Master of Fine Arts Thesis

Synthesis

Cory Brown

Submitted in partial satisfaction of the requirements for the degree of
Master of Fine Arts, School of Art and Design
Division of Ceramic Art
New York State College of Ceramics at Alfred University
Alfred, New York

2017

Cory Brown, MFA

Acknowledgements

I owe much of my progress to the great people behind me that I am very grateful for…

Caitlin Brown, my wife, has been selfless and supportive every day throughout graduate school, while also engaging my intellectual growth at home through discussion.

John and LuEllen Brown, my parents, have always been exceedingly supportive of my dreams.

The following people have been my teachers and mentors listed in chronological order. **2003-2017**

Lee Burningham
Dave Finkelnburg
Alex Solla
Forrest Lesch-Middleton
Dan Murphy
John Neely
Joe Davis
Ben Krupka
Tim Rowan
John Jessiman
Reena Kashyap
Bobby Silverman
Ray Meeker
Matt Kelleher
John Gill
Andrea Gill
Linda Sikora
Walter McConnell
Wayne Higby
William Carty
Linda Sormin
Takeshi Yasuda

List of Illustrations

(Figure 1)

Blue and White, Colored Porcelain, Oxidation, Cone 9, 2016, Photo by the Artist. Pg10

(Figure 2)

Iznik Tile (detail), colored porcelain, stoneware, oxidation, cone 9, 2016,

photo credit: Alex Solla. Pg12

(Figure 3)

Protest Krater, Earthenware, Oxidation, Cone 01, 2017, Photo by Artist. Pg14

(Figure 4) Blue and White Lekythos, colored porcelain, oxidation, cone 9, photo by: Alex Solla. Pg14

(Figure 4)

Blue and White Lekythos, colored porcelain, oxidation, cone 9, photo by: Alex Solla. Pg16

"Inert clay, from the earth, is made into something which is directly and intimately related to active craft, to the processes of human survival, and to social and spiritual factors in the life of man, all at once. None of the elements is lost; all are reflected in some sort of balance in each successful work. This then becomes what one may call a transformation image, something undeniably material, wearing the evidence of its material nature in its visible and tangible forms and attributes, which at the same time contains so much projected into it from man's daily life and experience at all levels that it can seem to him almost like a projection of his own bodily identity. It thus becomes an external testimony to his existence. By taking an existential back-step, so to speak, we are enabled to witness in humanity's pots a virtually unlimited variety of concrete realizations which uncover and authenticate his life and action in his world of meaning."[1]

-Phillip Rawson

[1] Rawson, Philip. *Ceramics*. N.p.: U of Pennsylvania, 2014. Print. p. 6

Before I knew what I was doing, I wanted to make pottery. Ceramics has been my greatest teacher and my unwearied guide. Through the making of objects and the consuming search for something more to discover, this obsession has led me to explore science, culture, and art. I believe seeking education is the key to understanding, and is essential to having a meaningful life. One does not need to know everything, though learning about history, nature, and our own existence leads us toward understanding our journey and place in the world. The objects I make have become a record of my existence; or as Rawson suggests: my "transformation image."[2] In each object there is evidence of growth; through innovation, expression, and yearning for understanding and meaning in life. As I push deeper into the knowledge of ceramic material, in tandem with an ever-evolving realization of purpose, my work deepens in meaning and quality of facture; each step reinforcing my commitment to clay.

I initially found ceramics through a community of people that welcomed anyone interested, regardless of their religious affiliation, race or gender. Though I have excellent parents, this kind of social welcoming was quite unusual in my upbringing. I was raised as a non-Mormon minority in Utah. In that oppressive environment, I was excluded from the majority on principle. Therefore, the ceramics studio, inclusive in its management became a haven. The value of inclusivity and community was the first lesson that ceramics taught me.

[2] Rawson, Philip. *Ceramics*. N.p.: U of Pennsylvania, 2014. Print. p. 6

It wasn't long before I was captivated with phenomenological possibilities attained by understanding the chemistry and the science behind clay. I was able to do practical experiments and get tangible results. I found a deposit of clay near my parents' home and discovered if fired to the right temperature, this unaltered creek clay would melt into a beautiful green glaze. This discovery sparked an interest in chemistry and geology that was educational, useful, and aesthetically compelling.

In the field of ceramics, hard work and persistence are common ethics. Early on, we learn to set goals and to accomplish them. Things are often learned the hard way, but learned well. Experiential learning after all, allows one to learn on many levels; physically, emotionally, visually. Mistakes become discoveries as we become accustomed to taking risks. Failure becomes a part of the process as success becomes fuel for further investment. These work ethics are assets beyond my studio practice because they are ingrained in me.

Experimentation is the format through which I allow questioning and research to enter. I generally have a good idea of what I plan to make before I make it, but I am always open, and in fact, hold out hope for an in-process discovery that will guide the work in a new way. I chase these discoveries. Excitement about the current "what if" is what drives me into the studio and perpetuates my own fascination with the work. While making, I am always looking for something that intrigues me aesthetically. I use my knowledge of material, including its chemical makeup, geologic origins, history of process, and anthropological origins to find something further to discover. Concepts arrive from an

ongoing process of aesthetically considered methods of learning about the world, and then combining and altering my current interests and research to create exemplifications as pottery or tile.

Creating systems and tools facilitates the interaction of experiment and chance. I use empirical and intellectual knowledge of material and process to invent methods of allowing the most beautiful, inherent aspects of clay to be seen. There is an aesthetic desirability found in the balance of chance and control in nature; in the colors, patterns, and forms of animals and geological phenomena. Clay has the ability to imitate the spirit of these natural places and phenomena through movement and form. To capture this beauty more clearly, I highlight this action with color.

I developed an inlay technique that simultaneously combines pattern, form, and color while adding a sense of movement. Colored clay patterns are paddled onto a base cylinder of clay on the potter's wheel. From there, I utilize a variety of shaped wooden rollers to form the work from the outside, allowing the surface to maintain its colored clay pattern while moving and changing based on how the form grows. As the cylinder spins with the colors blurring in motion from the inlay, the various rollers I use replace the motion of the hand, while eliminating the drag of wet fingers across the surface in throwing. Patterns are applied at the cylinder stage when the base is thick and can withstand the paddling required to properly bond the two layers. As the work is thrown and stretched; everything from pulls to shaping and forming can be made with the rollers. Each action taken can affect the outcome of the initial pattern depending on the direction

the wheel spins and the pressure applied to the surface. There is a balance between chance and control as I gain mastery of the technique, and add in variations. I am consistently surprised by the results. I think of this inlay process as my own personal language. As I use that language, I learn more ways of expressing my interests. At first, the way the clay would move and grow with any pattern was fulfilling. After developing some fluency with the process, finding meaning through the use of color and pattern became the key focus. This technique lends itself to explorations in relative color relationships, pattern creation, and abstracted references.

Seeking to develop my senses through the study of historical cultures, I found myself imitating and reinterpreting work I am attracted to. In turn, I discovered the ripe fruit of culture and history intertwined within the capacity of these historical forms to carry meaning. I discovered interesting information about past techniques for employing the use of color, form, and pattern in very specific and inventive ways. This historical exploration inspired me to appropriate iconic pottery forms and color palettes to create a sort of homage to ceramic history. My intention is to build a synthesis of interests and ideas through the interpretation and translation of these references into my own language of embedding colored clay inlay.

Certain ubiquitous themes such as Chinese blue and white porcelain, terra cotta Greek vessels, and Iznik pottery and tile are in part recognizable for their obvious aesthetic qualities and remarkable forms; less commonly known is the way each culture developed the techniques behind their particular use of color.

There have been great advancements in the art and technology of ceramics from China. Porcelain was developed there, over a thousand years before true porcelain would be imitated successfully by the imprisoned alchemist Böttger in Meissen, Germany in 1708.[3] Chinese potters developed the details of refined cobalt underglaze. Beginning in the Yuan dynasty (1271 -1368 BCE), these popular blue and white wares were exported en-masse, fueling a huge demand in the West. With the beautiful icy contrast that could express such graceful drawings often of lotus flowers, mountain landscapes, and symbolic animals, this technological development allowed generations of artists to create a timeless format that would be exported and copied for centuries, notably from Jingdezhen, "The Porcelain City."[4]

My own interpretation has focused on channeling the blue and white format and reinforcing the ubiquity with typical forms that would have been used in Yuan Dynasty China. My blue and white wares contain abstracted imagery; inspired by, though not directly referencing the symbolism behind the clouds, flowers, or dragons often portrayed on traditional Chinese pottery. On close inspection the images are simply patterns, yet the form and surface together remain identifiable as referencing Chinese blue and white porcelain. The inlay throwing technique imitates the flowing seductive brushwork of traditional Chinese Porcelain. Additional investigations replace the monochrome blue

[3] Honey, W.B. *Dresden China: An Introduction to the Study of Meissen-Porcelain*. London: Faber and FAber, 1954. Print. pp. 29-30

[4]Li, Zhiyan, Virginia Bower, and Li He. *Chinese Ceramics: From the Paleolithic Period through the Qing Dynasty*. New Haven: Yale UP, 2010. Print. pp. 535-563

with other monochrome color combinations such as red and white. My initial intention was to learn about form from ancient Chinese pottery.

(Figure 1) Blue and White, Colored Porcelain, Oxidation, Cone 9, 2016, Photo by the Artist

What surprised me was development within my practice: a liberation of process. The challenge of limiting my often flamboyant color palette, and leaving empty white space with no decoration, taught me that quiet space can provide dramatic relative weight by contrast. As the Chinese transitioned from the Yuan Dynasty into the Ming, the imagery on pottery became very clear, mostly due to refinement of materials and process. But also from several transitions in government including support of technical skills, established

favorable overseas trade, and encouraged a culture of tea drinking from ceramics that had the ultimate effect of bringing porcelain to new levels.[5]

Iznik potters in Turkey, during the 15th -17th centuries of the Ottoman Empire, discovered the necessary conditions to make a turquoise colored glaze from copper, and fine black lines from chrome. Heavily influenced by the Chinese blue and white wares, Iznik potters made their own discoveries due to availability of unique local material and firing processes. Cultural realities too guided the work in another symbolic, but far less literal format of decoration. Flowers and Arabic writing were done in codified color formats including blue, turquoise, black and white in nearly every case. In addition, one auxiliary color, often red, yellow, or green served to accent; for example, the centers of flowers. Another important detail was the development of outlining drawings with a fine black line which emboldens and emphasizes different areas.[6] Iznik pottery is hard to find, though tiles from this period continue to cover ancient mosques in the Middle East and parts of Europe. Their ideas about color relationships have fed my own aesthetic and design senses. Viewing mosques and palaces have also left me with a desire for massive scale. My work "Prunus Panels" provides a wide continuous surface of tile with my interpretation of Iznik pattern made with colored clay inlay and then stretched to add a sense of movement.

---

[5] Li, Zhiyan, Virginia Bower, and Li He. *Chinese Ceramics: From the Paleolithic Period through the Qing Dynasty*. New Haven: Yale UP, 2010. Print. pp. 388-389

[6] Denny, Walter B. *Iznik: The Artistry of Ottoman Ceramics*. London: Thames and Hudson, 2015. Print. pp. 61-62

(Figure 2) Iznik Tile (detail), colored porcelain, stoneware, oxidation, cone 9, 2016, photo credit: Alex Solla

Innovation is of particular interest to me. The Greeks, Chinese, and Iznik potters in their respective times, took the limited raw materials available to them and made exquisite pottery and tile. While clearly masters of craft and elegance, these early innovators also had a great deal of impact through their advancements in color. In the 6th Century BCE, the technique of Red Figure Pottery replaced the older Black Figure Pottery in Greece.[7]

[7] Sparkes, Brian A. *Greek Pottery: An Introduction*. Manchester: Manchester UP, 1994. Print. pp. 96-97

In Black Figure Pottery, figures and ornaments were painted on the body of the vessel like silhouettes. Details were then incised before firing. The development of Red Figure Pottery was an advance in tools and painting technique in which figures were represented in the natural terra cotta color of the clay, inversing what had been done previously. Black being a very strong pigment, was used for accents instead of creating the figure itself from the color. The materials stayed the same but human ingenuity and years of repetition evolved the process. A slight change in technique provided a major improvement in the ability to create detailed images.

As I was deciphering methods to create figurative narratives on Greek vessels with my inlay throwing technique, an important discovery took place that may feed me for some time. These developments led to drawing cartoon-like images using slip trailers onto newsprint paper. This wet slip is allowed to become leather hard clay and then transferred onto cylinders before continuing to throw and stretch with my rollers. This advancement has opened up another layer of process in which I feel limitless in my ability to make identifiable references, while maintaining a collaborative relationship with clay.

As the figurative narratives painted on Greek vessels were so often used to portray current events, I realized I could translate thoughts about my own present. While my inclination has been to turn away from direct representation and toward abstraction in imagery and pattern, current events have overtaken purely academic pursuit. As I write this, the United States is experiencing the first 100 days of the Donald Trump Presidency. I decided to reference the Women's March on Washington, held just one day after the

Inauguration, as a significant current narrative that is unavoidable in my thoughts. President Trump is portrayed with an orange face and yellow hair with Twitter birds coming from his mouth. He stands at a podium with an upside down Republican elephant symbol, as he puts his hands in the air to emphasize his words. The development of this more direct imagery has fed my research in new ways, connecting me to ancient makers and their innovations while I invent my own way of communicating a contemporary narrative.

(Figure 3) Protest Krater, Earthenware, Oxidation, Cone 01, 2017, Photo by Artist

Shortly after red figure pottery was developed around the 5th century BCE, Athens Greece was the most progressive city in the world, being the place where cities and democracy first originated.[8] Yuan dynasty China happened at a time when Kublai's four Khanates held sway over China and the Middle East. Blue and white porcelain was a highly prized item for trade during this last period of the overland silk road trade.[9] Iznik pottery and tile occurred during the peak of the Ottoman empire as they expanded across three continents. [10]All three of these cultures were at their height of power. Cultures collided as borders were redrawn and the mingling of ideas flourished. Interestingly, directly after these peaks, the empires all collapsed. As empires with global reach, the ceramic objects from these times live on and tell a story of progress and innovation in times of power and prosperity. My interest in combining techniques and drawing from a global view of ceramics affords education and inspiration for myself and others through an aesthetically compelling format. By reinterpreting a melting pot of cultures and incorporating them into my own ever-evolving practice as a maker, I can live a privileged American dream investigating diversity, inclusivity, collaboration and innovation.

[8] Ling, Roger. *The Greek World*. New York: Peter Bedrick, 1990. Print. p. 69
[9] Li, Zhiyan, Virginia Bower, and Li He. *Chinese Ceramics: From the Paleolithic Period through the Qing Dynasty*. New Haven: Yale UP, 2010. Print. p. 332
[10] Denny, Walter B. *Iznik: The Artistry of Ottoman Ceramics*. London: Thames and Hudson, 2015. Print. p. 7

(Figure 4) Blue and White Lekythos, colored porcelain, oxidation, cone 9, photo by: Alex Solla

The pottery from each of these cultures reflects spiritual, intellectual, and aesthetic mastery of their day. I look to them for inspiration out of respect, and to learn something new through the reinterpretation of content, color, form, and pattern. The challenge is to capture these elements while creating new methods of embedding information and aesthetic value, using the systems of my inlay language. Requiring reference for the

empirical knowledge I accrue daily, I combine research with experimentation. These cultures were inspired by each other and I am in turn inspired by them, to learn and to build upon their discoveries. Thus perpetuates a cycle perhaps as old as art itself: borrowing from the past to create something wholly new.

As I reflect on my research, at the core is trying to make sense of my unwavering interest in ceramics. A heavy determination has fueled my practice on a visceral level. I have become intertwined with my own reality through my making practice and I am pleased this material has instilled in me an inclusive global view which combines ideas and innovation for the sake of progress. Making with clay has been both my greatest access to new ideas, and also the method through which I am able to uncover deeper meaning. Learning about art and science, culture and history through ceramics has been endlessly fulfilling and will continue to be how I see going forward.

"In painting and sculpture, the ideational and the poetic come first and these bring in materials and technique. But it is not like that for me; for me the materials and technique come first. You could say that my attachment to clay is my destiny. It is both my greatest strength and weakness. In any case, I have attempted to continue to dwell purely on clay."[11]

-Yagi Kazuo

[11] Winther-Tamaki, Bert. "Yagi Kazuo: The Admission of the Nonfunctional Object into the Japanese Pottery World." *Journal of Design History* 12.2 (1999): 123-41. *JSTOR*. Web. 19 Mar. 2017.

Bibliography

Rawson, Philip, and Wayne Higby. Ceramics. Philadelphia: University of Pennsylvania Press, 1984. Print

Honey, W.B. Dresden China: An Introduction to the Study of Meissen-Porcelain. London: Faber and FAber, 1954. Print.

Li, Zhiyan, Virginia Bower, and Li He. Chinese Ceramics: From the Paleolithic Period through the Qing Dynasty. New Haven: Yale UP, 2010. Print.

Ling, Roger. The Greek World. New York: Peter Bedrick, 1990. Print.

Sparkes, Brian A. Greek Pottery: An Introduction. Manchester: Manchester UP, 1994. Print.

Denny, Walter B. Iznik: The Artistry of Ottoman Ceramics. London: Thames and Hudson, 2015. Print.

Winther-Tamaki, Bert. "Yagi Kazuo: The Admission of the Nonfunctional Object into the Japanese Pottery World." Journal of Design History 12.2 (1999): 123-41. JSTOR. Web. 19 Mar. 2017.

Technical Statement

This technical statement contains research, recipes, theories, and other thoughts about materials and phenomena that I have investigated in graduate school.

^9 Colored Clay

Recipes:

I have settled on a base body that matures at ^9. It is white as possible, while still using some ball clay to ensure it will stretch. Veegum is an amazing plasticizer, but holds onto water too much, and is a Magnesium Silicate so has a fluxing effect on clay bodies. Therefore, I use a small amount of Veegum and Bentonite.

Colored Clay Body Base

Grolleg	25
Tile 6	25
C & C	10
Potash Feld.	23
Flint	22
Bentonite	1
Veegum	1

Stain: I have found most colors work great at 10% stain in a white porcelain body. Some black and blue stains only need 6-7%. Bright Red and Orange require 15% stain. Alumina Manganese Stains can be used in clay bodies to achieve Pinks and Purples. (Chrome Tin Stains shouldn't be used in standard porcelain and are discussed below.)

Stain % for colors-

Black- 7% Mason Best Black 6600

Blue- 7% Mason Wedgewood

Purple- 10% Mason Alumina Purple

Pink- 10% Mason Alumina Pink

Green- 10% Mason French Green

Yellow- 5% Mason Buttercup and 5% Praseodymium

Reduction Notes for BLACK

I have noticed in Reduction firings that the Mason Best Black 6600 will turn a brownish black. In its place I have reverted to an older black recipe from John Jessiman using oxides. It is Jet black at ^9 in a Porcelain Base. Be careful not to add any more Iron than this. If the base has iron and then you add these oxides, it may bloat from too much iron.

Red Iron Oxide	6
Manganese Dioxide	3
Cobalt Oxide	1
Chromium	1

Techniques for Processing Colored Clay:

Porcelain is colored with Stains and Oxides most effectively as a slurry. Wedging stain into clay is very inefficient. When making smaller batches of colored clay I make a slurry of my base, add the correct amount of stain, blundge, and sieve through 60 mesh screen. Then I move this slurry to a plaster trough. Drying can take several days.

To make larger amounts of colored clay I developed a system using my pugmill to make colored clay batches. I have a VPM-20SS Peter Pugger pugmill. It has a 45lb batch size. I make large batches of my white base in a Soldner mixer separately and have this clay aging and standing by.

As an example, a 45lb batch of wet clay is around 33 lbs. of dry material. If my colored clay recipe calls for 10% stain, a whole batch will require 3.3 lbs. of stain. I mix the 3.3 lbs. in about a gallon of my base clay as a slurry. Blundge well. Dry out on plaster trough. Then add this concentrate to the pugmill with the remaining 45 lbs. space filled with white base clay. This speeds up the process considerably as I only have to dry out a small portion of the batch but the stain is still dispersed and hydrated well.

To avoid excessive cleaning of the pugmill, I make clay in order from light to dark and do minimal cleaning between. For example, I may start with a bright yellow, then make a batch of orange that will be minimally effected by a little yellow. Then a similar

transition from Orange into Red, then into Purple. Greens next followed by Blue and finally Black.

Reclaim can make a decent grey color or can be used as a base for more Black clay.

Inlay Throwing

I developed an inlay technique that simultaneously combines pattern, form, and color. I utilize a variety of wooden rollers to form the work, allowing the surface to maintain its colored clay pattern while moving and changing based on how the form grows.

History and Origin

Colored clay initially came into my practice as a solution for utilizing beautiful but difficult to use native clay. My intention was to make an object using the native clay from the Cub Creek Foundation in Appomattox, VA where I was a resident, combined with native clay from North Carolina that was processed at StarWorks to make as a symbolic object bringing two clay centers together through geology and intentions of connecting community. This happened directly after a visit to North Carolina in which Takuro and Hitomi Shibata hosted my fellow residents and me. As happens so often in this field, a family-like connection was made as Takuro and Hitomi are former residents at Cub Creek. The attempt to make a quality piece at that time was a failure, but the effort opened up a door for me. Initially, I attempted to maintain the separate qualities of each clay. I paddled simple patterns of the Cub Creek clay onto more plastic slabs of the

StarWorks clay and hand-built with them. I was attracted to the way the inlay would move and grow as I stretched and altered the slabs. It occurred to me that if I could do this on a thrown cylinder, I could achieve patterns of natural growth in the round.

Rollers and Roller advancements

Of course, throwing with wet fingers will smear and blur pattern on the outside of a form. To get around this, I first tried a 4-part plaster mold wrapped around a cylinder on the wheel, pressing out from the inside to make the pattern flush. The technique evolved quickly as I was using a standard roller (brayer) to fix the seams and to compress as I stretched it out. The turning point was when I learned the initial cylinder needed to be up to an inch thick to accept the inlay, then it could be paddled in, thrown thin afterwards, and formed completely using wooden rollers on the outside.

After realizing the rollers' potential, I began to customize the tool in order to achieve more complicated forms and maintain finer finishes. The rollers I use are made with this purpose in mind, and I have developed a number of shapes and sizes to navigate the various forms I create. The original rollers are lathe turned and simply have a hole with a binding post going through. Later rollers are outfitted with double sealed stainless steel bearings that reduce speed wobbles that were common with the pinned rollers. Until recently all the rollers have been convex in shape. Mimicking shapes my fingers can make, which is very effective for throwing. But Takeshi Yasuda my 3rd Semester Advisor

pointed out that for finishing I need a variety of subtle concave rollers. Concave rollers are parallel to round swelled out vessels. This supplementary roller has nearly eliminated flat tool marks on my round pottery.

Inlay Throwing Developments over time

2010/Wood Firing:

In the beginning of the Inlay technique I was wood firing native clay as I mentioned above. Typical patterns were dots and stripes. Iron was the major difference in bodies.

2011/Black and White:

I moved to an Urban area in New York Metro at the Clay Art Center and had no access to wood kilns. This led to a period of porcelain work that had Black Inlay and was reduction fired at ^10

2012/Soda Ash:

I started to soak my bisque ware in a concentrated solution of soda ash. When the solution evaporates it deposits on the surface in a pattern relating to the atmosphere in which it dries. Carbon trapping was also of major interest at this time.

2013/India and Color:

I spent 6 months in India absorbing color from everywhere and wood firing with Soda ash solutions. When I came back to the U.S. I moved into testing colored clay with Stains

2014/Cone 6:

I did ^6 colored porcelain for about a year. Many people were doing cone 6 and it seemed like the natural thing to do. I bought pre-fab clay and slaked it down adding stains. I applied to graduate school with this work.

2015/Alfred, Mullite, Cone 9:

Upon my arrival at Alfred I moved to a higher firing temperature because I found out Mullite doesn't grow at ^6. Mullite is what alumina turns into in high temperature porcelain and stoneware. It is a dense crystal structure that adds a lot of durability to ceramics. I want my work to be as durable as possible, so I moved to high fire. There are several reasons I didn't move to cone 10. Starting with Chrome-Tin stains limit being right around cone 9. Common k23 IFB (soft bricks) are actually only rated for ^9 and are "able to" go to ^10 for a small amount of time. The amount of energy required to go from 9-10 is actually fairly significant. And finally the stocked porcelain at Alfred I believe is nearing over-firing when fired to ^10 apparent because of warping. So I fire at ^9 and I plan to stay at this temperature. I think it's the sweet spot.

2016/Cane:

The inlay developed into making clay "cane", which is similar to a Venetian glass technique called murrine, or nerikomi block. I make colored clay coils and wrap multiple slabs of varying colored clay around that. Then this is stretched out, stacked, and formed into a block. Slices can then be taken from the block and applied directly to the cylinder. The outermost slab color from the original coil ends up appearing like the background color. There are limitless opportunities to play with pattern and color relationships within the cane itself.

2017/Paper Transfer

While trying to reference Greek figure narratives on pottery in a contemporary way I discovered I could make drawing on newsprint with slip trailers. I make the drawings very thick and very carefully dry the drawing to the soft leather hard stage and apply to the surface of a cylinder. Then after allowing some additional drying the form can be thrown just like the usual way I inlay and throw with rollers. I am capable of doing cane inlay alongside paper transfer inlay to open up a seemingly unlimited method of creating both movement and flow alongside recognizable content.

Large Tile

Recipes:

I use a heavily grogged sculpture clay that has a thin layer of colored porcelain laminated onto it. It is critical to match both the maturation of the fired bodies as well as the wet to dry shrinkage. Former is adjusted with flux and the latter is adjusted with water content. Porcelain has roughly 50% clay, and many stoneware's have upwards of 80-90% clay so has much higher shrinkage. Grog is fully vitrified and does not shrink, so I did tests to match the dry shrinkage of porcelain with stoneware by adding grog to the stoneware until the shrinkage was matched.

Tile Body Recipe

Gold Art	50
Hawthorne Bond	50
Custer Feldspar	10
Newman Red Sub	5
Kyanite 48 Mesh	5
Med Grog	25
Fine Grog	25
Fistfuls of Paper Pulp	3

Paper

I use spray-in insulation for paper. It is already in pulp form and comes in a bail at Lowes. 1 bail lasted all of graduate school. It is preferable over toilet paper as TP has starch and breaks down much faster and begins to rot. And STINK!

Firing

Tiles are all fired to cone 9. If possible I dry the tile on the kiln shelf it is fired on. If this is not possible, I have learned to not ever use sheet rock. While it is a safe way to get the tile into the kiln, I think its crumbling underneath is problematic. I have had the flattest and best tiles single firing, without sheetrock. With paper clay the tiles are actually fairly strong bone dry. With my 20" x 20" tiles I have been just picking them up and placing them in the kiln. With extra-large tiles they are all dried on extra-large shelves I own. Then the bone dry slab is moved on the large shelf to the kiln.

Search for Phenomena

Plastic Glaze and Calcium Eutectic:

Blurring the line between clay and glaze has been of significant interest to me in the last few years. Translating the ingredients while maintaining UMF has been an effective tool and has led me to discover a Plastic Glaze that does fit and is amazingly simple.

Plastic glaze came as a result of failure to achieve purple and pink stains in my colored clay bodies. Chrome-Tin stains require a high amount of Calcium to get the color effect. Typical clay bodies are fluxed with alkali sodium or potassium. During a lecture about the Calcium Eutectic from Anton Reijnders, I had an epiphany about how to simultaneously get sufficient calcium in my clay body to assist color development, but also a new clay that could melt. Anton posted a recipe he was using that created the Calcium Eutectic with nearly 30% Grolleg in it. So using Glaze calculation software I matched the body to have 50% C&C Ball Clay and was able to do so because of how much higher in Silica content C&C is over Grolleg Kaolin. With 50% Clay in the recipe this is basically a glaze that is malleable enough to manipulate or even throw. The Eutectic starts to melt around ^4 and has a wide firing range even up to ^10 before it starts to move.

Doing additional testing with the Calcium Eutectic while also trying to keep things simple I discovered that a simple 60-Clay/40-Wollastonite mix is very close to the

Calcium Eutectic. Depending on what clay you use there will be more alumina or more silica. I discovered that using Grolleg it will be a matte glaze and if you use C&C Ball clay it is much more melted and shinier. A line blend between the two provides a range of possibilities.

Chroma:

I have been exploring how to achieve colors beyond those offered in the form of Mason Stain. This came about while I was trying to achieve purple clay from a chrome-tin stain (described above). In this, I encountered one of the greatest learning experiences of my career.

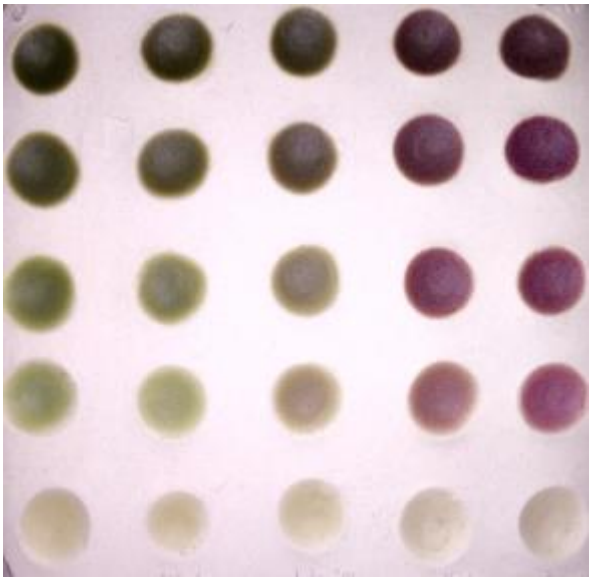
The amazing diversity and abilities of the element Chromium regarding color are staggering. Chromium is what gives color to rubies and emeralds. It can be red, pink, orange, yellow, green, grey, and brown. The word Chromium itself comes from the Latin Chroma meaning color. All the varieties of color are due to the environment the chrome is in.

To achieve a variety of colors using Chrome, I need to alter the base clay which is primarily determined by which flux is used. However, typical porcelain is fluxed using sodium or potassium, which I have found turns to an ugly green/brown with Chrome.

Bright Green requires high Calcium, Purple requires Calcium and Tin, Orange and Pink require Zinc. It also turns out that to achieve these colors, a certain degree of melt is necessary. My challenge has been to make glazes that have at least 50% clay in the recipe so they are plastic (stretchable) in the green state, but then melt into glazes.

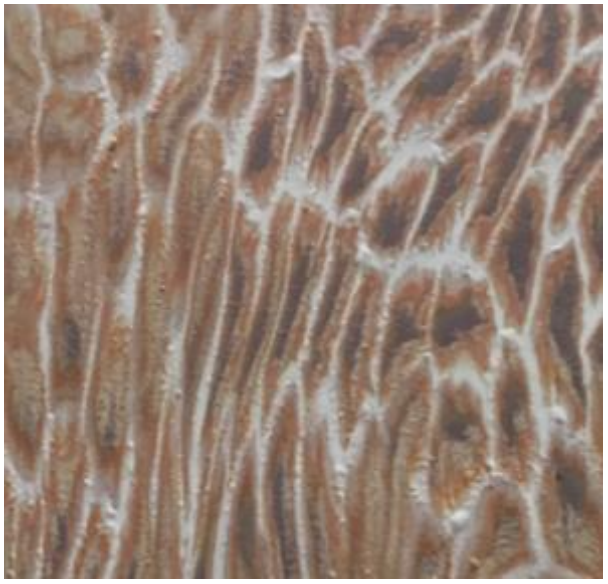
1% Cr

.5% Cr



Base 1.5% Sn 3% Sn

Chrome colored clay test tile showing chrome increases from bottom to top 0-1%, Tin increases from left to right 0-3%, in high calcium base clay. 2016.

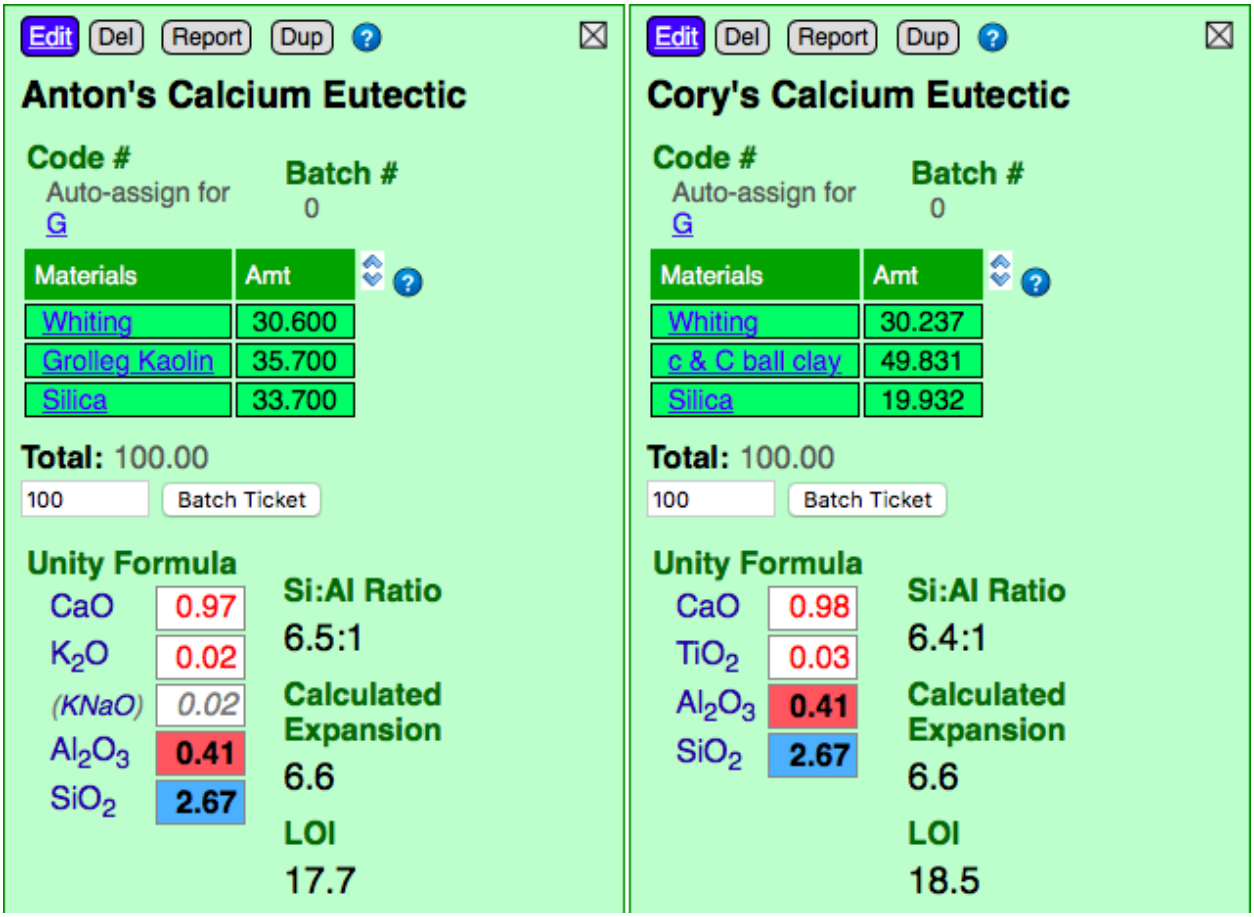


Chrome colored porcelain detail shot, colored porcelain, stoneware, oxidation, 2016, Photo by Artist

Translating UMF examples

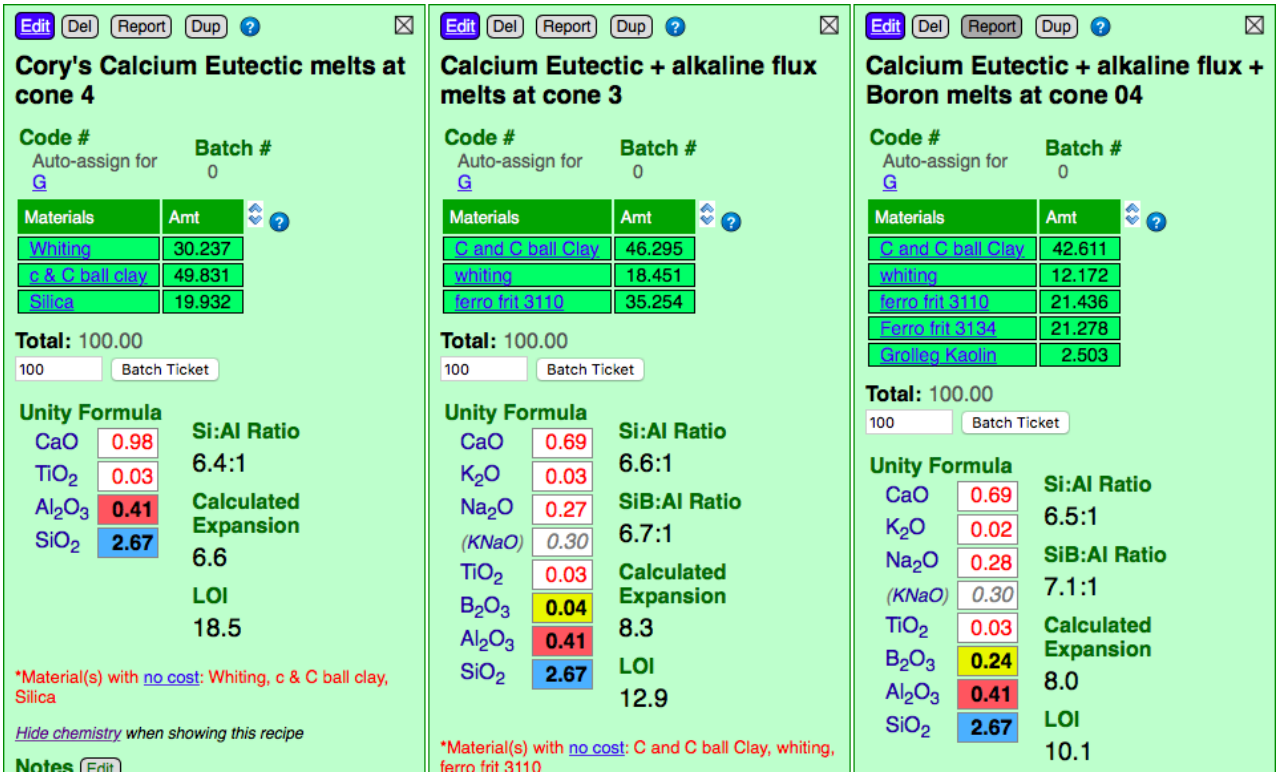
Comparing two recipes with the same UMF (Unity Molecular Formula) and learning how to adjust them has been used consistently in my studio. Below are a few examples. Notice that the UMFs are the same but the ingredients and their amounts change to meet some need such has clay content, or matching two glazes.

Anton Calcium Eutectic Recipe → to Plastic Glaze (referred to on p.25)



Altering Plastic Glazes

3 versions of plastic glaze starting with the High Clay Calcium Eutectic from the last page, → then brought down in firing temperature with diversity of flux, bringing in .3 Sodium into the UMF (this ratio of flux is recommended as most fusible by Stull) → Then a version improving upon the second by adding in Boron. High clay levels for plasticity are maintained in all 3 versions.



Edit Del Report Dup

Cory's Calcium Eutectic melts at cone 4

Code # Auto-assign for G | Batch # 0

Materials	Amt
Whiting	30.237
c & C ball clay	49.831
Silica	19.932

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.98
TiO_2	0.03
Al_2O_3	0.41
SiO_2	2.67

Si:Al Ratio 6.4:1

Calculated Expansion 6.6

LOI 18.5

*Material(s) with no cost: Whiting, c & C ball clay, Silica

Hide chemistry when showing this recipe

Notes Edit

Edit Del Report Dup

Calcium Eutectic + alkaline flux melts at cone 3

Code # Auto-assign for G | Batch # 0

Materials	Amt
C and C ball Clay	46.295
whiting	18.451
ferro frit 3110	35.254

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.69
K_2O	0.03
Na_2O	0.27
(KNaO)	*0.30*
TiO_2	0.03
B_2O_3	0.04
Al_2O_3	0.41
SiO_2	2.67

Si:Al Ratio 6.6:1

SiB:Al Ratio 6.7:1

Calculated Expansion 8.3

LOI 12.9

*Material(s) with no cost: C and C ball Clay, whiting, ferro frit 3110

Edit Del Report Dup

Calcium Eutectic + alkaline flux + Boron melts at cone 04

Code # Auto-assign for G | Batch # 0

Materials	Amt
C and C ball Clay	42.611
whiting	12.172
ferro frit 3110	21.436
Ferro frit 3134	21.278
Grolleg Kaolin	2.503

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.69
K_2O	0.02
Na_2O	0.28
(KNaO)	*0.30*
TiO_2	0.03
B_2O_3	0.24
Al_2O_3	0.41
SiO_2	2.67

Si:Al Ratio 6.5:1

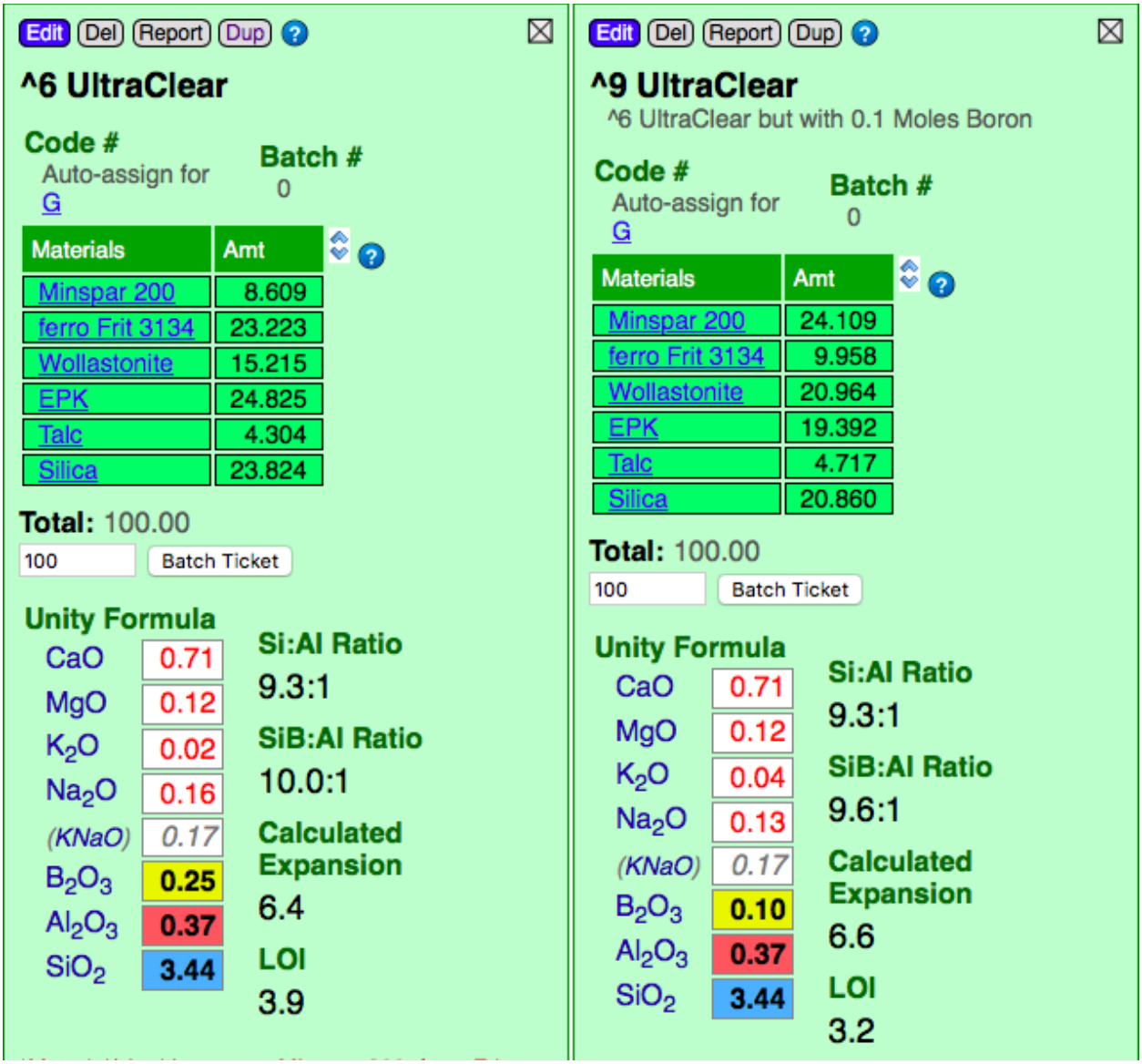
SiB:Al Ratio 7.1:1

Calculated Expansion 8.0

LOI 10.1

Cone 6 Ultra Clear Glaze → to Cone 9

This adjustment uses logic that may have been known for years, but more recently has been researched in the ceramic engineering lab at NYSCC under the direction of Dr. William Carty. The data suggests .05 Moles of Boron will move a glaze down in firing temperature by 1 cone. I have a cone 6 glaze that works and fits very well. To use it at cone 9 I removed .15 Moles of Boron. Otherwise the flux ratios and silica/alumina levels remain the same.



Edit Del Report Dup ?

^6 UltraClear

Code # Auto-assign for G

Batch # 0

Materials	Amt
Minspar 200	8.609
ferro Frit 3134	23.223
Wollastonite	15.215
EPK	24.825
Talc	4.304
Silica	23.824

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.71
MgO	0.12
K_2O	0.02
Na_2O	0.16
(KNaO)	*0.17*
B_2O_3	0.25
Al_2O_3	0.37
SiO_2	3.44

Si:Al Ratio 9.3:1

SiB:Al Ratio 10.0:1

Calculated Expansion 6.4

LOI 3.9

Edit Del Report Dup ?

^9 UltraClear

^6 UltraClear but with 0.1 Moles Boron

Code # Auto-assign for G

Batch # 0

Materials	Amt
Minspar 200	24.109
ferro Frit 3134	9.958
Wollastonite	20.964
EPK	19.392
Talc	4.717
Silica	20.860

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.71
MgO	0.12
K_2O	0.04
Na_2O	0.13
(KNaO)	*0.17*
B_2O_3	0.10
Al_2O_3	0.37
SiO_2	3.44

Si:Al Ratio 9.3:1

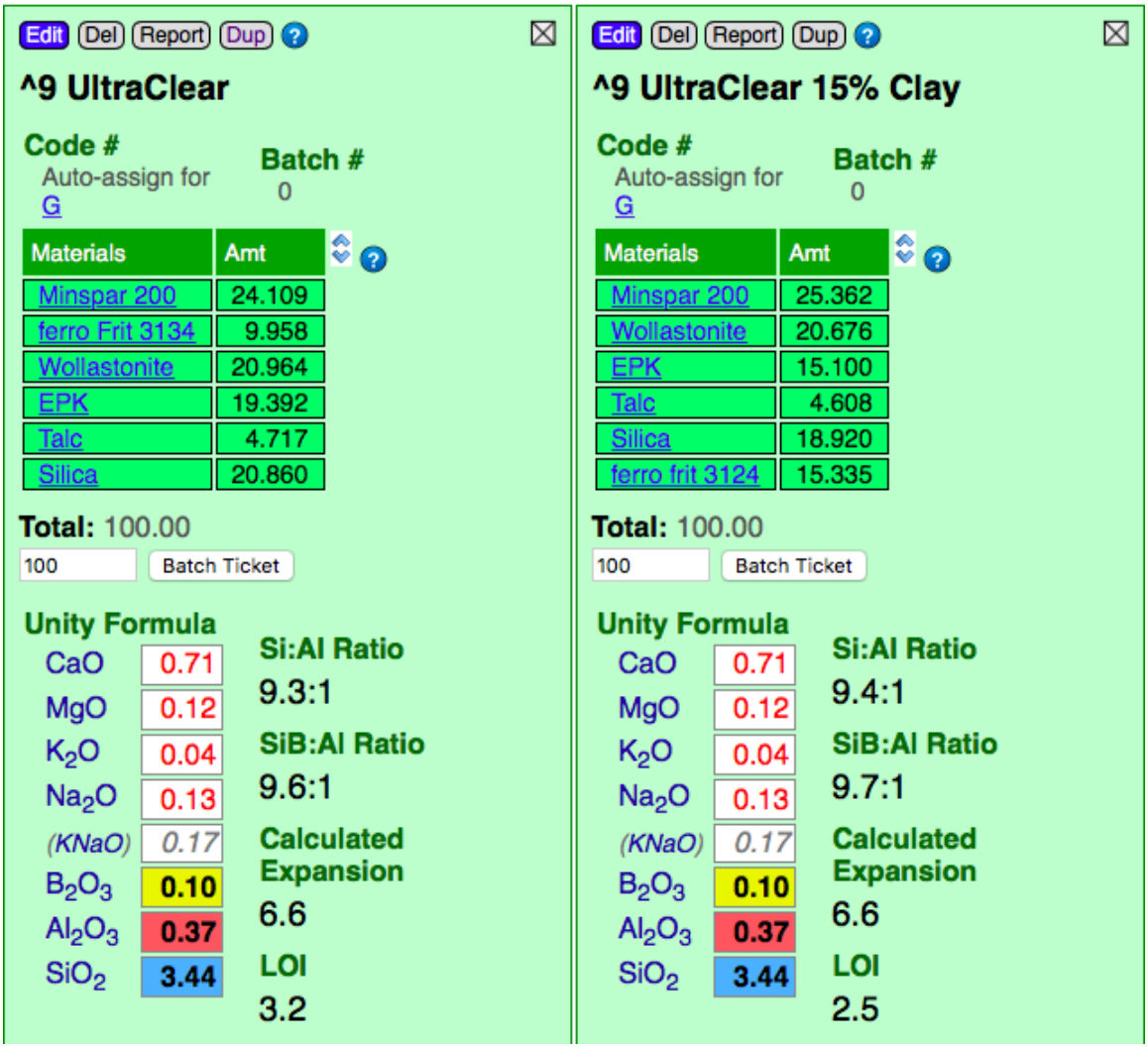
SiB:Al Ratio 9.6:1

Calculated Expansion 6.6

LOI 3.2

Clay Content of Glaze

Clay content of glazes should be in the 10-20% range. Less than this and flaking could occur along with settling in the bucket. More than 20% clay and crawling will often occur. 15% is the target for a dipping glaze. This adjustment takes the last ^9 glaze with19.4% clay down to 15% by changing from low alumina frit 3134 to using 3124 which is almost identical but brings in some alumina. This allows it to slightly lower the clay content. An alternative to this method would be adding calcined kaolin to replace the raw clay.



Edit Del Report Dup ?

^9 UltraClear

Code # Auto-assign for G

Batch # 0

Materials	Amt
Minspar 200	24.109
ferro Frit 3134	9.958
Wollastonite	20.964
EPK	19.392
Talc	4.717
Silica	20.860

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.71
MgO	0.12
K_2O	0.04
Na_2O	0.13
(KNaO)	*0.17*
B_2O_3	0.10
Al_2O_3	0.37
SiO_2	3.44

Si:Al Ratio 9.3:1

SiB:Al Ratio 9.6:1

Calculated Expansion 6.6

LOI 3.2

Edit Del Report Dup ?

^9 UltraClear 15% Clay

Code # Auto-assign for G

Batch # 0

Materials	Amt
Minspar 200	25.362
Wollastonite	20.676
EPK	15.100
Talc	4.608
Silica	18.920
ferro frit 3124	15.335

Total: 100.00

100 Batch Ticket

Unity Formula

CaO	0.71
MgO	0.12
K_2O	0.04
Na_2O	0.13
(KNaO)	*0.17*
B_2O_3	0.10
Al_2O_3	0.37
SiO_2	3.44

Si:Al Ratio 9.4:1

SiB:Al Ratio 9.7:1

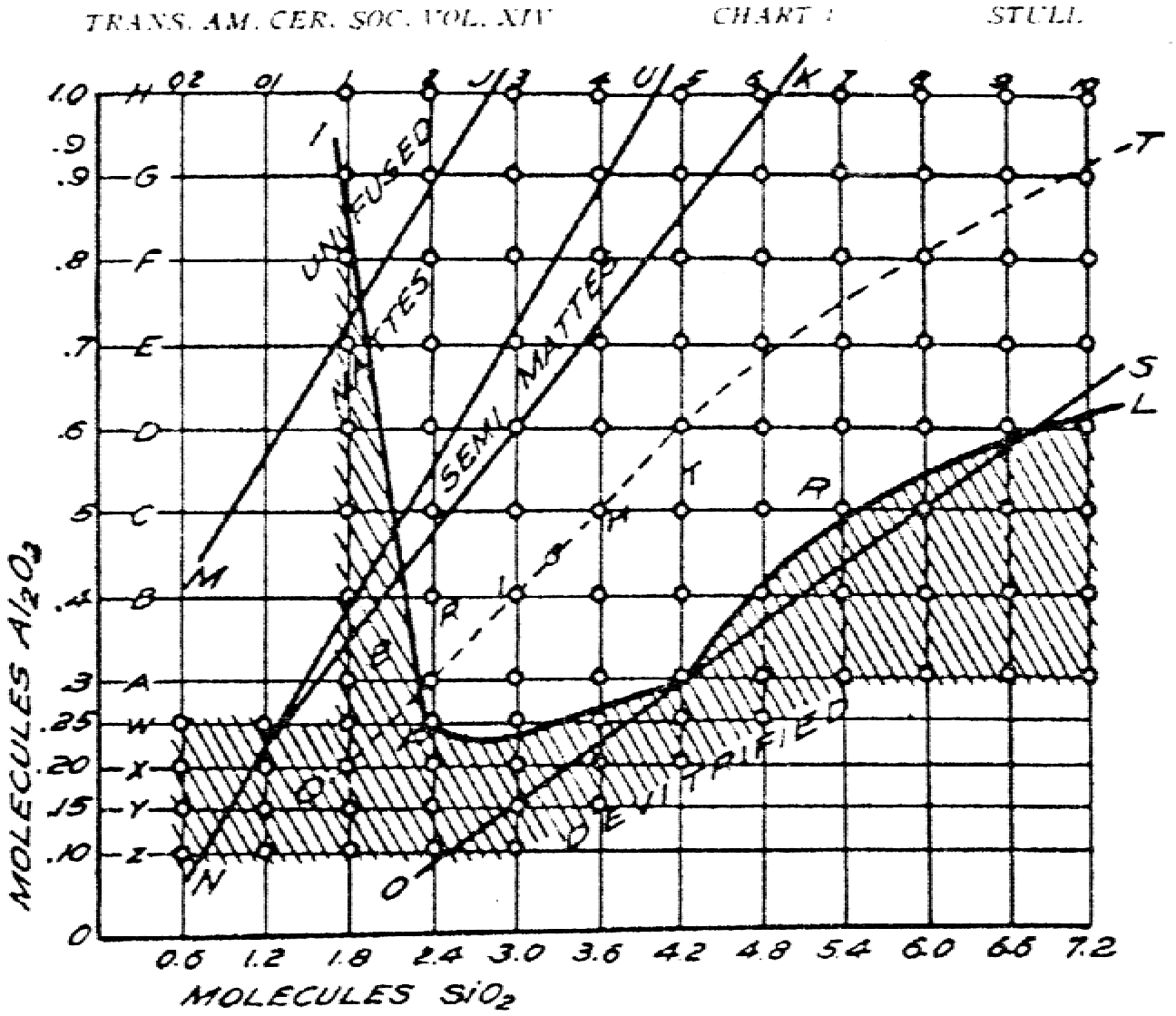
Calculated Expansion 6.6

LOI 2.5

Stull, 1912

Cone 11

0.3 K_2O
0.7 CaO



Clay content of glaze continued…

Stull made a chart in 1912 that maps robust glazes on a graph based on the flux, silica, and alumina ratios. It is recommended by stull that the best flux ratio is .7 alkaline earth to .3 alkaline metals. Using natural occurring materials, it is possible to achieve such a mix. However, it leaves the clay content incredibly low which leads to settling of glaze in the bucket and flaking of applied glazes. The reformulation below maintains the UMF by using a low alumina frit (Ferro 3110) for flux which allows less nepheline syenite to be used, (which is high in Alumina) and this allows us to bring in more alumina with clay content.