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## **Excavations of Kilns Near the Old City of Sisatchanalai, Thailand: Prompt Redevelopment of Pottery Production**

### **Prologue**

**I**n December 1885 Ernest Satow journeyed to the ruins of Sukhothai and Sawankhalok and shortly afterward wrote about his experiences in this area. The following excerpts are from his paper, 'The Laos States, Upper Siam':

The results of my inquiries had been that Phichhai was the most convenient starting point for a visit to the ancient cities of Sukhothai and Sawankhalok, and at Phitsanulok. I had arranged with an officer whom I met there to procure eight elephants for the journey . . .

About noon we came to the river, and descended the steep bank with perfect ease and safety. An hour after crossing the river we passed a few houses, and arrived at a sala, or large wooded shed, by the side of a pond, where I was glad to get down on to my feet again. Hearing that the next stage would be a long one, I resolved to remain here for the night . . .

At two o'clock in the afternoon of December 7, 1885, we reached the town of Sukhothai, built on both banks of the Meyom, which is here deep, though narrow. Round the upper part of the wall ran a painted frieze, representing scenes from the anterior lives of Buddha, but unfortunately there was no one in the place who could explain them . . .

At six o'clock in the morning of December 18th, the thermometer stood at 69° . . . At half past seven we started on elephants from the opposite bank of the river for Sachanalai (Old City Sukhothai). The road lay at first along the muddy bank of a creek, which we then crossed, and we did not see it again till shortly before we got to the ruins. We passed three small hamlets, and traversed a good deal of rice-land, of which only about one-half had been sown this year, owing to the deficient rainfall, for, as you know, the cultivation of rice is almost entirely dependent on an abundant supply of water. We proceeded on our elephants for forty minutes more to the principal ruins, which the Vice-Governor had caused to be cleared in great part of the overgrowth of bushes that would otherwise have rendered them inaccessible . . .

Fragments of a coarse pottery, having a pale, stone-coloured glaze, and picked out with designs of light brown, were lying scattered about. They take the form of Buddhist angels, lions, and small pagodas, their precise employment being uncertain, but they were probably intended for decorative purposes. There are also numerous small Buddhist images, of a fine grained green stone, resembling slate, the largest

fragment being a head about eight inches high. (Satow 1892:849)

Satow's experiences loosely parallel similar experiences of others who visited this area in the late 1800's, early 1900's, and more recently in 1986 when this writer made the same trek some 100 years later.

Portions of the old city wall still survive with few able to explain significant artifacts. The rice lands still subject to deficient rainfall often lie dormant. Crossing the Yom River to arrive at the old city also remains an option. But most importantly for the purpose of this paper is the observation that the past persists. The abundance of coarse pottery fragments still lie about in heaps around trees, flower beds and yards: the reminder of a pottery industry in years gone by. The nonchalant manner by which the fragments appear to have been handled indicate a lack of knowledge in regard to ceramic technology. The presence of so many shards lead those knowledgeable in ceramic production to surmise a pottery production of some degree existed in this area. Furthermore, logic suggests

that the materials required for the production still exist in the area.

## Overview

For more than 30 consecutive years researchers have focused attention on the histories and archaeological finds of the Sawankalok, Sisatchanalai and Sukhothai areas. These finds stimulate scholarly interpretation, speculation, theses, projection and premise as to civilization development and its significance. The areas of interpretive investigations include art, architecture, economic, agricultural and environmental development ranging from the early ninth to the late sixteenth centuries. On the one hand the data and artifacts gathered to date reveal a significant amount of insight into this former civilization. On the other hand, it is highly probable that researchers have only scratched the surface in regard to the vast evidence yet to be revealed.

This paper is limited to the past 12 years of observations in the village of Ko Noi. This village is located on the Yom River about six kilometers north of the old city of Sisatchanalai in central Thailand between the modern cities of Sukhothai and Sisatchanalai. To date, Ko Noi and Pa Yang boast some of the largest archaeological finds of ancient ceramics excavated in Thailand.

At the onset of excavation in the early 1980's the habitants of Ko Noi labored on the sites primarily for monetary gain. Their consciousness of kiln technology and ceramic processes surfaced and began to grow naturally as the same villagers continued affiliation with the sites. Awareness of the developmental process slowly emerged and a direct relationship between the inhabitant workers and the ancient ceramic industry resulted. Plausibility for a local ceramic industry as a means for economic gain emerged. This interest lead to the sophisticated pottery industry of today. Significant amounts of local clay and mineral supplies, still indigenous to the region, lend considerably to the success of the operation.

Some find that these excavations in Ko Noi are significant on both the archaeological and the socioeconomic arenas. This paper aims at relating not only to the important archaeological

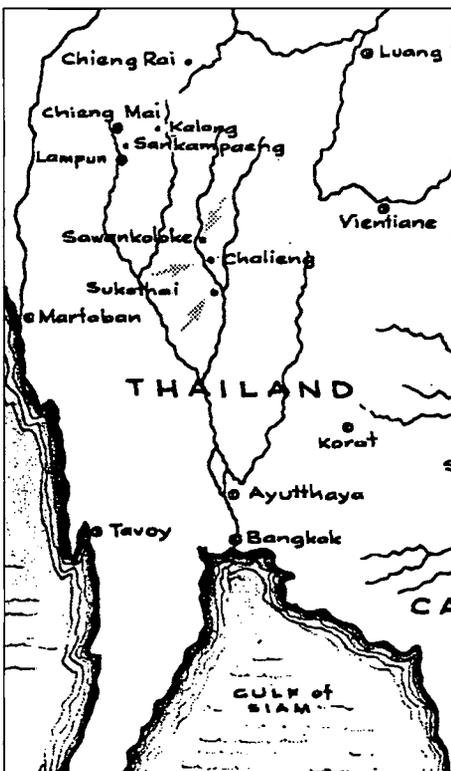


Fig. 1. Ancient Map of Thailand

unearthings but also to the human response through assimilation and hands-on education.

[On an economic note for 1986 in Ko Noi: transportation—bicycle, ox cart, occasional motorbike; housing—simple inexpensive; food—availability and options limited; clothing—affordability limited; employment—limited; water and electricity—two years in operation; and education—minimum requirements met.]

### Historical Guideposts

Travelers around the turn of the nineteenth century, such as Lucien Fournereau (1891), T. H. Lyle (1900) and Reginald LeMay (1913) were awestruck by the significance of the Sisatchanalai area. This is evidenced in their letters and journals.

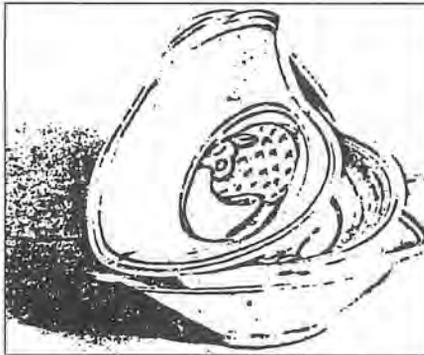


Fig. 2. Sukhothai wasters (*Frashe 1976:49*)

Fournereau, traveling in 1891, expresses amazement at the number of shards and wasters lying around on top of the ground as well as the obvious nature of mounds containing kilns situated in great numbers everywhere. Tales of this place and the beauty of the wares went around the world and still strike interest. Collectors are always hoping to acquire a perfect specimen for their private collections some hundred years later.

The following are excerpts from a May 12, 1900, letter by T. H. Lyle:

The whole district is a mass of forest and undergrowth, and as--at first sight--one perceived merely large trees and vegetation springing from a slight rise in the ground, one's natural impulse was to ask 'Where are the kilns?' That question



Fig. 3. Oxide designs found on pottery shards (*Brown 1988:69*)

speedily solves itself. These mounds, which average 20 to 30 feet in height, and vary from 60 to 100 feet in circumference, consist of bricks, pipes, earth, debris, and broken pots. Everywhere the ground is strewn with fragments of pottery but there is hardly a piece as big as this sheet of paper (5" by 7"). The mounds or kilns number several hundred; many of them are so overgrown as to be almost unapproachable. They stand in a close double line, at intervals of 20 to 40 yards, for over four miles. The hundreds of people who, at one time, found employment in these manufactories are vanished; countless fragments of pottery are the only relics of this once high-class industry. The fragments of pottery exhibited countless specimens of pattern in 'ink.' Fancy flower patterns, wheels, plain and fantastic grooves, and moulding in relief were equally plentiful. (Lyle 1904:233-47).

In these writings Lyle makes many insightful analytical statements such as "This Sawankalok . . . must have been possessed of a highly cultured and artistic population, as the imposing ruins of numerous magnificent temples testify." And, "In the case of the one or two mounds . . . the mouth and roof appear to have collapsed owing to the destructive action of the tree and vegetation, rather than to faulty construction." Don Hein comments on Lyle suggesting ". . . that old Sisatchanalai was the art and culture center of the Sukhothai Kingdom." And, "Lyle gave us a good description of the kilns and properly concluded that the destruction of the kilns was due to the ravages of 'time, vegetation and man. Note that even 100 years ago, man was exploiting the kilns. Lyle said that the kilns extended for six kilometers on the west side of the river Yom and numbered 'several hundred.'" (Hein 1986)

Although the information provided by Fournereau, Satow and Lyle is not entirely accurate in the light of today's finds, their observations remain important guideposts for

reference. Their words still ring through the ages as they, too, recognized the importance of the kiln fields of Sawankalok/Sisatchanalai.

### Excavations—Types of Kiln Constructions

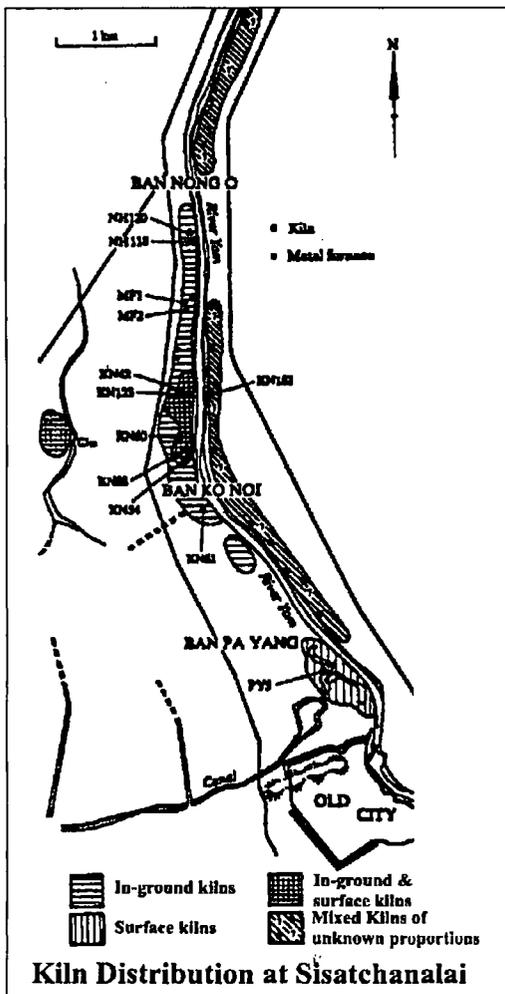
In 1977 Australian archaeologist Don Hein began investigating kiln sites in north and central Thailand, part-time during summer vacations and full time in 1984. Primarily because of Hein's investigative work, field reports and enthusiasm, the Thai Ceramics Archaeological Project, a joint Thai-Australian research project, organized and involved itself in the project through grant acquisitions beginning in mid 1980. Through TCAP's

cooperation with the Fine Arts Department of Thailand, the project made vast progress during its early days. The on-site direction and documentation of this vast historic site by Don Hein and his wife, Toni, provide invaluable data now and for years to come.

More than 1,000 kilns in an eleven kilometer radius are located in this area. Presently, about 200 hundred kilns are excavated and literally hundreds more are located underground awaiting excavation. The site includes specimens of both updraft and crossdraft kilns, in-ground and above-ground brick kilns. A site of this proportion is an incredible find of great historical significance. Yet, there is no evidence of anyone working in clay at this location. It appears that the area lay dormant of ceramic activity from the sixteenth to the twentieth centuries until 1985, some 400 years.

Exact dates for the kilns are not known; however, based on stratigraphy, context, radiocarbon, thermoluminescence and paleomagnetic technique, probable dates exist. Dates of a tenth century presence appear quite likely for the lower level in-ground kilns. The late fifteenth to early sixteenth century date is the most likely for the above-ground brick cross draft kilns. The in-between kilns show progressions between both the dates and the technological development.

Hein claims the first kilns in central northern Thailand were built at Sisatchanalai, Pa Yang and Ko Noi at about the end of the first millennium. He says, "These kilns were in-ground bank kilns which firstly occupied the Yom River banks and were later dug into the flat terrace nearby. In a major developmental shift, kilns then came out of the ground to finally be positioned in twos or threes on artificial mounds which probably constituted the basic production unit. The placement of the kilns began from an apparent tradition of kilns being located on river banks, probably because the river was the main artery of communication and trade, in addition to supplying water and other raw materials for the industry. For a long period of time in the industry there was no apparent shift from this practice in principle even though space problems forced the kilns to be built away from the actual terrace embankment. Most of the Ban Ko Noi kiln field extends for over three



kilometers in a 200 metre strip each side of the river, the exception being at Wat Don Lan where the kilns occupy flat land in a line leading away from a natural watercourse“ (Hein 1986).

Reference to one stratigraphic context at Ban Ko Noi, where eleven kilns are stacked in stratigraphic succession, will help illustrate the time scale. The first (lowest), which was abandoned after it aged into poor condition, was an in-ground bank kiln. Later a surface kiln was built above the bank kiln. When it aged, it was thrown down and another built using the old one as a foundation. The process continued until a huge mound existed, containing the eleven kilns one above the other and representing about five hundred years of time. This is the kind of evidence previous researchers did not have available in assessing the significance of these sites. What can be seen on the surface at Sisatchanalai, and probably any site, represents a very small part of its history. In every large mound at Ban Ko Noi there are probably twenty to thirty kilns. Parts of many surface kilns lie isolated and buried, with nothing on the surface to indicate their presence (Hein 1986).

Chronologically, at this site in-ground kilns dug into the terrace banks on both sides of the Yom River occurred first. River bank in-ground kilns become inoperable because the soil into which they are placed cannot be rehabilitated. The ever changing course of the river and erosion also create problems for this type kiln constructed on the river embankment. As space became limited—indicated by observation—it seems that the kilns moved inland. Once away from the cliff-like setting the kiln construction process required digging a hole deep and wide enough for the potter to stand and then tunneling into the earth in the same manner as at the river bank. Because there are hundreds of these type kilns in this area, it is difficult to find any place in the kiln fields where they do not exist. Keep in mind the probable date for these kilns is late ninth to early tenth century, and they operated for literally hundreds of years.

From the *in-ground bank kilns* to the *in-ground surface kilns* the kiln construction seems to develop toward the *above-ground brick kilns* that appear in the sixteenth century. There is no evidence currently available that points to

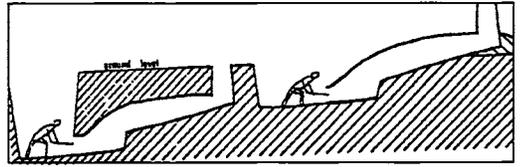


Fig. 5 In-ground and early surface kilns (Hein 1989)

an interim. It appears that there are 600 consecutive years of kiln operation in this area. Investigation and stratigraphicity of the kilns indicate a continuum of pottery production. Since the surface kilns of the same type are similar in shape, size and form, archaeologists believe that they developed naturally from the in-ground type. Such development as kiln structure, pottery processes, form decoration and firing procedures, appear to be gradual with no drastic interference.

An enormous amount of work is yet to be accomplished, however, both in additional excavations of the surrounding areas and in classification and dating of the data. It is safe to say that today not even half of the story has been uncovered or told:

Unfortunately, insufficient excavation has been done at Sisatchanalai to provide a satisfactory definition of that site. Many areas containing kilns and other features have yet to be studied and their significance can only be guessed. What is evident now is that the kilns and related infrastructure at Sisatchanalai cover a very large area, extending about ten kilometers each side of the river Yom from the old city almost to the modern town of Sisatchanalai (Hein 1988:8–18).

### Local Interest—Redevelopment

Viewing the site in 1986 Thais, Australians, and an American dug side by side. Initially, the Thai workers viewed the excavations simply as a means for providing food and clothing for their families. Though the immediate economy maintained basic necessities, it did not give rise to progress or expansion. The initial income generated by the archaeological project increased the village economy greatly. The temporary nature of the project, however, did not encourage great development or long term effects. Slowly, Thai awareness of the historical significance and its implications emerged. As curiosity emerged about the ancient artifacts, common place on the



Fig. 6. Modern Kiln, Ko Noi (Randolph © 1998)

ground for centuries, more people caught a glimpse of the possibilities for a clay industry. Common goals were set to use the data from the excavation project to benefit the economy.

During these days a pottery education program began. Various pottery teachers visited the site to give seminars and answer questions on various techniques. Some remained for longer terms in order to test local ceramic materials and kiln constructions appropriate to the site. The goal to recreate the industry using the available natural resources remained paramount. The accomplishment of this goal promised long-term economic inflow.

Eventually, interest in ceramic technology, as a means to an end, surfaced as the primary motivation. Many participated daily in gathering clay from the mountains and river beds, making bricks, building kilns and forming ceramic ware. Meanwhile, others observed. Centrally located group crossdraft kilns, similar in design to early kilns, appeared first and group firings ensued. Community stalls for selling ceramic wares appeared. With this increase of knowledge came

opinionated attitude, territorialism and the spin-off of individual family kilns.

Ancient above-ground crossdraft kilns were examined as prototypes for the village kilns. Modifications in regard to efficiency and downsizing for practicality evolved. The success level in proportion to the intense work effort in the newly designed kilns proved unacceptable for high-fire glaze ware. The labor intensive process and survival rate of the wares called for greater efficiency. The traditional style kilns better facilitate the firing of unglazed iron saturated wares such as water vessels and roof finials. Kilns based on the ancient traditional design eventually led to the construction of modern upright brick downdraft kilns for high-fire glaze wares.

The success rate of these firings significantly improved. The process holds true to ancient methods in that the fuel used is wood, most materials are gathered locally and firing of the wares is done visually by reading the color of the fire and its reduction.

#### **Modernization—Current Production and Effects on Village Economics**

Twelve years later, primarily because of the potters' self-motivation, the pottery industry thrives, incorporating most of the community. Entrepreneurial opportunities surfaced for stall owners, kiln owners, wood choppers and potters. Each of these opportunities also encouraged additional ventures. Now one can specialize in kiln operation, glazing, applied design, incising, line decoration, large or small thrown vessels and handbuilding.

The potters are now responsible for their own knowledge and process of the industry. Early in the development of the industry they recognized their strengths and contributed his or her part to the process. As previously mentioned many of the potters use the modern constructed brick downdraft kilns. They barter and trade with each other for clay, thrown pieces, glazes and firing space. Each potter's success in some way, depends on this cooperative effort. The Thai Department of Fine Arts established a few museums to house the excavated kilns, burial sites and historical objects of the "Old City" Sisatchanalai. These museums attract the



Fig. 7. Modern Potter, Ko Noi (Randolph © 1998)

continual flow of tourists to the area which nourishes the industry.

### Conclusion

A great deal more than economic development is evident here. A great deal more than ceramic

technological advancements or knowledge of process is significant. Before these developments, there was no evidence that sedentary life in the village could be any different. There were no promises and there were no dreams.

Self esteem and pride developed along with knowledge of pottery techniques and this is obvious not only to the villagers themselves but also to others. That this industry provides for village families is now established. Houses are rebuilt, yards are maintained, clothing is accessible and food is affordable: indicators that the economy changed. Water and electricity are now readily available. Families are able to educate their children beyond the sixth grade. Now, they look to the future with wide open eyes. They have taken hold of "this life." But, most importantly, they have dreams.

[An economic observation: Sit on the porch of a potter's house in Ko Noi today. Drink a cup of coffee and notice each child riding his bicycle to school down the dusty road. See a mother take her first grader to school on the back of a motorbike. See the ten pairs of children's underpants hanging on the clothes line next to several adult shirts. Remember that only ten years ago there were no motorbikes in this village except those of visitors. Usually one bike per family was sufficient. Children's underwear was a luxury and extra shirts rare. Look into their eyes and see that there is hope. Yes, see that there are dreams.]

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