2012

tools, including tools he learned to use and make at the Leach Pottery (Figure 32), like the wooden and metal trimming tools, shaping ribs, and callipers. Oestreich, a consummate tool maker, user, and collector, describing himself as a ‘tool junkie’, believed there is a correlation between the development of new tools and new practice:

‘When tools come into my life they push along forms for me...To me tools advance my forms in a major way’ (Oestreich 2012). For

Jeff, tools are also an object for refinement: ‘When I worked here in the 60s, we just used this knife to scratch-in cross-hatching and then I just made up this one from some sewing needles embedded in that piece of wood’ (ibid).

For Oestreich there is also a pay-off for using earlier tools that extends beyond their function:

Part of it is the romance of using this one, although it doesn’t give me the result. It’s about harking back to my earlier lessons and I cannot give up these tools that were from the very beginning because there’s a romantic involvement in the use of the tool. (Oestreich 2012)

John Bedding, when discussing the Lidded Soup Bowls of Section 4.2 (p.131), provided an overview of the tools he made and used at the Leach Pottery demonstrating, for example, the bamboo trimming tool (Figure 33 and Figure 34):

... the standard cut-off tool and you were taught to make this when you first went there. Basically, they’d give you a piece of bamboo. Bill [William Marshall] would cut up the bamboo to that shape and then Bill would teach you how to make it. (Bedding 2013)

Another important tool was the metal trimming tool used for turning leather-hard pots (Figure

35): ‘...you’d be given a straight piece of metal then you learnt to cut the shapes there – it was all about cutting and bending and shaping it on the grinding wheel’ (Bedding 2013). A range of wooden shaping tools (Figure 36) were also used for the inside of pots, especially the flatware like the Plates and the General Purpose Bowls: a further tool that Bill helped the potters make (Bedding 2013).

Similar to the Leach Pottery today, a gauge fixed to the frame of the potter’s wheel was used to measure pots during batch production, as evidenced in film footage and noted by MacKenzie (Gross 2012). Bernard corroborates this: ‘Repetition of size is ensured first of all by measurement and then by this adjustable gauge which gives the top edge limit to which each successive pot can be thrown’ (ibid).



Figure 33: Bamboo Trimming Tool - Courtesy of John Bedding, image M. Tyas 2013



Figure 34: John Bedding Demonstrating how the Bamboo Trimming Tool was Used, image M. Tyas 2013



Figure 35: Metal Trimming Tool for Leather-Hard Pots - Courtesy of John Bedding, image M. Tyas 2013



Figure 36: Wooden Shaping Tools - Courtesy of John Bedding, image M. Tyas 2013

Other points noted by Bedding were that the use of shared tools like the trimming tool, helped support standardisation: ‘Because everybody used it, that did standardise to a certain extent’ (Bedding 2013). It was also implied that there was a craft to making the tools, as they were not

made from drawings but from eye and experience, and that the tool making was an art:

This [trimming tool] started off a lot longer but I've whittled it down until it's become quite an ugly looking tool. The aesthetics of the tool is very important as well and some people make really nice looking tools and others really clumsy looking tools. (Bedding 2013)

Bedding also felt that tool making, for the trainee potter, was a worthwhile activity and fundamental skill that should be re-implemented into the Leach Pottery's repertoire (ibid).

The observations of Oestreich and Bedding, relating to the relevance of tools to their training, contrasts to MacKenzie's earlier experience where tool use seemed less widespread:

Everyone at the Pottery, generally speaking, worked with only their fingers and a simple bamboo stick to undercut the bottom of the pot. It was after coming to America and seeing Hamada work that I was introduced to the use of a fairly large smooth rib to sweep up the side of a pot. (Gross 2012)

John Leach (2014a) uses the same tools now and demonstrated the bamboo foot tool. To Leach, they '...are terribly personal...god forbid anybody if they use my tool, or I their tool, because we wear them in a slightly different way' (ibid).

3.2.2: Tools & Leach Tableware

In contrast to tool use in the production of Standard Ware, the role of tools in Leach Tableware was more dependent on the personal and professional preferences of the potter. For Wengeler, they were not significant as she preferred to work with her hands '...and just use a sponge, a throwing rib and chamois leather and a wire, and trimming tools if needed...', not considering herself a 'tool freak' (Wengeler & Wheeler 2014). Wheeler considered herself a 'sucker for nice tools' (ibid) but did not like to use them extraneously.

In making Leach Tableware, there was one specific tool that Doherty liked the Studio to use: a small pointed rib for removing excess clay. This tool was purpose-made and the only tool used by everyone. Wheeler was not sure how effective standard tools were as peoples' hands are different – as is the way they use the tools. However, if the Studio was tasked with training potters then it would be '...understandable that we'd teach them one tool and one way...' (Wengeler & Wheeler 2014), although it was not considered as practical to expect a skilled potter to change their way of working to suit a tool and, by implication, to suit the Studio's preferred methods of production.

3.2.3: Bernard Leach: Tools, Technology, & Industry

A Potter's Book (Leach 1976a) did not treat tools deeply or as an individual phenomenon but addressed them in the context of process, as part of the narrative of making. Of note are the descriptions of methods and the aesthetic treatment of pots that are strongly associated with Leach Pottery output. Reference is made to some of the tools associated with Standard Ware production, such as the adjustable pot gauge, ribs and turning tools (Leach 1976a, pp.76, 82–3).

As a potter, Leach was a consummate user of tools like shaping ribs and turning tools and pottery equipment like the potter's wheel. I begin this review with an interest in exploring Leach's ideas about technology as a critical lens for developing digital practice and contextualising it within the cultural heritage of Leach. The following review is based on two of Leach's early key texts: A Potter's Outlook (Leach 1928) and A Potter's Book, (Leach 1976a) first published in 1940, reveals Leach's position in relation to technology and industry to be more nuanced and compelling than simply being 'anti'.

Leach's relationship with industry and technology is complex, for example he considers factories to '...have driven folk-art practically out of England, and it only survives in out of the way corners of Europe; and the artist-craftsman, since the day of William Morris, has been the chief means of reaction against the materialism of Industry' (Leach 1928, p.1). His language is emotive, but on the same page he says: 'After 100 years, the trade offers us crockery which is cheap, standardised, thin, white, hard, and waterproof - good qualities all...' (Leach 1928, p.1). In principle, although factories are destructive the products of industry also offer benefits: a striking admission considering Leach's pursuit of making 'traditional' earthenware during this period (Edgeler 2010). However, Leach continues: '...the shapes are wretched, the colours sharp and harsh, the decoration banal, and quality absent' (Leach 1928, p.1); for Leach, utility was not enough.

Over a decade later, in A Potter's Book, Leach still admires the methods of industry but continues to struggle with the resulting ware:

And although the mechanical processes are indeed marvellous, as for example the automatic glazing, cleaning, measuring and stamping of many millions per month of bathroom tiles, fired in a single non-stop tunnel kiln, the mere fact of their being mass-produced is no reason why these tiles should be as cheaply designed and as dull and miserable in colour as it is possible for tiles to be; nor in the case of hollow-ware is the casting of shapes so exactly and so quickly and with such perfect pastes an adequate excuse for dead shapes, dead clay, dead lithographed printing or the laboured painting

of dead patterns. (Leach 1976a, p.3)

3.2.3.1: The Machine is Not the Enemy

For Leach, the failures of industry were neither inevitable or insurmountable as the methods of industry did not have to result in its ends: 'The next step is to get rid of the idea of the machine as an enemy. The machine is an extension of the tool; the tool of the hand; the hand of the brain; and it is only the unfaithful use of machinery which we can attack' (Leach 1928, p.1).

Leach's language of: 'enemy', 'unfaithful' and 'attack', almost suggests he is fighting a war and 10 years later, he again stresses he is not attacking the machine:

My frequent criticism of mass-produced wares should not be regarded as an attack upon the machine so much as an exposure of the false standards of beauty, whether of commercial origin of debased court taste, which have accompanied the rise of industrialism. (Leach 1976a, pp.xxi – xxii)

3.2.3.2: Mass-Production & Robot Work

Leach considered mass-production as inevitable and an important alternative to hand-labour:

The widened demands of the increased population of the world make inevitable the mass-production of many utensils. It is good that machinery should stamp the iron of a railway track, or the glazed bricks of London Tubes - better than that it should be done by hand - plain, and clean, and strong and no nonsense about it! (Leach 1928, p.1)

Leach did not think hand-labour should be used for repetitive work as technology offers the potential to free-up creative labour:

...that labour should be employed eight hours a day, year in year out, upon mechanical work which gives no play to its creative faculties, for that is ROBOT work. With the increase of mass-production shorter hours are bound to come, and with them the time and energy for individual and home production with power supplied by electricity. (Leach 1928, p.1)

For Leach there was no reason for a human to undertake 'robot work'¹⁶. For Leach, technology could undertake repetitive work and presented opportunities for new ways of individual working and home production. Leach saw technology as a line in the sand that offered new potentials: 'This business of going back as confederated purists to the hand which preceded the machine has served its purpose. The next step awaits us' (Leach 1928, p.2).

¹⁶ the robot was newly topical in the 1920s: the word was coined in a Czech play to denote 'forced labour' (Thompson 1996, p.879)

3.2.4: Summary for Section 3.2

This Section provides an insight into how potter's tools have been utilised by the Leach Pottery in the production of its tableware over the decades. Tool making and tool use was found, on the whole, to be an intrinsic aspect of Leach Standard Ware training and production with potters often found to be still making Leach-inspired tools in their contemporary practice. By comparison, Leach Tableware production does not engage with tool making in training or practice, and potters are encouraged to use only one Studio tool: production methods being based more in the individual potter's making preferences. This part of the review clearly shows how tool making and tool use were an intrinsic part of Standard Ware production: helping to not only train potters but also maintain production standards. Their historical use presents opportunities for introducing bespoke tools to current Leach Tableware production.

Bernard Leach's ideas about machines, industrial production, and the general role of technology, present a complex mix of ideological standpoints towards industrial manufacture and technological application. During the formative period of establishing his position in the UK, which culminated in publishing *A Potter's Book*, Leach promotes a progressive standpoint where the machine is not necessarily the 'enemy': what should be questioned and critiqued is the way that it is used. This idea does not fit neatly with some contemporary and somewhat reactionary interpretations of Leach's 'tradition', where valid methods are only those that fall within historical making methods as already outlined.

I consider Leach's approach to technology as empowering: he places the thinking self-conscious maker at the heart of practice suggesting that the machine can be a tool of the maker that does not necessarily dictate its own ends but is an extension of the hand and brain. Using this progressive reading of technological engagement, I believe it is valid to approach industrial production methods and technological practice, as a maker, within the cultural heritage of Leach, rather than dismissing digital technology practice merely because it is not 'traditional'.

Section 3.3: Digital Ceramic Practice & its Potential

This Section examines how ceramic practitioners engage with digital manufacturing technologies: this does not claim to be an exhaustive review of the field, especially as it is expanding in areas like 3D printing, nor does it include a review of other digital craft material practices as encountered in the likes of Lab Craft (Crafts Council 2010). Instead, this Section focusses on the long-established and overlapping areas of ceramic and digital craft practice, opening with an examination of some of the theoretical perspectives that exist around the topic before focussing on practitioners engaging in digital ceramic practice.

An emphasis is placed on practitioners engaging with materials and form making: practitioners engaging with digital practice primarily as a vehicle for two-dimensional print are not featured because object making is the focus of this research. The practitioner review is organised into three areas: research, design, and the independent practitioner, although it is recognised that the activities of these practitioners is often wide-ranging and they could readily feature in more than one category. These groupings are used because I am interested in the context of the practice and its results, rather than focussing on comparing practitioners' methods and/or materials. The practitioner content has been arrived at through prior knowledge and searches of EThOS, ProQuest and Google. These searches were focussed using practitioners' names and terms like 'digital pottery', 'digital ceramics' and 'laser cut plaster mould'.

3.3.1: Digital Practice: Differing Perspectives

McCullough's (1996) *Abstracting Craft: The Practiced Digital Hand* is an important text in establishing computer technology as a medium which can involve creative engagement in ways that draw parallels with craft practice. The book argues strongly and passionately from the beginning:

People cannot endure as "consumers," but must actively practice at something, however humble. This means that the ultimate significance of postindustrial technology has to be in serving the need to work well - and not in automation. (McCullough 1996, p.ix)

Importantly, McCullough articulates how the computer can be seen as a tool which can be employed as an extension of human intention, and is therefore as valid a means to a pragmatic or creative end as a traditional tool (ibid, pp.59-94): digital practice is about how technology is used – the engagement does not have to be determined solely by the technology.

Just over 10 years later, the field of crafts also grapples with the role of craft in the digital age.

Of note is Press' (2007) *Handmade Futures: The Emerging Role of Craft Knowledge in Our Digital Culture* which acknowledges that craft and digital practice are different spheres, but that 'craft is beginning to explore creative strategies and approaches that open up new possibilities of form, meaning, and significance in our digital culture' (ibid, p.250). Press is concerned with craft as a form of knowledge, and as a methodology, that can be combined with contemporary technology to allow '...makers to assert a new relevance and value for craft' (ibid, pp.264-5). Here, craft is recognised as a valuable research method involving making and working using tacit knowledge to develop and extend technology.

Harrod (2007), in *Otherwise Unobtainable: The Applied Arts And The Politics And Poetics Of Digital Technology*, also extols the virtues of digital practice and, like McCullough (1996), acknowledges how the use of technology in practice has evolved from pragmatic to more creative ends. Harrod argues that practitioner engagement with digital technologies ultimately results in the creation of otherwise unobtainable objects, recognising that digital technologies are tools with unique characteristics that can be explored by the craftsman. Like Press (2007), Harrod sees craft as a distinct methodology which can serve to humanize digital technologies and even articulate hidden aspects of craft: '...projects involving computing help make interior, unobservable processes public' (Harrod 2007, p.233). In recognising craft as a unique knowledge and methodology, both Harrod and Press (2007) show how craft offers many possibilities for exploring, and engaging in, digital practice.

However, engagement with digital technologies as an aspect of crafts practice is still not universally accepted. Adamson (2013), in *The Invention of Craft*, is a significant contemporary critic presenting a doubtful perspective entrenched in the idea that craft, by its nature, can only be analogue: '...craft is intrinsically analogue (as opposed to digital). Its physicality is irreducible, and while it can be translated through casts or other mechanical means, that process will always retain its own specificity' (ibid, p.165). Adamson is especially sceptical of digital practice as '...digital instruments have their own limits' (ibid, p.167) that lack the nuances of control and satisfaction of the hand tool (ibid). For Adamson, this is evidenced by the homogenised nature of digitally crafted objects which demonstrate: '...depressing stylistic homogeneity of digital craft objects, which tend to be limited to a vocabulary of topographical layers, accumulated blocks, and point-to-point "morphs"' (ibid). The only sanctuary, for Adamson, is Geoffrey Mann's *Shine* which finds life in its expression of the failure of the digital scanning method used to record the original object. As a maker, I note that many analogue tools and processes create distinct stylistic characteristics: indeed, that is often the reason for

choosing particular methods. As the practitioner review will show, some makers do produce work using topographical layers and morphs: this factor can be ascribed to the choice of methods and their use, but that selection of methods can also result from aesthetic preferences.

Adamson's critique seems to side-step digital craft from the maker's perspective, focussing on aesthetics and a macro view of the act of making where Adamson notes how, in contemporary design, computers are not engaged with as craft tools: digital and analogue processes remain as separate stages of making (ibid, p.168). Ultimately, Adamson believes that craft can be 'unthinking' and that it must be defended from the presumption of needing 'improvement', whether that is with the addition of theory or the digital:

When all is said and done, craft is indeed tacit. And though generations of reformers have been dismayed by the idea, and many continue to be so today, craft at its best can indeed be altogether unthinking. That is one of the most thought-provoking things about it. We must continue to defend it from the modern presumption that it needs "improvement" – through the addition of theory, or art, or more latterly, the power of the digital (Adamson 2013, p.171).

As a practitioner, I do not necessarily engage with digital craft through a desire to 'improve' or alter the status of craft, but to exercise craft as a form of knowledge procurement and expression, and to enact it as a methodology: I approach the research, and this review, more from the perspective of McCullough (1996), Press (2007) and Harrod (2007) than Adamson's.

3.3.2: Research Practitioners

Research practitioners are makers whose digital ceramic practice tends to operate or develop in a research/academic context. My first direct experience of this kind of practice was through contact with Dr Katie Bunnell, Dr Justin Marshall, and Tavs Jorgensen, of the Autonomic Research Group at Falmouth University (see '1.1.1: Institutional Background: The Leach Pottery, Autonomic, and the European Social Fund'). Their practice can be characterised as being progressive and often playful in the way that it approaches digital technologies.

Both Bunnell and Marshall are practitioners whose making has very much developed from the foundations of their research training, while Jorgensen's practice can be seen to have evolved as he has come into contact with academic environments, moving from being a trained potter, to a designer, and then researcher of digital practice. Similarly, Michael Eden's practice has evolved as a result of contact with the academic environment, progressing from being an earthenware potter to a digital artist whose work is now printed rather than thrown.

Ingrid Murphy is a more recent digital practitioner whose playful work also integrates digital technologies resulting in ceramics that are smart, hacked, and extended through augmented reality. John Balistreri employs digital practice at a human and even sculptural scale, but the importance of explorative process remains paramount. Finally, Dr Steve Brown explored the use of digital processes in the development of new printing methods during his doctorate.

3.3.2.1: Katie Bunnell

Bunnell has a long association with digital ceramic practice, using computers to develop her



Figure 37: Katie Bunnell, *Bunny Beakers*, *Digital Manufacturing Technology and Slip Casting*, 2003.¹⁷

design work in combination with lustre glazing and sandblasting (Bunnell 1996) before her subsequent thesis (Bunnell 1998) which sought ‘...to integrate computer technologies and environmentally-sensitive materials and processes into the practice of the ceramic designer-maker...’ (ibid). This work included the development of complex surfaces and forms using CAD/CAM and existing making methods, finding

advantages of digital technologies for the ceramic practitioner (ibid).

Bunnell also uses the digital medium to explore the relationship between making and drawing, whether through practice or digital production involving flexible customisation and e-commerce as found in the Digital Flora project: ‘...that exploits the customisation capabilities of digital manufacturing technologies and the market potential and global connectivity of the world wide web’ (Bunnell 2007). The Autochina (Bunnell n.d.) website was developed to test the concept, offering visitors the ability to co-author the pattern of their plates. Bunnell has also used digital technology to facilitate professional collaborations: Bunnell and Marshall (2002) created low-relief tessellating tiles giving the illusion of three-dimensional depth. 1479 Plates, in collaboration with Artist Chris Tipping, comprised a large map: ‘...printed



Figure 38: Katie Bunnell, *Minecrafting*, *Large Hand-Built Parian Vase with Digital Surface Pattern and Slip Casting*, 2013.¹⁸

¹⁷ <http://www.autonomic.org.uk/team/kb/bunnybeaker.html> [Accessed March 5, 2012]

¹⁸ <http://www.willslanegallery.co.uk/artists/ceramics/katie-bunnell> [Accessed September 28, 2014]

on 788 bone china dinner plates, exploring the relationship between present-day engineering and mining technology, stone mines heritage, natural history, and two eighteenth-century entrepreneurs...' (Bunnell 2011, p.62). Bunnell is currently developing a CNC slip-trailing machine:

...a digitally networked, computer numerically controlled machine for ceramic surface pattern decoration...a low cost digital system designed to provide an inspiring demonstration of the ways in which the internet and digital production can come together as part of a distributed production chain for artisan ceramics. (Bunnell 2014)

Bunnell also explores digital technologies through her practice as evidenced in the evolving translation of hand-drawn narrative-inspired lines into low-relief surfaces which began with Bunny Beakers (Bunnell n.d.) (Figure 37) whose themes developed both visually (The Wills Lane Gallery 2011) and physically (The Wills Lane Gallery 2013) (Figure 38). The gallery describes her work: '...Bunnell uses digital and ceramic processes, including laser cutting, CNC milling and silicone rubber casting, to create her one-off experimental bunny mugs' (ibid).

3.3.2.2: Justin Marshall

Marshall's early work with digital manufacturing technologies related to his thesis (Marshall 1999) which examined the use of CAD/CAM technologies by craftspeople and designer-makers in architectural ceramics. The practical elements of the research demonstrated that CAD/CAM technologies: '...can extend makers' practices and are useful in the production of ceramic work appropriate for architectural environments' (ibid). Marshall built on this research with investigative practice into how CAD/CAM could be used to create low-relief tessellating tiles with the illusion of depth (Bunnell & Marshall 2002) using CAD, CNC milling and a rampress.

Marshall (2002b; 2002a) also explored how digital technologies could extend creative practice using 3D CAD to design models of vessel forms and Layer Object Manufacturing to produce them. A series of plaster moulds were then produced from the models using a combination of



Figure 39: Justin Marshall, *Pouring Bowls*, Slip Cast Ceramic, 2000.¹⁹



Figure 40: Justin Marshall, *Solid Shadow-Crouched Figure 1*, Press-Moulded Ceramic, 2001.²⁰

silicon moulds: Marshall (2002b, p.49) stresses the importance of material skills and knowledge to make these processes effective. The works were realised in ceramic (Figure 39). Marshall notes how the digital process facilitates the creation of new kinds of work and extends thinking and making:

Not only would the bowls produced in this project have been impossible to produce physically without the aid of computer technologies, they would not have been possible to consider...this technology transformed and extended my way of thinking as well as my making; not as a passive aid to producing work but as an intrinsic active part of the creative process. (2002b, p.50)

Solid Shadows (Figure 40) is one of Marshall's last identifiable ceramic-related works. The series uses the 2D profiles of his body which were skinned in 3D software: 'The forms are therefore the result of an immaterial absence (i.e. a shadow) being made materially present (i.e. a physical sculpture)' (Marshall n.d.). The sliced digital model was then laser cut from thin foam sheet and used as the basis for a plaster mould.

¹⁹ <http://www.justinmarshall.co.uk/work%20pages/bowls/pouring%20bowls.html> [Accessed September 29, 2014]

²⁰ <http://www.justinmarshall.co.uk/work%20pages/s.shadow/s.shadow1side.html> [Accessed September 29, 2014]

3.3.2.3: Tavs Jorgensen

Jorgensen's practice was grounded in a four year production potter apprenticeship (Jorgensen 2011) and ceramic design (Jorgensen 2000), before progressing to digital practice and research. In *Binary Tools* (2005), Jorgensen presents his early digital practice arguing that digital technology is rarely used by potters and almost viewed as 'dealing with the devil' (2005, p.2). He offers reflections on digital methods and outcomes, sharing concerns about human agency and the mark making inherent in the process. This early work shows a strong digital aesthetic from the layering process of RP machines (Figure 41) and the use of CAD to unfold 3D digital models to 2D patterns, which in turn were used to produce moulds (Figure 42).



Figure 41: Tavs Jorgensen, MDF Model and Completed Bone China Cups (Jorgensen 2005)



Figure 42: Tavs Jorgensen, Porcelain 'Ceramic Origami' Vases (Jorgensen 2005)

In *Conducting Form*, Jorgensen's (2007) becomes more concerned with recording gesture than evidencing the marks of hand-making. The research is explorative in nature: the initial intention was to find new ways of working in ceramics but this was less effective than anticipated, so Jorgensen engaged with new creative opportunities and used the captured gestures to design furniture and develop new glass forms. Jorgensen interests have shifted from ceramics to more focused explorations of digital-related materials and methods, as evidenced in *Glass Investment Casting with 3D Printed Moulds* (Jorgensen & Matthias 2012). Jorgensen is now undertaking a PhD concerned with digitally enabled reconfigurable tooling.

3.3.2.4: Michael Eden

Before engaging with digital practice, Eden worked as a studio potter (Figure 43) who also shared his interests through a book on contemporary slipware (Eden & Eden 1999). However, Eden appears to move away from potting on commencement of his MPhil, in 2006 (Eden n.d.), which examined 'the relationship between the container, its surrounding space and the viewer' (Eden 2008). He used Rhinoceros 3D as an explorative tool which served as a starting point for his engagement with digital practice.

Eden's work is now more that of a digital artist, than potter: his current website records his



Figure 43: Michael Eden, Slipware Teapot, undated.²¹

'...efforts to bring together traditional ceramic craft skills and digital technology, including 3D printing, additive layer manufacturing and non-fired ceramic materials' (Eden 2013a). The gallery only features work made after March 2008, using '...a combination of drawing, 3D software, traditional hand skills, and digital technology, including Additive Layer Manufacturing and 3D printing...' (Eden 2013b). The majority of work is non-

ceramic and produced using CAM methods.

Through digital practice, Eden has shifted from pot and vessel making to the conceptual exploration of the vessel using a digital toolkit, as exemplified in the Babel Vessel (Figure 44). Hanessian (2010, p.68) suggests the 3-D printer allows Eden to work in ways that would be impossible with clay: 'His artwork is an excellent example of how a 3-D printer can shape ceramics in a way that would be nearly unattainable otherwise'. Amadei (2009) believes the 3D printer presents new possibilities for ceramic experimentation: 'For Eden, 3D printing is not replacing traditional crafts but is a new tool, which will increase the possibilities for experimentation in ceramics'. Eden's current practice has moved beyond clay but he still considers it an important engagement with meaningful object making (Eden 2013c).



Figure 44: Michael Eden, Babel Vessel, Nylon, Mineral Coating, 2010.²²

3.3.2.5: Ingrid Murphy

Murphy, a maker and academic, is a relatively new advocate of digital practice. More recently, Murphy (2014) presents 8 examples of using traditional practice, like casting and hand-building, alongside digital technologies to produce ceramic objects that are smart, hacked, and even realised through augmented reality. The broad strands of her work relate to augmented reality, the integration of technology into ceramics, and the embedding of QR codes within work.

²¹ Available at: http://www.craftscouncil.org.uk/files/download_iterator/72d7a40d3f1d8a69/michael-eden-presentation.pdf [Accessed March 3, 2012].

²² Available at: <http://www.edenceramics.co.uk/product14.html> [Accessed March 4, 2012].

An example of Murphy's augmented reality work, 'Things Men Have Made with Wakened Hands', uses the handling of a small gold-lustred jug to trigger footage of the original jug being



Figure 45: Ingrid Murphy, *Murphy as St George Slaying the Dragon, Slip Cast, 2014*.²³

handled by other makers. Murphy says: 'Rather than exploiting technology to create ceramics, this project examines technology as a means to re-negotiate and reclaim the basic, primal concerns that are inherent to ceramics and object making' (Roche 2013, p.81). Roche suggests that the impact of this technological approach creates a complex and nuanced encounter: 'Here, the self, the replica jug, the live projection and the film mingle to 'transform' an everyday ceramic object into a nucleus for expanded empirical and existential perception' (ibid). The work is realised through a combination of digital methods like the 3D scanning of the original jug, and making the copy through slip casting.

'Home' (Murphy 2014) is interesting for embedding visual and audio recording technologies into a small ceramic house, although I do not consider it a deep engagement with digital ceramic practice with regard to physical process and materials. Likewise, embedding QR codes to signpost the viewer to an online narrative develops the potential for different types of interaction with ceramic objects, but does not present an example of dedicated digital ceramic making: it is more concerned with surface and narrative than the physicality of process.

'Hacking Histories' (Murphy 2014) is a more personal work and one that more evidently combines Murphy's interests in augmented reality with an active engagement in digital ceramic making. Murphy physically and digitally hacks herself into ceramic history through the medium of Staffordshire flatbacks. This is achieved by 3D scanning herself, 3D printing the model, then slip casting the model of herself into flatback scenes. Murphy also introduces herself into the digital narrative of the work through augmented reality (Figure 45).

²³ <http://ingridmurphy.wordpress.com/2014/02/05/> [Accessed October 5, 2014]

3.3.2.6: John Balistreri

Balistreri (2014) is an American academic and ceramic artist whose early work was characterised by wood fired oriental tea forms, before engaging with large-scale ceramic sculpture. Balistreri's (2008) first major work with digital manufacturing technologies involved using a 3D printer:

...to understand the relationship of this new technology with my prior understanding of using clay to make an aesthetic object. We are three dimensionally scanning my original thrown tea bowls into digital files and then printing them using the rapid prototype process. The result is a highbrid object that can be argued as both a copy of an original and also an original object. These pieces are then glazed and fired to completion and displayed beside the 'original'. (Balistreri 2008, p.12)



Figure 46: John Balistreri, *Original and Digitally Printed Teabowl*, Wood Fired, undated.²⁴

In the teabowls (Figure 46), Balistreri sought to create originals but he also envisaged wider implications for the new technology which '...could revolutionize the tile and brick industries as well as design and ceramic art fields' (Balistreri 2008, p.12). As a result of the research, two patents were lodged relating to the powder recipes and how the printer mechanically distributes the material (Balistreri 2008, p.11). Z-Corp's Vice President of Business Development said: 'What John has clearly shown is that the combination of his material and our printers are very valuable for ceramics...That's beyond dispute' (Dupont 2010).

²⁴ <http://johnbalistreriartist.com/3d-tea-bowl-project> [Accessed September 28, 2014]

Balistreri's next identifiable practice using digital technologies is Recursion Collision (Figure 48): 'This Body of work is based on two large scale sculptures which were either scanned or photographed and rebuilt in a 3d modelling program' (Balistreri n.d.). A combination of methods were used to realise the works, including the previously developed digital printing. CAD was also used as a form of drawing (Figure 47) and, for Balistreri, the process is still about working with clay and acknowledging a creative interplay with the technology:

The integrity of the exercise is still rooted in the manipulation of wet clay to make monumental ceramic sculpture using traditional methods...it is likely that new original sculptures will be made and then through hybridization and recursion have new outcomes. This exercise has already become the source for new approaches to new sculptures. (Balistreri n.d.)

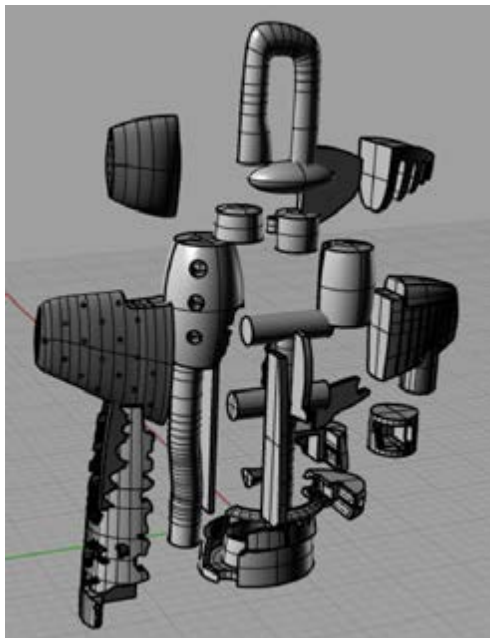


Figure 47: John Balistreri, *Recursion Collision*, Screenshot of 3D Model, undated.²⁵



Figure 48: John Balistreri, *Recursion Collision*, Finished Sculpture, undated.

²⁵ <http://johnbalistreriartist.com/recursion-collision> [Accessed September 28, 2014]

3.3.2.7: Steve Brown

Brown's (2011) thesis, *The Physicality of Print*, investigates printmaking and ceramics as a form of production, rather than reproduction. He seeks to develop methods to 'integrate surface and form', as used in industry, that are accessible to studio 'ceramist-printmakers' (Brown 2011, p.3). Following a technical overview and examination of industrial printing approaches, Brown pursues a dialogue between screen-printed image and ceramic form through his practice. Brown (2011, pp.135–142) experiments with CAD/CAM to draw and scan new forms and analyse patterns. He enters a dialogue of making that moves between different analogue and digital methods, like using a laser cutter to cut printed fabric panels for mould making and computer aided embroidery to join these panels. Brown uses these digital tools to solve problems and arrive at new outcomes, but he does not give special significance to digital methods and even rejects them at one point: 'The hi-tech line of research was rejected and I turned once more to thinking about the cross-disciplinary application of existing technology within my own experience' (Brown 2011, p.142).



Figure 49: Steve Brown, Arlecchino the Brave – Ridiculous Attitude I, Porcelain & Digitally Manipulated Surface Design (Brown 2011, p.174).

3.3.3: Designer Practitioners

Design practitioners are characterised by their use of digital methods, but they do not overtly communicate these methods or the kind of developmental practice that research practitioners undertake. The aesthetics of the work also embodies an essence of manufactured wares and the designs are usually reproducible. Brian Adams is an early advocate of digital production technologies who considers himself a designer and producer, while Geoffrey Mann is an artist and designer who uses a studio to produce his work.

3.3.3.1: Brian Adams

Adams is an established ceramist who has been using digital manufacturing technologies since the mid-1990s:

He uses technology to make objects that while simple and familiar, are usually impossible to create by conventional means. The aesthetic of the work does not proclaim or celebrate its digital origins and yet the objects are truly products of technology. (Adams n.d.)



Figure 50: Brian Adams, Ripple Platter, undated.²⁶

Adams uses the technology to generate forms that have a simultaneous complexity and visual simplicity: forms like the Ripple Platter (Figure 50) that would be difficult to achieve by hand:

Take the Ripple Platter for example: this form is possible within a computer programme, but almost impossible to model by hand. Ripples Dish is like a 3D photo. It emulates a normally brief and ephemeral moment of ripples on water and like a photograph, freezes that moment in time. It captures the complexity of the radiating rings and the interference pattern that the two converging ripples create. (Adams n.d.)

3.3.3.2: Geoffrey Mann

Mann is an artist who engages digital manufacturing technologies across several mediums. Of note is *Blown* (Mann 2013a), an edition of Bone China cups and saucers that are part of the *Natural Occurrence* series. In this work, the act of blowing has been simulated, captured and reproduced in the objects (Figure 51).

²⁶ http://www.brianadamsceramics.co.uk/pages/products_ripple_dish.htm [Accessed September 30, 2014]



Figure 51: Geoffrey Mann, *Blown, Bone China Cup & Saucer*, 2012, image Sylvain Deleu.²⁷



Figure 52: Geoffrey Mann, *Cross-Fire, Earthenware Teapot*, 2010, image Ben Murdock.²⁸

Also of interest is *Cross-Fire* (Mann 2013b) which is also part of the *Natural Occurrence* series. Its focus ‘...was to examine the intangible characteristic of the spoken word and investigate the unseen affect of sound upon its inhabited environment’ (ibid). This body of work, of which the ceramic elements comprise only a portion, is directed by Mann and realised through a team. The 3D modelling and animation was produced by Chris Labrooy (2014) and Ben Murdock (Mann 2010) assisted in producing the ceramic version of the teapot (Figure 52).

3.3.4: Independent Practitioners

Independent practitioners are makers working as full-time ceramicists who also explore and implement digital technologies: their activities often fall outside of academic research and design production. John Bedding currently uses digital methods in his work and appears to be the only ex-Leach potter engaging in this practice. Jonathan Keep, like Michael Eden, hails from a background of tableware production but continues to maintain this activity alongside his developmental and well-documented digital practice.

3.3.4.1: John Bedding

Bedding occupies a unique position as he appears to be the only ex-Leach potter engaging with digital practice. Bedding remains in St Ives, working from the Gaolyard Studios (Frears 2009; Frears 2010) producing work distinct in style from the Standard Ware he was trained to make. Bedding acknowledges that his style changes (Smith 2013, p.52) in an article stressing his connections to Leach heritage alongside the development of distinct decorative elements (Smith 2013, p.54) achieved by adapting:

²⁷ <http://www.mrmann.co.uk/natural-occurrence-series-blown> [Accessed September 30, 2014]

²⁸ <http://www.mrmann.co.uk/2010/08/cross-fire-teapot-edition-of-10.html> [Accessed September 30, 2014]

...a nineteenth-century photographic printing process based on the light sensitivity of dichromates. Having developed a light sensitive emulsion for use with ceramics, Bedding found he could project a computer-generated image of his own design on to a coated pot before dusting away any undeveloped mixture. (Smith 2013, p.57)

This method facilitates the creation of complex patterns and decoration that would be difficult to achieve otherwise (Figure 53). This is not the only method used by Bedding, but it forms a significant part of his work as exemplified in his recent Leach Pottery exhibition²⁹ (Figure 54).



Figure 53: John Bedding, Long Lidded Pot with Liquid Lines, Earthenware, 2014, image M. Tyas 2014.



Figure 54: John Bedding, Leach Pottery Exhibition, 2014, image M. Tyas 2014.

Bedding (2013) often shies from describing his making processes, but sees the computer as another tool of practice: his relationship with it developed over at least 6 years alongside his aesthetic interest in complex patterns and the technique of projecting patterns onto the pot's surface. Bedding (ibid) then began using the computer to make stencils for applying slip and anticipates further developments: 'The computer has become an important but enjoyable tool: I do enjoy that way of making decoration and I'm wanting to go a bit further and do real-time decoration on a pot' (ibid). Bedding (ibid) is keen to stress that the decoration could not be done any other way, and that it is part of a process involving further hand-skills and decision making: it is complex and part of a cycle of application, analysis, and modification.

3.3.4.2: Jonathan Keep

Keep is an established maker spanning several areas of ceramic practice from thrown domestic ware (Figure 55) to sculptural forms and using digital manufacturing technologies. Kemske asks: 'Is Jonathan Keep a sculptor who makes tableware - or is he a potter who makes sculpture? Actually, he is both' (Kemske 2008b, p.31). Keep's first foray into digital practice

²⁹ July 26th to September 6th 2014.

used 3D software to draw, generate, and explore pottery forms to create 10 original digital artworks (Wingate 2002). Keep was then exposed to 3D digital clay printing which inspired him to hand-syringe a body of work called Syringe Forms (Kemske 2010).



Figure 55: Jonathan Keep, Wonk Ware, Thrown Mugs, undated.³⁰



Figure 56: Jonathan Keep, Icebergs, Digitally Printed Porcelain, undated.³¹

Keep then worked with a RapMan 3D printer (Bits from Bytes Limited 2011): I visited Keep to see the technology work and evaluate its appropriateness for the research. His approach to digital practice is based on working with traditional materials and knowledge: ‘...digital tools undoubtedly offer new ways of working. But for me it will always be combined with traditional materials and techniques knowledge, it’s an evolving continuum’ (Keep 2012a). Keep believes that digital practice presents a new method of making in clay:

In broad terms I have always thought of three approaches to working...I am suggesting 3D printing in clay, and however it develops will become recognised as a fourth way of transforming formless clay into desired ceramic shapes. (ibid)

Digital printing also allows Keep the possibility to make his earlier virtual forms real:

I have long wanted to get the virtual forms I was creating out of the computer and into the physical world as real ceramic objects to be felt and held in the hand. Touch is such an important sensation. This is an exciting new way to work. (Keep 2012b)

Keep continues to develop his toolkit, finding an alternative for his discontinued RapMan printer (Keep 2013b), and producing recent work like Icebergs (Figure 56).

³⁰ http://www.keep-art.co.uk/Dom_Price/Mugs.htm [Accessed March 4, 2012].

³¹ http://www.keep-art.co.uk/Singles/icebergs_00.html [Accessed September 29, 2014]

3.3.5: Summary for Section 3.3

This Section began by outlining critical frameworks relating to the use of digital technologies in craft practice. McCullough (1996), Press (2007) and Harrod (2007) offer supportive and revealing accounts about the use of digital technologies in craft: the computer can be seen as a tool and a creative medium, and digital technologies can be utilised to make objects that are otherwise unobtainable. Craft is viewed as a unique knowledge and methodology that is perfectly placed to explore and develop digital technologies. Adamson (2013), on the other hand, sees digital crafts less positively citing the homogenous nature of its artifacts and noting that analogue and digital methods often remain separate.

This Section then proceeds to demonstrate the diversity of the field of makers undertaking digital ceramic practice. Many of the practitioners produce work that would be otherwise unobtainable without digital technology: there is also a significant focus on bringing previous crafts skills and knowledge to the making process, resulting in new and progressive areas of hybrid practice. Some makers have produced work with aesthetic similarities, but much of the work can defend itself from Adamson's criticisms both as objects and in their methods.

Some makers, like Bedding, are less overtly 'digital' but still use technology in their workflow, while Balistreri has used digital technology both specifically and as part of a wider body of work: it is a tool that can be employed when needed. Eden, on the other hand, exhibits a significant post-digital shift in his practice, having seemingly moved from being a potter to a digital artist who engages less with the materiality of clay – a move similarly echoed by Jorgensen. This is in contrast to Keep who continues to pot and develop digital methods, strongly believing that the digital printing of clay will eventually be recognised as a new method of working with clay.

Adams and Mann approach digital technology practice from a design perspective, which is perhaps less concerned with investigating the potential applications of technology compared to the practice of Keep and his nuanced and continuing exploration of digital printing within the wider context of his practice. The largest group of practitioners are associated with academic and research environments, exhibiting a wide-range of interests and approaches to practice leading to the development of new methods and objects. This is exemplified in the work of Bunnell, Marshall, Jorgensen, Murphy, Balistreri and Brown. However, less than half of this group continue to actively work in digital ceramics, although the nature of research means that this could change.

Section 3.4: Summary of Chapter

This Chapter establishes the research field by providing a definition of cultural heritage and introducing some of the aspects it encompasses. An understanding of the Leach Pottery context helps set the scene for the research, especially its influence in relation to training potters and the historical significance of the site which now includes new production and education facilities, a gallery, retail space, accommodation for potters, and research space. The Pottery's Director believes the Pottery remains significant because of its role in the local and international community and for its part of the story of St Ives.

In relation to practice, cultural heritage encompasses Standard Ware: this review provides a richer understanding of the topic from a historical and philosophical perspective. Standard Ware is also examined from the potters' perspective, providing several understandings of it and revealing the importance of tools, opening-up a further area of the contextual review and informing later practice relating to tool making. The revelation of the different periods of Standard Ware production, and the catalogue resources related to it, inspired the development of a visual lineage in the following Chapter.

Cultural heritage continues to be generated through contemporary Leach Tableware production. An understanding of this production is developed: pots are found to sometimes vary in their forms and a casual glance at Standard Ware demonstrates a similar phenomenon. This observation ultimately led to the extension of the lineage to also consider standards at a micro/making level in Chapter 4. The current Leach Potters also offer a perspective on production, stressing the value of skill and offering their definitions and understanding of Leach Tableware: this knowledge informed my approach to practice and the development of tools which were aids to throwing but not a substitute for decision making. This focus on tools was further influenced by knowledge of Standard Ware production methods which demonstrate a possible gap in application when compared to current production methods. Bernard Leach's ideas about machines, industrial production, and the general role of technology, demonstrate a complex mix of ideological standpoints towards technological application. Surprisingly, Leach often presents a progressive approach to technology, providing foundations from which to undertake technological practice in the context of Leach.

Finally, the Chapter presents an examination of some of the theoretical perspectives that exist around digital craft finding McCullough (1996), Press (2007), and Harrod (2007), to all offer supportive and revealing accounts relating digital technology use in craft. They acknowledge

the parity of digital technologies as a creative medium and recognise how they can be used to make objects that are otherwise unobtainable. Significance is also given to the knowledge and methodology of craft practice that uniquely positions it to explore digital practice. However, some commentators, such as Adamson (2013), are still sceptical about the role and value of digital technologies to the field of craft.

The review of digital practitioners found that many of the makers produced work that would be otherwise unobtainable without digital technology. The use of previous craft skills, and knowledge, are significant to the hybrid making processes. Some makers are less overtly 'digital' but use technology in their workflow, while others use digital technology specifically and/or as part of a wider body of work, or as a means to new types of practice. Ultimately, it is a practice that is skilled, requires decision making, and also an understanding of traditional processes. This review of the field helps point my initial digital practice towards making work based on Bunnell's Bunny Beakers, as well as further exploring the creation of vessels using contoured digital models.

Chapter 4: Leach Pottery Standard Ware & Tableware: Lineages of Forms & Standards

This Chapter extends the findings of 'Section 3.1: The Cultural Heritage of Leach' by developing the visual and physical knowledge of Standard Ware and Leach Tableware.

'Section 4.1: Leach Standard Ware & Tableware Lineage of Forms: A Macro/Design Study' provides a visual map of Standard Ware and Leach Tableware from a macro/design perspective. The Leach Standard Ware lineage shows what forms constitute the range and how they developed over the decades. The contemporary Leach Tableware lineage provides a snapshot of the current tableware range. The culmination of the practice, the Echo of Leach range, is also presented to contextualise it alongside the Pottery's tableware production and to recognise it as part of the continuum of cultural heritage.

These lineages visually define the 'standard' of Leach Standard Ware, Leach Tableware, and Echo of Leach at a macro/design, level. The final section of the Chapter examines Standard Ware from a micro/making level, using a selection of Lidded Soup Bowls, to understand how the 'standard' operates at the level of individual pots.

Section 4.1: Leach Standard Ware & Tableware Lineage of Forms: A Macro/Design Study

This section begins with an overview of rationale, definitions, and the development of the lineages for Standard Ware, Leach Tableware and Echo of Leach, which are then presented. These lineages are macro/design studies providing visual descriptions of the pots associated with the different periods of Leach tableware production, including data of their titles and sizes. The lineages are an account of the tableware from a relatively remote design perspective, suggesting linearity in development and asserting expectations of consistency in terms of size, proportions and the finish of pots. The lineages are followed by an analysis.

4.1.1: The Lineages: Rationale, Definition & Development

4.1.1.1: Rationale

As established in the contextual review, pages from Standard Ware catalogues have been reproduced in publication, as have images of individual tableware items, but the catalogues

are rarely engaged with and no consolidated study has been made of the pots, nor attempts made to extract the pots from their pictorial context and reconfigure them.

My initial engagement with cultural heritage focussed on examining the history of production and the role of key potters. This provided a richer understanding of the topic, but was not entirely sympathetic to practice. As the practice progresses, I increasingly realise the significance of the pots and it becomes more apparent how scant resources are to visually identify pieces or illustrate how they relate to each other as a wider body of work.

The forms are of primary interest to me: they are what my 'eye' identifies and there are aspects of them that can be noted in an image in a way that text fails to capture. Developing the lineages supported the practice and more fully versed me in what Leach tableware was and continues to be, helping me to address gaps in my knowledge about the different types of tableware and providing a practical guide for identifying a particular function, period of time, or genre within the cannon of Leach tableware production.

4.1.1.2: Definition

'Lineage' is defined in the OED as: 'lineal descent; ancestry, pedigree. [based on Latin *linea* 'line']' (Thompson 1996, p.578). In its basic form, the lineage of Standard Ware presents images of tableware pots in columns assigned to four main periods of production. The lineages of contemporary Leach Tableware and Echo of Leach provide snapshots of the final designs but do not feature developments as none were documented or have taken place. The lineages provide a simple way of showing a form, naming it, describing its dimensions and, when relevant, demonstrating its development over time, in a format displaying them at the same scale in relation to each pot and each lineage.

4.1.1.3: Development

The methods used can be found in 'Appendix 3.1: Standard Ware Lineage: Methods for Treating Catalogues' and 'Appendix 3.2: Standard Ware Lineage: Methods for Treating Catalogue Contents'. The Standard Ware pots were initially arranged in catalogue number order: form titles and item numbers remain highly consistent from c.1946 to 1961, until 1972 onwards when the numbering format changed. Pots are arranged alongside their evolutionary counterparts (where they exist), creating a horizontal path of a form's manifestation. Over the years, some forms changed significantly and were placed alongside earlier counterparts on the basis of sharing the same title. Forms with different titles from different periods have sometimes been connected to each other on the basis of their visual similarities, assuming that

it is a development of the same form but its title that has changed.

The lineage of Leach Standard Ware pots is mapped over the period of nearly four decades and four main periods of production: it is a comparative study of forms contained in fold-out pages. Contemporary Leach Tableware is presented using the same format but with fewer pages reflecting the lower number of forms. The Leach Tableware and Echo of Leach forms and data have been presented in the same way as the Standard Ware's, using the same methods, thereby making a comparison between different periods of tableware possible.

Leach Standard Ware is presented alongside its textual data and scaled in relation to its measurements: 1" of their original dimensions equates to 5mm at print size. For example, if the diameter of a bowl is 10", then it is scaled to 50mm and printed to this scale. When dealing with measurements in inches, 1/2" and 3/4" were converted to decimal: 0.5 and 0.75. The measurement of 3/8" occurred in the pre-1946 catalogue, this was dealt with by treating 1" as 25.4mm and 3/8" as 9.53mm. The following formula was implemented: if item #57, the Individual Butter, has a diameter of 3 3/8", this is a total of 85.73mm. This figure was divided by the number of mm in an inch (25.4) and multiplied by 5 to give the mm at print, in this case 16.88mm.

It is assumed that the forms were not photographed to the same scale as one another in catalogues, except where pieces were photographed in the same shot. The process of scaling was an exercise in approximation given the variable nature of handmade pottery, the different angles from which the photos were taken, and the variances in photography.

As the Standard Ware lineage developed, coloured lines were used to denote if a form remained unchanged (solid green line), if the dimensions changed (solid yellow line), or if the form's shape changed (solid orange line). A faded line is switched off e.g. a solid green line and faded yellow and orange lines denote that the form is unchanged, while a faded green line, a solid yellow line, and a faded orange line would denote that the dimensions and shape have changed. Sometimes the lines are dashed: this indicates that a change, or lack of change, has been assumed and that the data presented does not allow for a definitive judgement. For example, #19 the Shallow Salt Dish appears to have remained unchanged over two periods, but the photographic evidence from 1946-54 does not clearly show the form.

4.1.2: Standard Ware Lineage: From Handmade Fireproof Stoneware (c. 1939-1945) to Standard Ware (1976)

The following lineage comprises four main periods of Leach Pottery Standard Ware production covering nearly 40 years.


Notes & Key

Layout

The lineage has four main columns. The top row of the column indicates the period covered and the catalogue from which the data was extracted. The corresponding wares are presented below as images alongside their descriptions: catalogue number / title / dimensions (see key below).


Key: Pots

Period covered:



1946-54
1954 catalogue

Image of pot:



Description of pot:


82 General Purpose Bowl 5.75 x 2.75

Catalogue Number / Title / Dimensions (in inches) width x height.


Scale: 1" of the pot = 5mm on the page

Key: Transitions


Form unchanged:




Dimensions changed:



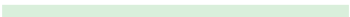
Shape changed:



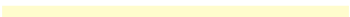
Broken line denotes assumption on status:



Form changed:



Dimensions unchanged:



Shape unchanged:

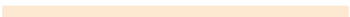


Image Credits

Period 1: 1939-45 (circa): images by Matthew Tyas (2011) with thanks to the Crafts Study Centre, University for the Creative Arts

Period 2: 1946-54: images with thanks to Tim Caulton, New Zealand

Period 3: 1957-61: images by Matthew Tyas (2011) with thanks to the Crafts Study Centre, University for the Creative Arts

Period 4: 1972-76: images by Matthew Tyas (2011) with thanks to the Crafts Study Centre, University for the Creative Arts.



1939-45 (circa)
undated catalogue



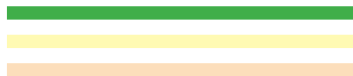
1946-54
1954 catalogue



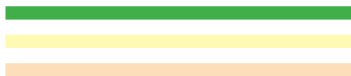
1957-61
1959-60 catalogue



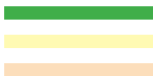
1972-76
1975 catalogue



1 Eggbaker or Ramikin 3.5 x 1.5



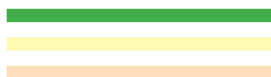
1 Egg Baker or Ramkin 3.5 x 1.5
As a Set: #1 & #6: Four Egg Bakers on Plate



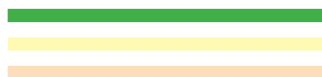
1 Egg Baker or Ramkin 3.5 x 1.5



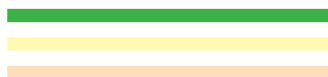
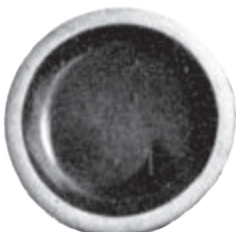
1 Ramekin or Egg Baker 3.5 x 1.5



2 Butter Dish 6 x 1



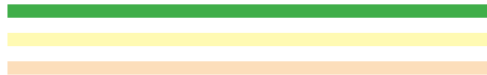
2 Flat Butter Dish WITHDRAWN



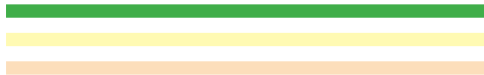
2 Flat Butter Dish



3 Butter or Side Dish 6 x 1



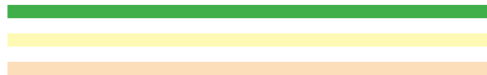
3 Egg Cup, Glazed, Plain WITHDRAWN



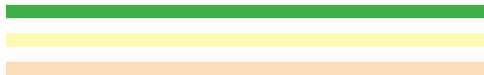
3 Egg Cup Plain 1.75 x 1.25



46 Porcelain Egg cup Plain 1.75 x 1.25



4 Egg Cup Decorated 1.75 x 1.25



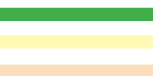
4 Egg Cup Decorated 1.75 x 1.25



47 Porcelain Egg Cup Decorated 1.75 x 1.25



6 Egg Baker Tray or Bread Platte 9 x 1
As a Set: #1 & #6: Four Egg Bakers on Plate



6 Egg Baker Tray or Bread Plate 10 x 1



7 Grill or Serving Plate 10 x 1



1939-45 (circa)
undated catalogue



1946-54
1954 catalogue



1957-61
1959-60 catalogue



1972-76
1975 catalogue



7 Plain Beaker 3.25 x 3.75



7 Plain Beaker 3.5 x 3.5



35 Plain Beaker 3.5 x 4



8 Handled and Decorated Beaker 3.5 x 3.75



8 Handled Beaker 3.5 x 3.5



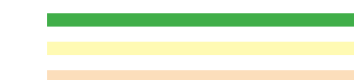
36 Handled Beaker 3.5 x 4



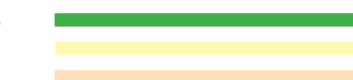
9 Shallow Decorated Bowl 5 x 1



9 Shallow BL Decorated Bowl 5 x 1.75



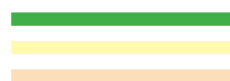
10 Small Decorated Porringer 5.5 x 3



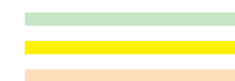
10 Small Decorated Porringer 5.5 x 3



42 Small Decorated Porringer 5.5 x 3



11 Large Decorated Porringer 9 x 4



11 Large Decorated Porringer 9 x 4



43 Large Decorated Porringer 9.5 x 4.5



1939-45 (circa)
undated catalogue



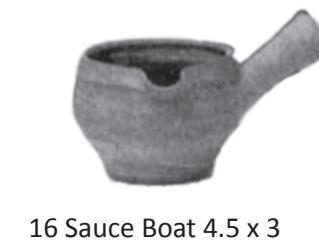
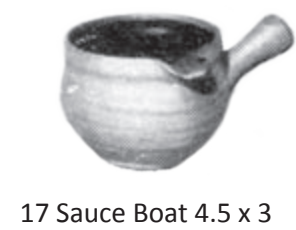
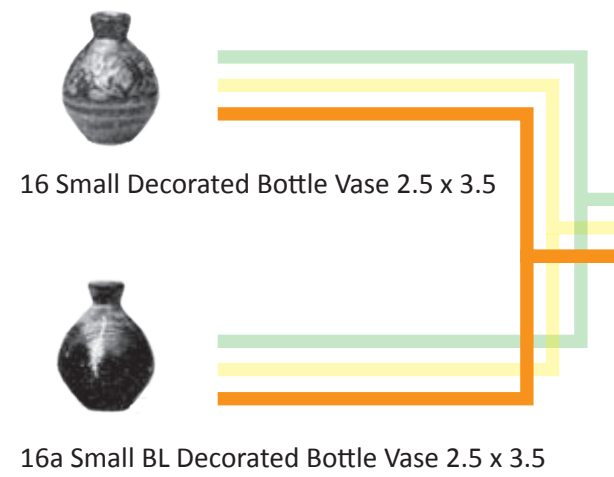
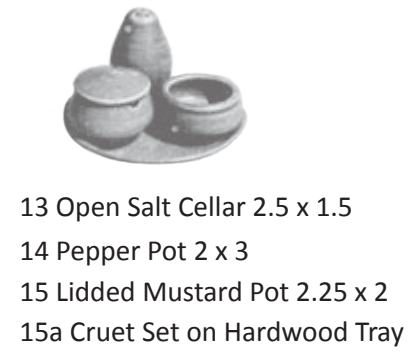
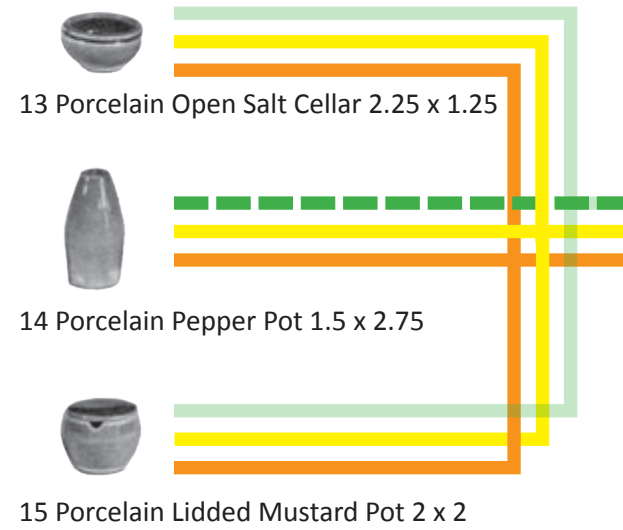
1946-54
1954 catalogue



1957-61
1959-60 catalogue



1972-76
1975 catalogue



1939-45 (circa)
undated catalogue

1946-54
1954 catalogue

1957-61
1959-60 catalogue

1972-76
1975 catalogue



19 Porcelain Shallow Salt dish 3 x 1



19 Shallow Salt Dish 3 x 1



21 Small Glazed Cream Jug 2.25 x 3



21 Small Cream Jug 3 x 3.5



25 Small Cream Jug 3 x 3.5



22 Small Waisted Jug 3 x 3.75



23 Small Decorated Cream Jug 3 x 3.5



26 Small Decorated Cream Jug 3 x 3.5



24 Small Glazed Squat Jug 3.25 x 3



24 Small Squat Jug 3.75 x 3



27 Small Squat Jug 3 x 3.5
28 Small Pitcher Jug 3.5 x 4.5



25 Glazed Pitcher Jug 1 pint



25 Small Pitcher Jug 1 pint





1939-45 (circa)
undated catalogue



1946-54
1954 catalogue



1957-61
1959-60 catalogue



1972-76
1975 catalogue



26 Glazed Lemonade Jug 2 pint 4 x 8



26 Lemonade Jug 2.5 pint



27 Large Pitcher Jug 1.5 pint



29 Large Pitcher Jug 3.5 x 5.5
30 Lemonade Jug 5 x 8.



28 Large Glazed Milk Jug 2.5 pint



28 Large Milk Jug 2.5 pint



30 Cane Handled Teapot 2 pint



50 Canehandled Teapot 1.5 pint



1939-45 (circa)
undated catalogue



1946-54
1954 catalogue



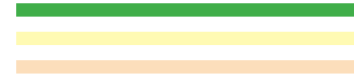
1957-61
1959-60 catalogue



1972-76
1975 catalogue



31 Decorated Lidded Pot 4 x 4.75



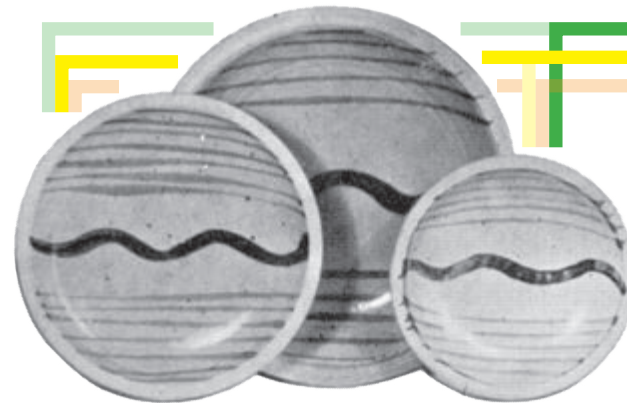
31 Lidded Pot BL Decorated



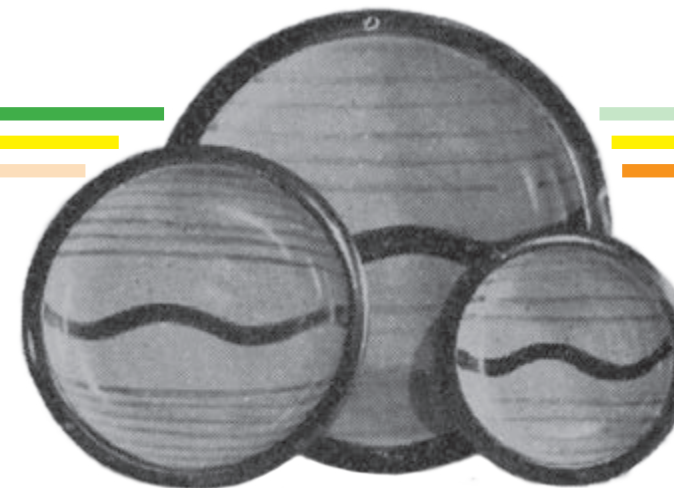
32 Porcelain Lidded Jampot 3 x 3



32 Lidded Jampot 3.5 x 3.5



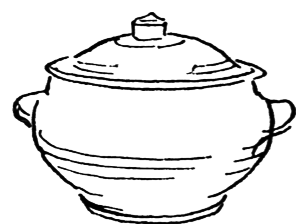
33 Small Decorated Cake Dish 6.5 x 1.25
34 Large Decorated Cake Dish 10 x 1.75
35 Medium Decorated Cake Dish 7.5 x 1.5



33 Small Decorated Cake Dish 6.5 x 1.25
34 Large Decorated Cake Dish 12.5 x 1.75
35 Medium Decorated Cake Dish 9 x 1.5



45 Large Decorated Plate 12.5 x 2



37 Casseroles 7.5 x 6 3.5 pints




37 Large Lidded Stewpot 3 pint





37 Large Lidded Stewpot 3.5 pint




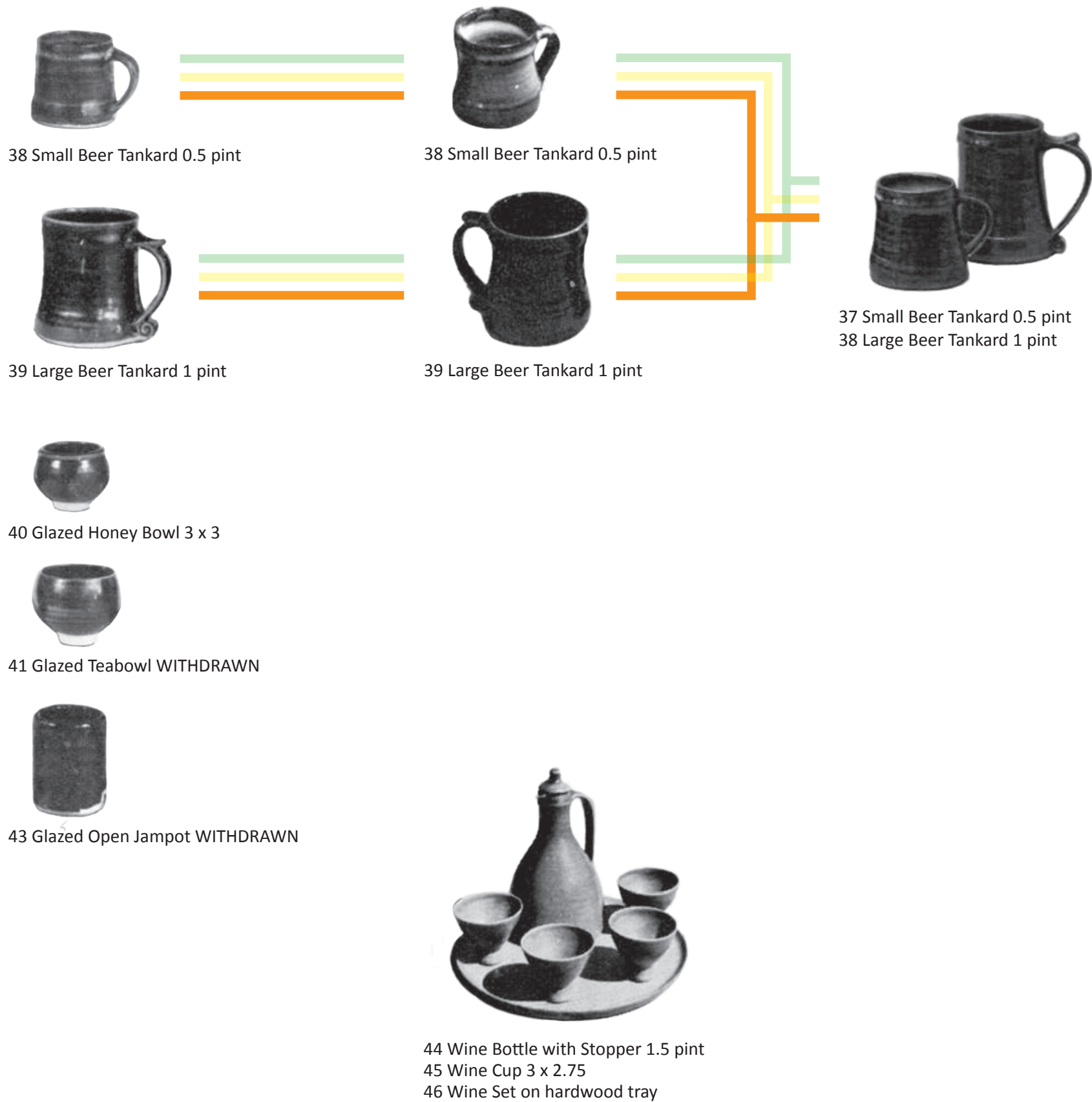
19 Small Lidded Stewpot with Lugs 2 pint
20 Large Lidded Stewpot with Lugs 3.5 pint


 1939-45 (circa)
undated catalogue


 1946-54
1954 catalogue


 1957-61
1959-60 catalogue


 1972-76
1975 catalogue



 1939-45 (circa)
undated catalogue

 1946-54
1954 catalogue

 1957-61
1959-60 catalogue

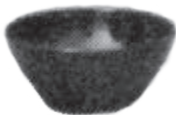
 1972-76
1975 catalogue



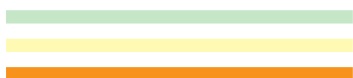
47 Coffee Mug 3.5 x 3.25



39 Coffee Mug 3.5 x 3.5



48 Open Sugar Bowl 4.5 x 2



41 Open Sugar Bowl 4.5 x 2



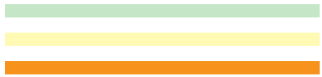
49 Lidded Coffee Jug 1.5 pint



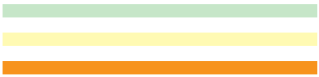
31 Lidded Coffee Jug 1.5 pint



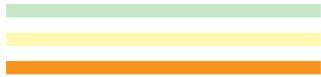
50 Lidded Soup Jug 5.5 x 9 2.5 pint



50 Lidded Soup Jug 2.5 pint
As a Set: #50 & #54 Soup Jug & 6 Lidded Bowls



50 Lidded Soup Jug 2.5 pint



23 Lidded Soup Jug 2.5 pint



50A Lidded Soup - Coffee Jug 2.5 pint



50a Lidded Soup - Coffee Jug 2.5 pint



32 Large Lidded Coffee Jug 2.5 pint



1939-45 (circa)
undated catalogue



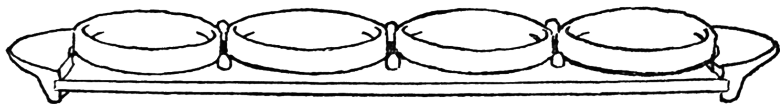
1946-54
1954 catalogue



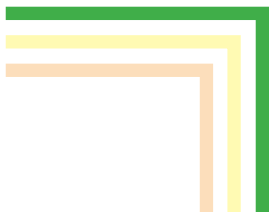
1957-61
1959-60 catalogue



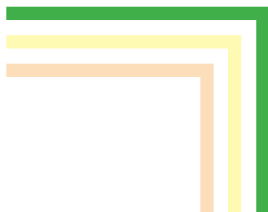
1972-76
1975 catalogue



51 Hors D'oeuvre Set, Oak Board. Overall 20.5, each 4.5 x 1



51 Hors D'oeuvre Dish 4.5 x 1
51A As a Set: 4 dishes on hardwood tray, length 22"



51A Hors D'oeuvre Dish 4.5 x 1
51 As a Set: 4 dishes on hardwood tray, length 22"



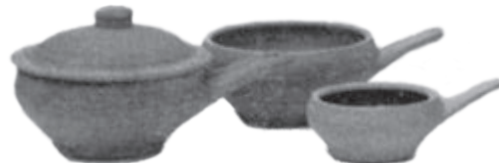
5 Hors-D'oeuvre Dish 4.5 x 1



52 Handled Soup Dish With Lid 0.5 pint



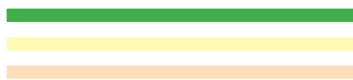
53 Handled Soup Dish Open 0.5 pint



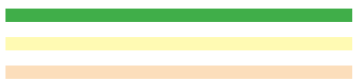
12 Handled Soup Bowl with Lid 0.5 pint
13 Handled Soup Bowl Open 0.5 pint



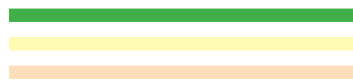
54 Lidded Soup Bowl 5 x 4 0.5 pint



54 Lidded Soup Bowl 0.5 pint
As a Set: #50 & #54 Soup Jug & 6 Lidded Bowls



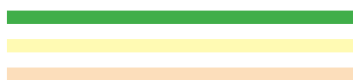
54 Lidded Soup Bowl with Lugs 0.5 pint



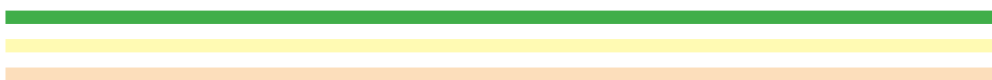
14 Lidded Soup Bowl with Lugs 0.5 pint




55 Casserole Without Lid 5 x 4 0.5 pint





55 Open Soup Bowl 0.5 pint




15 Open Soup Bowl with Lugs 0.5 pint

 1939-45 (circa)
undated catalogue

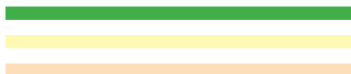
 1946-54
1954 catalogue

 1957-61
1959-60 catalogue

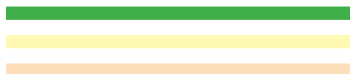
 1972-76
1975 catalogue



57 Individual Butter 3 3/8 x 1.25



57 Individual Butter Dish 3.5 x 1.25



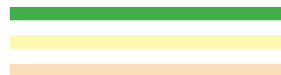
57 Individual Butter Dish 3.5 x 1.25



2 Individual Butter Dish 3.5 x 1.25



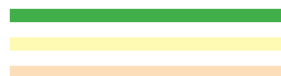
58 Large Decorated Fruit Bowl 12 x 4.25



59 Tall Jug 3 pint



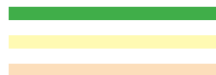
24 Tall Jug 3 pint



59.2 Tall Jug 3 pint




33 Tall Jug 3 pint





56 Shallow Decorated Dish 4.5 x 1




44 Shallow Decorated Dish 4.5 x 1

 1939-45 (circa)
undated catalogue

 1946-54
1954 catalogue

 1957-61
1959-60 catalogue

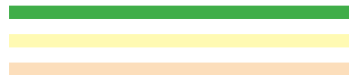
 1972-76
1975 catalogue



60 Mug 0.5 pint



34 Mug 0.5 pint



63 Lidded Butter Pot 4.5 x 2.5



64 Lidded Porcelain Butter Dish 6.5 x 2.75



64 Lidded Butter Dish 6 x 3.5



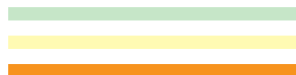
65 Vinegar Bottle with Stopper 3 x 4.5

66 Oil Bottle with Stopper 4 x 4.5

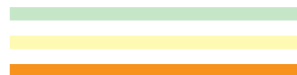
67 Oil and Vinegar Bottle on hardwood stand



73 Casserole 6 x 5 2 pints



73 Small Lidded Stewpot with Lugs 2 pint



73 Small Lidded Stewpot with Lugs 2 pint



1939-45 (circa)
undated catalogue



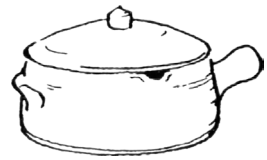
1946-54
1954 catalogue



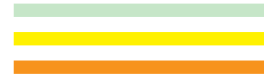
1957-61
1959-60 catalogue



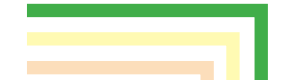
1972-76
1975 catalogue



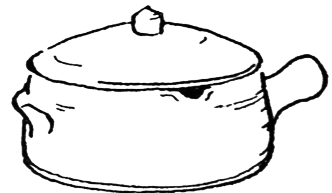
77 Stew Pot 5.25 x 4 1.5 pint



77 Small Lidded Casserole, Handled 1.25 pint



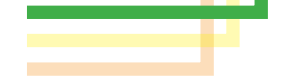
77 Small Lidded Casserole
with Handle 1 pint



78 Stew Pot 6.5 x 4.5 3 pint



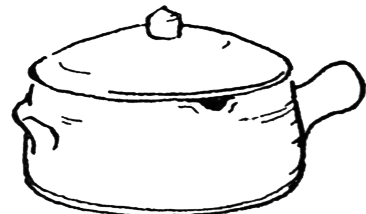
78 Larger Lidded Casserole 2 pint



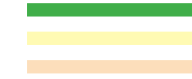
78 Small Lidded Casserole with Handle 2 pint



17 Small Lidded Casserole with Handle 1 pint
18 Large Lidded Casserole with Handle 2 pint



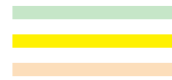
79 Stew Pot 7.5 x 5.25 4 pint



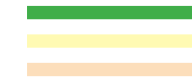
80 Medium General Purpose Bowl 8 x 3.5



9 Medium General Purpose Bowl 8 x 3.5



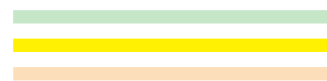
81 Large General Purpose Bowl 10 x 3.5



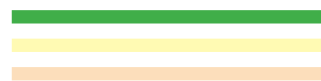
81 Large General Purpose Bowl 10 x 4



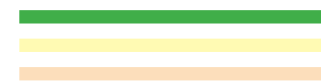
10 Large General Purpose Bowl 10 x 4



82 General Purpose Bowl 5.5 x 2.25




82 General Purpose Bowl 5.75 x 2.75





82 Small General Purpose Bowl 5.75 x 2.75




8 Small General Purpose Bowl 5.75 x 2.75

 1939-45 (circa)
undated catalogue

 1946-54
1954 catalogue

 1957-61
1959-60 catalogue

 1972-76
1975 catalogue



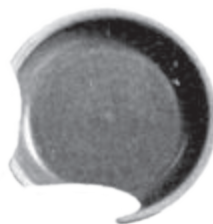
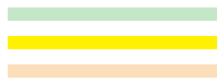
11 Extra Large General Purpose Bowl 11.5 x 4.5



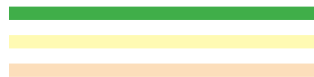
83 General Purpose Saucer 5 x 1 3/8



83 General Purpose Plate 6 x 1



83 General Purpose Plate 5.75 x 1



4 General Purpose Dish 5.75 x 1



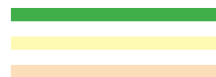
84 Divided Vegetable Dish 8 x 2.5



84 Lidded Vegetable Dish 7.5 x 5.25




84 Lidded Vegetable Dish 7.5 x 5





21 Small Lidded Baking Dish 7.5 x 5
22 Large Lidded Baking Dish 8.75 x 5.5




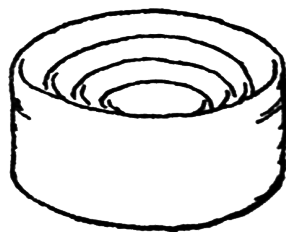
54 Extra Large Oven Dish 11.5 x 6.5

 1939-45 (circa)
undated catalogue

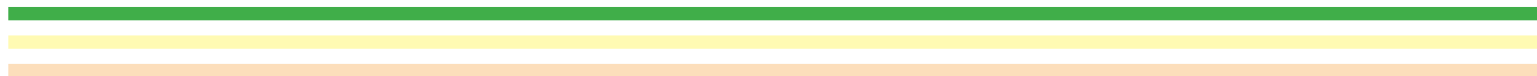
 1946-54
1954 catalogue

 1957-61
1959-60 catalogue

 1972-76
1975 catalogue



86 Souffle or Baking Dishes Nested 3.5 x 2
87 Souffle or Baking Dishes Nested 4.75 x 2.5
88 Souffle or Baking Dishes Nested 6 x 3
89 Souffle or Baking Dishes Nested 7.25 x 3.5



6 Small Tub 3.5 x 2



51 Yunomi 3.5 x 3



52 Lidded Rice or Soup Bowl 5.25 x 4.75



53 Sake or Sherry Cup 3 x 2.5



55 Mortar and Pestle 3 x 4.5

4.1.3: Leach Tableware Lineage

In February 2013, there was a sufficient level of Leach Tableware stock to facilitate the photography of all the forms available on the Pottery's Price List (Leach Pottery 2013c). This lineage of Leach Tableware represents the most complete and only record of Leach Tableware as designed and envisioned by Jack Doherty.

Where sizes were unavailable, or stated for height and not width, they were obtained from examples of the pots in July 2013. All pots are presented in code order except for 'LTW43 Beaker' which has been placed alongside the drinking vessels.

To make the scale comparative with the Standard Ware lineage, the dimensions are converted to mm, divided by 25.4 (1") and multiplied by 5 to arrive at the print size: 25.4mm of a form's dimensions equivalent to 5mm on the page.



Scale

25.4mm of the form’s size equivalent to 5mm on the page.

Measurements: stated in cm.

Image Credits

All images by Matthew Tyas (2013)



LTW8 Espresso Cup and Saucer 8(h)



LTW15 Small Pouring Bowl 10(d)



LTW19 Deep Stacking Bowl #1 8(d)



LTW10 Small Tall Mug 9(h)



LTW16 Medium Pouring Bowl 12(d)



LTW20 Deep Stacking Bowl #2 11(d)



LTW11 Small Shallow Mug 7(h)



LTW17 Large Pouring Bowl 18(d)



LTW21 Deep Stacking Bowl #3 13(d)



LTW12 Large Tall Mug 12(h)



LTW18 Extra Large Pouring Mixing Bowl



LTW22 Deep Stacking Bowl #4 16(d)



LTW13 Large Shallow Mug 8(h)



LTW14 Teacup and Saucer 8(h)



LTW43 Beaker



LTW25 Extra Large Deep Bowl



LTW27 Plate #1 12(d)



LTW28 Plate #2 15(d)



LTW29 Plate #3 18(d)



LTW31 Dinner Plate 30(d)



LTW32 Shallow Stacking Bowl #1 9(d)



LTW33 Shallow Stacking Bowl #2 13(d)



LTW34 Shallow Stacking Bowl #3 16(d)



LTW35 Shallow Stacking Bowl #4 20(d)



LTW38 Extra Large Shallow Bowl



LTW40 Small Pourer 7(h)



LTW40 Small Pourer 9(h)



LTW40 Small Pourer 9(h)



LTW40 Small Pourer 7(h)



LTW41 Pasta Plate 28(d)



LTW41 Pasta Plate 28(d)



LTW42 Soup Bowl 22(d)



LTW42 Soup Bowl 22(d)

4.1.4: Echo of Leach Lineage

The Leach Pottery Studio produced 200 pieces of the Echo of Leach collection in 2013, as documented in 'Section 5.5: Echo of Leach: Makers' Work & Exhibition'. As Echo of Leach was produced in the Studio, it is treated as part of the work of the Pottery and is documented here.

To make the scale comparative with the Standard Ware lineage, the dimensions are converted to mm, divided by 25.4 (1") and multiplied by 5 to arrive at the print size: 25.4mm of a form's dimensions equivalent to 5mm on the page.



Scale

25.4mm of the form's size equivalent to 5mm on the page.

Measurements: stated in cm.

Image Credits

All images by Matthew Tyas (2013)



Mug 9(d) x 12(h)



Small Bowl 19(d) x 6.5(h)



Small Jug 12(d) x 14.5(h)



Large Bowl 23(d) x 8(h)



Large Jug 15.5(d) x 20.5(h)



Side Plate 19(d) x 2(h)



Lidded Box 8.5(d) x 8(h)



Dinner Plate 23.5(d) x 3(h)



Vase 11(d) x 14(h)

4.1.5: Lineages: Analysis

The lineages provide a notation of Leach Pottery tableware forms at a macro/design level using titles, sizes, and a visual representation. The lineages serve as an identification guide and help establish what Leach tableware is, providing expectations for the properties of forms.

The Standard Ware lineage contextualises this body of work as an historical entity, presenting it as further component of Leach cultural heritage, and demonstrating that it embodied elements of both evolution and consistency. The remainder of this section provides an analysis of the lineages.

4.1.5.1: Standard Ware Period One: WWII

The first identified period of Standard Ware production presented 12 distinct forms equating to 19 pieces when accounting for size variations and the inclusion/exclusion of the 'Soup Bowl/Casserole' lid. All of the forms illustrated, despite demonstrating slight changes in name and shape, formed the backbone of Standard Ware production for over 30 years, being illustrated in the fourth and final period of production (1972-76). This includes the 'Egg Baker or Ramikin', 'Butter Dish' which became the 'Butter or Side Dish', 'Casserole', 'Lidded Soup Jug', 'Hors D'oeuvre Dish', 'Lidded Soup Bowl', the 'Casserole Without Lid' which became the 'Open Soup Bowl with Lugs', the 'Individual Butter' which became the 'Individual Butter Dish', the 'Stew Pot' which became the 'Lidded Casserole with Handle', 'General Purpose Bowl', the 'General Purpose Saucer' which became the 'General Purpose Dish', the 'Divided Vegetable Dish' which became the 'Lidded Baking Dish', and the 'Souffle or Baking Dish' which became the 'Small Tub'.

4.1.5.2: Standard Ware Period Two: 1946-1954

The second period of production saw an influx of forms, illustrating 27 additions which equated to 32 pieces when accounting for size and finish variations. Twelve of these new forms continued either as an unchanged form, or under the same title, into the fourth and final period of production (1972-76). For example, the 'Egg Cup', 'Egg Baker Tray', 'Plain Beaker', 'Handled Beaker', 'Porringer', 'Small Cream Jug', 'Small Squat Jug', 'Pitcher Jug', 'Lemonade Jug', 'Large Decorated Cake Dish' which became the 'Large Decorated Plate', and the small and large 'Beer Tankard', were all new forms that continued to the end of production.

Nine new forms introduced in this period were only illustrated into the third period of

production (1957-61), not appearing in the fourth and final period (1972-76). For example, the 'Shallow Decorated Bowl', the porcelain 'Salt Cellar', 'Pepper Pot', 'Mustard Pot', and 'Shallow Salt Dish', 'Large Milk Jug', 'Lidded Pot', 'Lidded Jampot', the small and medium 'Decorated Cake Dish', 'Lidded Butter Dish' only survived for two periods of the catalogue.

Six forms introduced in 1946 ceased to be illustrated in any future periods of production including the 'Small Waisted Jug', 'Honey Bowl', 'Teabowl', 'Open Jampot', 'Large Fruit Bowl', and the 'Lidded Butter Pot'.

4.1.5.3: Standard Ware Period Three: 1957-1961

The third period of production presented 15 new forms which equated to 21 new pieces when accounting for variations in size and finish. Out of the new pieces, 16 went on to be featured in the final production period and 5 ceased to be produced. Examples of new forms that continued in production during the final period were the 'Small Decorated Bottle Vase', 'Sauce Boat', 'Coffee Cup and Saucer', 'Small Decorated Cream Jug', 'Cane Handled Teapot', 'Coffee Mug', 'Open Sugar Bowl', 'Handled Soup Dish', 'Shallow Decorated Dish', and 'Mug'. The 'Small BL Decorated Bottle Vase', 'Wine Bottle with Stopper', 'Wine Cup', 'Vinegar Bottle with Stopper' and 'Oil Bottle with Stopper' were new forms that featured only in this period.

4.1.5.4: Standard Ware Period Four: 1972-1976

The fourth and final period of Standard Ware production was marked by the addition of four new forms which equated to 6 new pieces when taking into account variations offered through sizing and finish. The 'Yunomi', 'Lidded Rice or Soup Bowl', 'Sake or Sherry Cup', and 'Mortar and Pestle' are examples of the new forms.

4.1.5.5: Standard Ware: Overall Reflections

It can be seen that the Standard Ware enjoyed a degree of consistency and change. The first period of production contributed forms that largely remained part of the Standard Ware legacy. The second period contributed the greatest numbers of new forms and pieces, followed by fewer contributions in the third period. The fourth and final period presented the least developments.

The Standard Ware forms were illustrated and promoted with function in mind, as evidenced by their titles. Some forms, like the 'Egg Baker or Ramekin', constitute oven-to-tableware. Forms like the 'Lidded Soup Jug' are more concerned with serving and forms like the 'Handled Beaker' address the consumption of food. There are few forms, like the 'Small Decorated

Bottle Vase', that are decorative and not employed in the direct service of food but the form could have been conceived in the context of the kitchen/table.

Perhaps many of the forms represent a specialism of function and food rituals that are different to those in many of today's households. For example, in the fourth period of production there is a 'Small Cream Jug', 'Small Squat jug', 'Small Pitcher Jug', 'Large Pitcher Jug', 'Lemonade Jug', 'Lidded Coffee Jug', 'Lidded Soup Jug', and a 'Tall Jug': not including some un-lidded and additional glazing options. There are as many jugs available as there are variations in drinking vessels, which number 9 during this period. Leach Tableware, on the other hand, features no jugs.

Sometimes, as the form changed over the decades, so did its specialism. For example, over the four periods of production, the 'Divided Vegetable Dish' became the 'Lidded Vegetable Dish', and eventually the 'Lidded Baking Dish'. The form changed over the first two periods and became static in the final two. Perhaps the initial changes in the form made it more widely practical and then the final change in its name reduced its specialism making it more widely applicable, therefore ensuring its survival.

4.1.5.6: Leach Tableware Lineage: Analysis

The current Leach Tableware range is shown to consist of 6 handled drinking forms and one un-handled beaker. There are 4 Pouring Bowls and 4 un-handled Small Pourers. There are two main bowl types both comprising of 5 pieces: the Deep Stacking Bowl and the Shallow Stacking Bowl. There are also 6 flatware Plate forms including a Pasta Plate and relatively shallow Soup Bowl. Unlike the Standard Ware, there are no handled jugs and there is an absence of oven-to-tableware.

4.1.5.7: Echo of Leach Lineage: Analysis

This constitutes the smallest lineage as it comprises only 9 forms. This includes a mug, two handled jugs, two plates and two bowls, and the more decorative elements of a Lidded Box and Vase.

4.1.6: Summary for Section 4.1

The lineages show how Leach tableware is described and looks. The Standard Ware lineage shows four main periods of production with wares being presented alongside their counterparts over time. The wares in all the lineages were scaled to the same size to facilitate recognition and comparison. The lineages facilitated the practice of the research by providing a

visual guide and a resource of the variations of tableware produced by the Leach Pottery from WWII to 2013.

The lineages represent Standard Ware, Leach Tableware and Echo of Leach at a macro/design level, illustrating the 'standard' of the different design characteristics. Standard Ware is shown to develop over time while Leach Tableware and Echo of Leach were only in the first iteration of their record and/or designs and therefore have a small footprint.

I do not suggest the Standard Ware lineage is complete as further catalogues may become available. Leach Tableware is in its infancy and Echo of Leach is an outcome of this research and so developments may take place. Therefore, the lineages provide foundations that act as a field guide to Leach Pottery tableware production, so that one can more definitely say what comprises the body of work. The lineages also provide a comparative horizon for the practice. This, in turn, aids with locating Echo of Leach within the Leach canon.

However, a casual glance at examples of Standard Ware, and Leach Tableware, suggest a degree of variation between pieces of the same form. Thus, when considering Standard Ware, the idea of what that standard *is* alters depending on the level from which the work is examined. As the lineages are a macro/design level study of tableware, then it is appropriate to examine it at a micro/making level to acquire a further insight into standards.

Section 4.2: Leach Standard Ware: A Micro/Making Study

Building on the previous examination of Leach tableware at a macro/design level (p.104), this section takes a closer look at how the idea of 'standard' operates at a micro/making level. Even a casual glance at Standard Ware suggests a degree of variation between examples of the same form and yet its name implies a 'standard': an achievement of particular parameters or qualities. A similar variance was also found in examples of Leach Tableware as part of the contextual review.

It is therefore important to examine Standard Ware at a micro/making level. This examination begins with the selection of Lidded Soup Bowls and the interrogation of them through photography and 3D scans to ascertain their properties and measurements. Bedding then provides some reflections followed by MacKenzie.

4.2.1: Lidded Soup Bowls

The Leach Pottery Shop retails a selection of Standard Ware and I sourced a form with several examples: I found at least 16 Lidded Soup Bowls (LiSB). I selected four examples from this group, attempting to match lids to the bases using the colour and texture of the clay: it was not an exact process.

The LiSB can be found in the lineage (p.107) and were present in all four main periods of the Pottery's production. The lid and base were thrown on the potter's wheel with lugs attached to the side to form handles. They were unglazed on the outside and glazed on the inside.

I numbered, weighed, rotationally scanned (see Appendix 4.2.4.1: Engaging with Leach Standard Ware for details of method used elsewhere), and photographed each example. I realised, during the initial selection, that LiSB #2 was made at David Leach's Lowerdown Pottery. However, I thought it was interesting to include it to see how the base compared to the Standard Ware form.

4.2.1.1: Photographic Record



Figure 57: Leach Standard Ware, Lidded Soup Bowl #1: Front, image M. Tyas 2013



Figure 58: Leach Standard Ware, Lidded Soup Bowl #1: Side, image M. Tyas 2013



*Figure 59: Leach Standard Ware, Lidded Soup Bowl
#1: Inside, image M. Tyas 2013*



*Figure 60: Leach Standard Ware, Lidded Soup Bowl
#2: Front, image M. Tyas 2013*



*Figure 61: Leach Standard Ware, Lidded Soup Bowl
#2: Side, image M. Tyas 2013*



*Figure 62: Leach Standard Ware, Lidded Soup Bowl
#2: Inside, image M. Tyas 2013*



Figure 63: Leach Standard Ware, Lidded Soup Bowl #3: Front, image M. Tyas 2013



Figure 64: Leach Standard Ware, Lidded Soup Bowl #3: Side, image M. Tyas 2013



Figure 65: Leach Standard Ware, Lidded Soup Bowl #3: Inside, image M. Tyas 2013



Figure 66: Leach Standard Ware, Lidded Soup Bowl #4: Front, image M. Tyas 2013



Figure 67: Leach Standard Ware, Lidded Soup Bowl #4: Side, image M. Tyas 2013



Figure 68: Leach Standard Ware, Lidded Soup Bowl
#4: Inside, image M. Tyas 2013

The photographs of the LiSBs show that each piece has a different internal and external finish. Each piece also exhibits different stylistic properties in the shape of the lids and how the knobs have been finished. Likewise, each base is different in its form which is especially noticeable in the taper of the base into the foot, or finish of the lugs.

4.2.1.2: Scan Data

The 3D scans were used to provide measurements of the pots (see Table 4).

	Weight (grams)		Base Dimensions (mm)			Lid Dimensions (mm)	
	Base	Lid	Diameter	Diameter incl. lugs	Height	Diameter	Height
LiSB #1	293	241	117	144	58	128	48
LiSB #2³²	290	207	121	144	61	127	53
LiSB #3	300	176	122	150	62	127	40
LiSB #4	348	226	122	148	65	134	43

Table 4: Lidded Soup Bowls: Statistical Data

There was a 58g difference between the weight of the lightest (LiSB #1) and heaviest base (LiSB #4). Similarly, there was a 65g difference in weight between the lightest (LiSB #3) and heaviest (LiSB #1) lid. The average weight for a base was 314g, and the average lid weighed 213g.

There was less variance in the dimensions of the bases with a maximum difference of 5mm between the smallest (LiSB #1) and largest diameter (LiSB #3/4). Including the lugs, this difference was 6mm between the smallest (LiSB #1) and the largest base (LiSB #3). The largest difference in height was 7mm between the smallest (LiSB #1) and the largest base (LiSB #4).

³² Base not included in analysis as a Lowerdown Pottery piece

The largest difference in diameter of a lid was 7mm between the smallest (LiSB #2/3) and the largest (LiSB #4). The largest difference in height was 13mm between the smallest (LiSB #3) and the largest (LiSB #2) lid.

This small sample size demonstrates a degree of variation between the different LiSB bases and lids, both in their dimensions and the weight of clay used. It could be argued that the lids are more variable as they are the proportionately smaller part of the entire form, yet register more variance in their weight and dimensions.

4.2.2: Reflections on the Forms: John Bedding

Bedding, who made forms like the LiSB at the Leach Pottery, was invited to examine the LiSBs and comment on their characteristics. He immediately recognised that some of the lids and bases were mismatched, although two of the sets were by the same potter. In Table 5, Bedding (2013) provides assessments in response to the pots.

LiSB #1	<ul style="list-style-type: none"> • is oil fired & same clay as LiSB #4 • the base & lid match to the same maker and were made before his tenure • is the best piece: 'the character of it just works – it is complete in its look and form.'
LiSB #2	<ul style="list-style-type: none"> • the base is Lowerdown, the lid is Leach: '...that's David Leach: that's a transition that he's used in his own work. He's made it more into a bowl...and not accentuated the belly. It's a proper soup bowl.'
LiSB #3	<ul style="list-style-type: none"> • the base & lid match to the same maker • Bedding considers this the third best piece: 'is skinny all over: a bit skinny on the lip.'
LiSB #4	<ul style="list-style-type: none"> • is oil fired & same clay as LiSB #1 • the base & lid don't match • Bedding considers this the second best piece and claims authorship: '...It's not one of my best. I know the feel of how I throw and I know I've not given enough into the foot that would have made this whole shape a lot more feminine... The lugs are ok but they are definitely my lugs. That whole finish to the top feels like me. I knew as soon as I picked it up that it was mine'

	<ul style="list-style-type: none"> the lid is not by Bedding: 'I didn't make them like this unless it was a really bad day – just don't feel like me: that's far too skinny. I used to cut-in more...I was a lot rougher with my turning: I used to make cut marks. The knobs are all different...mine were bigger'.
--	---

Table 5: Lidded Soup Bowls: Bedding's (2013) Assessment

4.2.3: Reflections on the Standard: Bedding

On responding to one of the pieces and asking Bedding about the idea of having a 'standard' but also a pot that is 'acceptable', he responded: 'It's still acceptable: Bill [Marshall] wouldn't have told you to throw it in the bin, because it's well-made and in the parameters of the form.' Therefore, the 'standard' was not a fixed thing, but about being within certain parameters which allowed a degree of personal interpretation:

Bill Marshall would come along and make you an example. So you used to follow that example but as you started to work your natural way of working started to take over – so you weren't redesigning it but your way of working and just the way you saw things came into play and slowly that shape would evolve into what you make. And you would end up making a standard piece that was yours – it was within the limits but it was how you made it. (Bedding 2013)

Because of this interpretation, Bedding is still able to identify the Standard Ware of his contemporaries:

If I see some of Standard Ware made when I was in the workshop, I can nearly always tell within 80% probability who made it because I was familiar with how they used to make it, because I used to teach them shapes as well. So I knew how they made it and I used to correct them...but if you started to go too far off-form, Bill would come along, in later years me, and correct you. (Bedding 2013)

Bedding goes so far as to suggest that the workshop would become more accepting of an interpretation as a potter's skills improved:

If it's badly and completely off-message you used to tell them to throw them away but that got rarer as you became more accomplished with the shape and the workshop would accept your vision of it, if you like, and wouldn't keep making you go back to base. (Bedding 2013)

4.2.4: Reflections on the Standard: MacKenzie

MacKenzie also notes a difference between forms illustrated in the catalogue and how they were made during his tenure at the Pottery. While whitewashing the walls, he found examples of porringers made 10 years previously:

...we found the porringer up above here which was like that [gestures]. And not only

this, but the picture in the catalogue was like this [gestures] - a much lower, rounder bowl than the one we were making and nobody ever complained, when they looked at the picture in the catalogue and ordered the porringer, that they were not the shape that was in the catalogue because they had a couple of blue bands on it, at the top and bottom, and a big zee, or z...And as long as it had that, the two blue bands and the z, why people said they had the porringer. (MacKenzie 2013b; MacKenzie 2013a)

This example of Standard Ware had deviated from what was presented in the catalogue (macro level) to a different variation made during his tenure (micro level) that shared similarities and differences with the earlier piece. These differences were not seen as significant as they were 'invisible' to the customer and resulted from a gradual consensus of making in the group:

They never looked at the shape and we realised that the average person simply doesn't see the subtleties of shape which Bernard saw and that porringer had changed - not because someone had decided to change it but the whole consensus of the group working together was, you know, 'it would be better if it were a little straighter', sort of thing, and so they change it a bit and change it a bit. But it was quite different to the one that was in the catalogue. (MacKenzie 2013b; MacKenzie 2013a)

Batterham (2014) also contributed a useful insight into the relationship between hand making (micro level) and the evolution of a form within the context of the design (macro level), however research ethics mean it must be excluded.

4.2.5: Summary for Section 4.2

This section examined the 'standard' of Standard Ware at a micro/making level using Lidded Soup Bowls. The photographic record, weights, and dimensions of the forms, demonstrate variations between the examples of bases and lids. Bedding, a previous maker of the forms, examined them and identified strong and weak characteristics. He also discussed their variation in relation to the acquisition of skill and the interpretation of the form through finding personal ways of working. MacKenzie also noted a difference between the same bowl form, over time, and attributed this development to a changing group consensus about how the form should be made.

Section 4.3: Conclusions for Chapter

In conclusion, the lineages of Leach Pottery tableware provide a simple way of showing and describing Leach tableware and facilitate the practice of the research by providing a visual guide to the different types of tableware produced by the Leach Pottery from WWII to 2013, offering a visual horizon-line to the practice. Understanding Standard Ware is not just about

identifying pots but also getting a feel for the whole body of work and considering it from a wider perspective. I have been familiar with this work for over 15 years but did not view it in the context of several catalogues.

The lineages are a 'standard' of Leach Pottery tableware at a macro/design level, showing the different characteristics of the forms. In analysing the Lidded Soup Bowls at a micro/making level, it was found that the 'standard' operated at a different level, demonstrating a degree of variance across several criteria. This is the first time that Leach tableware has been examined in this way.

Thus, the 'standard' of Leach Standard Ware can be defined differently depending on the level that is being considered: at a macro/design level the 'standard' operates with clear definitions of size and shape. At a micro/making level, comparisons of the same form show deviations from the macro 'standard' and it is at this level that the design is interpreted and enlivened by the maker. Overall, Leach Standard Ware was a clearly defined body of work that not only evolved at a design level, but also developed through its making: the 'standard' was simultaneously fixed and fluid.

Chapter 5: Practice

This Chapter introduces the practice, outlining its nature, purpose, and contributions to knowledge through 5 Sections:

- ‘Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers’
- ‘Section 5.2: Tool Making’
- ‘Section 5.3: Digital-Analogue Leach: Early Echoes’
- ‘Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology’
- ‘Section 5.5: Echo of Leach: Makers’ Work & Exhibition’

‘Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers’ orientates my making in digital manufacturing technologies and methods. This involves revisiting Dr Katie Bunnell’s Bunny Beakers, learning and using the CAD/CAM methods used in their creation, and applying these methods to producing ceramics inspired by the cultural heritage of Leach.

‘Section 5.2: Tool Making’ was inspired by observations made in the contextual review relating to Leach Tableware production and the historical use of tools at the Leach Pottery. It investigates how digital manufacturing technologies, particularly the laser cutter, can be used to make bespoke tools to support Leach Apprentices in making Leach Tableware.

‘Section 5.3: Digital-Analogue Leach’ is inspired by ‘Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers’ which encouraged me to specialise with the laser cutter and explore Leach forms in different materials: this enabled a more direct experience of digital practice. Leach Tableware forms are explored in cardboard, through drawings, and in acrylic and wood. This culminates in making new digital-analogue ceramic bowls that re-interpret the Leach Tableware Shallow Stacking Bowl.

In ‘Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology’ I address the research objective of designing new Standard Ware using the previous methods and findings to develop a new range of tableware for the Leach Pottery using CAD and examples of Leach Standard Ware and Leach Tableware.

‘Section 5.5: Echo of Leach: Makers’ Work & Exhibition’ introduces how invited makers and myself respond to the brief for an exhibition at the Leach Pottery, to interpret the new standard ware designs developed in the previous section.

Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers

5.1.1: Introduction

This project was conceived as a way to begin orientating my practice to digital making, encouraging me to explore digital manufacturing methods in relation to ceramics. I sought to make a beaker using the production methods developed by Bunnell for Bunny Beakers (see '3.3.2.1: Katie Bunnell' also Figure 37) that also engaged with aspects of the cultural heritage of Leach: in this instance, using Bernard Leach's artwork, the Studio's clay body, and the Pottery's soda kiln.

5.1.2: Background & Methods

A Bernard Leach New Zealand sketch was used as inspiration for the decoration. 'Appendix 4.2.1: Milled Decoration: Slip-Cast Beakers' provides an overview of the process and methods used. New methods, materials and processes, include using Rhinoceros 4.0 and Maya Expert 7.0 software, the FB700 laser cutter (see Appendix 4.1.1: Laser Cutters), a milling machine (see Appendix 4.1.2: Milling Machine), silicone rubber, a de-gasser and the plaster lathe.

I made a slip casting body from the Studio's excess clay waste to create a coarser body than the commercial casting bodies: a body that would respond well to soda firing. Most of the work was fired in the Pottery's soda kiln, alongside the Leach Tableware, helping me further understand the Pottery's processes and provide a richer finish.

5.1.3: Outcomes

The work was mainly soda fired in the Leach Pottery's kiln (Figure 69, Figure 70, & Figure 71) which glazes the work in the firing, leading to a variable finish which is influenced by the pot's position in the kiln. This firing method requires the pots to be placed on three wads (Figure 69: far left) to prevent them being glazed to the kiln shelf. This process has a tendency to warp forms, although this may have been exacerbated by the thinness of the cast wall.



Figure 69: Matthew Tyas, Leach Beakers, Digital Manufacturing Methods, Slip Cast and Soda Fired, image M. Tyas 2011

One piece was fired in the electric kiln at Falmouth University (Figure 72) using my own tenmoku glaze: I was curious to see how the design worked beneath a glaze and how the clay body worked in oxidation.



Figure 70: Matthew Tyas, Leach Beakers - Bases, Digital Manufacturing Methods, Slip Cast and Soda Fired, image M. Tyas 2011



*Figure 71:
Matthew
Tyas, Leach
Beaker, Soda
Fired, image
M. Tyas
2011*



*Figure 72:
Matthew
Tyas, Leach
Beaker,
Digital
manufacturing
technology,
slip cast and
soda fired,
image M.
Tyas 2011*

5.1.4: Summary for Section 5.1

5.1.4.1: In relation to the Leach Pottery

My intention was to make a piece of pottery, using new digital methods, that would engage with some of the elements of the cultural heritage of Leach. In this instance, I focussed on clay and firing to try and connect with the current aesthetics of Leach Tableware. I also experimented with decoration to use one of Bernard Leach's drawings as the basis for the pattern.

Examples of the work, and a PowerPoint presentation (Tyas 2011a), were shown to potters at the Leach Pottery to inform them about the project and obtain their views. Several post-presentation debates developed (Tyas 2011b). Here are the themes that I found significant:

- There was a sense that the work was more about concept than making and skill. Lambley felt the work was '...more in keeping with conceptual art than craft in terms of it's about idea and intellect', to which Phillips added 'Somebody who has no hand-eye co-ordination can do that.'
- There was an interest in my connectedness to the work, the physicality of it, and the materials. Lambley: 'Do you feel as connected to your hand-made work as you do to the digitally made?' Doherty: 'I was really interested to see you pick up that slip and wondered what your thoughts were about the physicality of all the things.' Wheeler: 'I liked that you were still celebrating the material. You're letting the clay be clay.' (ibid)

It is not surprising that the issue of skill was raised, especially as it is a significant quality to the

Leach potter (see '3.1.4.3.1: The Significance of Skills'): there was a sense that digital practice skills equated to the same skills required for tableware production. The machine was also being viewed as the 'enemy' that Leach had earlier identified (see '3.2.3.1: The Machine is Not the Enemy'): a disconnected, disembodied entity.

5.1.4.2: In Relation to Practice

This project introduced me to a range of new methods and digital equipment. The resulting pots provided an early account of how digital and analogue methods could meet in the context of the Leach Pottery. I was reminded about the challenges of learning new equipment to a standard that would allow me to practice beyond a shallow level of understanding and engagement. The milling machine was a powerful tool but pragmatism came to the fore when considering its availability and the shortage of tooling. Milling also requires quality CAD files and it takes more time to set-up cutting jobs: both additional demands on time.

During the practice, elements of the digital making excluded a degree of freedom in the construction and decoration of the ware because of the nature of its design. For example, the core had to be made to a specific size to work with the silicon jacket. Likewise, there was little freedom to explore the decorative pattern of the design, as the pattern was the seam of the wall on the silicon jacket. This method of ceramic production suggested less potential for spontaneity in making, as the creativity was front-loaded into the design process.

The new Computer Aided Manufacturing (CAM) processes also required the use of more diverse materials which added additional costs and time to the project. Some of the materials, like acrylic and polyurethane were not environmentally sound: an issue amplified by the subtractive processes of cutting and milling which generates further waste.

The outcomes of this project was that I sought to reduce the number of CAM methods and focus solely on the laser cutter, which I further explore in 'Section 5.2: Tool Making' and work more deeply with from 'Section 5.3: Digital-Analogue Leach' onwards.

Section 5.2: Tool Making

5.2.1: Introduction

Tool making was initially inspired by data in the contextual review, especially in '3.1.4.2.1: Leach Tableware: In the Studio' (p.68) and '3.1.4.2.2: Leach Tableware: The Pottery's Shop' (p.71) where it was apparent that the Potters had their own approaches to making and that

the resulting pots often varied in their form. Repeated observations of Leach Tableware throwing and handle making, when contrasted with the approach to tools used in Leach Standard Ware production (see '3.2.1: Tools & Leach Standard Ware'), persuaded me that bespoke tooling could enhance productivity.

'Appendix 4.2.2: Tool Making' outlines the software used to manage the project and design the tools. This project was not consistently pursued over the course of the research as its reception, and the use of the tools, was linked to the Studio's changing organisation and approach to production: factors which I had no influence over.

In the early stages, it was difficult acquiring measurements for Leach Tableware forms as they were being notated and re-notated by the Potters as the designs evolved through making. I gathered a small number of diagrams (Appendix 1.4.1: Initial Diagrams of Forms) and began with the Shallow Stacking Bowl as a basis for experiments because it was a frequently made item.

The tools produced are explored under the following headings:'

- '5.2.2: Measuring Shallow Stacking Bowls: Beyond the Dragonfly'
- '5.2.3: Shaping & Measuring: Deep and Shallow Stacking Bowls'
- '5.2.4: Shaping Mugs & Handles'
- '5.2.5: Wooden Tools'.

5.2.2: Measuring Shallow Stacking Bowls: Beyond the Dragonfly

When making a batch of personal work (see 'Appendix 4.2.2.1: Returning to the Dragonfly Tool in Personal Practice'), I considered developing a tool based on the traditional Japanese 'dragonfly'³³. I had previously made this measuring tool, being especially attracted to the romanticism of its name and form. It is designed for measuring the inner height and width of thrown forms: I felt it might be applicable to this research.

5.2.2.1: Early Prototypes

'Appendix 4.2.2.2: Early Dragonfly Tools' outlines the process involved in designing the first tool (Figure 73) which also encompassed the outer profile of the bowl's wall in its curves (Figure 274): the form's dimensions were also etched into the surface of the tool. After cutting

³³ Called a 'tombo' in Japanese.

the first prototype, I realised the dimensions for the bowl's turned foot could be accommodated in the upper tips of the tool, leading to a revision (Figure 74).

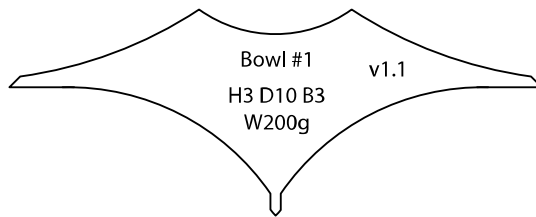


Figure 73: Matthew Tyas, Prototype 'Dragonfly' for Shallow Stacking Bowl #1, image M. Tyas 2011

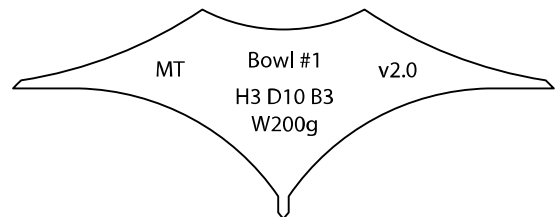


Figure 74: Matthew Tyas, Second Iteration 'Dragonfly' for Shallow Stacking Bowl #1, image M. Tyas 2011

The final version of this prototype tool was produced (Figure 75, Figure 76, Figure 77, & Figure 78) and given to one of the Apprentice Potters to test along with a diagram explaining its functions (Figure 79).



Figure 75: Matthew Tyas, Prototype Dragonfly for Shallow Stacking Bowl #1, image M. Tyas 2011



Figure 76: Matthew Tyas, Prototype Dragonfly for Shallow Stacking Bowl #2, image M. Tyas 2011



Figure 77: Matthew Tyas, Prototype Dragonfly for Shallow Stacking Bowl #3, image M. Tyas 2011



Figure 78: Matthew Tyas, Prototype Dragonfly for Shallow Stacking Bowl #4, image M. Tyas 2011

I tested the tool by producing three #3 bowls (Figure 80) at Falmouth University, throwing them from individual balls of clay in the same manner as the Studio.

Leach Bowls Throwing Tool - Guidance Notes
Matthew Tyas, 11 October 2011

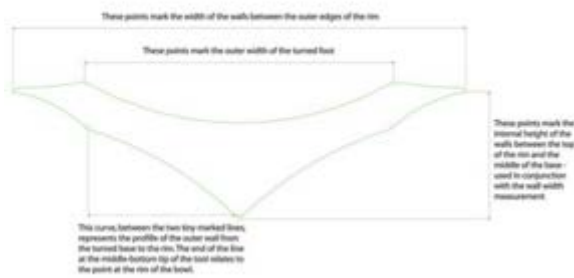


Figure 79: Matthew Tyas, Diagram for the Prototype Shallow Stacking Bowl Dragonfly, graphic M. Tyas 2011



Figure 80: Matthew Tyas, Three Shallow Stacking Bowls Thrown with the #3 Dragonfly Tool, image M. Tyas 2011

5.2.2.2: Dragonfly: Reflections

These prototype measuring tools took the idea of a traditional Eastern tool and expanded it using digital manufacturing technologies. This method of tool making and interpretation of the tool were new to the Leach Pottery. However, its design did not suite the production methods of the Studio: Apprentices preferred to check the proportions of a form from its outer rim with callipers before positioning a throwing gauge to the location where the rim should be thrown to.

The new tool was useful in establishing the initial parameters of the form but did not offer an improved method to the Potters: it was not as relevant to the repeat throwing of shapes as it would be in an Eastern tradition where several pots are thrown 'off the hump' from one piece of clay rather than individual balls.

5.2.3: Shaping & Measuring: Deep and Shallow Stacking Bowls

I returned to tool making after Lead Potter, Jack Doherty, requested tools to assist throwing the Deep and Shallow Stacking Bowls which were sometimes inconsistent in their forms, especially at the inner curve that joins the horizontal floor of the pot to the vertical wall: an area that can be difficult to shape and prone to sagging in the firing. The Studio possessed a small number of generic profile ribs for their Deep Stacking Bowls, but none of the tools were specific to the profile of each form in the repertoire. The tools were designed in a responsive way using CAD and the laser cutter ('Appendix 4.1.1: Laser Cutters'), and by working alongside colleagues at the Pottery to test and develop them.

I was also asked to investigate ways of supporting handle making for the various mugs: this

research is addressed in the following section '5.2.4: Shaping Mugs & Handles' (p.150).

5.2.3.1: Strong Examples of Pots

Rather than using Studio diagrams (see 'Appendix 1.4.1: Initial Diagrams of Forms') as a basis for the CAD model for the tool designs, Doherty wanted the tools to be consistent with actual pots. I worked with Doherty and Wheeler (Figure 249) to record the making process and select strong examples of each form on which to base the tools (see 'Appendix 1.4.5.3: Leach Apprentice Kat Wheeler Throwing Deep Stacking Bowls').

5.2.3.2: Extracting Cross-Sections and Developing the Tools

Once in receipt of Wheeler's greenware bowls, I developed a method (see 'Appendix 4.2.2.4: Interrogating & Recording Leach Tableware Forms') to yield cross-sections of the pots for digital scanning. These scans were used as the basis for CAD models drawn using the method of tracing established in 'Appendix 4.2.2.2: Early Dragonfly Tools'. The subsequent development of these tools is outlined in 'Appendix 4.2.2.6: Designing & Developing New Shaping & Measuring Tools'.

5.2.3.3: The Final Tools

I produced a set of bespoke tools for measuring and shaping the Deep Stacking Bowls (see Figure 81, Figure 82, Figure 83, Figure 84, & Figure 85) and the Shallow Stacking Bowls (see

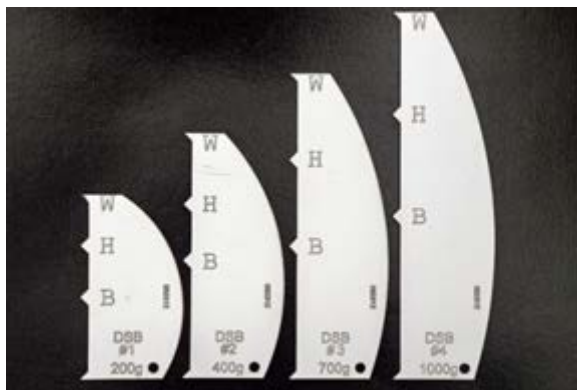


Figure 81: Matthew Tyas, Set of Measuring Tools for the Deep Stacking Bowls, image M. Tyas 2012

Figure 86 & Figure 87). Developing the dragonfly-inspired tool of the previous section, the new measuring tools (Figure 81 & Figure 85) were more suited the Studio environment as they measured the outer envelope of the forms. The new measuring tools were primarily used to set-up the production of a form, alleviating

the potter of the need to work from measurements and calibrate callipers for each dimension. The shaping ribs were developed to meet the needs of the Studio, especially Wheeler (2012), and effectively suggested the inner profiles of the bowls.

No further shaping tools for bowl forms were developed after these tools. Wheeler continued to use some of the tools in regular production, but they were not adopted as part of the

Studio's practice. Wheeler suggested the tools might be more effective and engaging to the potter if made in wood, and this option was explored in the final stages of the research: see '5.2.5: Wooden Tools' (p.152).



Figure 82: Matthew Tyas, Ribs for Deep Stacking Bowls #1 and #2 – Thinner Material and Rounded Corners, image M. Tyas 2012



Figure 83: Matthew Tyas, Ribs for Deep Stacking Bowl #3 – Thinner Material and Rounded Corners, image M. Tyas 2012



Figure 84: Matthew Tyas, Ribs for Deep Stacking Bowl #4 – Thinner Material and Rounded Corners, image M. Tyas 2012



Figure 85: Matthew Tyas, Ribs for all Four Deep Stacking Bowls – Note How The Ribs Echo the Forms of the Bowls, image M. Tyas 2012



Figure 86: Matthew Tyas, Set of Measures for Shallow Stacking Bowls, image M. Tyas 2012



Figure 87: Matthew Tyas, Set of Ribs for Shallow Stacking Bowls, image M. Tyas 2012

5.2.4: Shaping Mugs & Handles

When approached by Doherty to develop tools for making the Deep and Shallow Stacking Bowls in the previous section, I was also asked to examine ways of shaping the mug walls and making their handles: these tools are presented here.

5.2.4.1: External Wall Profiles

External profile tools (Figure 88) were developed, using Rhinoceros 3D and the laser cutter, for the two Shallow Mugs and two Tall Mugs. They were designed to be offered to the outer wall of the mugs, while on the wheel, to check for a consistent angle and straightness. 'Appendix 4.2.2.7: Mugs: Making an External Profile' outlines the method of designing and making this tool. It was not possible, at the time, to test these tools in the Leach Studio.

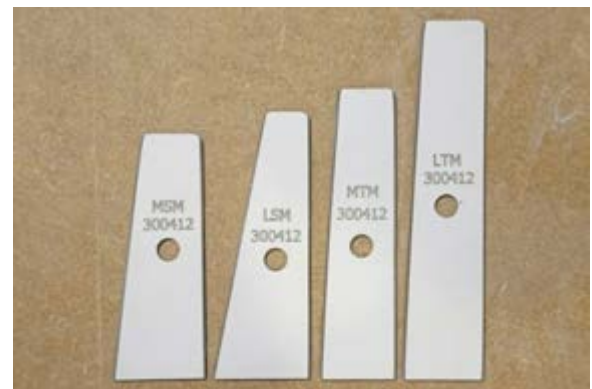


Figure 88: Matthew Tyas, Prototype Tools for Checking Angle of Mug Walls, image M. Tyas 2012

5.2.4.2: Making & Shaping Handles

I designed two tools to assist with handle making based on observations of the method, some observations being recorded in 'Appendix 1.4.5: Methods of Making' and 'Appendix 1.4.5.2: Approaches to Making Handles'. One of the designs acted as a physical former and was developed using a combination of CAD models, milling, and traditional plaster sledging. The second tool worked as a visual guide, being less prescriptive to the making process and developed using CAD models and the laser cutter.

The former (see 'Appendix 4.2.2.8: Mugs: Making a Plaster Handle Former'), more accurately called a plaster drape (Figure 89), was developed with the trainee potter in mind and/or as a way of increasing the rate of handle production. Pulled handles could be placed on the drape to ensure the correct curve, acting as a training device to help the potter learn the shape. This device was tried in the Studio (see 'Appendix 4.2.2.9: Mugs: The Plaster Handle Former in Use') by Wengeler, a trained production thrower who was the primary mug maker (see 'Appendix 1.4.5.2: Approaches to Making Handles'). For Wengeler (Wengeler & Wheeler 2012), the Plaster Drape did not offer additional enhancements to her own making but could potentially work as a tool for potters who were at the Studio a short period of time and needed to quickly learn the curve of the handle. For Wengeler, she prefers to use the least tools possible and rely on her hands.

The second tool developed (Figure 90, Figure 91 & Figure 92) was a visual template of the handle profiles based on observations made in 'Appendix 1.4.5.2: Approaches to Making



Figure 89: Prototype Plaster Drapes for Forming Large Tall Mug Handles, image M. Tyas 2012

Handles'. One of the Studio's methods for handle making was to draw a profile of the handle on the bench and work to that. The handle template was conceived to standardise this practice. Like the Plaster Drape (Figure 89), this tool was a prototype and I considered its strength to be its ability to work as a guide, rather than being as prescriptive as the Plaster Drape (Figure 89). I intended to make the final version in wood, as the clay would

invariably stick to the acrylic however, these templates were not tested.



Figure 90: Prototype Laser Etched Template for Espresso Cup Handle, image M. Tyas 2012



Figure 91: Prototype Laser Etched Template for Shallow Mug Handles, image M. Tyas 2012



Figure 92: Prototype Laser Etched Template for Tall Mug Handles, image M. Tyas 2012

5.2.5: Wooden Tools

The final area of engagement with tools culminated in the production of sample wooden tools, using a combination of digital and analogue methods, in partnership with Aaron Moore of Reform Furniture³⁴. This research was encouraged by the earlier project of designing and making shaping ribs in acrylic (p.147), when Wheeler suggested the tools would be more effective and pleasing made from wood. I was also interested in wood as it is more environmentally sensitive and creates high-end tools which



Figure 93: Prototype Wooden Rib for Deep Stacking Bowl #4, image M. Tyas 2013

³⁴ <http://re-formfurniture.co.uk>

might present a retail opportunity for the Pottery.

The final tools were produced using a combination of Moore's digital router and traditional tools (see 'Appendix 4.2.2.10: Producing Wooden Tools'), alongside my use of CAD for design, and the laser cutter (see 'Appendix 4.1.1: Laser Cutters') to etch the Leach Pottery logo into the surface. Sample tools were produced with the Echo of Leach Exhibition in mind (see 'Section 5.5: Echo of Leach: Makers' Work & Exhibition'), including a rib for Deep Stacking Bowl #4 (Figure 93), and two generic throwing ribs (Figure 94 & Figure 95) made in the shape available from most pottery supplies merchants.



Figure 94: Prototype Wooden General Purpose Rib for the Leach Pottery, image M. Tyas 2013



Figure 95: Prototype Wooden General Purpose Rib for the Leach Pottery, image M. Tyas 2013

5.2.6: Summary for Section 5.2

5.2.6.1: Tools Produced

The first tools of this section were prototype dragonfly measures that embodied the measurement and statistics of individual Leach Shallow Stacking Bowls. This tool was not effective in the Leach production environment, but was useful for measuring the proportions of the bowls when setting-up batch production.

The prototype dragonfly tool provided a basis for the next batch of tools designed to shape and measure the Shallow and Deep Stacking bowls. Rather than approximating a Japanese tool, these new measuring tools measured key external points, and displayed statistical data, which proved effective to the Studio for embodying form data and setting-up batch

production. The shaping ribs were developed through an iterative process with the Studio, based on the forms of successful thrown pots, and were found effective in checking and forming bowls.

The next area of research examined how improvements could be made to the profiling and handle making of Leach Tableware Mugs. Profiles were developed to check the outer walls of the mugs and a plaster drape mould was developed to facilitate handle forming alongside visual template profiles for checking handle shapes. Only the handle drape was tested by the Studio: I was invited to develop these tools, however changes in the structure of the Studio meant they were not tested or implemented.

Wooden shaping ribs provided the final contribution to this section. They were an extension of the previous research into acrylic shaping ribs and developed in collaboration with a wood practitioner. These tools were not tested, but developed in response to feedback from the Studio and to investigate making bespoke tools in a traditional material using digital methods.

5.2.6.2: In Relation to the Leach Pottery

These digitally produced bespoke tools presented new ways of supporting the production of Leach Tableware, building on the Pottery's earlier production and use of hand-made tools as evidenced in '3.1.3.4: Standard Ware: A Potter's Perspective'. These previous methods of training and hand-making tools ceased with the end of Standard Ware production. Digitally produced tools present a way of connecting with this past practice: they present the Pottery with the opportunity to enhance the capabilities of its potters and the productivity of the business. The Potter is also given the opportunity to re-engage with the past customs of tool making from a technologically-assisted perspective, to not merely re-create previous tools, or tools with generic profiles, but to develop specific and innovative tools that are generated from the forms of regarded examples of their practice.

The tool is also a way of embodying the knowledge of the form in an additional format to the Studio diagrams: the tool helps maintain a standard of making and a consistent approach to making in a production environment. Tools also offer efficiency improvements to the potters by, for example, saving time in re-adjusting tools like callipers and so potentially reducing errors too. However, for all the benefits the tools presented they were not formally adopted by the Studio and some of the Potters did not wish to use them.

In recalling the research context outlined in '2.1.1: Characteristics of Naturalistic Inquiry', the

Leach Studio is a Natural Setting which I have no control over, but I respond to it through the research methods. Therefore, the use and adoption of tools relates to how the research setting is managed and also how the tools relate to the Potters' own practice. For example, '3.1.4.3.3: What was Leach Tableware?' shows that the Potters adopt their own approaches to making Leach Tableware and they simply may not wish to try, or use, specific tools. Furthermore, activities like handle making have an ideological significance to the potters as it is an activity associated with enacting a high level of skill (see '3.1.4.3.2.1: Levels of skills'): a tool could potentially negate some of that skill or the perception of skill.

Section 5.3: Digital-Analogue Leach: Early Echoes

This project was, in part, inspired by the practice of 'Section 5.1' (p.141) where I first encountered digital CAM methods: the outcomes encouraged me to work more deeply with a reduced array of equipment and specialise in the laser cutter. I felt the cutter's process was similar to firing in that it uses heat to transform a material. Its interaction with material can also be controlled, for aesthetic purposes, to leave marks that speak of the process.

I also found, during 'Section 5.1' (p.141), that using materials like acrylic and polyurethane model board introduced additional costs to making while raising concerns about the environmentally unsound waste generated by experimental practice. These aspects of digital practice conflicted with my previous ceramic practice which often utilised organic materials, free materials like clay, and by-products like wood ash. I sought to make the research more financially and environmentally sustainable by initially working with discarded cardboard.

Taking an approach to layering objects as exemplified by Jorgensen (p.91) and Marshall (p.89), I began exploring the Leach Tableware Shallow Stacking Bowl #3 (Figure 202) using the digital model generated in 'Section 5.2' (p.144) (Figure 275). This was not, initially, an exploration of clay but the 'other' materials and methods involved in CAD/CAM. When working in clay, I often foreshadow explorative processes by anticipating how the clay might shrink or otherwise behave. This foreshadowing alters the approach to process: focusing on ceramic outcomes can potentially pre-empt creative making and exploration. I wanted to explore how a digital Leach form might evolve without the restriction of using and thinking in clay. By removing clay from the making, the practice could more freely explore forms and process.

This Section charts the development of practice primarily using the laser cutter to interrogate a Leach Tableware forms to arrive at new and unexpected outcomes. Content comprises:

- '5.3.1: Making Bowls in Cardboard'
- '5.3.2: Drawing Leach Forms'
- '5.3.3: Making Leach Forms in Acrylic'
- '5.3.4: Making Leach Forms in Wood'
- '5.3.5: Digital-Analogue Leach Bowls in Clay'.

5.3.1: Making Bowls in Cardboard

To interpret the Shallow Stacking Bowl in cardboard, I tested suitable materials (see 'Appendix 4.1.1.2: Laser Cutter Material Tests') examining how the laser cutter power settings affected the cut. This exercise expanded my skill and knowledge of the equipment, enabling more subtlety and range in my practice. I also explored different methods of dividing the digital models to create paths for laser cutting the sheet material (see 'Appendix 4.2.3.2: Methods for Dividing Models'), arriving at:

- '5.3.1.1: The Divided Model'
- '5.3.1.2: The 'Folded' Model'

5.3.1.1: The Divided Model

The divided models were arrived at using Maya and Rhinoceros 3D to divide the digital models to generate vector data for laser cutting (see 'Appendix 4.2.3.2: Methods for Dividing Models'). The models were divided into layers the same thickness as the sheet material they were to be constructed from, to ensure that the physical model was the same size as the digital model. Using a sheet material with a typical thickness of 4mm created a stepped aesthetic: it creates, in essence, a loss of resolution and the use of a thinner material creates models with more layers and a higher resolution.

The form was divided horizontally (Figure 96 & Figure 97) and vertically (Figure 98 & Figure 99). The bowl is wider than it is higher, therefore the vertical model contains more segments: I found the aesthetics of the vertical space (Figure 98) more interesting than the horizontal space (Figure 97).



Figure 96: Matthew Tyas, Cardboard Model of Shallow Stacking Bowl #3 – Split in Maya, image M. Tyas 2011



Figure 97: Matthew Tyas, Cardboard Model of Shallow Stacking Bowl #3 – Split in Maya, image M. Tyas 2011



Figure 98: Matthew Tyas, Cardboard Model of Shallow Stacking Bowl #3 – Contoured in Rhinoceros 3D, image M. Tyas 2011

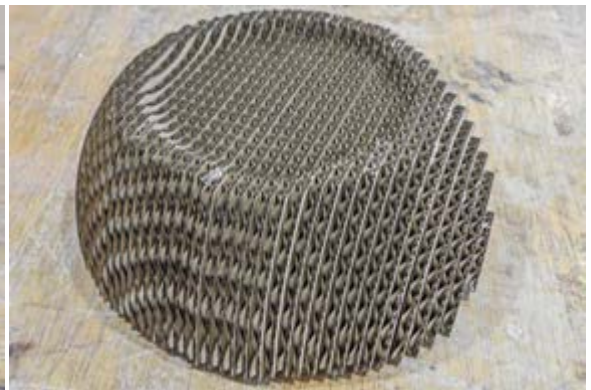


Figure 99: Matthew Tyas, Cardboard Model of Shallow Stacking Bowl #3 – Contoured in Rhinoceros 3D, image M. Tyas 2011

I also explored the potential of mould making with the cardboard models by vacuum forming with them: they were subsequently crushed (see ‘Appendix 4.2.3.4: Experimenting with the Vacuum Former’).

5.3.1.2: The ‘Folded’ Model

Another method explored was using paper modelling software Pepakura to unwrap the CAD forms to create fold and cut lines for making the model in sheet material (paper is usually used). The digital model was simplified as the process developed (see ‘Appendix 4.2.3.3: Methods for Making a ‘Folded’ Model’) to arrive at the cardboard model (Figure 100 and Figure 101). This cutting work resulted in moving up to the larger Trotec laser cutter.



Figure 100: Matthew Tyas, Cardboard Model of Shallow Stacking Bowl #3 – Using Pepakura, image M. Tyas 2011



Figure 101: Matthew Tyas, Cardboard Model of Shallow Stacking Bowl #3 – Using Pepakura, image M. Tyas 2011

5.3.1.3: Summary: Making Bowls in Cardboard

Using Maya, Rhinoceros 3D, and Pepakura software, Shallow Stacking Bowl #3 was digitally investigated. The resulting objects explored different methods of layering and unwrapping the digital form. This approach shared formal qualities and methods with the work of Marshall (p.89) and Jorgensen (p.91) who also used Pepakura.

The method of laser cutting the contours and manually constructing the piece from these layers was the most visually and manually satisfying interpretation of the form. Using cardboard proved problematic as the width of the slices used to contour the CAD model must match the material width, but it was difficult to find consistently thick batches of used cardboard stock. Furthermore, the model is time consuming to build and the cardboard lacks durability.

After crushing the cardboard model in the Vacuum Former, I was left with three separate pieces of the same bowl. This outcome, along with the experience of constructing the layered cardboard models, raised considerations for further practice. For example, seeing a group of the pot's cross-sections suggested they could serve as outlines from which to design pots with the essence of a Leach form. The three sections of the broken bowl also suggested that the elements of the physically divided model contained an 'echo' of the whole Leach bowl: this idea of an 'echo', or this method itself, could be more consciously explored.

The digital methods of the practice provided some unexpected outcomes that presented new ways of creatively exploring the cultural heritage of Leach Tableware. These outcomes were taken into the subsequent Sections, leading to a more concentrated contouring and re-making of Leach Tableware forms in acrylic. While I preferred the environmentally sound aspect of

using cardboard, a lot of time was spent sourcing it: consistency was problematic. I was subsequently given a stock of used acrylic sheets and switched to this material for its consistency and strength.

5.3.2: Drawing Leach Forms

An unexpected area of practice was the exploration of drawing and its impact on the research. As a potter, I never especially 'drew' but tended to sketch 3-dimensionally on the potter's wheel. An emergent aspect of 'Section 5.3: Digital-Analogue Leach: Early Echoes' was using the laser cutter to draw many of the models and designs, especially from '5.3.3: Making Leach Forms in Acrylic' (p.163).

I felt my CAD designs were 'trapped' inside the computer: they had no physicality and printing them offered few expressive or explorative outcomes. I wished to understand the laser cutter from multiple perspectives and it seemed logical to use it to draw and explore the models. I drew in two ways:

'5.3.2.1: Drawing with the Laser Cutter' was a way of building a deeper understanding of the cutter, and documenting the process of designing and making work.

'5.3.2.2: Drawing New Forms with Contours & Rhinoceros 3D' focussed on drawing in CAD, and exploring the potential of contours for developing new Leach Pottery designs.

5.3.2.1: Drawing with the Laser Cutter

I produced two books of drawings (see 'Appendix 4.2.3.7: Drawing with the Laser Cutter') documenting many of the forms I had generated in CAD as part of '5.3.3: Making Leach Forms in Acrylic'. Some of the drawings were of basic models and treatments (Figure 102), as well as evidencing various contouring procedures (Figure 103). Drawing was a useful way of finding, or even exemplifying faults in the CAD data (Figure 104), and of exploring the visual and potentially physical nature of the forms (Figure 105). Drawing allowed me to see particular features and explore them in a format that did not require materials or the time to make the models. I found the drawing more physically and psychologically engaging than looking at the files on a screen, and the physical act of drawing with the machine offered a rehearsal and reinforcement of the forms that might be constructed.

Each drawing took between 20 minutes and 2 hours to complete, thus the creation of nearly 100 drawings firmly cemented my relationship with the equipment. This was not an 'easy' way

to draw: the machine was closely directed to draw and portray CAD files in a particular way using bespoke settings developed to scorch the paper in a way that reflected my aesthetics.

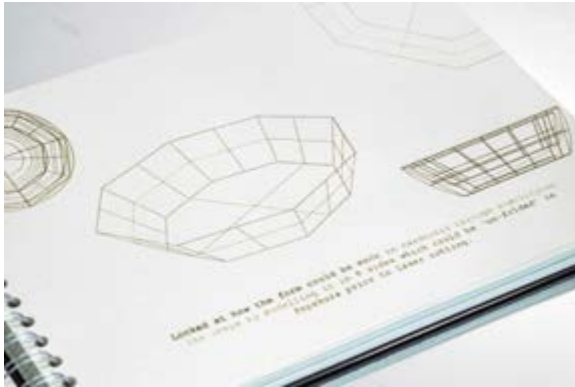


Figure 102: Matthew Tyas, Laser Drawing of Pepakura Bowl, image M. Tyas 2011



Figure 103: Matthew Tyas, Laser Drawing of Bowl Contoured in Rhinoceros 3D at 22.5°, image M. Tyas 2011



Figure 104: Matthew Tyas, Laser Drawing Showing Error in File Data, image M. Tyas 2011



Figure 105: Matthew Tyas, Laser Drawing Exploring the Bowl Form, image M. Tyas 2011

Using insights from ‘5.3.4: Making Leach Forms in Wood’, I then designed and made wooden jackets for the volumes (Figure 106 & Figure 107).



Figure 106: Matthew Tyas, Laser Drawing of Warped Bowl on Ply Book Cover, image M. Tyas 2012



Figure 107: Matthew Tyas, Laser Drawing of Lidded Form on Ply Book Cover, image M. Tyas 2012

5.3.2.1.1: Summary for Drawing Leach Forms

The 'simple' act of drawing with the laser cutter increased my knowledge and understanding of the equipment and gave a sense of meaning to the CAD data by creating drawings with a distinct physicality unique to the process. Mark-making is something that, as a potter, I have not tended to explore as I drew through throwing on the potter's wheel. Seeing the drawings being performed, and intervening within this performance, began to inspire the idea of designing Leach forms from CAD outlines.

This method revealed several facets of the laser cutter itself, including its physical condition and ability to perform tasks at particular power and velocity settings. Drawing is a good method for gauging how power/velocity settings need amending when cutting other materials, especially as the equipment's performance declines over time.

5.3.2.2: Drawing New Forms with Contours & Rhinoceros 3D

I also explored drawing through CAD in Rhinoceros 3D (see 'Appendix 4.2.3.8: Drawing New Forms with Contours & Rhinoceros 3D'). I began to see, in the many cutting sheets from '5.3.3: Making Leach Forms in Acrylic' that the slices of forms generated by dividing the digital models could be used as the starting point for a new range of Leach designs as exemplified in early Rhinoceros 3D sketches (Figure 108).

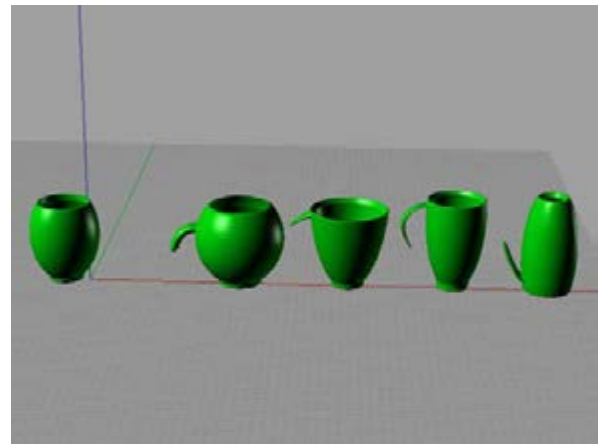


Figure 108: Selection of Cup/Mug Forms Generated from Cross-Sections, screenshot M. Tyas 2012

5.3.2.2.1: Summary for Drawing in Rhinoceros 3D

This new drawing practice began to present to me a method for designing Standard Ware by seeding a new pot from the component of a previous form. One could take a thrown form as the beginning for a journey of explorative designing and making that oscillates between digital and analogue methods, to arrive at a new designs and interpretations of Leach tableware.

5.3.2.3: Summary for Drawing Leach Forms

This venture into drawing had a strong impact on the research, taking me into new areas of practice and generating new ways of thinking about digital practice in the context of Leach. The skills and insights gained from '5.3.2.1: Drawing with the Laser Cutter' directly inspired further drawing and practice developments in the final stages on the research, especially in '5.5.3.1: Matthew Tyas: My Response as Maker' (p.179). The laser cutter, and laser drawing, demonstrated creative potential and the value of emergent practice.

My foray into drawing using Rhinoceros 3D provided the impetus for 'Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology' by establishing a creative method for designing new Leach forms in CAD that can be thrown on the potters' wheel.

5.3.3: Making Leach Forms in Acrylic

Using a stock of second-hand 3mm mirrored acrylic sheets, I systematically explored two Leach Tableware forms: Shallow Stacking Bowl #3 and the Large Tall Mug (see 'Appendix 4.2.3.5: Developing Acrylic Contoured Bowl Models in Rhinoceros 3D'). My aim was to continue developing an understanding of what a digital Leach object might embody if it was interrogated through the laser cutter and non-clay materials.

Both Leach forms were contoured at 0°, 22.5°, 45°, 67.5° and 90°, resulting in 10 pieces. Bowls contoured at 0° (Figure 109, Figure 110), 67.5° (Figure 111, Figure 112) and 90° (Figure 113, Figure 114) feature below, followed by a selection of the Large Tall Mug forms, contoured at 0° (Figure 115), 90° (Figure 116) and 22.5° (Figure 117).



Figure 109: Matthew Tyas, Acrylic Shallow Stacking Bowl Contoured at 0°, image M. Tyas 2011

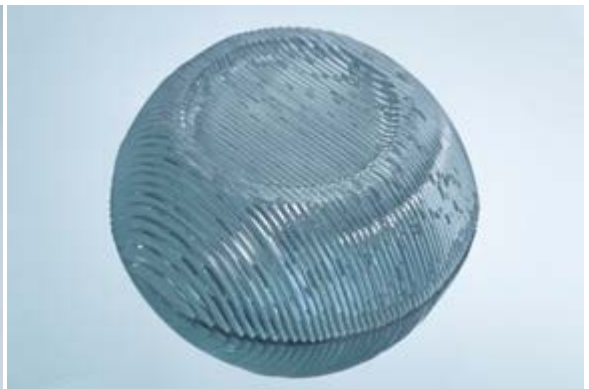


Figure 110: Matthew Tyas, Underside of Acrylic Shallow Stacking Bowl Contoured at 0°, image M. Tyas 2011



Figure 111: Matthew Tyas, Acrylic Shallow Stacking Bowl Contoured at 67.5°, image M. Tyas 2011

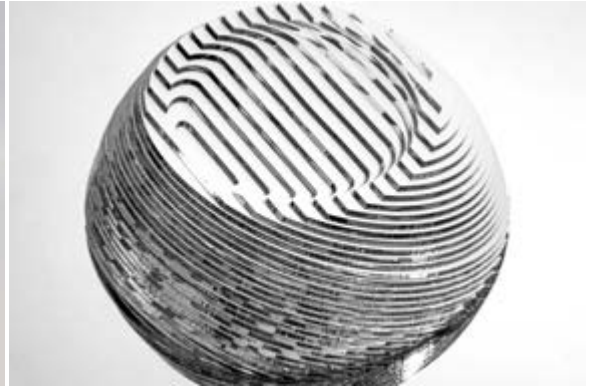


Figure 112: Matthew Tyas, Underside of Acrylic Shallow Stacking Bowl Contoured at 67.5°, image M. Tyas 2011



Figure 113: Matthew Tyas, Acrylic Shallow Stacking Bowl Contoured at 90°, image M. Tyas 2011



Figure 114: Matthew Tyas, Underside of Acrylic Shallow Stacking Bowl Contoured at 90°, image M. Tyas 2011



Figure 115: Matthew Tyas, Acrylic Large Tall Mug Contoured at 0°, image M. Tyas 2011



Figure 116: Matthew Tyas, Acrylic Large Tall Mug Contoured at 90°, image M. Tyas 2011



Figure 117: Matthew Tyas, Acrylic Large Tall Mug Contoured at 22.5°, image M. Tyas 2013

5.3.3.1: Summary for Acrylic Leach Forms

Each iteration of the form took approximately three days to design, cut and make: the methods of digitally dividing the model, saving out the components as vectors files, arranging the components for cutting, cutting the components and building the model had been practiced and honed, but could not be accelerated beyond a certain point. Digital methods were not necessarily unskilled or shortcuts to achieving an outcome but a different kind of skill to that encountered in the Leach Studio (see '3.1.4.3.2.1: Levels of skills').

The outcomes showed how digital practice could be used to hold a mirror to the cultural

heritage of Leach, to see what the Shallow Stacking Bowl and Large Tall Mug could look like when viewed through contouring, laser cutting and hand building in acrylic. Not having to anticipate how to make the objects in clay gave me the opportunity to explore them through these methods and new materials. The digital processes helped create a sense of distance from ceramic practice, providing me with space to reflect on and develop new areas of making.

The Bowl contoured at 67.5° (Figure 111 & Figure 112) was the most visually interesting piece, especially in the details where more of the sides of the individual slices were exposed in the foot as opposed to just their edges. This contrasted with the Bowl contoured at 90° (Figure 113 & Figure 114) which I found aesthetically 'flat'. The Mug divided at 22.5° (Figure 117) had similarly engaging aspects to the Bowl contoured at 67.5°.

Few of these objects were perfectly finished, nor practical, but they did provide starting points for other areas of practice, becoming visual sign-posts to the later Echo of Leach forms that would eventually emerge from the dissected shapes and components. Producing the models in acrylic also provided the basis for mould production and ceramic making, inspiring a return to clay in '5.3.5: Digital-Analogue Leach Bowls in Clay'.

5.3.4: Making Leach Forms in Wood

In this experiment, I explored a Leach Tableware Shallow Stacking Bowl in wood and attempted to move beyond a literal representation of it. Rhinoceros 3D was used to divide, crop, re-combine and contour an updated model of the bowl (see 'Appendix 4.2.3.9: Designing & Making a Bowl Form in Wood'). The resulting form (Figure 118 & Figure 119) was constructed in 4mm plywood using similar methods to '5.3.3: Making Leach Forms in Acrylic'.



Figure 118: Matthew Tyas, Laser Cut Wooden Bowl Form, image M. Tyas 2012



Figure 119: Matthew Tyas, Laser Cut Wooden Bowl Form (detail), image M. Tyas 2012

5.3.4.1: Summary for Making in Wood

This work demonstrated how digital technology could re-interpret the Leach Tableware aesthetic in wood through a form that was starting to occupy a more sculptural space. I enjoyed the process and material, and felt the work presented the possibility of taking the cultural heritage of Leach into new sculptural spaces, however the work was time and resource-intensive and I felt it prudent to focus on achieving new outcomes in clay.

5.3.5: Digital-Analogue Leach Bowls in Clay

Consolidating the practice of this section, I returned to clay to investigate the digital layered aesthetics that I had developed, especially those in '5.3.3: Making Leach Forms in Acrylic'

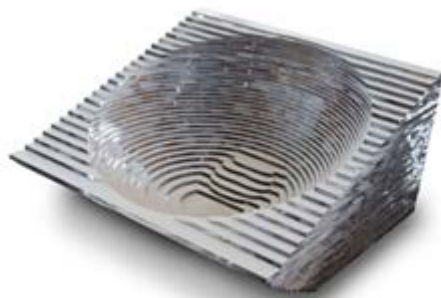


Figure 120: Matthew Tyas, Laser Cut Acrylic Mould Contoured at 67.5°, image M. Tyas 2012

(p.163). I intended to make a ceramic interpretation of the acrylic Shallow Stacking Bowl with a digital surface on the outside and a functional analogue surface on the inside. The resulting object would potentially present the meeting point of digital methods and an analogue Leach forms.

Shallow Stacking Bowl #3, contoured at 67.5°, was used as the starting form. The

form had been updated (Figure 221) to reflect the Leach Studio's changes: the original drawing (Figure 202) was incorrect (see 'Appendix 4.2.3.5: Developing Acrylic Contoured Bowl Models in Rhinoceros 3D'). I began by designing and constructing a new bowl in acrylic. However, the

important development in practice began with switching from working with an acrylic model to making an acrylic mould (Figure 120), enabling more accuracy and speed when translating digital practice into ceramic practice. This development in mould making was achieved while experimenting with mould making for glass (see 'Appendix 4.2.3.10: Experimenting with Moulds and the Shallow Stacking Bowl').

'Appendix 4.2.3.10: Experimenting with Moulds and the Shallow Stacking Bowl' outlines the methods used to create the following ceramic pieces, based on an accumulation of practice from across the research. All the forms were made using the Leach Pottery's high-iron clay body with some fired in the Leach Soda Kiln (Figure 121 & Figure 122). Another set of forms were internally decorated with markings from the bowls' outer walls, finished in a tenmoku glaze and fired at Falmouth University (Figure 123 & Figure 124).



Figure 121: Matthew Tyas, Digital-Analogue Bowl Soda Fired at the Leach Pottery, image M. Tyas 2012



Figure 122: Matthew Tyas, Digital-Analogue Bowl Soda Fired at the Leach Pottery - Underside, image M. Tyas 2012



Figure 123: Matthew Tyas, *Digital-Analogue Bowl with Tenmoku Glaze*, image M. Tyas 2012

Figure 124: Matthew Tyas, *Digital-Analogue Bowls With Tenmoku Glaze*, image M. Tyas 2012

5.3.5.1: Summary for Digital-Analogue Leach Bowls in Clay

The digital-analogue bowls were a culmination of the practice from 'Section 5.3: Digital-Analogue Leach: Early Echoes', focussing on clay but maintaining a layered digital aesthetic. This digital-analogue aesthetic, and the development of an alternative mould making method proved a useful starting-point for my final engagement with practice in '5.5.3.1: Matthew Tyas: My Response as Maker (p.179)', where I extend the digital mould making process.

5.3.6: Summary for Section 5.3

This section began with the idea of using waste cardboard, and the laser cutter, to interrogate Leach Tableware Shallow Stacking Bowls by contouring, and even un-folding, digital models and cutting-out the components. Alongside this practice, I experimented with drawing with the laser cutter and CAD which provided the impetus for 'Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology' by establishing a creative method for designing new forms that can be thrown on the potters' wheel with, if necessary, tools designed using the methods of 'Section 5.2: Tool Making'. Drawing with the laser cutter had a strong impact on the research, inspiring further drawing and practice development in the final stage: '5.5.3.1: Matthew Tyas: My Response as Maker (p.179)'.

The cardboard of the earlier practice was exchanged for acrylic and the new 'Digital Leach' acrylic pieces provided starting points for later practice in clay to produce the Digital-Analogue Leach Bowls. The earlier practice also provided visual sign-posts to the echo of forms that I could see in the dissected shapes and components of the work: echoes that would prove a pivotal point in the practice.

The wooden interpretation of the Shallow Stacking Bowl did not progress beyond this section,

but it did demonstrate the potential for digital technology to readily access and re-interpret the Leach Tableware aesthetic in a further material and in a different form to the original work. However, the return to working in clay produced a series of Shallow Stacking Bowls which embodied a digital and analogue aesthetic. The development of this work led to the production of a laser-cut mould and the idea of bespoke mould making was further developed in '5.5.3.1: Matthew Tyas: My Response as Maker' along with the aesthetic of the digital-analogue bowls.

Overall, this section acts as a bridge from the preliminary learning undertaken in 'Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers' and the knowledge gained through 'Section 5.2: Tool Making' to becoming a more capable digital practitioner. This section provided a basis for the practice and ideas demonstrated in the final and most crucial areas of the research, namely 'Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology' and 'Section 5.5: Echo of Leach: Makers' Work & Exhibition'.

This section also represents a more personal engagement with digital practice and the cultural heritage of Leach. I did not begin with the intention of working in clay but found a digital aesthetic, in the acrylic bowls, that I felt would provide an interesting counterpoint to the utilitarian nature of the Leach bowl. The work is more personal because I am starting to find my own digital methods to explore the cultural heritage of Leach. The resulting Digital-Analogue Bowls embody a sense of digital and analogue practice: the form resonates with Leach Tableware and could be used domestically, but it is also distinctly digital in its outer appearance.

Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology

This section addresses the 'Designing 21st Century Standard Ware' of the title by developing a new range of Leach Standard Ware, called 'Echo of Leach', using many of the digital technologies and methods engaged with so far.

5.4.1: Designing a New Range of Leach Standard Ware

I designed a new range of tableware because it was impractical to add forms to the 'live' Leach Tableware range, authored by the Lead Potter, which had specific visual characteristics (see

'4.1.3: Leach Tableware Lineage' on p.123). Doherty's range was concerned with soda firing to produce an aesthetic in pots to counteract 'blandness' (see p.66), while I was concerned with using digital technology to explore visual resonances within existing Leach forms.

Echo of Leach was also conceived as a way of engaging a wider field of Leach and non-Leach practitioners in making and interpreting Leach pottery. This presented a more self-conscious recognition that Standard Ware and Leach Tableware were not forms of absolute precision but were interpreted in the hands of the maker: both within the Leach Pottery and often in the wider Studio Pottery arena. This idea resonates with the different interpretations of 'standards' (macro/design & micro/making standard) in Leach tableware production as outlined in 'Chapter 4: Leach Pottery Standard Ware & Tableware: Lineages of Forms & Standards'.

5.4.1.1: About 'Echo of Leach'

The name 'Echo of Leach' has several resonances, developing from reflections on my research in 'Section 5.3: Digital-Analogue Leach: Early Echoes', where it was possible to see a visual echo of a form within contoured components. There is also an echo between the forms in the range, as many of the pieces share a commonality in the lines they were conceived with. An echo exists in the ancestry of the lines as they came from both Standard Ware and Leach Tableware pots. The echo was further explored through the distribution of the designs to makers and the subsequent return of those designs, to the Leach Pottery, in the makers' pots.

5.4.1.2: Echo of Leach Design Process

Initial inspiration for the designs came from contouring and making acrylic Shallow Stacking Bowls and Large Tall Mugs, and through laser cutter drawings (see 'Section 5.3: Digital-Analogue Leach: Early Echoes'). It was in the contours, dissections and drawings of Leach forms that I saw the seeds of new forms which could be explored in CAD by revolving their outlines on an axis. The design process began with a consistent approach to obtaining contours from Leach Pottery forms by also scanning examples of Standard Ware (see 'Appendix 4.2.4.1: Engaging with Leach Standard Ware'). A selection of slices from Standard Ware and Leach Tableware pots were obtained through contouring and selection (see 'Appendix 4.2.4.2: Contouring Forms & Selecting Slices'). These slices and lines formed the basis of the new designs.

5.4.1.2.1: Selecting Forms to Design

I focussed on designing particular forms using the '4.1.2: Standard Ware Lineage: From

Handmade Fireproof Stoneware (c. 1939-1945) to Standard Ware (1976)' to inform my choices. This era of Leach Pottery production offered a wider range of forms and functionality compared to Leach Tableware (see '4.1.3: Leach Tableware Lineage'). I declined to design oven-to-tableware forms as these were a more serious proposition with respect to purpose and materials, instead concentrating on general tableware. I visually grouped Standard Ware forms into common families like open forms, which included bowls and plates, drinking vessels, and serving vessels like jugs. I introduced the jug form into the range based on its historical ubiquity and its contemporary scarcity. I also chose to design a vase and a lidded container which blur the boundary between function and decoration. I designed the following forms:

- Mug
- Small Jug and Large Jug
- Lidded Box
- Vase
- Small Bowl and Large Bowl
- Side Plate and Dinner Plate.

5.4.1.2.2: The Design Method

'Appendix 4.2.4.3: Designing the Forms in CAD & Clay' details the design method of this section. In short, the Echo of Leach design began from a single curvy pot section, derived from a Standard Ware contour, that formed the outer wall of the Mug. This curve was then used to develop the shape of further forms like the Jugs. Further extracted curves were used to begin forms like the Vase and Lidded Box. I aimed to develop a visual interplay between the different forms in the range by actively comparing and editing them as the drawings developed in CAD.

Once the first iteration of the range was produced in CAD (Figure 372), the forms were taken to the potter's wheel: the drawn pot, whether notated by hand or computer, is a different proposition to the thrown pot. The designs needed to work on the wheel: this is method I am most accustomed to and the one associated with Leach Pottery production.

The exercise of exploring the forms on the potter's wheel resulted in changes to the designs to account for the process and the clay's behaviour. Also, the volume and proportions of clay 'look' and feel different on the wheel and the embodied unconscious knowledge of the maker is called upon. Some of the forms began to develop their own traits and, almost inevitably, began to take on the characteristics of other thrown shapes in their genre.

Once the first thrown pots were fired, I selected the forms which I considered to possess successful elements and reincorporated these features into the final digital drawings which were formatted as diagrams.

5.4.1.2.3: Summary of Design

The purpose of the exercise was not to design 'perfect' and final pots, but to begin a conversation between design and reflective personal practice that could be continued through the forms and their future interpretations. I perceived that Leach pottery lived most through its regularity at a macro/design level and the subtle nuances of its micro/making level, so I designed a template for a range of new Leach Standard Ware forms that are achieved in the hands of individual makers: a new way of exploring how Leach pottery can be physically made, distributed, and reinterpreted.

5.4.1.3: Identity of Echo of Leach

Echo of Leach required an identity in the context of Leach Tableware production and to help facilitate engagement with makers and, potentially, the market place. I developed a new pottery stamp which was used for branding the project (see 'Appendix 4.2.4.4: Designing a New Stamp') and later distributed to makers. It shared visual resonances with the Leach Pottery's stamp.

5.4.2: Echo of Leach: The Pots

A total of 9 forms were designed for the Echo of Leach range, comprising of diagrams for a:

- Mug (Figure 125 & Figure 126)
- Small Jug (Figure 127 & Figure 128) and Large Jug (Figure 129 & Figure 130)
- Lidded Box (Figure 131)
- Vase (Figure 132)
- Small Bowl (Figure 133) and Large Bowl (Figure 134)
- Side Plate (Figure 135) and Dinner Plate (Figure 136).

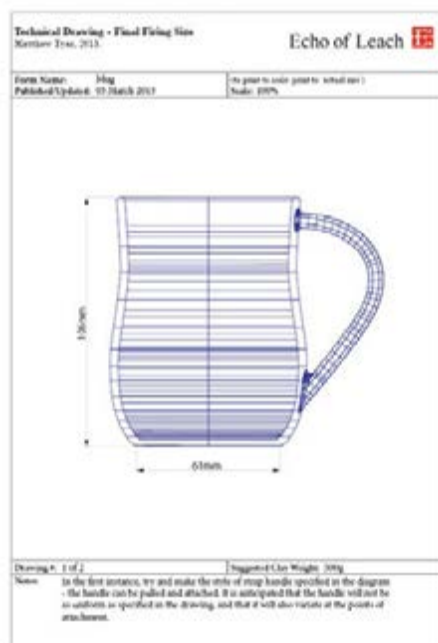


Figure 125: Echo of Leach Mug – Side Profile, graphic M. Tyas 2013

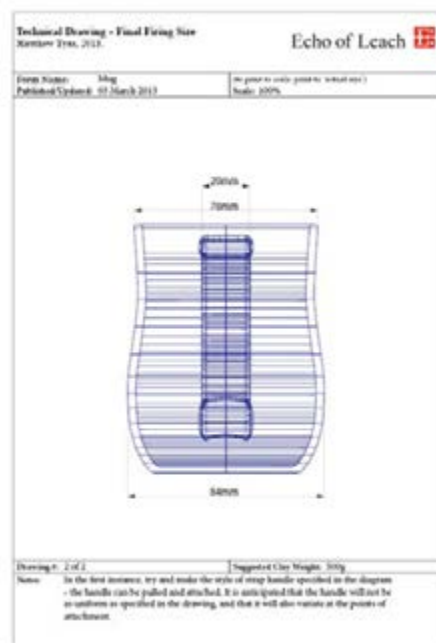


Figure 126: Echo of Leach Mug – Rear Profile, graphic M. Tyas 2013



Figure 127: Echo of Leach Small Jug – Side Profile, graphic M. Tyas 2013



Figure 128: Echo of Leach Small Jug – Rear Profile, graphic M. Tyas 2013



Figure 129: Echo of Leach Large Jug – Side Profile, graphic M. Tyas 2013

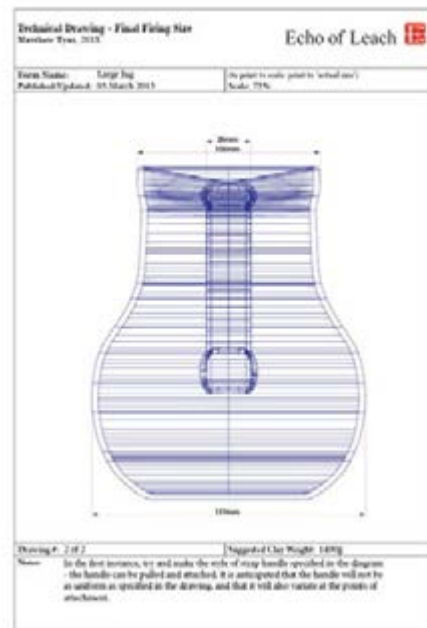


Figure 130: Echo of Leach Large Jug – Rear Profile, graphic M. Tyas 2013

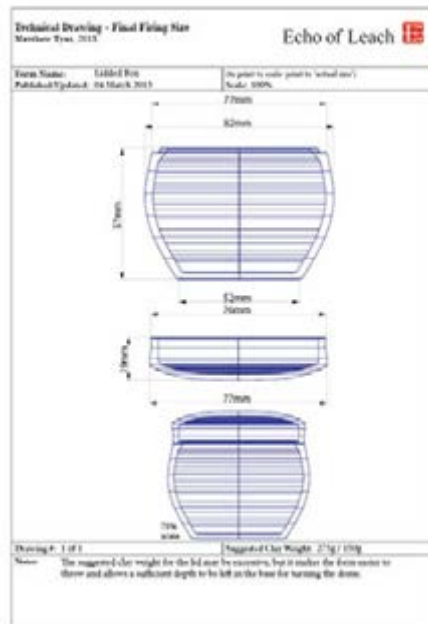


Figure 131: Echo of Leach Lidded Box, graphic M. Tyas 2013

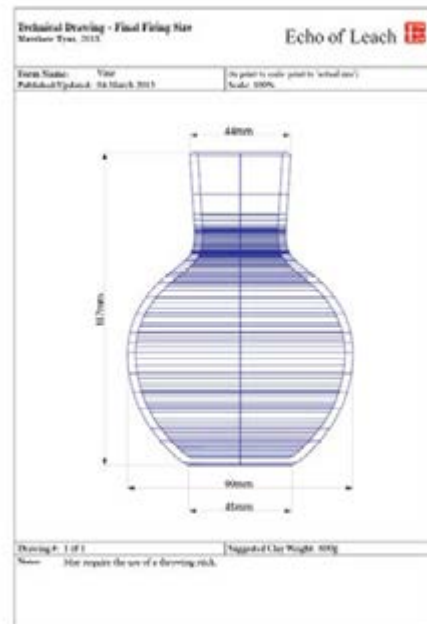


Figure 132: Echo of Leach Vase, graphic M. Tyas 2013

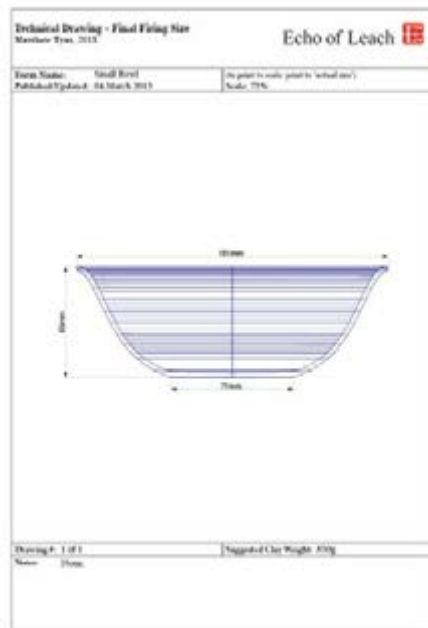


Figure 133: Echo of Leach Small Bowl, graphic M. Tyas 2013

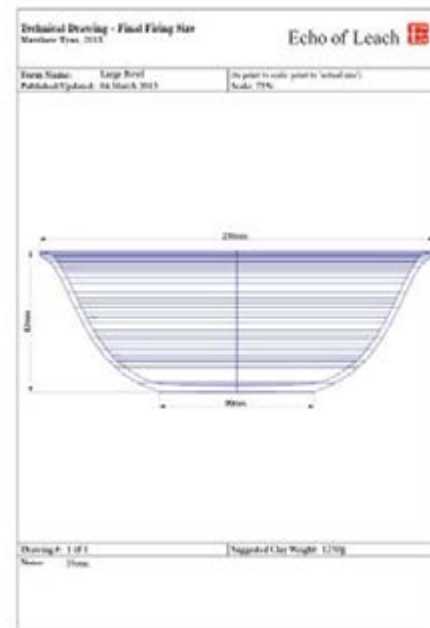


Figure 134: Echo of Leach Large Bowl, graphic M. Tyas 2013

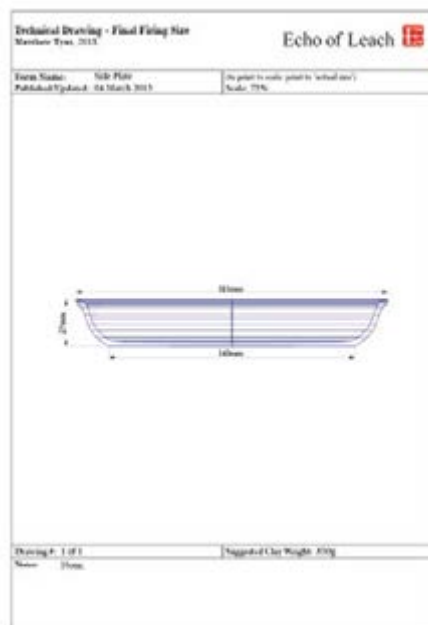


Figure 135: Echo of Leach Side Plate, graphic M. Tyas 2013

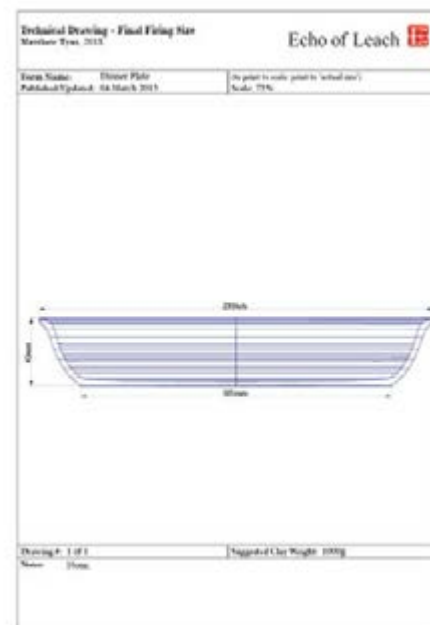


Figure 136: Echo of Leach Dinner Plate, graphic M. Tyas 2013

5.4.3: Summary for Section 5.4

Echo of Leach represents my contribution to 'Designing 21st Century Standard Ware' through work that constructs new perspectives on Leach in the 21st century using digital practice. The forms draw on the cultural heritage of Leach, especially Standard Ware and Leach Tableware forms. The designs have been conceived through digital and analogue methods, and the perceived means of their production will result in unique interpretations based on makers' processes, materials, glazes and firings.

Echo of Leach also presents a meeting place between digital and analogue practice where drawing through CAD, and making on the potter's wheel, can co-exist and increase the scope of the studio potters' design and development process. As a potter, I tended use the wheel as a drawing tool rather than actually drawing. While there is benefit in the practice of making and exploring ideas and forms directly in clay, it is also a time and resource-consuming process that does not necessarily record the iteration of forms: the form may survive as an object, but there are not always the resources and space to fire and keep each development. By starting the design process in CAD, there is the potential to explore variations of the form, to record these variations, to know the form's dimensions, before even beginning with clay work.

Section 5.5: Echo of Leach: Makers' Work & Exhibition

This final addition to practice examines how Echo of Leach developed and how makers responded to it, including the response made through my own practice which resulted in the creation of new decorated ware and the development of a re-configurable plaster mould. Overall, the work culminated in an exhibition that I curated at the Leach Pottery in 2013. I sought to exhibit at the Pottery as this had been the genesis of my initial beginnings in pottery making and its cultural heritage had formed the basis of the research: the resulting Echo of Leach designs were the culmination of what I had learned and researched.

5.5.1: The Brief

I began by developing concepts (Tyas 2012) for an exhibition at the Leach Pottery, including a conceptual overview, visual format, methods for achieving it, and a timeframe. One of the main thrusts of the concept was:

Echo of Leach grew from the idea that while Bernard Leach is recognized for his writing, thinking and making in relation to pottery, Standard Ware also represents an important physical and ideological legacy; it is also part of the Cultural Heritage of Leach, and the Leach Pottery, but is an overlooked area of knowledge. Echo of Leach evolved in the

practice of the doctoral research, of engaging with digital technologies and the Leach Pottery. It was guided by considering how digital technologies could be used to design '21st century standard ware' while maintaining the integrity of the making process. (ibid)

5.5.2: The Participants/Makers

I identified potential participants on the basis of knowing them through the Leach Pottery (the Leach Studio, Jeff Oestreich, and Britta Wengeler), having met them through the research (Jonathan Keep) or having met them at previous pottery markets (Doug Fitch). I also sought to identify other makers who would be interested in interpreting the designs and exhibiting this work at the Leach Pottery: I was aware of them as a result of journals like *Ceramic Review* or seeing their work at events like Rufford Earth & Fire and Hatfield Art in Clay. A significant factor in my decision to approach any of the makers was that I liked the work that they produced. Also, a small number of potters were recommended to me by fellow researches and colleagues at the Leach Pottery.

A total of 13 makers, not including the Leach Studio potters, were on this list or brought to my attention. I used a spreadsheet to track potential participants and interactions (Tyas 2013a). I contacted 7 makers who I did not previously know with a semi-tailored brief (see Appendix 4.2.6.1: Initial Invitation to Participate/Brief): 3 of these makers agreed to participate.

I also responded to this brief, as did the Leach Studio and one of its potters in their personal work (Wengeler). The brief was flexible and evolved to accommodate the suggestions and needs of the participants: it was distributed before the designs were finalised. For example, there was a proposal to supply tools to help make/measure the forms but dialogue with the makers suggested that they did not wish to use such tools for this project and that it would be problematic to create tools for such a wide variety of practice.

The following makers committed to working with the designs to produce work for the exhibition and retail in the Shop:

- Matthew Tyas
- The Leach Pottery Studio
- Doug Fitch
- Jonathan Keep
- Jeff Oestreich
- Britta Wengeler.

5.5.3: Making Outcomes

The Echo of Leach forms were distributed to all the makers involved: most participants requested the diagrams (see '5.4.2: Echo of Leach: The Pots', p.173), while Keep and myself also used the digital data. The remainder of this section showcases examples of makers' work.

5.5.3.1: Matthew Tyas: My Response as Maker

This section presents the final stage of my practice: my response to the Echo of Leach brief. This work developed along two strands inspired by a foray into drawing and narrative using the laser cutter. The first strand was mainly analogue and involved applying laser-cut stamps to thrown ware. The second strand was more digital, resulting in a reconfigurable laser-cut plaster mould to cast variations of the Vase.

5.5.3.1.1: Developing New Practice: Drawing and Burning

I encountered two main areas of creative development during this project, including the designing and making of:

- laser-etched stamps for thrown bowls
- a reconfigurable plaster mould using the laser cutter.

I did not begin with these outcomes: I sought to explore drawing on the laser cutter based on my experience in 'Section 5.3: Digital-Analogue Leach: Early Echoes', which provided a creative impetus for the practice of that section and the subsequent developments in 'Section 5.4: Designing 21st Century Standard Ware'. I returned to drawing and mark making with the idea of developing a new Leach tile decorated with the laser cutter using the narrative of my haiku.

I wanted to make work that was more personal, digitally-inspired, and that reflected my interests in haiku and photography: methods I use to reflect on my 'being' in places. I sought to portray the imagery of crows or foxes and use them to frame the making. I had explored narrative in earlier practice through surface pattern (Figure 5) but now sought a narrative that was more part of the form.

5.5.3.1.2: Throwing and Using Decorative Stamps: A Murder of Crows

This work is grounded in 'Appendix 4.2.5: Echo of Leach: Haiku: Drawing on Plaster, Modelling Board & Clay'. I sought a visual narrative that dealt with surface in a physically engaging and responsive way. I wished to make forms using the more tactile method of throwing, which



Figure 137: Matthew Tyas, Large Echo of Leach Bowl in Murder of Crows Style, image M. Tyas 2013



Figure 138: Matthew Tyas, Echo of Leach Dinner Plate, Side Plate & Large Bowl in Murder of Crows Style, image M. Tyas 2013

offers a direct engagement with material. The stamps were produced on the laser cutter and are of individual crows in different stages of flight: used together they portray a murder of crows which move through each piece differently.

I produced several pieces based on the Echo of Leach Small Bowl, Large Bowl (Figure 137), Side Plate and Dinner Plate (Figure 138). Further examples of the work can be seen in 'Section 5.5: Echo of Leach: Makers' Work & Exhibition'.

5.5.3.1.3: Re-configurable Plaster Mould: The Vase

This work formed my digital response to the Echo of Leach brief, it also dealt more directly with the form of the pot where the Murder of Crows work was more concerned with surface. The resulting mould enabled the Vase to be cast in its intended Echo of Leach form (Figure 162) or reconfigured to produce a variety of interpretations.

5.5.3.1.3.1: Initial Testing

After observing the laser cutter's ability to etch plaster in 'Appendix 4.2.5: Echo of Leach: Haiku: Drawing on Plaster, Modelling Board & Clay', I began testing the idea of a laser-cut plaster mould by etching wet and dry 3mm plaster sheets. A test mould was then cut from a dry sheet (Figure 139 & Figure 140) and a successful cast obtained from the mould (Figure 141): note the waste plaster on the surface of the cast, a residue created by the laser cutting through the plaster.

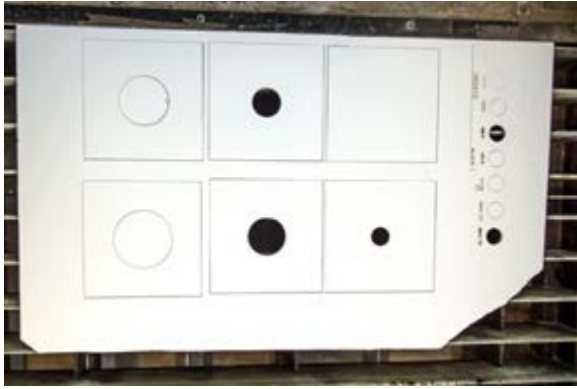


Figure 139: 3mm Plaster Sheet with Test Holes/Mould, image M. Tyas 2013



Figure 140: 3mm Test Mould, image M. Tyas 2013



Figure 141: Test Cast from Test Mould – Note Plaster Debris, image M. Tyas 2013

5.5.3.1.3.2: Designing the Mould

I designed the mould using a similar method to that developed in 'Appendix 4.2.3.10: Experimenting with Moulds and the Shallow Stacking Bowl', but used plaster rather than acrylic to facilitate the direct casting of ceramic forms. As the mould is made in slices, it would be possible to reconfigure it by changing the order of the layers or repositioning them in relation to one another.

Using Rhinoceros 3D, I constructed the walls of the mould around the Vase (Figure 142) and increased the mould's size to anticipate clay shrinkage. I also recessed the design of the Vase into the external wall of the mould as a way of readily identifying the mould in its fabricated state. The mould was also contoured with two vertical holes through all of its layers to accommodate acrylic rods to keep the mould aligned and aid its reconfiguration (Figure 143). As there was no way of extracting the Vase from the mould, other than removing the layers,

some layers were cut in half (Figure 144 & Figure 145) to facilitate its extraction.

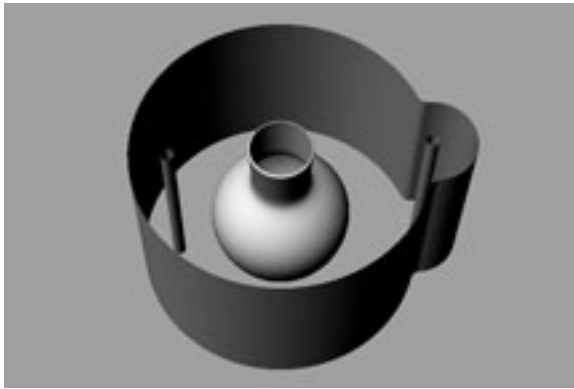


Figure 142: *Echo of Leach Vase Mould – Constructing the Volume, screenshot M. Tyas 2013*

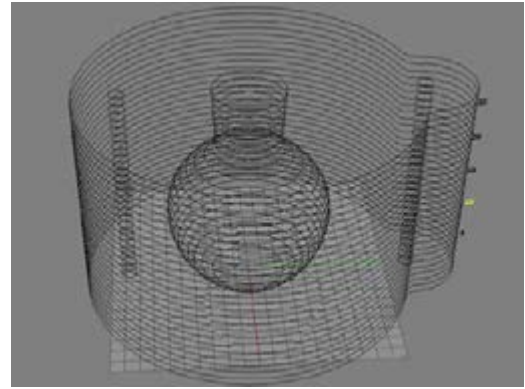


Figure 143: *The Mould with the Vase Removed and the Volume Contoured, screenshot M. Tyas 2013*

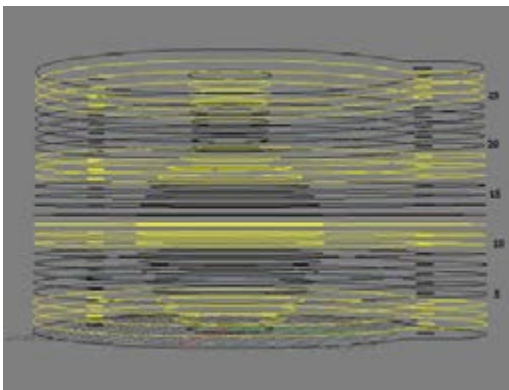


Figure 144: *Selecting Layers of the Mould for Further Slicing, screenshot M. Tyas 2013*

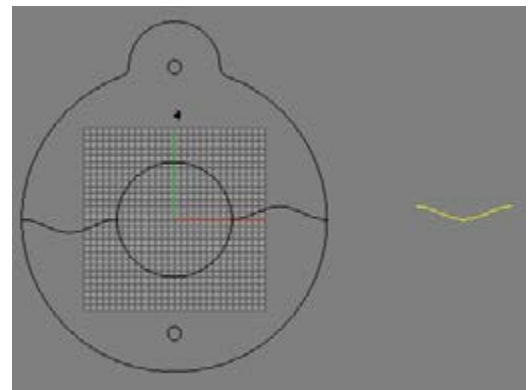


Figure 145: *Final Method For Cutting Mould Layers in Half, screenshot M. Tyas 2013*

5.5.3.1.3.3: Making the Layers

I required consistently thick and flat plaster sheets to cut the mould from. I used acrylic guides to attain the thickness and reinforced glass (Figure 146) to make the sheets smooth and flat. If the sheet was released from the glass to soon it was prone to warping. The sheets were then placed in the drying room (Figure 147).

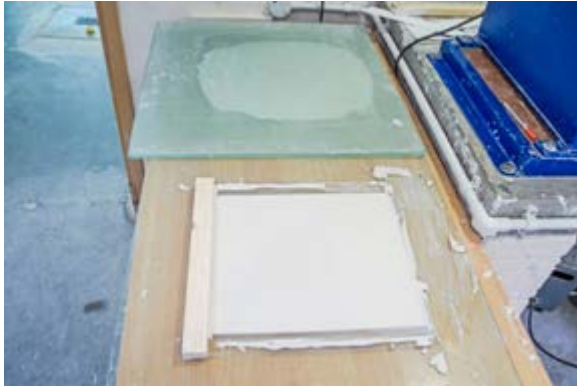


Figure 146: Using Reinforced Glass to Flatten the Plaster to the Guides, image M. Tyas 2013



Figure 147: Sheets Drying, image M. Tyas 2013

5.5.3.1.3.4: Constructing the Mould

The construction of the mould took weeks, rather than days, therefore there was a degree of evolution in its making. After cutting the first slices (Figure 148), I tested them in combination (Figure 149) to ensure the acrylic rod worked as a pivot.



Figure 148: First Plaster Sheet Including Material Tests (left corner), image M. Tyas 2013



Figure 149: Checking that the Acrylic Rods Work Correctly, image M. Tyas 2013

I built a hole into the base (Figure 150) so that casting slip could be drained from the mould without having to invert it: if the slip was poured out, it is likely that the mould would have come apart. The first version of the completed mould was dried together (Figure 151).

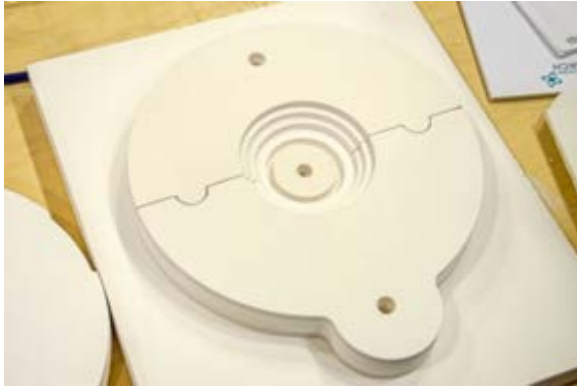


Figure 150: Building a Hole into the Base of the Mould for Slip Extraction, image M. Tyas 2013

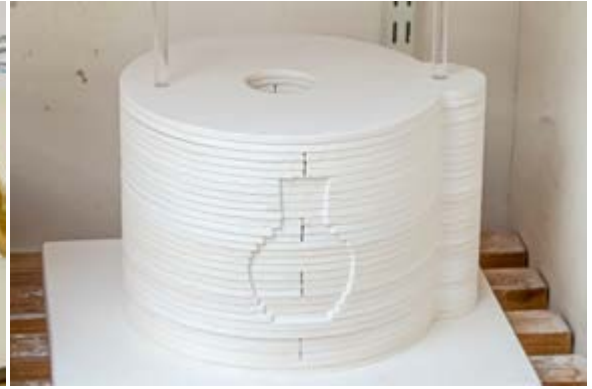


Figure 151: First Version of the Completed Mould in the Drying Room, image M. Tyas 2013

5.5.3.1.3.5: Testing, Working With, & Modifying the Mould

While the mould was being completed and drying, I used slices that were seconds to test casting times (Figure 152). I then tested how effectively the cast de-moulded and found that the porcelain did not shrink at the calculated rate so it was problematic to remove it, resulting in damage to the cast. I addressed this problem by making and testing a jig, first in cardboard, then acrylic, to facilitate cutting in half all of the mould's slices (Figure 153).



Figure 152: Test Cast at 6 Minutes Casting Time, image M. Tyas 2013

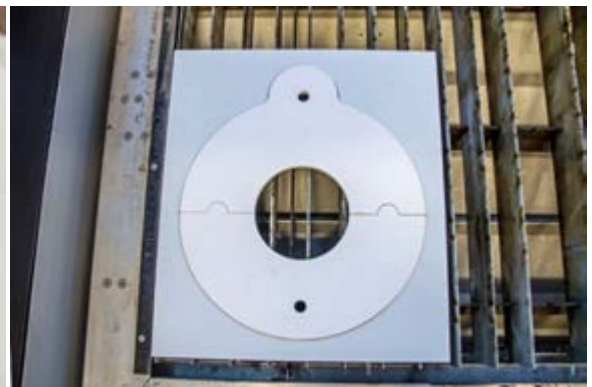


Figure 153: Slice Cut in Half in Response to Testing, image M. Tyas 2013

5.5.3.1.3.6: Working with the Mould

I continued testing the mould for casting times and to explore its effectiveness (Figure 154). The first test piece showed a high number of sprues resulting from the number of parts in the mould: these were subsequently fettled-off (Figure 155). I did not like the post-sprue aesthetic which was time consuming to achieve and problematic to execute. I began using the casting seems/sprues as an integral visual element in the work, eventually rotating each slice to stagger them (Figure 160).



Figure 154: De-Moulding the Test Piece, image M. Tyas 2013



Figure 155: First Test Piece After Fettling, image M. Tyas 2013

I experimented with building the mould into different configurations (Figure 156) to explore the Vase form (Figure 157). Glazes were tested to find one that worked with the ridges (Figure 158). The final pieces were finished in a cobalt-rich glaze which broke to white at high points and pooled at lower points, and fired to Cone 8 in an oxidising atmosphere.



Figure 156: Off-Setting the Mould to Alter the Form, image M. Tyas 2013



Figure 157: Fired Piece from the Off-Set Mould, image M. Tyas 2013



Figure 158: Examples of Test Glazes at Cone 8, image M. Tyas 2013

I also numbered a waste Vase (Figure 159) so that it was easy to identify which layers required altering in the mould. I settled for a design where three layers were off-set (Figure 160) so that the Vase distorted in the kiln but remained upright.



Figure 159: Using a Test for Layer Counting, image M. Tyas 2013



Figure 160: Final Style of Cast with 3 Off-Set Layers, image M. Tyas 2013

5.5.3.1.3.7: Final Mould & Vase

I considered the mould (Figure 161) as much a final and unique piece of work as the individual vases cast from it (Figure 160 & Figure 162): it took a total of 6 weeks to design and fabricate.

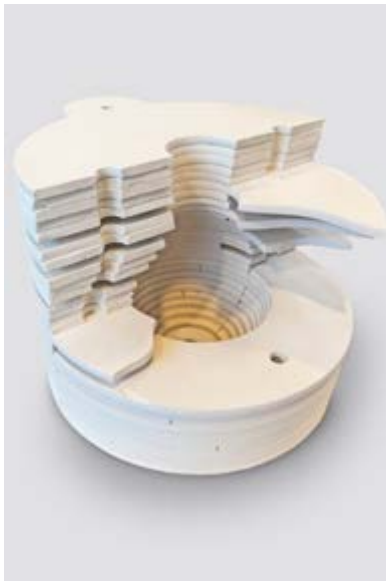


Figure 161: Matthew Tyas, Interior Shot of Reconfigurable Laser-Cut Plaster Mould, image M. Tyas 2013



Figure 162: Matthew Tyas, Echo of Leach Vase – Cast from the Reconfigurable Mould, image M. Tyas 2013

5.5.3.1.4: Summary for My Response as a Maker

This section charts my response to the Echo of Leach brief using digital and analogue methods. The thrown Murder of Crows work was realized through a simpler method of digital production in the form of etching and applied to thrown pots, while the reconfigurable plaster mould was achieved using a more complex method of cutting, fabrication and slip casting.

As with earlier practice, my encounter with drawing led to the development of the two bodies of work. My initial experiments with drawing on clay were disappointing and while experiments with plaster were promising I ceased further exploration because it was not realistic to resolve these findings in the given time. Observation of the laser's ability to etch plaster meant that it could also cut plaster. This observation, combined with the knowledge of the acrylic mould produced for 'Section 5.3: Digital-Analogue Leach: Early Echoes', led me to try cutting a mould directly in plaster, believing that its assemblage from layers would allow it to be reconfigurable. I was simultaneously considering how to take my laser mark-making from the plaster tiles to the thrown form and simplified the decorative element to create stamps. Each attempt to draw with the laser cutter created unexpected outcomes and new directions in the practice.

The reconfigured Vase presents a more intellectual proposition as it was less tactile in its execution and finish than the thrown ware which I like the 'feel' of. Similarly, the method of making the vases required a different type of skill and physical engagement to throwing,

although the reconfigurable mould suggests a method of slip casting that is a more responsive and engaging than traditional casting. Somewhat like the thrown work, the cast pieces do not evoke the complexities of their process, or time, invested in their creation. I enjoy the digital making, and it brings many new dimensions to practice, but its processes still present a further layer between myself and the material: I sometimes need to physically form clay with my hands, and that is where methods like throwing are paramount.

5.5.3.2: The Leach Pottery Studio

The Leach Pottery Director, Julia Twomlow, supported Echo of Leach in various ways: one of these was to allocate 40 hours of Studio production time to Britta Wengeler and Kat Wheeler to produce the Studio's interpretation of work for the exhibition using the Leach Tableware style (see '4.1.3: Leach Tableware Lineage') and methods. The Studio produced approximately 200 pots across the 9 forms (Figure 163 & Figure 164) which can be also be viewed as part of the Leach lineage: see '4.1.4: Echo of Leach Lineage'. The pots were also retailed in the Shop.



Figure 163: Leach Pottery Studio, Small & Large Echo of Leach Jugs, Lidded Box & Vase, image M. Tyas 2013



Figure 164: Leach Pottery Studio, Echo of Leach Mugs, Large Bowl, Dinner Plate & Side Plate, image M. Tyas 2013

5.5.3.3: Doug Fitch

Fitch, a UK-based earthenware potter (Figure 165), worked on the Vase (Figure 166) and Small Jug (Figure 167) designs in his style of English slipware practice. The images show how Fitch's interpretations are an extension of his practice in the use of loose throwing and casual slipware flourishes.



Figure 165: Doug Fitch, Slip Decorated Earthenware Jug, image Claire Borlase 2012



Figure 166: Doug Fitch, Echo of Leach Vases, image M. Tyas 2013



Figure 167: Doug Fitch, Echo of Leach Small Jugs, image M. Tyas 2013

5.5.3.4: Jonathan Keep

Keep (see p.99), based in the UK, explored the Echo of Leach forms with his digital slip printer (Figure 168). He began with a direct representation of the files in the Small Bowl, Mug and Vase, then introduced a more digitized form of the Vase and a series of 6 Small Bowls whose data was progressively altered by reducing the digital facets in the bowls.



Figure 168: Jonathan Keep, Echo of Leach Small Bowls, Mug & Vases, image M. Tyas 2013

5.5.3.5: Jeff Oestreich

Oestreich, based in the USA and an ex-Leach Pottery apprentice³⁵, developed decoration and altered forms inspired by his interest in Art Deco motifs (Figure 169). Oestreich made a wide range of pots for the exhibition, especially focussing on the Small & Large Bowls and the Side and Dinner Plates (Figure 170).



Figure 169: Jeff Oestreich, Thrown & Altered Bowl, Soda Fired, image courtesy of the artist 2013



Figure 170: Jeff Oestreich, Echo of Leach Small & Large Bowls & Plates, image M. Tyas 2013

³⁵ Circa 1969-71 (Whybrow 2006, p.204)

5.5.3.6: Britta Wengeler

Wengeler, born in Germany and now living in the UK, was based at the Leach Studio for most of the research making Leach Tableware. Wengeler also produces her own domestic ware (Figure 171) and interpreted Echo of Leach through her decorative stamps and reduction-fired celadon glazes (Figure 172 & Figure 173).



Figure 171: Britta Wengeler, Stoneware Kitchen Set in Celadon, image courtesy of the artist 2013



Figure 172: Britta Wengeler, Echo of Leach Mug & Side Plates, image M. Tyas 2013



Figure 173: Britta Wengeler, Echo of Leach Small Jugs & Small Bowls, image M. Tyas 2013

5.5.4: The Exhibition

The Leach Pottery Director also supported Echo of Leach by making the Cube Gallery available for the exhibition, initially for one month, and by providing the assistance of an external Public Relations consultant. Falmouth University's Research & Innovation Investment Scheme also supported the exhibition with £1500 of funding which helped, for example, to pay for the design and print of the large-format display panels.

Echo of Leach opened in the Leach Pottery's Cube Gallery on 15th June 2013 and closed on 1st October 2013.

5.5.4.1: Curation

I approached the curation as an extension of my practice: another form of making that involves constructing a narrative with the materials of objects, texts, and space. I have previously curated and co-curated exhibitions for the Northern Potters Association and the Leach Pottery, including administration, selection, curation, building-up and taking-down.

5.5.4.2: Initial Thinking

The aim was to illustrate the cultural heritage of Leach and make evident the relationships between the different strands of 'Leach' as found in the Standard Ware, Leach Tableware, and the forms developed by potters in response to brief. I also wished to make explicit some of the instruments of making/practice, as these are an inherent aspect of the final objects. I endeavoured to plan the space but there was also an element of responding to the process and making decisions and modifications as the exhibition was built.

5.5.4.3: Exhibition Content

The exhibition consisted of explanatory panels on two walls (Figure 174, Figure 176, & Appendix 4.2.6.2: Exhibition Panels Text) which conveyed the narrative of the exhibition based on the research of the thesis and 5 cases of exhibits (Figure 175).



Figure 174: Matthew Tyas, Echo of Leach Exhibition – Left Wall, image M. Tyas 2013



Figure 175: Matthew Tyas, Echo of Leach Exhibition – Cabinets, image M. Tyas 2013

Case #1 (Figure 177) presented examples of Leach Standard Ware, New Leach Tableware and Doherty's Leach Tableware, to



Figure 176: Matthew Tyas, Echo of Leach Exhibition – Right Wall, image M. Tyas 2013

contextualise Leach Pottery output and its use as a source in the research. Case #2

(Figure 178) focussed on the developmental Digital-Analogue work, my work developing tools, and also featured the laser-cut reconfigurable mould used to produce the Vases. Case #3 (Figure 179)

presented the Echo of Leach diagrams and the Leach Pottery's interpretation of the range. Case #4 (Figure 180) presented Echo

of Leach prototypes and interpretations by myself, and the work of Jonathan Keep. Case #5 (Figure 181) contained the interpretations of Doug Fitch, Britta Wengeler and Jeff Oestreich.



Figure 177: Matthew Tyas Echo of Leach Exhibition Case #1 – Leach Standard Ware, New Leach Tableware & Leach Tableware, image M. Tyas 2013



Figure 178: Matthew Tyas Echo of Leach Exhibition Case #2 – Digital-Analogue Leach, Tools, Reconfigurable Mould, image M. Tyas 2013



Figure 179: Matthew Tyas Echo of Leach Exhibition Case #3 – Echo of Leach Diagrams & Interpretations by the Leach Studio, image M. Tyas 2013



Figure 180: Matthew Tyas Echo of Leach Exhibition Case #4 – Reconfigurable Vase (Tyas), Printed Bowls, Mug and Vases (Keep), Prototypes and Interpretations of Plates and Bowl (Tyas), image M. Tyas 2013



Figure 181: Matthew Tyas Echo of Leach Exhibition Case #5 – Slipware Vases & Jugs (Fitch), Celadon Mugs, Jugs, Plates & Bowls (Wengeler) and Plates, Bowls and Lidded Box (Oestreich), image M. Tyas 2013

5.5.4.4: Echo of Leach Analysis

The exhibition, originally scheduled for one month, ran from 15th June to the 1st October 2013. During this period, the Museum received 730 visitors in June, 767 in July, 977 in August and 1023 in September. Echo of Leach opened on the same night as Tomoo Hamada's exhibition and was also promoted and shared through a Facebook page³⁶ that I populated.

The exhibition demonstrated how digital manufacturing technologies can be introduced to the Leach Pottery: especially as a tool for developmental and collaborative practice that facilitates creative dialogues with both Leach and non-Leach associated makers like Fitch and Keep. It showed that digital technology can be used to design and even make 21st Century Standard Ware.

The makers in the exhibition were asked, a year after the exhibition, to reflect on the exhibition and the work they made: I wanted them to convey insights that were significant to them and their practice so did not attempt to structure their responses.

5.5.4.4.1: Jonathan Keep

Keep offered several reflections on the project. He printed the provided CAD files, designed for thrown forms, but found them prone to collapsing:

...the 3D printer is not a substitute for traditional ways of working. The forms you designed would have been much easier and quicker for me just to...throw. The strength of the 3D printer is to offer a way to realise the new ways of working that digital techniques can offer. (Keep 2014)

For Keep, the strength of digital practice is the ability to '...easily take the digital file of the bowl you designed and very quickly on computer change it and make a whole series of new shapes based on the original' (Keep 2014). Keep did this for the series of 6 bowls (Figure 168) (Keep 2013a) where he sought to 'accentuate the digital finger print' on the bowls in response to thinking about the finger marks left by throwing by reducing the facets to produces a '...set of bowls that were related but different. Now the 3D printer was in its element as it could easily print out this digitally generated information and retain the interest of difference between each item' (ibid).

Keep also worked on the Vase but was not happy with the fired results: the form 'never printed well' especially at the shoulder where it slumped. Keep had an idea for developing

³⁶ <https://www.facebook.com/EchoOfLeach>

‘...an elongated vase with multiple necks allowing for a more fanned display of flowers’ (Keep 2014). However his ‘...primitive 3D printer is not yet refined enough to realise into physical object’ (ibid).

Keep suggests that the project allowed him comment on tradition from a contemporary perspective, to move from the old to the new:

I am a great believer in tradition and feel tradition is an ongoing phenomenon, so in time digital techniques will just become part of tradition. This was an opportunity to begin to make that move between old and new, to indicate what tradition of the future might look like. I’m also a great believe creative works should be and expression of the time in which it is produced and it worries me how in ceramics there is this terrible holding onto the past with almost a denial of any influence of the present. ‘Echo’ was a chance to learn from the past and through transformations offer a contemporary vision, what tradition is all about in my mind. (Keep 2014)

Keep’s approach to the brief recognises the intrinsic strengths and weaknesses of his digital method: he developed a response to the brief that took advantage of the explorative and playful side of the technology by accentuating the digital aesthetic of his bowls series. I think that Keep also eloquently reflects some of the wider issues of Echo of Leach, which is the importance of navigating and learning from cultural heritage while also undertaking practice that is an expression of contemporary life which has, to some degree, a digital element.

5.5.4.4.2: Jeff Oestreich

For Oestreich, participating in the exhibition helped develop a sense of perspective on his journey from his initial training at the Leach Pottery to becoming an established potter in America:

There was an intentional move on my part, when I returned home from my apprenticeship, to make pots of my own design and establish my own aesthetic. Looking at the Echo exhibit I see that I haven’t strayed too far from my roots, say, compared to John Bedding. (Oestreich 2014b)

Oestreich considered that his practice was still Leach-orientated as he was engaged with making reasonably priced domestic stoneware ware using a Leach wheel: ‘When you examine the forms I make you can strip all the fluff away and see echoes of the standard ware’ (ibid).

Over the last 5 years, Oestreich has struggled with the idea of being a ‘Luddite’ and tried to incorporate new technology and processes into his studio like using pre-made clay or buying an electric wheel. However, he is strongly ‘...attached to the romanticism of being a potter’ (Oestreich 2014b) and feels that by using pre-made clay he ‘...is giving up part of the romance

of being a potter' (ibid).

Reflection on the exhibition has galvanised Oestreich to return to his aesthetic and ideological roots, not because he is anti-technological, but because he associates making with romanticism and for him that is using basic methods, like the potter's wheel, to engage with material and the Leach aesthetic:

In some respects I have fooled myself in thinking my work has grown away from the Leach aesthetic. Your exhibit pointed this out. What I need to do is embrace it all. And being a romantic, when I return in October [2014] I will work on a Leach wheel in the museum and not on an electric in the new studio. (Oestreich 2014b)

Oestreich's work for the exhibition very strongly reflected his personal style: I found it difficult to see the influence of the Standard Ware aesthetic in pieces but he did alter the designs with function in mind. This was particularly evident in the way that most of the forms had been increased in size to be more generous.

5.5.4.4.3: Matt Tyas

Under analysis, neither of my bodies of work strike me as being quintessentially 'Leach' as defined by the lineages (see 'Section 4.1: Leach Standard Ware & Tableware Lineage of Forms: A Macro/Design Study'): their form is based on Echo of Leach, and the methods of slip casting and stamp decoration do not correlate with those of Leach tableware production and decoration. Likewise, the glazes do not relate to those found in the Leach tableware genre. However, these pots are worth attention as they are valid objects in their own right, demonstrating how 21st century Standard Ware can be manifested through digital ceramic practice to produce work that engages with the cultural heritage of Leach and also contemporary technological practice.

5.5.4.4.4: Wengeler & Wheeler: The Leach Studio Interpretation

Wengeler enjoyed making the ware and translating the Echo of Leach design into a Leach Tableware design: she felt this demonstrated that she understood Doherty's designs. Wheeler found the process of making to the specifications and interpreting it to be interesting: to try and imagine how Doherty would approach the challenge. Both potters felt the Studio's Echo of Leach ware complimented the existing Leach Tableware range (Wengeler & Wheeler 2014).

The project was also 'fun' because it encouraged play and interpretation, whereas Leach Tableware had strict parameters. However, it was also some of these design parameters, like the rims and handles, that could be transposed from the Leach Tableware to Echo of Leach

(Wengeler & Wheeler 2014).

It is interesting how Wengeler, in working to interpret the designs, was able to recognise that she had achieved an understanding of something else: in this case, an understanding of the Leach Tableware designs. This is similar to the understanding that Oestreich gained, of the reality of his own practice, also after working on Echo of Leach. Perhaps this is an unanticipated benefit to undertaking practice that falls outside of normal parameters.

Out of all of the responses to Echo of Leach, the Studio's response is the one that most closely relates to the existing cultural heritage of Leach in the form of Leach Tableware. This no doubt results from the fact that Wengeler and Wheeler were consciously trying to re-imagine the pots in the house style while also using existing methods, like soda firing, and finishing flourishes like the style of handles or the same decorative slips. However, the resulting work especially differs from Leach Tableware in that it maintains many of the curves of the Echo of Leach design.

5.5.4.4.5: Britta Wengeler

Wengeler found that interpreting Echo of Leach into her own style was difficult because of her decorative elements:

...more because I was probably too attached to my own style and suddenly to have to think about someone else's designs which is like intruding my space of creation suddenly and that felt more awkward because when I do the Leach Tableware it is someone else's design. (Wengeler & Wheeler 2014)

Wengeler's point is illustrated by the way that her pots look like they are made in distinctive phases: they begin with decorative elements which are gradually pared-back and simplified. However, Wengeler was the only individual maker who closely followed the parameters of the design. If one of the other potters had encountered her problem (which they most likely did) they would have altered the design to suit their style e.g. Fitch and Oestreich.

5.5.5: Summary for Section 5.5

This section charts the development of the Echo of Leach designs into an exhibition that revealed the research to a wider audience. The body of work was inspired by the cultural heritage of Leach and culminated in new Leach Standard Ware that was realised through a wider ceramic community.

The participants developed work that was both Leach and their own. My response resulted in

work that was both analogue and digital in method but driven by exploratory digital-based research. The Leach Studio Potters were able to exhibit their skills and their embodiment of the existing Leach Tableware range through their ability to interpret and make Echo of Leach. Doug Fitch showed how the designs looked in slipware, but was unable to overcome his personal style in the execution of the diagrams. Keep found the process affirmed the uniqueness of the digital tool and its potential to question tradition and form a bridge with contemporary practice. For Oestreich, participation in the exhibition caused him to realise that he needed to re-embrace his roots as a potter in the Leach tradition. Wengeler found the brief challenging, especially in how to project her style of decoration onto someone else's forms.

The idea to distribute the new designs was a way of consciously extending Standard Ware beyond the Leach Pottery and also encouraging a richer dialogue with it. This method could be developed to design new Standard Ware in the future, by actively engaging digital drawing and the interpretative work of external makers to develop tableware in an iterative and dialogic manner. Of course, the authorship of the ware would be ambiguous but this would be no different to the manner in which Standard Ware (see p.50) developed. Involving the wider ceramic community presents the opportunity to involve makers in 'Leach' who may be outside the genre, potentially introducing the Pottery to more progressive aspects of practice and new markets.

Section 5.6: Conclusions for Chapter

This Chapter began with 'Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers' which was devised to orientate my making to digital manufacturing technologies, and methods, by revisiting Dr Katie Bunnell's Bunny Beakers. I gained experience of using CAD/CAM methods, like Rhinoceros 3D, the milling machine and laser cutter, and applied them to designing and making ceramic beakers. The resulting pots provided an early account of how digital and analogue methods could meet in the context of the Leach Pottery. The experiences subsequently encouraged me to focus my attention on the laser cutter which I continued exploring in 'Section 5.2: Tool Making' and worked with it in greater depth in 'Section 5.3: Digital-Analogue Leach' onwards.

'Section 5.2: Tool Making' was inspired by observations made at the Leach Pottery, leading to an investigation into how the laser cutter, in particular, could be used to make bespoke tools to support Leach Apprentices in making Leach Tableware. I produced prototype Dragonfly measures for making Leach Shallow Stacking Bowls which provided a basis for further tools designed to shape and measure the Shallow and Deep Stacking Bowls with new measuring tools and shaping ribs. I offered digitally enhanced methods for improving the Leach Tableware Mugs, including profiles to check the outer wall, a plaster drape mould for forming handles, and a visual template of handle profiles. I concluded this investigation of tools with the production of bespoke Wooden shaping ribs. Not all of the tools were tested by the Studio but some proved effective: the Shallow and Deep Stacking Bowl tools presenting a way for the Leach Pottery to enhance the capabilities of its potters and the productivity of the business should it wish to adopt this tool. The development of bespoke tools also suggested ways of making the 21st Century Standard Ware that was to follow.

'Section 5.3: Digital-Analogue Leach' was inspired by 'Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers', where I first encountered digital CAM methods and chose to specialise in the laser cutter using discarded materials like cardboard. I began by making the Leach Tableware Shallow Stacking Bowl in cardboard, explored the drawing properties of the laser cutter and CAD, made Leach forms in acrylic and wood, and concluded with the production of a hybrid digital-analogue ceramic interpretation of the Shallow Stacking Bowl. This Section acted as a bridge from the preliminary learning undertaken in 'Section 5.1: Situating My Practice in the Digital: Milled Decoration & Beakers' and the knowledge gained

through 'Section 5.2: Tool Making' to becoming a more capable digital practitioner, so providing a basis for the practice and ideas demonstrated in the final and most crucial areas of the research, namely 'Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology' and 'Section 5.5: Echo of Leach: Makers' Work & Exhibition'.

'Section 5.4: Designing 21st Century Standard Ware: Designing New Tableware with Digital Technology' presented the methods and designs for a new range of 21st Century Leach Standard Ware, called 'Echo of Leach', that was developed using CAD and the potter's wheel inspired by earlier methods. A total of 9 pieces were designed and then made/interpreted in the following Section.

'Section 5.5: Echo of Leach: Makers' Work & Exhibition', presents the final practice of the research and demonstrates how myself and other makers responded to the Echo of Leach brief by interpreting a selection of the designs. This practice culminated in a 3 month exhibition in the Leach Pottery's Cube Gallery that served as an exposition of the research and demonstrated how Standard Ware could be designed, in the 21st Century, in an iterative and collaborative manner. The exhibition also showed how contemporary technological elements and methods could be introduced to the Leach tradition to design and make new work that was still deeply engaged with making and materials. It was in this point in the research that I felt that I was gaining an understanding of digital practice, leading to work with digital and analogue characteristics that was starting to reflect my interests and intentions.

Chapter 6: Conclusions

The main conclusions to the research are considered here through discursive threads that link together elements and outcomes of practice and the contextual review. The research aim was to design and make a new range of Leach Standard Ware through an understanding of the cultural heritage of Leach and by developing new practices with digital technologies. This Chapter then presents how the research has so far been disseminated before making recommendations for future work and outlining my own plans for future research.

Section 6.1: Overall Conclusions & Contributions to Knowledge

6.1.1: Practice

6.1.1.1: Making: Potters' Tools

The contextual review showed the significance of potter's tools, especially in relation to Standard Ware production, both as a way of training and of ensuring standards: these activities had essentially ceased in the contemporary Leach Studio. This knowledge, when considered alongside the variable nature of current Leach Tableware production, inspired tool making practice as it seemed that there was a potential gap in this knowledge and its application at the new Leach Studio.

The development of bespoke tools involved working closely with the Leach Studio to produce tools that shaped and measured, and even notated the wet clay weights of, the Leach Tableware Shallow and Deep Stacking Bowls. This was an effective way of embodying form data and setting-up batch production in the Studio. This was a significant outcome of the research because it showed how digital technologies could make a direct and immediate contribution to the current production environment and the wider practice of Studio Potters. In doing so, it established methods to develop tools based on the forms of 'real' pots. I was also invited to produce tools to describe and make mug profiles and handles and developed a small batch of high-quality wooden shaping ribs.

Tool making and tool use was a significant training and production activity during the time of Standard Ware production. By comparison, Leach Tableware production did not include tool making as part of the training and there was little emphasis on potters using specific tools in

production. In this context, digital tool production offered a way of re-engaging historical and contemporary practices. The introduction of specific tools presented the Studio with the opportunity to make their production more consistent: that is the initial reason why I was approached to develop tools to support bowl and mug production.

However, the new tools did not become part of the Studio's routine which could be attributed to the Studio's approach to training where potters can produce Leach Tableware using their own methods. To the wider business, the introduction of fixed standards using digitally produced tools could make sense as the technological overhead is relatively low and tool production could be readily out-sourced. From the perspective of the maker, this approach to tooling could be contrary to the idea of what a studio potter is: someone who often resists division of labour in their practice and rarely engages with repetitive production on the same scale as a traditional country potter. Additionally, there are benefits to tool making by hand related to the practice of hand-skills which can potentially improve skills/thinking in wider ceramic practice.

The findings of Chapter 4 are important here as they show that the potter, in the context of Leach, engages with two definitions of standards. At the macro/design level, the standard comprises of a definitive statement of the pot's characteristics, but at a micro/making level this standard is more loosely interpreted. This making standard is an enactment of the idea of hand-making by the individual in the studio context: it is the site where the work can evolve and, to some degree, be interpreted by the individual. Therefore, when it comes to making Leach pottery its value also exists in the variety of its production because it is handmade: this somewhat negates the need for precise tools which could potentially reduce the potter's ability to respond to the production context. Specialised tools could facilitate the production of a wider range of designs or off-site production. However, a brief examination of Standard Ware in the lineage demonstrates just how static elements of the range remained over 40 years, creating an environment where technological innovation and off-site production might not be relevant.

6.1.1.2: Making: Digital Practice: Contours & Layers

The review of the digital ceramic practice field yielded several areas of interest including a starting point in Bunnell's Bunny Beakers which helped develop my initial digital skills. The earlier work of Marshall, and also Jorgensen, demonstrated how methods of using 2D sheet material can create 3D forms with a layered aesthetic, which they both explored through bowl forms. My subsequent practice focussed on re-interpreting Leach in a digital context, especially through contouring. This method was also employed as an investigative and playful tool to develop ideas and designs, as well as to produce models and moulds.

My use of contours and layering extended their work and made contributions to practice by cutting the mould directly in plaster, rather than working through iterations of model making and silicon rubber casts. This approach to production reduced the stages involved in taking a digital model into ceramic production but a more significant element for me was the increased focus on hand-skills required to construct a working mould. More importantly, the reconfigurable nature of the mould meant that, at the casting stage, there was flexibility to respond to the making process and produce variations in the shape, therefore making slip casting a more involved and flexible method.

6.1.1.3: Making: Echo of Leach

One of the creative outcomes of working with digital contouring methods was the data and inspiration it provided for designing a new range of 21st century Standard Ware in Echo of Leach, a range which comprised of 9 new pots. Echo of Leach offers new methods for designing Leach pots based on the cultural heritage of Leach as manifested in Standard Ware and Leach Tableware. The resulting pots introduce new aesthetic qualities to Leach tableware forms as can be observed in the lineages. For example, the Mug, Jugs, Lidded Box and Vase, as interpreted by the Leach Studio, are all new forms to the Leach repertoire. The pots also make a new contribution to cultural heritage and suggest that the vocabulary of Leach forms can be extended.

Echo of Leach can be seen as a bridge between the existing Standard Ware and Leach Tableware pots and the sphere of digital-analogue practice. The digital practice also forms a connection between Standard Ware and Leach Tableware by re-introducing earlier forms like the jugs. This is a similar phenomenon as evidenced in the use of digital tool making to connect with earlier periods of Leach Pottery practice.

However, the most significant aspect of the digital practice is the way that it facilitates new

methods of working with other potters by bringing together a distributed group of makers, some of whom, like Fitch and Keep, had not previously been involved in making in a Leach Pottery context. This way of working introduces the prospect for more collaborative projects that could involve a wider group of makers in a co-authorship of Standard Ware design and production.

6.1.2: Cultural Heritage & Context

6.1.2.1: The Early Context

The cultural heritage of Leach provided the foundations for the research. As a practitioner, I initially found it difficult to understand how to approach this heritage and took some diversionary turns by, for example, looking at the phenomenon through the topic of Bernard Leach. However, it was only through undertaking this work that I was able to more fully understand Leach's relationship to the wider topic.

It is perhaps obvious to say that the practitioner-researcher should primarily focus on elements of the contextual field that relate to practice, but historical understandings of cultural heritage were equally relevant. This particularly relates to the cultural heritage of Standard Ware: through developing a narrative of its conception and production, and its record in catalogues, I gained a richer understanding of it, leading me to re-cast the net wider and examine it from the potters' perspectives. The culmination of this data led to the pots themselves becoming a topic and the subsequent development of the lineage and micro/making study in Chapter 4 (p.104). In essence, I was able to triangulate and establish knowledge on Standard Ware through understandings based on both its history and practice.

My approach to examining Standard Ware also informed my approach to Leach Tableware which formed a significant aspect of cultural heritage. By developing an understanding of the Studio's approach to making, I initiated lines of practice-based inquiry like tool making. In incrementally developing a picture of Leach Tableware based on its production and narrative, like Standard Ware, I was then able to more clearly ascertain the missing pieces of the review such as examples of the pots themselves.

6.1.2.2: The Changing Context

In establishing an idea of cultural heritage, I also recognise that it is an ever-developing phenomenon just like the real-world context of the Leach Pottery. I consider the following developments significant to the research environment and although they did not always have

a direct impact on the research, they did alter the context to which it potentially contributes.

6.1.2.2.1: Leach Pottery Structure

The most significant change to the Pottery's organisational structure occurred with the departure of Jack Doherty in early 2013. Later in the same year, the Pottery's projected structure recorded the new roles of Honorary Lead Potter and Senior Production Potter, and Wengeler and Wheeler changed from Apprentices to Production Potters (Twomlow 2013). As Doherty was a Supervisor to this PhD, I anticipated these changes to the structure might affect the research: the Leach Pottery continued supporting the research. However, the Pottery gradually phased-out its production of Leach Tableware and this is where the research's engagement with the Studio ceased.

6.1.2.2.2: Future Direction of the Leach Pottery

As the production of Leach Tableware declined, new Standard Ware was developed to take its place. In 2013, it was anticipated that growth in the business could be located in the production of off-site tableware using digitally produced tools (Twomlow 2013) but by 2014 these aims had changed. Twomlow currently believes the future of the business lies in increased production of on-site Standard Ware and more connections at a distance. The development of training and skills is seen as the key to increasing capability:

...being a trade rather than it being the kind of arts school training, because that's what we need here: we need people to be productive and to be highly skilled in what they're doing. That doesn't take away the creative side of it, but that's what we actually need to have in the Pottery to make it work as a business. (Twomlow 2014b)

Twomlow believes this level of training is not readily available in the UK, which is reflected in the international makeup of the workshop. The Pottery has become involved in the Craft Apprenticeship Trailblazer³⁷:

...a national body to shape the standards for craft apprenticeship delivery for the UK and we're taking on our first Adopt a Potter³⁸ and the first apprenticeship through Seasalt. (Twomlow 2014b)

The Pottery also has to adapt to visitor trends by making connections at a distance: '...we cannot rely on having more and more visitors coming...we do have the possibility of making connections at a distance, with people, and we've got to make the most of that' (Twomlow

³⁷ See <https://www.gov.uk/government/publications/future-of-apprenticeships-in-england-guidance-for-trailblazers>

³⁸ See <http://www.adoptapotter.org.uk>

2014b). Twomlow feels this must be done in a ‘meaningful way’ and might be achieved through exploring the symbolic nature of the Pottery and its pots: ‘...they are symbolic for people, they are iconic, and they speak on another level...They hold stories with them, they have a power of their own in peoples’ lives’ (ibid).

6.1.2.2.3: The potential role of digital technologies

The change in the Pottery’s production strategy from 2013 to 2014 was also evidenced in its perception of and relationship to digital technology. The Pottery moved from seeing a potential application in digital technology to enable distributed production underpinned by digitally made throwing tools (Twomlow 2013) shift to the connective and facilitative applications of digital technology. Twomlow now sees digital technology as a way of facilitating connections at a distance to allow a level ‘...of personal interaction with people that’s much more specific to their needs’ (Twomlow 2014b). This could involve ‘...communication and sharing stories around pots, collections, how people engage with their pots’ (ibid). Digital technology helps build community like the Pottery’s current use of Facebook³⁹ which facilitates engagement that falls outside of the Pottery (ibid). Twomlow’s current interests in facilitating connections at a distance and foregrounding digital narrative are also reflected in the current practice of Murphy (p.91), specifically the use of augmented reality and the potential for embedding QR codes.

Twomlow acknowledges that digital technology could play a role in design and production, although this application is not as significant as facilitating connections. The technological application is more in the context of customer engagement: ‘...there is a point at which people can interact with the design or influence it in some way, but we have to be quite careful about where we go with that one’ (Twomlow 2014b). Digital technology could also be helpful in developing a flexible scale of human production.

Twomlow (2014b) believes digital technologies offer a way to implement Nicholas Lovell’s business model, The Curve⁴⁰ which currently reflects the Pottery’s strategic intentions. This involves different levels of interaction that are appropriate to peoples’ needs.

Twomlow says:

³⁹ <https://www.facebook.com/groups/leachpottery>

⁴⁰ <http://www.thecurveonline.com> - in relationship to the Leach Pottery, see the 2014-2018 Forward Plan (Twomlow 2014a)

...it's exactly the model that we've worked on, where actually you get a high spend per head but you give away quite a lot. In our case kids can come in for free...We'll give away talks to potters. There's a certain amount we give away because actually, for us, it makes sense that we want potters to be engaged with us – we want them to get the benefit of the place because their involvement means their goodwill... (Twomlow 2014b)

Digital interaction can enable '...the curve to happen through the communication that you can make with people' (ibid).

6.1.3: Lineages of Forms & Standards

The lineages and standards study of Chapter 4 (p.104) results from the triangulation of Leach Standard Ware and Leach Tableware data in the contextual review to develop a real sense of Leach Pottery tableware production from a practitioner's perspective. For the first time, Standard Ware and Leach Tableware are presented in a broader pictorial context alongside their titles and dimensions. This offered a comparative baseline for the practice and a visual definition of the wares.

The lineage proposes a definition of how 'standard' works at a design/macro level where tableware is described in a fixed way: usually as specific forms with specific characteristics. The idea of a making/micro level is then promoted through an examination of the individual characteristics of Standard Ware Lidded Soup Bowls. At a making/micro level, pots are more prone to variation and interpretation in the potter's hands. When developing Echo of Leach, this knowledge of different levels of standards persuaded me to more consciously push the idea of exploring the standard at a making level by encouraging makers to interpret my design standards.

The Standard Ware lineage was also a vital reference in designing Echo of Leach: it served as a memory of the wider body of Leach Pottery tableware. For example, the Jugs, Lidded Box and Vases were inspired by the appearance of similar forms in the Standard Ware catalogues. Leach Tableware did not comprise any jugs, vases, or lidded vessels, and their inclusion in Echo of Leach was a way of trying to extend the vocabulary of current Leach Pottery production.

The Leach Tableware lineage was useful to the thesis because it helped map the range of tableware, which did not feature in any documents, therefore informing the Echo of Leach design process. I had not previously witnessed all the forms completed and presented together: I was struck by the simplicity and the sparseness of the designs compared to some of the curves encountered in Standard Ware forms. This encouraged me towards developing

designs with stronger curves. The lineage data was later used to design and produce, for the Leach Pottery, a visual chart of the ware (Tyas 2013b).

The presentation of the Echo of Leach pots alongside the Standard Ware and Leach Tableware lineages presents the project as a chapter of the Leach Pottery's tableware production, also acknowledging that the contribution to ceramic cultural heritage is ongoing. Visually, the pots stand apart from Leach Tableware as the design is based on a curve and not on straight walls, and the Lidded Box and Vase are visually distant from examples of Standard Ware. However, the Echo of Leach Bowls share visual similarities with the Leach Tableware Shallow Stacking Bowls which, themselves, share similarities with the Standard Ware GP Bowls.

6.1.4: Methodology

The approach to methodology was based on Naturalistic Inquiry which was adapted to the research at both a macro and micro (practice) level. Having a sensitive and adaptive methodology was helpful to the research in that I could respond and adapt to the nuances of the Leach Pottery: a real-world context which continually evolved and changed. A significant aspect of the methodology was how it acknowledged practice as a valid and important research method, enabling me to undertake practice in a way that was explorative and responsive to the context and process.

However, at times, I was too sensitive to the research context in trying to anticipate how a particular method might be viewed and applied in the context of the Leach Pottery, rather than experimenting with it through practice and responding to its development. For example, after visiting Jonathan Keep I discounted using a 3D slip printer in the research. I thought the use of such a method would be too incongruous in the context of Leach Pottery where there is a focus on throwing, working directly with clay, and strong ideas about what constitutes skills (p.73). Now, I would be more willing to see how this might have worked rather than anticipating its reception. On considering his involvement in Echo of Leach, Keep states the project:

...was an opportunity to begin to make that move between old and new, to indicate what tradition of the future might look like. ...creative works should be an expression of the time in which they are produced and it worries me how in ceramics there is this terrible holding onto the past with almost a denial of any influence of the present. 'Echo' was a chance to learn from the past and through transformations offer a contemporary vision: this is what tradition is all about in my mind. (Keep 2014)

A wider realisation is that I did not understand what practice-based research was until I

actually encountered it through practice: likewise, I more fully understood my methodology after I had enacted it. During the research, I developed an awareness of other areas I was interested in exploring but I could not grasp how they related, pragmatically and methodologically, to the inquiry. For example, a different approach could have been taken by using a design methodology to focus on the macro/design aspect of Standard Ware. These are the primary and fixed characteristics of the design, as noted in the lineages of Chapter 4 (p.104), that could have been made the focus of the practice. This may not have made the research as engaging for its lack of making, but it might have presented the opportunity to work with the market to develop a more coherent range of pots which could then have been explored through the micro/making elements of the 'standard' with makers.

6.1.5: Summary of Contributions to Knowledge & Final Thoughts

6.1.5.1: Contributions to Knowledge

The thesis offers the following contributions to knowledge:

- The establishment of a wider field of knowledge about Leach Standard Ware
- A series of visual lineages of Leach Pottery Standard Ware and Leach Tableware forms that define 'standard' at a design (macro) level with an additional explication of 'standard' at a making (micro) level. The lineages, for the first time, define the visual field of Leach Pottery tableware production and how standards relate to the work.
- The development of new digitally produced tools to support Leach Tableware production.
- The development of a digitally designed and laser-cut re-configurable plaster mould.
- New 21st century Standard Ware: a range of 9 ceramic forms, called Echo of Leach, that were developed using digital and analogue methods.

6.1.5.2: Final Thoughts

A further aspect of digital practice is that it presents a way for the Leach Pottery to reaffirm its relationship with contemporary life: the idea that practice should express elements of contemporary life is addressed by Keep in the previous section (p.195). I propose that the Leach Pottery was established with anything but tradition in mind: it is the site of the first climbing kiln in the West⁴¹ and it went on to produce Leach Standard Ware which combined

⁴¹ It is broadly considered that Shoji Hamada & Bernard Leach built the first kiln of this kind in the Western

characteristics of Western and Eastern pottery traditions, marking an aesthetic and technical break from the low-fired domestic English slipware mostly associated with traditional domestic pottery. Leach even introduced Raku firing to the West: on the whole, early Leach Pottery production was progressive, exploratory, and pioneering in spirit.

Digital technologies are part of contemporary culture and engagement with them offers the Leach Pottery ways to engage with new forms of practice and re-visit the progressive nature of its earlier years. From my own perspective, I feel the digital approaches that I have learned during the research will serve to benefit my personal practice in the future – particularly from a design development perspective.

However, the difficulty for many of the digital methods used in the research is the cost of the equipment, the additional specialism required to engage with it, and the general use of a method which is IT-based in an area of practice (studio pottery) where people choose to work with hand-based analogue methods and the materiality of clay. Some methods, like layering, produce a unique aesthetic which although has been explored over a long period of time, has not become part of wide-scale ceramic practice. Aesthetic preferences aside, this could partly relate to the cost and complexity of the method versus the pressures of trying to be productive practitioner.

I think the growth of digitally printed ceramics will continue and the aesthetic will become culturally absorbed. Reasons for this could be the already ubiquitous nature of this aesthetic that is also evidenced in other printing mediums, like plastic, alongside the cross-fertilisation of technological developments with such mediums. It is also a method that extends other established ceramic analogue methods and aesthetics like coiling and extrusion. Keep uses the technology, in *Echo of Leach*, to make a link between vessel forms and digital data in a way that offers a more direct treatment of the material than my layered interpretation of the Vases.

Section 6.2: Dissemination

Aspects of the research have been disseminated in the following ways:

- The Leach Tableware lineage was used as the basis for a Leach Pottery marketing

hemisphere. This kiln design is associated with the pottery traditions of countries like China, Japan, & Korea.

document for Leach Tableware (Tyas 2013b)

- An exhibition of the research at the Leach Pottery (p.192): brief coverage received in *Fusion*, the journal of Ontario Clay and Glass Association (Leser 2014)
- Delivered a paper at the 'All Makers Now?' conference, in July 2014, at Falmouth University. Conference theme: exploring craft values in 21st century production – materiality and aesthetics strand.

Section 6.3: Recommendations for Future Work & Research

This section presents recommendations for future work based on extending the research and also states my future research interests.

6.3.1: Lineage of Pots

I would recommend further mapping of Leach Pottery lineages by extending it to potters who trained at the Pottery and established their own tableware production. This would demonstrate how the cultural heritage of Leach has extended beyond St Ives. This could include the work of Lowerdown Pottery and the Muchelney Pottery. The mapping of the work of individual practitioners could also be undertaken. This work would begin to pave the way to establishing the impact of Leach Standard Ware production on the wider 20th century Studio Pottery movement.

6.3.2: Standard Ware

With relation to developing knowledge about Standard Ware, it would be interesting to overlay the structural changes at the Pottery onto the lineages in order to ascertain how the political and financial situation of the Pottery relates to its tableware offer. For example, the production of some porcelains cease from the 1957 catalogues onwards, and the style of some forms change too, which coincides with David Leach's departure from the Pottery and the arrival of Janet Leach. Overall, there is the potential to develop the findings about Standard Ware into a more focussed publication.

6.3.3: Tools

The knowledge generated from tool design and production could be used to produce a high-end enthusiast's tool kit for retail at the Leach Pottery. This could comprise generic potter's

tools or tools to help make historic examples of Leach Standard Ware forms developed using 3-D scanning and CAD modelling methods. Likewise, the Leach Pottery could provide a set of open source designs for a range of tableware for enthusiasts and potters to make and interpret.

There is still a potential role for digital methods in the Pottery's current production environment, especially to facilitate the design, notation and production of tableware. This could include the use of CAD in design and notation, and the production of measuring and shaping tools. This process could also be used to facilitate the reintroduction of handmade tools to the Studio's training regime.

6.3.4: Future Research Interests

My plans for future research are to continue developing knowledge of Leach Pottery tableware production, including Standard Ware, and to more closely examine the roles of potters like William Marshall in relation to the production of tableware and individual pieces. I also intend to continue gathering data about tool making and tool use in Studio Pottery production. In terms of my own practice, I am returning to tableware production where I aim to introduce and further explore digital tools and will begin with CAD drawings.

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Appendices

Appendix 1: The Cultural Heritage of Leach

Appendix 1.1: Initial Definitions

The definition of 'cultural heritage of leach' is arrived at by defining 'culture', 'heritage' and 'Leach':

Appendix 1.1.1: Culture

The definition of 'culture' is taken from Bennett et al (2005, pp.63–69) who identify it as a term with multiple interpretations used widely across different contexts. The use of the adjectival culture, especially in phrases like 'cultural heritage', 'cultural property', and 'cultural landscape', is noted as having grown rapidly too (ibid p.64). The authors outline the etymology of culture and how its associations with the cultivation of the physical and intellectual attributes of the individual came to be transferred to that of society so that '...culture comes to stand for a general process of social improvement' (ibid p.65).

The stature of culture further developed in the 19th century:

If culture thus supplied a set of standards through which industrial civilisation might be called to account before a higher court of appeal, it also supplied the means of overcoming the shortcoming that such a court might pronounce...it also informed the practises of a new set of cultural institutions which aimed to combat the shortcomings of civilisation by diffusing the higher standards of culture throughout society. (ibid p.65)

Culture is many things from progress to a means of judgement, to social enhancement: it is an outcome and a wider project. The text contains further insights on culture, including acknowledging its class, racial, and gender biases. It is interesting to contrast these deeper definitions with a dictionary definition of culture, which is '...the arts and other manifestations of human intellectual achievement regarded collectively...a refined understanding of this' (Thompson 1996, p.239).

Appendix 1.1.2: Heritage

Bennett et al (2005, pp.154–155) define 'heritage' as having early associations with religion and inheritance to eventually take on a more comprehensive meaning '...referring to everything acquired by one's circumstances at birth' (ibid p.154). Eventually, heritage:

‘...came to be allied in the modern period with the idea of culture itself...This mobilization of an expansive idea of ‘heritage’ also meant that it came to be closely associated with concepts of tradition, such that the terms often came to be interchangeable or synonymous.’ (ibid)

Allied to this, concepts of conservation and preservation emerged, in the 19th century, ‘...to embrace a range of social practises devised to safeguard what was coming to be perceived as the ‘disappearing’ past’ (ibid, p.155). The authors identify William Morris’ Society for the Protection of Ancient Buildings as the ‘most notable civic organization’ engaging with conservation during that period (ibid). Thus, heritage can not only be personally inherited but also something culturally significant.

Appendix 1.1.3: Leach

The ‘Leach’ of the research title could be taken to refer to Bernard Leach or, more widely, to the Leach Pottery, in St Ives, that Bernard established in 1920. Furthermore, Leach can also refer to the ceramic artefacts produced at the Pottery, which comprised the individual works of makers and also Leach Standard Ware. There also exists a dispersal of the Leach style of making and ideas about making that was achieved through the writings of Leach, especially *A Potter’s Book* (Leach 1976a), his pots and the pots produced at the Leach Pottery and by potters who trained at the Leach or independently engaged with texts and/or other potters associated with Leach.

Appendix 1.2: The Leach Pottery Today

Appendix 1.2.1: The Pottery’s Recent History, Continued Significance & Reopening

[Appendix 1.2.1.1: Recent History](#)

The Leach Pottery passed to Mary Redgrave upon Janet Leach’s death in 1997, and was bought by a local hotelier in 1999. A small number of potters remained until it was acquired, in 2005, by Penwith District Council for restoration (Cooper 2006, p.142) and closed. In the same year, a Memorandum of Association (Anon 2005b) was submitted to incorporate the Bernard Leach (St Ives) Trust Limited, along with Articles of Association (Anon 2005a). The Objects of the Memorandum were:

...to advance the education of the public in Cornwall and elsewhere in the life and work of Bernard Leach, his influence on the development of the ceramic arts and in particular studio pottery and to preserve and maintain his former house and workplace at Higher Stennack, St Ives to house and display examples of his work and those of

others whose work in the Trustees' opinion may appropriately be displayed with the works of Bernard Leach and to train people in the art, craft and manufacture of pottery and related skills and increase the appreciation of the public in the ceramic arts. (Anon 2005b, p.1)

In 2005, the Trust launched the Leach Restoration Project, using £1.7 million:

to restore and develop the Leach Pottery site and its buildings in order to make them fully accessible to the general public and usable by a new generation of potters. The Restoration Project aimed to celebrate the life, work, influences and legacy of Bernard Leach through the preservation and interpretation of the historic buildings, the creation of a museum and gallery exhibition space and, importantly, through the development of a living, working pottery. (Twomlow 2014a)

Appendix 1.2.1.2: Continued Significance

The Director for Arts Council England suggested the project's importance lay in its contribution to creative industry: 'Part of the attraction of this project is the opportunity it provides for young ceramicists to develop their skills, contribute to the creative industries and, we hope, be inspired to start their own studios' (Lewis 2006). For Emmanuel Cooper, value existed in the ceramic cultural heritage:

Leach was one of the first studio potters, setting up a pottery that was different to anything before it. He was a pioneer, so this is a key part of our ceramic cultural heritage...It's vital it's saved for the nation. It's also a very important part of St Ives – along with Barbara Hepworth and Ben Nicholson, it forms a cornerstone of that town. (Lewis 2006)

Lady Carol Holland (2010), the first Chair of the Bernard Leach (St Ives) Trust Ltd, notes Leach's influence:

The local and international influence and stature of Bernard Leach is undeniable. He was a man who, through his life, his work and his writings, has made a unique contribution to our cultural heritage, to the development of the art of ceramics and to the careers of many potters...' (studiopottery.co.uk 2008).

Appendix 1.2.1.3: Reopening

By 2008, restoration work was nearing completion and a charity fundraising auction of the work of 'more than 100 internationally renowned potters' took place at Bonhams, London (Lewis 2008). The Pottery building and 3-chambered climbing kiln gained Grade 2 status (British Listed Buildings n.d.) and the Pottery reopened in March 2008 (Twomlow 2014a). The restoration had an international dimension which drew upon its earlier Japanese ties:

'...Mingeikan and Mashiko Village mustered support from individuals, raising nearly £35,000' (Leach Pottery n.d.). The reader seeking further coverage, especially press, of the Pottery's

recent history and re-opening, and even its original opening, it is recommended to consult the St Ives Archive⁴² which holds multiple entries. See also Daniel and Twomlow (2008), for an early visitor's guide to the re-opened Pottery, providing an overview of Leach, the Pottery's history, its contemporary purpose, the site and the processes involved in production.

Appendix 1.2.2: Students & Potters at the Leach Pottery: 2008-2013

List of Students & Potters at the Leach Pottery: 2008-2013 on 21/11/13⁴³

Date	Name	Position	Duration
2008			
September 2008	Jacob Bodilly	Start up Potter	2 years
September 2008	Michel Francois	Start up Potter	1 year
2009			
September 2009	Tomoo Hamada		
30th March 2009	Ollie Marshall	School work experience	5 day
8th June 2009	Alice Greenwood	School work experience	5 days
	Ashley Gower	School work experience	5 days
1st July 2009	Tsubusa Kato		
19th October 2009	Daniel Casy	School work experience	1 week
October 2009	Kat Livesey	Potter	
2010			
February 2010	Midori Endo	Potter	
3rd May 2010	Jane Bradford	Intensive Course	5 days
17th May 2010	Margaret Kumsang	Intensive Course	5 days
24th May 2010	Daniel Jeyes	School work experience	5 days
	Oliver Lane	School work experience	5 days
June 2010	Ryoji Koie		
21st June 2010	Alice Atlee	School work experience	5 days
July 2010	Ella Phillips	Potter	
5th July 2010	Lillian Slowe	Intensive Course	5 days
31st July 2010	Japanese Potters	Demonstration	1 day
October 2010	Britta Wengeler	Potter	5 months
18th October 2010	David Smith	School work experience	5 days
18th October 2010	Sandy Layton	Intensive Course	5 days
1st November 2010	Christine Delatour	Intensive Course	5 days
15th November 2010	Jane Saul	Intensive Course	5 days
13th December 2010	Russell Gibbs	Potter	

⁴² <http://www.stivesarchive.co.uk>

⁴³ Data provided by Margaret Parma of the Leach Pottery

Appendices: Appendix 1: The Cultural Heritage of Leach

Appendix 1.2.2: Students & Potters at the Leach Pottery: 2008-2013

2011

17th January 2011	Claire Hincks	Intensive Course	5 days
14th February 2011	John Mahoney	Intensive Course	5 days
March 2011	Gordon Gran	Potter	1 month
7th March 2011	Victoria & Chris Baker	Intensive Course	5 days
28th March 2011	Tony Watkinson	Intensive Course	5 days
11th April 2011	Sam Gerlach	Studio assistant	
26th April 2011	Christina Robertson	Intensive Course	5 days
16th May 2011	Paige Mynard	School work experience	5 days
27th June 2011	John Hough	Intensive Course	5 days
11th July 2011	Suzanne Gardiner	Intensive Course	5 days
19th July 2011	Jake Griffith	School work experience	5 days
August 2011	Rie Tsuruta	Potter	1 month
22nd August 2011	Bronna Zlochiver	Intensive Course	5 days
	Gideon Cumming	Potter	1 month
12th September 2011	Sarah Field	Intensive Course	5 days
3rd October 2011	Sophia Wu	Studio assistant	2 months
3rd October 2011	Felix Attlee	Studio assistant	3 months
10th October 2011	Jason Cole	Intensive Course	5 days
31st October 2011	Robert Parfitt	Intensive Course	5 days

2012

9th January 2012	Landa Zajicek	Intensive course	5 days
February 2012	Britta Wengeler	Potter	
10th February 2012	Florian Gadsby	Student work experience	1 week
27th February 2012	Claudia Zeff	Intensive course	5 days
19th March 2012	Jo Baine	Intensive course	5 days
16th April 2012	Sheridan MacInnes	Intensive course	5 days
30th April 2012	Theresa Stamberger	Potter	3 months
28th May 2012	Alessandra Carrara	Intensive course	5 days
10th June 2012	Alicia Wolfgang	Work experience: Austria	4 weeks
16th July 2012	Jackie John	Intensive course	5 days
2nd August 2012	Akira Yagi	Residency	
6th August 2012	Chuck Lu Kuanchung	Studio assistant	1 month
8th September 2012	Yumi Seko	Studio assistant	1 year
14th September 2012	Jacy Shi Hsin Fei	Studio assistant	3 months
24th September 2012	Stephanie Dawkes	School work experience	5 days
4th November 2012	Mandy Dailly	Studio assistant	4 weeks
19th November 2012	Ella Phillips	Potter	1 month

2013

14th January 2013	Sophy McKeith	Intensive Course	5 days
February 2013	Beatrix Baker	Student	2 weeks
11th February 2013	Janet Paterson	Intensive Course	5 days
25th February 2013	Sonia Dupont	Studio assistant	3 weeks

6th March 2013	Laura Pegg	Studio assistant	
11th March 2013	Cherie Levinson	Intensive Course	5 days
15th April 2013	Jane Booth	Intensive Course	5 days
1st May 2013	Rhiannon Ewing	Studio assistant	2 months
7th May 2013	Roelof Uys	Senior Production Potter	
10th May 2013	Jodie Masterman	Studio assistant	3 months
13th May 2013	Elly Jay	Intensive Course	5 days
10th June 2013	Stella Harrison	Intensive Course	5 days
12th June 2013	Tomoo Hamada	Exhibition	6 days
8th July 2013	Rainer Kraft	Intensive Course	5 days
8th July 2013	Diana Gardiner	Intensive Course	5 days
8th July 2013	John Slade	Intensive Course	5 days
13th July 2013	Jordan	Studio assistant	2 weeks
15th July 2013	Wilson (from Taiwan)	Studio assistant	6 weeks
12th August 2013	Debbie, Cherie, Jaqueline	Intensive Course	3 days
23rd August 2013	Glenn Lewis	Residency	2 weeks
1st September 2013	Tinni Arora	Volunteer studio assistant	1 year
15th September 2013	Warren Mackenzie	Residency	2 weeks
22nd September 2013	Elvis (from Taiwan)	Studio assistant	6 weeks
7th October 2013	Catherine Wyatt	Intensive Course	3 days
14th October 2013	Ranjit Dhaliwal	Intensive Course	5 days
14th October 2013	Hans Thalgott	Intensive Course	5 days
1st November 2013	Martha Opher	Studio assistant	2 months
4th November 2013	Sylvia Li	Intern	2 weeks

Appendix 1.2.3: Exhibitions at the Leach Pottery: 2008-2013

Exhibitions at the Leach Pottery: 2008-2013⁴⁴

Date	Exhibition	Location	Artists
14/06/08 - 13/9/08	English Tea Ceremony	Gallery	Ruthanne Tudball, Rebecca Harvey, Kaori Tatebayashi, Jennifer, James & Tilla Waters, Chris Keenan, Sun Kim, New Leach tableware
14/09/08 - 14/11/08	Formed in Fire	Gallery	Svend Bayer, Gail Nicholls, Martin McWilliam, Ashraf Hanna, Jack Doherty, Nic Collins, Sarah Walton, Lisa Hammond

⁴⁴ Data provided by Margaret Parma of the Leach Pottery

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Appendix 1.2.3: Exhibitions at the Leach Pottery: 2008-2013

17/11/08 - 16/01/09	A Festive Table	Gallery	Walter Keeler, Clive Bowen, Patia Davis, Joanna Howells, Dylan Bowen, New Leach Tableware
15/3/09 - 25/4/09	Hamada Tomoo	Gallery	
21/2/09 - 25/4/09	New Expressions	Gallery	Daisy Dunlop (jewellery)
23/05/09 - 11/7/09	Flower Show	Gallery	Carina Ciscato, Charles Bound, Nick Rees, Clare Conrad, Marcio Mattos, Joanna Wason, Emily Myers
2/5/09 - 31/3/10	Hamada's St. Ives	Cube	
25/7/09 - 26/9/09	Legacy	Gallery	Micki Schloessing, Tim Andrews, Jeremy Steward, Jason Wason, Tim Hurn, Marcus O'Mahony, James Hake
Winter 2009	The Dartington years	Cube	
16/10/10 - 21/11/10	Slipware	Gallery	Jean-Nicholas Gerard, Clive Bowen, Peter Smith, Dylan Bowen, Patia Davis
28/11/09 - 6/1/10	White	Gallery	Jack Doherty, Kaori Tatebayashi, Rebecca Harvey, Ashley Howard, Carina Ciscato, Susan Disley, Ikuko Iwamoto
3/4/10 - 3/7/10	Janet Leach, her Life & Work	Cube	
3/4/10 - 4/6/10	The Flower Show	Gallery	Nic Collins, Lisa Katzenstein, Amanda Brier, Katerina Evangelidou, Jonathan Phillips, Simon Hulbert, Whichford Pottery
10/7/10 - 1/9/10	Funktional	Gallery	Elke Sada, Jeff Oestreich, Ninna Gotzsche, Derek Wilson, Linda Christianson, Karen Morgan, Ikuko Iwamoto, Janet de Boos, Tsubusa Kato, Sandy Brown
5/9/10 - 28/11/10	Black	Gallery	Jeremy Leach, Clive Bowen, Sam Hall, Dan Kelly, Sara Flynn, Walter Keeler, James & Tilla Waters
11/12/10 - 11/2/11	Setting the Place	Gallery	New Leach Tableware

14/4/11 - 16/7/11	William Marshall, First Apprentice	Cube	
9/7/11 - 30/7/11	Stoneware	Gallery	Jim Malone, Mike Dodd, Peter Swanson, Phil Rogers, Lisa Hammond, John Jelfs
10/9/11 - 30/9/11	Fiesta	Gallery	Elke Sada, Lisa Katzenstein, Zeita Scott, Louisa Taylor, Maria Wojdat, Sara Moorhouse
2012	Heart, Head & Hand	Cube	
1/7/12 - 3/8/12	Summertime Blues	Gallery	Peter Beard, Sue Binns, Sophie Cook, Jack Doherty, Chris Keenan, Emily Myers
3/11/12 - 30/11/12	Jeff Oestreich 77 x 77	Gallery	
9/3/13 - 6/4/13	Shigeyoshi Ichino	Gallery	Shigeyoshi Ichino, John Bedding, Jeff Oestreich
15/6/13 - 22/9/13	Echo of Leach	Cube & Reception	Matt Tyas, Doug Fitch, Jonathan Keep, Jeff Oestreich, Britta Wengeler, Kat Wheeler
15/6/13 - 15/7/13	Hamada Tomoo	Reception	
July/August 2013	A Focus on Britta Wengeler	Shop	
20/7/13 - 16/9/13	The Third Generation	Reception	John Leach, Jeremy Leach, Philip Leach, Simon Leach
September 2013	A Focus on Tim Lake	Shop	
21/9/13 - 2/11/13	Warren Mackenzie	Reception	Warren Mackenzie (and Glenn Lewis)
October 2013	A Focus on Mark Titchiner	Shop	
16/11/13 - 4/1/14	Phil Rogers	Reception	
16/11/13 - 7/1/14	Five Years On	Gallery	Midori Aoshima, Jacob Bodilly, Kat Wheeler, Ella Phillips, Yumi Seko, Michel Francois, Britta Wengeler

Appendix 1.3: Leach Standard Ware

Appendix 1.3.1: Sketches & Photographs

Examples of pencil sketches and monochrome photographs were found in the Crafts Study Centre archive: I identified and photographed 72 sides of paper sketches portraying pottery forms. Only 6 of the items were dated: 1939 occurred the most frequently at 3 times (Figure

182). Not all the drawings represented Leach Standard Ware (Figure 183) with approximately 45 of the drawings potentially attributable to Leach Standard Ware on the basis of their titles and/or their forms (Figure 184 and Figure 185). As the drawings are largely undated, it is problematic to firmly associate them with a point in the design process or a period in production, although it could be assumed that they represent preliminary design sketches.

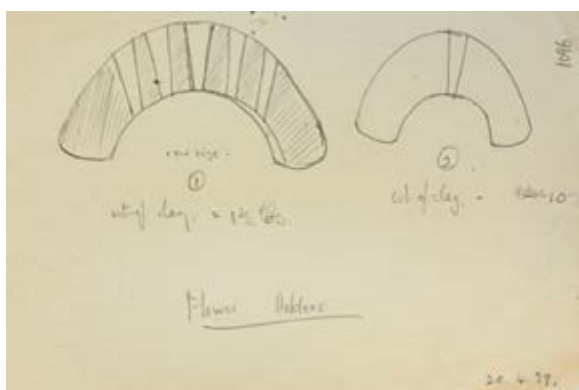


Figure 182: Flower Holders 1939, Pencil on Paper, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts



Figure 183: Plates and Coffee Jug, Photocopy, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts



Figure 184: Covered Vegetable Dish, Pencil on Paper, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts



Figure 185: Egg Bakers, Pencil on Paper, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts

A photographic record of Standard Ware items, separate to the catalogues, was also documented. These records did not yield much material, with less than 20 images being

recognisable as Standard Ware. Three of the images were identifiable as photographic plates from Standard Ware catalogues (Figure 186) and were also undated (Figure 187). Of 11 studio photographs of Standard Ware pots, seven presented forms at angles that were not documented in the catalogues (Figure 188 and Figure 189), and the remaining 4 photographs featured in subsequent Standard Ware catalogues. Three of the photographs were duplicates. The sketches and photographs were a rich source of visual material, but not investigated further as I did not intend to develop a design history of Standard Ware.



Figure 186: Leach Standard Ware, Photograph: The Council of Industrial Design Studio, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts



Figure 187: Leach Standard Ware – Back of Image, Photograph: The Council of Industrial Design Studio, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts



Figure 188: Leach Standard Ware Casseroles, Photograph: The Council of Industrial Design Studio, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts

Figure 189: Leach Standard Ware Hors D'oeuvre Set on Hardwood Tray, Photograph, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts

Appendix 1.3.2: Circa 1930: Tiles and Fireplaces

A small amount of catalogue material relating to tiles and fireplaces was found in the archive. Of note is an undated card folder identified as a 'Catalogue of Tiles, Fireplaces, Pottery' (Leach Pottery n.d.). It could be surmised that the folder and its contents date to 1930: one paper leaf refers to '...only after ten years of experiment are we able to issue this Catalogue'. Likewise, the illustration on another leaf, of a MARR Fireback, is dated 1930. Leach also states that tile production was developed from 1930 onwards (Leach 1946).

The inside cover of the folder is illustrated with the Leach Pottery Fireplace (Figure 190) and has a pocket to insert additional material. The archive holds several inserts printed on the same paper providing examples of a further fireplace and associated components, an explanation of the MARR Fireback, and introduction to the tiles and the fireback, and two leaves of sample tiles (Figure 191). There is no similar leaf illustrating the 'pottery' referenced on the cover.



Figure 190: Leach Pottery Fireplace, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts

(Leach Pottery n.d.)



Figure 191: Leach Pottery Decorated Tiles, image M. Tyas 2011 courtesy of Crafts Study Centre, University for the Creative Arts

(Leach Pottery n.d.)

Appendix 1.3.3: Standard Ware: The Narrative

The catalogues are here analysed to see how their text-based narratives, in relation to production and tableware, develop over time. This excludes data about tile and fireplace production, beginning with the earliest general pamphlet (Leach Pottery 1937, p.1) which establishes Leach's credentials as a potter who(se):

- started the Pottery with the help of his Japanese assistant (Shoji Hamada)
- studied under the Sixth Kenzan in Tokyo
- practised for 8 years in the stoneware and porcelain tradition of the Chinese Sung period
- work had been warmly regarded by the Japanese for the previous 20 years
- is considered one of the founders of the Japanese national craft movement.

It focusses on Leach's aims as an individual maker who endeavours '...to produce with local material and hand processes throughout a high temperature stoneware of personal design based upon the craftsmanship of the Chinese and Korean work of the Sung and Korai periods' (ibid). Leach quotes the Keeper of the Ceramic Department of the British Museum to explain

that the Sung period is a focus of practice because it achieved ‘technical perfection’ and:

The potter was complete master of all departments of his work, and his wares had a refinement of drawing and coloration, of potting and finish, such as the world had never seen before, and under modern industrial conditions, can never hope to see again. (ibid)

Leach is noted as reviving the old English pre-industrial pottery tradition, the ‘backbone of English Ceramics’, with its ‘generous and indigenous shapes and patterns’ and warm colours (Leach Pottery 1937, p.2), doing so ‘...for the sake of people, who, like himself, want to enjoy the use of their kitchen and cottage crocks again’ (ibid). Such nostalgia for earthenware did not discourage Leach from announcing the cessation of slipware production from the summer of 1937 onwards, wishing ‘...to make stoneware on a larger scale and for more general use’ (ibid). This pamphlet proves a pivotal point in the development of domestic stoneware at the Leach Pottery.

The pamphlet states that Leach works at Dartington Hall from where he supervises the artistic developments at the Leach Pottery - which David is now in charge of. There is a brief reference to using mostly local clays and its traditional wood fired Sino-Japanese climbing kiln (ibid).

The first available catalogue showcasing the new stoneware tableware dates to World War II: ‘The ovenwares described overpage represent only a part of the Leach Pottery output specially designed to meet war-time needs...’ (Leach Pottery n.d., p.3). The catalogue is brief, illustrated with basic drawings, and describes the glazes available e.g. celadon, rust, black and opaque cream. There is a focus on utility: ‘The heat resistance of these pots is very good but asbestos mats should be used when they are placed over a naked flame’ (Leach Pottery n.d., p.1). In 1946 (Leach Pottery 1946), the same glazes were available alongside the addition of a porcelain body.

A wider range of stock was available to order and the pots were potentially varied: ‘Customers should be prepared for a somewhat greater variation in shape and colour than is normal in industrial pottery. Such is the character of articles made by hand’ (Leach Pottery 1937, p.3). It is also noted that ‘...selected specimens of particularly well fired glazes are reserved for exhibitions at a higher valuation’ (ibid). In 1946, a proviso was added that the shapes were prone to change: ‘...the shapes illustrated may be altered from time to time when it is felt that an improvement in form will result’ (Leach Pottery 1946, p.3).

In 1949, the catalogue opens with a degree of self-appraisal relating to demand:

It is encouraging to find that the heavy demand of the past few years for Leach pottery is being well maintained, and we are glad to say it has been possible to increase output and stocks, with the result that orders can now be despatched more promptly than hitherto (Leach Pottery 1949, p.1)

This statement did not extend to porcelain teaset production which, for technical reasons, was '...limited and delivery may take longer than in other cases' (Leach Pottery 1949, p.3).

The 1951 (Leach Pottery 1951) catalogue remained similar to 1949, not changing until 1952 when an extended 'Note' is added, returning to pre-war themes (Leach Pottery 1937) by presenting a narrative around the Pottery's production and history. Of interest is a shift away from the ambitions of achieving the standards of Sung pottery to founding the Leach Pottery as '...an attempt by an artist-potter to discover and reapply standards of craftsmanship which had been largely forgotten in the passage from traditional hand-methods to large scale industrial production' (Leach Pottery 1952, p.5).

Tableware production was engaged with because it was perceived '...that a demand existed for good handmade domestic pots within the reach of the ordinary user' (Leach Pottery 1952, p.5). Bernard and David '...worked out a range of domestic shapes, low in price but maintaining the liveliness of form and beauty of texture and glaze inherent in good handmade pots (ibid)'. The production of these pots was later switched to stoneware '...because of its greater suitability for general use' (ibid). The text concludes '...that within a few years demand had exceeded supply...' and while orders had to be turned away, this was now not the case due to the team of trained workers which meant that output had been 'considerably increased' (ibid).

This statement remained consistent in 1954 (Leach Pottery 1954), being updated in 1957 (Leach Pottery 1957) to refocus on Leach's background in the East as the '...first Westerner to receive training in the Orient and the technique and design of the pots are an inter-blending of East and West' (Leach Pottery 1957, p.3). Similarly, Hamada and links with Japan are brought to the fore after being absent since 1937, with Hamada being elevated from 'assistant' to 'potter'. Further details of the wider Pottery team are also introduced, including information about David and his son Michael, with David joining Bernard at the Pottery in 1930, to eventually become his partner, and then leave the partnership in 1955 to establish his own pottery. More is divulged about the workforce of 9 permanent workers, partly comprised of 'local boys' taken in apprenticeship from 1938 onwards (Leach Pottery 1957, p.3).

The idea of a 'standard' is also introduced in a context other than the 'standards of

craftsmanship': 'Gradually a range of domestic shapes was standardised, low in price, but maintaining the liveliness of form and beauty of texture and glaze inherent in good hand-made pots' (Leach Pottery 1957, p.3) but it should be noted that the emphasis of Bernard and David doing this 'together' (Leach Pottery 1954, p.3) was removed. The leadership of Bernard Leach is reasserted, along with his international standing but, the reader is assured that 'The standard ware illustrated in this Catalogue is in equally wide demand' (Leach Pottery 1957, p.3). This is the first time that 'Standard Ware' is recognised in the catalogue literature.

The written element of the catalogues then remained mostly consistent through 1959-60 (Leach Pottery 1959), 1960-61 (Leach Pottery 1960), 1962-63 (Leach Pottery 1962) and 1964 (Leach Pottery 1964), with the most significant change to these catalogues being the addition of Janet Leach as a business partner: '...Bernard Leach remains in active leadership of this pottery, assisted by his wife, Janet Leach as partner in the business' (Leach Pottery 1959, p.3).

The narrative of the catalogues developed in the late 1960s and early 1970s as the undated catalogue (Leach Pottery n.d.), previously attributed to being pre-1972, further acknowledged both Janet Leach and William Marshall. Janet is recognised as becoming a business partner in 1956 and also contextualised as part of the historical and continuing cultural interchange:

...of visits and exhibitions and ideas between Japan and the St. Ives Pottery. This tradition was continued when Bernard Leach married Janet Leach in 1956 after she had been studying in Japan with Hamada and in the rural potteries for two years. (Leach Pottery n.d., p.2)

William Marshall receives his first mention as the first 'local boy' apprentice of 1938. More details are also provided on how the apprentice scheme was eventually abandoned and replaced by a system taught by Bernard, Janet and Marshall:

...due to the increasing number of young studio potters from all over the world who wanted to study at the Leach Pottery. The gradual evolvement has resulted in a crew of 5 young potter-trainees on a two year program, developing their own work as well as learning and making the Standard Ware in this catalogue. They are guided and taught by Bernard Leach, Janet Leach and William Marshall. (Leach Pottery n.d., p.2)

The 1972-73 catalogue (Leach Pottery 1972) contains the same Leach Pottery statement as the previous catalogue which was repeated in 1973-74 (Leach Pottery 1973) and 1974-75 (Leach Pottery 1974). Added to these catalogues, is an additional article titled 'Leach Pottery Standardware' written by Bernard in 1970. It offers an explanation of why Standard Ware is still a valid form of training for student-potters as '...students may teach themselves by our

words, example, good materials, throwing and firing techniques' (Leach Pottery 1972, p.1).

Leach believes that a '...standard of beauty and fine workmanship can emerge from a group, but the desire, the goodwill and the latency must be there' (ibid).

Leach also considers that repeat ware production has a spiritual, as well as aesthetic, dimension:

If you habitually make a lot of similar pots by hand, which you still feel are worthwhile, but not of your personal design, an expansion of the Real You, at the expense of the lesser ego, is bound to take place. You get outside the boundary of your own skin – your amputating mind – you make friends with clay, stone, ash and fire, dispassionately, but lovingly. All the efforts make you assess form, pattern, texture, and one must come to the criteria of real values. (Leach Pottery 1972, p.1)

This statement does not feature in the 1975 catalogue (Leach Pottery 1975), but returns in the final 1976 catalogue (Leach Pottery 1976). These final two catalogues offer an update to the Standard Ware narrative with John Leach, Atsuya Hamada and Shigeyoshi Ichino being acknowledged as previous student-potters. There was also a significant change in training at the Pottery following the withdrawal of Bernard who '...continued active leadership in the Pottery until 1974, when his failing eyesight forced him to concentrate solely on writing books...' and the leadership of the Pottery then passed to Janet (Leach Pottery 1975, p.5).

Appendix 1.3.4: Potters' Catalogues: Their Wider Use

Other potters and potteries making handmade repeat ware, in a Studio Pottery context, also use catalogues. Data was gathered using personal knowledge and through consulting potters and collectors.

John Leach's Muchelney Pottery (Muchelney Pottery n.d.) produces a printed catalogue which has existed in 'various formats for over 35 years, in its current A5 form it has been approximately 12 years' (Leach 2014b). The latest catalogue (J. Leach 2013) contained 50 tableware items represented in approximately 35 different forms. An earlier version (J. Leach n.d.) contained nearly 100 items: the current catalogue has a reduced range but an additional 50 forms, called the 'x-list', can be bought directly from the Showroom (Leach 2014a). Pots can also be bought online (Muchelney Pottery n.d.).

The Winchcombe Pottery (n.d.), revived by Michael Cardew, Bernard's first student (Whybrow 2006, pp.90–91), then owned by Ray Finch and now run by Mike Finch, offers Domestic Stoneware (Winchcombe Pottery n.d.) online. There are approximately 40 forms in 63 pieces

which are described with a separate page illustrating glaze variations (Winchcombe Pottery n.d.). The Pottery printed price lists of its standard range with the advent of early IT: pictures were added with the first website (Finch 2014).

The Crowan Pottery (Oliver 2013b), established by ex-Leach potter and student, Harry and May Davis (Whybrow 2006, pp.100–101), ran from 1946-1962, produced a listing (Oliver 2013a; Crowan Pottery n.d.) of tableware comprising approximately 27 forms through 56 pieces. The pots are described but not illustrated.

Other contemporary potters/potteries producing catalogues but not as closely associated with the Leach Pottery include the Selborne Pottery (Selborne Pottery 2014a) of Robert Goldsmith, with 17 ‘Standard Designs’ in its 2010 printed wholesale price list (Selborne Pottery 2010) including descriptions. In 2014 (Selborne Pottery 2014b), the designs featured alongside a brochure (Selborne Pottery n.d.) focussed on the visual qualities of the glazes. Made in Cley (Made in Cley n.d.) offers a range of ceramic items including its own online ‘Standard Ware’ catalogue (Made in Cley n.d.) which comprise 15 forms in 24 pieces, including descriptions and glaze swatches (Made in Cley n.d.).

Young Pottery (A & J Young Pottery 2014c), of Joanna and Andrew Young, do not produce a printed catalogue but once produced a leaflet with line drawings ‘...inspired by catalogues from the late 19th Century pottery factories like Pearson's of Chesterfield’ (Young 2014). Their illustrated online range comprises 9 forms (A & J Young Pottery 2014a) which is further supported by their ranges of illustrated domestic pots themed around four colours (A & J Young Pottery 2014b), with each range containing 13-14 forms.

Appendix 1.4: Leach Tableware

Appendix 1.4.1: Initial Diagrams of Forms

These diagrams were acquired from the Leach Studio over 2011 and 2012. Initially they were not available for all the forms in the range. A second version of some forms, with stylistic/technical changes, was added in 2012. These early diagrams were created by the Apprentice Potters.

There was sometimes a disparity between the name given to pieces by the Studio and their retail name in the Shop. For example, Figure 194 and Figure 195 were identified as the Small Tall Mug in the retail price lists (Leach Pottery 2011e; Leach Pottery 2011d; Leach Pottery

2012c; Leach Pottery 2011f; Leach Pottery 2010d; Leach Pottery 2013c; Leach Pottery 2009b), but the Studio titled them as the Medium Tall Mug: I linked the Studio and Shop titles by observing the similarities between the forms. The following diagrams are titled with the Shop code/name.

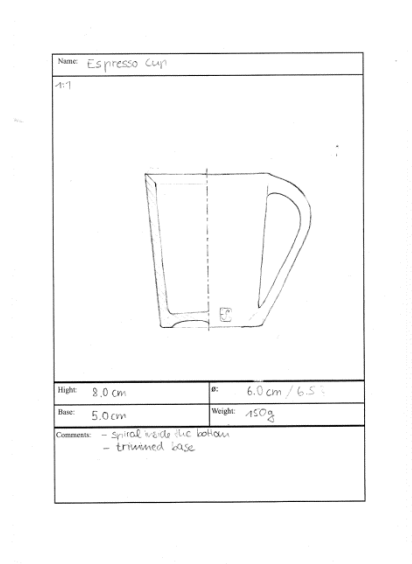


Figure 192: Leach Studio, LTW8 Espresso Cup Diagram, 2011

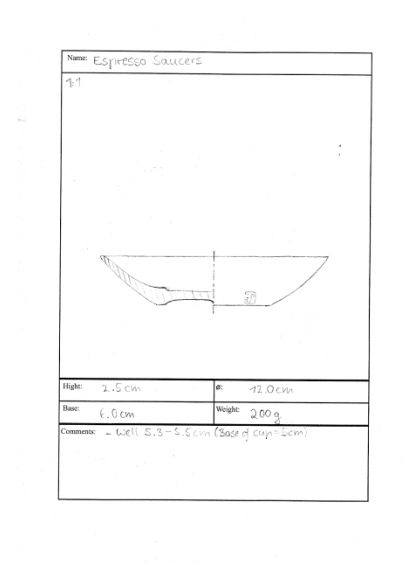


Figure 193: Leach Studio, LTW8 Espresso Saucer Diagram, 2011

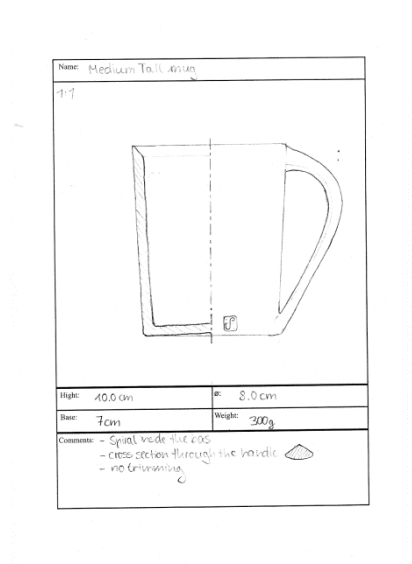


Figure 194: Leach Studio, LTW10 Small Tall Mug Diagram, 2011

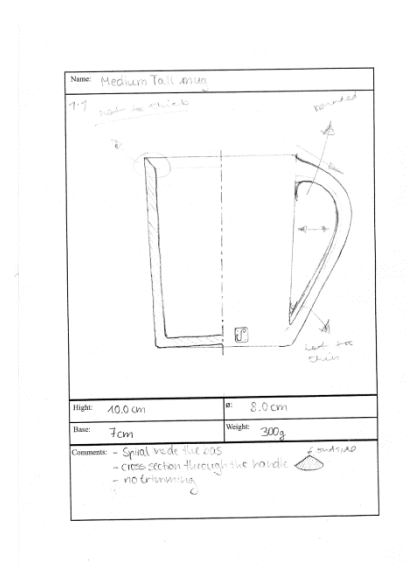


Figure 195: Leach Studio, LTW10 Small Tall Mug Diagram - Revised, 2012

Appendices: Appendix 1: The Cultural Heritage of Leach

Appendix 1.4.1: Initial Diagrams of Forms

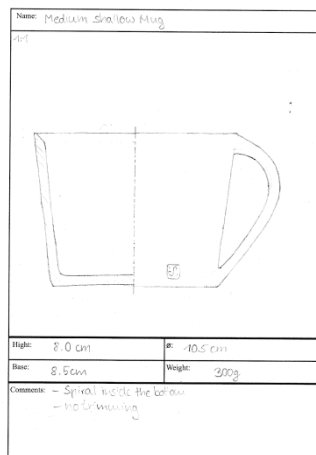


Figure 196: Leach Studio, LTW11 Small Shallow Mug Diagram, 2011

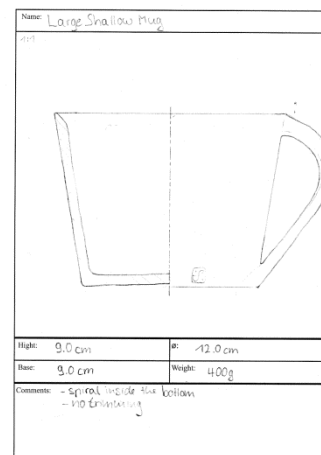


Figure 197: Leach Studio, LTW13 Large Shallow Mug Diagram, 2011

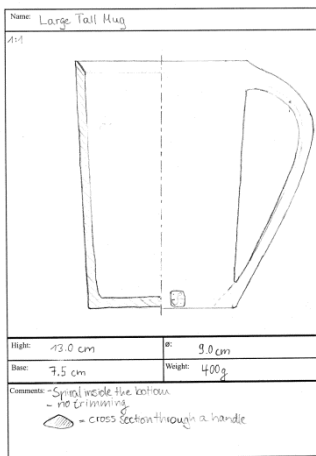


Figure 198: Leach Studio, LTW12 Large Tall Mug Diagram, 2011

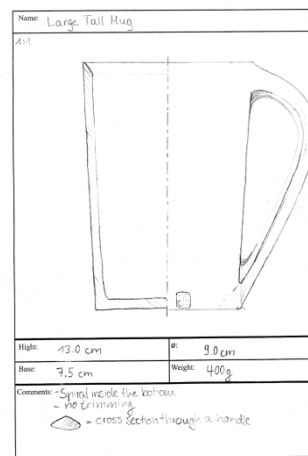


Figure 199: Leach Studio, LTW12 Large Tall Mug Diagram - Revised, 2012

Appendices: Appendix 1: The Cultural Heritage of Leach

Appendix 1.4.1: Initial Diagrams of Forms

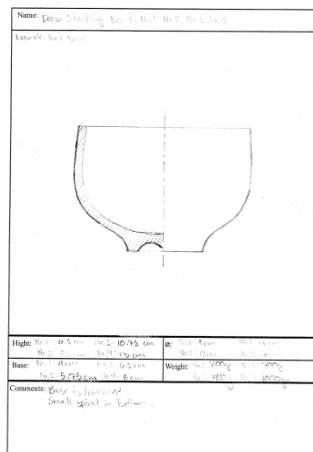


Figure 200: Leach Studio, LTW19-22 Deep Stacking Bowl Diagram, 2011

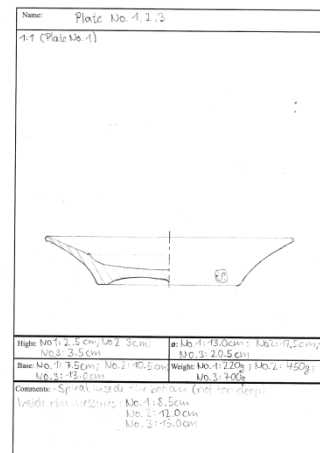


Figure 201: Leach Studio, LTW27-9 Plate Diagram, 2011

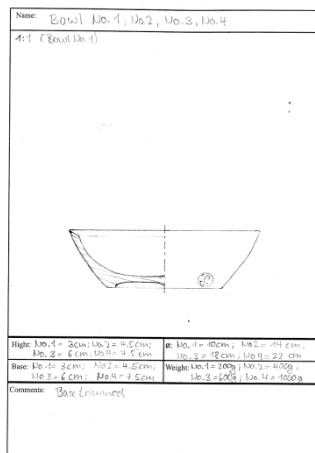


Figure 202: Leach Studio, LTW32-35 Shallow Stacking Bowl Diagram, 2011

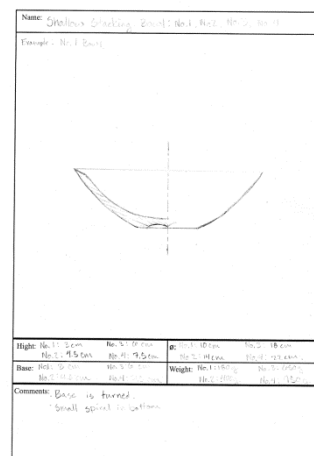


Figure 203: Leach Studio, LTW32-35 Shallow Stacking Bowl Diagram - Revised, 2012

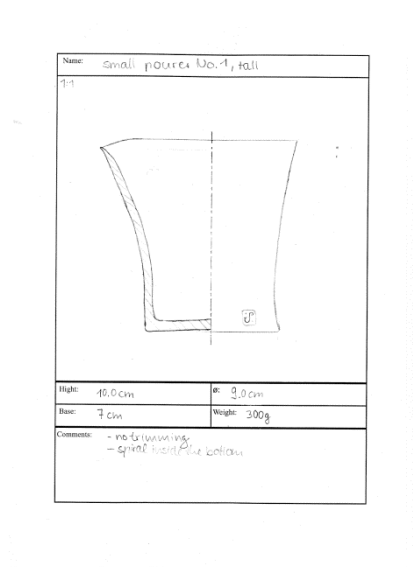


Figure 204: Leach Studio, LTW40 Small Pourer Diagram, 2011

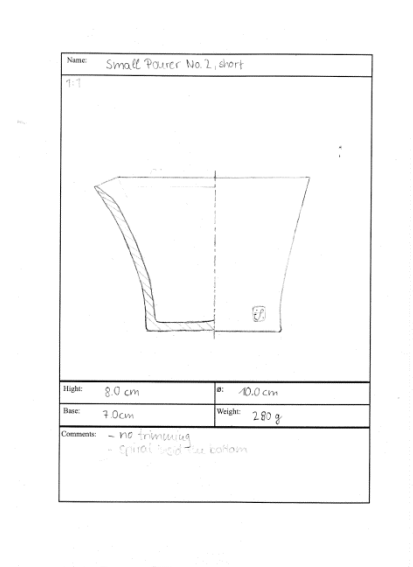


Figure 205: Leach Studio, LTW40 Small Pourer Diagram, 2011

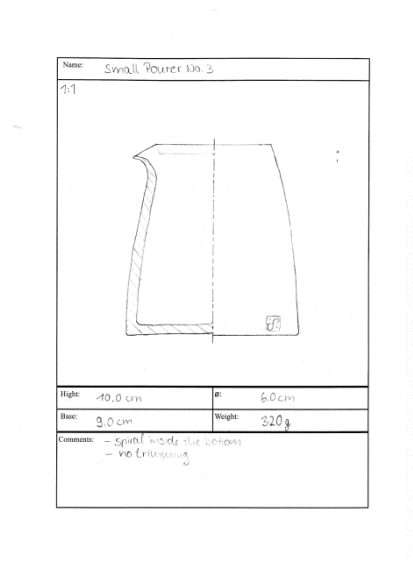


Figure 206: Leach Studio, LTW40 Small Pourer Diagram, 2011

Appendix 1.4.2: Final Diagrams of Forms

These are the final Leach Tableware diagrams as drawn by Jack Doherty in 2013. The titles follow the conventions of the Leach Tableware Price Lists: these diagrams closely adhere to this convention compared to the earlier Studio diagrams. It is only in Figure 217 that the

catalogue numbers assigned to the Deep Stacking Bowls are incorrect.



Figure 207: Jack Doherty, LTW8 Espresso Cup Diagram, 2013

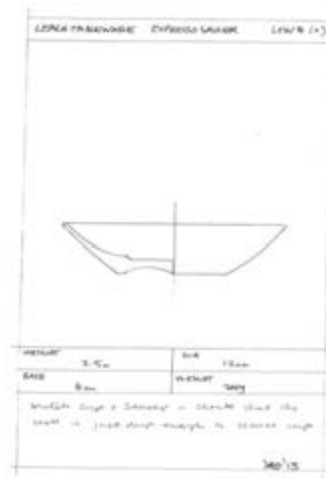


Figure 208: Jack Doherty, LTW8 Espresso Saucer Diagram, 2013

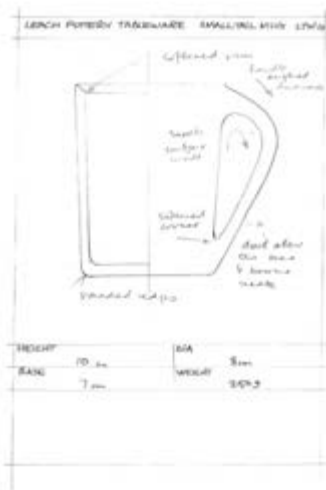


Figure 209: Jack Doherty, LTW0 Small Tall Mug Diagram, 2013



Figure 210: Jack Doherty, LTW11 Small Shallow Mug Diagram, 2013

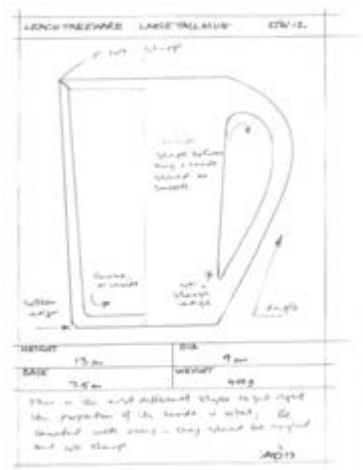


Figure 211: Jack Doherty, LTW12 Large Tall Mug Diagram, 2013



Figure 212: Jack Doherty, LTW13 Large Shallow Mug Diagram, 2013

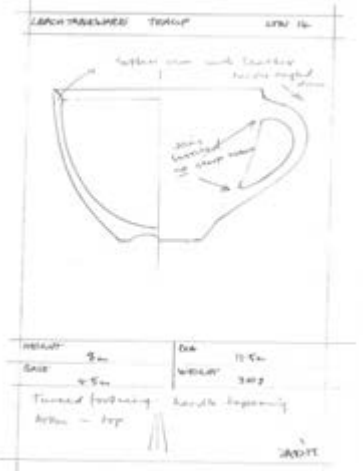


Figure 213: Jack Doherty, LTW14 Teacup Diagram, 2013

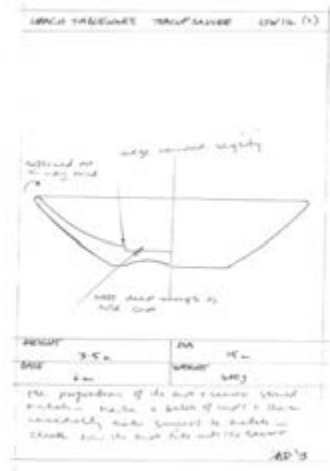


Figure 214: Jack Doherty, LTW14 Teacup Saucer Diagram, 2013

Appendices: Appendix 1: The Cultural Heritage of Leach

Appendix 1.4.2: Final Diagrams of Forms

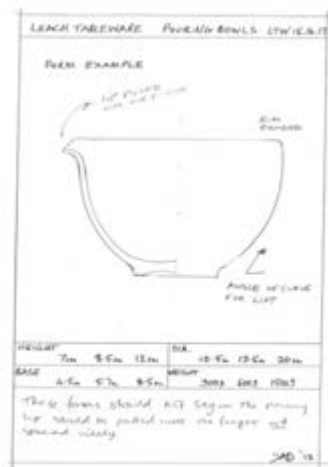


Figure 215: Jack Doherty, LTW15-17 Pouring Bowl Diagram, 2013

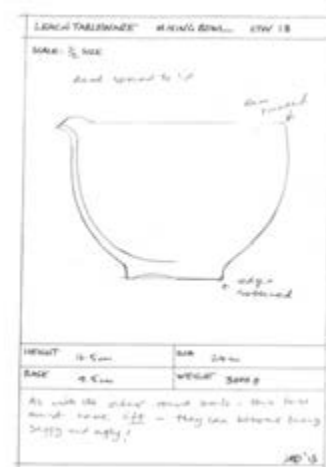


Figure 216: Jack Doherty, LTW18 Mixing Bowl Diagram, 2013

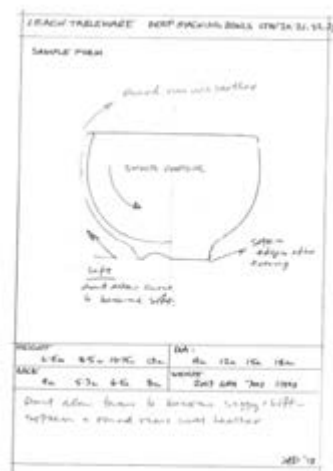


Figure 217: Jack Doherty, LTW19-22 Deep Stacking Bowl Diagram, 2013

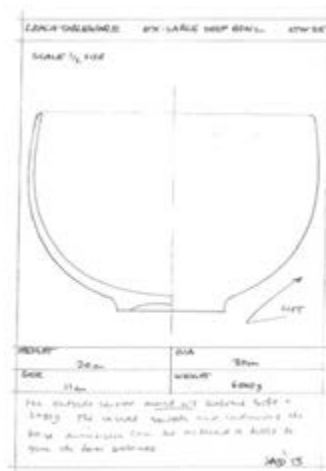


Figure 218: Jack Doherty, LTW25 Deep Stacking Bowl Diagram, 2013

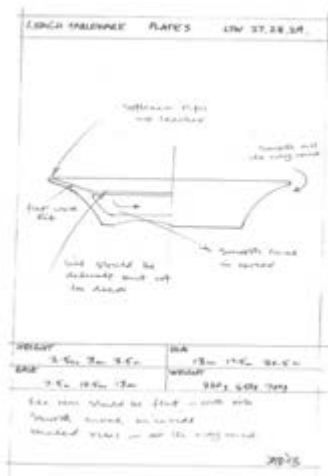


Figure 219: Jack Doherty, LTW27-9 Plate Diagram, 2013

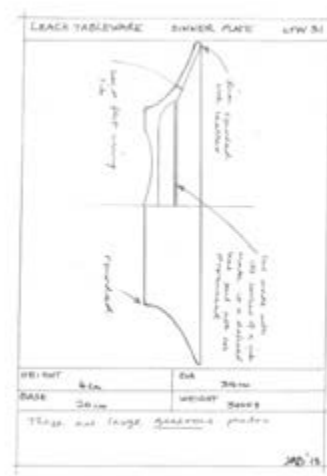


Figure 220: Jack Doherty, LTW31 Dinner Plate Diagram, 2013

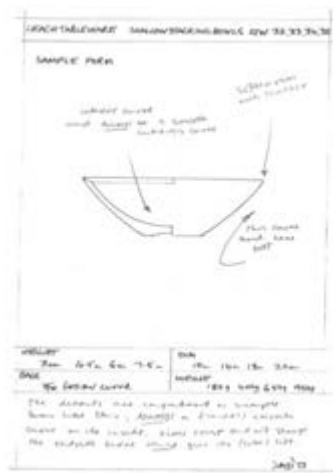


Figure 221: Jack Doherty, LTW32-5 Shallow Stacking Bowl Diagram, 2013

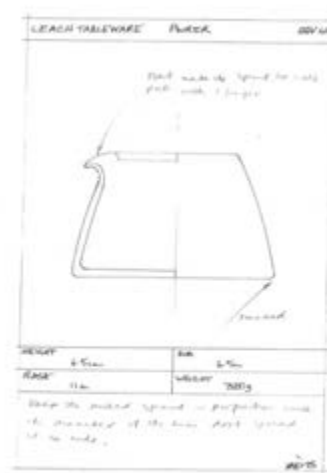


Figure 222: Jack Doherty, LTW40 Small Pourer Diagram, 2013

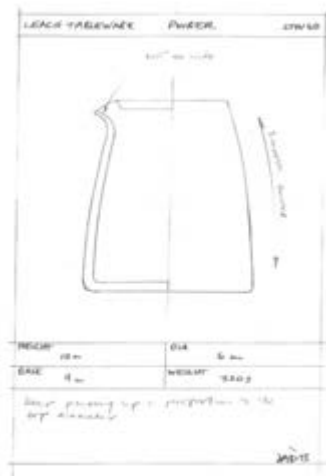


Figure 223: Jack Doherty, LTW40 Small Pourer Diagram, 2013

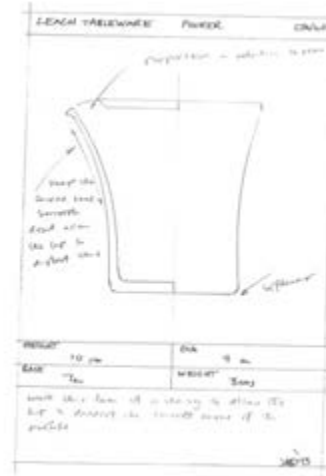


Figure 224: Jack Doherty, LTW40 Small Pourer Diagram, 2013

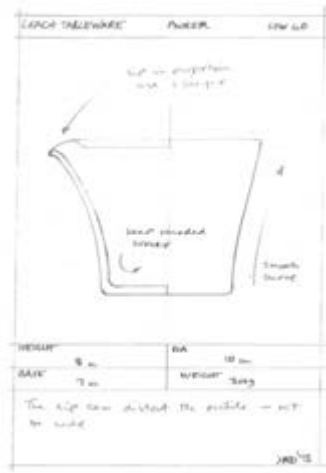


Figure 225: Jack Doherty, LTW40 Small Pourer Diagram, 2013

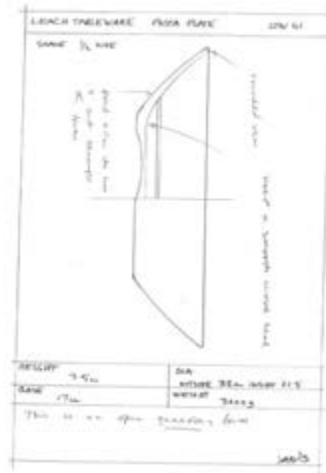


Figure 226: Jack Doherty, LTW41 Pasta Plate Diagram, 2013

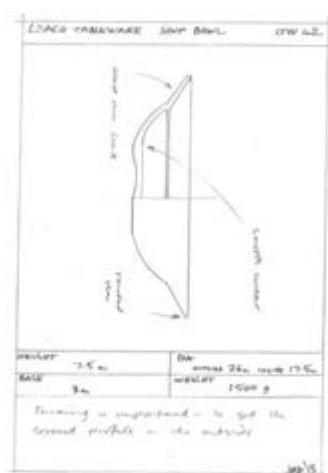


Figure 227: Jack Doherty, LTW42 Soup Bowl Diagram, 2013

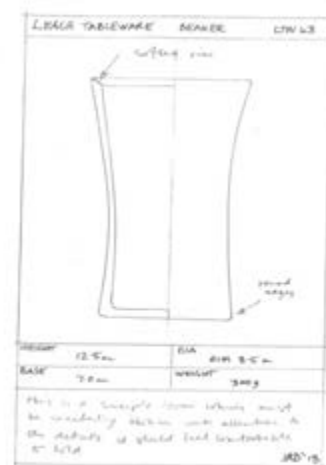


Figure 228: Jack Doherty, LTW43 Beaker Diagram, 2013

Appendix 1.4.3: Price Lists

Seven different price lists were identified: the first dates from October 2009 (Leach Pottery 2009b) and the final from January 2013 (Leach Pottery 2013c): Leach Tableware continued to be sold after this time, however there were no further design developments by Doherty. In October 2009, 11 designs can be counted comprising a total of 27 pieces. In January 2013, 14 designs can be counted over 32 pieces (LTW40 is counted as two designs over four pieces which were not recorded on the price list).

The early forms of the Mustard Pot, Pebble Bowl and Oval Bowl were dropped from the initial repertoire and, by 2013, the Tea Cup & Saucer, Dinner Plate, Pasta Plate, Soup Bowl, and Beaker, had been added. By December 2010 (Leach Pottery 2010d), the Mustard Pot, Small Pourer and Oval Bowls were identified as porcelain and removed from the range by January 2011 (Leach Pottery 2011f), from when the Leach Tableware offer remained largely constant for the next and final two years: 2011-12 (Leach Pottery 2011e; Leach Pottery 2011d; Leach Pottery 2012c).

Appendix 1.4.4: Leach Pottery Newsletter Narrative

It was found that the Leach Pottery newsletter offered a narrative of Leach Tableware development and production. In May 2008, Doherty (Leach Pottery 2008a) notes the maiden firing of one of the new kilns: ‘...tested the colours for the new standard ware range that we

will be producing and I'm really looking forward to expanding the range now'. There are also two Start-Up Potter opportunities for potters who want to pay rent to use the workshop and spend part of their time producing '...the new range of Leach standard ware' (ibid). By August of 2008, '...the first pieces of the new standard ware, designed by Jack, have been selling in the shop' and Jacob Bodilly and Michel Francois were appointed as the new Start-Up Potters (Leach Pottery 2008b). By the end of the first year, Bodilly and Francois are acknowledged as making the new tableware and the first image of the ware is presented in the form of an Espresso Cup & Saucer (Leach Pottery 2008c).

At the start of 2009, 'Most of the clay and slip testing was done during the summer [of 2008]...' and that iron-rich clay from Dobles, in St Agnes, was selected for the stoneware body (Leach Pottery 2009a). Doherty wanted the resulting pots '...to show the essential qualities of the clay, the making processes, and the firing' and sets out his intentions for the tableware to be 'affordable' and begin with the 'basics' of '...mugs, cups, stacking bowls and plates' to eventually include porcelain (ibid). Doherty considered that designing pots for other people to make was challenging (ibid) – he proposed to return to writing about the evolution of tableware in later issues, but no significant mention of tableware was made in the further three 2009 issues.

At the start of 2010 (Leach Pottery 2010a), a regular firing pattern was established during the winter and Kat Livesey [Wheeler] and Midori Endo had joined the Studio to make a total of three potters. Later in the year, a larger area of the Shop was dedicated to tableware display and Ella Phillips became the fourth potter to join the Studio (Leach Pottery 2010b). Towards the end of 2010, Livesey and Endo had left to be replaced by Britta Wengeler and Christmas saw the launch of new tableware pieces and a new exhibition: 'Setting the Place', curated by Doherty, featuring '...tableware entirely made in the Leach Pottery studio and will include our standard range plus a number of new additions designed and made by Jack especially for this show' (Leach Pottery 2010c).

In early 2011, Wengeler had left to be replaced by another German potter on a short residency: Gordon Grann (Leach Pottery 2011a). Doherty notes: 'Previously we have expected potters to come here for one/two year periods, but I will broaden this to include shorter work placements for experienced production potters' and acknowledges that developing the range and production is a 'major concern' (ibid). Doherty aimed to add new shapes to the range and was '...working on a series of jugs, oval serving dishes and large platters' (ibid). Tableware was

beginning to be sold outside of the Pottery with the New Craftsman, St Ives, taking stock for the summer and the Studio undertaking their 'first large commission, which is a 16 piece dinnerware setting for a client in London, and also shipping a collection to the American School in Taipei' (ibid).

In the Summer newsletter, Doherty asserts the significance of training: 'As well as sound practical workshop experience, I feel strongly that the training we give to our apprentices should help them get to grips with the basics of running their own business' (Leach Pottery 2011b). At the end of the year, the Pottery announced its first entry-level pottery apprentice: Felix Attlee and the departure of Phillips' (Leach Pottery 2011c). Doherty says: 'I am pleased that she is the third apprentice from the pottery, in the last four years, who has moved on to work independently. This is how the apprenticeship system works best' (ibid). The Pottery also collaborated with a local restaurateur to become a pop-up restaurant venue necessitating the 'Making, drying and firing the 254 pots needed in a couple of weeks gave us a few late nights, but all potters out there will know this one' (ibid).

In early 2012, the number of external outlets increased to include the Courtauld Institute at Somerset House, with work being sent to three exhibitions in Japan later in the year (Leach Pottery 2012a). In the Studio, there were three potters: Wheeler, Endo, and Wengeler (ibid). Later in the year, Endo left to be replaced by Japanese potter Yumi Seko and Phillips briefly returned (Leach Pottery 2012b).

In 2013, it was announced that Doherty had left the Pottery on January 14th and the Pottery stated its intention to advertise a new post of Senior Production Potter and for the title of Lead Potter to become an honorary position filled by John Bedding (Leach Pottery 2013a). The Studio reported that it had been undertaking clay and slip tests to improve Tableware quality (ibid). Later in the year, Roelof Uys was appointed Senior Production Potter and Wengeler began maternity leave (Leach Pottery 2013b). It is noted that Uys '...will supervise the training of student apprentices and visiting interns, and oversee the production of the new Leach Tableware' (ibid).

A recurring narrative through the Newsletters is that the Tableware is in high demand and the Studio is working to try and meet that demand, creating a sense of scarcity.

Appendix 1.4.5: Methods of Making

Appendix 1.4.5.1: A Training Session with Jack Doherty 13/01/11

This was a formal training session that I attended at the Leach Studio, in January 2011, where Jack Doherty demonstrated making the Soup Bowl, Dinner Plate and Pasta Plate, and the pulled handles of the mugs. A brief photographic overview of the demonstration follows. My interest was not throwing as the method, but the methods/tools used as part of the throwing to measure and shape the forms.



*Figure 229:
Jack
Doherty,
Checking
Clay Weights
in Sketch
Book, image
M. Tyas
2011*



*Figure 230:
Jack Doherty,
Using
Callipers to
Check
Diameter of
Soup Bowl,
image M.
Tyas 2011*



*Figure 231:
Jack
Doherty,
Using Plastic
to Profile
Soup Bowl
Rim, image
M. Tyas
2011*



*Figure 232:
Jack Doherty,
Marking
Diameter of
Dinner Plate
on Desk,
Prior to
Setting
Callipers,
image M.
Tyas 2011*



*Figure 233:
Jack
Doherty,
Checking
Width of
Pasta Plate
with
Callipers,
image M.
Tyas 2011*



*Figure 234:
Jack Doherty,
Using
Turning Tool
to Profile
Pasta Plate,
image M.
Tyas 2011*



*Figure 235:
Jack
Doherty,
Rolling Clay
into Carrots
for Handle,
image M.
Tyas 2011*



*Figure 236:
Jack Doherty,
Assessing
Pulled
Handle,
image M.
Tyas 2011*



*Figure 237:
Jack
Doherty,
Examples of
Pulled
Handles,
image M.
Tyas 2011*



*Figure 238:
Jack Doherty,
Example of
Pulled
Handle; Note
Pronounced
Middle
Ridge, image
M. Tyas 2011*

Appendix 1.4.5.2: Approaches to Making Handles

Here are examples of how potters in the Leach Studio make and attach handles, specifically Leach Apprentices Ella Phillips and Britta Wengeler, and Studio Assistant Jacy Shi. The purpose of this Section is to demonstrate the different methods, but not necessarily to illustrate the whole process of handle making. However, the overview of the different approaches does give a strong indication of the complete method.

In Figure 239, Figure 240, and Figure 241, Leach Apprentice Ella Phillips places a pre-pulled handle onto a profile that has been sketched on the bench: this provides a guideline for the shape and extents of the handle which can then be cut to size and re-shaped accordingly.



*Figure 239:
Ella Phillips,
Aligning
Handle to
Profile on
Bench,
image M.
Tyas 2011*



*Figure 240:
Ella Phillips,
Cutting
Handle to
Profile on
Bench,
image M.
Tyas 2011*



*Figure 241:
Ella Phillips,
Cut Handles
Assembled
for
Application
to Mugs,
image M.
Tyas 2011*



*Figure 242:
Leach Studio,
Large
Shallow
Mugs in
Process of
Having
Handles
Attached,
image M.
Tyas 2011*

Britta Wengeler used a handle, pre-cut to the correct proportions, as a template for trimming other pre-pulled handles (Figure 243). Before trimming the handles, the mugs are prepared by scoring and slipping (Figure 244). The handles are attached and the moisture in the joint given time to equalise (Figure 245) before being finishing (Figure 246). Wengeler's approach to handle making developed during the research: she found the handles time consuming to make using the Studio's prescribed methods of shaping and attaching compared to pulling the handle from the pot which she increasingly did. Wengeler concedes that Doherty may not have been happy, from a designer's perspective, with the slightly different look but she went from completing one handle in 20 minutes, to taking 10-12 minutes per handle and eventually completing one every 3 minutes (Wengeler & Wheeler 2014).



*Figure 243:
Britta
Wengeler,
Using a
Correctly Cut
Handle as a
Template to
Trim Others,
image M.
Tyas 2012*



*Figure 244:
Britta
Wengeler,
Mugs
Slipped and
Scored in
Preparation
for Handles
Being
Attached,
image M.
Tyas 2012*



Figure 245: Britta Wengeler, Mugs with Handles Attached Awaiting Finishing, image M. Tyas 2012



Figure 246: Britta Wengeler, Finishing the Handle and the Mug, image M. Tyas 2012

Jacy Shi, a Studio Assistant, was, on this occasion, practicing handle making. It is interesting to note Shi using the same method of making employed by other potters, which is to pull the handle but also diverges from this method in using the bench (Figure 247) to act as a co-former. Shi had also sketched a handle outline on the bench (Figure 248) on which to base the handles.



Figure 247: Jacy Shi, Using a Bench to Shape the Handle, image M. Tyas 2012



Figure 248: Jacy Shi, Note the Outline of a Handle (Lower Right) to Act as a Template, image M. Tyas 2012

Appendix 1.4.5.3: Leach Apprentice Kat Wheeler Throwing Deep Stacking Bowls and Other Forms

This series of images shows how Kat Wheeler throws the Leach Tableware Deep Stacking Bowls and calibrates her tools in order to begin a production batch. Wheeler and Doherty discuss the task (Figure 249) and the measurements and measures are prepared (Figure 250). The height (Figure 251) and width (Figure 252) of the first pots are established. The internal (Figure 253) and external (Figure 254) shape are formed. The measurements are re-checked

and the pointing gauge established (Figure 255 & Figure 256). The first pot is finished (Figure 257) and the next started (Figure 258).

The purpose of this exercise was to produce a range of good examples of different bowl forms, as requested by Lead Potter Jack Doherty, as the basis for designing a set of tools to support their production (see '5.2.3: Shaping & Measuring: Deep and Shallow Stacking Bowls'). After this demonstration, Wheeler proceeded to make further Deep Stacking Bowls and a series of Shallow Stacking Bowls (Figure 259 & Figure 260).



Figure 249: Jack Doherty, Discussing the Bowl's Curve, image M. Tyas 2012



Figure 250: Kat Wheeler, Ruler and Callipers for Measuring Forms Plus Notes on How to Make the Forms, image M. Tyas 2012



Figure 251: Kat Wheeler, Checking Height of Pot with Callipers, image M. Tyas 2012



Figure 252: Kat Wheeler, Checking Width of Pot with Callipers, image M. Tyas 2012



Figure 253: Kat Wheeler, Using Kidney to Get Inner Profile, image M. Tyas 2012



Figure 254: Kat Wheeler, Using Wooden Rib to Shape and Compress Outer Wall, image M. Tyas 2012



Figure 255: Kat Wheeler, Re-Checking Height of Pot with Callipers Prior to Calibrating the Pointer on the Right, image M. Tyas 2012



Figure 256: Kat Wheeler, Re-Checking Width of Pot with Callipers Prior to Calibrating the Pointer on the Right, image M. Tyas 2012



Figure 257: Kat Wheeler, Compressing Rim and Final Shaping, image M. Tyas 2012



Figure 258: Kat Wheeler, Throwing Second Bowl to the Now-Established Pointer, image M. Tyas 2012



Figure 259: Kat Wheeler, Two Completed Deep Stacking Bowls, image M. Tyas 2012



Figure 260: Kat Wheeler, Selection of Shallow Stacking Bowls, image M. Tyas 2012

Appendix 2: Potter's Tools & The Leach Pottery

Appendix 2.1: Potters and Tools: An Overview

Appendix 2.1.1: A Western Perspective

With reference to the development of my practice, I recall a scarcity of general texts that addressed tools. The Encyclopaedia of Pottery Techniques (Cosentino 1990) provided early reference material, allocating its first part to methods and tool use which were demonstrated in their own right. The Complete Practical Potter (Warshaw 2001) also focussed heavily on methods and specialised tool use, doing this through the narrative of individual projects.

It is only in a more contemporary text like 250 Tips, Techniques and Trade Secrets for Potters (Atkin 2011) where there is a consolidated approach to the topic of tools where it begins with a chapter on 'materials, tools and equipment'. Compared to previous texts, it clearly illustrates a wide range of tools, their names and applications, as well as advocating the improvisation of tools to save money and more closely serve the maker's needs. The remainder of the book articulated the role of tools within the processes, demonstrating how closely tools are linked to practice.

In a similar vein, Simon Leach's Pottery Handbook (S. Leach 2013) provides an overview of process including guidelines on making simple tools and examples of different methods often supported by tool use. Texts like Potters' Tips (Cooper 2006b) also provide examples of tool and simple device making to aid pottery production: it reflects the ingenuity of the potter to make tools and adapt equipment.

There is also a market for a wide variety of pre-made potter's tools that can be used in processes like shaping, stamping, forming, cutting, throwing, turning, and sculpting (CTM 2014, pp.14, 17–19, 21–22, 24, 26, 27; Top Pot Supplies n.d.; The Potters Connection Ltd n.d.; Potclays Limited 2008, pp.35–39; Pottery crafts Ltd 2009, pp.07.2–07.17).

Appendix 2.1.2: An Eastern Perspective

The above texts approach tools and making from a Western perspective sometimes also informed by Eastern practice and methods. My early potting was also inspired by texts more Eastern in background. These texts were quite in-depth compared to some of the texts above. For example, *The World of Japanese Ceramics* (Sanders & Tomimoto 1976), first printed in 1967, provides insights into tools and practice to the extent of naming, illustrating and contextualising particular tools and methods – the tool is foregrounded in such a way as to present it as a practice in itself. *Inside Japanese Ceramics: A Primer of Materials, Techniques, and Traditions* (Wilson 1995) provides, again, a separate illustration and description of tools then systematically demonstrates different processes and methods for making various forms using these tools.

Appendix 2.1.3: Tool Making

The *Japanese Pottery Handbook* (Simpson & Sodeoka 1979) provided a refreshing contrast to the previous texts in its casual artist's-like approach to tools and pot making through a hand-written and hand-illustrated guide to a wide array of tools and their use and, importantly, also introducing tool making. However, such texts generally fail to engage with tool making in any depth and its significance as an activity in its implication for practice. This area of making and thinking is addressed in *Handmade Potter's Tools* (Whitford & Wong 1986) which presents an account of tool making and experimentation with Western materials. It argues that tool use and tool making is closely bound with ceramics practice and is potentially a catalyst for expression and innovation, a way of resisting specialisation and therefore exploring the physical world and making with it. However, the text is also critical of much Western practice, for example: 'So often Japanese techniques are only used to make fake Japanese pots' (Whitford & Wong 1986, p.8). For them, tool making, like practice, must be progressive and grounded in the context of the maker and contemporary culture. Although the structure of their arguments are, at times, tangled and their tone is confrontational towards potters and tool suppliers, I found many of their arguments inspirational for this research and would recommend the text to anyone with an interest in tool making and critical engagement:

Sophisticated techniques (that is, techniques that require high technology or support mechanisms such as high-quality steel, electricity, wealth, etc.) do not impede the ability to put life into a pot, but they extend the range of applying this sense of materials. Regardless of the level of technology, all potters work with clay, and it all comes down to working with the material, carrying on a dialogue with it, rather than imposing your will on it. (Whitford & Wong 1986, pp.17–18)

Appendix 3: Lineages of Forms & Standards

Appendix 3.1: Standard Ware Lineage: Methods for Treating Catalogues

The '4.1.2: Standard Ware Lineage: From Handmade Fireproof Stoneware (c. 1939-1945) to Standard Ware (1976)' is compiled from the data found in Leach Pottery catalogues: the most extensive collection of catalogues exists at the Crafts Study Centre, Farnham. Prior to visiting the Centre in 2011, the available catalogues were identified online and the best examples photographed. Some undated catalogues were also photographed.

Microsoft Excel was used to manage the catalogue data, recording data in the fields of Year and Title. Notes were also made on whether it was a complete catalogue or comprised of print or images only, on the source of the catalogues, and on the filenames of the images relating to each catalogue.

The lineage comprises four main periods of production, or more accurately, style. Analysis of the catalogues presents three positively identifiable periods: 1946-54; 1957-61; 1972-76. An additional period is also attributed to 1939-45 on the basis of its reference to the War. It is not impossible that the pre-1946 catalogue was published in 1946 but before the pictorial edition; however this is assumed as unlikely. Most other undated catalogues have been excluded from the lineage because they either contained photographic data already featured in dated catalogues or contained no photographic data: none of the undated catalogues contained images that were not present in dated catalogues. The Crafts Study Centre's archive formed the backbone of the lineage with a collection of around 21 different catalogues.

Appendix 3.2: Standard Ware Lineage: Methods for Treating Catalogue Contents

Once the catalogues had been identified and grouped into periods Excel was used to track which images best represented each period. Data from the catalogues was entered into a further spreadsheet, in the following fields: Catalogue Title; Year; Page #; Page Title; Cat #;

Description; Dia. x Ht.; Glaze. This exercise aided the management and comparison of what data about the forms was available. Almost 950 entries were made under these headings: the data aided cross-referencing Standard Ware images using their associated catalogue numbers in a format that could be searched and compared.

To create the lineage, the individual pots were cut-out from the Standard Ware catalogue images using Adobe Photoshop layer masks: each image was saved as a .PSD and named using its Catalogue Number, Title, and Dimensions. These files were pulled into Adobe InDesign. The cut-outs of some pots have resulted in incomplete visuals when another piece of ware was placed before them in the photograph.

The lineage's design developed through several iterations, beginning with a collection of Standard Ware pottery images in the shape of the Leach Pottery St Ives 'S' stamp. As the comparative aspects of a Lineage became more significant, so the scope of the map became larger, with the identification of four main periods suggesting that a linear A3 format would allow the data to be presented in the most meaningful way within the context of the thesis.

The images of pots are scaled in relation to their measurements, therefore the forms within the same catalogue, and between catalogue periods, can be readily compared. It is assumed that this was not the intention of the original Standard Ware catalogues. Titles and measurements are also included.

Measurements were not available for all the forms, especially those associated with holding liquids e.g. jugs. In these cases, real-world examples of the corresponding ware were sought out using the images in the lineage as an identification guide. In order to more correctly identify the forms, their stated volumes were tested. Having been positively identified, their measurements were recorded as a guideline for the lineage and added to the spreadsheet, but not added to the lineage as they were used as a guideline for producing the lineage but they are not a statement of their rightness in relation to the Leach Pottery's original design intentions.

Measurements could not be confirmed for every form, in which case their proportions were estimated in relation to pieces of a similar function/shape/volume or scaled in relation to other pieces that they were photographed alongside. For example, in the 1957-61 catalogues, #28 appears alongside #7 #8. However, #28 from 1946-54 appears on the same page as #21 which is also a jug, but they have all been cut-out so the assumption has been made that the

images were inserted into the original catalogue relative to each other.

All wares that were represented in catalogue photographs, or drawings in the instance of the first period of Standard Ware, appear in the lineage. Not all of the forms listed in the text of catalogues were visually described and where the title of a pot exists but there is no image to support it, is not featured. For example, the 'Celadon Teasets' associated with the 1946 to 1954 period are an iconic product of the Pottery and some of the items from it, like the Teapot, can be readily identified as they are engraved with an 'oakleaf'. However, the catalogues present no photographic evidence to support this, and it is not my intention to work on an assumption that they are connected: an assumption that would have to be extended with less readily identifiable pieces if they were sourced for the lineage. It is not my intention to suggest that a piece of Leach Pottery, that cannot be identified in the record of the Pottery catalogues, should be classed as a particular example of Standard Ware on the basis of a brief textual description.

Appendix 4: Practice

Appendix 4.1: Equipment

Unless otherwise stated, the equipment listed here has been accessed as part of the resources available at Falmouth University and used in accordance with their Health & Safety guidelines.

This section focusses on digital equipment: it is not a detailed guide on the equipments' use as this differs between machines and organisations. It is the practitioner's responsibility to seek the appropriate instruction, follow safety protocol and understand how best to use available equipment.

Appendix 4.1.1: Laser Cutters

Appendix 4.1.1.1: Laser Cutter General Overview

During the research two laser cutters, at Falmouth University, were used.

The FB700 (CadCam Technology Ltd 2006) was the most basic machine and the first one that I learned: it can be used independently by students after training.

The second laser cutter was a Trotec Speedy 500 (Trotec Laser Inc 2008; Trotec Laser Inc n.d.; Trotec Produktions und Vertriebs Ges.m.b.H. 2011) that required the support of the

University's Technical Instructors during its operation by undergraduate students: after training I was able to operate it under my own supervision. This was a more complicated machine but also more accurate and powerful.

Appendix 4.1.1.2: Laser Cutter Material Tests

The laser cutters were used for the cutting and etching of materials, especially acrylic, wood, cardboard and plaster. I often undertook small series of tests to explore the power and velocity settings with particular materials. For example, Figure 261 shows a series of power tests undertaken on the FB700 to look out the different depths of etching that could be achieved through the back of mirrored acrylic.

When using the laser cutters in a bespoke cutting/etching context, the Trotec proved the most flexible and consistent machine. However, the settings arrived at on either machine, for a particular material, did not remain consistent over time. Therefore, settings usually had to be re-tested each time they were applied.

When working on the laser cutter, often in limited time slots, I would make notes on whatever was handy, but also found it useful to write cutting notes, like velocity and power settings, on the target material, when possible (Figure 262) or make them an integral part of the test.



Figure 261: Matthew Tyas, Laser Cutter Power/Etching Test Swatches, image M. Tyas 2011

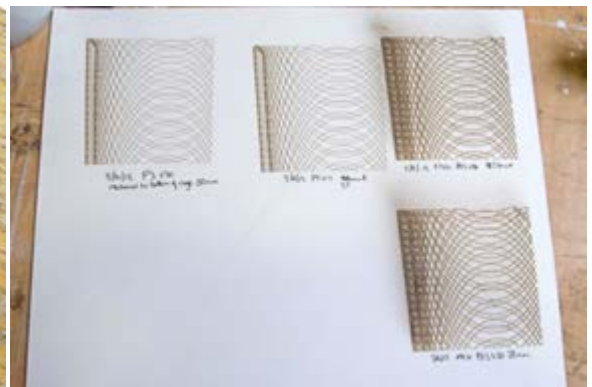


Figure 262: Matthew Tyas, Different Settings Explored for Paper Drawing, image M. Tyas 2013

Appendix 4.1.2: Milling Machine

The milling machine used in the research was the Roland MDX-500 (Roland DGA Corporation n.d.; Roland DGA Corporation 1999) .

Appendix 4.1.3: 3D Scanner

The 3D rotational scanner used in the research was the Roland LPX-250 Picza 3d scanner.

Appendix 4.1.4: CNC Router

The CNC router used in the research was built and operated by Aaron Moore of Reform Furniture⁴⁵.

Appendix 4.2: Methods of Making & Research Practice

This appendix presents an overview of the methods of practice learned, developed and employed in the research.

Appendix 4.2.1: Milled Decoration: Slip-Cast Beakers

The following beakers are based on Dr Katie Bunnell's Bunny Beakers (Bunnell n.d.) (Figure 37) and involved the creation of milled decoration and a silicon rubber jacket.

Bunnell (n.d.) provides a description of how the idea for the Bunny Beaker design was arrived at and the methods used to achieve it. I worked through these methods in order to understand the process and repurpose it.

Appendix 4.2.1.1: Bernard Leach Sketches

A Bernard Leach sketchbook at the Leach Pottery caught my eye. The entire sketchbook may date to 1962 and I was especially drawn to the landscape themes and worked with an image of sheep.

Appendix 4.2.1.2: Working with Adobe Illustrator

I began to isolate and develop areas of the image that were of interest using Illustrator as I needed a vector file for the laser cutter (Appendix 4.1.1: Laser Cutters) and milling machine (Appendix 4.1.2: Milling Machine). I began by tracing over its lines (Figure 263) and isolating them (Figure 264). I also blocked out areas of wash and considered these areas in relation to the original. Having found the elements that interested me, I reconfigured them into a format suitable for cutting and milling the beaker jacket (Figure 265).

⁴⁵ <http://re-formfurniture.co.uk>



Figure 263: Matthew Tyas, Drawing Outlines in Illustrator, image M. Tyas



Figure 264: Matthew Tyas, Isolating Outlines in Illustrator, image M. Tyas



Figure 265: Matthew Tyas, Development of the Design in Illustrator, image M. Tyas

Appendix 4.2.1.3: Laser Cutting & Milling



Figure 266: Matthew Tyas, Early Experiments with the Milling Machine; Width and Depth of Line, image M. Tyas

As these drawings were developing, I began experimenting with the laser cutter to learn how to cut with it and how it cut the lines in acrylic.

I also adopted an experimental approach to the milling, examining how the line was defined by milling at different depths into the acrylic and using ball nose tools with different diameters (Figure 266). The milling files were configured and sent to

the milling machine using Mayka Expert 7.0. The cutting paths for the core and acrylic former

each required different configurations.

These initial experiments in acrylic and the milled core, used for wrapping the silicon design around, were all produced at 50% of the design size to reduce the overheads in materials and time to cut and mill tests. The finished model board core (Figure 267) was eventually superseded by a core made at full-scale on the plaster lathe: given my relative inexperience with the mill and the difficulties in sometimes finding personnel to support my technical needs, it proved quicker and cheaper to make the core by hand.

Turning on the lathe was done when the plaster had cooled so as to maintain accurate size and reduce the risk of further contraction. A range of chisels were used to remove the excess plaster and a profile, made from laser-cut acrylic, provided the exact profile of the form: removing plaster from the core where it made contact with the profile. The final full-size version of the silicon rubber jacket (Figure 268) was then fitted around the core which became the model from which to cast a one-part dropout mould (Figure 269) from.



Figure 267: Matthew Tyas, Milled Beaker Core – Hand-Sanded, image M. Tyas



Figure 268: Matthew Tyas, Silicone Rubber Designs for Wrapping Around the Core; Full-Size at Bottom, image M. Tyas

Appendix 4.2.1.4: Casting Slip

I developed a 'rustic' casting slip from the Leach Pottery's used throwing body that was awaiting reclaim. For the previous two years, the Studio had been storing its waste clay outside with the eventual aim of reclaiming it. This could prove an efficient way of using the material to produce a new form and simultaneously reduced backlog of reclaim.

After mixing the dry clay shavings with water, and prior to de-floculation, the slip was put through a 40 screen mesh to remove larger particles but retain some textured particles. I used the following formulation for the casting slip: 10kg powdered clay, 12-30g Sodium Sil.140, 12g Soda Ash, 4000cc water. This recipe was provided by Potclays (Potclays Limited 2008).

Slip Casting

After being dried and allowed to cool, the mould (Figure 269) was ready for its first waste cast (Figure 270).



Figure 269: Matthew Tyas, Drop-Out Mould with Pouring Reservoir, image M. Tyas



Figure 270: Matthew Tyas, Detail of First Waste Cast – Note Plaster Nodule in the Design, image M. Tyas

After casting, some pieces were decorated with slip to enhance their colour in the soda firing at the Leach Pottery. I also applied a small amount of sand to the bases of some of the pieces: an aesthetic that I like to explore.

Appendix 4.2.1.5: Glazing & Firing

The model and mould making, casting and biscuit firings were all completed at Falmouth

University; most of the glost firings were undertaken in the Leach Pottery's soda kiln. One piece was glost fired in an electric kiln at University.

Appendix 4.2.2: Tool Making

This appendix provides an insight into some of the methods, processes and materials involved in the tool making. The tools' development, and their allocation to particular Leach Tableware forms, was tracked in an Excel spreadsheet (Figure 271). All the models and tool diagrams were drawn and consolidated into one Rhinoceros 3D file.



Figure 271: Matthew Tyas, Excel Spreadsheet for Managing the Tool Making/Research, screenshot 2014

Appendix 4.2.2.1: Returning to the Dragonfly Tool in Personal Practice

While throwing a batch of personal work, during the early stages of the research, I thought it would be useful to have bespoke tools for specific forms in my repertoire: I made them from acrylic off-cuts to mark the depth of the intended piece (Figure 272). This makeshift tool was neither highly practical nor beautiful, but it performed its function. This exercise inspired me to think about the application of the dragonfly tool to the context of the Leach Studio.

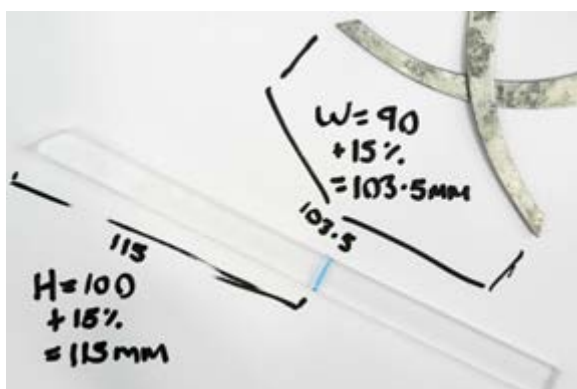


Figure 272: Matthew Tyas, Tools to Measure Width and Height, image M. Tyas 2011

Appendix 4.2.2.2: Early Dragonfly Tools

Having acquired a small number of Leach Tableware form diagrams (see 'Appendix 1.4.1: Initial Diagrams of Forms'), I imported the diagram for the Shallow Stacking Bowl (Figure 202) into Rhinoceros 3D, traced its profile (Figure 273) which was used to sketch the outline of how the dragonfly might look. I then adapted the design for production in acrylic for cutting

on the laser cutter (see 'Appendix 4.1.1: Laser Cutters').

As the design developed, I thought it might also be useful to include the curve of the outside

wall of the bowl in the tool, to aid potters during the turning phase of the work (Figure 274).

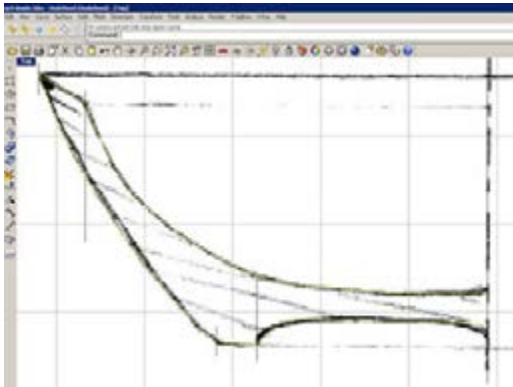


Figure 273: Matthew Tyas, Tracing Contour of Bowl in Rhino 3D, screenshot 2011

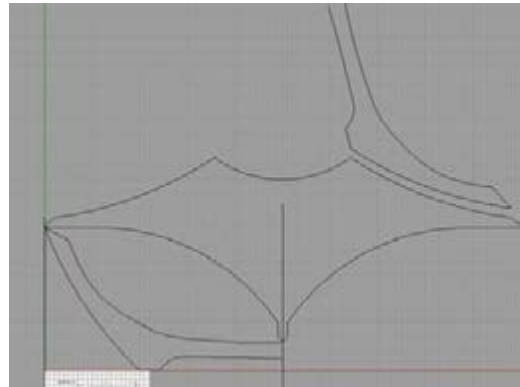


Figure 274: Matthew Tyas, Responding to Process – Building-In A Profile Checking Facility in Rhino 3D, screenshot 2011

Additional functions were added to the tool like indicators for the width of the bowl's turned foot, its measurements statistics and clay weight (Figure 74). After the first tool had entered its third iteration, I developed tools for the other three Shallow Stacking Bowls.

The Shallow Stacking Bowl diagram (Figure 202) does not illustrate how each version of the bowl should appear in proportion to the other pieces: simply taking the contour of the diagram (Figure 273) and rescaling it produced profiles of the bowls' walls and inner contours that did not reflect the way they would be thrown. Consequently, I redrew the inner profiles so that the cross-sections of the bowls looked more accurate (Figure 275). In retrospect, this was unnecessary as I could have designed measurement tools on the basis of the pots' statistics alone.

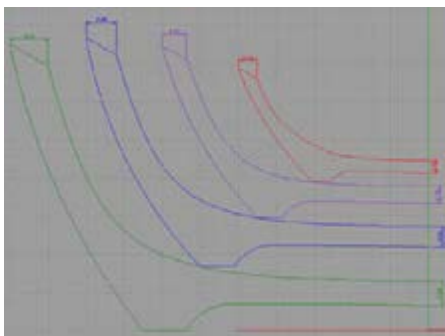


Figure 275: Matthew Tyas, Bowls Scales and Adjusted to a more Accurate Wall Thickness, screenshot 2011



Figure 276: Matthew Tyas, Prototype 'Dragonfly' for Shallow Stacking Bowl #1, image M. Tyas 2011

The third and final iteration of the tool was produced for all four Shallow Stacking Bowls (e.g.

Figure 276) (for completed prototypes see: Figure 75, Figure 76, Figure 77, and Figure 78) encompassing notches to identify the points of measurement and curves.

The design work was completed in Rhinoceros 3D, and the data was exported as a vector file. The subsequent cutting and etching was undertaken on the FB700 Laser Cutter (Appendix 4.1.1: Laser Cutters) using 3mm mirrored acrylic – the tips of the tools were hand-sanded. I also made a series of acrylic swatches to test the depth of etch in relation to the different power levels (Figure 261).

Appendix 4.2.2.4: Interrogating & Recording Leach Tableware Forms

Having gained several strong examples of greenware forms from the Leach Studio (see 'Appendix 1.4.5.3: Leach Apprentice Kat Wheeler Throwing Deep Stacking Bowls'), they were digitally recorded and recreated to provide the basis for designing new tools.

I examined non-destructive ways of recording the forms by, for example, rotationally scanning them (see 'Appendix 4.1.3: 3D Scanner'). However, this method does not reveal the inner surface of the forms which is required to provide a cross-section/profile for the design of tools. This form of scanning also generates large and complex files with excess data. It was important to see the fabric of the pots in order to judge the shape of the forms more accurately and to be able to feel and evaluate the cross sections before reducing them to CAD data: so a new method was devised to achieve this.

The forms could not be cut in half while wet as the clay might deform under the knife and its own weight. At leather hard, the clay might chip or split in an unwanted direction due to the clay's large particles. I attempted to mark a bowl for cutting, but realised any attempt to cut it before firing would lead to a poor cut and its destruction.

Once the work was fired (Figure 277) I cut it with the clipper saw, testing this on one of my own pieces. The pieces were cut slightly off-centre (Figure 278) so that the thickness of the saw blade did not eliminate the central cross-section of the form. Although a destructive method, it produces less erroneous data than 3D scanning and also allows one to 'see' what is physically happening to pots during making: data which could also be of value to the thrower.

Once the forms were cut, they were dried and scanned on a 2D flatbed scanner for tracing in Rhinoceros 3D. The same method was applied to the mug forms, also by Kat Wheeler (Figure 279 & Figure 280).



Figure 277: Kat Wheeler, Biscuit Fired Shallow and Deep Stacking Bowls, image M. Tyas 2012

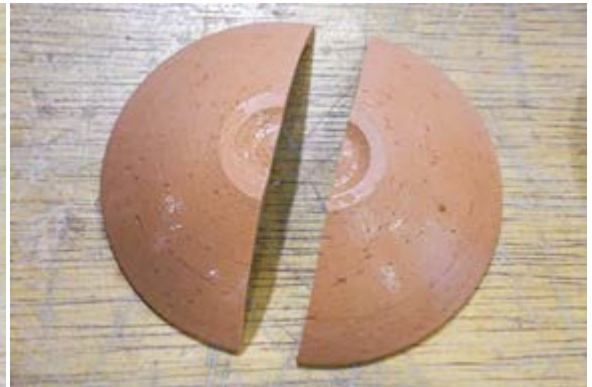


Figure 278: Kat Wheeler, Shallow Stacking Bowl Cut in Half, image M. Tyas 2012



Figure 279: Kat Wheeler, Greenware Short and Large Tall Mugs with Note Indicating Handle to Use for Profile, image M. Tyas 2012



Figure 280: Kat Wheeler, Greenware Small and Large Shallow Mugs, image M. Tyas 2012

Appendix 4.2.2.5: Scans of Leach Tableware Cross-Sections

After the Leach Tableware forms had been cross-sectioned, they were scanned on a 2D flatbed scanner in preparation for being traced in Rhinoceros 3D. Below are examples of cross-sections for Shallow Stacking Bowl #3 (Figure 281), Deep Stacking Bowl #3 (Figure 282), the Large Shallow Mug (Figure 283), and the Large Tall Mug (Figure 284).

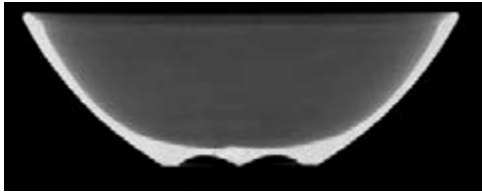


Figure 281: Cross-Section of Shallow Stacking Bowl #3, scan M. Tyas 2012

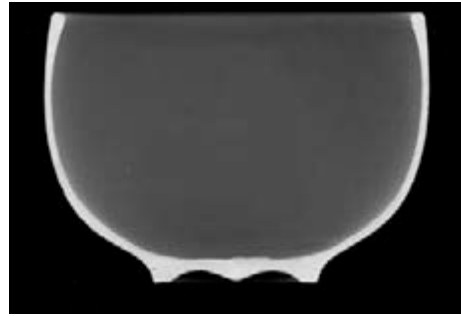


Figure 282: Cross-Section of Deep Stacking Bowl #3, scan M. Tyas 2012

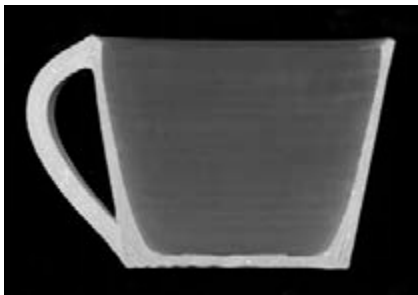


Figure 283: Cross-Section of Large Shallow Mug, scan M. Tyas 2012



Figure 284: Cross-Section of Large Tall Mug, scan M. Tyas 2012

Appendix 4.2.2.6: Designing & Developing New Shaping & Measuring Tools: Bowls & Mugs

Having yielded the cross-sections of the pots in 'Appendix 4.2.2.4: Interrogating & Recording Leach Tableware Forms', the CAD models were built using methods established in 'Appendix 4.2.2.2: Early Dragonfly Tools'. Tools were then developed through practice and in conjunction with the Leach Studio; this Appendix highlights some of the key stages of tools' development.

Appendix 4.2.2.6.1: Developing a Shaping Rib

This iteration of Shaping Rib is based on the scanned pots which were traced in Rhinoceros 3D (Figure 285), using the software to find the mean curve which was then used to draw the tool (Figure 286).

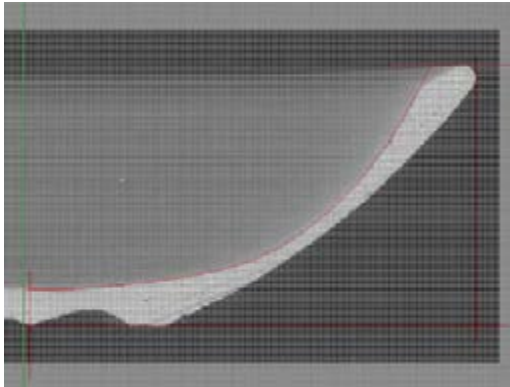


Figure 285: Matthew Tyas, Tracing Inner Curve of Shallow Stacking Bowl, screenshot M. Tyas 2012

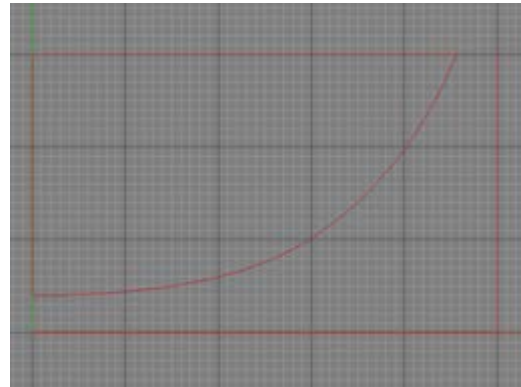


Figure 286, Drawing the Tool from the Curve, screenshot M. Tyas 2012

Appendix 4.2.2.6.2: Version One

The first iteration of the tools offered three proposals (Figure 287): a purely measuring tool indicating height, width and base widths, a shaping tool (rib) for the inner wall, and a speculative tool combining the function of both tools.

Appendix 4.2.2.6.3: Version Two

Feedback from the Studio suggested the combined tool was not useful. Working first on tools for the Deep Stacking Bowls, I designed the measures to be easier to handle, making them wider and adding the associated clay weight data.



Figure 287: Matthew Tyas, New Tools: A Measuring Tool (top), Shaping Tool (middle) and Combined Tool (bottom), image M. Tyas 2012

Rather than following the somewhat flattened-out inner curve of the thrown bowls, as attained from the scanned pots, the curve was bellied-out in CAD (Figure 288 & Figure 289). Feedback from Kat Wheeler resulted in the ribs for the two larger bowls, #3 and #4, being made out of thicker material for easier handling during throwing. They were also designed in a cut-down version (Figure 289) where the upper area of the pot's wall was removed from the tool to reduce drag. This area of the form is easy to read and shape by hand compared to the lower curve between the base and the wall of the pot.



Figure 288: Matthew Tyas, Shaping Ribs for Deep Stacking Bowls #1 and #2 (incorrectly dated 050311), image M. Tyas 2012



Figure 289: Matthew Tyas, Shaping Ribs for Deep Stacking Bowls #3 Including a Cut-Down Version and Thicker Material (incorrectly dated 2011), image M. Tyas 2012

Appendix 4.2.2.6.4: Version Three

When testing the previous tool versions (Figure 288 & Figure 289), I asked Wheeler to write critical notes on them so that I could easily action suggested improvements. Wheeler requested that all of the tools be made of a thinner material (Figure 290) and have their corners removed to avoid catching the wall or base of the bowl (Wheeler 2012). The tools for Bowl #3 and #4 (Figure 291) also required a sharper edge to avoid dragging on the clay. The cut-down tool was seen as potentially more successful than the tool that notated the shape of the whole wall.



Figure 290: Matthew Tyas, Ribs for Deep Stacking Bowls #1 and #2 – Requested to be Made of Thinner Material and Have the Corners Removed (incorrectly dated 2011), image M. Tyas 2012



Figure 291: Matthew Tyas, Ribs for Deep Stacking Bowls #3 – Requested to be Made of Thinner Material, Have the Corners Removed, and Make the Edge Sharper (incorrectly dated 2011), image M. Tyas 2012

The final versions of these tools can be found in the Section '5.2.3: Shaping & Measuring: Deep and Shallow Stacking Bowls'.

Appendix 4.2.2.7: Mugs: Making an External Profile

These tools were developed to check the outer wall of the mug forms, especially its angle and straightness. The forms' angles were taken from the form diagrams (see 'Appendix 1.4.1: Initial Diagrams of Forms'): the scans of the cross-sections (see 'Appendix 4.2.2.5: Scans of Leach Tableware Cross-Sections') were not used as the profiles were not true to the intention of the diagrams.



Figure 292: Matthew Tyas, Examples of Tool Development Using Laser Cutter Settings and Aesthetic Decisions, screenshot M. Tyas 2013

The angle of the wall was traced and constructed in Rhinoceros 3D and the tools made with the laser cutter. Figure 292 shows a final development version of the tools as produced for the Echo of Leach Exhibition in 2013.

Appendix 4.2.2.8: Mugs: Making a Plaster Handle Former

The Plaster Handle Former was made using the method of plaster sledging (Figure 294). The profile for the sledge was cut in tin plate sheet on the Roland MDX-500 milling machine (see 'Appendix 4.1.2: Milling Machine'). A 4mm flat end cutting tool was used to cut the profile which was attached to a sledge made of off-cuts (Figure 293). The shape of the profile was obtained from the cross-section obtained in 'Appendix 4.2.2.5: Scans of Leach Tableware Cross-Sections'. Lengths of plaster were then sledged (Figure 294).



Figure 293: Profile Attached to Sledge, image M. Tyas 2012



Figure 294: Examples of Sledged Plaster Lengths, image M. Tyas 2012

Appendix 4.2.2.9: Mugs: The Plaster Handle Former in Use

Britta Wengeler made a series of handles using her own methods and also the plaster drape (Figure 295). As an established maker of Leach Tableware, the drape (Figure 296) did not enhance the process, and Wengeler felt able to identify the handles she had made using her regular methods (Figure 297). Wheeler re-iterated that another way of making handles in the studio was to draw the outline on the bench where faint outlines of previous sketches could be found (Figure 298). This method of making the handles is also referenced in ‘Appendix 1.4.5.2: Approaches to Making Handles’ and ‘Section 5.2: Tool Making’.



Figure 295: Britta Wengeler, Row of Handles Made in Regular Way and Using Plaster Drape, image M. Tyas 2012



Figure 296: Handle Laid on Plaster Drape, image M. Tyas 2012



Figure 297: Britta Wengeler, Comparing Handles, image M. Tyas 2012



Figure 298: Kat Wheeler, Re-Sketching Template of Handle Proportions, image M. Tyas 2012

Appendix 4.2.2.10: Producing Wooden Tools

Wooden tools were developed and produced with Aaron Moore: an accomplished maker who built his own CNC-router (see ‘Appendix 4.1.4: CNC Router’) used to produce these tools.

Moore used open-source software applications: I had to find a way of exporting the data files from Rhinoceros 3D to avoid conversion artefacts (Figure 299). Moore developed a jig system for making the ribs. Having been cut from planed wood, the ribs were placed in the jig for bevelling (Figure 300).

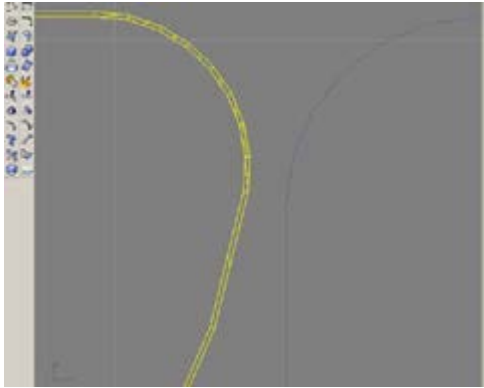


Figure 299: Matthew Tyas, Conversion Artefacts Witnessed in Tool Files, screenshot M. Tyas 2013

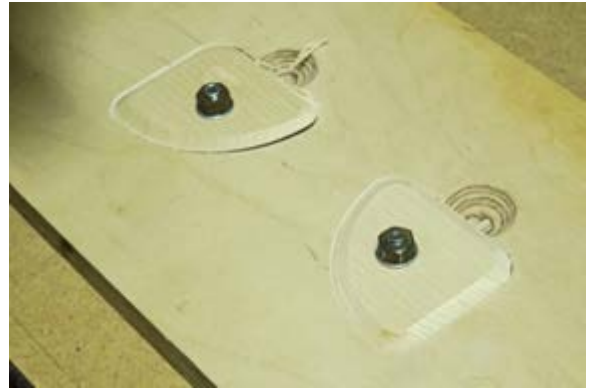


Figure 300: The Jig with Pair of Ribs After Bevelling Pass, image M. Tyas 2013

Appendix 4.2.3: Digital-Analogue Leach

Appendix 4.2.3.1: Methods for Making Bowl Models in Rhinoceros 3D

The models were initially based on the Shallow Stacking Bowl profiles (see 'Appendix 1.4.1: Initial Diagrams of Forms'). The profile of the bowl was traced then revolved around an axis to create a complete bowl shape.

Appendix 4.2.3.2: Methods for Dividing Models

Appendix 4.2.3.2.1: Using an array in Rhinoceros 3D

Preliminary searches suggested an array would be the most effective way of dividing the model in Rhinoceros 3D (Figure 301) – however unwanted geometry was created (Figure 302).

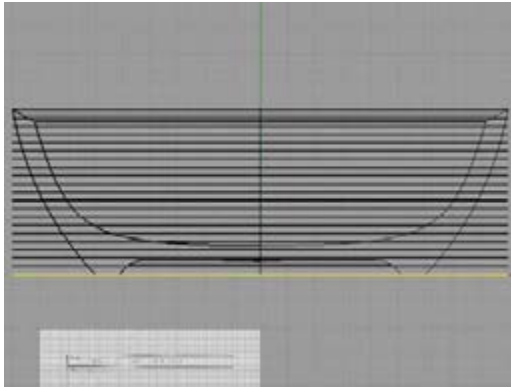


Figure 301: Duplicating the Array in Rhinoceros 3D, screenshot M. Tyas 2011

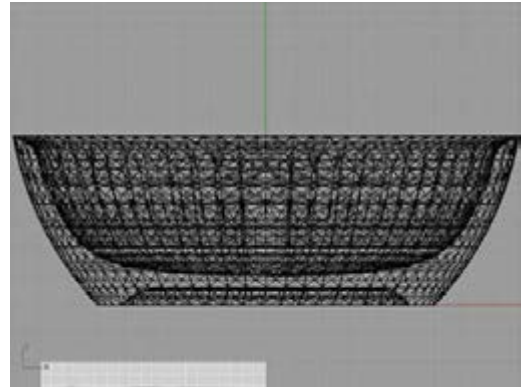


Figure 302: Intersecting the Model with the Array Created Unwanted Geometry, screenshot M. Tyas 2011

Appendix 4.2.3.2.2: Methods for dividing models: splitting models in Maya

Another suggested method was to use Maya to split the model. This method worked but proved complex, especially when considering the limits of the Maya software licence, and the steps required to split the model (Figure 303), export the data (Figure 304), and sort/export it in Adobe Illustrator.

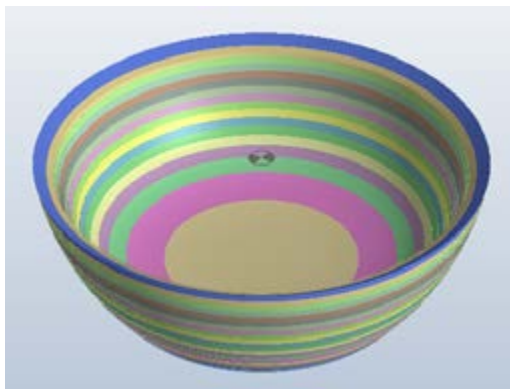


Figure 303: Bowl After Splitting in Maya, screenshot M. Tyas 2011

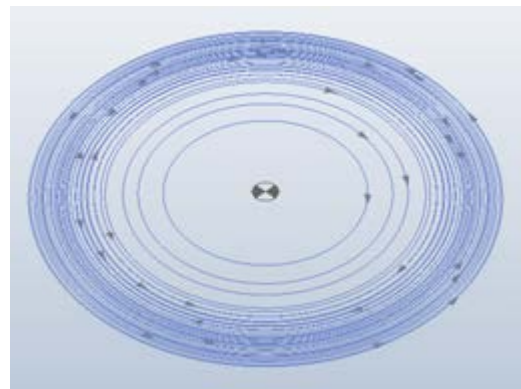


Figure 304: Tool Paths in Maya – Prior to Export, screenshot M. Tyas 2011

Appendix 4.2.3.2.3: Methods for dividing models: contouring models in Rhinoceros 3D

Another suggestion for dividing the models was to use the contouring function in Rhinoceros 3D: a function I was unable to find as I was unaware of the terminology describing this operation. This method of dividing a model (Figure 305 and Figure 306) was easier to control, view and export compared to the previous methods.

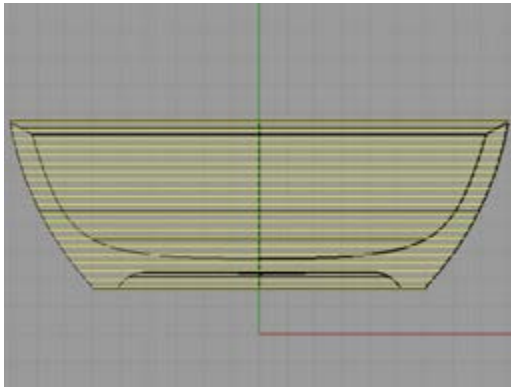


Figure 305: Contoured Bowl Model in Rhinoceros 3D, screenshot M. Tyas 2011

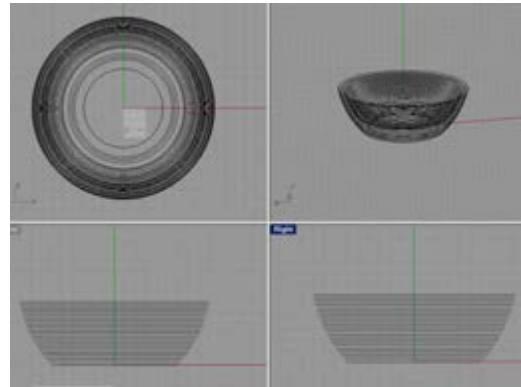


Figure 306: Contoured Bowl Model in Rhinoceros 3D – Multiple Views, screenshot M. Tyas 2011

All the models were subsequently cut on the laser cutter (see ‘Appendix 4.1.1: Laser Cutters’), assembled by hand, and held together with thermal glue.

Appendix 4.2.3.3: Methods for Making a ‘Folded’ Model

Pepakura software is typically used for creating paper models from 3D files which were, in this case, cut on the laser cutters (see ‘Appendix 4.1.1: Laser Cutters’). Pepakura’s interpretation of the original bowl file produced a file suggesting a complex number of fold lines (Figure 307) while the laser cutter (FB700) interpretation of this data rendered a useless outcome (Figure 308). The original data file was simplified into an octagon in Rhinoceros 3D (Figure 309). Using this model, Pepakura produced a model with simplified cut and fold lines (Figure 310). An inner and outer shell were modelled to reflect the bowl having a wall with thickness.

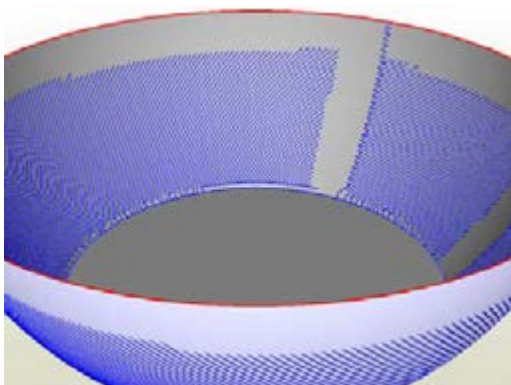


Figure 307: Pepakura Dividing the Model into Folds, screenshot M. Tyas 2011

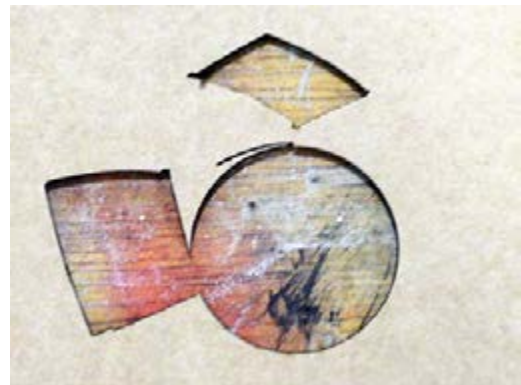


Figure 308: Early Example of Cuts/Folds Executed by the Laser Cutter – Material Obliterated, image M. Tyas 2011

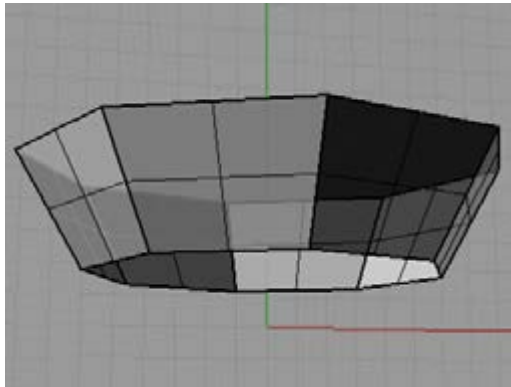


Figure 309: Octagon Created from the Bowl Model in Rhinoceros 3D , screenshot M. Tyas 2011

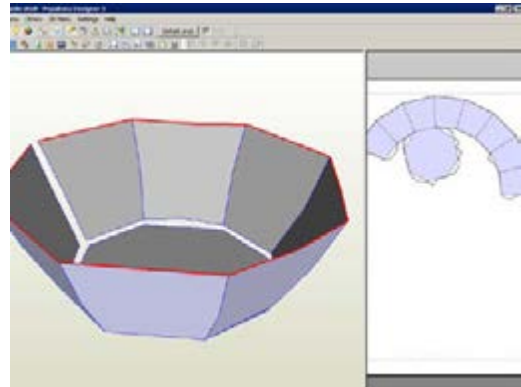


Figure 310: Pepakura Unwrapping the Octagon Model, screenshot M. Tyas 2011

The Trotec laser cutter was used to cut the octagon model because of its extra speed and accuracy. However, Pepakura's fold lines were read by the control software and scored to such a degree that the laser cut-through the cardboard (Figure 311). Illustrator was used to delete the erroneous data and some basic models were obtained (Figure 312): the arrangement of the joints between base and side were incorrect and required modifying.

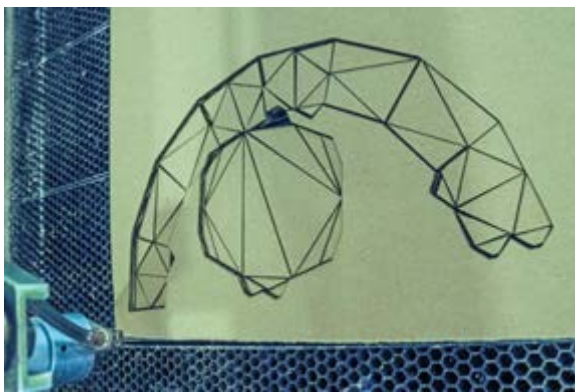


Figure 311: Pepakura Model Cut in Cardboard – Internal Score Lines Unexpectedly Cut , image M. Tyas 2011



Figure 312: Pepakura; Cut with Laser Cutter Using Updated Files and Machine Settings , image M. Tyas 2011

To produce the final model, the relationship of the wall's attachment to the base was enhanced in Pepakura (Figure 313) to have four points of contact, rather than one: all joining tabs were removed. The model was subsequently assembled by hand and held together using a thermal glue gun.



Figure 313: Pepakura; Cut with Laser Cutter Using Updated Files, image M. Tyas 2011

Appendix 4.2.3.4: Experimenting with the Vacuum Former

I speculatively experimented with some of the Leach Tableware Shallow Stacking Bowl #3 cardboard models to see how the process of vacuum forming might provide the basis for mould making with clay. The models were fully or partially crushed (Figure 314) and I did not like the aesthetic impression of the model (Figure 315). The

process was wasteful, generating excessive off-cuts.

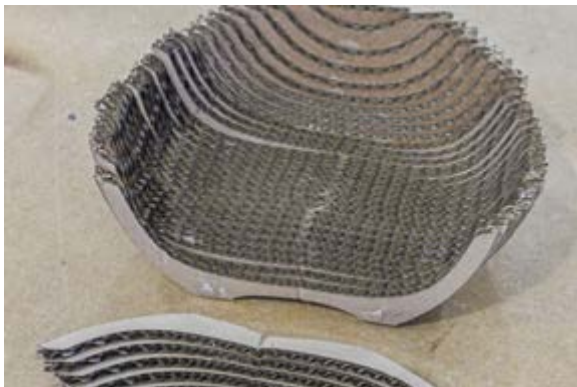


Figure 314: Cardboard Model – Partially Crushed by Vacuum Forming, image M. Tyas 2011

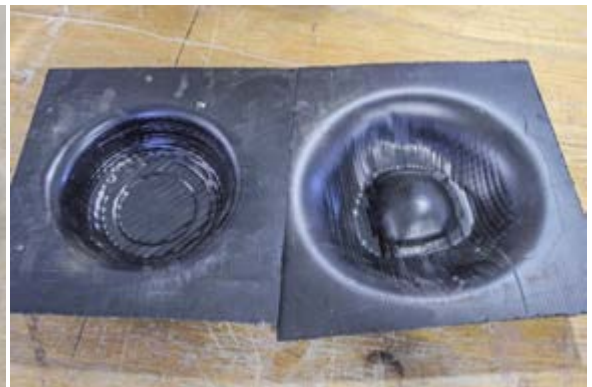


Figure 315: Vacuum-Formed Plastic, image M. Tyas 2011

Appendix 4.2.3.5: Developing Acrylic Contoured Bowl Models in Rhinoceros 3D

Increased use of Rhinoceros 3D improved accuracy in actions like contouring (Figure 316) and problems arising when the model has not been correctly centred or levelled. A method developed where the model was fully centred on the X, Y and Z axis, before being rotated to the angle required for contouring. The contouring was then carried out from the same fixed baseline (Figure 317).

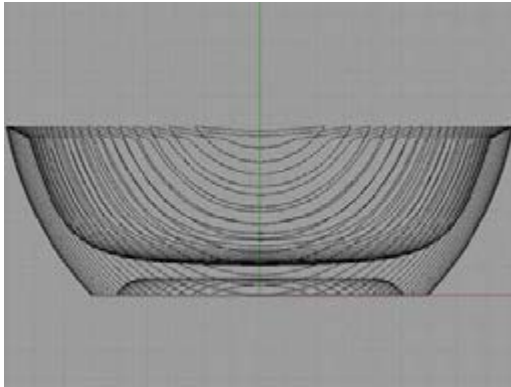


Figure 316: Side view of Bowl Contoured at 90°, screenshot M. Tyas 2011

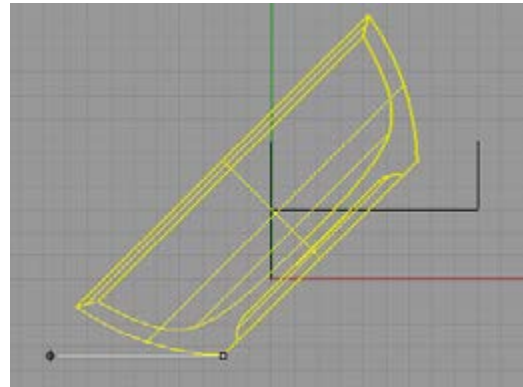


Figure 317: However the Bowl is Rotated the Contouring Begins from the same Horizontal Baseline, screenshot M. Tyas 2011

The process for exporting components as vector files became more robust by, for example, using a numbering system (Figure 318). Illustrator was used to set-out the material for sheet cutting (Figure 319) and bespoke settings for the FB700 laser cutter were developed.

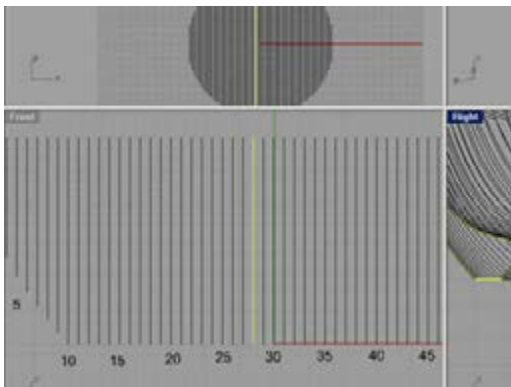


Figure 318: Using a Numbering System to Track Components, screenshot M. Tyas 2011

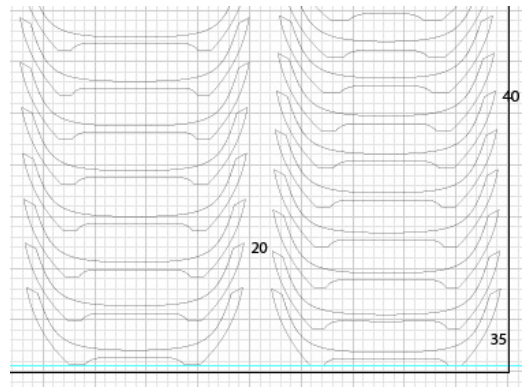


Figure 319: Using Adobe Illustrator to Lay-Out Components on Material Sheet, screenshot M. Tyas 2011

Appendix 4.2.3.5.1: Cutting & Register Marks

The first bowls were contoured at 0° and 90°: the individual components were easy to recognise in the sheet material. It was relatively easy to build the model as the components could be registered to a flat edge for the 0° bowl, or to the centre of the piece for the 90° bowl. However, it proved difficult to register subsequent forms as it was not obvious how each component spatially related to the next one. I started using the edge of fore or aft components to make a registration mark, during the design and cutting stage (Figure 320), on each piece of the model.

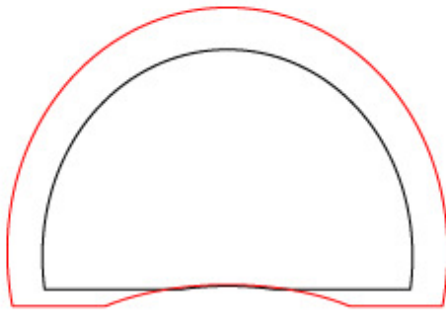


Figure 320: Component Showing Red Cut Lines and Black Registration Etch Mark, screenshot M. Tyas 2011

Appendix 4.2.3.5.2: Moving to the Trotec Laser Cutter

To make more efficient use of large sheet material and achieve a faster cutting job with better quality registration marks, the work was subsequently undertaken on the Trotec laser cutter. Tests were also undertaken to see how well the acrylic adhered to itself depending on how the mirrored/un-mirrored surfaces faced each

other: I was not concerned with the look of the joint and more interested in the speed and strength of the bond, so dots of cyanoacrylate (superglue) were used to bond the mirrored to the un-mirrored surface.

Appendix 4.2.3.5.3: The Final Version

One final iteration of Shallow Stacking Bowl #3 took place as the Leach Pottery Studio acknowledged that their drawings were incorrect and subsequently updated them (Figure 202 and Figure 203). Therefore I developed a new CAD drawing for '5.3.4: Making Leach Forms in Wood' and, initially, a model for '5.3.5: Digital-Analogue Leach Bowls in Clay'. The updated form had the same width and height but was portrayed with a much narrower base.

The Trotec's cutting settings had to be tested and altered due to changes in the equipment (Figure 321) and the bowl was constructed using previous discovered methods (Figure 322).

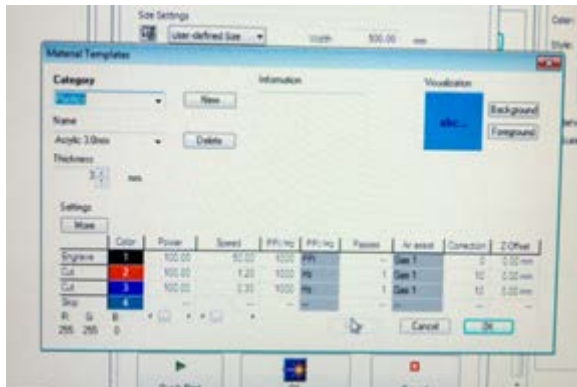


Figure 321: Updated Trotec Cutter Settings, image M. Tyas 2012

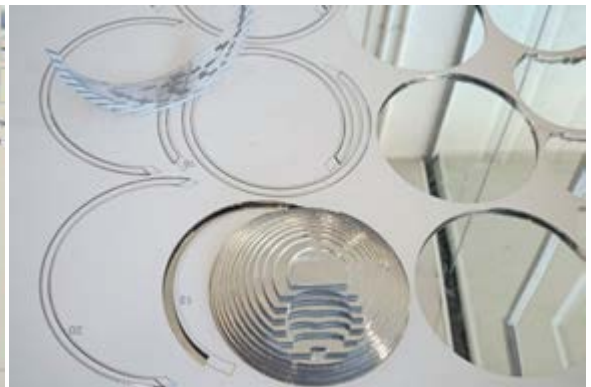


Figure 322: Shallow Stacking Bowl – Mid-Build, image M. Tyas 2012

Appendix 4.2.3.6: Developing Contoured Mug Models in Rhinoceros 3D & Acrylic

The method for making the mugs differed from the method used to build the bowls in 'Appendix 4.2.3.1: Methods for Making Bowl Models in Rhinoceros 3D'. The body of the mug could still be revolved, but the handle needed treating differently. I envisaged a handle whose form reflected that of the handmade handle. To this end, I obtained and traced handle cross-sections (Figure 323) and used the diagram to define the side profile (Figure 324). Various attempts at sweeping along the two rails of the profile resulted in finding the mean curve and compromising over the final cross-section of the handle (Figure 325). It is likely that I could have found methods to perfect the handle, but had to acknowledge that I was trying to achieve a representation of the mug and did not have the resources to become an accomplished CAD operative.

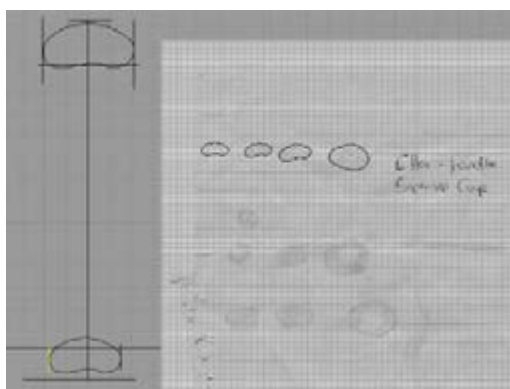


Figure 323: Drawing Handle Cross-Sections from Cross-Sections Obtained from a Handle Pulled by Ella Phillips, screenshot M. Tyas 2011

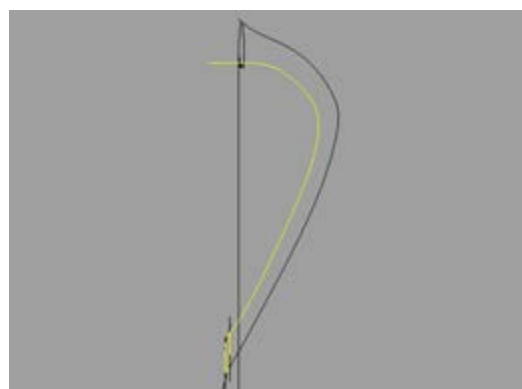


Figure 324: Defining the Side Profile, screenshot M. Tyas 2011



Figure 325: Completed Handle Showing a Degree of Compromise When Sweeping Along One Rail , screenshot M. Tyas 2011

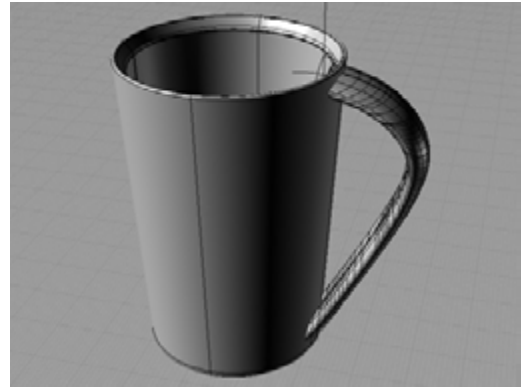


Figure 326: Offering the Handle to the Mug, screenshot M. Tyas 2011

The mug and handle were then brought together (Figure 326) and joined: any loose geometry was tidied. Perhaps because of the way that the components had been constructed in Rhinoceros 3D, the software struggled to consistently and accurately contour the models: I returned to Maya to achieve this (Figure 327).

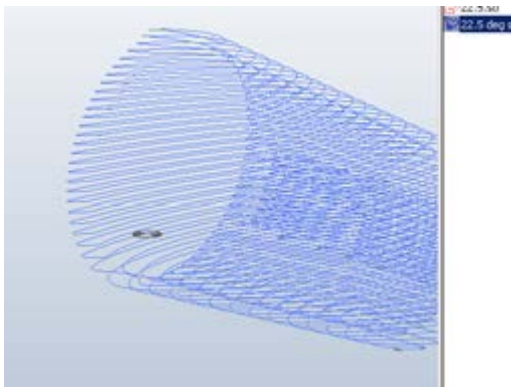


Figure 327: The Mug after Contouring in Maya, screenshot M. Tyas 2011

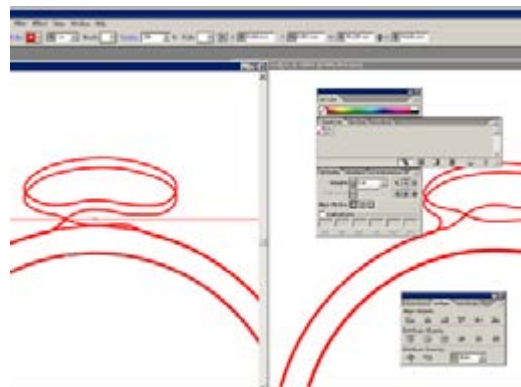


Figure 328: Repairing the Contour in Adobe Illustrator, screenshot M. Tyas 2011

The occasional corrupted vector line was found in the contoured data and this was repaired in Illustrator (Figure 328). The components were then cut and the mugs constructed in the same manner as the Bowls, sometimes working with the file open on the laptop to cross-check components.

Appendix 4.2.3.7: Drawing with the Laser Cutter

These experiments involved working with the equipment on a closer basis both in configuring the hardware and software. When cutting in normal conditions, it is important for the laser to be in focus in relation to the material; when drawing, it is useful for it to be slightly out-of-focus. This is achieved through altering the bed height. I began by running comparative tests of the different software setting variables, like the Arc Error settings (Figure

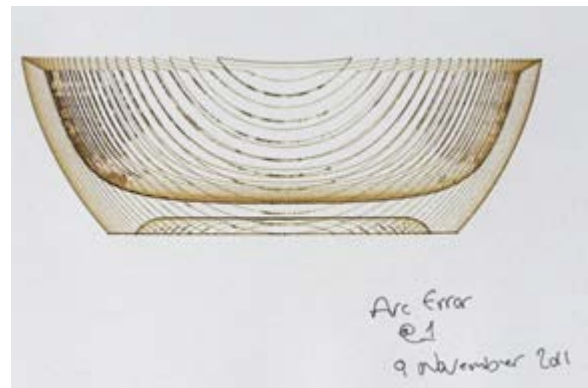


Figure 329: Test Laser Drawing on the Trotec Examining the Arc Error Settings, image M. Tyas 2011

329). The main variables were the speed and velocity of the laser cutter, however I found that the effectiveness of the machine was highly variable depending on how well it was maintained. The best approach was to work in batches and begin with quick material tests to tweak the settings at the start of each experiment.

Appendix 4.2.3.8: Drawing New Forms with Contours & Rhinoceros 3D

I used Rhinoceros 3D to sketch potential pottery forms using the contoured segments of Bowl and Mug (Figure 330) forms, obtained from '5.3.2: Drawing Leach Forms', as the creative starting point. The slices were copied, pasted, and narrowed-down into potential types of forms like cups and bowls (Figure 331), and lidded vessels. One of the forms was contoured and made in 4mm ply as part of the tests for 'Appendix 4.2.3.9: Designing & Making a Bowl Form in Wood'.

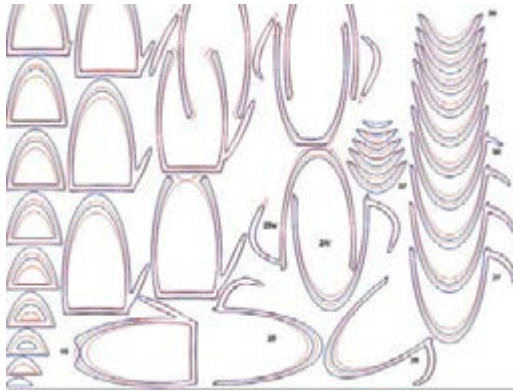


Figure 330: Selection of Slices from the Large Tall Mug Contoured at 22.5°, screenshot M. Tyas 2012

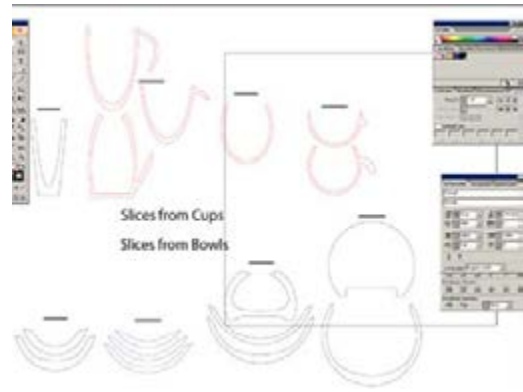


Figure 331: Slices Identified as a Potential Basis for Mug/Cup and Bowl Forms, screenshot M. Tyas 2012

Appendix 4.2.3.9: Designing & Making a Bowl Form in Wood

This work was also based on Shallow Stacking Bowl #3, however the Leach Studio subsequently modified the diagram of the form (Figure 202 & Figure 203). I used Rhinoceros 3D to undertake all the work on the model, including dividing and trimming the bowl form (Figure 332).

I began material tests at an early stage, contouring some of the segments and making them in the intended material (Figure 336 & Figure 337). I worked in 4mm plywood as the laser cutter can cut it and the material is thin enough to allow a degree of resolution in the work. I chose to work in regular plywood, over laser-friendly plywood, as I wished to keep costs down and use a readily available material. The resulting test pieces were more successful when the work was on a larger scale: it was less prone to breaking/warping and the larger surface areas facilitated bonding between components.

Using this information and CAD, I scaled and rotated the different segments of the bowl to create a new object (Figure 333 & Figure 334) of a more significant scale than the original Deep Stacking Bowl. The final model was contoured (Figure 335), cut on the Trotec (Figure 338) and constructed (Figure 339). The bonding time for wood was longer than acrylic so the form was constructed at a slower pace using weights and clamps.

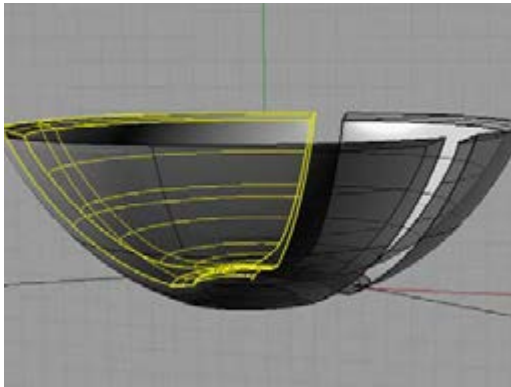


Figure 332: Deep Stacking Bowl Divided into Three Segments, screenshot M. Tyas 2012

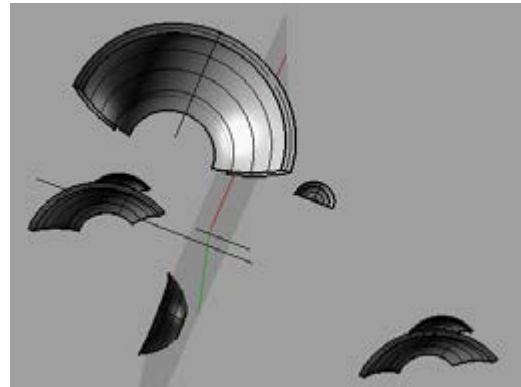


Figure 333: Deep Stacking Bowl Segments – Thinking Through the Form, screenshot M. Tyas 2012

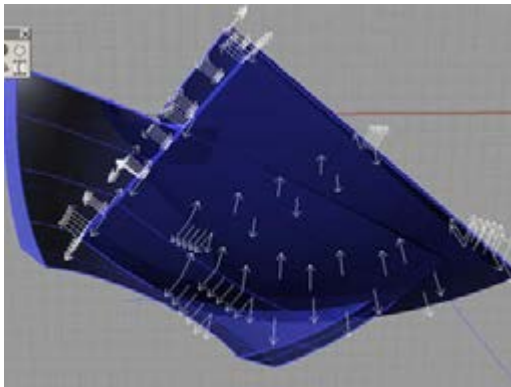


Figure 334: Deep Stacking Bowl Segments – Re-Sized and Re-Configured into a New Form, screenshot M. Tyas 2012

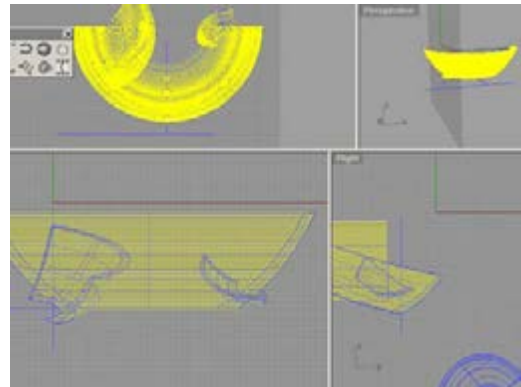


Figure 335: New Form and Its Contours, screenshot M. Tyas 2012



Figure 336: Test Shot Cut – Scale Too Small for Material Size of 4mm, image M. Tyas 2012

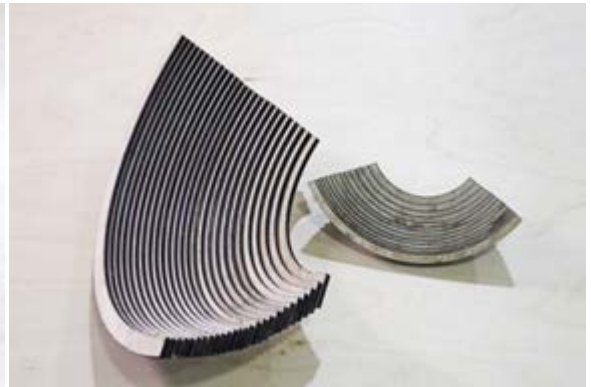


Figure 337: Test Pieces of Bowl Form, image M. Tyas 2012

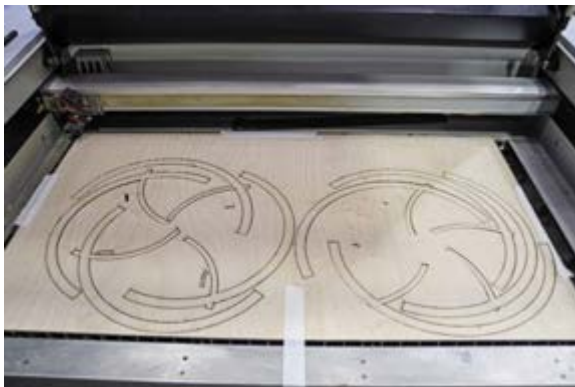


Figure 338: Components of Form on Laser Cutter Bed – Masking Tape Used to Hold the Sheet Down, image M. Tyas 2012



Figure 339: Form During Construction – Bulldog Clip Used as a Small and Impromptu Clamp, image M. Tyas 2012

Working in plywood also inspired be to develop a book cover with 'living hinges' for the work created in '5.3.2.1: Drawing with the Laser Cutter'. Below are examples of tests (Figure 340):



Figure 340: Tests of Living Hinges Inspired by Working in 4mm Plywood, image M. Tyas 2012

Appendix 4.2.3.10: Experimenting with Moulds and the Shallow Stacking Bowl

During the final stages of ‘Section 5.3: Digital-Analogue Leach: Early Echoes’, I considered making a Shallow Stacking Bowl in glass: some of the properties exhibited by the acrylic pieces indicated that the work would prove interesting in glass. I attempted to make the piece using the lost wax process (Figure 341 & Figure 342) with the final iteration of Shallow Stacking Bowl #3 (see ‘Appendix 4.2.3.5: Developing Acrylic Contoured Bowl Models in Rhinoceros 3D’).



Figure 341: Making a Mould for Lost Wax Glass Casting – The Outer Wall With Mould, image M. Tyas 2012



Figure 342: Making a Mould for Lost Wax Glass Casting – Pouring Silicone Rubber into the Inside Space, image M. Tyas 2012

The process was new and problematic (Figure 343) but most issues were resolved. However, I was limited by time and left the glass work for a future attempt should the opportunity arise. I attempted using the already created silicone impression of the bowl’s outer wall to cast a plaster model from with the aim of creating a plaster press mould. This attempt to use the silicone impression failed, especially as a result of air bubbles in the plaster model (Figure 344).



Figure 343: Making a Mould for Lost Wax Glass Casting – Failed Silicone Impression of Inside Space, image M. Tyas 2012



Figure 344: Plaster Model – Note Further Bubble Holes, image M. Tyas 2012

I then attempted to make a silicon model from the silicon mould: however the condensation and chemical cure silicones were incompatible, resulting in a surface layer of uncured silicone. However, it seemed problematic to build a model in acrylic and take casts from it that potentially damage the model: the silicone also has a tendency to penetrate the model. Therefore I designed the mould in Rhinoceros 3D and laser cut it, filling the resulting mould with silicone rubber (Figure 345) and casting a plaster press mould from it (Figure 346). Using knowledge from 'Section 5.2: Tool Making' I made a profile rib (Figure 347) to form the inside of the bowl while the mould was turned on a potter's wheel.

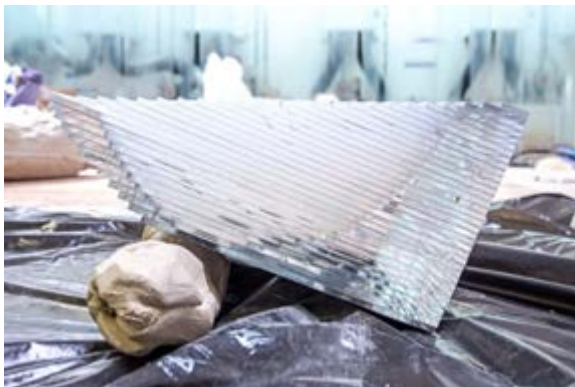


Figure 345: Laser Cut Mould Containing Chemical Cure Silicone, image M. Tyas 2012



Figure 346: Plaster Press Mould Made from Silicone Model, image M. Tyas 2012



Figure 347: Laser Cut Tool For Shaping Inner Space of Bowl, image M. Tyas 2012



Figure 348: First Attempt to Make Bowl – Base Breached Through to Mould, image M. Tyas 2012

Some of the early attempts to form a bowl failed (Figure 348) or were clumsy. However a method was soon developed and recorded (Figure 349). The bowls were made using the Leach Studio's clay body: some were decorated with slip. Other bowls were internally decorated (Figure 351) with wax impressions (Figure 350) of the bowl's outer wall.

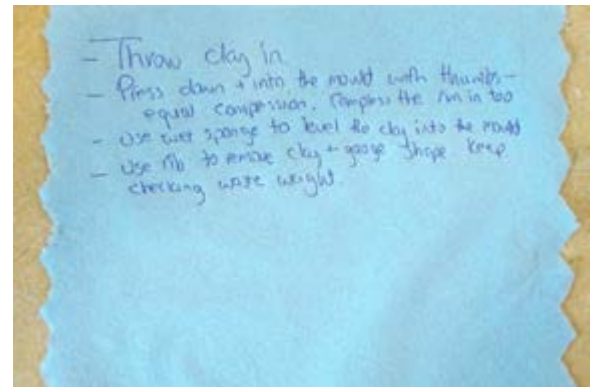


Figure 349: Photograph of Making Notes, image M. Tyas 2012



Figure 350: Wax Cast of Bowl Form – Outer Wall, image M. Tyas 2012



Figure 351: Bowl Impressed with Wax Casts of Outer Wall, image M. Tyas 2012

Appendix 4.2.4: Echo of Leach

Appendix 4.2.4.1: Engaging with Leach Standard Ware

The design for Echo of Leach was based on the digital contours of Leach Tableware Shallow Stacking Bowls and Large Tall Mugs: the digital data was largely gathered and prepared in Rhinoceros 3D (see 'Appendix 4.2.3: Digital-Analogue Leach'). The design also engaged with Leach Standard Ware and several forms (Figure 352, Figure 353, Figure 354, Figure 355, Figure 356) were gathered, identified (see 'Section 4.1: Leach Standard Ware & Tableware Lineage of Forms: A Macro/Design Study') and three-dimensionally scanned in a rotational scanner (see 'Appendix 4.1.3: 3D Scanner'). The identification of pieces was as accurate as possible given the limited data in the catalogues and potential variations in the forms.



Figure 352: Leach Standard Ware Glazed Lemonade Jug circa 1954, image M. Tyas 2012



Figure 353: Leach Standard Ware Small Beer Tankard circa 1957-61, image M. Tyas 2012



Figure 354: Leach Standard Ware Small Lidded Stewpot circa 1957-61, image M. Tyas 2012



Figure 355: Leach Standard Ware Sauce Boat circa 1972-76, image M. Tyas 2012



Figure 356: Leach Standard Ware Large Beer Tankard circa 1972-76, image M. Tyas 2012

The scanned Leach Standard Ware forms (Figure 357 & Figure 358) were initially considered as the starting point for creating a more 'perfect' model in Rhinoceros 3D and subjected to initial diagnostics, however I soon came to accept the scans as valid objects (Figure 357 and Figure 358) in their own right and that they contained the essence of the Leach forms that I wanted to contour.



Figure 357: 3D Rotational Scan of Sauce Pot, screenshot M. Tyas 2013

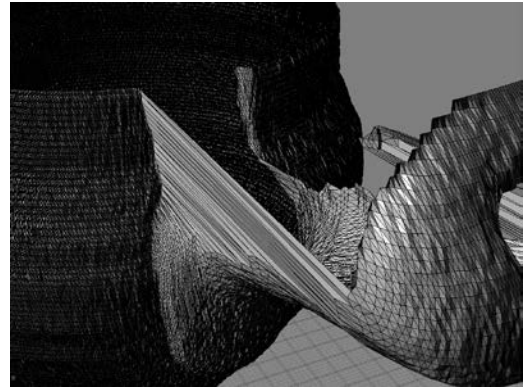


Figure 358: 3D Rotational Scan of Sauce Pot - Detail, screenshot M. Tyas 2013

Appendix 4.2.4.2: Contouring Forms & Selecting Slices

Leach Tableware and Leach Standard Ware forms were contoured and selected from using the methods outlined in 'Appendix 4.2.3.5: Developing Acrylic Contoured Bowl Models in Rhinoceros 3D'. A process of exploration and distillation took place (Figure 359, Figure 360, & Figure 361) until I found curves I felt would be suitable to begin designing forms with: one particular curve (Figure 362) became the starting point for the range.

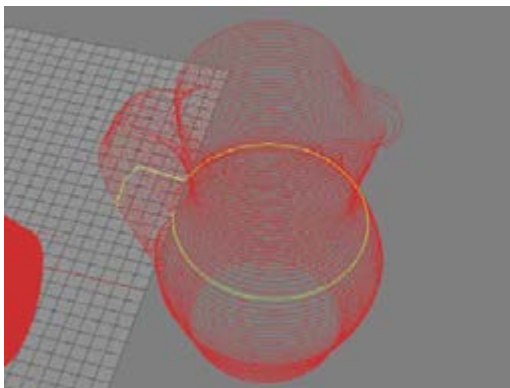


Figure 359: Contours of the Lemonade Jug, screenshot M. Tyas 2013

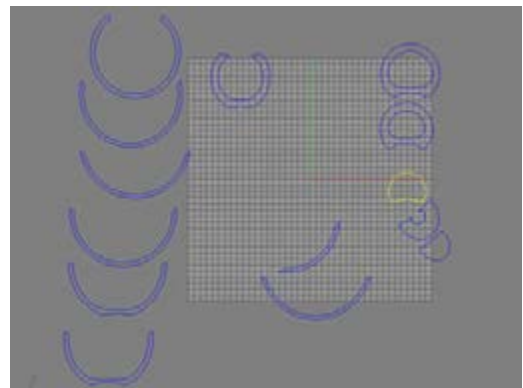


Figure 360: Narrowing Down the Shallow Stacking Bowl Slices, screenshot M. Tyas 2013

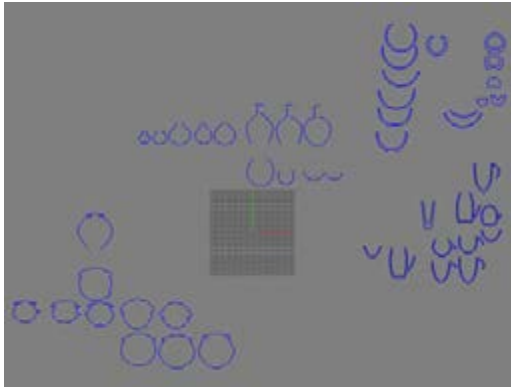


Figure 361: Further Narrowing Down of all Contours/Slices, screenshot M. Tyas 2013

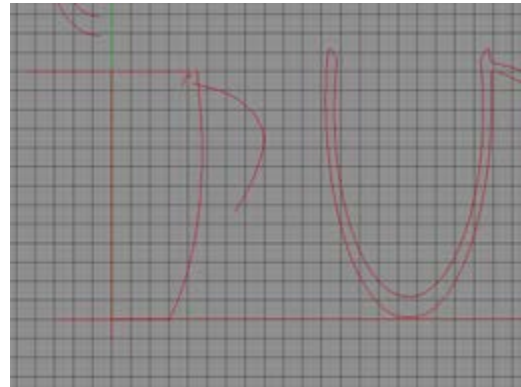


Figure 362: Taking Preferred Slice (right) and Beginning to Build a Form With It (left), screenshot M. Tyas 2013

Appendix 4.2.4.3: Designing the Forms in CAD & Clay

Appendix 4.2.4.3.1: Beginning with CAD

The design for the range began with one curve (Figure 362) that particularly appealed to me: this was revolved into a mug and the form developed (Figure 363, Figure 364 and Figure 365). The body of the mug was then used as a starting point for the jugs (Figure 366 and Figure 367) and the plate/saucer forms (Figure 368). Further curves were then taken as starting points for the design of the bowls (Figure 369), vase (Figure 370), and lidded box (Figure 371). The first iteration of the range consisted of 10 forms (Figure 372).

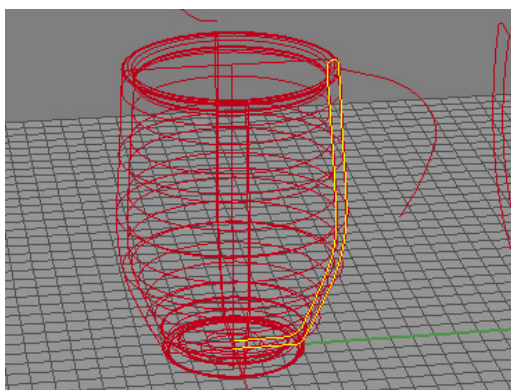


Figure 363: Revolving New Form with Preferred Slice, screenshot M. Tyas 2013

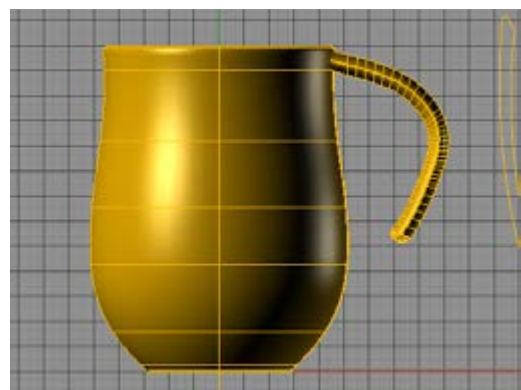


Figure 364: Developing the Handle, screenshot M. Tyas 2013

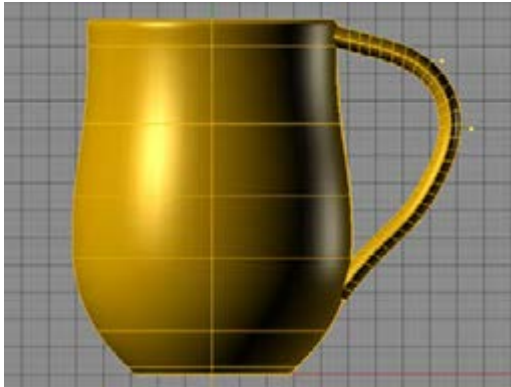


Figure 365: Developing the Handle and Correcting its Curve, screenshot M. Tyas 2013



Figure 366: Jugs Developing from the Mug Form, screenshot M. Tyas 2013



Figure 367: Developing the Jug Form, screenshot M. Tyas 2013

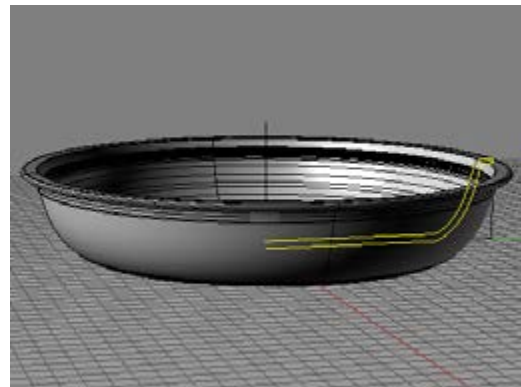


Figure 368: Developing the High Sided Plate, screenshot M. Tyas 2013

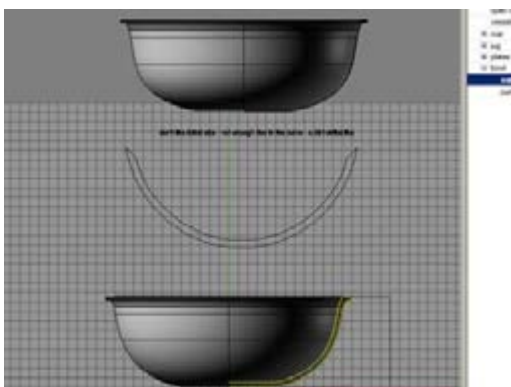


Figure 369: Developing the Bowl, screenshot M. Tyas 2013

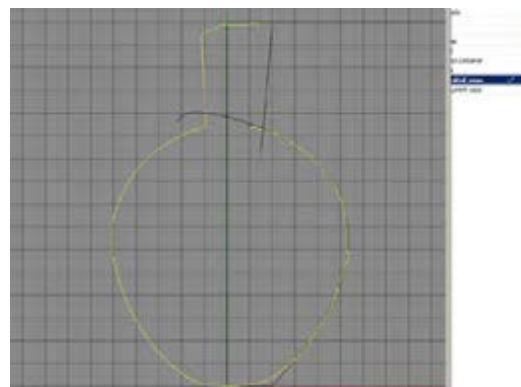


Figure 370: Initial Form of the Vase, screenshot M. Tyas 2013

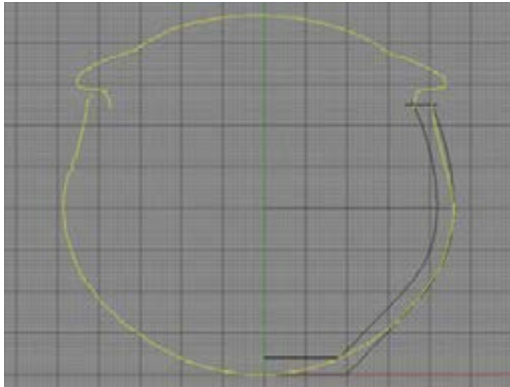


Figure 371: Initial Form of the Lidded Box, screenshot M. Tyas 2013



Figure 372: First Iteration of the Design in CAD, screenshot M. Tyas 2013

Appendix 4.2.4.3.2: Moving to Clay: Throwing, Turning & Firing the Prototypes

The CAD models did not present a final design but a starting point for working in clay, specifically the potter's wheel: my assumption was that interaction with the material and the wheel would lead to a degree of interpretation and alteration of the designs. I used the diagrams to set the measuring tools (Figure 373) and threw the various forms (Figure 374, Figure 375, & Figure 376), which were finished through turning (Figure 377) and/or attaching handles (Figure 378). The process of responding to the forms through throwing led to their modification: some of the curves were not necessarily realistic for thrown forms and some of the forms simply did not look or feel right on the wheel, leading to their alteration.



Figure 373: Diagram of Bowl and Measuring Tools, image M. Tyas 2013



Figure 374: A Version of the Bowl, image M. Tyas 2013



Figure 375: Lidded Boxes Drying for Turning, image M. Tyas 2013



Figure 376: Developing the Vase, image M. Tyas 2013



Figure 377: Boxes After Turning, image M. Tyas 2013



Figure 378: Jugs After Handles Attached, image M. Tyas 2013

The prototypes (Figure 379, Figure 380, Figure 381 & Figure 382) were biscuit and glost fired in an electric kiln to Cone 6. The same glaze was used throughout the whole work, its appearance differing in relation to the thickness of application and final kiln temperature.



Figure 379: Matthew Tyas, Prototype Small and Large Bowl, image M. Tyas 2013



Figure 380: Matthew Tyas, Side Plate and Dinner Plate, image M. Tyas 2013



Figure 381: Matthew Tyas, Prototype Lidded Box and Vase, image M. Tyas 2013



Figure 382: Matthew Tyas, Prototype Mug and Small Jug, image M. Tyas 2013

Appendix 4.2.4.3.3: Returning to CAD

After the work was fired, I selected the stronger examples and scanned them with the 3D Scanner (see 'Appendix 4.1.3: 3D Scanner'), extracting their profile to begin the process of re-shaping the form (Figure 383, Figure 384 and Figure 385). Each significant development of form was also logged through copying it and creating a tree of the designs (Figure 386). When finalising the models, I attempted to finish them in a similar manner to a finished pot by, for example, creating a mesh between the point where the handles join the body (Figure 387). Once the changes were complete, the final version of the design was ready (Figure 388).

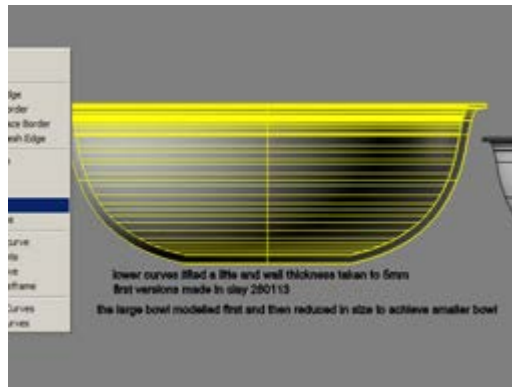


Figure 383: Pre-Throwing Iteration of the Large Bowl, screenshot M. Tyas 2013

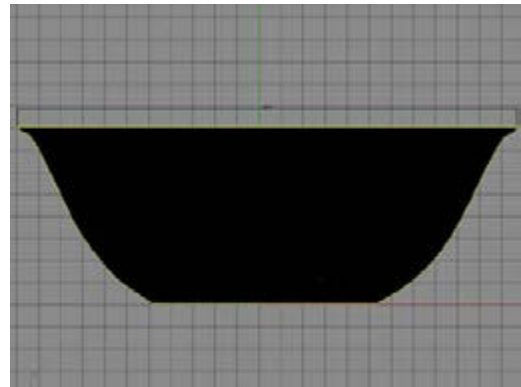


Figure 384: Scanned Profile of a Thrown Large Bowl, screenshot M. Tyas 2013

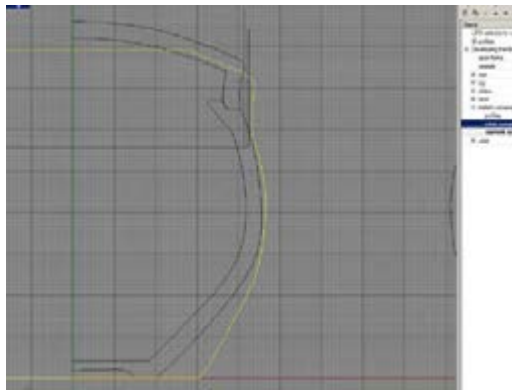


Figure 385: Comparison of Profiles for Lidded Box with Thrown Scan of the Pot in Yellow, screenshot M. Tyas 2013



Figure 386: Development Tree of the Mug, screenshot M. Tyas 2013

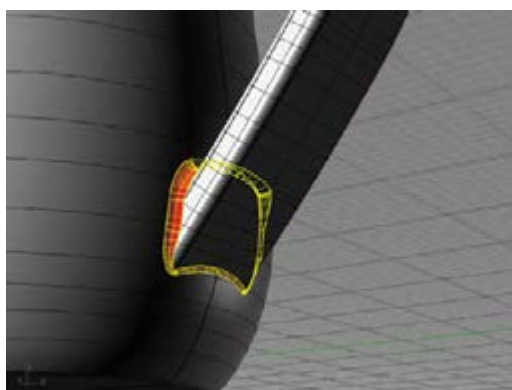


Figure 387: Creating a Mesh Between Handle and Body, screenshot M. Tyas 2013

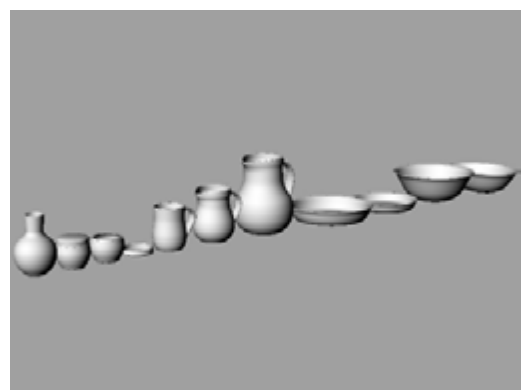


Figure 388: Final CAD Iteration of Echo of Leach, screenshot M. Tyas 2013

Appendix 4.2.4.4: Designing a New Stamp

Initial sketches for the design (Figure 389) were based around working with 'E' for 'Echo', in the same way that the 'S' represents 'St Ives'. After agreeing the stamp with the Leach Pottery

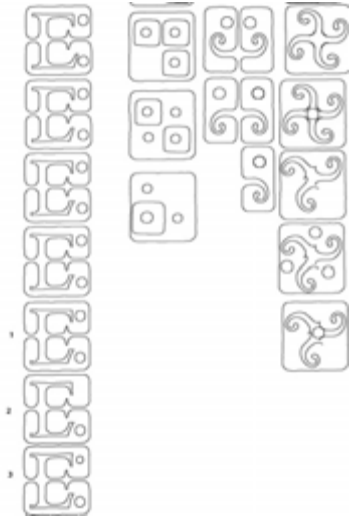


Figure 389: Developing an Echo of Leach Stamp/Icon, screenshot M. Tyas 2013



Figure 390: Attempting to Carve the Stamp by Hand, image M. Tyas 2013

Director, I attempted to make it using hand methods (Figure 390) which proved problematic. I opted to etch the stamp using the Trotec Laser Cutter (see 'Appendix 4.1.1: Laser Cutters').

Appendix 4.2.5: Echo of Leach: Haiku: Drawing on Plaster, Modelling Board & Clay

I obtained examples of haiku from my Twitter⁴⁶ account by downloading a database of my tweets and searching for references to 'crows' and 'foxes' made over the period of the PhD:

The crows' alarm calls,
A fox bolting through the field;
Another pursues.

Foxglove petals
Strewn across the muddy path;
Fallen in the rain.

The moon and clouds,
Night curls around a fox;
My footsteps, quiet.

Lifting and landing,
Field with a single oak tree;
A murder of crows.

Does the crow count
Crab apples it carries off;
Lodged in its beak.

⁴⁶ <https://twitter.com/MatthewTyas>

I then sourced examples of images based on the themes of these haiku.

Appendix 4.2.5.1: Working with Fox & Crow Motifs

I began working with crow and fox motifs to explore the drawing ability of the laser cutter on plaster, applying simple filters in Photoshop to produce black and white images for etching. The details of the filters were largely lost through etching: I also found the motif was of less interest to me than the effect of the laser cutter on the plaster (Figure 391 & Figure 392). I also etched the motifs into modelling board (Figure 393) to make clay impressions (Figure 394) from: I was tentatively examining the potential for sprig or tile making.

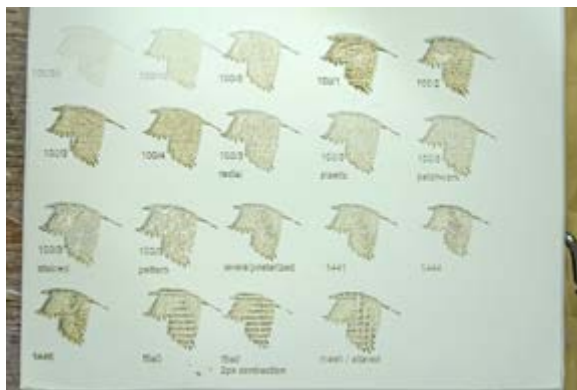


Figure 391: Laser Engraved Plaster – Tests Denote Power/Velocity Levels and Photoshop Filter Used, image M. Tyas 2013



Figure 392: Laser Engraved Plaster – Smaller Selection of Tests with Fox Motif, image M. Tyas 2013



Figure 393: Laser Engraved Modelling Board, image M. Tyas 2013



Figure 394: Clay Impressions made from Laser Engraved Modelling Board, image M. Tyas 2013

The processes seemed convoluted and reduced the potential for working directly with clay. I also mixed a plaster-clay body that could be fired to low earthenware temperatures, to etch directly into the final material. I noted an unexpected outcome/modification on the plaster's surface created by the laser cutter, making me think there could be a digital modification of the motif through the software. I then explored the idea of transformation in the design,

distorting the vector lines of the fox until it became unrecognisable (Figure 395).



Figure 395: Transforming Fox Laser Etched on Plaster-Clay, image M. Tyas 2013

I liked the outcomes of the etched aesthetic and the fired test tile, but I did not feel there was time to properly resolve the idea of a tile and develop the work in this context. Realising that I could etch the plaster made me appreciate that I could also cut it with the laser cutter, quickly leading me to develop the practice in

'5.5.3.1.3: Re-configurable Plaster Mould: The Vase'.

My final explorations with this area of practice were to make a stamp of the transforming fox and impress it in clay (Figure 396). The design worked better as a stamp and I developed this idea further in the practice. I also etched a fox directly onto clay to observe the effects (Figure 397) but this did not prove useful.



Figure 396: Transforming Fox Modelling Board Stamp Impressed in Clay, image M. Tyas 2013



Figure 397: Transforming Fox Laser Etched on Clay, image M. Tyas 2013

Appendix 4.2.5.2: A Murder of Crows

Having created a clay stamp using the fox motif (Figure 396), I returned to the crow: the fox has legs and is therefore 'grounded' and so limited in its decorative use on ceramic forms. Crows move along the ground and fly: they traverse any space. I designed a set of stamps to create a murder of crows for decorating the Echo of Leach forms. I used Photoshop to brush-in the crows (Figure 398) and inverted them for laser etching. I experimented with different velocity settings (Figure 399) to attain a depth of etch for a suitable stamp.



Figure 398: Crows Brushed-In in Black Using Photoshop, screenshot M. Tyas 2013



Figure 399: Modelling Board Etching Test – Velocity at 30, image M. Tyas 2013

The clipper saw was used to cut the crows from the board and each stamp filed (Figure 400 and Figure 401) to reduce prevent the background making impressions in the clay.



Figure 400: Crow Stamp – Cut from Modelling Board, image M. Tyas 2013



Figure 401: Crow Stamps After Filing, image M. Tyas 2013

The initial tests of the stamp (Figure 402) using high-fired terracotta clay and a tin glaze, suggested that the crows needed to be more visible and that the firing was a too high for the glaze, based on its movement and interaction with the clay body. I reduced the final glaze temperature and used a blue slip to back-fill the impression of the stamps (Figure 403 & Figure

404). I experienced some firing problems in heavily cracked forms: this was resolved by more careful drying of the work to reduce uneven movement in the piece at leather hard stage.



Figure 402: Test Bowls with Crow Stamps, image M. Tyas 2013



Figure 403: Large Bowls After Application of Slip, image M. Tyas 2013



Figure 404: Crow Stamps Revealed Through Scraping Slip Away, image M. Tyas 2013



Figure 405: Examples of Echo of Leach Pieces with Murder of Crows Decoration, image M. Tyas 2013

I gradually developed a glazing strategy to compliment the crow stamps, double-dipping an area of the form to create a horizon for the stamp decoration (Figure 405).

Appendix 4.2.6: Echo of Leach Exhibition

Appendix 4.2.6.1: Initial Invitation to Participate/Brief

"Dear ,

I am a doctoral researcher with the Leach Pottery, St Ives, and Falmouth University. The title of my research is: Designing 21st Century Standard Ware: The

Cultural Heritage of Leach and the Creative and Economic Benefits of Digital Technologies.

I am writing to invite you to take part in the 'Echo of Leach' exhibition that I am organising in the Leach Pottery's Cube Gallery for June 15th to July 15th 2013. As part of the research, I am designing a new range of Leach Standard Ware called 'Echo of Leach' that comprises 8 pieces and I have identified a small number of makers (no more than 6 - yourself included) whose work I feel would both compliment and challenge the work/idea that I am developing. I anticipate providing these makers with drawings of the pots and the tools to measure/check the pots with, so outlining a basic pottery form, but the potters/makers will explore the details of the forms through their own practice, materials, process, firing and tools. The designs and tools will be ready for distribution to participants by the end of January 2013.

I have chosen you because...

If you would like to participate, I will ask you to make examples of three particular pieces of work and return them to the Leach Pottery for display in the exhibition; the aim being to create a conversation/comparison between the Leach forms, the makers' interpretations, and tool use in the context of the making. My initial designs are based on the deconstruction of Leach Tableware and Leach Standard Ware forms which I am then digitally sketching-up into new designs.

It would be fantastic if you are able to take part and contribute to the conversation about what digital technology, tool use, and Leach pottery could mean in the 21st century.

I look forward to hearing from you.

Yours sincerely,

Matthew Tyas."

Appendix 4.2.6.2: Exhibition Panels Text

Appendix 4.2.6.2.1: Panel 1: Echo of Leach: Introduction

Echo of Leach presents a study of ways in which digital technologies can be used to design and

make a new '21st Century Standard Ware' whilst maintaining the integrity and tradition of handcrafted processes.

Emerging from the doctoral research of ceramicist Matthew Tyas, in conjunction with the Leach Pottery and Falmouth University's Autonomic Research Group, this new Echo of Leach collection is rooted in the design and principals of the original Leach Standard Ware, developed by Bernard Leach and produced at the Pottery until the late 1970s, and the current Leach Tableware.

The research involved a review and the development of a typology of Leach Standard Ware and Leach Tableware, and the making of tools to assist in producing the current Tableware. Tyas also explored the making of non-ceramic objects based on Leach forms, and then produced Leach-inspired ceramic objects using different types of moulds.

The exploration of these different types of making led to the design and development of Echo of Leach, which was initially inspired by the lines found when slicing through the digital versions of various Leach forms. Nine Echo of Leach pots were then developed on both the computer and the potter's wheel before the designs were distributed to a variety of makers.

Britta Wengeler and Kat Wheeler, of the Leach Studio, initially produced an interpretation based on the Leach Tableware style. Doug Fitch explored the designs through his English earthenware style, while Jonathan Keep, a maker who is also a potter, developed work using his digital slip printer. Jeff Oestreich, an original Leach apprentice, met the designs with over 40 years' experience and an interest in Art Deco motifs. Matt Tyas, new to digital practice, developed digital work which engaged traditional methods like throwing and new areas like reconfigurable mould making using the laser cutter.

Appendix 4.2.6.2.2: Panel 2: Leach Standard Ware and Leach Tableware

Leach Standard Ware was a range of tableware that the Leach Pottery developed and produced until the late 1970s. Bernard Leach introduced, through Standard Ware, a new interpretation of vernacular pottery especially rooted in the traditions of the Song Dynasty of the East and old vernacular pottery of the West. Standard Ware gained popularity in the post-War climate and comprised of stoneware-fired oven-to-tableware and serving vessels whose forms evolved over several decades. Traces of its forms can be observed in both historic pottery and the work of contemporary studio potters. The production of Standard Ware ceased upon Bernard Leach's death in 1979.

The Leach Pottery now produces Leach Tableware designed by Jack Doherty and made in the Leach Studio by the Leach Production Potters. The team comprises a Senior Production Potter, Roelof Uys, and the Production Potters Kat Wheeler and Britta Wengeler who produced the Leach pieces for this exhibition. Leach Tableware is not glazed in the way that Standard Ware was, but soda fired.

Echo of Leach grew from the idea that while Bernard Leach is recognised for his writing, thinking and making in relation to pottery, Standard Ware also represents an important physical and ideological legacy; it too is part of the cultural heritage of Leach. Echo of Leach emerged in the practice of Tyas' doctoral research, of engaging with digital technologies and the Leach Pottery Studio. It was guided by considering how digital technologies could be used to design and make '21st century standard ware' while maintaining the integrity of making processes like throwing.

Tyas worked with Computer Aided Design (CAD) software and Computer Aided Manufacturing (CAM) equipment, such as a laser cutter, to investigate Leach Tableware and Leach Standard Ware, discovering new ways of 'looking' at it, of dissecting it, drawing it, and creating new forms using a method of deconstruction and reconstruction; effectively seeding new forms from Leach originals: literal echoes of Leach forms. Tyas also developed methods for making laser-cut throwing tools that were tested and used in the Leach Studio to explore how digital technologies can facilitate the making of current Leach Tableware.

Appendix 4.2.6.2.3: Panel 3: Making Tools to Make Pots

When beginning the research with the Leach Pottery, Tyas realised that there might be potential in exploring tool making to assist with the production of Leach Tableware. The production of tools using digital technologies is interesting because it offers a way of introducing technology, while maintaining production standards and allowing potters the opportunity to continue working intuitively and flexibly.

The apprentices who made Leach Standard Ware were taught how to make the tools that they would ultimately use in production of the ware. This might include wooden trimming sticks and ribs to shape the inner profiles of forms like the General Purpose bowl.

Digital production technologies offered a tantalising opportunity to begin recording Leach Tableware forms and acknowledge a 'standard'. Initially, forms were modelled in CAD using the Studio's drawings but drawings and digital models do not possess the same quality and

nuances as a thrown pot. The next stage was to take strong examples of pots, that had been thrown in the Studio, and to saw them in half once they had been biscuit fired. The pieces were then scanned, traced and drawn in Rhino 3D CAD software.

The digital models of the Leach Tableware were used to draw precise designs for the tools that were needed for shaping or measuring specific forms. There is a kind of knowledge that a maker embodies in their thinking and physicality; a knowledge that is learnt through practice. Digital technologies offer ways to record and store knowledge about thrown pottery forms in addition to diagrams and the maker's hands.

The tools offer a supplementary knowledge, giving the maker an immediate way to check the measurements or profile of a singular form with a tool that can be handled and directly compared to the clay. The tool embodies a knowledge about the forms it describes, but it is not designed to replace the thoughtful maker. Digital manufacturing technologies offer many potentials, like facilitating the making of Leach Tableware in different contexts, or supporting new methods of designing and making in a traditional or hybrid digital-analogue context.

The tools were initially developed using a laser cutter and acrylic - which is a good material for making a measuring tool. However, wood is still the preferred favourite of the potter and Tyas has begun taking steps to explore the production of wooden ribs using the knowledge, skills and digital router of Aaron Moore at Re-Form Furniture.

Appendix 4.2.6.2.4: Panel 4: Making New Kinds of Objects

While developing tools using the laser cutter, Tyas began considering how the data of the Leach Tableware forms could be explored with this method of digital production to make objects. The ultimate aim being to make something in clay, but this first meant producing a model in another material. Early experiments in working with cardboard were instructive but not successful.

Acrylic proved a useful material in working with the laser cutter and model making. While exploring this method of production, it was soon apparent that the outcomes were interesting objects in their own right. The digital models were 'contoured', a process which divides them into slices that correspond to the thickness of material that they will eventually be constructed in. Models usually consisted of around 40-60 contoured slices which had to be digitally arranged to fit the material sheets, then laser cut, and assembled and joined by hand; the process often taking days to complete.

Tyas enjoyed the transformative nature of the laser cutter which shares similarities with the firing process; it uses heat to transform a material and while the outcomes can be controlled they can also be made to be more spontaneous. The final development in this series of work was to use deconstructed components of Leach Tableware bowls to realise a sculptural piece made in laser-cut plywood.

The act of contouring in CAD also developed into an act of drawing, leading to unexpected experimentations of using the laser cutter as a mark-making tool – to scorch the newly explored model drawing onto paper. The making of these drawings ultimately inspired Tyas in designing the Echo of Leach pots.

Appendix 4.2.6.2.5: Panel 5: Different Ways of Working with Clay

Throwing pots on the potter's wheel is a traditional way of making pots and the main method of production associated with the Leach Pottery. Tyas could throw forms on the wheel, but wondered whether the creative use of digital technologies could be fluidly mapped-onto the wheel. It would be a challenge to try and develop the aesthetic of the digital acrylic forms in the context of clay, so new making methods were explored.

The acrylic models of Leach Tableware were used as a starting point for making with clay. A complex method of mould making had to be undertaken to establish a way of making digital Leach pieces in clay. This initially involved making negative silicon casts of the acrylic model, then using the moulds to make a further positive in silicon and ultimately a negative in plaster – from which a something in clay could be made!

These methods of mould making require time to develop; a plaster press-mould was eventually made to create an external digital mark on the clay and the inside of the piece was then completed on the wheel in order to try and maintain a sense of utility in the work and to try and capture some of the spontaneity of the potter's wheel. These pieces were the Digital-Analogue Bowls which directly reference the Leach Tableware Shallow Stacking Bowl.

In order to simplify the process and to develop the aesthetics of the work, Tyas made a negative mould, of the model, in acrylic. This improved the speed of the mould-to-claymaking process and produced a more accurate rendition of the digital form. However, after further experiments with mark making using plaster and the laser cutter, Tyas began to make the final mould directly in plaster using the laser cutter and a digital model. This method was used to produce some of the final pieces in the show – the mould has in the region of 60 pieces and

can be reconfigured; thus while the method of production is slipcasting, working with the mould is also hands-on, flexible, and playful.

Appendix 4.2.6.2.6: Panel 6: Designing Echo of Leach

Through making the acrylic bowls and mugs, and using the laser cutter as a tool for mark making, Tyas became interested in the lines that were generated by intersecting (Contouring) the digital models. Some lines directly referenced their parent forms, while other lines offered tantalising glimpses and outlines of new forms.

Tyas constructed digital models of selected Leach Tableware and also undertook 3D scans of examples of Standard Ware, his interest moving from creating exacting digital data to capturing the basic essence of the form to eventually Contour it and discover the lines it might contain.

The Echo of Leach design began with one single curvy line that formed the basis of the outer wall of the Mug; the curve was then used to develop the shape of further forms like the Jugs. Further curves were then used as inspiration for forms like the Vase or Lidded Box, trying to ensure that there was a clear and developing language between the different forms in the range.

CAD is a useful drawing tool, but the drawn pot is a different proposition to the thrown pot and so Tyas took to the potter's wheel to explore and test the forms. This exercise resulted in changes to the designs to account for the process of throwing and the way that clay behaves. Also, the volume and proportions of clay 'look' and feel different on the wheel and the embodied unconscious knowledge of the maker is called upon. Some of the forms began to develop more of their own personality and, almost inevitably, began to take on the characteristics of other thrown shapes – the wheel acted as an evolutionary filter.

The successful elements of the thrown and fired pots were then reincorporated into the digital designs which were then formatted as diagrams and distribution to other makers. The purpose of the exercise was not to design and make the perfect pot but to establish a conversation through the resulting forms and their return to the Leach Pottery; a physical echo of designing and making.

Appendix 4.2.6.2.7: Panel 7: A New Type of Leach Pottery

Echo of Leach is a new range of tableware whose design is not driven by precise definitions of

form but the relationship between design and reflective personal practice. Tyas spent time in the Leach Pottery Studio and handled many examples of Standard Ware and Tableware, and perceived that the pottery lived through both its regularity and subtle nuances. He sought to design a template for a range of new Leach Standard Ware forms that are achieved in the hands of individual makers, a new way of exploring what Leach Pottery can be, of how it can be physically made, distributed, and propagated.

Echo of Leach is the sound struck by the Leach Pottery's original forms whose substance echoes through the subsequent digital designs which are distributed to makers through diagrams and, if requested, measuring tools. The echo returns to the Leach Pottery in the makers' interpretations of the new Leach forms. On the one hand the forms are Leach, on the other they are digital and the unique outcome of the makers' spirits, their processes, materials, glazes and firings.

As '21st Century Standard Ware', Echo of Leach proposes and explores a new mode of Standard Ware forged through alliances with potters and ceramists to nurture creativity, tentatively suggesting the potential for partnerships based on a new model of vernacular pottery where the local resources of the potter are now the practice and methods of the studio maker.

Appendix 4.2.6.2.8: Panel 8: The Leach Studio: Kat Wheeler & Britta Wengeler

Appendix 4.2.6.2.8.1: Kat Wheeler

"While working at the wheel, I am always considering functionality in my design. As I have learned from the Leach Tableware production, I work repetitively, striving to make objects that will work harmoniously together.

My work, like the Leach Tableware, is soda fired. I discovered soda firing while I was at the Appalachian Center for Crafts and began studying the chemistry involved in soda glazing while I was at the Australia National University doing a semester's study abroad. Over three countries, I have learned to accept the unpredictable nature of soda firing. Everything from the materials I use to the way the kiln is fired has a direct effect on the surface of the pots. It is important that I approach each firing with an experimental attitude, working to find the best combination of firing methods and materials to yield the finishes I desire. With enough practice it has become possible to predict the style of finish and range of colours I will achieve, without removing the spontaneity vital to the soda firing process.

I believe that the enjoyment of handmade objects should be accessible to everyone. It is important to keep the ethos of the original Leach Pottery alive while we move into more contemporary aesthetics and designs. With the advent of new technologies, it is important to strike a balance. We respect our history, carrying forward these important traditions in making practices and philosophies while embracing the future. By continuing to work towards a standard of high quality making and a tradition of passing age old hand-skills on to the next generation of potters, together we can continue the legacy of the Leach Pottery.”

Appendix 4.2.6.2.8.2: Britta Wengeler

“I like to produce work which is both useful and beautiful. I love the humbleness of making simple well-crafted pots, relating to the activity of daily living, as much as the creative process of designing. Being a designer and maker is highly fulfilling for me and it provides the customer with an individual pot with a ‘story’ that they can connect to.

Making Leach Tableware involves a lot of repetitive throwing to a given standard. I was trained as a production potter and have worked for several potters in Germany, France, New Zealand and England producing their designs, so I am used to reproducing different styles with a minimum of my own interpretation. I found it fascinating to work on Echo of Leach and to work with the design of another person and transfer it into our Leach Tableware style. It was a challenge, as the Echo of Leach shapes are more organic and very different to the Tableware, but in the end I was pleased with the results and find that they work alongside the Tableware range.

Making my personal work provides a good balance to producing the Leach Tableware. I throw my domestic ware in batches and feel more flexible and free; so I try a lot of new things. Surprisingly, it seemed more difficult to make the Echo of Leach shapes in my own style than in the Leach Tableware style. I often mark the change of direction in a curve with a step or an edge. It took a while to resolve this with the Echo of Leach designs as they have a certain ‘flow’ in their curve which I didn’t like to interrupt. I wanted to find a balance between giving the pot my own mark but keeping a recognisable shape, which I feel I achieved in the end.”

Appendix 4.2.6.2.9: Panel 9: Doug Fitch: An Earthenware Tradition

“I make pottery in a remote workshop in rural Devon using earthenware clay and a basic palette of slips and glazes. My inspiration comes from the countryside; the textures and colours that surround me every day. Although I consider my work to be progressive, the pots

draw influence from many makers of the past, especially the traditional English country potters and Bernard Leach and Michael Cardew. I enjoy the oriental language of Leach's work, but it's the 'Englishness' of his pots that appeals to me most and the influence of medieval form that is clearly apparent in many of his jugs.

The Echo of Leach brief presented some interesting challenges to me. Although I trained as a production potter, it's a long time since I've attempted to make series of similar pots of specific dimensions. In fact, it's something that my work has increasingly moved away from: I found that I could no longer do it!

It's an interesting revelation that when trying to replicate another maker's designs, I couldn't get it right and I became much more aware of the characteristics of my own work. We each make unique decisions about form and proportion: how the foot relates to the rim, how the curve that connects these extremes should flow. It's curious how my hand and eye have become conditioned to my own application of the curve. So the pots here are inspired by the brief, but very much my own take on the original forms."

Appendix 4.2.6.2.10: Panel 10: Jonathan Keep: Digital Slip Printing

"While stylistically the echo of Leach is faint in my work I would undoubtedly not be a potter if it was not for Bernard Leach and what he did to establish pottery as an accepted creative art form. As a student, like many others, I read 'A Potter's Book' and was captured by the possibilities of making creatively and the humanity that can offer. Now in the 21st century the world is a very different place and the ubiquity of digital technology cannot be ignored. In the belief that the work of an artist should be an expression of the time in which the artist works, it would be lacking not to embrace these technologies.

While I use digital 3D printing as the making process for my pots, rather than the pottery wheel, the Leach echo has to be seen in how the maker approaches these pieces of machinery. Both are ultimately tools at the potter's disposal and what is important is how they are used. My interest in digital technologies is to find new ways of working that are an expression of our age but I also aim to understand the material qualities and processes involved to reinforce the idea that ultimately it is the human expression in the resultant objects that is important."

Appendix 4.2.6.2.11: Panel 11: Jeff Oestreich: An Apprentice Returns

"It's been an honour and privilege to produce work on Echo of Leach. Matt's offer to make work for this exhibition followed a month-long residency at the Leach Pottery in October 2012.

My life's dream of returning to the Leach Pottery, after an absence of over 40 years, and working in the same corner on the same wheel was fulfilled. To be asked to be a part of this project was perfect timing as my mind was still in the mode of processing this life-altering experience.

Working on the pots for Echo of Leach threw me back decades, in my mind, and provided the opportunity to examine all that Bernard and Bill Marshall taught me in the late 1960's. At a glance, the Standard Ware appeared rather bland but upon making it I realised how a seemingly simple form had complexities that required great attention. Upon returning to America, after my apprenticeship, it was a 20 year struggle to find my own identity in clay. It was apparent, upon working for this exhibition, how little and how greatly my work has changed. What hasn't changed is my endless passion for combining angles and curves.

My worn-out copy of *A Potter's Book*, purchased in 1965, has a statement by Leach which I underlined upon reading it and has been etched in my brain ever since: "Curves for beauty, angles for strength". What has changed is my glaze palette, decoration motifs to reflect my interest in Art Deco, and my firing methods. But strip this all away and underneath is the Leach foundation. This past six months with Bernard speaking over one shoulder and Bill Marshall over the other, I am reminded of the school of clay I came from and am grateful to have had these opportunities. With this comes my dedication to keeping the Leach tradition alive."

Appendix 4.2.6.2.12: Panel 12: Matt Tyas: Digital Interventions

"The first personally significant pot that I found, over 15 years ago, was a humble Lowerdown Pottery version of a Leach Standard Ware General Purpose Bowl. This was my first experience of an 'Echo of Leach' and it left a stronger impression than I realised. My interest in making was then driven by Bill Marshall's work; it was through his forms, glazes, and thinking about ceramic aesthetics that I met and viewed the Leach Pottery. The Leach Pottery was, and is, important to the Studio Pottery movement but one must also meet clay on one's own terms. This has often been a challenge and whilst my making has diversified, materials and process are still paramount.

I think it's important for 'traditions' to develop and therefore remain relevant. The digital making of the PhD has always been challenging and often self-conscious, but it does present the opportunity to step outside what I 'know' and suggest new potentials and different ways of seeing and engaging with ceramics. I've attempted to produce two bodies of Echo of Leach

work for this exhibition: one is overtly digital, using a reconfigurable laser-cut plaster slipcast mould to explore the Vase. The other body of work, thrown on the wheel, engages with the digital through decorative slip inlay stamps I've etched on that laser cutter.

Perhaps these different digital and analogue outcomes represent a still resolving dichotomy in my practice and thinking in relation to making and the 'digital', but what the digital has allowed me to do is encounter drawing in my practice, and it's through these digital drawings, and attempts to make drawings physical, that new ideas and processes of making were able to develop; without the drawing, there would be no 'Echo of Leach'."

Appendix 5: Glossary of Terms

Appendix 5.1: Definition: Country Potter(y)

McGarva (2000) provides a good grounding in the topic, broadly defining country pottery as vernacular earthenware that included the production of things like tiles and bricks, horticultural items, and domestic and decorative wares. It was a continuation of production established in the Middle Ages and characterised by a basic application and use of materials and a direct way of working. Production became more mechanised during the 19th century with few potteries surviving after the 1960s. Anderson (1998) offers a similar perspective but focusses solely on Isaac Button, perhaps one of the UKs most well-known country potters.

Appendix 5.2: Definition: Leach-Oriental

An approach to pottery pioneered by Bernard Leach that took the elements of forms from Eastern and Western pottery traditions and decorated them marks, glazes and patterns that were also borrowed from these traditions, essentially creating a new genre of pottery. This style was essentially characterised by a high-fired clay body, the use of forms from these two cultures and their decoration with oriental glazes like tenmoku.

Appendix 5.3: Definition: Studio Pottery

Studio Pottery emerged in the early 20th century and is variously defined. Dormer (1988, p.12), whose coverage of the topic is limited, offers two categories of handmade pottery: Studio Pottery which is an art form object made on a one-off basis - the potter making batch domestic ware engages in production pottery. Jones (2007) presents a detailed investigation of the British Studio Pottery movement founded on his thesis (Jones 1999). He resists an outright

definition of the phenomena, developing it through the coverage of a broad gamut of work and perspectives from the modern to post-modern, or the producer of tableware to the maker of individual works. Jones suggests that ‘...the culture of studio pottery has been constantly re-negotiated over a period of a century or more’ (J. Jones 2007, p.9) and ‘Of all the qualities that distinguish the work and life of the studio potter, an independence of spirit is the most characteristic and enduring’ (J. Jones 2007, p.11). For further reading, also see Harrod (1999, pp.30–42) who outlines the history and development of studio pottery in the context of the wider crafts movement and its development in post-War Britain (ibid, pp.256-279).

I suggest that Studio Pottery is the practice of the self-conscious artist potter who is not simply working as a labourer. While the production of tableware may constitute an increased focus on the activity of systematic labour and is sometimes less concerned with artistic expression, it is not the same kind of production pottery experienced in industry or the more traditional country pottery (see ‘Appendix 5.1: Definition: Country Potter(y)’). I propose that some of those working in the tradition today are Studio Potters as their endeavour is more ideologically driven than simply engaging in pottery production as trained labour.