I first visited Ban Chan village in 2009 and was immediately intrigued. The village sits right on the banks of the Mekong River just about 20 minutes by longboat down river from the ancient capital of Laos, Louangphrang. Laos is a small, landlocked country bordering on Thailand, Cambodia, Vietnam, Burma and China. With a scattered, mostly rural, population of 6 million people it is probably best remembered as the country where America was definitely NOT fighting during the Vietnam war. In fact while America was not fighting in Laos it earned the dubious distinction of becoming the most heavily bombed nation in world history. Over ten years in excess of 600 t of explosives were dropped on the country every single day. An estimated 90 million unexploded devices still litter the country, continuing to claim around 300 victims a year almost 40 years after the end of the war. Even today the Americans claim that much of the bombing of Laos was done with no malice–when bombing missions to Vietnam's were unable to reach their target their pilots will often dropped their bombs on Laos on the way home so as to avoid the danger of landing with live munitions. Oddly the people of Laos do not find this explanation particularly comforting!

Ban Chan village is a small village of around 250 people with close to 25% of the population being traditional potters. One of the first noticeable characteristics of the potters of Ban Chan village was their impressive output. While traditional pottery worldwide is in rapid and irreversible decline the potters of Ban Chan village seemed to be making a livable income from their craft.

Of all the ancient and traditional crafts pottery seems to be the most threatened. Whereas many traditional crafts such as weaving, jewellery or paper making have both utilitarian and decorative/artistic outcomes traditional pottery relies almost entirely upon the utilitarian nature of its products. With plastic, aluminum and steel products being readily available at very low cost the humble utilitarian pot is a dying breed. A villager can purchase an aluminum cooking pots for a few dollars and it will last for many years. A traditional clay cooking vessel will usually cost as much or more and generally have a much more limited life expectancy. When a plastic bucket can be purchased for $.50 it is obvious that demand for a heavier, less durable and more expensive water jar will die out. A good example is the tiny, frail kulhar, the barely fired terracotta cup used for chai tea across India. Anyone who has travelled in India knows the pleasure of drinking their hot, sticky Chai tea served in tiny paper-thin terracotta cups that, once the tea is finished, are disposed of by smashing in the street. These cups are often so low fired that the hot sweet tea is flavored by a gritty earthy taste–something much treasured by the locals. I used to find it vaguely reassuring that as the cup was fresh out of the kiln it was likely to be as sanitary as was possible on an Indian sidewalk!

In 2004 Indian Railway moved to ban the use of plastic cups on trains countrywide. The reasons were that it would reduce the horrific litter of Styrofoam cups along the railway and that it would also support the many families and communities involved in the production of these tiny cups. This well-intentioned intervention by the railway minister has almost died out, partially because of cost (a Styrofoam cup can be purchased for half a cent while the kulhar costs almost one cent) and partially because of the lightweight and less breakable nature of Styrofoam. At its height the new regulations meant that Indian Railways was using 6 million disposable terracotta cups everyday. It is estimated that across India in excess of 50 million kulhar were used, and destroyed, every day. Today the ocean of Styrofoam and plastic cups littering the country testified to the disappearance of the kulhar, and with it thousands of traditional potters.

How was it then that these potters of Ban Chan village were managing to survive with the practice of their ancient craft? The answer lay in the near by town of Louangphrang. The town is a romantic, magical mix of Laoation and French colonial architecture populated by some of the most friendly,

laid-back people on the face of the earth. With a history dating back over 1000 years Louangphrang has gone from a forgotten backwater to a thriving centre for tourism since its listing by UNESCO as a world Heritage site and Lonely Planet making it a must see destination. A leisurely stroll round the streets reveals the secret of Ban Chan village's success as a ceramic centre. Everywhere, from a public spaces to the many Buddhist temples, from private residences to guest houses and shops there are the products of the traditional potters from Ban Chan village. From tiny saucers to giant garden pots, from rows of flower pots through to streetlamps and whiskey jars, animal sculptures, charcoal cooking stoves for restaurants as well as everyday use, even to the tables and stools in guest houses and restaurants through to bricks for paving and building and tiles for roofs, the town is full of ceramic products from Ban Chan village.

There are approximately 10 workshops producing pottery in Ban Chan village, often shared by a number of potters. My research focused on one particular workshop, which was shared by 5 potters, all husband and wife teams. The workshop consists of an roofed area with dirt floor, an area where the clay is dug and a large underground kiln which is shared by all the potters. The clay is dug, processed, mixed, kneaded, thrown and fired within an area measuring no more than 50m square.

Each day the clay is dug by the women, often in fiercely hot conditions. The clay is then thrown out of the pit by shovel, ground into powder in a small hammer mill (the only mechanised part of the process) then sifted into a large drum of water until it reached the right consistency for kneading. The teenage sons of the families mix the clay by foot every morning before heading off to school. What a block of clay is ready it is hoisted onto their shoulders and carried to the main workshop. These blocks of clay generally weigh between 30 and 50 kg.

The clay is used immediately. The throwing of the pots is a wonder of teamwork. The husband sits on a small wooden bench a few inches high in front of the wheel which consisting of a block of teak wood revolving on a hardwood stake driven into a small pit in the ground. His wife sits on the ground opposite him, and has multiple roles. She starts the process by forming large, thick coils, which she stacks, on a rough piece of wood. After the potter has formed a base on the wheel by beating and rolling out a slab of clay he starts to build the shape of the pot by a rhythmic overlapping coil method. Sitting in a crouched position he overlaps each coil by about two thirds of its total height, all while incrementally turning the wheel with his big toe. Even though the height increases only by about 15 to 20 mm for each coil the process is relatively rapid. Even large, 15 to 20 kg pots take only 30 min to form. Once the walls are about 40 cm high the wife starts to turn the wheel by hand as the potter smooths and shapes with ribs carved from teak wood. The walls are built very accurately and the throwing process is primarily for smoothing and final shaping rather than actual forming. As the pot gets larger the ribbing process is followed by a close inspection where small rocks and bits of root etc are removed and any imperfections or holes are filled before the next stage of coiling proceeds. The whole process looks effortless. The workshop seems to be constantly alive with chatter, laughter, much joking, wandering kids and passers-by. Yet through all this apparent confusion the throwing process proceeds seamlessly with no apparent discussion, with both husband and wife seemingly in perfect sync.

Usually the wife uses both hands to turn the wheel. As she rocks forward in her right hand pushes the wheel, as she rocks backwards she turns the wheel with a pulling motion using her left hand. The overall effect is that the wheel is turned with almost constant force being applied. Sometimes however only one hand is used, especially when there is a sleeping baby to be held!

The only part of the process where a wet throwing method is used is the final finishing stage where

the potter uses a small amount of water with a piece of cloth or leather to apply the finishing touches. Then the pots are given their final finishing flourishes–usually in the form of bands of patterns or textures usually using hand carved wooden rollers and often even the small metal roller on cigarette lighters! The finished pot is then cut from the wheel and simply lifted off and placed on the sandy floor to dry. If the pot is particularly large then once again this process is a matter for teamwork. Then it is time for a quick stretch and the process is repeated.

The truly extraordinary thing about Ban Chan village then unfolds. This village is possibly the last remaining place in the world where potters still fire their work in huge underground cave kilns, although there reports of some very remote Burmese villages using underground kilns about twenty years ago but, because of the extraordinarily closed nature of Burma over recent years it is not known if any of these traditional practices still survive. The excavated cave kiln is the very earliest of enclosed kiln types, having been introduced in China approximately 3000 years ago. As ceramic technology developed over the centuries kilns slowly transitioned out of the ground until the predecessor of the modern above ground kiln came into common use some centuries ago. In fact archaeological evidence would suggest that the practice of firing in wholly underground kilns disappeared approximately 400 years ago. Thus this tiny community of traditional potters offers a quite extraordinary window into the history of our craft.

Now for a closer look at these amazing cave kilns. The group of potters that I was researching used a communal kiln. The kiln measured just over 8 meters in length, almost three metres in width with the firing chamber being approximately 1.1 metres high. The kiln was constructed by excavating a large ramp for access and then starting to dig into the clay to form a small opening about 700 millimeter across and, finally, hollowing out the huge kiln and finally digging a 600 millimeter tunnel to the surface to act as the flu. All the underground kilns in Ban Chan village, while varying slightly in dimensions, followed the exact basic layout as archaeologists had discovered in kilns that had been built almost one thousand years ago.

The building of these kilns is obviously a laborious process– but one with a number of benificial outcomes. Having dug a kiln of this proportion the group of potters not only get a new kiln that will usually last for 8 to 10 years but they also get approximately 30 tons of clay that will last them for a couple of years. Another side benefit for the potters is that the old kiln, which is usually abandoned because of collapse, now fills with water and becomes the community well– accessed by lowering a bucket down the disused flu. In fact the last time we arrived in the village we were immediately offered lovely cool orange cordial, which turned out to be terracotta-stained water extracted from an old kiln. Compared with some of the foods we ate with the villagers, such as deep-fried pigskin and soup made from congealed buffalo blood this was one of the less worrying things on the menu!

Because it is used by a collective of five potters the kiln is in almost constant use. The firing cycle takes three days– loading and kindling on day one, firing all night and most of the next day, cooling on the third day, unloading early the next morning before the next family repeats the process once again. Being so huge the kiln takes a large number of pots–often between 250 and 500 depending on the size of work being fired. The smallest thrown work was generally whiskey jars that would hold between 3 and 4 litres so they were still substantial pots. In between the thrown production work small animal sculptures were turned out by the dozen for sale to passing tourists. If you do the sums you will is understand the amazing output of these potters. The kiln was fired approximately twice a

week meaning that each couple were making enough pots to fill the kiln every 2 weeks. Even at a conservative 300 pieces in each kiln that equates to over 20 medium to large pieces every single day and this does not take into consideration the considerable amount of time involved in digging and processing clay, collecting, sawing and splitting 5 tonnes of wood per firing and the transport of the finished pieces in small canoes up river to Louangphrang.

The firing cycle starts early in the morning with the unloading of the previous kiln load of pots. It is a brutal process. Obviously a kiln dug into the ground has extraordinarily high thermal mass and hence it cools very slowly. The door of the kiln has been opened for close to 12 hours when the unloading starts. The firebox is still full of red-hot embers and to gain access to the rear of the kiln the potters lay rough planks, poles and sheets of galvanized iron to form a crude bridge over the hot coals for the potter to crawl into the kiln. The heat is extraordinary. I measured the temperature inside the kiln over number of firings and, while the potters were unloading, the roof temperature, just a few inches above their heads, was between 150 and 180°C while the floor was around 130°. The potters worked doubled up in this hellhole with only thongs for protection on their feet. Any contact with the floor or roof of the kiln resulted in burns. Long boards were laid over the glowing firebox and the plots were expertly rolled to the entrance of the kiln where they were retrieved by the women and stacked nearby. The heat was so extreme in the kiln that the potters were only able to work for 5 or 6 min before crawling out and lying prostrate on the ground dripping wet with perspiration as someone else took their place in the kiln. Often when the women entered the kiln they wore long skirts and thick jackets to protect them from burns and in the belief that the coat would also keep the heat out for a few minutes. Even under these extraordinarily extreme conditions the unloading was completed within an hour, a process that left the potters visibly exhausted.
As the kiln was being fired the pots for the next load are carried from the workshop and stacked near the kiln. This is obviously to make the loading process easier but also helps in the drying of the pieces. Even so many of the pots are still visibly damp when loaded into the kiln. Loading the kiln is labour intensive and often a number of couples work together. Each of the large pots must be carried down the steep ramp and carefully handed through the small entrance to someone crouched on the inside of the kiln who then must carry the often heavy pots back into the kiln while doubled over, being very careful to avoid the sharp tiny stalactites formed by the gradual melting of the roof. The pots are stacked with great care to maximise the numbers in the kiln. Often pieces will be stacked inside each other and up to 2 or 3 high. Even though the kiln had cooled down a little more by this time the heat is still ferocious. I spent quite a deal of time inside the kiln recording and photographing the stacking process, crouching to one side as the pots were handed through the small door and carried back into the kiln for stacking. Even though the hot embers in the firebox had been shoveled out by this time the roof of the kiln was still over 100°C and the floor was around 70°C. Even at these relatively moderate temperatures any prolonged contact with the kiln surfaces resulted in skin burns. Trying to crawl through the small opening carrying cameras, infrared temperature guns and other instruments while not getting too badly burned was not the highlight of my trip– but it did seem to provide much merriment for the locals.

Loading the kiln required four hours of careful, backbreaking work. The pots were completely unglazed, with the only attempt at surface decoration being in the scattering of 4- 5 kg of salt on the floor of the kiln so as to cause some coloration and flashing during firing.
As soon as the kiln was fully loaded the firing began with the lighting of a small fire in the mouth of the firebox. The firing continues all night, with the potter resting on the ground next to the kiln. The

next morning the firing started in earnest, with long pieces of wood being pushed through the door into the firebox. There was a constant stream of wood being dropped down into near the mouth of the kiln. Over five tonnes of wood are burnt for each firing.

Fuel is becoming very difficult to obtain. With the constant demand for wood for firing the kilns in the village combined with the rapidly growing demand for construction timber in Louangphrang deforestation is occurring at an alarming rate. The old potters spoke of a time only 20 or 30 years ago when the village was surrounded by forest and wood was plentiful. Now the potters are forced to buy small truckloads of wood or make a rather torturous to 2 1/2 hour return trip with a motorised trailer to collect fuel. The difficulty in obtaining fuel combined with the prohibitive cost has resulted in an extremely dangerous practice being adopted throughout the village. For the last 2 or 3 hours of each firing wood is augmented with car and truck tyres. While this produces a huge amount of heat it also results in dreadful pollution, with thick, choking smoke from the rubber constantly blowing through the village. The potters seem to have a limited concept of the danger of this practice but it remains a cheap, highly efficient source of fuel and they believe it turns their pots a highly desirable black colour.

Even in a remote province of northern Laos where environmental concerns are secondary to daily survival the practice of burning rubber tyres is starting to cause concern. As with many traditional crafts there is little margin between eking out a living and failure. Herein lies the quandary. There is little doubt that with efficient, above ground kilns that consumption of wood would be much reduced and the effectiveness of the firing would be far superior. It would also enable the potters to fire in a far more environmentally sustainable fashion, doing away with the noxious burning of rubber. Yet here in this tiny village, somehow preserved from a millennium of change, is a handful of potters who are digging their clay, throwing as a couple on hand powered wheels and firing in huge underground kilns in a fashion that died out elsewhere in the world many hundreds of years ago.

UNESCO speaks a great deal about preservation of ‘intangible cultural heritage’. By this is meant the nonphysical heritage of a community, the knowledge, skills, craftsmanship and oral culture that forms the fabric of many traditional communities.  Yet this intangible heritage is a frail and easily lost treasure. In Ban Chan village, where the intriguing remnants of a millennia old tradition faces an uncertain future when balanced against it's human and environmental costs, the complexities facing many traditional craft communities are brought into sharp focus.