

CRYSTALLINE GLAZE FROM THE 19TH CENTURY THROUGH TODAY: A brief history and a conversation with studio potter, Robert Hessler

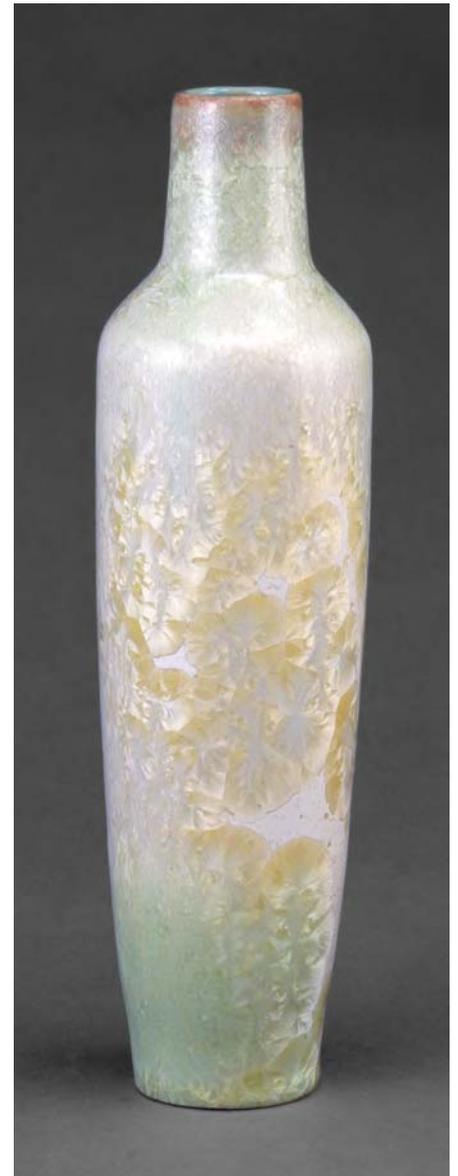
“According to the dictionary, it [the word “research”] also means to search over and over again – to re-search. This relates it to aspiration, endeavor and to the intense and continuous striving we associate with the drive and enthusiasm of the artist.”¹ This is the definition of the pioneer ceramic artists and Robert Hessler, a contemporary ceramic artist, who continues to plumb the secrets of the Crystalline Glaze.

Today when we think of crystalline glazes the names Taxile Doat (1851-1939), Adelaide Alsop Robineau (1865-1929) and Herbert Sanders (1909-1988) come to mind. The story of these artists is one of discovery, improvisation and art. While crystal formation on ceramic surfaces has occurred in glazes in the West for centuries, it frequently interfered with intended surface decorations and was considered a flaw. It was not until the late 1800s that the technology and art of the crystalline glaze was pursued and disseminated at international expositions and in books and periodicals. This article aims to tell the story of crystalline glaze in ceramic surface techniques beginning with its late 19th-century origins and bringing it into the present with the continued pursuit of crystalline mastery by contemporary ceramic artist Robert Hessler.

During Art Nouveau and Arts and Crafts movements of the late 1800s and early 1900s, the emphasis in ceramics shifted to the craft person’s expression in both the object’s form and its surface technique. It was in this moment the process of crystalline glazing was developed as the focal point of the ceramic object. The Great Exhibition of the Works of Industry of All Nations in 1851, the Crystal Palace Exposition, and those that followed, became the showcases of the best of and most advanced of each countries’ arts and industry. Quickly, new technologies in ceramics moved across continents spread by knowledgeable visitors and the press. The access to the innovative works of large and small factory producers pressured established factories of the world to attract new and retain existing customers. Leaders of the ceramics industry like Royal Copenhagen in Denmark and Sèvres in France employed chemists and artists to develop interesting glaze surfaces and forms to differentiate their wares. The flambé and crystalline glazes were among the most exciting glaze discoveries made during this period.

The larger ceramic companies soon realized that, because of the unpredictable nature of its outcome, crystalline glazes were not suitable for commercial production. With upwards of half of the fired pots rejected as unsuitable for sale, the crystalline glaze was reserved for small runs or one-of-a-kind objects of art.

In the early 1900’s Adelaide Alsop Robineau and her husband, Samuel E. Robineau (1857-1934), published a series of articles based on Samuel’s translation



Taxile Doat, French, 1851-1938; associated with University City Porcelain Works, University City, Missouri, 1912-1914; Vase, 1912; glazed porcelain; 9 3/8 x 2 3/4 inches; Saint Louis Art Museum, Friends Fund 215:1980



Large Jar with Cover, 1919, porcelain by Adelaide Alsop Robineau, American (b. Middletown, CT, 1865-1929). Collection of Everson Museum of Art, Gift of Dr. Ethel T. Eltinge, PC 82.33.1.a-b. Mark detail insert.

Photo: David Revette Photography



Jar, Porcelain with Crystalline Glaze by Herbert Sanders. Collection of June Sakata. Photo: Loren Maron, The Marks Project.

from French to English of Taxile Doat's book,² *Grand Feu Ceramics: A Practical Treatise on the Making of Fine Porcelain and Grès*.³ Adelaide Alsop Robineau was inspired by Sèvres forms and glazes. Based on Doat's writings she began to experiment and produced her first crystalline glazed ceramics in 1904. She continued to experiment and produce some beautiful examples of crystalline glazed work until her death in 1929.

According to Linda Roth, writing in the American Ceramic Circle Spring Newsletter 2020, Doat worked as a chemist from 1877 to 1905 for The National Manufactory of Sèvres, France. He also maintained his private studio from the 1880s producing porcelain and grès (stoneware) using high fired flambé, metallic and crystalline glazes, often accented with *pâte-sur-pâte* medallions. Doat traveled from France to the United States in 1905. From 1909 until 1914 Doat lived in University City (Saint Louis), Missouri where he led the School of Ceramics of the Peoples University. In 1914 Doat returned to France where he worked in his studio in the town of Sèvres until his death in 1939.

The Journal of the American Ceramic Society⁴ published findings on studio-prepared glazes for the studio potters and industrial factories. These recipes were the basis for artisans to experiment and pursue a more individual style. The elusive crystalline glaze was one of the glazes that was heavily explored and prized when the exceptional occurred in the firing, and the results were favorable.

In the early 1930s Herbert Sanders, a graduate of and later a ceramics educator at Ohio State University, began what was to be a life's work, crystalline glaze research. Sanders was an important educator who founded the ceramics department at San Jose State College, San Jose, California and, after serving in WWII, became the Director of the School for American Craftsmen at Alfred University (1946-1948). In 1951 Sanders returned to Ohio State on the GI Bill and earned a PhD in ceramics, the first doctorate in ceramics granted in the United States. Throughout his career as an educator, Sanders developed his unique crystalline glaze recipes which he published in *Glazes for Special Effects*, 1974. This book was the culmination of his years of teaching and glaze experimentation and is credited with reviving the use of crystalline glazes in the United States. It is still a canonical text for crystalline artists today, including Robert Hessler. Below, Robert Hessler sheds light on the challenges crystalline artists continue to surmount to become masters of their art.

MY PRACTICE: BY ROBERT HESSLER

Discovery: Within this narrowed focus of crystalline glaze on a ceramic form, I discovered a world of possibility, of exploration and of experimentation. This is the crux of my practice: To always probe and try something new.

With every kiln opening I observe and build on what has happened to the glazes in that firing. When I started to experiment with crystalline glazes I realized that the surface and line of the form itself needed to be clean and streamlined: it must not interfere with the complex nature of the crystallization process. In this matter, my forms and glazes developed simultaneously. There was a challenge in creating a form that was simple in its line but still pleasing on its own. I discovered such an aesthetically pleasing and glaze appropriate form was not an easy one to make.

I consider the surface of the pot to be a canvas with the crystallization as its focal point. For this reason, many of my forms are elongated with straight or slightly swelling sides. Crystalline glazes become quite fluid when fired, so these longer sided forms allow more room to display the results of what has happened in the firing. This is especially true when numerous colors and glaze formulations are applied to the same pot. If a pot is long and narrow I will play with multiple glazes to see what happens as one glaze runs into the other.

In a smaller, squatter form or a form that is more intricate, I use a unifying single glaze to prevent competition between the form and the glaze. In the end I am ultimately seeking a symbiosis between the form and the glaze. This is my goal, the criteria I use as I unload a kiln and hold each object: I ask myself, is it revelatory?

Evolution of Approach: In the early years of experimenting I was often unsuccessful and dismayed at the results of firing. At some point I realized that, if I wasn't satisfied with the first glaze firing, I could attempt to re-glaze and re-fire the piece. I discovered there were effects and results I could achieve with multiple glaze firings which were unattainable with just one firing.

This was a turning point in my growth and the development of my approach to the process. No longer was an unsuccessful firing a dead end – it was an opportunity to try and to discover something new. This is now the basis for many of the glazes I have and continue to develop.



Red, Green and Black Crystalline Bottle, by Robert Hessler, 2009. Wheel thrown porcelain with copper, iron and tin crystalline glazes over ceramic stain fired multiple times in a reduction atmosphere, 14 inches high x 5.5 inches diameter. Private Collection.



Small Bottle, by Robert Hessler, 2010. Wheel thrown oxidation fired with zinc crystalline glaze, 4.75 inches high x 5.75 inches diameter. Private Collection. Photo: *The Marks Project*.



The importance of mastering these steps are seen by comparing the foot finish of 2003 and 2010.



Preparatory Steps: I spent my early years perfecting the preparatory steps to overcome the obstacles in firing crystalline glazes. Because these glazes become liquid in the kiln and can weld the pot to the kiln shelf, the first problem was to contain the runoff and not damage the aesthetic of the finished pot doing it.

Each pot has a foot ring that is designed to fit perfectly under the foot of the pot. It is placed in a shallow 'catch basin' which collects the glaze as it runs down and off the pot. This stops the pot's glaze runoff from bonding the pot to the kiln shelf.

When the fired pot is removed from the kiln, this 'catch basin' and ring are knocked off and the jagged bottom edge of the pot's foot rim is ground smooth with a grinding wheel. (see above)

On the left: Foot 2003. Note the foot rim is almost completely ground away. On the right: Foot 2010. Note the foot remains distinct and the foot well is clean after grinding.

Mastering Kiln and Glaze Technology: Once I mastered these steps and fine-tuned my kiln firing schedules, I grew restless. I felt limited by the color possibilities of firing in an electric oxidation atmosphere⁵ kiln (whites, tans, greens and blues).

In 2000 I read *Crystalline Glazes* by Diane Creber. It introduced me to the possibility of 'reducing' in an electric kiln, which basically entailed introducing something combustible (alcohol, oil, wood, etc.) into the firing chamber to burn off oxygen. This is done after the kiln is finished firing and it begins to cool. My initial goal was to achieve copper reds. Copper oxide fired in an oxidation atmosphere (oxygen in the firing chamber) will produce greens, but in a reduction atmosphere (oxygen not in firing chamber) will produce reds.

After finding some success I began to wonder what else would happen with other metal oxides in this reduction environment. I soon discovered that there were numerous metals (titanium, iron, silver, tin) that were prone to shifting in a reduction atmosphere. This significantly expanded my color palette and opened new avenues of exploration.

The exciting part of this process, and of creating in general, is the feeling of discovering something new with and in the work. Above all, I want to maintain a sense of exploration and playfulness with the materials while striving to discover something unique in the art of crystalline glazing.



Multi-fired Bottle, by Robert Hessler, 2013. Wheel thrown porcelain fired multiple times in reduction atmosphere with silver and titanium crystalline glazes, 5.5 inches high x 4 inches diameter. Private Collection.

MY PATH:

Beginning: In 1991 I graduated from The School of Visual Arts in New York City with a Bachelor's Degree in Photography. The focus of my work in school was experimental. My interest was in playing with the photographic process rather than focusing on studio or commercial photography. What I was looking to express could not be conveyed in a straight photograph, so the photographic process became a step in a much bigger process that involved printing manipulation, collage and paint.

After graduating I struggled to find my next creative step. Without having the structure of a school environment and an active audience to respond, I didn't know how to move forward. I felt the frustration of simultaneously wanting to create and not knowing how to start.

Introduction to Clay: About four years after graduating a friend encouraged me to take a ceramics class at the Potter's Wheel in Kew Gardens, Queens. It was a welcoming environment that fostered growth and creativity from both the instructors and the fellow students. At my first class in March 1995 I felt an instant connection and fascination with the materials and process of clay work. I remember coming home that day feeling elated. It felt as if something internal shifted in me. I was excited to start creating again. Actively thinking about what I wanted to make and how I could make it charged my creative cells.

I threw myself into practicing and learning as much as I could, and, after about three years of ceramics as a serious hobby I decided that this was what I wanted to do full time. This notion 'crystallized' after seeing a retrospective of the work of Beatrice Wood in New York City in 1997. I was inspired by her work, her person and the life she lived. I walked out of that exhibit with resolve knowing the path I wanted my life to take.

Realization: In the Summer of 1998 I moved to the Catskills area in New York State to start my Journey as a full-fledged potter. I spent a few years trying to improve the technical aspects of my throwing and tackling the challenge of teaching myself glaze formulation and mixing. I waited tables while trying to figure out how I could turn this passion into a vocation. During this time I met another potter, Jehanna Zell, who was making a living selling at craft shows. She coached me on the ins and outs of being an exhibitor. I quickly realized my craft show success was limited by my lack of mastery of any of the techniques I was exhibiting. I pulled back from shows and concentrated on identifying a surface technique to master and build a consistent body of work. It was the crystalline glazes which offered the widest range of possibility and room for growth. In the summer of 2000, I quit my restaurant job and have been a full time ceramic artist ever since.

What I have learned by shifting from photography to clay is that, regardless of my medium, my impulse to push the bounds of the material and process remains the same. It always starts with the question: What will happen if ...?



Multiple Fired Vase, by Robert Hessler, 2019. Wheel thrown porcelain fired multiple times with silver, cobalt and titanium crystalline glazes fired in reduction atmosphere, 6 inches high x 4 inches diameter. Private collection.



Multiple Fired Vase, by Robert Hessler, 2019, detail. Note the crystal formation becomes an outlined abstract pattern; the typical crystalline formation is not apparent. This can only be achieved in a reduction atmosphere.



Multi Fired Bowl, by Robert Hessler, 2010. Wheel thrown porcelain fired multiple times in reduction atmosphere using silver and titanium crystalline glazes, 9 inches high x 6 inches diameter.



AUTHORS' NOTES:

ROBERT HESSLER is a contemporary crystalline glaze ceramic artist whose education in experimental photography set the stage for his ceramics career. A quiet, searching person, he is always testing the limits of his medium and his intellect. Robert is becoming the contemporary master of the art of crystalline glazed ceramics. Working at his studio in Amsterdam, New York, he describes his work as always probing, his use of materials and the kiln evolve with each kiln opening and the lessons learned from examining its content. www.roberthessler.com



Vase, Early Reduction Fired Success by Robert Hessler, 2003. Wheel thrown reduction fired porcelain with iron, cobalt and copper crystalline glazes, 11.75 inches high x X 6.75 inches diameter. Details of crystalline bloom and cascade. Private Collection. Photo: Loren Maron, The Marks Project.



MARTHA B. VIDA is the founder of The Marks Project (TMP), a not-for-profit online research hub of American potters/ceramic artists working from 1945 onward. Vida wrote “The American Studio Pottery Movement: Making order of its Marking” which appeared in *Journal* Winter 2018 Vol.34 No.1. She is a lecturer and ceramics collector.

TMP recognizes the wealth of mid-century ceramics in regional museums which lack a robust websites or other avenues of outreach. TMP seeks collaborations with these institutions to bring their collections to international search on its website. Currently TMP is documenting the Mr. and Mrs. Fred Marer Collection at Scripps College Collection, Claremont, California and the American Museum of Ceramic Art’s (AMOCA) American Ceramic Society Collection, Pomona, California. Together these two projects will make over six hundred mid-century and contemporary ceramists internationally searchable on www.themark-project.org.

FOOT NOTES:

- 1 Mallory, Robert. “The Value of Research for the Artist” *Papers Delivered at the Fourth National Conference of the American Craftsmen’s Council*, 18-24. University of Washington, Seattle, Washington: The American Craftsmen’s Council, 1961.
- 2 1899, Robineau and her husband launched *Keramic Studio*, a periodical focusing on china painting, trends, ceramic design, technology and production.
- 3 *Grand Feu Ceramics; a practical treatise on the making of fine porcelain and grès*, by Taxile Doat. Translated from the French by Samuel E. Robineau; with numerous illustrations and notes on the use of American clays for porcelain and grès by Prof. Charles F. Binns. Syracuse, N.Y., *Keramic Studio* publishing company, 1905. [grès, or, in translation, stoneware].
- 4 American Ceramic Society published many articles on glazing during the period.
- 5 Oxidation firing and reduction firing refer to the atmosphere in the kiln: In an electric kiln there is oxygen present in the firing chamber. This is called an oxidation firing. In a reduction firing, the oxygen in the firing chamber is reduced or completely eliminated, usually by introducing a combustible fuel source to consume the oxygen in the resulting hence the use of the word “reduction.” The oxygen is reduced or eliminated from the kiln.

BIBLIOGRAPHY:

- Daniels, Diana L., and Martha Drexler Lynn. *The Vase and Beyond: The Sidney Swidler Collection of the Contemporary Vase*. Crocker Art Museum, 2010.
- Doat, Taxile, and Charles F. Binns. *Grand Feu Ceramics; a Practical Treatise on the Making of Fine Porcelain and Grès*. Syracuse, N.Y.: Ceramic studio publishing company, 1905. <https://hdl.handle.net/2027/hvd.fl2xs5>.
- American Ceramic Arts Society, Martin P. Eidelberg, Robert A. Ellison, and Betty G. Hut, eds. *From Our Native Clay: Art Pottery from the Collections of the American Ceramic Arts Society*. New York: Turn of the Century Editions, 1987.
- Conradson, David, and Ellen Paul Denker. *University City Ceramics Art Pottery of the American Women’s League*. Saint Louis Art Museum, 2004.
- Dietz, Ulysses G. *The Newark Museum Collection of American Art Pottery*. Newark, NJ: The Newark Museum, 1987.
- Frelinghuysen, Alice Cooney. *American Porcelain, 1770-1920*. New York: Metropolitan Museum of Art/Harry N. Abrams, 1989.
- Frelinghuysen, Alice Cooney, Martin Eidelberg, and Adrienne Spinozzi. *American Art Pottery The Robert A. Ellison, Jr. Collection*. New York: The Metropolitan Museum of Art, 2018.
- Creber, Diane. *Crystalline Glazes*. Philadelphia, PA: University of Pennsylvania Press, 1997.

Haddad, Nicole. “The Flawless Imperfection.” *New York Spaces The Home Design Magazine of Metropolitan New York* (September 2017) Pages 118-119.

Koplos, Janet, and Bruce Metcalf. *Makers: A History of American Studio Craft*. Chapel Hill: University of North Carolina Press, 2010.

Mallory, Robert. “The Value of Research for the Artist.” In *Research in the Crafts*, 18–24. University of Washington, Seattle, Washington: The American Craftsmen’s Council, 1961.

Norton, By F. H. “The Control of Crystalline Glazes.” *Journal of the American Ceramic Society* 20, no. 1–12 (January 1937): 217–24. <https://doi.org/10.1111/j.1151-2916.1937.tb19892.x>.

Olsen, Erica, ed. *2019 Scripps College 75th Ceramic Annual*. Claremont, CA: Creative Collaborative, 2018.

Perry, Barbara, ed. *American Ceramics The Collection of the Everson Museum of Art*. New York, NY: Rizzoli International Publications, Inc., 1989.

Piche, Thomas, Ellen Paul Denker, and Dr. Elizabeth Fowler. *Only an Artist: Adelaide Alsop Robineau, American Studio Potter*. Syracuse University Press, 2006.

Porcelains from the Robineau Pottery Adelaide Alsop-Robineau, Pottery. Tiffany & Co., Agents, 1906.

Roth, Linda. “The Wadsworth Athenaeum Museum of Art.” *American Ceramic Circle, Spring Newsletter 2020*.

Sanders, Herbert H. *Glazes for Special Effects*. New York: Watson-Guptill Publications, 1974.

Sanders, Herbert H., and Kenkichi Tomimoto. *The World of Japanese Ceramics*. 1. ed., 12. printing. Tokyo: Kodansha Int, 1980.

Taylor, Brian, and Kate Doody. *Glaze: The Ultimate Ceramic Artist’s Guide to Glaze and Color*. First edition for the United States and Canada. Hauppauge, New York: Barron’s Educational Series, 2014.

Weiss, Peg and Everson Museum of Art, eds. *Adelaide Alsop Robineau: Glory in Porcelain*. 1st ed. Syracuse, N.Y: Syracuse University Press: Everson Museum of Art, 1981.