

**Tableware for everyday food and feast: the ceramics of
Fay Morris**

Volume I

Dissertation

Fay Morris

202521804

Supervisor:
Mrs Michelle Rall 838290

Dissertation submitted in partial fulfilment of the requirements
for the degree of Master of Art in Fine Arts, Centre for Visual Art,
University of KwaZulu-Natal: Pietermaritzburg.
July 2018

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DECLARATION

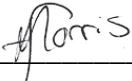
Submitted in ~~fulfilment~~ / partial fulfilment of the requirements for the degree of Master of Art in Fine Arts, in the Graduate Programme in the School of Arts, Centre for Visual Arts at the University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa.

I, Fay Morris, declare that

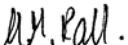
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Name and Signature of Supervisor

13 July 2018

Date

Abstract

This practice-based MAFA-R consists of integrated theoretical and practical components. The theoretical component is divided into two volumes, with Volume I looking at the potential of commensality (eating together) to create a sense of community, whether tableware can enhance communal eating and a discussion of original tableware created by Fay Morris. Volume II, the Ceramics studio manual, documents technical knowledge gained through the research and studio practice of Fay Morris. This includes information such as ceramic raw materials, studio safety and other practical guidelines that would assist practitioners setting up a ceramics studio. An exhibition of selected tableware created by the researcher-practitioner forms the practical component.

Several theories and philosophies underpin this research. Academic findings on commensality and its potential to create a sense of community are explored. The value of handmade utilitarian wares in our culture of mass production and convenience is discussed as well as the Japanese philosophy that ceramic wares have spiritual content. Furthermore, the Japanese method of *kintsukuroi* is found to be a personal metaphor for healing.

The practical component involves the creation of original tableware for everyday use and festive occasions. Unique ceramic wares, some with glass components, are created using the methods of throwing, slip-casting and glass slumping. Details referencing rockpool life are incorporated into many festive wares, inviting close inspection. Both functional and aesthetic considerations for tableware are taken into account. Adopting a practice-based approach, studio practice is built on tacit knowledge and existing skills. New knowledge and additional skills are acquired through practice and discoveries direct further research. Thumbnail images in text illustrate these discoveries.

Keywords

Practice-based research, commensality, tableware, utilitarian, aesthetic, festive tableware, everyday tableware, Japanese philosophy, *kintsukuroi*, porcelain, ceramics, glass, ceramics studio manual, creative studio practice, throwing, slip-casting

Acknowledgements

No man is an island, and this research would not have progressed as it has without the help of my cheer-filled and supportive community, a few of whom I mention below.

I thank my parents for their belief that it would be worth the risk to return to university, and for their constant encouragement throughout this journey. Their quiet, steadfast confidence in me, despite my quirky disposition, has enabled me to believe in myself also.

My precious sister deserves special mention; her timeous phone calls kept me on the straight and narrow with sound counsel.

My ever-caring, ever-kind fiancé helped in more ways than he knows. His logical outlook, wise advice, and practical assistance with my exhibition set-up, were a pillar of strength for me.

I am profoundly indebted to my talented supervisor. A wise sounding-board, always aware of the bigger picture, she refocussed me when I strayed somewhat. I am grateful for the selfless manner with which she offered guidance and support.

Prefatory notes

This MAFA-R combines an interrelated theoretical dissertation, ceramics studio manual and creative works. This document is Volume I of two volumes which comprise the written component. My creative studio practice will be presented in the form of an exhibition of selected original work which has been generated by me during the course of this degree.

The following procedures have been utilised in Volume I:

1. In line with the studio practice of making tableware, references to food have been utilised in chapter headings.
2. In this research, the researcher-practitioner, Fay Morris, will be referred to in the first person when discussing her ceramic work, philosophies and discoveries relating to these.
3. Texts have been cited using the Harvard short form. A list of references is included at the end of this dissertation.
4. All photographs have been taken by Fay Morris, unless otherwise stated. All measurements are given in centimetres, first the height, then width.
5. There has been discussion around the terms pottery/potter and ceramics/ceramist and the writing of David Walters, a practicing ceramist, has guided the author's word choice. He notes that 'pottery' suggests wares made on the wheel and is associated with 'rather dull little shops with predictable 'hairy brown jugs and things'' (Walters 2010). He proposes 'pottery' loses the magical qualities found in this art form. Walters defines 'ceramics' as anything made from clay and fired and feels it is a term taken more seriously. Because this body of work is made from fired clay and explores the mysteries of this medium, 'ceramics/ceramist' have been utilised throughout this dissertation.
6. The following abbreviations have been used:
MAFA-R: Master of Art in Fine Arts (Research)
PBR: Practice based research
UKZN: University of KwaZulu-Natal
CVA: Centre for Visual Art
CPS: Cape Potters Supplies
7. Clay and raw materials from the UKZN Ceramics Department were used in creating the body of work. CPS's industrially produced clay, White Stoneware with Grog and Supa Porcelain, which are referred to as white stoneware clay and porcelain, were the preferred materials.
8. Figures are incorporated in text. A list of these appears after the Contents page.

9. A short glossary is provided at the end of this dissertation to briefly explain ceramic terminology used in text. Volume II provides detailed information on relevant ceramic terms and processes.

10. It must be noted that the total word count of the two volumes exceeds the 30 000 word guideline placed on this degree. Volume I falls well within these recommended guidelines and is presented in the form of my dissertation. During the course of my degree, I realised that it would be advisable to record technical research related to my practice in one separate document. This has become the Ceramics studio manual which is Volume II of the two volumes presented in partial fulfilment of this degree. The information in Volume II is a vital part of this research and needs to be presented for examination purposes together with Volume I in order to provide the examiners with the full scope of this research. It must also be noted that Volume II contains numerous illustrations which contribute to its apparent length.

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Introduction: Canapes

My practice based MAFA-R consists of two integrated components, one theoretical and the other practical. To organise theoretical research effectively, it has been separated into two volumes; Volume I, in the form of a written dissertation, consists of the theoretical underpinnings of this research as well as a discussion of selected practical works. Volume II, a ceramics studio manual, records the technical knowledge gained through research and practice. The exhibition of selected work generated in my creative studio practice forms the practical component which consists of original work in the media of ceramics and glass. To understand my research in its entirety, these need to be viewed together as an interrelated study.

This introduction serves to outline key threads in my MAFA-R; namely, my personal context and commensality, the academic validity of utilitarian ware, the potential of ceramic ware to carry meaning, and the impact tableware can have on food. My preferred materials and making method will also be discussed.

Personal Context

My family is close-knit. I attribute much of this current unity to our daily ritual of eating together during childhood. When I resigned from my teaching job and set up my own studio, I started making tableware with the hope of providing a means of perpetuating the sense of belonging I associate with the communal meal. I soon realised that the facilities at UKZN offered me the opportunity to not only build on my knowledge, but to gain additional skills and hone those that I had

Having spent time in Japan during my undergraduate studies, I witnessed first-hand the value the Japanese attribute to the beauty and soul of handmade ceramic ware. I embarked on this MAFA-R to research academic findings on eating together, which is known as commensality, gain technical knowledge to make beautiful tableware and run my studio, and explore possible links between tableware and commensality.

Towards the intended completion of my studies, I was brutally attacked by two dogs. It left me significantly scarred and with permanent nerve damage to my leg. When I returned to complete this research, after taking a semester off to recover, I found my life-changing experience had given me a new perspective on my work.

Utilitarian ware as a valid art form with emotional content

As my research commenced, I began to wonder about the validity of utilitarian ware as an art form in an academic university setting and if tableware has potential to convey emotional content amongst diners.

Utilitarian ware as art

Current artists, such as Carol McNicol, recognise the importance of making work with a utilitarian function (Harrod & Goldberg 2003:67; Thuman 2007). Furthermore, the same

skillset is required for making sculpture or tableware (Thuman 2007). Defining ware as 'functional' does not make it 'quotidian' (common, everyday and ordinary) (Harrold & Goldberg 2003:67).

Surveying the history of ceramics, Jones (2007:16) observed that industrially produced tableware became 'sterile and featureless'. In reaction to this, studio potters, like Lucie Rie, created utilitarian ware. Intending to promote harmony, Rie's wares were designed both for use and display (Birks 1987:23). An immediate reading of her work is that they are 'straightforward functional' pieces, however, on closer inspection of technique and glazes, a viewer is treated to the excellent skill and sense of design of a master ceramist (Birks 1987:21).

In Japanese culture, humble containers like rice and tea bowls are highly esteemed and have 'an artistic meaning over and above their practical function' (Klein 1987:11). Distinction is not made between artist and craftsman. Utilitarian ware allows the artist as much individuality and opportunity for expression as any other (Klein 1987:8). The high number of studios in Japan, around 3000 located in cities and villages, means the majority of the population has an appreciation of the ceramic process (Klein 1987:7).

Japanese utilitarian ceramists, like Rie, strive for harmony of form and decoration (Klein 1987:7). Other aspects of Japanese utilitarian ware that will guide my making and critical evaluation of my work are colour and asymmetry. Their philosophy of perfect imperfection or imperfect perfection is evident in their wares and the technique of kintsukuroi involves fixing broken ware with gold or silver leaf to enhance the ware. Whilst honouring tradition, Japanese ceramics is not static. This dynamism is evident in that threads of Japanese aesthetic are interwoven with current influence from the West (Klein 1987:8). This relates to my method of working in which I will draw on traditional materials and methods as well as present trends to inform decisions relating to my tableware.

Along with practicing ceramists including Sarah Walters, I recognise the value of striving to improve my technical skills. She notes that as she gained technical knowledge, she had more control over her material and 'the more boundaries [she found] to explore' (Walters 2017). I aim to equip myself with practical skills to create wares that investigate their material and intended function.

The emotional and spiritual value of handmade utilitarian ware

My personal connection with handmade wares goes back to when I was about ten years old. I recall a chunky little blue mug with a teddy bear painted on it, made by my mom's friend, that my sister was given. I wished I also had a special mug, even though there were plenty other mugs to choose from. That was my first encounter with the desirability of handmade ware. To this day I stretch over my stack of uniform white commercial bowls in search of my favourite one-of-a-kind hand-thrown breakfast bowl.

In current society there is sufficient cost-effective, industrially produced tableware. Handmade wares serve a different purpose, touching heart and soul (Love 2007), bringing happiness (Haigh 2008) and providing moments of delight (Harrold & Goldberg 2003:11). Sarah Walters speaks of utilitarian ware 'sitting quietly' in our homes and adding 'sparkle to the intimate daily rituals we perform' (Walters 2017). She recognises the beauty and strength of a utilitarian piece.

Considering the spirituality of utilitarian ware, the philosophies embodied in the Japanese tea ceremony provide insight. The interplay between ware and spirituality is at the essence of this philosophical ritual (Klein 1987:50). The tea ceremony is intimate, and participants are expected to adopt an appropriate spirit to fully appreciate the harmony between art, spirit and nature (Klein 1987:49). Guests enter through The Way of Tea, bowing low through the doorway. They observe the making and serving of tea and take special note of the wares used throughout. After finishing their tea, guests can reach a place of quiet and abandonment of self by silently contemplating the works of art in front of them. This ceremony creates and maintains links between the Japanese people, the ceramists and their wares (Klein 1987:53).

The conscious approach to ceramic wares in the tea ceremony differs from mine, which is more understated and subliminal. Commensal eating in my cultural context does not formally make time and space for reflecting on tableware used. However, it is my hope that my handmade tableware will quietly encourage contemplation and allow for the still refreshing of spirit while the body is nourished.

Using tableware enhance food

I became aware of David Walters, a successful utilitarian ceramist, due to his association with UKZN. He makes tableware for private patrons and custom-made wares for high-end restaurants. In writing about his dinnerware, he says that he ‘seeks to enhance the food which will be placed on it, rather than overshadow it’ (Walters 2010) This resonates with me as I aim for my tableware to add value to the commensal experience. To further equip myself for this task, I will explore the discoveries of a group of researchers who looked at the effect practical tableware considerations like size, shape, weight and presentation had on the perception of the food they contained.

Choice of preferred material and method of making

My studio practice involves creating ceramic tableware, some with glass components. I aim to acquire additional skills to make unique utilitarian wares, specifically bowls. I do not intend to make sets, but rather to explore the possibilities in making a variety of individual everyday and festive pieces. To do so I will experiment with different materials and methods of making. In the following section I explain my attraction to porcelain, a material held in high esteem by ceramists. I then comment on my intended use of the method of throwing to make my tableware.

Porcelain

A brief history of porcelain assists me to understand why this specially formulated clay body is valued for its translucency and strength. In China, porcelain was first used for ritual pieces. Recognising the unique qualities of this clay body, Korea began importing Chinese porcelain wares in the 3rd and 4th centuries AD until local ceramists formulated their own porcelain. Subsequently, Japan and China both invaded Korea, taking home Korean porcelain. Japan

is recorded to have taken 400 Korean ceramists as prisoners, so desperate were they for the recipe of this unique clay body (Doherty 2002:13).

Because of the spice trade, porcelain ware was introduced to the West. Porcelain's unique qualities of translucency and purity made it a luxury art form (Doherty 2002:14). The demand for porcelain ware increased, and efforts were made in Europe to formulate a recipe. Soft paste porcelain was developed in Italy in the 1500s, and later in France and England. The first European porcelain was formulated under desperate conditions. Johann Friedrich Böttger was employed by Augustus the Strong. His job was to produce gold and when he failed, he was threatened with his life. To save himself, he claimed he could make highly valued porcelain. Augustus spared him and sponsored his research (Doherty 2002:15). Collaborating with Ehrenfried Walther von Tschirnhaus, Böttger worked tirelessly and systematically, and in 1710 the Meissen porcelain factory was opened.

Porcelain embodies 'precious' in a variety of ways. Imported porcelain wares were seen as special luxury items indicating wealth. The recipe for porcelain was precious and highly sought after. The physical qualities of the clay body are described as 'exceptionally white, lush translucent and magical' (Walters 2010). Because it can be worked to incredible levels of thinness, it becomes fragile and precious. I feel that the preciousness of this material will suit the specialness of my more elaborate celebratory pieces. I aim to use porcelain to communicate the tenderness and value I place on eating together.

Having experienced first-hand the fragility of life during my dog attack, I now connect with this material in a new way. The evil darkness I experienced during the attack contrasts with the lightness (in both weight and colour) and purity of porcelain. A symbol of preciousness, I find in porcelain a personal metaphor for the special treasure that life is. Using porcelain will add a new personal layer of meaning to my work.

Throwing

Throwing dates back to 2000BC (Woody & Smolker 1976:ix) and is described as 'one of the most exciting, expressive and impressive' making methods (Hamer 1975:297). Along with mould-making, it is a popular method of creating utilitarian ware: my initial reason for selecting this method. Throwing also appeals to me because of my approach to working which is similar to that of Rie; namely that one works hard and practices rigorously to learn a new skill.

Making research accessible

The knowledge gained from my technical research will be essential to empower me to manage my own studio safely and efficiently. Ceramic raw materials, clay bodies, glazes, methods of making and firing schedules are important aspects of this. To satisfy the requirements of practice-based research, my generated knowledge needs to be shared so that it can be verified (Biggs & Karlsson 2010:2). I will compile my technical research into a Ceramic studio manual (Volume II) which will be useful as a reference tool for both me and other ceramists.

Having outlined the key threads of my research in this introduction, chapter 1 will present my research questions. Following those, my literature review will incorporate pertinent sources consulted, and finally my theoretical framework and methodology will be discussed. Chapter 2 will look at the theory of commensality and Japanese philosophy surrounding tableware. It will conclude with research on the impact practical considerations such as the weight, colour, size, shape of tableware have on the perception of food. In chapter 3 I will explore discoveries I made in my studio practice, relating specifically to wares' bases, rims and surface treatment. I will then discuss selected works in detail. In my conclusion, I will draw all these threads together, highlighting connections between my studio practice, commensality and Japanese philosophy. I also comment on the effectiveness of a practice-based approach to my research. Paths for potential further experimentation will be mentioned.

Chapter One: First Course – Starter

Introduction

The first chapter of this dissertation is an overview of my research conducted under the umbrella of PBR, a qualitative research approach. PBR recognises the central role I, as a practitioner, play in my research and places value on my context (Ings 2011:227). Cyclical in nature, PBR develops as new knowledge is generated. My research will affect my practice, which in turn guides further research. It affords me opportunity to include various philosophies in my theoretical framework and to incorporate numerous methodologies. The resulting research is presented in this dissertation, my Studio manual and exhibition.

After outlining my research questions, I will discuss key texts in my literature review. My theoretical framework will be explained in terms of methodological, analytical, philosophical and epistemological aspects. Methodologies I selected under PBR include heuristics and a discussion of them will conclude this chapter.

Research Questions

The overarching question that drives my research is how I, through my research, can equip myself with the critical and technical skills that will enable me to create a variety of unique tableware, taking into account commensal, aesthetic and functional considerations. This question gives rise to two sub-questions.

The first questions how considerations of commensality and tableware design affect my approach to making my wares. I will focus on how academic research on commensality and tableware design could inform the choices I make about the forms and surface treatment of my tableware.

My second sub-question asks how considerations of functionality and aesthetics affect the design of my ware. I will aim to expand my technical knowledge of ceramic processes and materials to assist me to create interesting forms and surface treatments.

In the academic context of UKZN I will gain critical evaluation skills which I will use to evaluate my tableware.

Literature Review

I sourced literature to guide my practice-based approach, provide technical information, explore the community-building potential of food and keep my visual vocabulary current.

Five key texts dealing with practice-based research (PBR) are particularly helpful to me. Gray & Malins are authors also involved in PBR. Their personal experience is evident in their book which explains PBR as a research method and provides me with guidelines on interrogating my practice to direct further research (Gray & Malins 2004). They explain the research process to practice-based practitioners and outline possible methodologies (Gray & Malins 2004:103-120). Candy & Edmunds' chapter in Biggs & Karlsson (2010) will be fundamental in furthering my understanding and adoption of PBR. They explain the

interrelatedness of artwork and text as well as the interaction between practice, theory and evaluation (Biggs & Karlsson 2010:3;11)

Two texts will inform my reflective practice, which is essential to PBR. Bolton's (2010) chapter on reflection and reflexivity will assist me to keep a reflective journal by providing practical tips (Bolton 2010 5;15). Bolton (2010:1;4) also explains the theoretical strengths of reflective writing, emphasising it is a state of mind, giving the researcher opportunity to safely use experiences to learn more about themselves and their practice. Highlighting transparency in research, Ortlipp (2008:697) wrote a particularly helpful guide on recording, reflecting on and evaluating one's work and shows how a reflective journal can be used to track research progress and influence research design (Ortlipp 2008:699-703).

To guide my heuristic approach, I will rely heavily on Ings (2011), who recognises the value of 'self-experience'. This helps me to understand that, as a practitioner, I am central to my research and will assist me to situate my new connection with, and insights gained about, my work following my dog attack. Ings (2011:227-229) validates my tacit knowledge and the knowledge I generate in my practice and reflective journal as primary information sources which form an essential part of my research.

To explore the relationship between eating together and a sense of community I will study two key texts. Visser (1991) maintains that while eating is a biological necessity, it is also an essential ritual for building community. Her a historical overview of commensality illustrates that it is a philosophy common to humankind from ancient times (Visser 1991:X). Visser also mentions the Japanese philosophy towards tableware and aesthetics which I will discuss further in the following paragraph (Visser 1991:X). Purnell's thesis (2013) researches the effect 'family dinners' had on a community. His research assisted me in understanding the community building potential of food and the change it brings in a community. This then guided me in understanding the potential commensal value of my tableware. A comprehensive article by Fischler (2011) will be useful to define commensality. He also identifies food as a leveller, a common need of humankind and then explains its role in society (Fischler 2011:532).

An essential area of my research is the Japanese philosophy of the interplay of food and tableware. Klein's (1987) comprehensive book on Japanese ceramics provides information on how utilitarian wares are valued in Japanese culture. Cardozo & Hirano (1998) document the life of Japanese artist Kitaoji Rosanjin who is known for his interest in the relationship of food and tableware. They include many of Rosanjin's thoughts, which will influence my work and will be recorded in this dissertation.

Researchers at Oxford University, Spence, Harrar, & Piqueras-Fiszman (2012) provide insight on the impact the size, weight, colour and shape of tableware have on how a diner experiences food it contains. Their findings will assist me with practical decisions regarding my tableware design.

Throughout my research, I will require accurate technical information on ceramic raw materials, clay bodies, glaze recipes, firing information and methods of making. For this information I will rely heavily on standard ceramics reference books written by Rhodes' (1971), Hamer (1975) and Fraser (1974; 2005) which have not dated as most information

remains constant. DigitalFire, a website authored by current authorities in their specific field will serve as a quick and easy source of technical information (<https://digitalfire.com>). A key text for glaze research is Cooper (1989) who provides a wide range of base glazes, allowing me to take this research further in developing my own glazes.

There are several current specialist ceramic journals I will consult; *Ceramic review* (UK), *Ceramics monthly* (USA). Reading these keeps me abreast of current research and thinking, technical information, exhibitions and ceramic artists.

An important aspect of my research is current food trends. By accessing a variety of online sources such as Instagram feeds, online journals and artists' websites, I can observe current developments in food presentation. Local and international artists whose work inspires me include David and Sarah Walters, Rogan Brown, and Mary O'Malley (figure 1). Chefs and magazines I follow on Instagram include Camille Beccera (figure 2), founder of the 'bowl food' trend, (@camillebeccera), Food 52 (@food52), Bon Appetit Mag (@bonappetitmag) and Lukas Volger (@lukasvolger).



Figure 1 Mary O'Malley adds intricate organic details onto utilitarian pieces.

Mary O'Malley, Teacup and saucer, Bottom feeders series, date unspecified. Porcelain, 10,2x10,2x12,7. [<http://www.arch2o.com/wp-content/uploads/2013/05/Arch2o-Bottom-Feeders-Mary-OMalley-2.jpg>, accessed 15 August 2016]



Figure 2 Camille Beccera frequently posts images of her dishes on Instagram. Her feed informs me about contemporary chefs' tableware choices which then guides my wares' design. Featured above is her renowned Dragon Bowl from Café Henrie.

[<http://pixel.nymag.com/imgs/daily/grub/2016/05/04/cafe-henrie-04.w600.h400.jpg>, accessed 15 August 2016]

Theoretical Framework

I have organised this discussion according to a suggestion made by Osanloo and Grant (2014:13), namely that a theoretical framework encompasses methodological, analytical, philosophical and epistemological aspects.

Theoretical framework: methodological aspects

A PBR theoretical framework recognises the central role I, as a practitioner, play in my research and offers a wide variety of methods to use. PBR involves a trajectory between practice, theory and evaluation. Practice is the action, experience or experiment and is generally the motivation for the research (Biggs & Karlsson 2010:10-11). The theory refers to how knowledge is examined, critiqued and applied. In addition, it provides the context for the action. The researcher-practitioner uses evaluation as a lens through which to

consider their practice. Evaluation includes observation, recording, analysing and reflecting (Biggs & Karlsson 2010:11).

Acknowledging the rich experiential knowledge of a practitioner, PBR recognises that my research process is initiated by practice and reflection on my action leads me to further research (Malins & Gray 1995:3). Relevant to my research, the making of artefacts is viewed as an essential aspect of knowledge generation and the research process (Biggs & Karlsson 2010:2).

The requirements of this practice-based MAFA-R are integrated practical and theoretical components. According to Candy & Edmunds (in Biggs & Karlsson 2010:3) ‘any art object made as part of ...research does not, by itself, embody knowledge. ...the text that accompanies the work may indeed illuminate ... new knowledge produced’. For research to be valid it needs to be disseminated, original and contextualised (Candy & Edmunds in Biggs & Karlsson 2010:6). Therefore, I present my findings in Volume I, Volume II and the accompanying exhibition.

My wares made as part of my studio practice are contextualised in chapter 2, where I discuss commensality and Japanese philosophy on ceramic wares and food presentation. Chapter 3 is a discussion to guide viewers in reading my wares. Volume II documents the technical knowledge I have acquired during my research.

A heuristic approach is characterised by systematic exploration and discovery and can be included under the umbrella of PBR (Kleining & Witt 2000:1). Originating from the Greek word meaning ‘to discover or find’, Ings (2011:227) observes that heuristics is more an attitude than prescriptive approach. This approach will be important in my research as it does not place emphasis on a rigid structure, but allows fluidity and values ‘deeply constituted experience, reflective search, sensitive overview and discovery’ (Ings 2011:277).

Other characteristics implicit in a heuristic approach include the study being qualitative, focussing on ‘intelligent, informal questioning and guesswork’ to acquire knowledge (Ings 2011:227). Personal experience, including tacit knowledge, imagination, intuition and emotion, are of importance (Ings 2011:240). Defining tacit knowledge, Ings (2011:228-229) claims it is an intuitive sense of what is right. It acknowledges a practitioner’s gut feel and insight and is vital for heuristic judgement and evaluation.

A ‘study of the inner space’, a heuristic approach is conversational. The researcher-practitioner is expected to ask open-ended questions of the material. (Kleining & Witt 2000:3;5). Because of this dialogue, new findings may require a researcher to change the direction of their research or discard previous ideas. To enrich the interaction of practitioner and material, a wide variety of perspectives and methods should be utilised (Daly, Christian, Yilmaz, Seifert & Gonzalez 2012:464) (see Methodology for a discussion of methods I have utilised).

Theoretical framework: analytical aspects

PBR requires that the practitioner makes work and critically analyses product and progress (Gray & Malins 2004:58-63). This approach remains qualitative as subjective decisions are made about the outcomes’ success.

Gray & Malins (2004:38) explain that critical analysis requires researchers to think about their thinking. It encourages questions, imagination, connections, interpretation and application, which lead to new discoveries or understandings. When analysing process critically, researchers are advised to find value in perceived failure (Gray & Malins 2004:41). The critical analysis of my thoughts recorded in my reflective journal, as well as my work, will be an essential ingredient in the study of my practice, directing further research.

The use of a reflective journal allows practitioners the freedom to mindfully interrogate experiences to learn about themselves, their work and how these interact, providing clarity of practice and ownership in actions, choices and practice (Bolton 2010:3-4). Ortlipp (2008:699-703) finds that a reflective journal serves as a tool to clarify research aims and approach, choose a theoretical lens, raise concerns, map out research as it develops and identify a researcher's baggage (the personal context a researcher brings into the research setting). My reflective journal will provide a means to navigate difficult experiences such as others' perspectives, what causes me anxiety in my practice, how to alter my practice and to interrogate the concept of combining commensality, functionality and aesthetics in my work (Bolton 2010:4).

Theoretical framework: philosophical aspects

My research includes exploring two philosophies: the community-building potential of commensality and Japanese thought on the value of handmade tableware. Both are discussed in detail in Chapter 2.

Fischler (2011) maintains that commensality elevates the selfish biological function of eating to a communal interaction resulting in cohesion. Research has been done exploring whether commensality enhances a sense of community and belonging (Purnell 2013; Visser 1991). These findings will be utilised to guide practical decisions regarding my tableware.

Japanese thought values tableware aesthetics and the presentation of food (Klein 1987; Visser 1991:217). Japanese artist, Rosanjin, a self-identified epicurean, viewed tableware as carefully selected clothing for food (Cardozo & Hirano 1998:125). This philosophy validates my thoughts on food and aesthetics and will guide decisions I make when considering the form and surface treatment of my every day and celebratory tableware.

Theoretical framework: epistemological aspects

A unique practitioner, I acquire knowledge in ways specific to me and my context. My tacit knowledge is valuable as I am both practitioner and researcher (Biggs & Karlsson 2010:7). At varying stages of my research, I will take on different roles to gain knowledge, becoming a generator of knowledge, a self-observer and observer of others (Gray & Malins 2004:21).

Methodology

PBR is the overarching methodology of this research, combining knowledge gained from a variety of methods. It emphasises critical engagement with practice and gives me the freedom to develop my own vocabulary for research and practice (Gray & Malins 2004:40-41). What attracts me to this method is that I can continue with it after my studies as many

practitioners have adopted it as a way of making for life (Biggs & Karlsson 2010:16). A practice-based researcher should initially view the research theme or problem broadly before narrowing it down. I will need to be an active participant in my research, consciously reflecting-in-action during practice to further direct my research (Malins & Gray 1995:9; Gray & Malins 2004:22).

A heuristic approach usually begins with researchers immersing themselves in the creative experience, theme or problem (Ings 2011:228). According to Kleining & Witt (2000:4-5), the general method for heuristic research consists of five stages. A practical application of this is illustrated in glaze testing. The first stage is the action itself; for example, mixing up and firing a new set of glaze tests. In the second stage, I would document my experience of the action, physically feeling and viewing my fired test glazes. Thirdly, reflection on the action is interrogated either privately or through discussion with peers or colleagues. First making my own evaluation, I would then present my test glazes to my peers for their input. Fourthly, essential findings then determine the next course of action. Taking personal discoveries and outside input into account, I could set about adjusting glaze recipes where necessary. In the fifth stage, for heuristic research to be valid, the results need to be able to be verified and I would document my technical research in my Ceramic studio manual.

Due to the lack of structure of a heuristic approach, researchers may find it challenging. (Ings 2011:229). Furthermore, it does not lend itself to the completion of a list of specific tasks, and so it is difficult to determine the success and end of the research. A practitioner researcher may also find it difficult to plan how to collect and organise data. To structure my research, I will use a shelf to display glaze tests, keep an organised glaze recipe book and up to date reflective journal to promote an effective research style.

PBR advocates for triangulation which allows numerous methods to be applied to gather a wide variety of data, permitting rigorous interrogation from a variety of angles (Gray & Malins 2004:31, Hamilton, Smith & Worthington 2008:24). This will enable me to understand my findings more fully to provide a wider perspective of new knowledge generated (Gray & Malins 2004:31). Specific methods I will use are photography, a reflective journal, experimentation and samples, and every day use of my wares.

Photography

I take photographs of interesting objects, scenes and textures I found in nature (figure 3). This allows me to bring inspirational material into my studio. In addition, I will photograph my progress, processes and wares (figure 4 and 5) to enable me to critically reflect on my work (Gray & Malins 2004:108-109). For the photographs to function as more than a ‘happy snap’ or ‘pretty picture’, I will print them out and annotate them in my reflective journal. They thus become an analytical tool and a means of communicating my research.



Figure 3 I took this photograph of a sprouting rhubarb while working in my vegetable garden. The colour and texture will become inspiration for my wares.



Figure 4 Photograph of a hand-built foot popping through the base of a bowl. This happened when slip remained in the bowl too long before being poured out, causing the base to soften too much. I can learn much from failures.



Figure 5 Hand written details of glazes used in the base of a bowl are photographed alongside the bowl to provide a visual record of the reaction between a combination of glazes and other materials.

Reflective journal

I will record my thoughts and processes as my research progresses in a reflective journal (figure 6). Guided by Bolton (2010:8), I will include academic research, personal musings, inspirational imagery, technical discoveries and difficulties in my writing. I will also insert relevant photographs as visual cues. Bolton warns against limiting reflection to major events, and urges the reflective writer to also contemplate small incidents. I envision that frequently reflecting on every day happenings in my life and practice will provide a wealth of knowledge and greater understanding of my work (Bolton 2010:8).

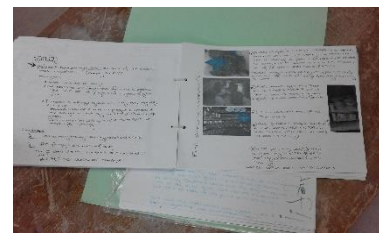


Figure 6 Pages in my reflective journal showing my thoughts and discoveries when working with porcelain for the first time.

Ortlipp (2008:697) identifies a reflective journal as a means to identify personal context and acknowledge bias and this will assist me to keep my research transparent. Bolton (2010:8) suggests that a reflective writer should not look for answers and concepts but rather trust that the reflective process will bring topics to the fore. Furthermore, an event or artwork should be examined from various perspectives. I will use a variety of text styles (for example short quotes, annotations, narratives and musings) to keep my writing fresh and create more opportunities to gain understanding (Bolton 2010:12). In using ‘through the mirror’ reflective writing, a practitioner should mindfully interact with their practice and critically consider their experiences (Bolton 2010:4;10;15). Reflective writing will enable me to clearly observe, communicate, use implicit knowledge and gain insight into my work (Bolton 2010:15).

Experimentation and samples

A heuristic approach is characterised by orderly inquiry and its resulting discoveries (Kleining & Witt 2000:1). Using embedded knowledge and research, I will, for example, test clay bodies during my making processes, and mix up small quantities of glazes which will be evaluated after firing. Glaze experiments need to be conducted systematically with precise measurement (figure 7). On evaluation I will use suitable glazes on my wares. I will explore different representations of my source material on smaller maquettes and select successful forms and glaze combinations for celebratory ware.



Figure 7 Testing mocha diffusion effects as an alternative organic decoration

Daily use of my wares

I will use my tableware in my home to observe its durability when washed, used in the microwave and how easy forms are to stack and store (figure 8). How readily rims chip and how the glaze responds to frequent use will also be noted. This knowledge will guide the making of future tableware. In my reflective journal, I will also record personal observations made when others use my wares (Gray & Malins 2004:106).



Figure 8 Using my handmade tableware in my home will help me determine its durability.

Conclusion

This Chapter started with an overview of my practice-based research and an outline of my research questions. I then highlighted key texts which will assist me to gain greater understanding of PBR, commensality, Japanese thought on tableware and practical considerations, technical information and online media in order to be aware of current food trends. Methodological, analytical, philosophical and epistemological aspects of my theoretical framework were discussed. Finally, I have explained my PBR methodology and heuristic approach. These include methods of photography, a reflective journal, experimentation and samples, and every day use of my wares.

Chapter Two: Second Course – Soup

Introduction

This chapter will begin by defining two key terms, ‘ritual’ and ‘commensality’. After a brief historical overview of commensality as well as academic research on the topic, this chapter will explore the effect it has in creating a sense of belonging, commensality’s ability to affect meal patterns and food intake and positive and negative aspects of commensality.

I will then discuss research conducted as to whether aesthetically pleasing tableware can be used to enhance this social ritual. I will look at Japanese philosophy on tableware and the writings of Japanese artist and epicurean, Kitoaji Rosanjin. Finally, this chapter will investigate research done on the impact practical considerations such as the weight, colour and size of tableware can have on the perception of food and hence the dining experience.

Defining ‘Ritual’ and ‘Commensality’

I will use the definitions of ‘ritual’ and ‘commensality’ to situate my research on commensality.

Ritual

Visser (1991:18) defines a ritual as an ‘action frequently repeated, in a form largely laid down in advance’. Counihan (1999:17) notes that ‘family’ was originally used to denote people sharing the same hearth, the central and intimate place in the home. In this dissertation, I refer to family broadly, including biological, adoptive and close relationships in which people live/d under the same roof. Pleck (2000:10) defines a family ritual as a ‘highly stylized cultural performance’. It occurs frequently and requires set behaviours. It can include any repeated meaningful behaviour, from big, public occasions such as Christmas dinners to small, intimate events like reading bed-time stories (Pleck 2000:10).

From these definitions, I submit that communal eating is a ritual. People eat together frequently using appropriate set behaviour. Mealtimes have conventions providing security: commensals know what is expected of them (Kristensen & Holm 2006:152). Shared meals are enjoyed amongst friends and acquaintances and within family units, making it a family ritual. Family members have individual set roles – who sets the table, who washes the dishes, who serves, and so forth – which differ from family to family. While a ritual can be national, religious or cultural, individual families personalise it. One can thus identify familial behaviours unique to one’s own family (Pleck 2000:10).

Commensality

Synonymous with the terms ‘eating together’, ‘sharing a meal’ and ‘communal eating’, commensality originates from two words: comm (meaning ‘together’) and mensa (meaning ‘table’). Thus, commensality literally means being together around the table (Fischler 2011:529). Sobal & Nelson (in Fischler 2011:529) view commensality as ‘eating with other

people'. They maintain that commensality is epitomised in the common, every day meal (Fischler 2011:531).

Hirschman (1998:18) claims that a more modern term for commensality is 'conviviality', viewing commensality as a 'technical term'. I have selected to use 'commensality' and its derivatives because commensality is the more frequently used term in academic writing. In addition, I feel not all shared meals are guaranteed to have a convivial atmosphere and thus commensal describes eating together more accurately.

Commensality explored

Eating: more than biological functioning

Early anthropologists and sociologists viewed eating as a purely biological process, as it is the only natural way for mankind to obtain nutrition and energy to sustain life (Fischler 2011:530). Simmel (in Frisby & Featherstone 1997:130) notes that eating is the most selfish act mankind partakes in. Humans can share experiences and emotion, but every mouthful of food is 'one lost to everybody else'.

Simmel then develops his commensal theory stating that it transforms the

'...selfishness of eating into a habit of being gathered together such as is seldom attainable on occasions of a higher and intellectual order. Persons who in no way share any special interest can gather together at the common meal ... there lies the immeasurable sociological significance of the meal' (Fischler 2011:531).

Fischler supports Simmel, describing eating as the primary biological function *and* primary social function of mankind (Fischler 2011:530, my emphasis added). The sharing of meals is a common human condition, also found in many religious rituals including Shabbat, Ramadan, Eid and Christmas. He finds evidence of a higher value attached to eating in the Biblical verse in Deuteronomy 8:3 (which is repeated in Matthew 4:4): 'Man shall not live on bread alone'. While man requires bread (symbolising food) to live, man also needs the Word of God for life. Here, eating is given religious relevance, and is used for spiritual nourishment (Fischler 2011:530). Christian communion is a ritual which involves eating. Participants share bread and wine, symbolising the broken body and shed blood of Christ necessary for their forgiveness and redemption. In a discussion on communion, Fischler (2011:532) identifies food as a leveller – everyone eating the bread 'symbolically shares the same, undivided food, ie the body of Christ'. Commensality unites individual, private and public communal actions.

A further social function of commensality is bonding. In mammals, nursing compensates for separation from the mother's body. As family members mature, commensality 'preserves, neutralises, [and] builds up kinship' (Fischler 2011:533). Festive occasions bring separated families and different generations together around one table. Dining out is an established step during courting, through which bonding is nurtured with specific behaviours and locations (Fischler 2011:534).

Brief historical overview of commensality

The following selection of historical examples illustrates that since antiquity man has viewed commensality as a way to build and maintain community.

The ancient Greek's god, Zeus, is also called 'Xenios, Protector of Hospitality' (Visser 1991:93). Hirschman explains that ancient Greek banquets were used to unite people. Individuals were not bound into the group through slaughtering the animal for the banquet. Rather, they became members by eating its meat at a ceremonial meal (Hirschman 1998:22). There is a close correlation between commensality and 'social and citizen relationships'. Research shows that Greek communal banquets allowed for the formation and strengthening of friendships and political ties (Hirschman 1998:23).

In the 1500s Catherine de Medici used commensality to increase a sense of patriotism and unity. She travelled throughout her French kingdom, hosting banquets, which are recorded as inspiring and uniting citizens (Visser 1991:28).

King Charles V (1338 – 1380) ate with his servants. His relationship with them is known to be typified by trust and camaraderie (Fischler 2011:536). Additionally, I suggest that King Arthur's success was possibly related to the fact that he and his men were known as the King Arthur and the Knights of the Round Table. However, as courts increased in size, commensality became onerous and, by the seventeenth century, King Louis XIV was reported to eat alone. In light of this discussion it is perhaps no surprise that his court was apparently run more autocratically (Fischler 2011:537).

Communal eating has also been commented on by philosophers. In 1889, thinker Robertson Smith declared commensality 'tied [diners] by a bond of friendship and mutual obligation' (Mennell, Murcott & Van Otterloo 1994:115). French philosopher Michel de Montaigne cautioned: 'One must be careful not so much of what one eats as with whom one eats. There is no dish so sweet to me, and no sauce so appetising as the one derived from good company' (Fischler 2011:531).

Writing at the turn of the twentieth century, Simmel commented that commensality regularised eating. Firstly, people come together at a determined eating time. Furthermore, practices during the meal regulate behaviour (Frisby & Featherstone 1997:131).

Numerous academic sources find that commensality is a ritual common to humankind throughout history occurring both within familial units and a wider social community (Fischler 2011:529; Visser 1991:ix; Dunbar 2017:1). Commensality, while common to man since the earliest of times, has only recently become a research topic in its own right.

Brief historical overview of commensal research

Traditionally, anthropologists have researched cultural food preparation and consumption. Mennell, Murcott & Van Otterloo (1994:1) note that very little was written sociologically about food and commensality. Factors listed for the neglect of this research include the biological need for food making it appear mundane to study and 'advanced' levels of society were given priority (Mennell, Murcott & Van Otterloo 1994:1). Because a commensal study involves looking at the domestic, and traditionally woman's functional realm, it was

historically viewed as having ‘lesser’ academic clout. Mennell, Murcott & Van Otterloo (1994:1) speculate that hunger was not often experienced by the class of people from which most anthropologists would have hailed and so was possibly deemed unnecessary to research.

A search on historical writings about food and eating reveals that cultural food and eating was viewed as valuable information about people groups. In 1845, Engels penned *The condition of the working class in England*, mentioning the poor quality of food consumed by the working class. Half a century later, Prince Kropotkin (1892) recognised food as being ‘the most basic ... means of subsistence’ (Mennell, Murcott & Van Otterloo 1994:2). Weber records the cultivation of plants and domestication of animals in *The agrarian sociology of ancient civilisations* (1909). Durkheim (1912), and Spencer (1888-90), note the purpose of food in religious contexts (Mennell, Murcott & Van Otterloo 1994:2). In *The theory of leisure* (1899), Veblen speaks of eating and drinking rooted in a hope for conviviality and religious background (Mennell, Murcott & Van Otterloo 1994:2). When studying commensality, Simmel’s frequently quoted essay, *The sociology of the meal* (1910) is a seminal work in this field. He emphasises commensality’s importance, noting that social norms and routines formed around food and eating supersede the actual calorie content consumed (Mennell, Murcott & Van Otterloo 1994:3). Elias’s *The civilising process* (1939), discusses the development of table manners, while Riesman (1950) studied the symbolic shift in the meaning associated with various foods (Mennell, Murcott & Van Otterloo 1994:3).

Mennell, Murcott & Van Otterloo (1994:5) suggest that commensality is currently more widely researched due to growing awareness worldwide of nutritional issues (such as eating disorders and mass hunger). In addition, as professions in dietetics, nutrition and preventative medicine gain status, studies around food, eating and eating in community have increased.

Early food studies looked at nutritional value, calorie count, health benefits and effects on physiology (Fischler 2011:532). Recent research has expanded to include eating context and social environment.

Preliminary comments on food

In Old English, ‘foster’ means ‘food’, indicating the strong relationship between food and nurturing (Counihan 1999:17). Conner & Armitage (2002:2) find that people’s perception and understanding of others is influenced by observing their food choices. Furthermore, personal choice of food is a way of ‘self-presentation’ (Conner & Armitage 2002:3).

Structuralists (including Lévi-Strauss and Verdier) recognise the mediating role of food between culture and nature. People identify an element from nature as ‘food’, transform it through a preparation process, and serve it up in a cultural context. This process is referred to as the ‘culturizing’ of nature (Counihan 1999:20).

A cultural indicator, food preference also identifies nationalities or people groups: Italians are labelled ‘Macaronis’, Germans ‘Krauts’, and the French are known as ‘Frogs’ (Mennell, Murcott & Van Otterloo 1994:117). A dog-eating people group in the Congo are called

‘Baschilambua’ (dog-people) and the ‘Dhor’ are a subgroup in Bombay who eat otherwise forbidden beef.

Group membership is also signified by sharing food. Rotary dinners, Women’s Institute teas, matric dance dinners, church suppers are a few examples. The daily family meal is also a signifier of a bond, reminding individual members that they are a part of family unit (Mennel, Murcott & Van Otterloo 1994:115-116).

Three factors influence food choice: sensory, psychological and physiological. Sensory factors involve how the texture, taste, smell and appearance of the food is perceived, while psychological factors note the impact the understood benefits, attitudes, preferences, mood and personality of the individual have on food choice. Psychological factors reveal that social interactions affect food choice, either because of others’ physical presence, ‘how we use food to communicate with them’, or how we judge others’ food choice (Connor & Armitage 2002:114;124).

Food carries emotional weight. Having eaten their full, Sardinians are known to say ‘*consolada(o) soe*’, meaning ‘I am consoled’, acknowledging the strong connection between food and feelings (Counihan 1999:21). Conner & Armitage (2002:128) discuss three types of communication through food: food sharing (indicating friendship), social feeding (often in a romantic relationship) and additional consubstantiation (when food has made contact with another first, showing an intimate relationship). How food is shared communicates the degree of intimacy between individuals. Purnell (2013:88) finds that hosts use food to demonstrate their ‘generosity, hospitality and friendship’.

Contemporary society and commensality

Two trends in contemporary society threaten commensality. Kristensen & Holm (2006:153) observe that convenience-eating, or eating-on-the-go, is the dominant eating pattern in contemporary society, negating the dining table. Additionally, Mennel, Murcott & Van Otterloo (in Fischler 2011:529) noted a growing trend towards food-individualisation; people controlling their own food intake for dietary and life-style reasons. They argue that this is dangerous for cohesion in society. Purnell’s research was motivated by his observation of the decline of communities within society (Purnell 2013:1). Fischler (2011:529) acknowledges that a communal eating crisis exists, and poses two questions: Whether commensality is indeed declining? If so, is there a link between its decline and public health problems including obesity (Fischler 2011:529).

Despite the above-mentioned shift in current eating patterns, the family meal remains a means of maintaining familial bonds (Kristensen & Holm 2006:153). Research shows that parents who ate as a family while growing up desired to perpetuate this ritual, seeing it as a time to be together and converse meaningfully (Friend, Fulkerson, Neumark-Sztainer, Garwick, Flattum & Draxten 2015:6). Additionally, set routines and roles were established as family traditions (Friend, Fulkerson, Neumark-Sztainer, Garwick, Flattum & Draxten 2015:6).

Researching society’s perception of the importance of commensality between couples, Kniffin & Wansink’s (2012) interesting study confirmed that subjects viewed extra-pair

commensality (in other words, eating with someone other than their present partner) as a possible threat to their romantic relationship.

Dunbar's recent research (2017:1) finds that regular commensals are generally happier and feel more life satisfaction. They also appear to have higher levels of trust for others, a greater involvement in their community, and a larger support-base than eaters who dine alone. Furthermore, closeness is enhanced when the shared evening meal includes laughter, storytelling and alcohol (Dunbar 2017:9).

Of relevance to my research is that Dunbar (2017:1) ran a path analysis of the data collected during her research to establish whether commensality affected community, or whether previously formed communities ate together. She found that the causal direction moves from eating together to bondedness and not the inverse (Dunbar 2017:1).

People rarely choose to consistently eat alone. A ritual of relaxation, eating together is an opportunity to socialise and rekindle friendships (Visser 1991:23). While conformity to a group forges a sense of identity, the act of doing something together strengthens these ties. Thus, eating together fosters a sense of belonging and identity (Visser 1991:24). Anderson (1997) (in Kristensen & Holm 2006:153) finds that people desire to partake in a ritualistic, commensal, home-cooked meal. However, this commensal ideal frequently gives way to busyness and has become an 'increasingly symbolic activity'.

Visser notes that conversation is expected at Western society dinner parties as a way to enjoy each other's company. W. S. Gilbert stated: 'It isn't so much what's on the table that matters, as what's on the chairs' (Visser 1991:262). She explains that because portions are plated, verbal communication creates the sense of community. Mealtimes tend to be quieter in cultures sharing a communal dish as 'non-verbal cooperation' is required and the act of eating creates a sense of togetherness (Visser 1991:264). A predominantly silent and contemplative ritual, the Japanese tea ceremony embodies a different philosophical stance to a social ritual.

A cultural perspective of the body affects eating. Kristensen & Holm (2006:154) found that the average American, valuing aesthetic bodily qualities, eats primarily to maintain their body. In contrast, Italians view their body as 'a source of pleasure, a reflection of family' (Kristensen & Holm 2006:155). Tradition and social mealtimes were valued, and eating was perceived as a social interaction (Fischler 2011:542). These findings were confirmed with qualitative research, establishing that Americans emphasize the value of individual choice when eating and the French, Italians and Swiss had a more social view of eating (Fischler 2011:542).

Managing eating patterns is affected by work and life activities. Kristensen & Holm (2006:160) report that many interviewees struggled to combine commensality and everyday life. Associated difficulties identified included a lack of time, variety of schedules and different bodily rhythms. Their research looked at professional's lunch-times and identified three main types of eating: eating at a set time, eating in turn and eating independently (Kristensen & Holm 2006:165). Eating commensally at a set time was most effective in regulating socialising, consumption and maintaining weight.

Benefits of commensality

Eating together has individual and social benefits which are classified, using Dunbar's divisions and terminology, into communal, networking and personal categories (Dunbar 2017:2).

Communal benefits

Relationships within the wider community are strengthened through commensality (Dunbar 2017:2). Fukuyama suggests that community is not just a location but rather refers to the links created by common experiences and values (Purnell 2013: 133). Purnell researched the effect of commensality on community by hosting a weekly 'family dinner' with neighbours. Purnell observed a growing sense of community amongst diners over time. On interviewing attendees, he found that they felt that eating together had created 'a sense of belonging, ... a sense of connection' (Purnell 2013:71).

Furthermore, the type of food brought to the communal table and amount consumed are other ways food is used to communicate to others (Connor & Armitage 2002:3).

Often, commensality that starts out as communal progresses to a networking level, which is eating with family and close friends.

Networking benefits

Relationships are maintained and deepened through more frequent eating with friends and family (Dunbar 2017:2), enhancing a positive identity, a sense of unity and well-being (Friend, Fulkerson, Neumark-Sztainer, Garwick, Flattum & Draxten 2015:2). Commensals are afforded an opportunity to interact through discussion, reminiscing, sharing opinions and imparting information (Hirschman 1998:29).

While this bonding is healthy for the familial unit, commensals benefit individually (Dunbar 2017:2).

Personal benefits

Nutritionists found that solitary eating often leads to an unbalanced diet – solitary eaters tended to graze on snacks and among the elderly poorer nutrition was observed (Mennell, Murcott & Van Otterloo 1994:116). Eating with company tends toward a balanced diet and regular eating times.

Dunbar records research proving an individual's well-being and happiness is affected by the extent of his/her social relationships. Biologically, endorphins are released during singing, laughing and dancing, creating a heightened sense of closeness between participants (Dunbar 2017:2). Endorphins are also released to control eating and thus she argues that the act of eating promotes bonding between commensals (Dunbar 2017:2).

Personal benefits particular to children

The wide variety of benefits for children eating regular family meals includes: greater fruit and vegetable and less soft drink intake, better school performance, smaller chance of abusing alcohol and smoking cigarettes, healthier body-weight control, less chance of

becoming depressed and possible positive effects on long term eating patterns (Friend, Fulkerson, Neumark-Sztainer, Garwick, Flattum, & Draxten 2015:2).

Children exposed to family narratives often recounted during mealtimes have a high self-esteem, experience familial unity, bond closely with their parents and have a positive self-image (Bohanek, Fivush, Zaman, Lepore, Merchant & Duke 2009:490). Family dinnertime conversations revolve around stories, reminiscing and both parents' and children's social activities, rather than academic or work-related discussions. This is a valuable time for parents to help their children navigate interpersonal interactions and conflict as well as to learn to empathise with others (Bohanek, Fivush, Zaman, Lepore, Merchant & Duke 2009:507).

Although the positive effects of commensality are numerous, far-reaching and diverse, there are also disadvantages to communal eating.

Negative effects of commensality

Research identifies possible negative effects of commensality. Visser (1991:94) discusses power-struggles commensality may bring about, as well as the anxiety of hosting and expected reciprocation of dinner invitations. Mennell, Murcott & Van Otterloo (1994:117) state that by inviting diners the host excludes others, causing potential offence. Clendenen (1994) (in Connor & Armitage 2002:115) found that eating with others in a relaxed setting increased food consumption. These negatives appear to me to be minor when compared to the benefits of commensality.

This discussion on commensality has found that eating together creates and maintains a sense of community. One of my research objectives is to explore if and how I can enhance this ritual through my tableware.

Enhancing the commensal experience with tableware

Japanese influence

While in Japan, I found Japanese food presentation fascinating. Visser explains that the Japanese consider what foodstuff a specific container will hold when deciding on its shape and size. She notes the variation of colour, size and shape in Japanese tableware: '...taste, as well as factors such as seasonal changes and the character of festivals and occasions for celebration, should be reflected in the dinnerware chosen for a particular meal' (Visser 1991:216).

Japanese guests consider and praise wares separately from the food. A host considers the guests' possible moods and thoughts and sets out tableware accordingly. A very proper host may leave the room for a time 'so that the guests may be left at liberty to look around and comment on the dishes, the room, and its furnishings without embarrassing the host' (Visser 1991:217). This is in stark contrast with the West, and my cultural context. Food is not

complimented extensively, and neither is the plateware bearing it. At a formal dinner, a comment on the tastiness of the meal suffices (Visser 1991:218).

Kitaoji Rosanjin, a talented Japanese artist, produced works in engraving, calligraphy, painting and ceramics. His overarching passion was food and how to present it properly (Cardozo & Hirano 1998:9). Born in 1883 and was raised by a family of poor farmers, initially he managed to eke out an existence but, by the 1930s, became possibly Japan's most famous chef at the time (Earle 2013:26).

Managing the acclaimed restaurant, Hoshigaoka, in Tokyo, Rosanjin combined his love of food, its presentation and ceramics by making wares for the restaurant and being involved in menu decisions. Many of his beliefs, including seasonal cooking, and using fresh ingredients, are reflected in current Japanese cuisine, but he is best known for his conviction that food is clothed by the dish it is served in (Earle 2013:26).

Moreover, just as attire can be used as a signifier, serving dishes give cues as to the importance of the meal. His wares were stand-alone works of art, but their 'charm was most apparent when in use' (Cardozo & Hirano 1998:9).

A self-professed epicurean, Rosanjin recalls an incident from his youth. Seeing him eating tofu (a relatively inexpensive food) on a piece of stunning red-tinted glass, a colleague remarked that Rosanjin was extravagant. Rosanjin realised food choice did not make much impression but presentation did (Cardozo & Hirano 1998:99). This is a manner of thinking that I have adopted, that presenting everyday food well has the potential to elevate it to something noteworthy.

When asked why he made ceramic ware, Rosanjin replied that it was because of his 'dedication to fine food', saying that he did not find satisfaction in a delicious meal alone (Cardozo & Hirano 1998:75). He mused that tasty food deserved plating of a similar level of beauty. Food served in a lesser dish made the meal incomplete (Cardozo & Hirano 1998:74). I agree with Rosanjin to a large degree. A purpose of my gaining technical skills is to make beautiful tableware that complements food.

People content with low-grade tableware can only produce low-grade food. People raised on low-grade food can only become low-grade people.

Kitaoji Rosanjin
(Cardozo & Hirano 1998:125)

Why seek out beauty? Is beauty to be a mere diversion, or a friend of the heart? If the latter, there must be a spiritual exchange. *Then* it is true beauty indeed; this is the realm of paradise.

– Kitaoji Rosanjin
(Cardozo & Hirano 1998:85)

Japanese thought on beauty and craftsmanship has inspired and freed me in my creative practice. Sōetsu Yanagi, a leader of the Japanese craft revival, wrote: 'To me the greatest thing is to live beauty in our daily life and to crowd every moment of our life with things of beauty' (Cardozo & Hirano 1998:11). Rosanjin compared encountering a beautifully crafted porcelain bowl to the sense of wonder and awe felt when viewing a 'famous rock garden, a pine tree, or a spray of blossoming apricot' (Cardozo & Hirano 1998:81). This illustrates that Rosanjin appreciated the first impressions of beautifully made ware which then invited scrutiny which would reveal practical details of material and process.

Rosanjin felt the essence of a ceramic piece is its form, not little detail (Cardozo & Hirano 1998:75). Discussing ware's imperfections, Rosanjin pointed out that Japanese Old Kutani ceramists painted 'flawed' wares with care. He maintained that early Japanese potters valued the inner essence of the piece and did not see a defect as detraction (Cardozo & Hirano 1998:82). Handmade pieces have their own sense of beauty. That they are not made by a machine adds to their charm, giving them an inner character, a presence of their own.

To make food taste better, put it in a better serving dish. Eat, if possible, in a room with a view. Even if these goals cannot be met, it is necessary to bear them in mind.

– Kitaoji Rosanjin

(Cardozo & Hirano 1998:125)

Japanese culture recognises beauty in everyday life. Yanagi described his impressions after viewing a famous tea bowl. He noted that it was a rather plain bowl, but that in 'the unagitated, the uncalculated, the harmless, the straightforward, the natural, the innocent, the humble, the modest: where does beauty lie if not in these qualities?' (Busch, 2000). On his travels in Japan, Busch, a potter and reporter for the Washington Times, noted that most Japanese found pleasure in handmade ceramic wares and used these daily for serving food, flower arranging and in the tea ceremony (Busch, 2000). Their individuality recognised, tea bowls are often given names.

Thoughts on the importance of food and its aesthetic presentation is obviously not limited to Japanese culture. In recent research on the effect aesthetics had on the perception of food, Spence, Harrar & Piqueras-Fiszman served participants coffee with glass and metal containers for condiments (stir-sticks, milk, sugar). Others were served the same coffee, but condiments were placed in hand-labelled polystyrene cups. A preference for coffee served with more aesthetically pleasing condiment containers was reported. Furthermore, people were willing to pay more, and this coffee was perceived to taste better (Spence, Harrar & Piqueras-Fiszman 2012:8).

Comparing thoughts on aesthetics in 1910 and 2012

Simmel wrote on the aesthetics of the dining experience in 1910, observing that communal meals were elevated to 'aesthetic stylization' (Frisby & Featherstone 1997:132). He proposed that commensals sought satisfaction from both food and aesthetic context which was to be calm, dark and unimposing. Simmel recommended hanging family portraits to create a sense of 'familiarity and dependability' (Frisby & Featherstone 1997:133). The table setting, Simmel claimed, should not appear to be a complete work of art to be viewed from a distance, rather its beauty should invite the diner to partake of it (Frisby & Featherstone 1997:133).

Individualisation in dress, behaviour and speech, was to be strictly regulated. Simmel felt it was appropriate to keep conversation general and typical. He advised diners not to become distracted or excited while eating (Frisby & Featherstone 1997:134).

Looking to define contemporary middle-class taste (the class I associate with), British artist, Grayson Perry, travelled throughout England interviewing people and documenting events. He collated his findings into an hour-long televised documentary and produced a tapestry.

His findings show that taste and communal dining expectations have changed since Simmel's writing a century previously.

Perry (2012) found that the middle class was upwardly mobile, defined by an aspiration to be able to afford their wants rather than needs. People dressed and behaved in a particular manner to signify they were middle class without being too blatant. Hence, name-brands were selected and reknowned housing estates seen as a desirable address. (Perry 2012).

At a Jamie Oliver Cook Party, Perry observed women's choices in kitchen ware and informally interviewed them. He found that pretty but useful goods were selected. One interviewee claimed that she was not looking for a kitchen that matched, and preferred to create an eclectic feel. She hoped her choices would show guests that she had an eye for tasteful items and added it was a challenge to find individual classy items and make them appear to fit together (Perry 2012). Inexpensive items were displayed alongside costly ones in an attempt to marry practical functionality with a sense of wealth.

A recurring theme in Perry's research was that of appearances. Middle class interviewees admitted concern about how they were perceived. One lady commented that when she shopped for household items, she saw herself more as curating than shopping (Perry 2012).

Much of the middle class explore their relationship with food, typically through fad diets, 'real' food and claimed intolerances. The rise of the Farmers' Market as a trendy destination can be attributed to the middle class. At dinner parties, a ritual central to the middle class, Perry (2012) noted that effort was made to have serve tasteful food in a comfortable yet classy setting. The setting did not parallel the atmosphere outlined by Simmel.

In closing this section, my research shows that tableware, and the correct choice of it, can enhance the food presented in it. I have selected Japanese artist and chef, Rosanjin, as an example of a renowned artist and chef who shares my view. If the food is enriched, it stands to reason that the experience of eating it will also be elevated. The human tendency to eat in community has already been discussed in detail. Thus, I feel that these views allow me to conclude that tableware has the ability to enhance the commensal experience.

Thus far I have looked at the combining of commensality with suitable tableware. As an active practitioner, interested in aspects of both aesthetics and functionality, I now consider the effect practical choices such as colour, size, weight and shape have on the food wares contain. In the next section, research into these aspects will be explored in order to see which if any, of these factors should influence choices I make in designing my tableware.

The impact tableware has on the perception of food

Researchers at Oxford University have been doing tableware research particularly useful to me, looking at the effect tableware has on the perception of food. It is important to note that this section looks at the *perception* of food. The food itself remains constant. They note that this field of research is relatively new, the first empirical research reported in 2011 (Spence, Harrar & Piqueras-Fiszman 2012:1). They started with the hypothesis that the tableware and dining environment affect our perception of food and drink. For the purposes of this dissertation, I have chosen to focus only on the effects of tableware on food. Their interesting

research which records the effect music, smell, cutlery and lighting have on diners' perception of food is outside the scope of this dissertation.

Colour

If the saying 'one eats with one's eyes' holds true, it would follow that the colour of the tableware is important. Popcorn was placed in four different coloured (red, blue, green, white) bowls (Spence, Harrar & Piqueras-Fizman 2012:4). In one study, salty popcorn was used and in another, sweet. Popcorn was reported to taste saltier in the blue bowl and sweeter in the white. In a further study, strawberry mousse was plated on a black or white dish. The mousse served on white was 'perceived as 15% more intense, 10% sweeter, and was 10% more liked' than the same mousse served on a black, but otherwise identical, plate (Spence, Harrar & Piqueras-Fizman 2012:4). It would appear that sweeter courses benefit from white tableware and blue enhances a more savoury flavour.

Shape

Serving strawberry mousse on different shaped plates, Spence, Harrar & Piqueras-Fizman (2012:5) reported that the shape of the dishware, whether round, square or triangular, did not affect the taste of strawberry mousse. However, a study by Simner & Ward showed that eating food from a star-shaped plate made food appear to taste slightly 'sharper' than food served on a round plate (Spence, Harrar & Piqueras-Fizman 2012:5).

Shape: bowl versus plate

'Bowl food', an emerging trend amongst proponents of healthy eating has influenced various restaurants and international chefs. Lukas Volger, chef and cookbook author, serves most of his dishes in bowls (Instagram: @lukasvolger). Camille Beccara, one of the initiators of bowl food, is renowned for her Dragon Bowl she developed while chef-in-residence at Café Henri (Mucci 2016). Further discussion on Bowl Food, the bowl form and my choice to use it are discussed in Chapter 3.

Simmel compared a bowl and plate. It is clear that he felt the plate offered a more sophisticated dining experience and this is an indication of the normal of his time and social class. He claimed a bowl is more primitive. Everyone serves from it. Because it is angular or oval and not as closed as a plate, it is softer and invites sharing (Frisby & Featherstone 1997:132). He sees a plate as an individualistic piece of tableware. The food served on it has been claimed by an individual and is no longer shared. Being round, the circular shape signifies a boundary, excluding others (Frisby & Featherstone 1997:133). Ironically, the plate also signifies uniformity as plates generally exist in identical sets.

Shape and volume perception

People subconsciously and automatically make volume judgements using visual cues (Raghubir & Krishna 1999:318). In their study looking at the effect a shape has on volume perceptions, Raghubir & Krishna (1999:313) took three constructs into account: perceived volume (before consumption), perceived consumption and actual consumption. It was found

that increasing the height of a container led to the perception of a greater volume (Raghubir & Krishna 1999:316).

Size

Participants at a social event were given a bowl and served themselves ice-cream. Those who received a larger bowl served themselves an average of 30% more ice-cream than those who had a smaller bowl (Spence, Harrar & Piqueras-Fizman 2012:6). The Delboeuf illusion holds that a given amount of food is perceived to be smaller against the background of a larger bowl. The same amount of food appears larger when placed in a smaller bowl. Spence, Harrar & Piqueras-Fizman (2012:6) use this illusion to explain the larger ice-cream serving in the bigger bowl.

Klara (2004) reports that the average plate size has increased from 25,4cm in 1960 to 30,5cm in 2004 (Pratt, Croager & Rosenberg 2012:299). Consumers' judgement of an appropriate portion size, as well as the proficiency to monitor food intake, is compromised on a larger plate. The increase in dishware size leads to an increase in food consumed (Pratt, Croager & Rosenberg 2012:299). Additionally, research shows that people use a vertical rather than horizontal measure to estimate portion size and thus a larger plate increases the amount of food served (Pratt, Croager & Rosenberg 2012:299). The World Health Organisation identified a link between portion increase and the growing percentage of overweight and obese people (Pratt, Croager & Rosenberg 2012:299).

Weight

A study by Spence, Harrar & Piqueras-Fizman (2012:6) looked at the influence the weight of a container had on the perception of the food in it. Participants sampled the same yoghurt in three identical bowls of different weights. Yoghurt served in the heaviest bowl was rated as '13% more intense, 25% denser, 25% more expensive'. In addition, it was liked 13% more than the yoghurt dished into the lightest bowl (Spence, Harrar & Piqueras-Fizman 2012:6).

I will take their findings into consideration in decisions regarding my tableware. For example, were I to make dessert bowls, I would make them paler coloured glazes and of a conservative size. I would make them with a rounded curve, to nestle into the diner's hand. I would not necessarily follow all these findings. My personal preference is to use clays that are more suited to making thinner, or more refined ware.

Conclusion

Food, while necessary to sustain biological life, has significant social implications that have been recognised since ancient times. My research shows that food was used to study people groups to reveal how they lived.

My studies found that commensality is an essential part of social interaction. Research shows that ancient Greek communal banquets allowed for the formation and strengthening of friendships and political ties (Hirschman 1998:23) and there is no reason why this cannot also be true of today. Furthermore, that commensality is a ritual people wish to perpetuate is illustrated by findings that parents who ate family meals as children wish to continue this method of eating with their own children (Friend, Fulkerson, Neumark-Sztainer, Garwick, Flattum, & Draxten 2015:2). While there are some interesting and noteworthy negative effects of sharing meals, it is my feeling that these are outweighed by the proven benefits of eating in company.

There is no one format of commensality: different people groups worldwide have their own ways of eating together. However, all involve people, tableware and food.

The Japanese appear to be particularly conscious of the wares, as is evident in the structure of their tea ceremony (Klein 1987:53). Additionally, wares are seen as vessels to complement the food they contain and are specifically selected for certain dishes. Rosanjin believed his wares were only complete when they contained food (Cardozo & Hirano 1998:9). Furthermore, Yanagi wrote of the desire to fill everyday life with beauty (Cardozo & Hirano 1998:11), and tableware is one way of doing so. It is my hope that my wares will add a sense of occasion to communal dining, contributing to the experience being enjoyable.

Although Simmel writes unflatteringly about bowls, I have chosen to focus much of my energy onto making them. Current trends of 'bowl food' and 'slow food' have influenced this decision as their philosophy of wholistic, informal, healthy and attractive meals resonates with me.

The colour, size, weight and shape of tableware has been found to impact the perception of food. I will use these findings to inform decisions pertaining to my tableware.

Chapter Three: Third Course – Main Dish

Introduction

Chapter 3 begins by exploring the historical context of ceramics and current approaches to writing about this field of art. I discuss the writings of contemporary critic, Janet Koplos (2017) and ceramist Robin Hopper (2006). Next, considerations pertaining to materials, methods of making and source material I utilised are highlighted. In keeping with PBR, the final section of this chapter examines discoveries I made, regarding my tableware, through my studio practice. Particular attention will be paid to bases, rims and surface treatment of both my festive and everyday wares. Representative samples of my studio work will then be discussed.

Historical context

It has taken many drafts of this chapter to find an appropriate framework to write about my work. To understand why this is so, I turned to literature to help me situate my work in the art world and discovered that critics and artists also struggle to position and write about ceramics.

Throughout history, ceramics as a discipline moved to either side of the hazy line dividing Fine and Applied Art. Recognising this separation early in the twentieth century, Roger Fry, painter and critic, noted that ‘a man can still remain a gentleman if he paints bad pictures, but must forfeit the conventional right to his Esquire if he makes good pots’ (Stair in Livingstone & Petrie 2017:149).

Between the wars, ceramics gained status in art rankings and Bernard Rackham commented on it being a radical art form. In Britain, owing much to critics Roger Fry and Herbert Read, ceramists were recognised as Modernist Fine Artists and their work was shown in prestigious galleries. Using a Modernist framework, ceramics was recognised as the abstract fusion of painting and sculpture. Signifying acknowledgement as an art form, the term ‘studio pottery’ was first used in print 1923 and ceramics received widespread coverage in newspapers, magazines and journals (Stair in Livingstone & Petrie 2017:149).

During the 1930s the attitude towards ceramics started to change. The Depression and Wall Street crash affected the economic climate. At this time Bernard Leach advocated that ceramic wares should be readily available to all, not just the upper class. Over a few years ceramics was demoted to craft status again and Stair (in Livingstone & Petrie 2017:156) comments that affordability, rather than aesthetics, governed ceramist’s choices.

In 1936, in one of the Observer’s articles about ceramics, Jan Gordon, noted that

‘pottery has contrived to straddle branches, appertaining to Fine Art on the one side and to Craft-Art on the other ... though potters always lay claim to be craftsmen, the high art of potting, that is, the production of rare pieces with unique glazes, belongs to the most high-brow of Fine Arts ... much pottery is abstract Fine Art camouflaged in the sheep’s clothing of a humble craft’ (Stair in Livingstone & Petrie 2017:156).

Stair argues that Gordon’s opinion is still generally applicable today.

Current approaches to writing about ceramics

The writing of Koplos clarifies my position as a practicing ceramist. Presenting at The Ceramic Millennium in 1999, she made two key statements on the position of ceramics in the art world.

Firstly, she says that ceramics criticism was weak. Much written about ceramics is found in ceramic journals, which are not widely read in the broader art community (Koplos in Livingstone & Petrie 2017:38).

Secondly, Koplos states that ceramics will never be the same as painting or sculpture. She observes that clay is a material widely used by numerous historical and contemporary artists and their works are found in museums. She contrasts this acceptance of clay as a recognised medium for art-making with the isolation of the ceramic world, defining it as ‘a community based on a material and shared attitudes toward working with it’ (Koplos in Livingstone & Petrie 2017:38). This community has its own technical terms, publications, teaching programmes and galleries. She recognises that the ceramic world frequently comes into contact with the art world, sometimes with resistance, and speaks of existing assumptions that ceramics is not as ‘interesting, as adventurous, ... as important as painting and sculpture’ (Koplos in Livingstone & Petrie 2017:39).

The fundamental issue, Koplos maintains, is that ceramists choose to work in their own medium but want to gain the same status as painting and sculpture (Koplos in Livingstone & Petrie 2017:40). Ceramists can only feel inferior if they perceive painting and sculpture as the ideal benchmark. Koplos encourages ceramists to see their differences as something to be celebrated. Having different considerations, general art criticism cannot always be applied to ceramics.

One of the differences Koplos points out is that ceramics demands more intimate contemplation than painting or sculpture. She recalled being in a gallery and moving from a room of paintings to a room containing ceramics, adjusting her looking to view small detail and nuances, and peer into pieces. She notes that ‘ceramics tends to be easy going as a statement ... yet intense as a demonstration of skill’ (Koplos in Livingstone & Petrie 2017:39).

Koplos predicts that the art world will never fully accept the field of ceramics, and that ceramists should not strive towards inclusion. Should acceptance be a ceramists’ goal, their work ‘would be regarded as poor sculptures rather than good pots’ (Koplos in Livingstone & Petrie 2017:43). In search of the essential elements of ceramics, she proposed including function, technical adeptness and the perpetuation of tradition (Koplos in Livingstone & Petrie 2017:40).

Koplos (in Livingstone & Petrie 2017:44) concludes, commenting that ‘clay has always occupied the space between art and life’. While criticism is important, Koplos claims that there are also places where it is unnecessary, such as around the dining table and kitchen which is where my work is intended to function. However, for the purpose of this MAFA-R, I will exhibit my tableware in a gallery space, foregrounding their technical and aesthetic qualities.

Additional readings have further informed the framework of the discussion of my tableware. Spencer (2017:15) makes use of formal analysis, involving focussed scrutiny of the work; looking at elements and principles of design and the content of the work, as a springboard for discussion. In ceramics, areas to formally focus on are form, surface treatment and content (pers com Rall 2016-2018). Hopper (2006) writes of the importance of functional and aesthetic considerations.

My practice-based approach recognises the knowledge I gain through my practice and requires teasing out my reflections on my work and resulting reflexive decisions (Gray & Malins 2004:59). These show the choices and discoveries I make as my research progresses. A cyclical process, discoveries then inform further practice. Thus, my wares also become part of my journal and documentation of my practice. They record gained knowledge and skills in a visible and tangible manner. In writing about my work, I will refer to specific wares as examples of discoveries I have made.

Materials: some considerations

The table below compares considerations about clay bodies I used for everyday and festive wares.

Everyday wares	Festive wares
Clay body predominantly used	
White stoneware clay	Porcelain
Qualities the clay body offered me	
<ul style="list-style-type: none"> • Strength for the rigors of frequent use • Light fired colour suitable for my glazes 	<ul style="list-style-type: none"> • Refined finish • Translucency when thin • Harmony of body and glaze
Practical considerations	
<ul style="list-style-type: none"> • Microwave- and dishwasher-safe ware • Relatively cheap clay body • Firing temperature of 1200°C keeps electricity costs down 	<ul style="list-style-type: none"> • Microwave- and dishwasher-safe ware • More than double the price of white stoneware clay • Firing temperature of 1250°C adding to electricity costs

Methods of making: some considerations

Below I have tabulated reasons I utilised throwing, moulding and adding sculptural detail as methods of making. These considerations will be discussed in relation to my work in the last section of this chapter.

Method of making	What it offered me
Throwing	<ul style="list-style-type: none"> • Make wares relatively quickly • More control over variety of form than moulding • Strong structure to withstand firing as clay particles have been aligned • Meditative rhythmical process
Moulding	<ul style="list-style-type: none"> • Make identical wares quickly • Option to use hump, slump or casting moulds • Slip-casting utilised my studio scraps
Hand-modelling	<ul style="list-style-type: none"> • Individualise wares • Incorporate source material directly onto my wares • Add delicate detail to encourage careful scrutiny

Source material: some considerations

Countless happy beach holidays, particularly to the Transkei coast, have influenced my choice of source material. I have spent leisurely hours combing the shore's intertidal zone looking for shells and sitting beside rockpools watching small creatures and fish dart about. The intricate details associated with anemones, crabs, starfish, clams, corals, seaweed and the likes fascinate me, and I wanted to bring nuances of this world into my work. I looked at rockpool life for ideas for the little sculptural additions to my festive ware, inviting viewers to peer into or under my wares.

The continuous fluid motion of swells and water rushing in and draining from rockpools creates undulating lines and movement which I have allowed to inform some of my moulded ware's rims. This movement is also transferred to my pieces through the method of glazing I have used. Areas where layers of poured glaze overlap add variation to my wares' surfaces. Furthermore, the clear and tranquil colour ranges of blue, green and white found in water have guided the colour formulation of many of my glazes.

Through my source material, I have also hoped to convey a subtle message of peace and purity, harmony and rest with oneself, others and nature. Additionally, I trust that my celebration of beauty in nature will subtly stir in others an appreciation and respect for our natural world and a desire to make their own living environment more beautiful.

Discoveries made through practice

The record of my practice relating to bases and rims, documents the cyclical process of PBR and my reflexive practices as my research progressed.

Bases

In some cultures, the bases of some wares are rounded as they nestle in the sand or are hung in trees (Hopper 2000:16). In a tabled culture like mine, a base is the flattened lower part of a piece that will rest on another surface. These should be smooth so as not to scratch the surface in use. Chronologically bulleted below, are discoveries I made during my research. Many of these have been taken into account when making the wares on my final exhibition.

Discoveries for everyday ware's bases



Figure 9 An added foot ring with the joining lines evident

Early bases on moulded bowls

- Hand-built foot rings
- Not uniform in shape
- Left evidence of my process in the form of visible joining lines, which could be used to aesthetic advantage but practical considerations of hygiene led me to finish these off in later wares



Figure 10 Thrown jar with a flat base.

Early bases on thrown ware

- Base left flat and excess was trimmed while throwing
- No turning required, saving time
- Wares lacked finesse and were often squat.



Figure 11 Low foot ring on an early thrown bowl

First turned foot rings

- Low
- Impossible to grip when glazing
- Glaze painted on exterior base stuck to kiln shelf

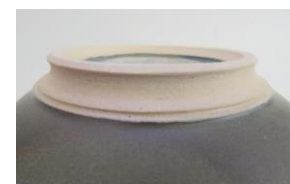


Figure 12 Higher thrown foot ring elevating the bowl

Higher turned foot rings

- Influenced by Lucie Rie's high foot rings (Birks 1987)
- Advantages:
 - Good grip while glazing wares
 - Raise the exterior base so glaze underneath does not stick to the kiln shelf.
 - A 'plinth' creating a sense of lightness
 - A place to sign my wares as painting glaze on the exterior base conceals the traditional location for signing.

Discoveries for festive ware's bases



Figure 13 Moulded bowl with an intricate base

Early hand-made base on moulded bowl

- Rockpool detail added onto three 'legs'
- Kept detail simple
- Crystal growth in glaze reflected sculptural organic growth



Figure 14 Higher rock pile base

Higher hand-made base on moulded bowl

- Rocks piled up to form a stand
- Allowed more room for sculptural areas of interest
- Became unstable in use



Figure 15 Thrown and assembled tall bowl

Thrown and assembled base

- Quicker way to make a high base
- Used lace to create textured porcelain strips as detail
- Echoed base detail on the top of the form



Figure 16 Bowl with separate base

Base separated from moulded bowl

- A result of wanting to make wares interactive to provide opportunity for mindful commensal interaction, the bowl would be passed around, held while another served, and returned to its base.
- Inspiration taken from an interactive table and chair seen on Design Indaba
- Made base form over the moulded bowl, separating it with a layer of plastic
- Intended as a release agent, glass kiln batt wash stuck to the base during the glost firing. I then began to paint on calcined alumina mixed with water as a release.



Figure 17 Unsightly glass kiln wash on the top of the base



Figure 18 Glass bowl on porcelain base

Separate base with glass bowl

- Exposed to possibilities of slumping glass bowls at a glass workshop, I threw bases, manipulated them and added detail interior and exterior.
- Interior detail protected from breaking during handling
- Inside detail viewed through the glass bowl, creating an illusion of looking through water.



Figure 19 Porcelain bowl with glass base

Fused glass-shard base

- Shards were first fused, then arranged in a pile and tack-fused.
- Decorative bases which reflected light
- Glass is a clear and subtle turquoise, the colour of some of my glazes

Rims

Forming a frame, rims separate a ware's interior and exterior and require special consideration. In use, they also function as bases when upturned to dry after washing. Lips touch drinking vessel rims and send messages to the brain regarding 'surface quality, thickness, curvature and the width' (Hopper 2000:103). The diameter of these should be between 7,5cm and 9cm as this is the average distance from the bottom of the upper lip and the bridge of the nose and will ensure comfortable drinking (Hopper 2000:103). Serving wares' rims need to be able to withstand spoons knocking against them.

Discoveries for everyday ware's rims

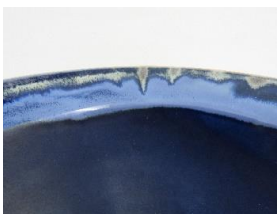


Figure 20 A
combination of glazes
trailed on a bowl's
flange for decorative
effect

Thrown rim of everyday bowl

- Robust to withstand the rigors of everyday use
- Functions as a decorative surface framing the food within



Figure 21 Very drippy glazing can break up the rim, causing disharmony

Overactivated thrown rims of everyday bowls

- Glaze was trailed irregularly around these bowls' rims
- The trailing ran and disrupted the rhythm of the rim at times
- Future trailing attempted to make the glazes blend better around the rim



Figure 22 Glaze trailing around the neck of a mug to enhance the form

Quiet thrown rims on mugs

- Rims were left plain
- Detail was added to accentuate the mug's gentle profile
- The result was more cohesive and gentle than the bowls above

Discoveries for festive ware's rims



Figure 23 Manipulated rim breaks the mechanical uniformity created on the wheel

Manipulated thrown rim

- Once firmed up slightly, thrown wares' rims can be altered
- This creates an organic feel and sense of movement
- Festive rims can be delicate



Figure 24 Dark manganese dioxide on the rim framing the glass pool in the base

Manganese around thrown rim as a frame

- Manganese dioxide ran over crystalline glaze
- It formed a dark frame around the glass-glaze pool in the base



Figure 25 Eggshell thin rim, accentuating the delicate nature of the bowl

Refined moulded rim

- Top left undulating as evidence of the moulding process
- Some areas scraped thinner to vary the rim's thickness
- Thin porcelain rims became translucent
- The result was a light organic, eggshell-like rim accentuating the fragility of the bowl

Surface treatment

Considerations for the surface treatment of utilitarian ware differ considerably from ceramic works not intended for food.

Discoveries for everyday ware's surface treatment

- Surfaces coming into contact with food should preferably have a glossy or satin finish
- Cutlery frequently leaves marks on matt glaze surfaces
- Dry and crusty glaze surfaces trap food making wares unhygienic
- Some ceramic raw materials are toxic and should not be used on tableware
- No sculptural additions as these are too fragile to withstand daily use

Discoveries for festive ware's surface treatment

- All the above discoveries also hold true for the interior surfaces of festive wares
- Sculptural additions allowed for experimentation with texture, metal oxides as food does not come into contact with these areas

Discussion of selected works

I made repetitions and/or variations of the same form to refine my skillset, resulting in a large body of experimental work (Adamson 2012:198). This section presents a representative sample from each group of wares, namely jugs and mugs, everyday bowls, special bowls, loose base bowls, festive sets, centrepieces and specifically autobiographical works. Some of these wares are included in my exhibition. As explained in the introduction to this Chapter, I will use formal analysis, specific functional and aesthetic considerations and content as tools to write about my work. The discussion will conclude with personal reflections and identify reflexive decisions arising.

Jugs and mugs

Ganagana moody

A set of six blue glaze trailed stoneware jugs arranged in descending height order



Figure 26 Morris, F. 2018. *Ganagana moody*, 16 x 17,5 (largest jug). White stoneware

Glenn Adamson (in Elkins 2012:198-199) addresses skill acquisition in art schools and highlights the importance of cultivating the correct attitude, one of perseverance, towards developing a skillset. Sharing Lucie Rie's belief that one must work hard at something for a long time before becoming skilled at it, I spent many hours at my wheel, refining my throwing skills (Birks 1987:50). The making process facilitated PBR reflection and evaluation of practice (Candy in Biggs & Karlsson 2010:5). Observing my throwing improvement, I challenged myself to make a set of jugs, descending in size, but similar in form. I weighed out consistently decreasing amounts of clay and the final result was a group of six jugs that achieved my objective.

Each jug's profile shows a curved belly narrowing into a neck before flaring out at the rim. A handle springs from the base of the neck and re-joins onto the body as it tapers to the foot ring, introducing movement into the form. All six jugs are glazed in the same manner: a dark blue satin-smooth interior and a lighter nickel-blue exterior. A glaze-trailed band just below the neck accentuates the form and activates the surface. The handle is simple and practical. When the jug is upturned in use or washing, a little abstract glaze painting is revealed inside the foot ring as a surprise to add beauty to everyday experiences.

Ganagana moody means ‘the ducks go home’ in Malagasy. When I lived there, friends and I walked single-file down a busy street daily to get to work, often told we resembled *ganagana moody*. On arranging the jugs in descending order, I was reminded of the familiar phrase and it felt an apt title. The blue glaze evokes a sense of water and the negative spaces speak of a duck with her ducklings following in tow. Furthermore, these are intended to be everyday jugs in the home, robust for frequent use, and referring to home in the title is fitting.

Bowls

A discussion on the bowl form will contextualise my decision to make bowls.

Historically, the bowl form was the first created to eat from. Initially made by cupping one or two hands, it was then emulated in pinch pots which developed into a variety of bowl forms. The spiritual symbolism of the bowl shape is one of giving or offering (Hopper 2000:18). When in use, my bowls embody the host’s giving of sustenance, both nutritional and relational, to guests.

Being tactile, the nestling of a bowl into my hands is comforting, the curves intimately cupped by my hands (Yoppolo 2017). Like ceramist Naomi Cleary, I feel that bowls ‘are a reminder of the warmth and comfort found in domestic spaces’ and I wish to pass on this value to others (Donner April 2016). Furthermore, researchers claim that serving food in a bowl enhances eating, keeping food warm for longer, and providing a concentrated olfactory and visual experience (Spence, Harrar, & Piqueras-Fiszman 2012).

Bowl Food is a way of eating that has gained popularity since 2016 on various social platforms. International chefs, Camille Beccara and Lukas Volger, design many of their meals for bowls (Mucci 2016, Regensdolf 2016). Earlier this year, Bowl Food was included as one of the courses at the royal wedding (Naylor, 2018). Celebrity chef and author, Nigella Lawson dedicated an entire chapter in a recent book to bowl food and is quoted saying, ‘If I could, I’d eat everything out of a bowl’ (Naylor 2018).

In simple terms, Bowl Food is a meal presented in a bowl. The dish is typically comprised of healthy ingredients and emphasis is placed on nutritional value as well as presentation. The constituents are prepared separately and then combined in a bowl. Says acclaimed chef and ceramist, Dan Cox, the diner experiences ‘a voyage of discovery through the bowl’, eating through different layers, revealing what lies beneath (Naylor 2018). Cox notes that presenting food in a bowl is easier than on a plate where food-stacks frequently topple over.

Bowl Food shares aims with the Slow Food movement, a reaction against fast food chain stores. It began in 1986 in Rome, and emphasised the use of local, seasonal, artisanal products, traditional recipes and relaxed communal dining. Both advocate for leisurely wholesome eating of healthy handmade meals. Both place value on the meal as an enjoyable sensory experience, rather than a rushed necessity (Austin 2016:29).

Influenced by Bowl Food and Slow Food, as well as my personal preference for a bowl, many of my forms are bowl-like.

Everyday bowl set

Studio lunch

A set of 7 stoneware bowls, glaze trailed around the rim and distributed to my colleagues



Figure 27 Morris, F. 2017. *Studio lunch*, 3 x 17 (largest). White stoneware

Whether subconscious or not, I, as a practitioner, have reasons underpinning my actions which are usually related to ethical values (Bolton 2010:4). The creation of *Studio lunch* was made to test readings about commensality and the aesthetic value of tableware. Regarding commensality, I wanted to see first-hand whether eating together could create a greater sense of unity, a time in our day to share discoveries and struggles, within the community of post-graduate ceramics colleagues at UKZN. Additionally, I noticed that few colleagues brought nutritious lunch when working full days in the studio. From my reading on the aesthetic value of tableware, I hoped to motivate students to bring lunch by making a handmade bowl for each of them.

Eight similar shallow bowls were thrown taking into account different students' food preferences. The open bowl form accommodates both wet and dry lunches, allows for mindful display of food, keeps different food types separate as well as allowing rapid cooling of hot meals during short lunch breaks. A variety of food safe glazes were applied in different combinations on the interior and exterior of the bowls with complimentary glaze-trailing around each rim, adding visual interest.

My practice-based approach allows me to use my work both as an artefact to study and as an experimental 'apparatus' (Candy in Biggs & Karlsson 2010:5). I studied the effect of

glaze combinations and used successful ones on future wares. *Studio lunch* was experimental apparatus used to determine whether my wares could influence student behaviour.

This project was launched with a bring-and-share lunch for my colleagues. Each student was invited to select a bowl they preferred and to use it frequently. Encouraged to take informal photos of their bowl ‘in action’, I received informal snaps from some colleagues (figure 28 – 30). These bowls were also used at subsequent department lunches (figure 31 – 33).



Figure 28 Noxie using her bowl to present muffins.



Figure 29 Anda sent this picture, excited by the way the greens of the grapes and bowl interacted.



Figure 30 Post-graduate ceramics student sent a snap of their supper stew in their bowl.



Figure 31 Student lunch using my tableware



Figure 32 Studio pizza using my tableware.



Figure 33 Meeting over birthday tea. Unprompted, Gillian selected to use her bowl to present the butter for the hot cross buns. A jug I made is also pictured containing iced tea.

After the initial lunch, colleagues ate together weekly and used my tableware. I often observed bowls on washing up rack, indicating frequent use on other days. It is my hope that these wares added to ‘the experience of connection’ of the students to their day by providing them with a moment of contemplation when using their handmade bowls (Donner April 2016).

I believe that, at least for one colleague, using my bowl encouraged him to bring lunch. He excitedly told me he had brought proper lunch one day soon after receiving his bowl. Later he mentioned a friend had commented that his bowl looked as if it needed fancy food in it

(pers comm Sphe 2017). As he has now graduated, I do not know if he still uses his bowl. However, if for only a short while, I am certain the handmade bowl I gave him made him conscious of the potential of finding pleasure in food.

While I was recovering in hospital, my colleagues had a lunch and, as a means of including me, used my tableware and sent me a photograph (figure 34). I feel their action confirms that at least in this instance my tableware could create a greater sense of community.



Figure 34 Lunch on 8 September 2017 using my bowls. This is the picture that my colleagues took and sent to me.

Small bowl set

Three crystalline stacking bowls

A set of three thrown porcelain bowls, glazed in a subtle blue crystalline glaze with a pool of glaze in the centre



Figure 35 Morris, F. 2018. Three crystalline stacking bowls, 5 x 14,5 (largest). Porcelain

My personal enthusiasm, affection for and connection with porcelain is clear from my reflective journal entry inserted on the right (figure 36) My reflections on using porcelain include the following: 'The purity and translucency appeals to me for my tableware. I am wanting my wares to be precious, delicate, pure in body, form and meaning' (12-12-2016). I believe these bowls highlight porcelain's qualities of purity, beauty and refinement.

It was amazing! Once centered and pulled up, one can barely feel it between one's fingers. I made myself only throw cylinders - just to get the feel for it.

Figure 36 Excerpt from visual diary illustrating my fascination with porcelain

Three bowls, decreasing in size, are thrown with a gentle curve formed with a metal kidney and stand on low foot rings. When stacked, the rims are all about the same height, and the concentric circles they form are reminiscent of ripples on water. This watery theme is furthered by the glaze's subtle blue tones, and the little glaze pools collected in the bottom of each bowl. The pool's irregular outline contrasts with the mechanically thrown rim.

Bolton states that 'learning and developing through examining what we think happened' is part of the reflective process (Bolton 2010:13). Initially I fired these bowls to 1200°C; the glaze did not flux properly, and thicker areas bubbled. On reflection I re-fired them to 1240°C and added a glaze with a lower melting temperature to the base pool. This resulted in the fluxing of the glazes in the base and complete fusion of glaze raw materials. Having made this discovery, I no longer fire this glaze to 1200°C.

Loose base bowls

Slumped: glass bowl with porcelain base

A slumped glass bowl on a thrown and modified porcelain base



Figure 37 Morris, F. 2017. *Slumped: glass bowl with porcelain base*, 13 x 20. Porcelain and glass

Candy (in Biggs & Karlsson 2010:4) discusses interactive art, recognising that it is through public interaction that a piece is fully completed. The audience participates in the 'realisation of the work itself'. This was a key motivation in my choice for making these loose base bowls. Kleining & Witt (2000:3) write of the research process being conversational in that the researcher asks questions of the material and product. Through these bowls, I asked two

questions: How I could use slumping in two different materials? and How my bowls could enhance commensality more directly?

Slumped over a mould causing a soft fold on the rim, the glass bowl is formed from one continuous curve. Transparency varies on the glass surface, with areas that are more opaque undulating in the bowl interior. The rounded glass rim provides a subtle green-blue accent.

My intention in throwing the base was to utilise the slumping tendency of porcelain when stretched beyond its limit. I threw the base and then applied uneven pressure to the top half to cause it to slump partially. The resulting organic curves are reflected in the glass bowl's rim fold. Groupings of small clam-like details on the interior and exterior are left unglazed, in contrast to the transparent glossy glaze over the base. The clarity of the glaze contributes to the stillness and purity of the ware, unifying the glass and stand in finish.

I found the combination of slumping two very different materials unifying. Both materials produced soft organic curves relating to one another, allowing the eye to flow smoothly over the piece. Like ceramist Jami Porter Lora, I felt like a collaborator with my materials and method of making. Starting out with an idea, she speaks of adapting it because 'the clay has its own ideas. I like the feeling of being led by the material' (Lesser 2017).

Reflecting on the final product, I found the glass bowl rested uneasily on the glossy glazed base. Future bases could be thrown wider at the rim so that the bowl could nestle deeper into them.

Centrepieces

Rockpool centrepiece

A small porcelain plate with rock pool detail, glazes merging organically, and covered with a glass dome



Figure 38 Morris, F. 2017. *Rockpool centrepiece*, 4 x 16,5. Porcelain and glass

Intended as a centrepiece, I threw this plate wide open to make space for a little underwater scene. It contains an imagined world, with the mystery of the crystals and glaze effects creating magical intrigue and beauty. Peering through the glass dome, which distorts the rockpool detail much like water would, allows the viewer to briefly escape, peering into the pool to examine the intricate detail (Koplos in Livingstone & Petrie 2017:39).

The plate for *Rockpool centrepiece* is porcelain thrown with a wide flange. A slumped glass dome, covering and protecting the detail, rests on the flange. For a good fit, clay shrinkage had to be calculated. Sculptural additions in the base of the plate are refined and delicate. These allude to a scene in a rockpool containing references to the myriad of creatures, forms and textures I have observed there.

The plate is glazed with a crystalline glaze. During firing crystals grew and activated the surface. In addition, sprinklings of copper wire caused interesting reactions with the glaze. I incorporated actual sea sand near the porcelain rocks and the glaze melted around the sand in firing. The muted colour palette was achieved by the merging of thinly applied glazes on the rock pool detail. I left some areas were left unglazed to create a contrast with the satin and glossy glazed surfaces and to highlight porcelain's purity. The upper surface glass dome is slightly pocked because of the plaster used as a release agent when slumping.

Rockpool centrepiece sits quietly on a table, possibly as a little conversation starter, possibly to provide a moment of private contemplation. It is a container of many things: my increasing technical knowledge, my source material, imagined mystery and delicacy.

A new perspective

Kleining & Witt (2000:5) write of a heuristic approach facilitating the study of the 'inner space of experience'. This has positioned personal experiences, and my processing of them, in this research.

Following my dog attack, my approach to my work shifted. To assist me in dealing with this life-changing event, I sought out the familiarity of creating with clay as a comforting and meditative therapy. This has added a new level of meaning to my work. My reasons for using porcelain have now expanded to include its fragility as a symbol of the temporal nature of life. The way in which it smoothly glides through my hands while throwing has been a calming balm to soothe the negative impact of the brutality I was exposed to. Repetitive actions of making little hand-modelled sculptural additions have given my mind opportunity to find safe rest when overwhelmed. My wares are now containers of my hope for complete healing, becoming functional metaphors of my desired wholeness.

I have also gained deeper appreciation for the Japanese philosophy of *kintsukuroi* (Baime 2014), proposing that brokenness can be beautiful, and defects are not flaws. Although I would previously have discarded breakages, I fixed a group of little broken jars using this Japanese method of highlighting the cracks with silver leaf. The resulting work, *Communal kintsukuroi: healing*, represents my healing, and has helped me to acknowledge the beautiful miracle my scars represent. My last group of work in this research project, *Acknowledgements*, embraces the warping of thinly cast porcelain that occurs in the kiln, usually perceived as a flaw. To me, the warping makes each piece individual, evidencing varying reactions when exposed to heat. Warped wares have become a celebratory symbol of the changes humans undergo through our life-journey, enhancing our character.

Festive sets

Coral bowl set

A set of three serving bowls on coral inspired stands and four smaller bowls made from slumped glass or moulded porcelain



Figure 39 Morris, F. 2018. *Coral bowl set*, 12,5 x 18. Porcelain and glass

On resuming my research, I found throwing a challenge as my right leg was weak. I used moulds to create a festive set of bowls, some with coral-inspired stands. Wanting to convey the preciousness of life, I refined the rims and paid special attention to the coral's detail.

Coral bowl set comprises of interchangeable slumped glass bowls and moulded porcelain bowls with thin, undulating rims. The soft folding of the glass bowl's rim is a result of the slumping process. I used a grozier to disrupt the rim of the smaller glass bowls in order to create a rippled effect and reflect the rims of the porcelain bowls. Larger bowls are supported on delicate stands reminiscent of coral growing on rocks. One bowl nestles into the supporting coral, while the other two stand proud on the tips of coral branches.

The interiors of the porcelain bowls are glazed with a crystalline glaze, and the unique pool in each base is achieved through a combination of glass beads and glazes. The exterior surface of the bowls is unglazed and sanded after firing to render them soft and smooth to touch. The stands' rocks have been glazed with quiet, glossy glazes. Specks of copper create little areas of interest and reference the green pools inside each bowl. Unglazed, the matt coral branches foreground porcelain's fineness and whiteness.

My heuristic approach allows my research and self to be entwined and for personal development to occur alongside project development (Ings 2011:240). *Coral bowl set* represents my personal development in many ways. I sought out pure, fresh and subtle colours as a symbol of my desire for peace, as well as their association with tropical seas, suggesting holidays and refreshing rest. They are deliberately delicate and beautiful in the hope that their purity and lightness will convey my realisation of life's fragility and how it

should be handled with purposeful care. Because real coral grows imperceptibly slowly, I view it as an apt metaphor for my healing process.

Autobiographical series

In this section two groups of work are discussed.

Communal kintsukuroi: healing

Ten thrown porcelain jars, glazed with a variety of glazes and repaired with glue, gold size and silver leaf



Figure 40 Morris, F. 2017 - 2018. *Communal healing: kintsukuroi*, 8 x 7,5 (tallest). Porcelain and silver leaf

In 2017 I threw little jars as test pieces, experimenting with different shapes and glaze combinations. Some successful glaze-pairings formed little landscapes circumnavigating the jar, while others resulted in gently curved quiet pieces with subtle variations in glaze colour where poured layers overlapped. These jars became precious to me and I envisioned exhibiting particularly pleasing ones.

The day after my dog attack, the shelf the jars were displayed on inexplicably fell, smashing the jars (figure 41). The parallel of my broken body and shattered jars was profound. Returning to my studies, my body sufficiently healed, I felt the need to repair these jars as a symbolic act. I intentionally chose to use the method of *kintsukuroi* for its deep symbolism. In her discussion of this method, Bartlett (2008:8) recognises that mending Japanese tea bowls gave them new life. Rather than losing value, repaired vessels gained a ‘new sense of [...] vitality and resilience [and this] raised appreciation to even greater heights’ (Bartlett 2008:9). She makes two observations that relate particularly to me. One is that the silver leaf on the repair-lines draws attention to the crack, and the rupture lines indicate the area of impact and disturbance of the structure (Bartlett 2008:10). In the same



Figure 41 A jar in shards

way, my scars mark where my body was injured and compromised. A further observation is that the repair lines represent time (2008:11). The cracks indicate an immediate shattering. Additionally, slow passage of time is alluded to by the long repair process evident, as well as the assumption that the vessel has been used repeatedly before and after repair. Continuing with the comparison of my jars and body, my scars show the rapid destruction of my body, as well as the slow process of healing and rehabilitation. Bartlett (2008:10) acknowledges the effort that repair takes:

‘Accidental fractures set in motion acts of repair that accept given circumstances and work within them to lead to an ultimately more profound appearance. The only wilfulness in the process is the effort to assist with the rebirth of something whose existence has been threatened, something that has held value for others.’

Self-study is ‘a look at self in action’, recognising the value of interaction with others in learning (Hamilton, Smith & Worthington 2008:17; 20). Applying this broadly, I set about furthering my learning by including others in the repair process. I repaired the jars with people who were key to my journey of healing, including my mom, sister, fiancé, psychologist and close friends. I have included these images (figure 43 and 44) I concede that the images are more informal than those that would usually be found in an academic paper. However, due to the personal nature of the discussion on repairing my jars, I feel that the inclusion of these snapshots gives the reader a holistic impression of the formal yet personal nature of my work.



Figure 42 Mismatched shards leaving gaps in the jar



Figure 43 Chris and I having glued one jar back together



Figure 44 Sarah and I having painted stuck on silver leaf on another jar

A cathartic experience, this process facilitated intimate conversations and a means of processing how life had changed for those involved. I learnt much from individuals’ different approaches to this exercise, including cheer, contemplation, honour, light-heartedness and deep confusion. Some people were incredibly accurate and neat, while others were lax, leaving gaps between shards when gluing and painting irregular lines for the silver leaf (figure 42). Every fixed jar has been exhibited, even the shoddily repaired ones, because their purpose is no longer perfection, but the representation of communal healing they personify.

These jars have gone through three stages of purpose. Initially they were little test pieces, resulting from my practicing to throw in porcelain and used for testing glaze combinations. I then realised that many were small displayable works, and some had little landscapes formed by glaze trailing. After shattering their purpose shifted; previously ‘perfect’ jars have become a personal metaphor of my healing and those who assisted in it. Both myself and my jars will never be the same again; both are now complete in a different way.

Acknowledgements

Multiple porcelain slip-cast sculptural ‘cups’ arranged on four shelves, glazed inside and on the rim



Figure 45 Morris, F. 2018. *Acknowledgements*, 14,5 x 8 (tallest). Porcelain

My technical research included slip-casting and making appropriate moulds for this process. Traditionally this is an industrial process associated with economical mass-production. Anticipating running my own studio, this process could enable me to produce a bread and butter line relatively quickly. Furthermore, casting-slip could be made by processing studio porcelain scraps. Explaining heuristic research, Ings also allows flexibility in the way I proceed in my research (2011:228). Thus, after my dog attack, I found a new application of this method of making.

Acknowledgements consists of many porcelain slip-cast cups, cast in one of three mould sizes. Normally, as part of the casting process, one would trim drips of casting-slip left on the rim. However, I left most of the drips intact as evidence the making process and to individualise each ‘cup’. Formed by a flowing action, the drips connect to my source material, bringing to mind waves on the sea (figure 46). The ‘cups’ are cast thinly, becoming translucent when fired. Due to the uneven weight distribution on the rim, ‘cups’ warp, making each ‘cup’ unique.



Figure 46 Rim with draining drips left as a record of the process

The interior and rim of the ‘cups’ are glazed, and when viewed together visually represent my successful glazes. Variations of glaze thickness on the irregular rim create a watery effect. The exterior is unglazed and sanded after firing, making the ‘cup’ pure white, smooth and soft to hold.

Referencing the utilitarian cup, *Acknowledgements* alludes to people being invited for drinks, generally an open and informal gathering, as opposed to the intimate interaction experienced in *Communal kintsukuroi: healing*. There were so many people who played a part in my healing and these cups, each unique, are my acknowledgement of them. Leaving the cups nameless allows people to choose a cup they identify with. After the exhibition I

will invite friends to select their favourite ‘cup’ as a gift symbolising their involvement in my journey.

I have chosen to display my work on glass shelves supported by stainless steel rods or plinths. Although it was not my original reason, I find these materials carry personal significance. A real danger I faced after the attack was the risk of infection and these two materials are associated with hygienic practice and medical facilities.

Conclusion

In this chapter I have discussed discoveries made during my practice and selected wares predominantly using Koplos and Hopper’s thoughts on writing about ceramics. My practice-based approach has recognised the value of my experiential knowledge. After presenting considerations on my materials, methods and source material, I outlined and illustrated specific discoveries I made through my practice pertaining to bases, rims and surface treatment of everyday and festive wares. I then proceeded to discuss selected wares in detail.

In making my work, I have drawn from various artists and philosophies to guide my approach to my making. The emphasis Lucie Rie placed on repeated practice to refine throwing skills, as well as her technical approach to glazing, resonated with me. I identified with Sarah Walters’ comments that she wished to offer quiet moments of reflection to other’s days with her wares. The Japanese method of *kintsukuroi* and the philosophy it embodies came to have a deeper meaning for me.

I recognise that I have lightly touched on the deeper meaning attached to works created after my dog attack, specifically *Kintsukuroi: communal healing* and *Acknowledgements*. I am aware that an in-depth discussion would further enlighten the viewer and reader as to their content. However, due to their very personal nature, and the fact that I am still processing my own trauma, I do not currently feel prepared to write about them. PBR afforded me the opportunity to create works as a reflection of my personal processing. The works, as well as the way I have chosen to display them, give others space to interpret and give meaning to my experience and make it their own.

Conclusion: Dessert

My primary research question was to identify how I could equip myself with technical and critical skills to create tableware, taking into account commensal, aesthetic and functional considerations. To assist me in answering this question, I adopted a practice-based approach which allowed my research to develop as I made new discoveries. PBR and my heuristic approach recognise the central role I play to my research and thus I could incorporate my personal context and life-events into my research. I believe that PBR was an effective approach for this research as it allowed my research to develop organically.

In my introduction I discussed my personal belief in the unifying value of eating together. I then looked at the validity of utilitarian ware as an art form and through my research found that my work does hold its own in an academic environment. Japanese philosophy recognises that handmade utilitarian ware contains spiritual value, a message I wished to convey through my tableware.

Chapter 1 I dealt chiefly with my literature review, theoretical framework and methodology. I identified key texts that would assist me to answer my research questions and established that there was sufficient academic research on both the theoretical and technical aspects I needed to investigate.

I then discussed my theoretical framework, utilising the divisions of methodology, analysis, philosophy and epistemology proposed by Osanloo & Grant (2014:13). The overarching methodology of my research, PBR, was then presented, as well as my heuristic approach. PBR recognises the central role that I play in my research, as a practitioner with embedded knowledge (Gray & Malins 2004:22). The cyclical nature of this type of research means that discoveries I made in practice informed further action taken. With each firing, I gained more knowledge about glazing; as I practiced throwing, my technique improved incrementally.

In chapter 2 I set out theories and philosophies pertinent to my practice. Firstly, I defined the terms 'ritual' and 'commensality'. Commensality was a term I discovered as I began to research academic writing on communal eating, and I was encouraged by how much research has been done on this topic. Although it is an activity mankind has engaged in since early times, it has only recently been studied as a field in its own right. Simmel wrote that eating is a selfish act, but that the shared meal elevated eating to an important communal interaction (Fischler 2011:531). Through my research, I learnt that contemporary society views commensality as a tradition worth upholding despite busy lifestyles (Kristensen & Holm 2006:153). Furthermore, Dunbar's research (2017:1) supported my belief that people who frequently eat in company are generally happier than lone diners. The benefits of commensality, including the building of community spirit (Purnell 2013:71), deepening of relationships (Dunbar 2017:2) and a more balanced diet (Mennell, Murcott & Van Otterloo 1994:116) were noted.

To establish whether tableware could enhance food I drew on some of the Japanese philosophies that I became aware of during my time in Japan. I had observed that food was presented beautifully, and Visser (1991:216) wrote of the care taken over selecting the correct ware for food. Relevant to my practice, I learnt that Japanese chef and artist, Rosanjin, viewed wares as clothing for food (Earle 2013:26). Wares were seen to embody

function and spirit and even flawed wares were valued for their inner essence (Cardozo & Hirano 1998:82). After my dog attack, this philosophy took on more personal significance.

A series of experiments by researchers at Oxford University looked at the impact colour, shape, size and weight of tableware had on the perception of food (Spence, Harrar & Piqueras-Fiszman 2012). I applied some of their conclusions to my practice but felt that others were not relevant to the work I am currently making. I have made one-off pieces rather than dinner services and thus I have not stuck rigidly to the research findings, leaving room for trends and personal preference. My hope was, and remains, that food could be enhanced by being placed on the correct colour and on beautiful tableware, encouraging care to be taken over the food and enriching the commensal experience.

Chapter 3 began with the history of the position of ceramics in the art world. I used the writings of Koplos and Hopper, as well as the precepts of PBR, to inform the framework I used to write about my tableware. Koplos (in Livingstone & Petrie 2017:40) argued that ceramics is not the same as painting or sculpture and thus, in discussing my works, I paid attention aspects particularly relevant to utilitarian ware using Hopper (2006) as a standard. He highlighted the importance of ceramic wares' functional and aesthetic qualities. PBR guided me to critically reflect on my wares as a means of knowledge generation, and to incorporate personal experiences into the content of my wares (Gray & Malins 2004:59).

After outlining my decision to use porcelain for festive pieces and white stoneware clay for everyday wares, I then commented on the three methods of making I used: throwing, moulding and hand-modelling. Presented in bullet-point format, with accompanying photographs, I set out discoveries I made through practice regarding bases, rims and surface treatment of everyday and festive wares. I then referred to theoretical and technical aspects of my research when discussing selected wares.

Ceramist Courtney Murphy finds satisfaction in making handmade wares in an age where it is often overlooked in favour of the disposable and convenient. Like me, she feels handmade wares, with their small imperfections and allusions to process, allow for 'moments of quiet recollection, meditation, and personal connection' (Donner March 2016). Additionally, I hope the aesthetic qualities of my carefully considered handmade wares will enhance eating together. With commensality in mind, my loose base bowls could encourage interaction when passed between diners.

Further content of my detailed festive wares is an invitation to carefully peer into or under wares to discover the magical world depicted with intricate detail (Koplos in Livingstone & Petrie 2017:39). Other little moments of contemplation are glaze-paintings in the foot rings of everyday wares, only seen when upturned in use or washing. Through my choice of predominantly watery glaze colours, and the evidence of pouring glaze on wares' surfaces, I hope to implicitly convey a message of purity, tranquillity and harmony with one another and nature. My rockpool source material allowed for experimentation with hand-modelling, texture and surface treatment. These details are intended to draw the viewer nearer and evoke a sense of wonder at the natural environment.

I have realised, that though I will always use nature as my inspiration, I need to explore a greater variety of source material. For example, I feel the rockpool themed sculptural details on my tableware limits the type of food that one would want to use these for.

The need to be centred is one life-lesson I feel throwing highlights. The ceramist's whole body should be positioned correctly; their entire being focussed on the task at hand. The Japanese would say that this energy is transferred to the inner essence of the ware (Cardozo & Hirano 1998:82) If one approached life in the same manner, I am certain that beautiful and exciting lives could be formed. Furthermore, a vessel on the wheel responds to pressure. By varying the pressure, the ceramist shapes a non-descript lump of clay into the desired form. The pressures in our lives constantly shape and reform us into more complete beings.

As explained in the 'A new perspective' section in the discussion of my work, my practice-based and heuristic approach facilitated incorporating a life-changing event into my research. I found a personal metaphor for healing in *kintsukuroi*, the Japanese method of repairing wares (Baime 2014). I have also begun to view 'flawed' wares differently, looking for beauty in imperfection. These shifts added another layer of meaning to my most recent work.

One of the difficulties of an integrated MAFA-R is that final editing of this dissertation is taking place at the same time as the setting up of my exhibition. The written component needs to be printed and sent to Higher Degrees before the exhibition is completed. Gallery bookings mean that a candidate does not have the opportunity to set up well in advance. This is not ideal for documenting reflection on final display issues. Lucie Rie commented that only once on exhibition, years subsequent to their making, did she really see her pots for the first time (Birks 1987:74). In beginning to set up my exhibition, I am making new connections between theory and practice, and between wares. I believe this will direct my exploration in future practice.

It is unusual to introduce new images in a conclusion. However, I believe the following photographs illustrate discoveries I made while beginning to set up my exhibition. In a work entitled *Top shelf*, I explore the visual unease and imbalance created by a typically messy Tupperware cupboard found in most kitchens. I stacked numerous porcelain bowls precariously on a glass shelf. To further the sense of disquiet, I mounted this shelf above head height, forcing the viewer to stand on tip toes, or peer up from under the glass to see the bowls. Both actions are frequently performed when working in the kitchen. I set up a trial run in my studio space which has bright fluorescent lighting (figure 47). Only when working in the gallery did I realise the interesting conversation forming between the bowls and their cast shadows in the softer, directional lighting (figure 48). Furthermore, I expect that lighting from below will illuminate the glaze-glass detail on the inverted bowls' interior bases. This will be an aspect to explore as set up continues.



Figure 47 Trial set-up in my studio with fluorescent lighting.



Figure 48 The interaction between the bowls and their shadows became more apparent in the gallery setting.

Furthermore, viewing my work collectively and deciding how to exhibit it has highlighted gaps in my practical work. It is apparent that my wares are of a similar size and that the creation of more festive wares would have made my exhibition more substantial. Varying the scale of my work would have contributed to presenting the generous amount of food associated with feasting.

Koplos (in Livingstone & Petrie 2017:44) comments that 'clay has always occupied the space between art and life'. I feel this gives me permission to make beautiful work intimately connected to daily life. Initially I considered exhibiting my wares as table-settings in a dining-room environment. However, as my research progressed, showing that utilitarian ware is a valid art form and that clay has been used as a medium for artmaking historically and currently, I chose to exhibit my tableware in a gallery space. Additionally, Koplos (in Livingstone & Petrie 2017:44) states that the place for clay to carry 'metaphor and meaning' is the art gallery. I thus believe that this setting is effective in communicating my wares' aesthetic, functional and technical qualities as well as their metaphorical content. In contrast, I expect that my wares be used in the home, for display, as one would other artworks, and on the table. Along with many ceramists, including Nakazato, I believe my wares are only complete when in use (Crowe 2016).

As this period of academic research draws to a close, I am encouraged by Adamson's view (in Elkins 2012:198-199) that art schools are only the beginning of learning, and that learning continues through doing. As I consider my future studio practice, I will be open to opportunities to engage in short apprenticeships and workshops to facilitate further learning. In addition, I will use the valuable PBR skills of recording, reflecting and evaluating on a regular basis to guide my continued learning.

Glossary

Batt: wooden disc affixed to the throwing wheel-head on which the clay is placed

Biscuit: clay that has been fired to between 950°C and 1000°C, has undergone a chemical reaction but remains porous

Casting-slip: clay with a deflocculant added to it to make it fluid enough to pour

Ceramic: when clay has undergone an irreversible chemical process through heating

Clay: a weighty, moist, malleable material that retains its form and becomes hard and ceramic through heating

Commensality: eating together

Deflocculant: a soluble mineral added to clay to increase fluidity

Firing: the heating up of clay works in a kiln to a specific temperature

Glaze: a combination of ingredients coating fired to melt over clay works

Glaze-trailing: the process of trickling a variety of glazes on a piece and then firing it. The glazes melt into each other creating interesting effects.

Glost firing: firing to melt glaze onto works

Kiln: a heat-insulated machine, generally electric, gas or wood powered, able to reach high temperatures used in converting clay to ceramic

Kiln-wash: A mixture of raw materials painted onto kiln shelves to protect kiln shelves and prevent works sticking to them in the glost firing

Mould: a shape frequently made from clay or plaster of Paris used to form clay into a specific shape

Porcelain: a clay body specifically formulated for its properties of translucency and whiteness

Practice-based research: research rooted in the actual making of work

Saggar: A lidded ceramic vessel that other smaller works are fired in for special fuming effects or support

Slip: clay that can be poured, either because of its high water content or the addition of a deflocculant

Slip-casting: a method of making that involves pouring casting-slip into a mould, pouring out the excess and then allowing it to dry

Stoneware: ceramic ware fired between 1180°C and 1300°C

Throwing: the act of making ceramic vessels on a rotating wheel

Wheel: a machine with a rotating head used for throwing

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 Glaze recipe file of Fay Morris
 Reflective journal of Fay Morris

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Tableware for everyday food and feast: the ceramics of Fay Morris

Volume II
Ceramics Studio Manual

Fay Morris

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Tableware for everyday food and feast: the ceramics of Fay Morris

Volume II

Ceramics Studio Manual

Fay Morris

July 2018

Pietermaritzburg

Preface

This Ceramics studio manual forms Volume II of the written component of my MAFA-R. Volume I presents the theory motivating my research and discusses a selection of my works. To communicate my research to others and keep it transparent (as discussed in Volume I), Volume II documents technical and practical knowledge generated as a result of my studio practice. In order to present this research in an easily accessible format, it has been separated from the dissertation presented in Volume I. Related to my written component, selected works produced in my creative studio practice are presented in an exhibition. These three interrelated units provide a holistic view of my research.

The following should be noted:

1. Intended as a working document for studio use, this manual could be put in a ring-binder with plastic sleeves which will protect the pages and allow for the inclusion of additional information such as glaze recipes. Therefore, it is not paginated, but colour page inserts, reflected on the Contents page, aid quick referencing of required topics.
2. I have omitted citations in this document as it would become unreadable, but all sources are listed in the bibliography. In many instances the same information is contained in several sources.
3. Photographs of the mould-making process were taken by May Okafor.
Photographs of the throwing, slip-casting and glass cutting process were taken by Tsholofelo Moche.
The first photograph in the firing section was taken by Michelle Rall.
All other photographs were taken by me, Fay Morris.
4. To give visual illustrations of many of the processes discussed, captioned figures are included as part of the text. For this reason, no list of illustrations is supplied.
5. To assist the beginner ceramist, analogies useful in understanding complicated ceramic concepts have been included.

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Introduction

The field of ceramics encompasses a variety of materials and processes and there are many excellent resources on a wide range of topics. Drawing from some of these, I have compiled this studio manual as an easy reference document for myself, containing technical research relevant to my studio practice. As a student in a teaching studio I recognise the value of each student having a copy of this to which they can add information relevant to their practice. This could also be a useful resource for beginner ceramists working in their own studios. It comprises ... sections, each one separated by an inserted page of a different colour.

In the first section, basic ceramic equipment, tools and studio layout are discussed to assist a ceramist in setting up a new studio. In time, relevant items will be added to suit personal style and preference. Pointers for general studio cleanliness and safety conclude this section.

The second section contains a table of ceramic raw materials and their uses. Their general properties are noted and then specifics pertaining to clay or glazes are recorded. A greater understanding of the chemical make-up of ingredients assists in mixing up and adjusting clays and glazes.

The next section discusses clay in general and clay bodies (white stoneware, porcelain and casting-slip) relevant to my practice. I look at clay workability and the different types of water in clay. The changes clay bodies undergo during firing are tabulated to provide understanding of what happens to the clay in the kiln. The advantages and disadvantages of making one's own clay or purchasing clay are highlighted and instructions for reconstituting clay and making casting slip are included. Diagrams showing common cracks provide corrective measures for construction faults.

Glazing is discussed in the following section. The three basic groups of raw materials making up a glaze are discussed. I then include a section on utilitarian considerations followed by some of my recipes. Photographs of glaze faults and ways to remedy them would assist the studio ceramist to adjust glaze finishes.

The fifth section is dedicated to methods of making. Using annotated photographs, I explain throwing, mould-making and slip-casting step-by-step. I then provide a few of my tips for hand-modelling.

Firing is the magical and intense process which transforms raw clay into a ceramic material. After a couple of tips regarding kiln packing, I include my preferred firing schedules.

Ceramics and glass are two materials that share many properties, and this section records methods of working with glass that I have used when combining glass with ceramics for my tableware pieces.

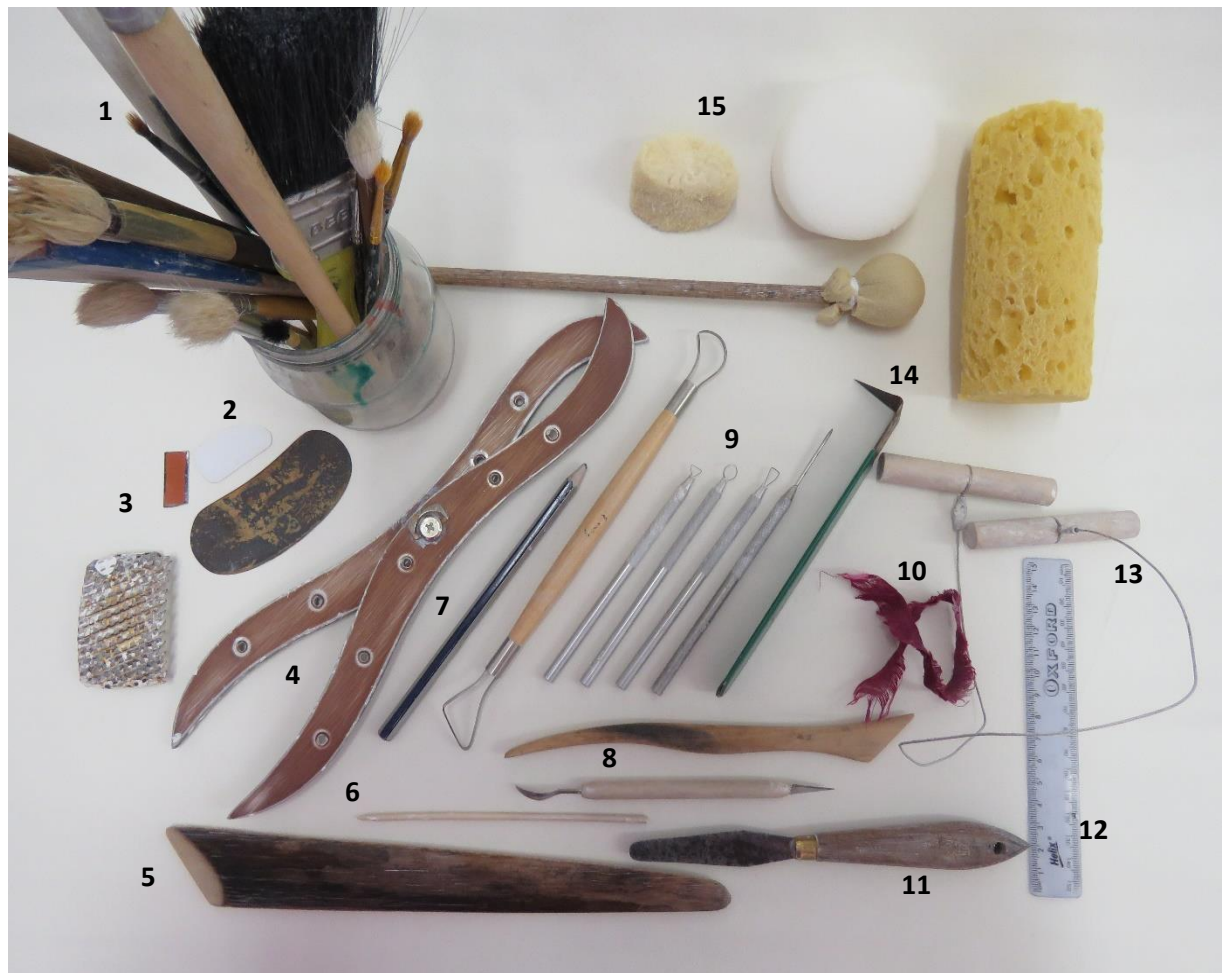
Two reference lists conclude this studio manual. Because ceramic supplies are mostly available from specialist stores, a list of suppliers I used is included. To guide further research, I have supplied a reference list of helpful books, online journals and websites consulted during the course of my research.

The ceramics studio

tools, equipment, layout and safety

Useful tools and studio equipment

The pictures below illustrate tools and equipment I frequently use in my studio. In time, and as one develops a unique style and preferred techniques, more individualised tools can be made or sourced (see List of suppliers).



Tools I frequently used and their uses

- 1 Selection of paintbrushes – glazing, painting, (use separate brushes for transparent and white glazes)
- 2 Plastic and metal kidneys – shaping forms, can be specially cut for a specific curve
- 3 Hacksaw and surform blades – refining forms and rims
- 4 Callipers – measuring interior and exterior diameters
- 5 Bamboo knife – trimming excess off base when throwing
- 6 Wooden stick – useful for adding detail when modelling
- 7 Pencil – marking measurements, especially when turning
- 8 Hand-building tools – working in joints, adding texture, working into small spaces
- 9 Stainless steel and wooden handled turning tools
- 10 Strip of fine cloth or chamois – compressing rims when throwing
- 11 Palette knife – scraping glaze off foot rings, mixing oxides
- 12 Ruler
- 13 Cutting wire – slicing clay, wiring thrown pieces off batts or the wheel head
- 14 V-tool – trimming base when throwing, refining form when turning
- 15 Selection of smooth and coarse sponges for cleaning up, smoothing surfaces, applying and soaking up water when throwing



Useful studio containers

1 Large bucket – useful for collecting clay scraps, mixing slip and glaze, washing floors

2 Variety of containers (and lids) collected from home to store raw materials, glazes and other items

3 Plastic basins for water, mixing glaze, to catch glaze when glazing

4 Jug for pouring glaze



Additional equipment necessary for mixing up glazes and glazing

1 Banding wheel – to rotate your piece while pouring glaze, for working on generally – particularly hand-building

2 Sieve – glazes should be sieved through a mesh #80 or #100 sieve

3 Accurate scale (showing one or two decimal points) – for weighing out raw materials

The kitchen and garage workshop contain a variety of tools that are useful in a studio. From the kitchen, silicon scrapers, forks, graters, cookie cutters, piping bags and so forth make effective tools. A drill fitted with a paint mixer becomes a glaze or slip mixer, and sand paper, rasps and files, a dremmel and hammer are great garage additions to a studio.

Layout suggestions

A studio layout will vary according to the shape of the space available. Necessary designations are a work space, washing up spot, firing area and a storage section.

The pictures below illustrate my functional throwing and firing area.



My throwing area

- 1 Apron conveniently hanging above my wheel
- 2 Power supply close to the wheel, far enough away from water
- 3 Mirror which allows me to sit up straight and still see the profile of my thrown form
- 4 Bowl with water for throwing with
- 5 Variety of Masonite and Supawood batt sizes
- 6 Bowl for throwing off-cuts
- 7 My wheel with a hand lever and foot pedal
- 8 Plastic bags kept close at hand to cover thrown wares with overnight
9. Shelf within arm's reach to place thrown work on to firm up
- 10 Open wall to stick inspirational ideas on to refer to while throwing
- 11 Backless adjustable office chair on wheels
- 12 Cloth to wipe my hands or surfaces



My firing area

- 1 Open window for ventilation during firing
- 2 Kiln with side elements (some kilns have elements on the kiln floor and/or roof)
- 3 Kiln power switch
- 4 Digital controller
- 5 Shelf containing kiln furniture close to the kiln
- 6 Dish of calcined alumina for sprinkling on kiln shelves and coating clay coils before placing them on props
- 7 Selection of props
- 8 Shelf with bungs, cones and protective glasses
- 9 Kiln shelves stacked on spacers
- 10 Box with a variety of stilts

Studio safety

When equipping your studio and planning its layout, certain safety aspects should be considered.

Equipment

- Purchase good quality **masks** to wear when sanding work, mixing glazes and using calcined alumina when packing kilns. Make sure that there is a mask conveniently placed at your glazing area and firing area.
- Ensure you have a **mop and bucket** of water handy to clean the floor rather than using a broom, which stirs up harmful clay dust. Studio floors and surfaces should be frequently mopped and wiped.
- Have a **bucket of water** to drop clay scraps into as you work. This simultaneously reduces studio dust and slakes the clay for recycling.
- Have a **bucket** to rinse clay and glaze off hands and equipment. The contents should not be emptied down the drain as the drain will become blocked. Alternately, a **settling tank** can be installed under the sink to catch clay and glaze materials. This should be emptied regularly. Waste should be dried, fired (to prevent harmful materials from leaching into the soil) and then thrown away.
- Consider learning to throw looking at your work with a **mirror**. It improves neck and back posture which will have long-term benefits.
- Keep a **nail brush** at your wash up area to scrub raw materials out of your nailbeds and from under your fingernails.
- Should your studio floors be even, it is useful to have a **wheelable trolley** (with a brake) to move work or equipment between work, washing and firing areas. A low trolley will also prove useful for unloading heavy clay and raw materials, preserving your back.
- Wear **welding glasses** (to protect your eyes from UV rays) when looking into the spyhole of a kiln.
- Wear **safety goggles** when chipping glaze off kiln shelves.

Layout:

- **Kilns** should be in a well-ventilated area, or an extractor fan should be installed. If they are in the same room as the work area, they should be fired when the work area is not being used as harmful gasses leave the kiln during firing.
Ensure that there is nothing on top of the kiln. Combustible materials can catch alight. Works needing to dry can be placed on fire-proof props on top of the kiln, although these may crack as the surface closest to the kiln gets hot.
- **Water and electricity points** should not be close to each other.
- Ensure the **electrical trip switch** is accessible.
- **Sufficient shelving for storage** is necessary to keep your studio space clear of clutter and easy to move about in. A crammed area with containers on the floor is a tripping and spillage hazard. Ensure that there is storage space close to your work area, kiln and washing up area to aid efficient practice.
- Should you be **selling work** directly from your studio, a display area that is removed from more dusty areas is advisable. It may be necessary to plan for a clean area for pricing and packaging.

Additional safety considerations

- Do not **eat and drink** in the studio
- Wipe up **glaze spillages** and wash equipment before they dry out and become dusty.
- **Label** all bottles and packages of raw materials as they all look similar. Stick glaze recipes onto their containers.
- Do not wear **scarves or loose clothing or hair** when throwing or operating other machinery.
- Frequently **wet wipe surfaces** to keep them dust-free.
- Carefully **read labels** on raw materials to establish if they are poisonous, and for storage guidelines.
- Working with **glass**:
Wear a mask when sanding glass and working with enamels or ceramic fibre.
Wear protective glasses when cutting glass and breaking off little bits.
Crash cooling: Wear heat resistant clothing, especially gloves, when crash-cooling. A pole attached to the kiln handle will allow one to stand further away from the hot open kiln.

Ceramic raw materials



Understanding ceramic raw materials is essential as one material may have numerous uses. Below is an alphabetical table of common raw materials with an explanation of their properties and use in clay, glaze or both.

Material	Notes
Alumina/ alumina oxide/ corundum Al_2O_3	Not often added separately; sufficient quantities are found in kaolin, feldspar and nepheline syenite <u>Clay</u> Gives plasticity <u>Glaze</u> Primary stabiliser (amphoteric oxide) To make a glaze more matt add alumina hydrate or china clay or feldspar, because alumina in them has a high melting point. Too much alumina results in crawling and pin-holing (see Glaze faults)
Alumina hydrate $Al_2O_3 \cdot 7H_2O$ Calcined alumina Al_2O_3	Alumina hydrate contains water whereas calcined alumina has been fired (removing the water) and ground up Highly refractory materials that can be used on kiln shelves to enable ware movement during glost firing Painted onto porcelain pieces as a release agent when firing two pieces on each other Sprinkled onto kiln shelves to allow for easy removal of runny glaze Wear a mask when using it (see Safety)

<p>Ball clay</p>	<p>Small particles, plastic, low fusing temperature Often has impurities, test each batch before using Colours vary according to mine purity <u>Clay</u> Used in small quantities (2-3%) as a plasticiser with kaolin Small particles, plastic, low fusing temperature and therefore found in smaller percentages in stoneware clays than earthenware clays. Added to casting slip to promote pouring and green strength If impure, no more than 15% should not be used for light clay body Bentonite is often preferred over ball clay as bentonite results in a whiter body. <u>Glaze</u> Suspension agent Can also discolour the glaze, depending on the purity of the ball clay <u>Tip</u> Clumps together and so glaze should be double-sieved. Alternately, mix all dry ingredients well before adding water.</p>
<p>Barium carbonate BaCO₃</p>	<p><u>Clay</u> Deactivates natural flocculants in casting slip <u>Glaze</u> A flux for high firing (above 1175°C), not food safe when fired low Results in a matt finish</p>
<p>Bentonite Al₂O₃. 5SiO₂. 7H₂O</p>	<p>Due to depleting mines, bentonite can be used as a pure white substitute Ocean bentonite is cheaper, but not pure white and so can be used as a substitute for bentonite when whiteness is not required <u>Clay</u> Add small amounts (less than 3%) to increase plasticity Too much makes clay gummy and sticky to work with because of its small particle size <u>Glaze</u> Used in small quantities as a suspension agent <u>Tip</u> It tends to clot. Mix all dry ingredients first before adding water to prevent clumping.</p>
<p>Calcined china clay/ moločite Al₂O₃. 2SiO₂</p>	<p>Highly refractory material, calcinated to 1500°C Used on kiln shelves to enable ware movement during glost firing <u>Clay</u> Used as a grog for porcelain Can be added to introduce mullite (see Firing) <u>Glaze</u> Used to introduce aluminium oxides without shrinkage problems of raw china clay</p>

<p>Calcium carbonate/ whiting/ limestone</p> <p>CaCO_3</p>	<p><u>Glaze</u> Common ingredient All temperature alkaline flux, especially above 1100°C Adds calcium to a glaze Forms strong, durable glass Aids acid resistance in glaze</p>
<p>China clay/ kaolin</p> <p>$\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot \text{H}_2\text{O}$</p>	<p>Purest primary clay, very little contamination Large particles, non-plastic High melting point of 1770°C. <u>Clay</u> Most common ingredient Requires a plasticiser to make clay workable Essential in porcelain and bone china <u>Glaze</u> Acts as a stabiliser Also an opacifier because the alumina content gives viscosity at molten stage</p>
<p>Chromium oxide</p> <p>Cr_2O_3</p>	<p>Strong green colouring oxide Results in chrome-tin pink when used in a tin glaze Results in a vibrant green when used with cobalt oxide 1% gives a strong colour and 5% results in a metallic surface in a glaze Add 5 times the glaze percentage to a slip to achieve the same colour</p>
<p>Cobalt Carbonate</p> <p>CoCO_3</p>	<p>Blue colouring oxide It dissolves more readily than cobalt oxide, and results in a subtle blue which is less prone to speckling Substitution ratio of CoCO_3:CoO is 2:1 Add 5 times the glaze percentage to a slip to achieve the same colour</p>
<p>Cobalt oxide</p> <p>CoO</p>	<p>Blue colouring oxide Strongest and most expensive oxide 1% in a glaze gives a strong blue and 10% results in a metallic finish Not poisonous and chemically stable so it can be used for earthenware and stoneware blues Colour varies depending on other colouring oxides present Must sieve (and grind) for even distribution Add 5 times the glaze percentage to a slip to achieve the same colour</p>
<p>Copper carbonate</p> <p>CuCO_3</p>	<p>A lighter and clearer green colour than CuO Substitution ratio of CuCO_3: CuO is 1,3:1 Add 5 times the glaze percentage to a slip to achieve the same colour</p>

<p>Copper oxide CuO</p>	<p>Strong colouring oxide Oxidation firing: 2% results in green 5% – 10% black metallic finish Reduction firing: red – brightest when less than 0,5% Raku firing: metallic greens and reds 3% in a glaze gives a strong colour and 10% results in a metallic finish Bleeds when painted on glaze because it dissolves easily into molten glaze. 5% or more CuO is poisonous as the copper dissolves in acidic fruit juices etc Add 5 times the glaze percentage to a slip to achieve the same colour</p>
<p>Dolomite MgCO₃.CaCO₃</p>	<p><u>Glaze</u> High temperature alkaline flux– contains calcia and magnesia. Acts as an opacifier – high dolomite percentages result in a matt finish as calcium and magnesium crystals form during cooling Promotes a durable, hard surface Can be substituted with whiting</p>
<p>Feldspar Potash feldspar K₂O. Al₂O₃. 6SiO₂ Soda feldspar Na₂O. Al₂O₃. 6SiO₂</p>	<p>It is used as an inexpensive high temperature flux to lower silica's melting point (thus fusion temperature) Potash and Soda are the two most readily available feldspars. <u>Clay</u> Essential ingredient in porcelain and bone china Enhances translucency and increases possibility for distortion Potash feldspar generally used Up to 25% <u>Glaze</u> Feldspar is a natural glaze, containing a stiffener, flux and glass former. Soda feldspar generally used Too much feldspar can result in crawling as it has a high surface tension Enhances colour and lustre Contains potassium Melts at a lower temperature but more viscous Can be used in a glaze when no soda feldspar is available Contains sodium Runnier than potash feldspar, shinier glaze finish Contains sodium which enhances copper turquoise colour in glaze</p>

<p>Grog/ charlotte/ </p>	<p>Ground high-fired clay body which comes in a variety of mesh sizes <u>Clay</u> Mixed in clay when making large pieces, tiles or slab work for strength as the grog helps to hold the body's structure Opens up the clay body resulting in:</p> <ul style="list-style-type: none"> • Even drying • Reduction of thermal shock and shrinkage <p>Reduces tendency for fired ware to warp</p>
<p>Iron oxide/ ferric oxide FeO or Fe₂O₃ or Fe₃O₄</p>	<p>Colourant in clay bodies and glazes: variants range from yellow, brown, red to black and grey Add 5 times the glaze percentage to a slip to achieve the same colour Acts as a flux in clay and glaze <u>Clay</u> Gives terracotta clay bodies their colour Seen as an impurity in lighter clay bodies <u>Glaze</u> Responds differently in different glazes and kiln atmospheres: turns red in oxidation firing and black in reduction with typical iron spotting Small quantities result in celadon greens in stoneware and porcelain glazes with light reduction</p>
<p>Kaolin Al₂O₃. 2SiO₂. H₂O</p>	<p>See China clay</p>
<p>Lithium carbonate (Not a naturally material, but made from lepidolite, petolite, spodumene or amblygonite, and recipes may use these terms) Li₂CO₃</p>	<p><u>Glaze</u> All-temperature flux as it is activated at earthenware temperatures but only volatilizes just over 1200°C Complements feldspars Aids glaze hardening Expensive ingredient so at higher temperatures it is often decreased in favour of calcium and magnesium</p>
<p>Magnesium carbonate MgCO₃</p>	<p><u>Glaze</u> High temperature flux – contains magnesia Results in a smooth, hard surface When used with cobalt – promotes purples/pinks Opacifier at lower temperatures (up to 1160°C), where it is refractory Adding too much can cause glaze crawling, which can be used on purpose for decorative effects (see Glaze faults)</p>

<p>Manganese dioxide MnO_2</p>	<p>Black, purple or brown colourant Add 5 times the glaze percentage to a slip to achieve the same colour <u>Clay</u> In slip – can cause bubbling in glaze on slip In bodies – can cause over-fluxing (clay body should be handled with gloves) <u>Glaze</u> Used in glaze, or painted over glaze (metallic finish where thick) With alkaline fluxes, goes purple/red With cobalt, goes black Alone, yellow-brown Can blister when over 5% is added to a glaze</p>
<p>Molochite $Al_2O_3 \cdot 2SiO_2$</p>	<p>See Calcined china clay</p>
<p>Nepheline syenite $K_2O \cdot 3Na_2O \cdot 4Al_2O_3 \cdot 9SiO_2$</p>	<p><u>Glaze</u> Common transparent, colourless all temperature flux It is feldspathic, containing both potassium and sodium Stronger than soda feldspar because it has less silica</p>
<p>Nickel oxide NiO or NiO_2</p>	<p>Strong green/brown colouring oxide when used alone Used to enhance cobalt and copper colours Comes in green and black form, but has the same result when fired Add 5 times the glaze percentage to a slip to achieve the same colour <u>Glaze</u> Results in greens and greys when used with chromium oxide Should not exceed 3% in a glaze, 1% gives best colour in a crystalline glaze</p>
<p>Rutile TiO_2</p>	<p>Natural titanium dioxide Can be substituted with ilmenite (rutile with over 25% FeO) <u>Glaze</u> Often has iron as impurities and so is used as a tan colourant Mottled colour at high temperatures 15% or more makes the glaze phototropic (changes colour as light changes) 25% can enhance crystalline growth</p>

<p>Silica/ silica sand/ silicon dioxide/ flint/ quartz</p> <p>SiO₂</p>	<p>60% of the earth's crust is silica</p> <p><u>Clay</u> Constitutes approximately 50% of a clay body Forms a glassy binding for clay particles, making fired bodies harder and more durable Has a high melting point and thus makes the body more refractory Contributes to even drying</p> <p><u>Glaze</u> Essential glass former Melts at 1710°C so a flux is required to melt it Improves glaze fit</p>
<p>Talc/ magnesium silicate/ French chalk/ steatite/ soapstone</p> <p>3MgO. 4SiO₂. H₂O</p>	<p>Added to clay bodies and glazes as a source of magnesium which helps prevent glaze crawling in earthenware bodies Similar make-up to clay</p> <p><u>Clay</u> Reduces thermal shock in stoneware clay bodies</p> <p><u>Glaze</u> High temperature alkaline flux – contains magnesia An opacifier For smooth, buttery surfaces</p>
<p>Tin oxide</p> <p>SnO₂</p>	<p><u>Glaze</u> Most powerful opacifier Remains a preferred low fired opacifier as it results in a pure white 5 – 7% required to make a clear glaze opaque Can pick up pink flashes if in a kiln with chromium oxide in another glaze Good for majolica glazes It is expensive and can be substituted with zircopax</p>
<p>Titanium dioxide</p> <p>TiO₂</p>	<p><u>Glaze</u> Opacifier and matting agent Aids crystal growth Adds visual texture to a glaze</p>
<p>Whiting /calcium carbonate</p> <p>CaCO₃</p>	<p>See Calcium carbonate</p>

<p>Wollastonite/ calcium silicate</p> <p>CaSiO_3</p>	<p><u>Glaze</u> Source of calcium and silica Wollastonite crystals formed during cooling give an opaque matt finish More expensive than using a combination of calcium carbonate and silica</p>
<p>Wood Ash</p>	<p>Ash obtained from burning wood or other natural materials (grass), thus ashes vary between batches</p> <p><u>Glaze</u> Functions predominantly as a flux in high fired glaze (above 1150°C) Can also subtly colour glazes</p>
<p>Zinc oxide</p> <p>ZnO_2</p>	<p><u>Glaze</u> Used as an opacifier and high temperature flux Traditionally used as an anti-craze agent, but high concentration zinc glazes do potentially crawl due to high surface tension (see Glaze faults) Encourages marococrystalline growth when used in larger amounts and cooled slowly Can enhance copper and cobalt colour in simple feldspathic glazes, but in more complex glazes with different colouring oxides it can muddy colours Promotes brilliant, glossy surfaces in smaller quantities</p>
<p>Zirconium oxide or dioxide</p> <p>ZrO_2</p>	<p>Metal with a high melting point</p> <p><u>Glaze</u> Used as an opacifier Adding up to 15% will produce an opaque white glaze finish Often used as a substitute for expensive tin oxide, although the fired colour is not as creamy as tin Zirconium oxide is made from zirconium silicate, thus, the silicate is more concentrated and cost effective</p>

Clays



Introduction

A weighty, moist and malleable material that occurs abundantly worldwide, clay dries, sets and can be permanently changed with sufficient heat to become hard and waterproof. The scientific name for clay is hydrated aluminium silicate. People have used clay to make wares since Neolithic times to improve their quality of life.

All clays originate from metamorphic or igneous rock. Hot magma from the earth's core rises upwards, does not reach the surface and begins to cool. Hot gases, including boron, fluorine and carbon dioxide, and water infiltrate and begin to decompose the large solidifying masses. Boron and fluorine decompose granite into feldspar, quartz and mica. Water and carbon dioxide further decompose feldspar into kaolin, quartz, potash and feldspar. In less pure parent rock (rock other than granite), the first decomposition results in feldspathic minerals, quartz, mica and iron ores. Further exposure to water and carbon dioxide leads to the formation of less pure kaolin, quartz, feldspathic minerals, mica and iron ores.

Clays are divided into two groups, primary and secondary, according to their origin.

Primary clays

- Also called residual clays
- Remain at site of parent rock
- Range of particle sizes – non-plastic and coarse
- Relatively pure, few contaminants
- Examples: bentonite; kaolin

Secondary clays

- Much more common than primary clays
- Clay has been transported (generally by water) and settled elsewhere
- Smaller particle size – clay is plastic and sticky
- Deposits include a wide variety of parent rock – complex clay body with organic and mineral contaminants
- Example: terracotta clay

Clay can be added into a glaze (see Glaze) and has many uses other than being an essential material in a ceramics studio. It is used in items varying from bricks, tiles, and electrical insulators to makeup, rubber and paper.

Clay terminology

Below are brief descriptions of key terms used when discussing clay.

Deflocculate	A term primarily used when referring to making slip. It is the act of using a substance (frequently sodium silicate) to make the clay and water mixture more fluid (easier to pour) without adding water. (see Casting slip)
Fusion	When materials making up a clay body or glaze melt
Grog	A ground high fired clay body added to clay bodies for various reasons (see Ceramic raw materials)
Plastic	Plastic is a clay property. Plastic clay can be modelled with moderate pressure and is strong enough to retain its shape. It can be bent without cracking as it is made up of fine particles. Plastic clays can be stretched (see Clay workability).
Reconstitute	Making clay scraps useable again (see Clay recipes).
Refractory	A refractory material is one which is resistant to high temperatures (1300°C and higher). Kilns are built from refractory materials. Refractory materials, such as grog, are added to clays for strength and to reduce thermal shock.
Sintering	The fastening together of clay particles at around 600°C, before fusion occurs
Short	Short refers to the crumbly nature of drier clays. It is the opposite of plastic clay (see above). Short clay contains larger particles, more grog, not enough water or a combination of these.
Shrinkage	This is the reduction in clay body size due to drying and firing.
Slake	Clay bodies slake when they are dissolved in water. Some clay bodies disintegrate readily, others need to be bone dry before being added into water. Clays with fine particles, like ball clay, do not slake. Slaking clay is generally the first step in reconstituting clay.

Slip	Slip is a fluid mixture of clay and water. It may contain colouring oxides. It is used to coat clays for a smooth or coloured surface. It can also be poured into moulds to make forms (see Casting slip).
Specific gravity	The weight of 100ml of a liquid. This measurement is used to determine the correct consistency of casting-slip.
Thixotropy	This clay body property occurs when fluid slips are left to stand and become more viscous (thicker; less runny). Thorough stirring of thixotropic slip renders it fluid again without the addition of extra water. This property is also found in plastic clays, enabling them to retain their shape during modelling (see Clay workability).
Tired clay	Tired clay has been overworked and loses its strength. It can be used again after a period of rest (longer than a few days) during which ageing and souring rejuvenate the clay (see Clay workability).
Vitrification	The maturing of a clay body that occurs when clay particles have been heated sufficiently to melt and fuse together, while still retaining its form. Greater heatwork or temperature increase result in deformation and bloating of the clay body. A mature body may still be slightly porous.
Workable	A workable clay body has a suitable combination of strength, plasticity and thixotropy. It has the strength to withstand the rigors of throwing and stretching in hand-building as well as the plasticity to be modelled with little applied pressure (see Clay workability).

Types of clay

Different clay types can be designated by firing temperature. These temperature ranges are raku, earthenware, stoneware and porcelain. I have chosen to work with the latter two and these are discussed along with casting-slip.

Stoneware

Stoneware clays either have a porosity of below 5% or are non-porous. Slightly porous wares are stronger than non-porous ones. The clay body vitrifies or matures between 1200°C and 1300°C. It vitrifies slowly, which reduces the possibility of distortion. Stoneware clays tend to be light in colour, generally firing to buff, cream or grey. This is because terracotta clay contains the oxide and flux, iron oxide, which melts at lower, earthenware temperatures.

While there are naturally occurring stoneware clay bodies, many are formulated using a base of ball clay or fireclay. Clays based on ball clay are plastic and materials are added to increase their strength. They are often used for throwing.

A mature stoneware clay fuses with the covering glaze. However, they do not bond entirely, and a level of tension exists between the body and glaze. Thus, it is essential to find the correct glaze-body fit.

Because of stoneware's properties of strength and vitrification, this clay is the most commonly used clay for functional ceramic wares. It is more resistant to chipping than earthenware clay, and, when sufficiently vitrified, is microwave and dishwasher safe. In addition, because stoneware glazes are generally completely fused, they are less susceptible to leaching (see Glaze faults).

Stoneware pieces fire to a higher temperature than earthenware clay and require more electricity making them more expensive to produce.

Porcelain

Porcelain, valued for its translucency, whiteness and strength when fired, is not mined as a clay body but is formulated usually using a combination of clay (kaolin), frit (feldspar) and glass former (silica).

Porcelain becomes translucent at high temperatures because of its high silica content. These particles fuse and vitrify completely in the glaze firing (even without glaze) and the glaze and body become one body-glaze layer. A porcelain body is formulated to mature between 1200°C and 1300°C. Maturation is the point at which maximum body-glaze fusion, translucency and strength are achieved, with minimal distortion. Due to the high percentage of flux (in the form of feldspar) in the clay body, it distorts easily, especially when over-fired.

Casting-slip

To utilise my studio porcelain scraps I made casting-slip. The method of slip-casting puts high demands on a clay body. The clay body must be fluid enough to pour, and the particles need to be in suspension so as not to settle out in the mould. Additionally, it must be able to be poured out of a mould smoothly so as not to leave lumps or streaks on the interior of the cast form. Furthermore, it should contain minimal water to keep the moulds as dry as possible and reduce shrinkage. A further requirement is that a slip-casting clay body should release easily from the mould to minimise warping. It is not feasible to simply add more water to a clay body to make it runnier. Rather, the process of deflocculation is used to make an effective casting-slip.

When water and clay powder are mixed, the fine clay particles 'flock' together forming minute clusters suspended in the water. A relatively large amount of water is required to make these clusters flow over each other. To decrease the amount of water needed for fluidity, the clusters need to be separated. This can be done by adding a deflocculant; an electrolyte that breaks the charges keeping the clusters together and causes the particles to repel each other. Common deflocculants are soda ash and sodium silicate. Commercial deflocculants can also be purchased, example Alcosperse from CPS (see List of suppliers).

Raw materials for clay bodies

Clay is a basic combination of alumina, silica and water, with other raw materials added for their specific properties.

Sources of alumina include kaolin, ball clay and feldspar. Bentonite also contains alumina, but it is primarily added to clay bodies in small quantities to increase plasticity.

Other raw materials include silica, grog and iron oxides. Their specific properties and function in a clay body are explained in the ceramic raw materials table.

Clay workability

The workability of clay takes plasticity, strength and thixotropy into account. Workable clay can be manipulated with gentle pressure, while still maintaining its shape.

Plasticity refers to the ease with which clay particles slide over each other. This particle action enables a ceramist to shape the clay without the particles returning to their original position (no elasticity) or the body cracking. Plasticity is affected by particle size; the smaller the particle, the more plastic the clay body generally is. Kaolin is a non-plastic clay and is about 3 microns wide, whereas plastic ball clay and bentonite particles are about 0,25 microns and 0,05 microns in diameter respectively. Additionally, the water of plasticity content in a clay body affects plasticity. Up to an optimal point, adding more water to clay makes it more workable. However, when too much is added, the clay becomes too sticky or fluid to work with. Another factor contributing to plasticity is the presence of organic matter in clay. Bacteria decomposing this matter release colloidal gels, increasing plasticity. Should a clay be too plastic, a non-plastic material can be blended in.

To test for plasticity, a sample can be rolled into a length the thickness of a pencil. The clay should not crack when curled into a small ring of about two centimetres in diameter.

Strength and thixotropy are interrelated. Strength refers to the ability of clay to hold its shape, supporting its weight. Thixotropy relates to the ease with which the particles form and reform bonds between each other.

The **strength** of the clay depends on the ratio of clay particles to water. It is also affected by the friction between clay and non-clay particles. Clay particles are flat and have a large surface area. When lubricated with water, they stick together, much like wet playing cards. On the application of pressure, the forces of attraction and gravity hold the particles together until the yield point is reached, when these forces are overpowered. The bonds are broken, and continued pressure causes the particles to slide over each other. Once the pressure is released, the bonds are reformed between new particles. **Thixotropy** refers to the ease in which new bonds are formed. Thixotropy is especially important for throwing clays; as they are pulled up, new bonds need to be formed quickly to enable the clay to hold its new shape.

For a clay to be workable, a balance between thixotropy and plasticity is necessary. A clay lacking in friction and too plastic will collapse, because of its own weight. Too much friction and little plasticity in a clay body also causes deformation, this time because the particles tear apart.

Workability can be improved by adjusting grain size, blending and adding plasticisers or sand and grog, monitoring the moisture content, aging and souring the clay.

Clay becomes more plastic as it is sieved or settled and larger **particles** have been removed. A non-plastic clay can be made more workable with the addition and blending of plastic materials. As little as a 10% addition of a **plastic material** can affect the plasticity of the clay. Because of the difference in their particle size and purity, plastic clays alter the shrinkage and colour of the blended clay body. Should a clay be too plastic, **grog or fine sand** can be added

to strengthen the clay body. Adjusting the **moisture content** makes the clay more workable. The type of water also makes a difference. Acidic water in clay makes the clay 'thirsty to throw with' and it may hold shape for a while and then unexpectedly collapse. Alkaline water softens clay quickly and can make the clay feel slippery.

The Chinese were said to make clay for their grandchildren. This illustrates the importance of **aging** clay. Wrapped in plastic, kept in a damp place or an airtight container, water slowly infiltrates between the clay particles. Clay left to age should have excess water so that this can be absorbed into the clay body making it more plastic. Additionally, the clay particles are compressed under their own weight, suctioning together and forming stronger bonds. This improves the clay's strength. When time is not available, de-airing and pugging clay in a pugmill has the equivalent effect as two months of aging.

While aging occurs physically in a clay body over time, **souring** is an organic process. Decomposing the organic matter in clay, bacteria multiply and release amino acids. These act as a flocculant, forming a colloidal gel that holds the particles in the clay together. The bacteria's action may change the clay's colour to grey-blue and give it a strong smell. Adding yeast or sugar to the clay increases the bacterial activity. Furthermore, pieces of soured clay can be added to 'new' clay to speed up the souring process.

Three types of water in clay

Bound water

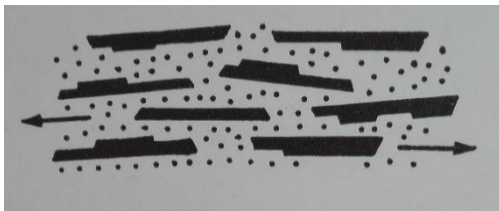
- Chemical formula for kaolin, a primary clay, is $Al_2O_3 \cdot 2SiO_2 \cdot H_2O$
- Formula shows water chemically bonded to clay
- Also called water of crystallisation
- Makes up 14% of the clay body
- Molecules form a layer around the alumina and silica crystal.
- Only removed by red heat during firing.

Pore water

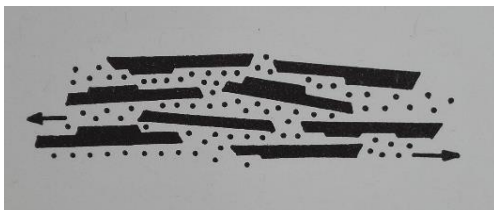
- Found in the gaps between clay particles
- Does not leave the clay body naturally
- Heating the clay to over 100°C causes this water to boil, become steam and escape the clay body

Water of plasticity

- Makes up 20 to 30% of the weight of plastic clay
- Lubricates the clay particles, freeing them to slide over each other
- Slip is a clay body containing a large amount of water (and sometimes a deflocculant) allowing clay particles to flow over each other fluidly
- Leaves the clay body on drying



A fair amount of water of plasticity allows the clay particles to move freely over each other. This is apparent in slips.



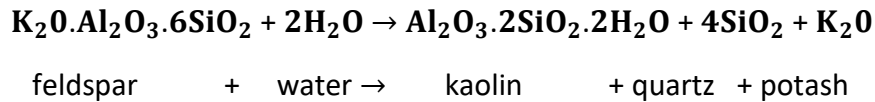
Less water of plasticity makes it tricky for the clay particles to move over each other. The clay holds its form.



As water of plasticity leaves the clay body, the clay particles are no longer able to move freely over each other. During drying, all water of plasticity leaves the clay, leaving the pore and bound water which are removed during firing.

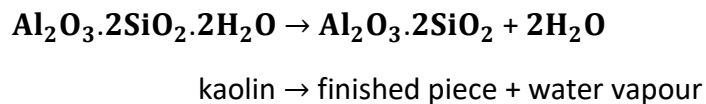
From rock to ceramic: chemical changes that take place

In the process of the formation of clay, granite decomposes to form feldspar, quartz and mica. Upon exposure to water, feldspar then decomposes further, as illustrated in the equation:



When water reacts with feldspar, kaolin, made up of alumina, silica and water in a ratio of 1:2:2, is formed. By-products of this reaction are quartz and potash.

The conversion of raw clay to a ceramic material involves heating to at least 600°C. The clay body can no longer be dissolved in water and this irreversible change is called ceramic change. The following equation shows the reaction kaolin undergoes when fired:



The formula for kaolin shows two bonded water particles connected to the alumina and silica. Red heat removes this water and the chemical make-up of the clay body changes. Chemists call the resulting material aluminium silicate and to a ceramist it becomes the art-work. The clay body becomes hard, water resistant and its colour changes.

The table below explains the changes that take place at specific temperatures or temperature ranges.

Temperature (in °C)	Change in clay body
Room temperature	Complete drying. Water still remains inside the clay body. Tip: Clay that feels cool to the touch is not totally dry, even though the body colour has changed.
100	Water smoking. Water inside clay form turns to steam and leaves the body as water vapour. Because the heat needs to penetrate pieces throughout the kiln, water smoking is said to occur until beyond 120°C. To be sure this process is complete it is recommended to fire slowly to 200°C. Grog and sand in the clay body form additional passageways between clay particles, allowing steam to escape freely. Tighter clays, with smaller particles, and thick-walled pieces should be heated more slowly to allow trapped steam to escape. Rapid heating can result in the clay body exploding as the steam expands. The thickness of the pot plays a role in the optimal rate of heating. Radiant heat comes into contact with the outer walls of the piece. The heat is then conducted from particle to particle by vibrations through the clay wall. Rapidly heating thick clay walls can cause uneven heat in the piece and thus cracking or exploding.

	Tip: to ensure water smoking is complete, a mirror held to the kiln bung hole should show no condensation.
120 – 350	Decomposition of vegetable matter in the clay body
350	Ceramic change begins to take place slowly as water of crystallisation begins to leave the clay body.
500	Ceramic change continues as the temperature increases. The clay body is now dehydrated, no water remains. The clay particles are held together by a process called sintering which continues until the clay body has vitrified. Sintering is the fusing of particles at their points of contact. These fuse more as the temperature increases. At this stage the body is incredibly fragile and has not yet begun to shrink.
573	Quartz inversion. All clay bodies contain a measure of quartz. As the temperature increases, these crystals begin to rearrange themselves. At 573°C, the quartz crystals change from alpha to beta quartz. In the beta phase, the molecule of silica twists and this causes expansion in the clay body of between 1 and 2%. It shrinks by the same percentage during cooling.
600	Sintering begins to occur, and the clay can no longer be reconstituted.
700 – 900	Burning out. This is the burning out of carbon in organic matter, inorganic sulphites and carbonates in the clay body. It usually occurs as par for the course in a well-ventilated kiln. Should oxidation not happen, clay bodies become blackened or smoky in appearance. Burning out requires a temperature of at least 700°C (a dull red heat). It is mostly completed by 900°C. It is important not to fire too quickly, especially when firing thick or raw glazed pieces, fire clays or porcelain, as trapped gases can cause bloating in glaze firing. This bloating is different from bloating caused by over-firing (see Glaze faults).
800	Vitrification starts as the sodium and potassium oxides begin to flux with the free silica. It progresses as the firing continues. Put bung in spyhole
950 - 1000	This is the general biscuit temperature range and the kiln can be switched off and left to cool. At this temperature, the clay body has become ceramic. It is hard enough to handle and still porous enough to absorb glaze.

This is the end of the biscuit firing. Below is an explanation of what happens to the clay body if the temperature increases further (in a glost firing).

800 – 1200	Vitrification begins to occur. It is when the clay body hardens, then tightens and finally becomes glass. The clay body becomes hard because its materials begin to melt. More fusible materials become little beads of glass. As the temperature increases, these little glass beads soak into the surrounding particles, joining them together much like glue. A vitrified body will remain slightly porous and if vitrification continues then body will melt into glass. Different bodies are formulated to mature at different temperatures. Shrinkage occurs as a result of vitrification because the particles reduce in size as they melt and the crystalline structure changes. Shrinkage is about 10% but varies with the degree of vitrification and type of clay body.
1000	Clay becomes stronger due to the formation of mullite crystals. Mullite, an aluminium silicate, consists of long crystals and, when heated, these crystals grow into glassy beads in the clay. Although these begin to form at 1000°C, their presence is notable after 1150°C. Mullite (a product of vitrification) can be introduced into clay bodies in the form of molochite.
1200 – 1300	Having matured, the stoneware clay body is at its maximum strength. Should the temperature continue to increase, the clay body will bubble, bloat and eventually melt, losing its form as it becomes completely vitrified.

Important temperatures when cooling

During cooling the body contracts at a regular rate except for three key temperatures where cooling must take place slowly.

573	Beta quartz converts to alpha quartz again. Draughts in the kiln should be avoided as this will lead to uneven cooling; some parts of the ware will be in the beta phase and others already converted to alpha, putting the ceramic body under stress, most likely resulting in dunting.
226	Crystoballite is a form of silica resulting from prolonged heating. Should the kiln be opened in the vicinity of 230°C, the rapid cooling could cause pieces to crack.
280 – 220	This is the tridymite phase, and it progresses slowly over about 60°C. Because it takes place slowly, it can counter some potential dunting cracks.
150	Safe temperature to crack a biscuit kiln
100	Safe temperature to open a biscuit and glaze kiln

Mixing up clay bodies and reconstitution recipes

Before mixing up your own clay, it is essential to weigh up the time and financial costs that go into clay preparation. There are advantages and disadvantages to both commercial and privately mixed clay bodies.

Commercially mixed clay bodies

Advantages

- Mixed thoroughly by machines
- De-aired by pugging
- Made in big quantities so batches are consistent
- Thorough research into correct formulation

Disadvantages

- Relatively few suppliers of plastic clay in South Africa, thus clay usually needs to be transported great distances
- Need to order well in advance
- A large proportion of the weight is water, which one pays for

Clay mixed up in your studio

Advantages

- A means of recycling clay scraps
- Can formulate a specific clay body to suit your unique needs

Disadvantages

- Time consuming and labour intensive
- Batches not always consistent
- Will contain air pockets unless thoroughly wedged

I chose to use commercially mixed clay bodies for throwing. I kept studio scraps in buckets and reconstituted them (see below) to use for slip-casting and hand-modelling.

Reconstituted clay recipe

Studio clay scraps and off-cuts can be reconstituted into workable clay again. In a studio using both clay and porcelain, it is advisable to use separate buckets and canvases for each. However, they can be reconstituted using the same method.

1. Place clay scraps in a bucket of water.
2. Allow this to stand for at least 48hours, to ensure the water has soaked in throughout the clay.
3. Mix up the softened scraps either with a strong wooden spoon, blunger or drill with a paint mixer attachment.
4. Spread the sloppy clay evenly on a canvas sheet resting on a layer of bricks. The clay layer can be up to 4cm thick. The moisture will be absorbed into the bricks and evaporate.



Sloppy clay drying on my studio veranda which was protected from rain but allowed for quicker drying than indoors.

5. When the sloppy clay no longer has a shiny sheen (this can take from a few hours to overnight, depending on the weather and amount of moisture in the clay) roll it up into manageable balls.
6. Wedge small quantities of this clay to ensure a smooth consistency. Wrap in plastic and store in an airtight container. This clay becomes more plastic when left to age.

Some ceramists prefer to add scraps to a bucket of water as they work. Thus, they do not dry out and less dust is created in the studio (see Studio safety). Others choose to dry scraps and then pound them to a fine powder before adding water and mixing.

Depending on the clay scraps used, this studio mix will vary in colour, coarseness, and consistency. Should the resulting clay be sticky it probably contains too much water and wedging it on a dry wooden surface will improve its workability. Should it be crumbly, the problem is possibly a lack of water. Wedge some more water into it and, after wrapping it in plastic, allow it to stand. It should become more workable.

Porcelain casting-slip recipe

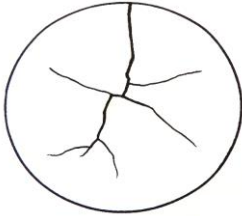
This is my recipe for recycling porcelain studio scraps. Note: This is a casting-slip.

1. Cover dry scraps with water and soak for two days. Alternately, scraps can be added to water and excess water syphoned off.
2. Use a blunger, or drill with a paint mixer fitting, and begin to mix the clay. It should be thick and difficult to mix.
3. Weigh exactly 100ml of this mixture. It should weigh between 155 and 175g. (This is its specific gravity.) If it weighs less, either allow it to stand and syphon off more water or add more dry scraps. If it weighs more, add a little more water, mix and reweigh.
4. Continue mixing and add 10ml Alcosperse. The mixture will become runnier. Continue adding increments of 5ml Alcosperse, mixing thoroughly each time, until the clay mixture resembles smooth thick cream.
5. Allow to stand for an hour before use.

Clay body cracks

Clay bodies undergo stress as they are shaped, dried and fired through the processes of expansion, contraction and shrinking. When the piece cannot withstand this stress, cracks occur. The nature of the crack reveals the type of stress experienced.

Star cracks



- Usually have one primary crack with little ones running off it
- Occur when the base of a thrown piece is too thin for the walls
- Prevention: Leave base thicker

S-cracks



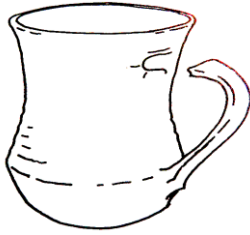
- Occurs in thrown wares because of uneven shrinkage between the base and walls
- Prevention: Compress base when throwing

Straight cracks



- Caused by uneven drying
- Prevention: Firmed up thrown work should be removed from the batt and inverted to dry the base.

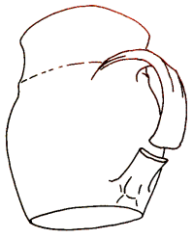
Handle join cracks (springing)



Springing occurs at the top or bottom join of the handle to the ware. There are a variety of reasons for springing:

- The join was either too wet, or not wet enough
- Drying occurred too quickly
- The handle was attached when the ware was too dry
- The handle was too dry (and thus stiff) when it was attached
- Two different clay bodies were used (one for the handle and one for the ware)
- Not enough scoring and slurry when joining

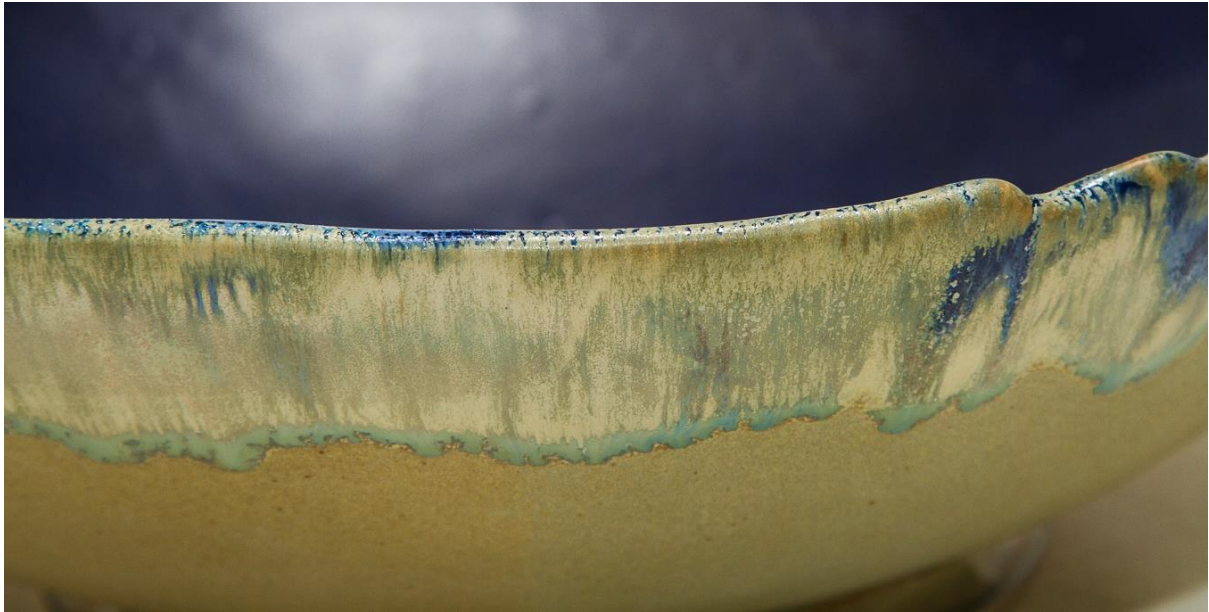
Handle cracks



- Often in a pulled handle's lower half
- Occurs when the pulled clay becomes overworked or is too thin

Images: Hamer 1975:80-85

Glaze



Introduction

A glaze is a layer of molten glass that covers a ceramic piece. Glaze can be decorative, provide colour, shine, texture and increase the strength of the body, depending on the materials making up the glaze. It is used as a hygienic covering on utilitarian ware.

A glaze is made up of three basic groups of raw materials:

- A **glass former**: usually silica, which forms the glassy layer
- A **stabiliser**: usually alumina, which prevents it from sliding off your piece
- A **flux**: which makes the raw materials melt

A **colouring oxide** is often added to tint the glaze. It can also function as a flux.

An **opacifier** can be added to make the glaze opaque. It also usually has stabilising properties.

Glaze raw materials

Glaze raw materials have been grouped according to their primary function in a glaze. Because many raw materials are compounds, they may fulfil other functions due to other minerals they consist of. For example, soda feldspar ($\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$) contains sodium, alumina and silica. Primarily used as a flux in glazes, because of its sodium content, it is also a stabiliser and glass former (because of its alumina and silica content respectively). The Ceramic raw materials table explains specific raw materials' functions in a glaze.

Glass formers (Acidic oxides, RO_2)

- Form the bulk of a glaze
- Oxides which melt and do not return to a crystalline state when set
- Give glaze strength, described as glassy cement
- Normally exist in their crystalline state in nature
- Transparent, although appear white because light is reflected off little crystals
- When heated, crystals melt into a transparent liquid
- If cooled over a period of weeks or years, crystals reform
- Rapid cooling, as in a ceramic firing schedule, doesn't allow enough time for the crystals to grow and it becomes a transparent solid
- Most common: silica, introduced into a glaze by adding quartz (100% silica), flint, (95% silica), feldspar (65% silica) or china clay (47% silica)
- Other glass formers rarely used for special effects: boric acid, phosphorus pentoxide, antimony oxide and arsenic oxide

Stabilisers (Amphoteric oxides, R_2O_3)

- Give glaze 'hooks' to grip onto the piece; prevents glaze from running off
- Most important stabiliser: alumina, introduced in a glaze through ingredients containing alumina
- Increase viscosity
- In excess, create crystals or cause the glaze not to melt
- Exceptions to the R_2O_3 rule, the colouring oxide, chrome, and titanium, zirconium and tin oxides are opacifiers and stabilisers
- Common stabiliser is kaolin

Fluxes (Alkaline oxides, RO and R_2O)

- React with silica (the acid) assisting ceramic fusion
- Increase glaze flow
- Active at different temperatures: match flux and firing temperature
- Earthenware: lead oxide (PbO), soda oxide (Na_2O)
- Stoneware: contain calcia, magnesia, zinc or baria
- Lead is the only flux that can be used alone, others should be in combination of two or more fluxes

- Examples of fluxes: barium carbonate, dolomite, feldspar, lithium carbonate, magnesium carbonate, nepheline syenite, talc, whiting and wood ash

Other glaze additives:

Opacifiers

These opacify glazes for one of the following reasons:

1. Light reflects off opaque matter in the glaze: This is when the opacifier does not melt at the glaze temperature. Thus, little opaque particles exist in the glaze and make it appear cloudy. An example is tin.
2. Crystals in the glaze reflect light: During cooling, crystals form in the glaze. Opacifiers of this nature are zinc, titanium, calcia, magnesia, alumina and baria.
3. Light is deflected by minute particles. This is either when particles have not fully melted, or when tiny air bubbles get trapped in the glaze. They are called colloidal bubbles. Alumina and zirconia can lead to this type of opacifying.

Colouring oxides

Metal oxides can also function as a flux or are refractory (chrome oxide). Colours are affected by the clay body, other ingredients in the glaze and firing atmosphere and temperature. Adding too much of a colouring oxide results in a metallic surface.

Mollified oxides are commercially available oxides that have been added to other raw materials, fused and ground up. Because the strong oxides have been diluted, they become more stable, are easier to disperse throughout the glaze, and can be used to achieve more subtle colours.

Chromium oxide, cobalt carbonate, cobalt oxide, copper carbonate, copper oxide, Iron oxide, manganese dioxide, nickel oxide and rutile are commonly used colouring oxides (see Ceramic raw materials table).

Clay

Clay forms part of the glaze (through the addition of materials such as kaolin). Ball clay or bentonite are clays often added to a glaze because they:

- Act as a suspension agent
- Stick glaze to the clay piece
- Are a stiffening agent as the glaze matures

Considerations for utilitarian ware

When sculpting, the ceramist makes form and surface treatment decisions. Ceramic utilitarian ware includes the consideration of food safety.

Vitrified, a stoneware clay body is more hard-wearing and does not chip as easily as earthenware. Because water is not absorbed into the clay body, it is microwave- and dishwasher-safe. Stoneware wares can be used for all food and drink.

The following should be considered when making utilitarian ware.

Glaze finish

The ideal food-safe glaze surface is smooth and glossy. (On sculptural pieces, this does not have to be a consideration.)

Flaking glaze may lead to cuts when handled and is harmful if ingested. Highly textured glaze surfaces trap food making wares unhygienic.

When food is placed on crazed glazes (see Glaze faults), bacteria colonise their thin cracks. The colonies are comparable to the bacteria we encounter in our daily lives, which our immune systems have learnt to fight off. For home-use crazed ware is acceptable, but these glazes should not be used for commercial ware. Dairy products should not be eaten off crazed wares, as dairy bacteria can be particularly harmful.

Resistance to abrasion

Cutlery may leave grey scratch marks on tableware glazed with a matt glaze, which can be scrubbed off during washing. Marking occurs because the glaze finish is slightly rough, due to under-firing or crystal growth on the surface. Glossy glazes are generally unaffected by normal cutlery use.

Resistance to acidic foodstuffs

Glazes need to be able to withstand acidic foods. Acids can cause leaching of unsafe materials.

Either of the following tests indicate leaching if a colour change results.

1. Leave a slice of lemon on the ware overnight.
2. Soak it in vinegar for three days.

Resistance to thermal shock

Thermal shock is the tendency of wares to crack when exposed to a sudden and dramatic change in temperature (being placed into a hot oven). Wares intended for private home use, should not be exposed to sudden temperature changes. Special fireclay should be used for commercial wares.

Microwave safety

To ensure wares are safe to use in the microwave, note the following:

1. Metal oxides painted over glazes or lustres should not go into the microwave.
2. Clay body should be vitrified. If not, during microwaving, water molecules trapped in spaces in the clay body become steam and expand, potentially exploding the ware. This can also be avoided by glazing wares with a tight-fit glaze preventing water from permeating the clay body.

Leaching

Leaching occurs on a glaze surface that has not matured, when fired glaze particles leave the glaze surface on exposure to certain liquids. This is easy to identify in a glossy glaze as the clear, shiny and smooth surface evidences maturation. The matt finish on mature glazes is because of their fine crystal network and these will not leach. An under-fired glaze also presents as matt and will most likely leach.

Test: To see if a ware is under-fired, fire test pieces of the same glaze to one cone temperature higher and one lower than normal firing temperature. Comparing the results will confirm under-firing or not.

Leaching can be harmless when safe materials such as silica, dolomite, kaolin, feldspar, whiting or ball clay leach. It becomes a health concern when harmful materials such as metallic colourants (other than iron) or minerals containing lithium, barium, lead or chrome leave the glaze surface.

Crystalline glazes are often unstable and may leach. Large crystal structures themselves are rough and prone to leaching.

An imbalance of raw materials in a recipe is an indicator of potential leaching and the table below highlights normal and concerning amounts of certain materials in glazes.

Raw material	Normal amount (%)	Concerning quantity (%)
Cobalt	0,5 – 1	5
Manganese dioxide	5	20
Lithium carbonate	3	10
Barium carbonate	5	30
Feldspar (all types)	30	60

Glaze recipes

Many ceramics books and online sources contain glaze recipes. Below is a sample of recipes I sourced or formulated. Transparent and opaque white glazes can be altered by adding colouring oxides.

Glazes maturing at 1200°C (used on white stoneware clay)

Transparent

50 potash feldspar
10 whiting
5 dolomite
3 zinc oxide
12 ball clay
20 silica

Opaque white

52 potash feldspar
11 dolomite
12 whiting
5 titanium dioxide
3 wood ash
17 silica

Nickel blue

53 potash feldspar
16 barium carbonate
5 whiting
12 zinc oxide
5 ball clay
1 nickel oxide
9 silica

Crystalline glaze

20 nepheline syenite
8 lithium carbonate
20 zinc oxide
6 whiting
8 titanium
3 ball clay
35 silica

Glazes maturing at 1250°C (used on porcelain)

Transparent

56 potash feldspar
14 kaolin
16 whiting
14 silica

Opaque white

50 potash feldspar
15 kaolin
10 whiting
10 zinc oxide
10 silica
5 tin oxide

Chrome-tin pink

48 mineralised stone
28 whiting
14 kaolin
5 silica
5 tin oxide
0,05 chrome oxide

Midnight blue

35 potash feldspar
25 whiting
15 ball clay
25 silica
2 cobalt oxide
1 black iron oxide

Tips for glazing

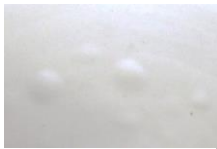
Below are some tips I found helpful when glazing.

1. Use separate brushes for white/transparent and coloured glazes.
2. Always sieve glazes after mixing up a new batch
3. To facilitate glaze development, aim to put new test pieces into each firing.
4. Test glazes on the same clay body as works are made from
5. Write the glaze recipe out, tick off ingredients as they are added and then stick it on its container
6. Spraying can be wasteful, and required specialised equipment. It is useful for light glaze application, gradation of different glazes and re-glazing.
7. I found pouring to be the most effective method of glazing. I glazed the interior of my wares on one day, and the exterior on the next.
8. To pour the exterior, I inverted my ware over a tall cup in a basin.
9. For evenly cleaned foot rings, rotate the ware's base on flat wet sponge sitting on a tray.
10. To create a range of a coloured glaze, consider the strength of the colouring oxide and increase it incrementally on successive test pieces.

Glaze and firing faults

The effects below may be considered a fault by one ceramist but a desirable surface quality by another. Additionally, no glaze recipe is infallible and variations in materials, firing, clay bodies and so forth may result in different finishes.

Bloating



Bloating in a raw glazed slip-cast bowl that was fired up too rapidly

Description

Hollow lumps or bubbles in the clay body
May be visible after bisque firing, generally manifest in glost firing
Occurs more frequently in clay bodies with a greater amount of organic matter
This is not the bloating caused by over-firing

Cause

- Rapid biscuit firing causes surfaces of the clay walls to vitrify before all the gasses escape. Pockets of trapped gas expand in higher temperature firing, causing bloats or rupturing the surface

Remedy

- Biscuit fire slower and soak at top temperature

Crawling



A glaze that crawled due to dust on the clay surface

Description

Glaze rolls up on itself, exposing the clay surface

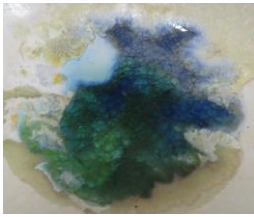
Cause

- Dust on the clay surface before glazing, preventing the glaze from sticking to the clay
- Underglazes hinder glaze adhesion
- Glaze shrinkage during drying
- Rapid heating of recently glazed ware
- Glaze is applied too thickly

Remedy

- Wipe wares with a damp sponge before glazing
- Add gum arabic to the underglaze to aid adhesion
- Rub over glaze cracks formed while drying. It may be necessary to substitute a non-plastic calcined clay like molochite (calcinated kaolin) or calcite (calcinated ball clay) weight for weight with the plastic clay
- Slow down the initial heating in firing
- Thin glaze or add 3% bentonite to the recipe

Crazing or crackling



Crazing in a pool of glass and glaze used as a decorative effect at the base of a bowl

Description

Fine hair-like cracks all over the glaze surface

Occurs in glazes with high potassium and sodium content as these have a high expansion rate

Decorative on sculptural work, crackle effect can be further enhanced by rubbing ink or finely ground oxides into the cracks once cooled

Potentially unhygienic on utilitarian ware

Cause

- Glaze contracts more than the clay body during cooling because there is too much high expansion flux
-

Remedy

- Slightly higher or lower firing temperature
- Reformulate the glaze by adding talc containing silica and a low expansion flux (magnesium)

Dunting or cracking



Dunting on a slip-cast porcelain cup

Description

Crack with a crisp glaze edge, showing that it occurred after the glaze melted

Frequently occurs on weak points (thin walls or junctions)

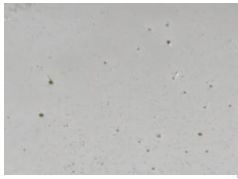
Cause

- Cooling occurs too rapidly after firing because of cool draughts in the kiln (not common in electric kilns) or when the kiln is opened too soon
- Uneven wall thickness, causing uneven cooling

Remedy

- Crack kiln at a lower temperature (100°C should be safe)

Pin-holing



Example of pin-holing in a white matt glaze

Description

Dry, pin-holed surface because the glaze has not melted sufficiently, and bubbling gasses do not smooth out

Occurs in matt and opaque glazes

Note: This is not the same as the little bubble marks left on the surface when applying glaze which should be rubbed over before firing.

Cause

- Firing too quickly
- Soak not long enough
- Too much stabiliser in the glaze

Remedy

- Fire slower
- Soak longer
- Reformulate by adding 3% to 4% flux or reducing the stabiliser

Runny glaze



Test piece with a little lip at the base

Description

Glaze runs off the piece and can stick to the kiln shelf

Cause

- Thick application
- Over-firing
- Soak at top temperature too long
- Incorrect formulation

Remedy

- Water down the glaze for thinner application
- Decrease the soak time
- Fire wares on a saucer to catch runs and grind saucer off after firing
- Sprinkle calcined alumina on kiln shelf to protect it
- Stiffen glaze by adding more alumina: add equal parts of china clay and silica to the recipe, starting with between 3% and 5%



Runny glaze that stuck to the kiln shelf

Shivering, shelling or peeling



Shivering on a rim a few days after the glaze firing

Description

Flaking of a glaze occurring on raised decoration, rims and handle edges

Occurs in the kiln or in the days or weeks following firing due to the build-up of pressure at the layer of clay and glaze interaction

Cause

- Clay body shrinks more than the glaze during cooling

Remedy

- Reduce glaze silica content
- Lower firing temperature
- Add low expansion fluxes

Methods of making



Introduction

There are numerous ceramics making methods and excellent books and online information explain how to go about them. Here I provide a pictorial guide of my processes:

- throwing
- mould-making and slip casting
- hand-modelled sculptural additions.

Throwing

Below I demonstrate how I throw a little bowl. I have not given a detailed description on each step as there are many sources which do. Rather, I have recorded my method and included helpful tips.



Weigh out the required amount of clay

Pat clay into balls, and cover with plastic
(I found commercially processed clay did not require wedging)



Throw a small clay disc on the wheel-head by centring and completely opening up the clay (see below)
The disc's diameter should be slightly smaller than the batt



Make a hole in the centre and another furrow or two (for larger batts) further out

Place the batt on the clay disc and push down to secure



Drop the clay ball onto the batt
Pat down to secure

Continuously lubricate with water. Do not make it too wet
as the slurry build-up softens the clay



Centring:

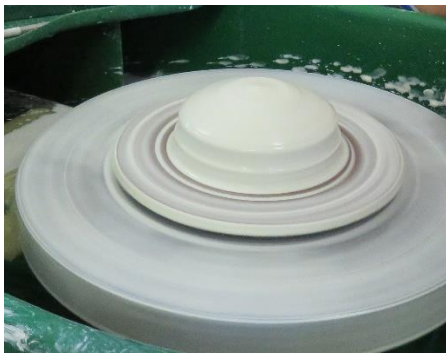
Increase wheel speed to fast
I generally throw slower with porcelain than stoneware clay

Cone up
Keep movements fluid and hands controlled
Apply even pressure



Cone down
Keep downward pressure consistent and left hand steady

Repeat until clay is centred
Larger amounts of clay require more repetitions



Centred clay should be the shape of a squat dome
It should move smoothly under your hands

Make sure it is centred right down to the wheel-head or batt



Opening up:

Slow the wheel down to mid speed

Push a supported finger into the centre of the clay
Apply steady downwards pressure

Leave the base about 2 centimetres thick



Frequently tidy and compress rim
Compression strengthens the rim, helping the form to keep its shape



Compress and shape base
Compression prevents S-cracks

Bowls: curved base
Cylinders, plates: flat base



Pulling up:

Decrease wheel speed

Pull up the wall:

Support clay on inside and apply pressure on the outside wall, starting from the base, moving up slowly and steadily

Repeat until the wall is the required thickness.



Shaping:

Reduce speed further.

Apply pressure to the wall interior or exterior, forcing it either in or out

Use a sponge to keep hands and clay lubricated, but do not over-wet as this reduces workability



Tidying up:

Speed is slow

Refine exterior profile and remove excess slip
I prefer to use a metal kidney



Compress base, refine interior shape and remove excess slip

Metal kidney needs to be cleaned repeatedly



Use callipers to measure required diameter
Use a ruler to measure required height



Frequently compress the rim with the strip of cloth or chamois



Use a sponge, or sponge on a stick, to soak up excess water which can otherwise cause the form to collapse



Trim the base with a V-tool



Wiring off:

Wheel rotates very slowly

Wire off holding gut securely and drawing it across the batt towards yourself
Keep gut flush with batt



Turn wheel off

Use back of V-tool to lever batt off clay disc

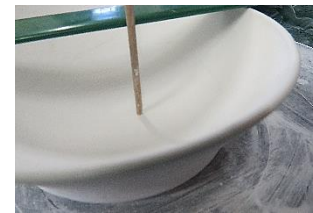
As soon as the rims have firmed up, turn the piece over and place it on clean newsprint to allow the base to dry. Once thrown wares have firmed up, they are generally turned.

Below are some of my turning tips

- For crisp finish, turn when the piece is cheese-hard
- To measure the thickness of the base, lay a flat object across the bowl rim. Hold a stick perpendicular to it and mark off the height where the object and stick intersect (I put my finger nail on the intersecting height on the stick). Move the stick to the deepest part of the interior base and measure the difference in height. This is the base thickness.
- Make a pencil mark on the wall to indicate where to start trimming (1)
- Make a pencil mark on the base to position the foot ring (2)
- Secure with three small clay rolls (3)
- Increase speed when turning base and foot ring
- Decrease speed when trimming outer walls
- Trim the outside wall of the pot first. Only trim the base once satisfied that all excess clay is turned off the walls. This will ensure that the foot ring is correctly placed
- Make a narrow groove on the inside of the foot ring and then clear the excess clay to form the well
- Use a wooden tool to compress the bottom of the foot ring



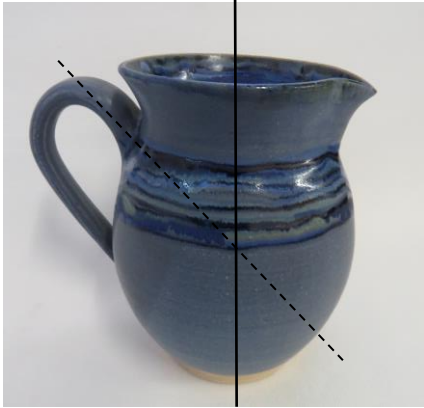
Measuring base height (exterior)



Measuring base height (interior)



Pencil markings on inverted bowl



Lines to determine the centre of gravity of a jug

Handle tips

To make comfortable pouring handles, the centre of gravity of the vessel should be as close to the handle as possible. This is determined as follows:

1. Line | is a vertical line down the centre of the vessel.
2. Line \ is a vertical line running down from the upper curve of the handle when the jug hangs naturally.
3. The centre of gravity is where the two lines intersect.

Looking at my jug, the handle could spring slightly higher to raise the centre of gravity and thus place less strain on the wrist when in use.

Mould making

Making and using moulds as a ceramic process is a specialised field. I have made and used simple hump, press (or slump) and one-piece slip-casting moulds, made from plaster of Paris (calcinated hydrated sulphate, $2CaSO_4 \cdot H_2O$) in making some tableware items. Any found item without an undercut can be used as a one-piece mould model. Moulds of forms with undercuts need to be made in several pieces but this was not necessary for my straightforward forms.



Hump mould and a bowl I made with it

Hump mould

- Mushroom-like shape
- Narrower base allows for easy handling
- Clay slab or coils placed over the mould shaped under pressure



Press mould and a bowl I made with it

Press mould

- Concave shape
- Clay slab or coils placed into the mould and compressed



Slip-casting mould and a cup I made with it

Slip-casting mould

- Similar to press mould
- Casting-slip is poured in, allowed to stand and then poured out

Below I demonstrate how to make a simple one-piece slip-casting mould from a commercially available form with no undercuts.



Make a cottle:

Roll a length of flexible, strong plastic and secure it with tape

Peg the top to secure plastic more when making larger moulds



Reinforce cottle base with thick clay coil



Rub a very thin layer of Vaseline over the model surface as a release agent

Also rub Vaseline on your hands and arms to below your elbows (aids cleaning)



Place model, inverted, in the centre of the cottle

Make a mark 4cm above the height of the model as a guide for when pouring in plaster



Estimate the required volume

Measure out water in one basin

Weigh out plaster in another (see ratio table below)

Wear a mask while working with plaster powder



Gradually add plaster to water until little plaster islands form.



Gently, taking care not to create air bubbles, mix plaster by hand (gloves can be worn)

It should become smooth and thicken

It is the right consistency when a cross traced across the plaster surface does not disappear

Work quickly from now as the plaster is starting to set

Plaster can be poured into a jug or poured directly from the basin, depending on cottle and basin size



Steadily pour the plaster over the model

Fill up to the mark 4cm above the model

(Pour excess plaster onto a glass sheet

Lightly press another glass sheet on top

Resulting plaster batts are useful small drying batts)



Due to a chemical reaction, plaster heats as it sets

After 15 – 20min, once the plaster has set, remove the cottle



Round off sharp edges around the base while cheese hard



Turn mould over and remove model

If it is stuck, wait for the mould to dry further

Once model is removed, tidy up the top rim

Leave mould to dry out

I erred on the safe side and allowed two weeks for thorough drying

Note:

1. Always add plaster to water.
2. Wash plaster containers and utensils in a separate basin, collect the plaster pieces and throw them away. Do not pour them down the drain.
3. Clay contaminated with plaster should be reserved for further mould-making or discarded.

The table below shows the water: plaster ratio for different strengths of mould.

Parts by weight		Pouring time (min)	Setting time (min)	Absorbency %	Strength and use
Water	Plaster				
100	110	6	13	50	Weak, for patching moulds
100	120	5 ½	18	45	Hump moulds Absorbent batts
100	130	5	20	40	Slip-casting moulds

Slip-casting

Here I demonstrate my slip-casting method. An individual will tweak this to suit their needs.



Thoroughly mix the casting-slip until it resembles thick cream.



Start the timer

Steadily fill mould



Allow to stand for a determined period of time
It is essential that timing is accurate

I found that leaving casting-slip in the mould for 3 ½ minutes on the first pouring resulted in the wall thickness I required

When using mould repeatedly, leave casting-slip in for a few seconds longer in subsequent pourings



Steadily pour the casting-slip out of the mould
Initially tip mould to about 45°
Tip to about 70° to drain the last of the casting-slip.



Place mould at an angle to firm up



Once the slip is no longer shiny, turn mould right way up
and clean edges of excess slip.



Cast edges begin to shrink, separating from mould

Remove cast piece from mould
Should it not release easily, wait and try again later



Tidy up edges and decorate if desired

Allow to dry and biscuit fire or raw glaze and glaze fire

Hand-modelling

I made the general form of my wares using throwing or moulds. I added little hand-made sculptural details to some wares. Below are a few tips I found useful.

1. Find inspirational source material. Collect objects, take photographs or draw. Drawings made from life are useful as they require careful observation.



One of my rockpool photographs used as inspiration



Detail of one of my rockpool inspired plates. Both form and glaze are influenced by my subject matter.

2. Use a plaster batt (made from excess plaster during mould-making) to absorb moisture when creating delicate details.
Reserve a batt for light coloured clays.



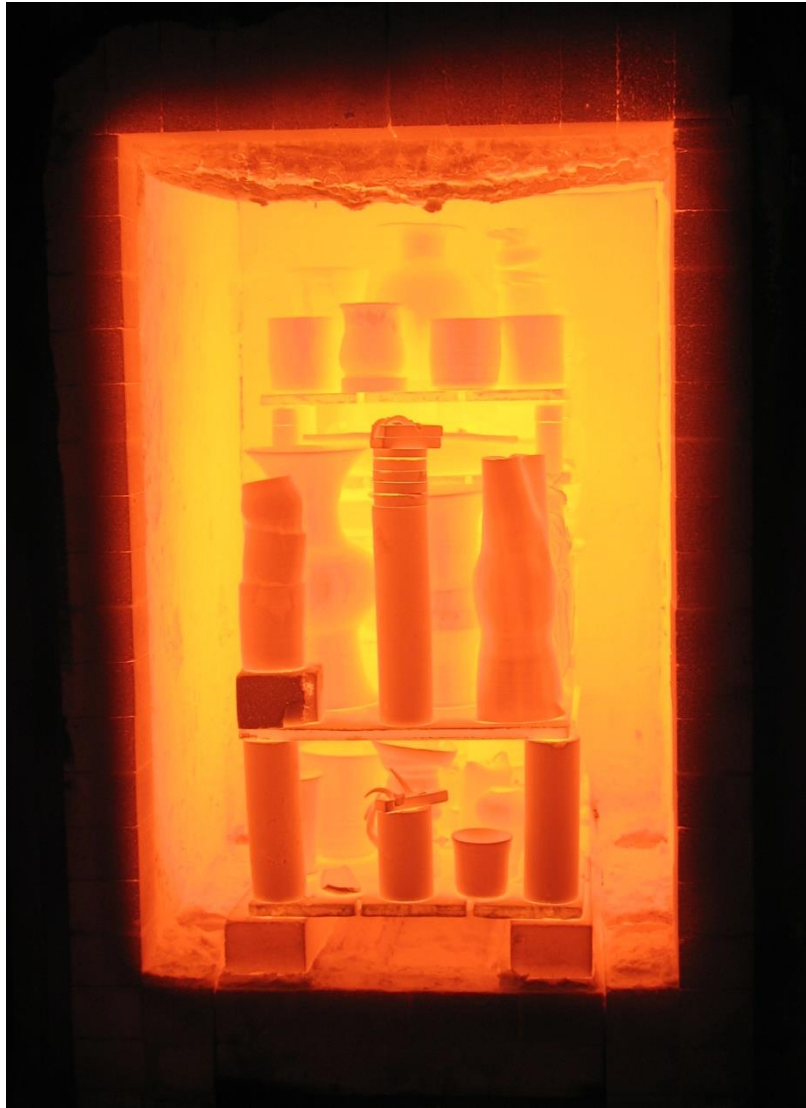
Rolling rockpool details on a plaster batt

3. Use a slurry to 'glue' any additions onto the main body. The slurry is made by mixing dry shavings of the same clay body with vinegar (any type). Score the two surfaces to be attached, dab on the slurry onto one surface and push them together firmly. Work around the join with a wooden tool to tidy it up. Keep slurries in labelled and lidded jars, for future use.



Paintbrush loaded with slurry.

Firing



Introduction

Firing is an enchanting process transforming clay to ceramic and a dull glaze powder to a wide variety of surface finishes. Although a ceramist works towards an intended outcome, magic happens during firing, making unpacking work an exciting experience. For a studio ceramist, working creatively, the 70:30 rule generally applies to kiln firings: 70% of the resulting work is generally ordinary or unsatisfactory, and 30% is surprisingly wonderful. While this magic is to be embraced, there are guidelines to ensure reasonably reliable results.

Factors that should be taken into consideration as these variables affect results:

- How full the kiln is
- How even the distribution of wares in the kiln is
- The amount of kiln furniture
- The rate of heating
- Soak time
- Reliability of the power supply.

Heat-work and the Orton cone temperature chart

Many modern kilns have a digital controller linked to the pyrometer. The pyrometer reads the exact temperature at the point where it is inserted in the kiln. It cannot measure heat-work.

Heat-work

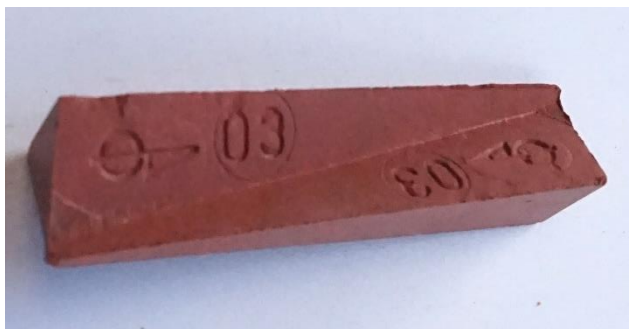
Heat-work is affected by temperature and time. An example from baking assists in understanding how it practically works. If I put a quiche in the oven and turn the oven on to 180°C the oven and quiche begin to warm up. If, once the oven reaches 180°C, I switch it off, the quiche will not be cooked although top temperature has been reached. However, should I leave the oven on at 180°C for an hour, the heat would have had time to work through the whole quiche and it will be properly cooked. The same applies to ceramics.

If I put a glaze maturing at 1200°C on a piece and fire the kiln quickly to 1200°C, it is most likely that the glaze will not mature fully. Although the pyrometer reads 1200°C, the kiln furniture and pieces will not be heated equally. Firing at a moderate pace ensures glaze maturation. I found that slowing down the firing rate for the last 100°C and soaking the kiln at top temperature ensured sufficient heat-work.

The most reliable means of determining the kiln temperature and heat-work remains a cone preferably visible through the kiln spyhole.

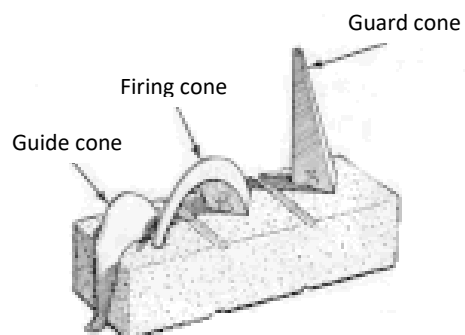
Cone

A cone is scientifically formulated from ceramic raw materials to melt at a specific temperature. Placed inside the kiln, it is an accurate measure of the heat-work active in the kiln. Manufactured to stand at a slight angle, cones should be placed visible from the spyhole, tipping into view as they bend. Cone stands are commercially available or can be made using a highly refractory clay. Secure the cone in the stand with a little roll of clay coated in calcined alumina.



Orton cones are sold paired and one breaks them apart to use them. The number (03 in this example) correlates with the melting point chart included below.

Image: <https://tiranti.co.uk/products/orton-cone-03-s/> Accessed June, 15, 2018



When testing glazes, or firing in a big gas kiln, three cones can be used. The guide cone has a lower melting temperature, the firing cone melts at the desired temperature and the guard cone has a higher melting point.

Image: <https://keaneceramics.com.au/products/orton-pyrometric-large-cone> Accessed June 15, 2018

There are different brands with different coding and the ceramics department uses Orton cones. Below is the temperature chart for Orton cones showing the bending temperature of cones at different rates of firing (available online at https://www.ortonceramic.com/Resources/Pyrometric_Cones/).

Heating Rate	15°C/hr	60°C/hr	150°C/hr
Firing Speed	Slow	Medium	Fast
Cone #			
022		586	590
021		600	617
020		626	638
019	656	678	695
018	686	715	734
017	705	738	763
016	742	772	796
015	750	791	818
014	757	807	838
013	807	837	861
012	843	861	882
011	857	875	894
010	891	903	915
09	907	920	930
08	922	942	956
07	962	976	987
06	981	998	1013
05½	1004	1015	1025
05	1021	1031	1044
04	1046	1063	1077
03	1071	1086	1104
02	1078	1102	1122
01	1093	1119	1138
1	1109	1137	1154
2	1112	1142	1164
3	1115	1152	1170
4	1141	1162	1183
5	1159	1186	1207
5½	1167	1203	1225
6	1185	1222	1243
7	1201	1239	1257
8	1211	1249	1271
9	1224	1260	1280

Tips for packing a kiln

1. Stabilise kiln shelves
Place a thin roll of clay coated in calcined alumina on top of each prop
The alumina hydrate ensures the clay does not stick to the props or shelves
Place kiln shelf on securely on props and press down
Generally, pack lower wares at the bottom of the kiln
2. Ensure air flow within the kiln
Leave a gap of 3 – 4cm between the edge of the shelf and the kiln walls
Place bottom shelf on 2cm props
If shelves fit kiln snugly, space pieces more to allow air flow
3. Organise packing
Arrange wares by height before loading to reduce handling
Use a prop as a measure to determine whether pieces will fit
4. Orderly storage space
Keeps packing efficient
For easy handling, stack shelves with low props as spacers (these can be hand-made from clay and biscuit fired)
5. For continued development, aim to put new glaze tests into each firing

Firing schedules

The changes that take place during firing have been discussed in the clay section. Here biscuit and glost firing schedules are outlined.

Biscuit firing

Three terms are frequently used interchangeably but this is not correct.

Bisque is when the first firing reaches a higher temperature than the second, glost, firing. Commercial ware is often fired with this method. The glaze must be deflocculated as the bisque is not porous enough to absorb the moisture in a normal glaze.

Biscuit refers to firing beyond the ceramic change temperature, but lower than the temperature of glaze and body maturation.

Soft biscuit: fired to 950°C, pieces are easier to sand and more porous so glazes must be thinned.

Stronger biscuit: fired to between 980°C and 1000°C, less fragile body

Unglazed fired ware is also called biscuit ware.

Bisc is as an alternative spelling of bisque

Biscuit temperature rates are indicated below.

Temperature range	Temperature increase rate (°C /h)
Room temperature - 200°C	Thin wares: 60°C to 75°C Uneven, thick wares: 50°C to 60°C
200°C - 600°C	70°C to 80°C
600°C – top temperature	100°C
Soak	About 20min soak ensures all gasses have left the clay body Recommended for porcelain and clay high in organic matter

Below is the biscuit firing schedule I tended to use for my wares.

990°C (takes 12hrs)

0°C – 200°C: 3 hrs; 200°C – 600°C: 5 hrs; 600°C – 990°C: 4hrs; (possible soak 20min;) off.

Glost firing (glaze firing)

It is important to learn the specifics of your kiln and glazes. I found it necessary to break up the required temperature increase into segments on the controller to achieve consistent heating. My glazes benefitted from a 20min soak.

Glost temperature rates are indicated below.

Temperature range	Temperature increase rate (°C /h)
Room temperature - 200°C	100°C Allows water absorbed during glazing to escape
200°C – 100°C less than top temperature	Can increase temperature at 120°C
600°C	Bung can be put in
Last 100°C – top temperature	100°C Aids even heat-work
Soak	About 20min soak Ensures even heat-work throughout the kiln

Below is a 1200°C (for stoneware clay) and a 1250°C (for porcelain) firing schedule I frequently use.

- 1200°C (takes 11hrs 20min)

0°C – 200°C: 2hrs; 200°C – 600°C: 3 ½ hrs; 600°C – 1000°C: 3 ½ hrs; 1000°C – 1200°C: 2hrs; Hold 20min; Off. (only remove bung once cooled below 150°C)

- 1250°C (takes 12hrs 10min)

0°C – 200°C: 2hrs; 200°C – 600°C: 3 ½ hrs; 600°C – 1000°C: 3 ½ hrs; 1000°C – 1200°C: 2hrs; 1200°C – 1250°C: 50min; Hold 20min; Off. (only remove bung once cooled below 150°C)

Glass



Introduction

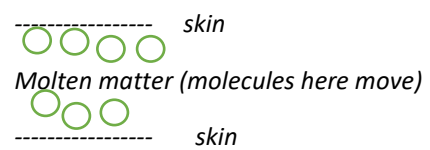
The field of glasswork is vast, and this section only records my limited experience with this material. My aim was to see how I could use glass in conjunction with clay at a basic level. The three basic glass processes I explored are fusing, tack-fusing and slumping. I used 4mm float glass which does not require annealing. My firing schedules were thus straightforward.

Glass has an amorphous molecular structure, meaning that the molecules are randomly dispersed without a set structure. Thus, glass is a solid liquid.

Not all types of glass are compatible because they can have different expansion and contraction rates. Window glass (also called float glass or soda lime glass) the most easily accessible type of glass.

This section looks at glass-specific terminology, useful glass-work tools, how to cut glass, different types of moulds used and concludes with glass-firing guidelines.

Diagram of glass' structure



Glass terminology

Ambient heat	Ambient heat is heat that comes from all sides, like that of a pottery kiln.
Bubbles	Bubbles can be formed by wet organic matter, or other raised materials that leave air pockets. To reduce bubble formation, metals can be beaten down and leaves pressed and dried before use. For deliberate bubbles, plaster of Paris, snuff or tobacco can be used between layers of glass.
Crash cool	<p>This is a rapid cooling of the kiln. Once the desired temperature has been reached, the kiln is switched off. It is then opened and quickly cooled to 600°C. On closing the kiln, the temperature rises. Before it reaches 710°C (see Devitrification) it needs to be opened to cool again. Repeat until the temperature no longer rises. The kiln should then be left to cool naturally with the bungs in.</p> <p>Why we crash cool:</p> <ul style="list-style-type: none">• To freeze the effect we want – the glass skin freezes.• To get the glass below devitrification temperature quickly.
Devitrification	<p>Crystals form on the glass surface making it grey and smoky at temperatures in a range around 710°C.</p> <p>Glass also goes grey and smoky for additional reasons</p> <ul style="list-style-type: none">• Crystals form in the glass• The plaster used• The glass not being washed thoroughly before firing. <p>It can be avoided by cooling the glass more rapidly than the crystals can form (see Crash cool).</p>
Fire polish	This is when you put a piece back into the kiln and fire it to 730°C to make it shinier.
Fuse	<p>Depending on the type of glass, thickness and number of layers, glass melts and joins with other glass. This happens at temperatures ranging from 780°C – 850°C, the kiln glows red-hot.</p> <p>I found 4mm float glass began to get tacky at 780°C and edges softened and fused closer to 850°C.</p>

Radiant heat	Radiant heat is heat that comes from above like in a glass kiln. Radiant heat pushes down on the glass aiding fusing or slumping.
Shim stock	A thin copper used in engineering works which can be used between two glass sheets and then fused. It can yield interesting effects when crumpled and opened out or rubbed with oil.
Slump	Slumping occurs between 630°C and 835°C, when the glass is hot enough to bend and take on the shape of a mould. Various factors affect this such as type, thickness and size of glass, as well as the shape of the mould. My bowls slumped at 750°C when the kiln is dull red in colour.
Tack-fuse	Between 730°C and 780°C, one piece of glass will stick to another. Edges do not soften. I tack fused at 780°C.

Tools for working with glass

The picture below shows useful tools for working with glass.



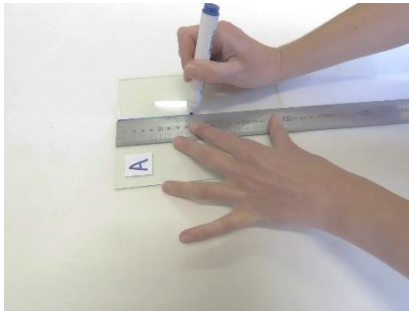
1. Plaster of Paris: coating shelves and as a release agent in or on moulds
2. Ruler: measuring and to guide cutter while cutting
3. Sewing machine oil: lubricate cutter
4. Turpentine: lubricate cutter
5. Circle cutter with diamond cutter blade
6. Whiteboard marker
7. Grozier: adding texture to edges; pulling off cutting irregularities
8. Snappers: snapping glass along the cut line
9. Diamond cutter with oil reservoir
10. Sieve: sprinkling plaster on kiln shelves to texture glass
11. Scraper: clean shelves after firing

Cutting glass

To cut glass, one must cut through the top skin and then break it. The score line forms a pathway along which the break runs. It is essential that the entire line is scored, otherwise the crack may make its own way across the glass sheet. Glass should be cut on a carpeted surface to reduce scratching and allow a certain amount of give so the glass does not snap.

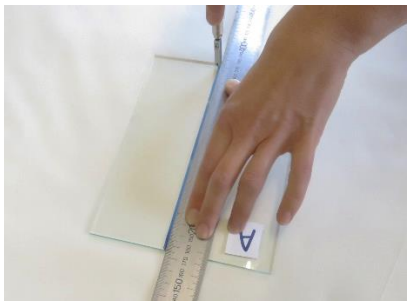
There are different methods for cutting straight/wavy lines and circles which are illustrated below. The sides of the glass are labelled A and B.

Cutting straight lines



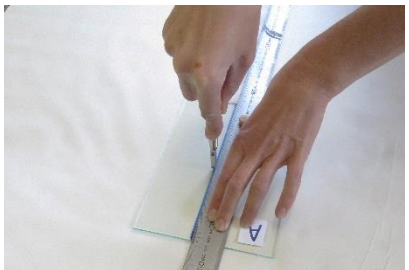
Measure intended line with a ruler

Mark with whiteboard marker



Dip cutting tool in Turpentine

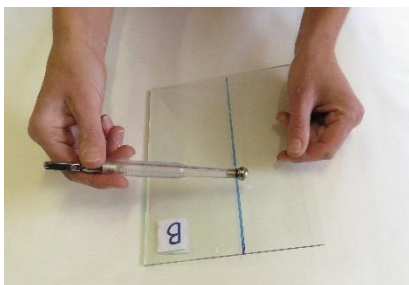
Run it lightly down the intended cut line



Hold the cutter firmly and push down at an angle of about 75° with moderate pressure

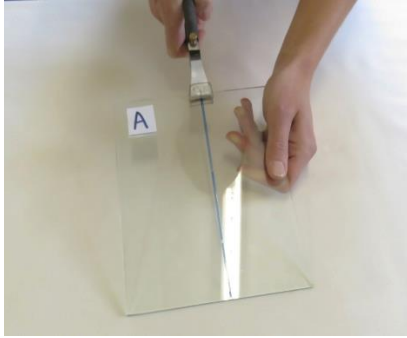
Run the cutter smoothly down the line, against the ruler

A grinding sound should be heard



Turn glass over and tap down the line

(This step is not necessary for short cuts)



Align the snappers on the cut line and snap the glass

Cutting wavy lines

The process outlined above is used with the following changes:

- The line is drawn free-hand, not with a ruler
- For deep curves, cut shallower ones first. Pull these out successively with a grozier. Release lines are required and should be included where they flow naturally away from the shape to the edge of the glass sheet.

Cutting a circle with the circle cutter

With the right equipment and a little practice, it is possible to cut perfect glass circles.

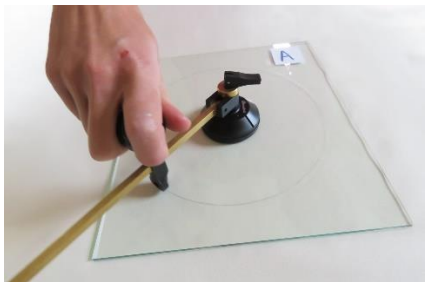


Set diameter on circle cutter



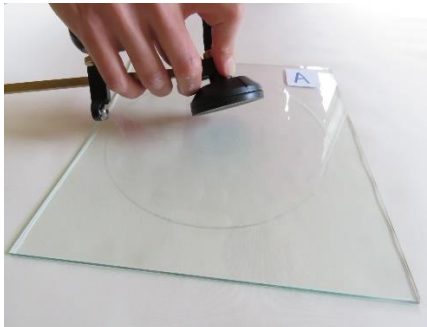
Put circle cutter on glass and suction it in place
There should be at least 2centimetres between the edge of the intended circle and the edge of the glass

Put a drop of oil at the cutter blade

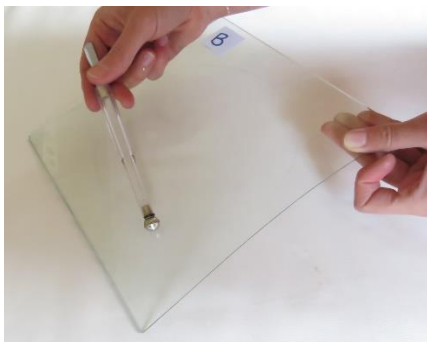


Rotate cutter once lightly to oil up the cut line

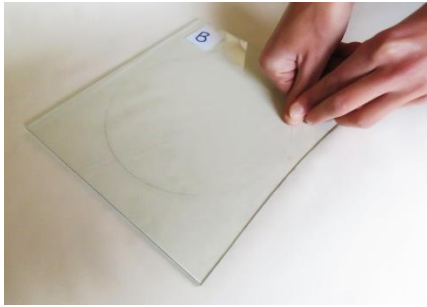
Apply moderate steady pressure and rotate cutter, scoring the glass
Stop when a crunching sound is heard as the cutter reaches the beginning of the scoring



Release suction and remove circle cutter

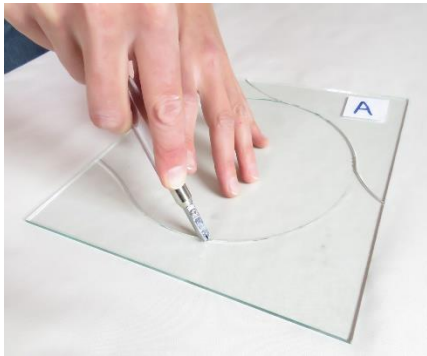


Turn glass over and tap along the score line with the back of the cutter



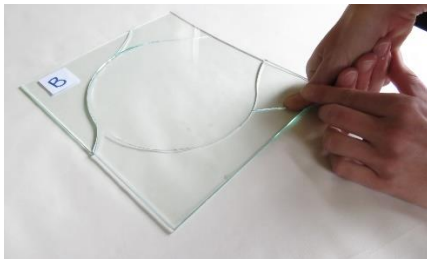
Put glass down flat

Press firmly with thumb along the score line, it will crack and become a silver-green colour
Methodically press just behind the crack around the scored line
It will move forwards with each pressing



Turn glass over

Cut release lines from the circle outwards
Some will crack by themselves (see crack just below A)



Turn glass over

Push down on release lines that did not crack

Pull the cracked pieces off the circle
(a grozier may be necessary for stubborn pieces)



Use a grozier to remove little shards



Edges can be smoothed with wet carborundum paper and/or fused in the kiln

General cutting tips

1. Occasionally open and close the top of the cutter with an oil reservoir to release the airlock.
2. The screw must be on the top side of the cutter for effective cutting.
3. Hold the cutter almost perpendicular, index finger on top.
4. Dip the cutter in turpentine frequently.
5. Some small sharp edges may remain on the cut line. These are dangerous and should be cleaned off with the grozier or wet carborundum paper. It must be wet to prevent inhalation of the harmful glass dust.

Moulds for slumping

I used three types of biscuit-fired clay moulds to slump glass which could be used repeatedly.

- Domed hump moulds formed bowls without bases.



Biscuit hump mould and a glass bowl that was slumped over it



Glass bowl on a porcelain base

- Thrown bowls served as slump moulds.

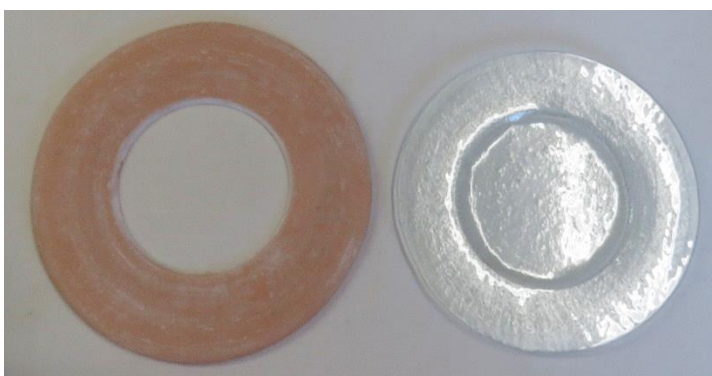


Slump mould with little holes in the base to allow air to escape as the glass sheet slumped into the bowl



Glass dome made from the mould on the left positioned over a rockpool plate

- Thrown ring moulds were used to make platters with a flange.



Ring mould with a platter that was formed by slumping glass into it



Ceramic platter the glass one was made to fit over

Firing glass

Here I discuss information pertaining only to my practice. I identify important temperatures when working with glass and explain how to prepare kiln shelves. My firing schedules for fusing and slumping conclude this section.

Important temperatures when working with glass

As with firing clay, temperature and time work together to create sufficient heat-work. Unlike clay, glass can be fired and cooled (to a point) rapidly. The table below provides a rough guide for the temperatures at which various changes take place during heating.

Temperature	What happens	Possible process
Room temp	Start firing with kiln lid propped open (about 10cm open) and bung out	
100°C	Close kiln lid	
400°C	Put bung in	
480°C	Glass skin gets tacky	Fire lustres
510°C	Glass skin gets even more tacky	Low temp enamels
680°C	Suspended glass starts to bend, thicker glass bends more (because of gravity)	
750°C	Glass bends readily	Slump into or over moulds
780°C	Glass becomes tacky	Tack fuse glass together and keep texture/edges
850°C	Glass becomes molten	The glass edges soften. Fuse, emboss or cast

Preparing the kiln for glass firing

Different processes and desired finishes require different kiln preparation.

- Fusing: requires shelves
- Slumping: no shelves because the shelf does not heat up evenly under the slumping mould and is thus susceptible to cracking during crash cooling
- Shelves should be prepared outside the kiln
- Glass pieces need to be assembled inside the kiln to prevent slipping during transportation

Shelves are prepared in one of two ways, depending on the desired glass surface finish, so that the glass does not stick to the shelf.

Smooth finish

1. Put water in a dish. Sieve a little plaster to make a weak mix, resembling 1% fat milk.
2. Let it stand, it should not thicken.
3. Float a large, loaded ceramic brush over the shelf, not overlapping strokes and not pushing hard on the brush.
4. Work methodically firstly from side to side and then from top to bottom. Apply 4 coats, allowing time to dry between each coat.
5. Shelves can be heated to 50°C to aid drying.
6. Place shelves into the kiln.



Floating a large brush across the kiln shelf

Textured finish (also a type of embossing)

1. Sift or sprinkle dry plaster powder onto the kiln shelf (outside the kiln). One can also sift plaster over a stencil to get texture. Then remove the stencil and place the shelf in the kiln.
2. Position glass as desired on the sieved plaster.

Firing schedules for fusing and slumping

Below are two firing schedules I used.

- Fusing: softens glass edges and melts pieces together with/without inclusions
- Slumping: shapes glass sheet into/over a mould.

Fusing

For decorative effect, inclusions can be placed between two sheets of glass which are then fused. Examples include sand, dried and pressed leaves or flowers, feathers, crushed shells, glass beads, paper and fabric of all kinds, lace, chalk, underglaze paints and oxides.

A fusing schedule:

400°C: 1h; 850°C: 1h20min; hold for 15min; Off. Crash cool to 600°C. Close the kiln and do not open until the temperature is 60°C

Fuse firing notes:

- When the two separate edges of the glass sheets are still visible, hold the fuse for longer. Properly fused sheets become wholly united.
- Tack-fusing is a partial fuse where the edges are not softened, but separate glass surfaces stick together. I tack-fused at 780°C, adjusting the top temperature in the fusing schedule above.

Slumping

Slumping is the bending of glass into or over a mould and I slumped at 750°C.

- Successful moulds are rounded, as opposed to jagged shapes.
- The glass is pre-cut to fit the mould.
- Moulds are placed directly on the kiln floor to prevent kiln shelves from cracking.

A slumping schedule:

400°C: 1h; 750°C: 1h; hold for 15min; Off. Crash cool to 600°C. Wait until kiln naturally cools to 60°C or less (generally overnight)

It is essential to keep looking through the bung hole to monitor the slumping progress. Larger pieces should be fired at a slower rate.

General firing tips

- Leave a gap of at least 4mm between glass pieces to avoid them sticking together during firing.
- Place a piece in clear view from the spy-hole so that the melting stages can be observed during firing to accurately determine what is happening to the glass in the kiln. The kiln can be opened from 650°C to inspect firing progress.
- Glass 8mm or thicker should go up slower (350°C/h).
- Big pieces of glass should be heated slower.

List of suppliers

The list that follows gives suppliers that I have had experience with. Certain ceramic tools and supplies can also be purchased from local art specialist retail outlets.

Cape Pottery Supplies (CPS)

Head office: Cape Town, 021 701 1320/1

Website: www.capepotterysupplies

CPS stocks a wide variety of clays and mixed glazes as well as raw materials. They also have an extensive selection of tools and other equipment, such as kilns and wheels. CPS clay is consistent and specially formulated for specific uses. Their online catalogue is clear, and they are willing to provide telephonic/email advice before ordering. Delivery is prompt.

Hillford Pottery (Lindsay Scott)

Studio: Lidgetton, 082 682 6294

No website

Lindsay Scott is a practicing ceramist running a successful studio. He has experience in kiln-building and specialises in throwing and salt glazing. Lindsay sells a locally mined terracotta clay and other formulated clay bodies.

Kamel Potteries

Head office: Durban, 031 597 1011

Website: www.kamelpotteries.com

Kamel has been undergoing renovations over the past few years. Their shop is cramped, and stock is not well organised. Phone beforehand to make sure they have what you require in stock. They sell biscuit ware, under- and over-glaze paints as well as tools, clay and raw materials.

Potter's Supplies and Mail Order (PSMO)

Head office: Randvaal, 016 365-5313

Website: www.potters.co.za

With a comprehensive online catalogue and helpful staff, PSMO is easy to order from. They have a contract with a courier and purchases are delivered door-to-door, promptly and cost effectively. PSMO sell a wide range of raw materials, tools and studio equipment. They also offer ready-mixed glazes, lustres, under- and over-glaze paints and biscuit ware.

Ultrafurn Furnaces and Kilns

Head office: Johannesburg (Germiston), 086 100 0933

Website: www.ultrafurn.co.za

Ultrafurn is the company many other ceramic equipment suppliers source their kilns from. Dealing directly with them avoids middleman costs. Ultrafurn sells only new kilns, which are pricy. However, they are constructed by a small and specialised staff and kilns are reliable. Delivery is prompt and installation professional. An electrician is required to set up the electrical connection, but Ultrafurn staff install the kiln. Follow-up service is excellent. Ultrafurn offers single phase and three phase kiln options and their helpful staff are willing to advise you on the correct choice. They also offer advice on kiln shelves, props and firing schedules.

Jimnettes Arts and Crafts

Shop: Pretoria

Website: www.jimnettes.co.za

I bought my glass tools from Jimnettes. The tools are good quality and this store came highly recommended. Their service was efficient and prompt and I found the staff helpful.

List of references

The following books and websites have been used in compiling this manual and will be useful for further reading.

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Websites

www.digitalfire.com

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**Tableware for everyday food and feast: the ceramics of Fay
Morris**

Exhibition

Tableware: the space between art and life

Fay Morris

202521804

Supervisor:
Mrs Michelle Rall 838290

Artist's statement

My exhibition title, *Tableware: the space between art and life*, derives from Koplos (in Livingstone & Petrie 2017:44), an important text which resonated with me as I grappled with the issue of making tableware in a university Fine Arts department. Initially, I considered exhibiting my wares as table-settings in a dining-room environment. However, as my research progressed, showing that utilitarian ware is a valid art form and that clay has been used as a medium for artmaking historically and currently, I chose to exhibit my tableware in a gallery space. Additionally, Koplos (in Livingstone & Petrie 2017:44) states that the place for clay to carry 'metaphor and meaning' is the art gallery. I thus believe that this setting is effective in communicating my wares' aesthetic, functional and technical qualities as well as their metaphorical content. In contrast, I expect that my wares will be used in the home, for display, as one would other artworks, and on the table in everyday life.

My motivation to create handmade tableware stems from my belief that eating together (commensality) builds community and my works are intended to facilitate, and hopefully enrich, these occasions. *Commensal rockpool bowl* is an example of a work I feel will enhance commensality. With its loose base, diners are required to hold the bowl for each other, mindfully interacting. Other wares, such as the bowls in *Kitchen cupboard*, are intended to subtly enhance commensality through beauty.

I also feel that correctly selected tableware enhances the food it contains and encourages the chef to take a little extra care over its presentation. Japanese philosophy views tableware as clothing for the food it bears, and wares are selected based on the food-type, season, setting and message the chef wants to convey (Earle 2013:26). Furthermore, research has found that colour, amongst other factors, impacts the perception of food. Using this information, I have glazed large serving bowls blue, as it boosts the savoury flavour of food (Spence, Harrar & Piqueras-Fiszman 2012).

As art, my tableware explores the formal art analysis standards of form and surface treatment, as well as function, pertaining specifically to ceramics (Hopper 2000). I experimented with a variety of forms and found the bowl-form best suited my purposes. Tall foot rings and open forms create light, spacious wares. Taking the intended function of the ware into account, I made decisions regarding size, clay body, glaze finish and colour. Utilitarian, my wares require food safe glazes and acquired technical knowledge enabled me to formulate and adjust these.

A characteristic of art is that it conveys content, and my tableware contains subtle and implicit meaning. In our society of convenience and mass production, ceramists creating handmade tableware speak of these sitting quietly in homes, providing moments of gentle beauty in everyday life (Walters 2017). It is these moments of contemplation that my wares offer. The Japanese recognise the spirituality of handmade wares and their tea ceremony incorporates time to reach a place of quiet and abandonment of self by silently reflecting on the tea-bowls (Klein 1987:49).

Furthering my theme of contemplation, Koplos observes that ceramics demands intimate scrutiny (in Livingstone & Petrie 2017:39). Delicate details, inspired by textures and forms of rockpool life, invite the viewer to peer into or under works to discover little scenes from a magical world. Inverted works, as with *Rockpool flange bowl 1*, reward the purposeful viewer

with elements of surprise. Reminiscent of looking through water, glass bowls and platters distort details found underneath. The watery theme is furthered by my use of glaze trailing and my wares' green, blue and white colours. The varying colour intensity where layers overlap, resulting from pouring glaze, continues the flowing rhythm in my work. It is my hope that intimate viewing, my forms' gentle curves, the watery colours of my wares and delicate crystal growth in glazes will bring the viewer to a place of harmony and rest, akin to my experience of leisurely exploring rockpools.

Although exhibited in an art gallery, my tableware is intended for use in life. In fact, a certain blue bowl on exhibition has been microwaved and washed every morning for the past year. Utilitarian ceramist, Nakazato, writes that her wares are only complete when in use (Crowe 2016), and I have gained satisfaction eating butternut soup out of one of my blue bowls, or seeing colleagues eating out of *Studio lunch* (incorporated as part of *Kitchen cupboard*).

I identify with my wares, finding myself in a space between art and life for two main reasons. Firstly, on a practical level, I resigned from my working life to pursue my ceramics dream and the past three years of my life have been focussed on making art. As my studies draw to a close, I am confronted by the challenge of making a living again. I aim to combine these two spaces by opening my own economically viable ceramics studio and continuing to make works useful in everyday life.

Secondly, on a more personal emotional level, the university space, the location of my art-making, is where a horrific event took place that changed my life forever. I now find myself leaving, altered, and needing to find my place in real life again. This exhibition marks the space between my current art-making and new life.

I now wish to draw attention to a few exhibited works and considerations pertaining specifically to them.

Top shelf (2017)



Morris, F. 2017 - 2018. Top shelf. Porcelain

Top shelf references high kitchen shelving, where extra crockery is stored. Wares are frequently balanced precariously, and this shelf is often a source of unease and imbalance in the home. Displaying this collection of bowls high required the viewer to stand on tip-toes or move underneath the shelf to view the bowls. Both of these actions are performed in everyday life.



Morris, F. 2017 - 2018. Top shelf (detail). Porcelain

300g Porcelain (2018)



Morris, F. 2018. 300g Porcelain. Porcelain

Each of these mugs was thrown from 300g of porcelain and was glazed in the same manner. Subtle variations in form and glaze reaction make them unique.

Commensal rockpool bowl (2018)



Morris, F. 2018. Commensal rockpool bowl. Stoneware.

I feel this bowl is the answer to my search to create interactive tableware, encouraging diners to consider each other. Previous loose based bowls were too small to contain food for more than two people and their bowls did not sit snugly on the bases. This piece consists of a large loose base bowl which can be passed between diners. Its base is wide enough to provide stability for the bowl, and delicate details create a point of interest when the bowl is removed in use.

Communal healing: kintsukuroi (2017 – 2018)



Morris, F. 2017 - 2018. Communal healing: kintsukuroi. Porcelain, silver leaf

These little jars fell inexplicably the day after my dog attack, and I found the parallel of my broken body and shattered jars profound. As a symbol of my healing, I asked friends and family involved in my journey of recovery to piece the jars together with me. Utilising the Japanese method of kintsukuroi, we then painted the silver leaf on the cracks, drawing attention to their beauty. This philosophy has assisted me in viewing my scars as evidence of a beautiful miracle.

Acknowledgements (2018)



Morris, F. 2018. Acknowledgements. Porcelain

These slip-cast 'cups' are arranged in little conversations, referencing groupings of people at a 'drinks gathering'. Through this work, I wish to convey my sincere thanks to all those who were involved in my recovery process. The 'cups' are numerous as there were many people who contributed in some way, some big and some small. The shadows on the wall reach down to interact with the works below.

The cups are warped, yet beautiful, a symbol of my wholeness despite my changed mobility.

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