

The Ban Chiang Digital Image Project

Your F0BC dollars at work!

Most long term archaeological projects have stacks of film photos stuck in a cabinet, set aside to be organized—some day. The thousands of images of pots, spear points, bracelets, bones, and excavation layers taken during decades of excavation and analysis in the Ban Chiang Project weren't stuck in a cabinet. Instead, slides were organized in little boxes on shelves, and negatives and contact sheets were loaded into large and unwieldy loose leaf binders and stored in cardboard boxes. To find all the photographs taken of a certain pot required hours of hunting through dusty boxes, flipping through file folders, and deciphering twenty-year-old handwritten notes.

To protect, preserve, and make accessible the thousands of images housed in the Ban Chiang Project's offices (including several other sites Penn excavated in Thailand), Joyce and I began the Ban Chiang Digital Image Archive Project last June. I designed an easy-to-use Filemaker Pro database compatible with the Penn Museum's photo archive database, so that Ban Chiang photos can eventually and easily be incorporated into the Museum archives. A crack team consisting of work-study student Sasha Renninger and volunteers Heather Saeger and Stephanie White (no relation to

Joyce) then began scanning the thousands of slides and negatives of artifacts and entering basic data about each artifact and image into the database. It sounds simple, even routine, but it isn't. The quality of the images varies widely, partly because taking multiple exposures, or "bracketing," was common using film cameras. Our workers usually choose the best image among several duplicates and variants and constantly adjust scanning protocols. The initial scan produces a large digital file in TIFF format, but these images are much too large (5-25 megabytes each) to use in the image database.

So, using Adobe Photoshop, Sasha, Heather, or Stephanie produce a much smaller 300-

pixel by 300-pixel version of the original scan and place that version of the image into the database. The data that need to be entered are complex. Some of the scanned images have up to nine separate artifacts in each picture, requiring our workers to painstakingly identify exactly which artifacts are on the image and where, so that someone in the future can interpret the image. Some of the original photo log notes are incomplete, so to identify some artifacts, our workers search the shelves (even going down to the rather spooky Museum sub-basement) for the actual artifact and compare it to the image, often black and white and poor-quality. The excavation site and time period of each



Upper image: BCES Burial 40 Pot A 1934.

Lower image: various clay rollers from the site of Ban Chiang.



Some of the gorgeous images in the Ban Chiang Digital Archives, soon to be part of the Museum's "Digital Spine."

artifact need to be entered, not easy when some images contain several artifacts from different sites and periods, and the information must be sought in other tables and databases.

Then the workers enter information about the image itself—its type, physical dimensions, digital size, scanned resolution, and magnification. If the image had ever been used in a publication, the bibliographic citation has to be tracked down and entered. This is not a job where the data entry people can turn off their brains—it requires patience, attention, and intelligence. We have been very fortunate in our mostly volunteer work team. As of April 27th, 2009, the number of images in the Ban Chiang digital photo archive has reached an impressive 4,169! *Thanks to funds provided by the Friends of Ban Chiang*, we were able to buy a higher capacity computer and backup system, appropriate software, hire Sasha, our first worker and trainer of our team of scanners, and purchase archival quality storage supplies.

What's the reason for all this effort? A digital archive preserves images for posterity and enables wider access and use. Anyone can easily search for all images, for example, of Pot A 1943 from Ban Chiang Burial 40, (see image on page two) in any format—slide, print, or black-and-white negative. No longer do we need to hunt through shelves, files, and folders (often sneezing from all the dust). After our workers scan the image and enter the data, they store the physical image in archival-quality, clean, numbered polyethylene storage sheets that can be hung neatly in a file cabi-

net. Each sheet and pocket or sleeve in each storage sheet is numbered, and the exact locations of the image and the additional copies of that image are recorded in our database. We can now not only open every image of Pot A 1943, but we can quickly locate the physical image as well by its storage sheet number, for future publication-quality scans. In addition, we will eventually put this database online, so that scholars—and the Friends of Ban Chiang—can look at any image of our artifacts and excavations they desire.

The Ban Chiang Digital Image Archive Project is extraordinarily useful. Not only does it record and make accessible decades-worth of film images from this historic project, but it unites image and data, preserves the image in proper archival materials, and provides essential backups of all the images. *Thanks to contributions from the Friends of Ban Chiang, the pictures produced by decades of photographic work on the Ban Chiang Project are safe, accessible, and above all, usable.❖*

*Elizabeth Hamilton,
Research Coordinator*



BAN CHIANG'S ARCHAEO-DATABASE

Chet Gorman made sure that his Ban Chiang excavations would be cutting edge. It was a pioneering project in many ways. The most important aspect was, of course, the unearthing of a previously unknown civilization.

The archaeological project was also among the very earliest to record its findings in a computer.

More than thirty years ago, before the PC had been invented, everything found from the Ban Chiang dig was entered into a computer database. In basement rooms of the Penn Museum, a corps of volunteers measured, examined, and recorded each artifact. The data were punched into IBM cards, coded as one or two digit numbers since in those days computers handled text inefficiently. The cards were fed into an IBM 370 mainframe, a six-foot-high machine with spools of magnetic tape on the front. These tapes were the machine's memory, as hard disks (let alone floppies) had yet to be invented.

In 1990, all these data were transferred from the old rolls of 8-track tape onto floppy disks (with considerable difficulty!), which could be read by a then "modern" PC database. The coded data were translated to text; for example, the condition of a blade was changed from "3" to "Slightly corroded." Year by year, additional information was added. As newer and better database programs became available, everything was migrated up to them.

The Ban Chiang Project is currently in the midst of upgrading and expanding the database originally developed in the 1970s. As a trial, a couple of years ago, Elizabeth Hamilton used File-Maker Pro to post the data from all metal artifacts from four of the Penn Museum sites in Thailand, including Ban Chiang, on the Museum's Southeast Asian Archaeology Scholarly Web-

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MMAP 2009

by Beth Van Horn (BH),
Elizabeth Hamilton (EH),
and Joyce White (JW)

JW: The Luce-funded MMAP 2009 season in Laos wasn't intended as an excavation season. The primary aim was to train thirteen Lao and two Thais in basic non-excavation archaeological techniques. When you say "archaeology," everyone thinks of digging, but of course most of the information comes from a protracted and often tedious process of analysis.

EH: Over the six weeks of the season, a rotating cast of teachers lectured and trained the students in computer care, databases, artifact drawing, raw material analysis, rock identification, GIS, survey, and exhibit preparation.

EH: But first the team had to get from Vientiane to Luang Prabang. Joyce rented a minibus to take ten of us on the spectacular 8-hour ride up the ominously named Route 13. A few years ago the drive would have been too dangerous because of bandits; now it's just dangerous because there's no guardrail. Luang Prabang is in the mountains, and most of the drive was spent careening around hairpin turns and observing tiny clusters of wood and bamboo thatched houses, usually built by villages of Hmong or Khamu, which clung to the narrow cliff

A File Maker Pro page taken from our database of images.

site (<http://seasia.museum.upenn.edu/>). Anyone can view images, photomicrographs, provenience and other data from hundreds of metal pieces and crucibles fragments, and even download the data for comparison with other sites!

In his five-year strategic plan, Richard Hodges, the Director of the Penn Museum, named Ban Chiang as one of five Penn Museum "key long-term research locations." He would like to see all of data and records put online, thus becoming part of the Museum's "Digital Spine." While the Ban Chiang Project has a head start in digitizing its artifacts in databases during the 1970s, much work remains to be done to digitize and migrate other classes of data and records to a current online for-

mat. Paper records need to be scanned and added to the artifact database and, as you can read in Elizabeth's previous article, scanning of images is ongoing.

The new Luce Grant will greatly assist in the digitization and study effort, particularly in year 3 when the loaned collection of Ban Chiang pottery will be the focus of study. Chet Gorman would have been amazed at the current use of computers in archaeology. Today all archaeological digs are computerized in various ways, but few have as long a pedigree as Ban Chiang. ❖

John Hastings, Ban Chiang Volunteer

