Ceramics

The Firing of Autash

by Ian Granick

The first time Autash was fired disaster struck. Deep in the belly of the kiln, amidst the swirling ash and scorching heat, the wad had fused between a plate and a vase. The wad, the clay spacer designed to prevent just such a crisis, had failed, joining the two; an unintended and unwanted union. Days later, after Autash had cooled and her innards exposed, Hady sat quietly studying the strange shape. A plate and a vase. A vase and a plate. And then he saw it. A tension line. A chisel point. A way to save one by destroying the other. But which one?

The plate belonged to Howard Axner, a potter, a craftsman and a clay manufacturer. Axner was a patron of Autash, contributing money and support. He was well known, well liked and well respected in the community. He was a friend.

The vase belonged to Peter Voulkas, an internationally renown artist. Voulkas had accepted Hady's invitation and arrived in Orlando to teach a master class on ceramics to Hady's students. Voulkas' vases retailed in galleries for as much as $20,000.

The decision was made. Smash. Shards of Howard's plate fell to the floor. Voulkas would have his vase…

Anagama traces its origins back to the predawn of civilization. First seen in Korea almost 5,500 years ago, the ceramic technique was eventually exported to Japan by enslaved Korean potters. The Anagama process is based on a semi-subterranean, high temperature tunnel kiln, the firing of which consumes large quantities of wood. The resulting wood ash combines with the ceramic pieces to create unique and highly evolved glazes. Anagama kilns are currently thought to be the oldest form of ceramic kilns in Japanese history.

As the ceramic craft evolved, potters created more efficient and predictable methods of kiln firing and by the early 17th century, the Anagama kiln had been all but abandoned.

However, since the mid-1960's, the Anagama method has undergone a rebirth. Professor Hady Ali Abbas, of the University of Central Florida, attributes this resurgence to the joy of the craft. "The experience of a modern kiln cannot compete with the excitement of a wood fired kiln. It matches neither the thrill nor the mystique of the wood firing process's unpredictability."

Indeed, while potters needing to mass produce ceramic wares were all too eager to embrace more efficient methods, ceramic artists have unearthed and resurrected the more time consuming, labor intensive and unpredictable wood firing kiln. These purists enjoy the smell of the burning wood, are refreshed by the heat blasts from the kiln's furnace—which must be constantly tended to—and look forward with palpable enthusiasm to see what magical and never-before created patterns are reflected in the finished surfaces.

Part of the thrill of Anagama is its highly organic process. Explains one student, "it is a marriage between the wood and the clay. In a gas or electric kiln, the fuel's only purpose is to generate heat. Here the wood burns creating heat and the left over ash is then fused to the surface of the clay to create natural glazes."

It is this organic process that has lured potters who are more concerned with form than functionality. Gone are the smooth and innocuous flower vases and plateware. Contemporary clay artists prefer to work with more modern shapes—crevices and jags, juts and rough surfaces. Not surprisingly these shapes fire better. "An organic shape is going to welcome the ash better," offered Abbas. "The ash will settle in the nooks and crannies and flats better then on sharp corners and smooth slopes. If the ash rolls off of a slope or can't settle on a corner then you won't get the rich patinas for which this process is known."

A standard Anagama firing takes several days and involves the burning of huge amounts of wood. The wood is placed in a fire pit at the front of the enclosed kiln. As the wood burns, large quantities of ash fill the kiln settling on the tempering wares. Over time, as the temperature increases, chemical reactions occur, fusing the ash with the surface of the clay and creating a natural glass or glazed surface. The patina or color of this glaze ranges from browns to yellows to blues to purples.

While the resulting patina is not entirely random, it can be difficult to control or predict. Explained Abbas "these color arrangements are not predetermined. The colors may be affected by the length of time during which the pieces are fired, their placement in the kiln, the environment—whether it is sunny or rainy, high or low pressure—the type of wood being used. Is it a soft wood like pine or a hard wood like oak? These woods produce different kinds of ash. Also, the minerals that the trees were grown in make a difference. In Florida we have a high mineral content in the soil, higher than the content of the soil up north. This rich minerality results in richer colors."

As with any project, ultimate success rests on the shoulders of leadership. The students of this central Florida community have an excellent role model in their professor. Not only is Hadi Ali Abbas a talented ceramic artist and a brilliant teacher, he is also adept in chemistry, architecture, engineering and alchemy.

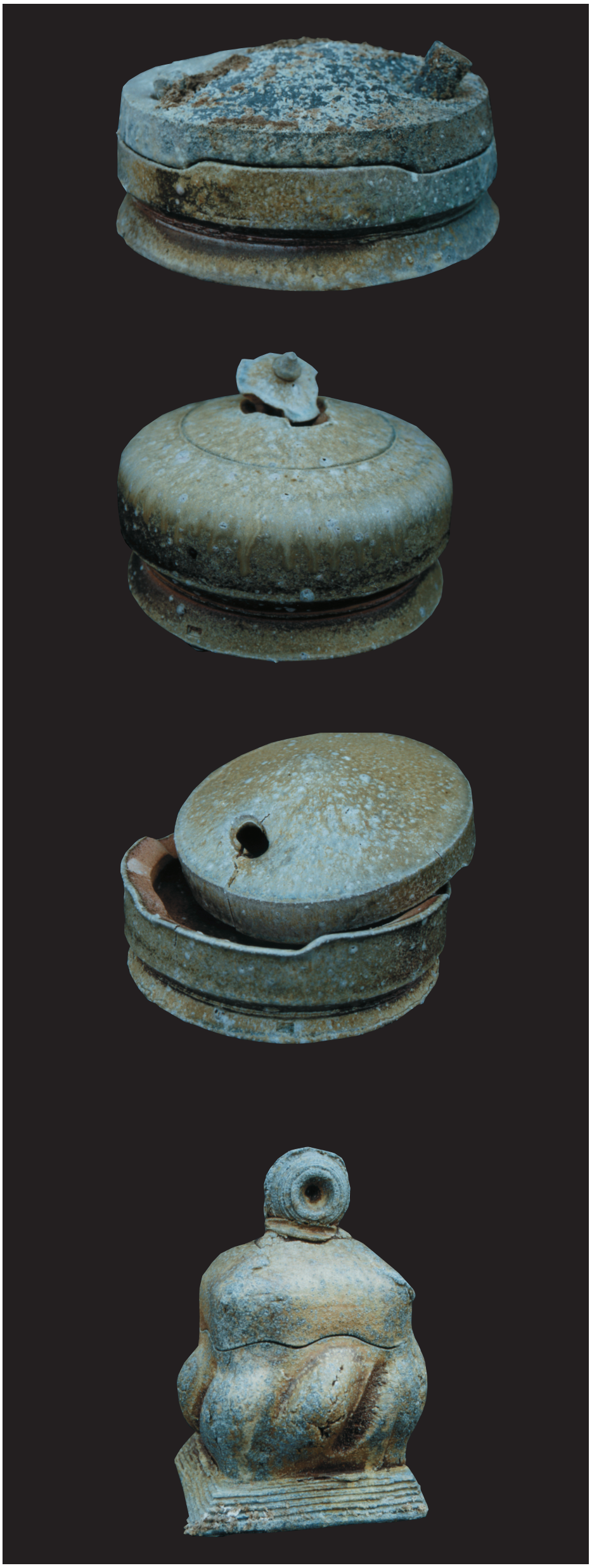
Abbas first encountered a wood firing (ground hog) kiln on a trip to northern Georgia over a decade ago. "The Meaders family has been using the process for four or five generations. I became intrigued with the ground hog kiln and, after intensive research, I discovered that the Korean and Japanese Anagama kilns are similar to the ground hog kilns of North Georgia. The difference is that the North Georgia kiln is built on a flat surface while the Japanese version is built on the incline of a hillside." He then spent the next seven years studying the technique, researching the process and traveling the world learning about this ancient art form.

The Pragmatist: Explain how the ash turns into the glaze.

Abbas: It is basically a form of chemical reactions between the alkaline minerals from the wood ash—potassium, sodium, magnesium—and the minerals in the clay—silica, silispart and aluminum. The combustion of the wood creates a reduction (oxygen deprived) atmosphere. This phenomenon helps pull oxygen from the clay and the minerals allowing for certain color development such as browns and yellows. In contrast, an oxidation (oxygen rich) atmosphere encourages the development of colors like purple and green.

I understand the surface and color variations depend in part on the location in the kiln.

Yes, because the temperature and ash falls are different between the front and the back. For example, in the fire box more we have an increased temperature and ash deposit, as we go further back these decrease. However, an experienced potter can take advantage of this variation arranging the ceramic wares thoughtfully to achieve maximum color affects.



When the process is over are the ceramic pieces completely covered with ash?

No. Because the kiln gets so hot all of the ash that is created during the firing process will fuse. Thus, any ash on the pots will be converted to glaze. However, before we shut down the kiln we stuff as much wood into it as we can. We then seal it off. As it burns it also cools since we are not continuing to feed it anymore. This final burning creates a considerable reduction environment, very low oxygen, which leads to the rich color arrangements we are seeking. Also, slow cooling effects the glaze surface by creating a small arrangement of crystal formations. This gives the glaze a matte surface. In comparison, pieces that are cooled quickly develop a gloss finish. Thus, from the same ash we can get a glossy or a matte finish.

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As exciting as the process is however, an intrigued potter can't just go to the store and buy a wood fire kiln. They have to be built on site. That is just what Abbas, with the help of his assistant, Teresa Robert, did.

Recalls Robert. "I had just returned from the Arrowmont School of Craft and Design in Gattlingburg, Tennessee where I had taken a course on wood firing with Paul Chales. (Chales is) a famous wood firer here in the US. When I came back I told Hady that I had fallen in love with the process and that I was sure that I wanted a wood fire kiln of my own. He replied that they were big and hard to build and temperamental and needed a great design. However, he also admitted that he had always wanted to build one and that he had been collecting materials for years. We agreed that he would design a kiln and I would find people to help us build it. I started holding lectures on campus. I would show people slides of wood fired kilns from my trip to Gattlingburg and then I would ask if anyone was interested. At our first work party 40 people showed up. They came with their own shovels."

During his more than a decade of research into wood kiln building, Abbas had sketched several designs and maquetts. He eventually settled on a combination blueprint; one based on the ground hog and oriental tunnel kiln designs.

Construction of the kiln took about five months. First, the land needed to be cleared, some pine trees needed to be removed, a small slope needed to be leveled and steps needed to be dug out. Using shovels, machetes, axes and saws, the group of artists and students labored on the weekends and evenings to finish the task. Eventually, concrete was poured and bricks were hand laid. The final result is the kiln that now stands on Abbasi's property.

It is constructed out of refractory hard brick. "They are designed to stay in their basic shape up to 2300 degrees," explained Abbas, "The walls are nine inches thick forming a Roman archway. We had to use a refractory mortar instead of cement because of the heat. There are also a number of expansion and contraction modules because when we fire the kiln the whole thing expands with the heat and then contracts."

At the front of the kiln is a five by five foot fire box which is filled with charcoal at the beginning of each firing. In the back is a collection box and a chimney. The box traps some of the gasses in the kiln helping to keep the temperature throughout the kiln even. The chimney releases pressure, preventing the whole thing from exploding. However, the chimney is not the only prevention measure.

During his research, Abbas discovered that kilns built on an uninsulated concrete foundation could explode if the concrete got too hot. For the foundation of this kiln they began with a 6 inch slab of concrete. "On top of that we used a layer of red common brick, on top of the brick we placed a layer of insulation, and then another layer of red brick." The final layer, which

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forms the floor of the kiln is a layer of refractory hard brick. The exterior of the kiln was then covered with a layer of insulation and a 4" thick layer of stucco consisting of "clay, sand, straw and anything else we could get our hands on."

The finished kiln stands over six feet tall, seven feet wide and twenty feet long with a volume of 350 cubic feet. It can hold anywhere between 700 and 1,000 pieces of pottery depending on their sizes.

It was now time to name it.

The Little Econalacahatchee River Kiln

At first, Abbas did not give much thought to the name. He figured that he would name it after the geography, perhaps after the river that ran adjacent to his property. Something like "The Little Econalacahatchee River Kiln."

Robert was mortified. "He, his wife and I were sitting around one day when he proposed that one. 'What,?' we said. 'The what kiln?' I felt that the name needed to reflect the spirit and mystique of the kiln. I asked Hadi how to say 'fire' in Farce, his native language. His reply was 'autash.' And I said 'well that sounds pretty.' So I ask him how to spell it and he say's 'I don't know. Its in Arabic.' So we developed a phonetic spelling and came up with a-u-t-a-s-h. I think it suits the kiln. It also rhymes with 'hot ash' which is exactly what we want so I thought it was appropriate."

The Second Firing.

As I was working on this article, Hady invited me out to his studio to observe Autash's second firing. Driving onto his property was like entering a surreal junkyard. The entire driveway and yard were filled with unfinished ceramic pieces. Hundreds of them. Plates and bowls and urns of every conceivable size and shape lay waiting—a purgatory for pottery.

Artists from all over the community had sent work to be fired in the kiln. Cost for space runs from 75 to 200 dollars per cubic foot depending on the proximity to the fire box.

When the firing begins the kiln is cold. The clay pieces are brought in and arranged. The kiln is then sealed with a layer of brick and stucco. An opening, reminiscent of a small middle-eastern baking oven with a one foot ledge remains. This is where the first fire will be ignited. A larger opening covered by an insulated slat is closed but can be opened for viewing.

On the first day the kiln is filled with shadows. Some light radiates from the small external starting fire which now burns on the ledge. As the wood burns new wood is lit and placed on the ledge. The old wood is pushed slowly forward until it falls into the mouth of the kiln and onto the top of the fire box. The temperature will increase gradually as the fire is continuously stoked and new wood is added.

On the third day a glance into the kiln reveals the full interior. A soft red glow seems to surround everything and occasionally (but with increasing frequency) small sparks can be seen as the heat causes the swirling ash to spontaneously combust. The temperature now hovers near 13 hundred degrees.

By the seventh day looking into the kiln is like looking into a small sun. The temperature has soared to 24 hundred degrees. The external fire ledge has been sealed off and the large window is now open. Heat blasts out of the kiln. Chunks of wood are now fed into the large opening directly into the fire pit below. The heat causes the wood to instantaneously burst into flame as it falls. It becomes difficult to stare into the kiln for too long and sun glasses are mandatory for fire stokers.

Over the course of the ten days that this firing will take place, the fire will need constant supervision. Around the clock volunteers will feed wood into the kiln's hungry mouth. 15 cords of timber will be consumed; enough wood to effectively warm a small house for four winters. The outside of kiln will also become very hot reaching 300 to 400 degrees.

Working with such extreme heat is not without its draw backs. Workers assigned to fire stoking will begin to notice minor burns and a reddening of the skin on their faces, arms and hands. In addition to sun glasses, bandanas and sweat bands will become regular attire.

On the tenth day the kiln will be stuffed with wood and sealed. The fresh wood will burn up quickly and a slow cooling process will ensue. The sealed kiln will cool for two weeks before it is finally opened and its treasures examined.

Although the kiln has been fired only twice, it has already lead to the out growth of additional crafts. Prior to the first firing, Abbasi and Robert experimented with and created a new type of clay designed to be burned specifically in their kiln. They call it Autash clay. While its recipe is still a secret, Abbasi does offer that the clay is higher in silica than normal. "The alkaline from the ash and the silica in the clay create a glassy shell on the pieces. So by using this clay we can get a more interesting color arrangement on the finished pieces."

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