Cottonwood, Cooling and Colour

by Lindsay Oesterritter

I have been interested in atmospheric firing processes for some time now, particularly experimenting with how a reduction atmosphere can influence the appearance of the finished pieces. During the summer of 2004 before I applied to graduate school, I visited Utah State University in Logan, and observed a woodfiring being reduction cooled for the first time. Prior to this, I had fired most of my work in gas fired, salt-glaze and soda-glaze kilns. That summer at USU was the first time I had fired a wood kiln or given serious thought to controlled cooling. I immediately appreciated the physical and direct nature of firing with wood. Since this initial experience I have primarily wood-fired my work, specifically researching iron bearing clays cooled in a reducing atmosphere.

During the intervening two years I have been repeatedly firing the same train kiln at USU, becoming sufficiently familiar with it to carry out progressive experiments with various types of wood, clay bodies, slips, and glazes. I have figured out where to place work in the kiln to obtain specific results; how to control temperature for an even firing and successful cooling, and most importantly which forms are the most suitable for the surfaces that it is possible to achieve.

I fire to Orton cone 9 (1257°C/2295°F), and then fire down to 760°C (1400°F). (All of the temperatures referenced in this article are based on the readings from a Type R pyrometer placed in the top of the kiln.) A typical firing lasts approximately 40 hours (roughly 15 hours to get to temperature; 10 hours at temperature to build-up ash; 8 to 10 hours for cooling). After experimenting with different types of wood and the surface effects they produce, I have discovered that a combination of cottonwood, elm, box elder and pine produces surfaces I like. Cottonwood, elm and box elder all produce a substantial amount of embers in the kiln without producing as much heat as pine. Pine, on the other hand, produces few embers and a very hot and long flame. Pine effectively increases the temperature in the kiln; however, it produces yellow shiny surfaces that I do not care for. I find the surface results from elm or box elder,

Platter by Lindsay Oesterritter, 38x38cm. High iron stoneware, reduction cool. This piece was selected by jurors Joe Molinaro and Rand Heazlitt for The Log Book Student Award *at the National Juried Woodfire Exhibition in Louisville KY, March 2007.*

ranging from dark yellow to red, with a more matt surface more desirable. Cottonwood, my personal favourite, yields a drier surface with subtle variations of grey, green, blue, purple, red and orange. By using a combination of these woods I am able to do two important and distinctive things: achieve the colour and texture variations I aim for, and maintain specific temperatures without producing a quantity of embers that might stop the airflow within the kiln. I am not dogmatic and if someone in the community calls about a spruce or willow tree that has been cut down, I am more than willing to experiment with whatever wood is available.

When a woodfiring has reached top temperature I would guess that most potters would be ready for a cocktail and a comfy bed. This, however, is when I start the reduction cooling process. I fill the firebox with wood and begin to clam the kiln. Generally starting at the firebox and working my way towards the chimney, I seal every crack (where I can see colour) with a mixture of sand and clay. Carefully preventing the infiltration of air makes the difference between an 8 hour cooling and a 14 hour cooling. If I fail to seal the front of the kiln, as the temperature approaches 760°C, it will stall. (Yes, I learned this the hard way.) After thoroughly clamming the kiln, I start to push in the damper until it is almost shut. At this stage there will be light smoke coming out of the firebox, and flames in the chimney. I then wait for the flames in the chimney to become soft fingers flickering just past the damper. When these short finger flames are barely visible or

have just disappeared, I put a small amount of wood in each of the two side stoke ports and the firebox, and carefully reseal the openings. Soft flames flickering just past the damper reappear each time I stoke. As the kiln cools, the amount of wood required to continue to decrease the temperature in a reducing atmosphere gradually increases. It is counterintuitive, but, the cooler the temperature gets, the more fuel is required. At the start of the cooling process, I add only one small piece of wood in each opening, and by the end I add two to three small pieces. The pyrometer is also a useful indicator. When the temperature stops falling, it is time to add more fuel. Once the hottest part of the kiln reaches 760°C (dull red heat) I simply stop.

There are a number of effects I find interesting. By cooling the kiln to 760°C in a reducing atmosphere I am not allowing black iron in the clay to reoxidize to red iron oxide. The dark grey to black effects are not just on the surface of the clay. If I were to break a piece and look at the cross section, it would be the same black colour throughout. The vapour effects on clay reduced to 760°C are also darker in tone, and do not follow the flame pattern within the kiln as much as they relate to the works placement in the kiln and the way the kiln was stacked. The platter in the photograph on the previous page, shows a good example of the matt cranberry or dark cherry red vapour effect I am referring to. This platter was fired at the bottom of the chamber and the colour caused by localised reoxidation. This seems to happen in lower areas of the kiln, where the embers are covering the vessels, or where they are stacked closely together. I speculate that when I stop cooling the kiln at 760°C, the embers and stacks of pots hold their heat longer than the rest of the kiln, staying at a temperature at or above 760°C, thus allowing for reoxidation.

Using cottonwood in a controlled cooling, I am consistently intrigued by the colour and surface effects. The clay surfaces seem to record slow and natural changes, rather than the wilful application of extreme heat. The ash build-up reminds me of the colours and textures found in moss and lichen, while the vapour and reoxidation effects are reminiscent of the rusty erosion of metal. With each kiln I fire, I learn more; the possibilities for future exploration seem limitless.

Lindsay Oesterritter is currently an MFA candidate studying at Utah State University, Logan, UT. She gained her BA from Transylvania University in Lexington KY in 2000 and her MA from the University of Louisville KY in 2006.

Earlier this year Lindsay Oesterritter was the recipient of *The Log Book Student Award* at the National Juried Woodfire Exhibition shown at the Thrown Together Gallery, Louisville, Kentucky, USA during the 2007 NCECA conference. The jurors were Joe Molinaro, ceramic professor at Eastern Kentucky University, and Rand Heazlitt, professional potter and proprietor of Thrown Together Gallery. *The Log Book Student Award*, valued at US$500 consisted of a special Box Set of all back issues of *The Log Book*, together with a two-year subscription and US$250 cash.