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ARCHAEOLOGY OF THE MIDDLE MEKONG: INTRODUCTION TO THE LUANG PRABANG PROVINCE EXPLORATORY SURVEY

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ABSTRACT

The first objective of this paper is to present the potential of Northern Laos for archaeological research on human prehistory. This region could be key to understanding many of the formative developments of mainland Southeast Asian societies including the origin of upland and lowland agricultural systems, and the first appearance of metallurgy. The second objective is to briefly present the design and preliminary results of an exploratory archaeological survey in Luang Prabang province, March-April 2005. This rapid survey, conducted by the Middle Mekong Archaeological Project, aimed to provide an initial assessment of the potential of Luang Prabang province for further archaeological research into the middle Holocene, the period during which many of mainland Southeast Asia's characteristic attributes emerged.

L'archéologie du Moyen-Mékong : introduction aux recherches dans la province de Luang Prabang

Le premier objectif de cet article est de présenter le potentiel archéologique du Nord-Laos pour la recherche sur la préhistoire humaine. Cette région pourrait être essentielle pour la compréhension de nombreux processus de développement des sociétés continentales du Sud-Est asiatique, incluant l'origine des systèmes agricoles en montagne et en plaine et l'apparition de la métallurgie. Le deuxième objectif est d'exposer brièvement les grandes lignes et les premiers résultats de prospections archéologiques menées dans la province de Luang Prabang en mars et avril 2005. Ces enquêtes rapides ont été conduites par le Projet archéologique du Moyen-Mékong et ont visé à fournir une première évaluation des ressources de cette région en vue de recherches archéologiques approfondies sur l'Holocène moyen, période durant laquelle plusieurs des traits caractéristiques du continent sud-est asiatique sont apparus.

ARCHAEOLOGY OF THE MIDDLE MEKONG:
introduction to the Luang Prabang province exploratory survey

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The Mekong River has long been recognized as the main communication artery for the country of Laos. Moreover, the Mekong has been viewed as the primary bio-cultural artery for much of mainland Southeast Asia presumably for thousands of years (fig. 1). Relative to many other major geographic regions, such as East and West Asia, the time depth for the existence of writing in Southeast Asia, and thus of history stricto sensu, is shallow–less than 2000 years in general and, for most parts, less than 1000 years. Therefore prehistoric archaeological research is the primary discipline to provide data and empirically based insights on the vast proportion of human habitation and development in this region.

Prehistoric archaeological research in the middle Mekong basin (e.g., north of Cambodia and south of China) undertaken in

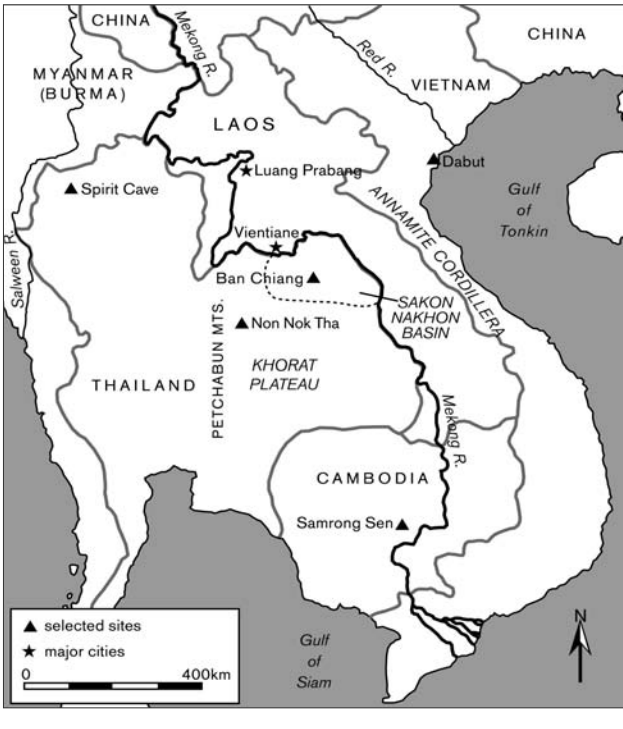

Fig. 1: The central position of Laos in mainland Southeast Asia and along the middle reaches of the Mekong River indicates it should have important evidence of human prehistory. However, prehistoric human settlement of Laos is virtually an archaeological terra incognita.

the modern era has occurred primarily in Thailand, (note, the modern era here means since the 1950s when the advent of radiocarbon dating enabled chronometric dating of prehistoric cultural remains, hereafter "modern archaeological research"). The concentration of modern archaeological research in Thailand reflects the geo-political conditions for the last several decades in the region, and has resulted in marked distortions of archaeological knowledge across Southeast Asia. Northeast Thailand now has a considerable record of prehistoric human habitation, and the Ban Chiang cultural tradition in the Sakon Nakhon Basin of the Khorat Plateau includes the earliest unambiguous agricultural sites in the middle Mekong basin. Some sites date to more than 4000 years ago, and an agrarian tradition could possibly date from one or two millennia earlier (White, 1997; White et al., 2003).

Despite efforts to identify within Thailand specific societies antecedent to the early agricultural societies in northern northeast Thailand, as well as cultural-chronological links between the northeast Thailand societies and hunter-gatherer stone age societies to the west and south dating from earlier in the Holocene, no convincing connection has yet been determined with empirical archaeological data (Bayard, 1980; Higham & Thosarat, 2004:158; Penny, 1986). It has not been possible until very recently, however, to look for cultural connections between early agricultural societies in the Sakon Nakhon Basin and potentially earlier human habitation to the north and east in Laos.

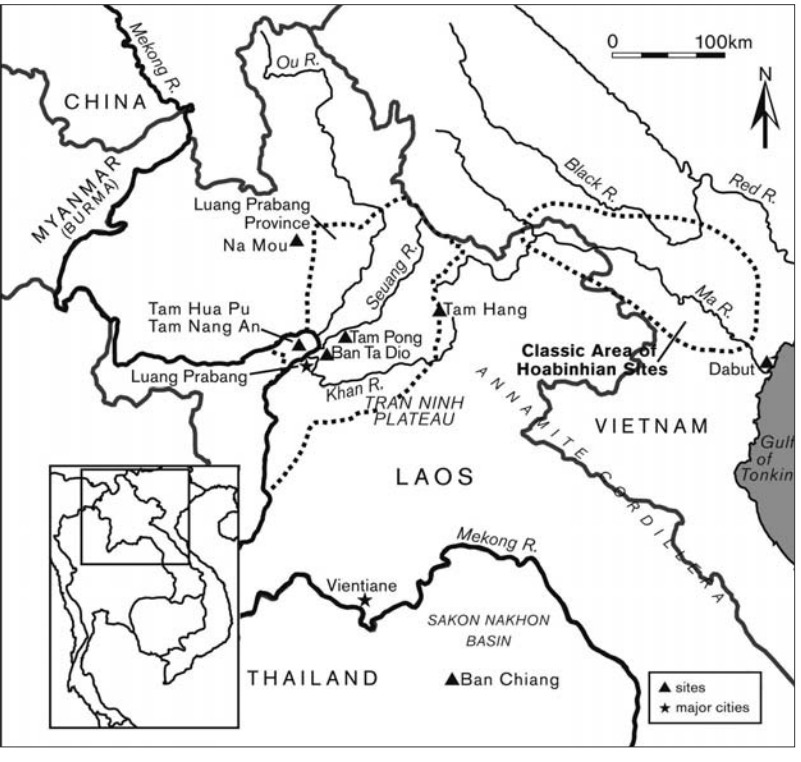

Fig. 2: Map showing the position of the three Mekong tributaries in Luang Prabang province surveyed by MMAP 2005 in relation to selected sites and areas of importance to Southeast Asian prehistory.

Laos holds a keystone position in the geography of mainland Southeast Asia, but its culture history is relatively unstudied in comparison to its neighbors, Vietnam and Thailand. Early Holocene human occupation of mainland Southeast Asia is well documented outside of Laos. Many Hoabinhian stone age hunter-gatherer sites have been excavated in karstic landscapes of northern Vietnam, the area where that lithic industry was first defined in the early 20th century (see Ha Van Tan, 1997; Higham, 2002: 28, 33-35; and Reynolds, 1990 for recent summaries). The drainage basins of the Black and Ma rivers on the eastern side of the Annamite Cordillera have the densest evidence for late Pleistocene to early Holocene Hoabinhian settlements yet identified for mainland Southeast Asia (fig. 2). To the west and roughly within comparable latitudes, Hoabinhian occupation is well known in Mae Hong Son (e.g., Spirit Cave; fig. 1) and

other parts of karstic northern Thailand (Gorman, 1972; Reynolds, 1992; Santoni et al., 1990; White & Gorman, 2004; Treerayapiwat, 2005). Many of these Thai sites lie within the Salween drainage system. However, the intervening Mekong basin at the same latitudes (roughly between 18 and 22 degrees north), which lies largely in northern Laos, has been little studied, although it too has extensive karstic landscapes. Presumably the land situated between two well-documented areas of early Holocene occupation must also have been occupied at the same time, especially if all three areas have a similar type of landscape. In fact, a handful of informal surveys and small excavations in northern Laos over the past 100 plus years have found Hoabinhian lithics as well as a variety of other artifacts of prehistoric age (e.g., Massie, 1904; Raymaekers, 2001b:1; Sayavongkhamdy et al., 2000). But would more intensive and systematic prehistoric archaeological research in northern Laos do more than simply fill in a blank space on a map?

There are several puzzles in Southeast Asia's past that could potentially be rectified or at least clarified with research in the middle Mekong basin and northern Laos. As one example, archaeological evidence dating to the critical middle Holocene period, c. 6000-2000 BC, is sparse and ambiguous in Thailand and mainland Southeast Asia generally (White et al., 2003). These 'missing millennia' in the region's cultural sequence are one of the least understood and most contentious periods of regional prehistory (Higham, 2002: 39; Shoocongdej, 2000: 25; White, 2004; White et al., 2003). Judging from what is known archaeologically from before 6000 BC and after 2000 BC, seminal changes emerged during this period that affected human existence here for thousands of years up to the present day. Ceramics appeared in many parts of Southeast Asia; domesticated foodstuffs including rice appeared; tool technologies changed with lithic tools transitioning from predominantly flaked to predominantly ground stone tools; and, at the termination of the middle Holocene, copper-base metallurgy appeared. At some point in this time frame, settlement systems changed focus. Locations of known settlements expanded from primarily karstic upland and coastal landscapes during the early Holocene to include inland alluvial lowland villages by the late Holocene. Caves declined in importance for habitation but in some places became important for deposition of the dead (Anderson, 1997 & 2005). The upland/lowland agrarian dichotomy said to characterize Southeast Asian agrarian lifeways likely emerged.

The relationships between these profound changes and potential linguistic and/or population changes are topics of lively discussion among regional scholars (e.g., Blench, 2005; Diamond & Bellwood, 2003; Higham, 2001). The Mekong River figures in many speculative discussions as a potential avenue for the transmission of peoples, languages, technologies, and ideas. However, the debates will be resolved only with robust archaeological data acquired with up-to-date methodologies. The few archaeological remains thus far excavated from the middle Holocene in mainland Southeast Asia contexts were excavated decades ago and/or have not been published in sufficient detail or studied with sufficient methodological rigor to belay arguments. For example, while Vietnam has archaeological cultures dating to the middle Holocene, such as the Dabut culture (Nguyen Viet, 2005), their cultural relationship to preceding and succeeding cultures, and the presence of food production, are often not determined. While some Vietnamese scholars claim that domesticated animals were present in Dabut sites (see Bui Vinh, 1991), some archaeologists have not accepted or fully incorporated this evidence (e.g. Higham, 2002: 37), probably because supporting quantitative and qualitative evidence has not been published in western languages and international journals. In any case, the apparent coastal adaptation of many Vietnamese middle Holocene cultures cannot be generalized to all

of mainland Southeast Asia. A much more robust set of middle Holocene archaeological data from all parts of Southeast Asia, especially interior non-coastal areas, is needed to move these discussions forward.

INITIATION OF THE MIDDLE MEKONG ARCHAEOLOGICAL PROJECT

The Middle Mekong Archaeological Project (MMAP) has its roots in these issues and in archaeological research that has been undertaken on the right bank of the middle Mekong drainage basin in northeast Thailand since the 1960s. Even though research within Thailand for agricultural precursors to the Ban Chiang cultural tradition cannot be considered exhaustive, the possibility of conducting modern archaeological research to the north and west in Laos in the left bank of the middle Mekong basin to seek such societies is a compelling opportunity given several geographic realities. With a position upstream, archaeological sites in northern Laos older than Ban Chiang could help determine whether in situ development, migrations, or combinations of the two occurred that ultimately led to the lowland agrarian way of life in Thailand and elsewhere in Southeast Asia. The archaeology of northern Laos could provide important data pertinent to other issues as well, such as Southeast Asia's origins of metallurgy and population history.

Rapid assessment in 2001

In 2001, White contacted the Lao Department of Museums and Archaeology (DOMA) to see if it would be interested in a brief survey to investigate the potential for prehistoric research in the Mekong basin upstream from Ban Chiang. A two week rapid assessment archaeological survey (RAAS) by White and Bouasisengpaseuth (2002) in December 2001 sought to compare Vientiane and Luang Prabang provinces for a possible long term project. While prehistoric sites were found in Vientiane province, Luang Prabang province clearly held unusual potential for archaeological research. Over the course of three days, the authors saw evidence of 10,000 years of human occupation in the vicinity of Luang Prabang. This evidence included the Hoabinhian cave site Tam Hua Pu (Sayavongkhamdy et al., 2000) (fig. 3), hundreds of polished stone adzes in tourist shops and village homes (fig. 4), and ceramics likely dating from the pre-metal through the historic periods eroding out of the banks of the Mekong. Such density, abundance, and age range of material evidence easily

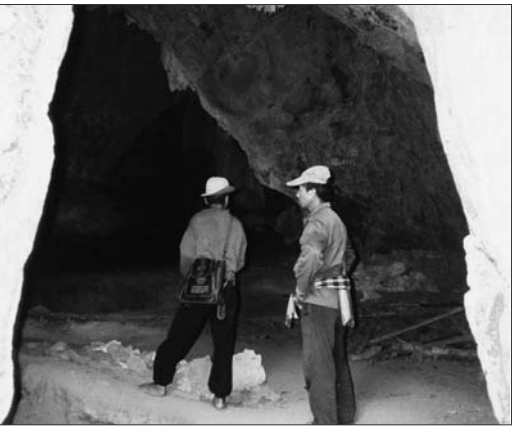

Fig. 3: Tham Hua Pu is a cave site with Hoabinhian remains on the right side of the Mekong Basin in Luang Prabang Province. It was excavated in the 1990s and visited by RAAS in 2001.

Fig. 4: The abundance of polished stone adzes in local shops in Luang Prabang implies extensive prehistoric activity in the area, supporting other evidence that archaeological research in the vicinity would be productive.

Fig. 5: These sherds were recovered by the authors during the 2001 Rapid Assessment Archaeological Survey at a site eroding out of the left bank of the Mekong near Ban Xanghai. The sherds portray the "i & i style" (impressed and incised) that has been argued by Higham (1996) to document the spread throughout mainland Southeast Asia of rice-cultivating Austroasiatic farmers.

observable with only a brief and superficial examination of a small area suggested that Luang Prabang vicinity was an enduring occupation area and nexus for regional interaction over the course of thousands of years. The plethora of polished adzes and presence of pottery with rockerstamping and comb impressions between incised lines (termed "i&i" style for "impressed and incised" decoration, fig. 5) gave particular promise that archaeological deposits pertinent to the middle Holocene and the issues noted above would be found in the area.

Other prehistoric indications in Luang Prabang province

Even before 2001 there existed indications from the colonial period that Luang Prabang might be rich in prehistoric remains, possibly including remains pertinent to the middle Holocene. Even though Lao prehistory received less attention than Vietnamese prehistory during the French colonial period, Luang Prabang's potential importance to the 'neolithic' was brought to light first by some early French investigators. In 1888-1892 a member of the Mission Pavie, the French scientific and commercial expedition to Laos, collected 138 polished stone and 20 bronze implements in the vicinity of Luang Prabang (Massie, 1904). In the same area in 1908-1909 Mansuy collected a combined total of 108 bronze and polished stone implements, plus ceramic artifacts. The implements were retrieved primarily from alluvium along the Mekong, and the ceramics were excavated from a limestone cave at Ban Don Tio about 7 kilometers outside of Luang Prabang (Mansuy, 1920). The majority of finds recovered were polished stone axes, adzes, and chisels–finely formed and of a wide typological range. Although the drawings of the recovered ceramic finds are crude, Mansuy (1920: 8, Plate VI) compares the incised designs with designs found on ceramics at Samrong Sen in Cambodia. These may be among the earliest published examples of the i&i horizon style.

Excavations in Luang Prabang province in the 1930s produced further evidence of lithic-using societies. Fromaget conducted excavations at three cave/rockshelter sites in Luang Prabang province: Tam Pong in the Seuang basin, Tam Hang in the Khan drainage, and Tam Nang An in the right bank Mekong watershed opposite Luang Prabang town (fig. 2; Fromaget & Saurin, 1936; Saurin, 1937 & 1966). These three sites produced many noteworthy finds, including Hoabinhian deposits, partially polished tools called 'protoneoliths', as well as human remains. Although polished stone tools conventionally have been considered a tool of the 'neolithic', it is now known that fully polished stone tools were used well into the metal ages in mainland Southeast Asia. However, the finds of partially polished stone tools in cave contexts that include Hoabinhian flaked tools suggest deposits of potential middle Holocene age. Finding such tools in an area where fully polished stone tools become conspicuously

abundant suggests that an in situ development may have occurred. The potential for archaeologically documenting this development is further suggested by the recovery of seven fully polished stone implements and a perforated disc found at 1-1.5 m depth during construction of a military post at Na Mou in the remote interior 25 kilometers from the border with China (Saurin, 1935). These latter finds indicate that open-air sites with potentially datable in situ deposits containing polished stone tools (i.e., not just finds from surface or alluvial contexts) exist in interior regions in northern Laos at some distance from the Mekong River proper.

Virtually no archaeological research occurred in Luang Prabang from the 1940s through the 1980s, due to geopolitics of the period. Archaeological research resumed near Luang Prabang in the early 1990s as Laos began to open up to collaborations with developed nations (Källén & Karlström, 1999; Santoni et al., 1997). In addition to the excavation in 1991 of a historic kiln site at Ban Xanghai (Hein et al., 1997), three prehistoric cave/rockshelter sites on the right bank watershed of the Mekong were excavated in 1994-1995 (Sayavongkhamdy et al., 2000). Tam Hua Pu, previously identified by Anzai (1976) as a promising stone age site based on surface artifacts, comprised a Hoabinhian deposit into which iron age burials were interred. Tam Nang An cave produced a jar burial associated with a ground stone adze. Tam Nang An rockshelter, also excavated in the 1930s by Fromaget (Saurin, 1937), had a sequence similar to Tam Hua Pu. Even though the relationships of dated samples to cultural contexts are not published in detail, ^{14}C determinations from two of the cave sites range from 32,000 bp to 1010 bp (Sayavongkhamdy et al., 2000) suggesting that a complex and lengthy regional prehistory likely lies waiting to be defined through systematic archaeological research.

Also in the late 1990s, a reconnaissance expedition along the entire length of the Mekong within Laos visited 42 localities in Luang Prabang province (Raymaekers, 2001a, b). Like expeditions 100 years previously, the "prospection survey" by Raymaekers and Souksavatdy, which emphasized the recording of unprovenienced artifacts over identification of in situ deposits, recorded numerous ground stone and socketed bronze adze/axes. Interestingly, the expedition along the Mekong upstream from Vientiane recovered prehistoric finds in much greater abundance than along the Mekong downstream from Vientiane, again indicating the potential importance of northern Laos during the prehistoric period.

Nevertheless, while the recent but very limited archaeological research in Luang Prabang province reaffirmed a long-term human presence in the region, it did not clearly identify in situ middle Holocene deposits. Unprovenienced finds, market adzes, and the few small excavations provide no more than tantalizing hints, not hard evidence, that Luang Prabang has a prehistoric past significant to understanding Southeast Asian prehistory. Confirmation and elucidation of a significant past in this area will only emerge with a focused, up-to-date scientific research effort.

THE THREE TRIBUTARIES PROPOSAL

When applying for research grants, scholars must justify why a particular area deserves an investment of resources. Why are results expected from expenditure of money, time, and energy in one as opposed to another area? In the absence of hard archaeological evidence, White needed to propose why the area around Luang Prabang should be unusually rich in significant prehistoric remains. Examination of Luang Prabang's

geographic position suggested that, along the extensive expanse of the middle Mekong upstream from Ban Chiang, Luang Prabang would be particularly well sited with regard to potential transregional avenues of communication. In addition to the Mekong itself flowing from the west toward Luang Prabang and then heading south, three left-bank tributaries cross the province and flow from different subregions (fig. 2). The Ou flows south from the border of China and, as a gentler and more direct route than the Mekong from southern China, was "a longstanding route of trade, migration and invasion in northern Laos" (Walker, 1999: 19). The Ou was the main migration avenue for Lao speakers entering the country in protohistoric times (Stuart-Fox, 2002: 2), and thus logically may have been a migration avenue for populations moving south from southern China in prehistoric times including postulated agricultural migrations (Blust, 1996; Higham, 1996: 195).

The Seuang and Khan drain south and west from hills drained on the east by the Ma River, along which late Pleistocene, and early and middle Holocene societies have been documented (fig. 2). Headwaters of tributaries to the eastward flowing Ma lie in northeast Laos between headwaters of the westward flowing Seuang and Khan, thus prehistoric habitation of the upper Ma, Seuang, and Khan basins may have been closely related. If Hoabinhian societies inhabiting these highlands on the east side of the Annamite Cordillera underwent a transition in settlement and lifestyle during the middle Holocene toward food production, as the Vietnamese archaeologists suggest for Dabut, evidence for such a transition seems likely to be found on the west side as well. Finds of partially and fully polished stone tools excavated in association with flaked Hoabinhian tools at Tam Hang (Fromaget, 1940: 68) and Tam Pong (Saurin, 1937) also suggest the presence of transitional economies on the western side. Partially polished stone tools from non-excavated contexts have also been recovered from along these tributaries (Massie, 1904: 14; Raymaekers, 2001a: 38).

The Khan has an additional attribute of flowing along the northern edge of the Tran Ninh Plateau, on which lies the Plain of Jars. This archaeologically rich though little explored plateau (Colani, 1932; Rogers et al., 2003) is best known for its iron age evidence, but Saurin (1968, 1971: 30) also recovered Hoabinhian tools in open-air contexts. Luang Prabang city lies at the mouth of the Khan, and the other two left bank tributaries reach the Mekong along a 22 km stretch upstream. There may be no better location in Southeast Asia to examine alternative models for Holocene human prehistory than the Mekong's left bank watershed in Luang Prabang province, which can be argued to lie at the heart and crossroads of the core of the region.

2005 survey and initial results

White approached the Lao Department of Museums and Archaeology (DOMA) with the idea of conducting simultaneous exploratory surveys along all three left bank tributaries to the Mekong in Luang Prabang province. None of the three tributaries was obviously more important than the other two. Rather than picking one of the river systems, or examining each tributary sequentially, White deemed that all three should be rapidly and simultaneously assessed prior to developing a more intensive field work program. The exploratory survey was thus conceived of as Phase 1 of a joint, long-term scientific research program between the University of Pennsylvania Museum and DOMA to understand the stone and metal ages of northern Laos. Up until recently, prehistoric archaeology had been a low priority for the Lao Department of Museums and Archaeology. But the department knew that there were many important prehistoric sites in neighboring countries such as Thailand and Vietnam. So Laos must have an important prehistoric past as well. DOMA agreed to the collaborative effort and the three tributary survey.

White sought and received funding for MMAP 2005 from the National Geographic Society and the High Risk Archaeology Program of the National Science Foundation of the United States to conduct an exploratory survey in Luang Prabang province. The main objective of the initial survey was to find sites potentially dating to the middle Holocene, roughly 6000-2000 BC calibrated, in order to begin acquiring data to test alternative models for the appearance of agriculture in mainland Southeast Asia.

The survey was conducted over the course of four weeks during March and April 2005. In early March 2005, an international team came to Luang Prabang, including: the authors who are the project co-directors; representatives from the Vientiane Department of Museums and Archaeology, Ministry of Information and Culture; representatives from the Luang Prabang Department of Information and Culture; a specialist from Penn Museum's IT department; two graduate students from the Department of Anthropology at the University of Pennsylvania and one grad student from Australian National University; a lecturer in Geography from the University of Leeds; a Thai archaeologist from the Sirindhorn Anthropology Center; and three volunteers from the University of Pennsylvania Museum. A small building on the grounds of the Palace Museum served as the base lab for the next several weeks.

The main MMAP 2005 fieldwork objective was to find as many archaeological sites as possible in a short amount of time, namely a one month field season. Some of that time was spent assembling equipment, meeting with local officials, and taking care of various kinds of "business" that usually happens in any field research program, such as "extending visas." While the original plan was to simultaneously deploy separate survey teams on each tributary, in the end, only enough staff for two teams was recruited. Nevertheless, the two teams undertook some survey along all three rivers. The two teams ultimately spent 19 days "on the ground" searching for sites. During that time, within an area of roughly 1500 square km, a total of 58 sites were found (fig. 6).

Because this was an exploratory survey in a region with extensive subtropical vegetation, and because of the unexploded ordnance (UXO) problem in Laos, MMAP 2005 conducted an "ask the villagers" survey. Villagers led the teams to sites after team members described the kinds of things the project was looking for, such as caves, rockshelters, sherds on the ground, stone adzes, etc. Thirty-nine of the sites identified

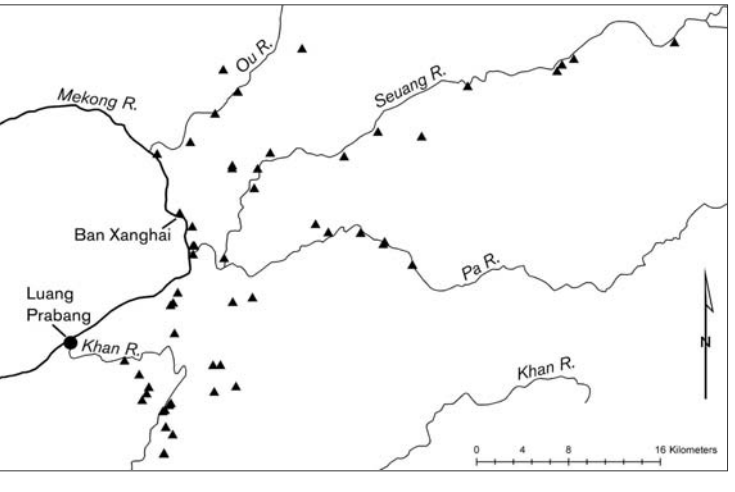

Fig. 6: Map of sites found by the Middle Mekong Archaeological Project 2005 exploratory survey along the Ou, Seuang, and Khan tributaries in Luang Prabang province.

were caves and/or rockshelters. Nineteen were open air or riverbank sites. Some sites were at, or close to, villages. Some were a short walk or a boat ride across the river. But quite a few caves and rockshelters required a hike up steep rocky terrain for up to three hours. All archaeological sites of any time period were recorded, and finds representative of the surface materials were collected to document the time and activity range present at each site.

Mobile GIS

The project proposed to funders the implementation of a GIS database for recording sites, surface features, and artifacts. The speed and efficiency of data recording at sites was assisted by the use of a mobile GIS system designed by Olivia Given (Given & Hyla, 2006). Each survey team had, in addition to a GPS unit, a Dell Axim hand-held computer with ArcPad software containing a digitized map of the survey region (fig. 7a). Digitized map data were purchased from the Mekong River Commission. In addition to recording coordinates from the GPS at each site directly onto the digitized map, the teams could record other features, such as the site name, surface finds, evidence for disturbance, etc. directly into standardized forms in the handheld computers (Tripcevich, 2004 for similar setup). Every night, the digitized data were downloaded from each team's hand-held computer and integrated into ArcGIS on a laptop at the base lab in Luang Prabang (fig. 7b). Given also integrated the ArcGIS database with an Access database of artifacts and locations. Digital cameras allow images to be incorporated into the database as well, although that aspect was not fully integrated in the 2005 season.

Fig. 7a: A mobile GIS was used during the MMAP 2005 survey. Each survey team had a handheld computer with digitized maps of the survey region in ArcPad. Data at each site, such as artifacts found, evidence of disturbance, and coordinates provided by GPS units, were recorded into standardized forms in the ArcPad database.

Fig. 7b: Every night at the Luang Prabang base lab, the GIS data from the handheld computers were downloaded onto a laptop and integrated into a full-service GIS for the survey study area.

Preliminary findings from MMAP Phase 1

Judging from the surface collections at the 58 sites, White's observation in 2001 that the Luang Prabang area appeared likely to have rich evidence for human occupation for the past 10,000 years was confirmed. MMAP 2005 found at least twelve sites with stone cores and flakes typical of Hoabinhian technology (cf. White & Gorman, 2004). A wide variety of pottery was recovered from most sites. Ceramics included both stoneware, which may have come from the historic kiln site at Ban Xanghai excavated in the 1990s by an Australian-Lao project (Hein et al., 1997), and cord-marked and decorated earthenware. Interestingly relatively few polished stone adzes were recovered on the

survey. Finds of flaked and polished lithics, earthenware and stoneware were distributed within all three tributary basins, demonstrating that the survey region was apparently broadly inhabited throughout the Holocene. Most sites had evidence of use during more than one time period.

Rare finds add to the picture and suggest a wide range of activities occurred over the course of millennia in addition to habitation: rockpainting, small Buddha sculptures, human bone, and the occasional log coffin indicate ritual and mortuary activities occurred during more than one time period; spindle whorls, stone bracelet cores, and pottery kiln supports provide evidence of craft production activities in the prehistoric and historic periods; small finds such as stone and iron bangles provide evidence of exchange activities in items of different materials and crafts during the metal age.

Several sites were identified that potentially have deposits dating to the middle Holocene, about 8000-4000 years ago. Although it is still unknown if any sites discovered can be firmly dated to that time period, sites that have both cord-marked pottery and flaked stone tools are possible candidates for further exploration of this time period. While nine sites had both cord-marked pottery and flaked stone cores (two open air and seven cave/rockshelters), the landscape position of each site is important to consider with regard to questions of the development of agriculture. Some sites with flaked lithics and earthenware are located in rugged terrain far from arable land. However some are located close to flat lands suitable for wet rice cultivation and/or sloped land good for swidden, and these are of primary interest for future investigation.

The next step

The priority for the next MMAP field season is to conduct a test excavation at one potential middle Holocene site near arable land. The goal of the test excavation will be not only to assess the chronology and contents of the site, but also to implement scientific data collection strategies pertinent to environmental and subsistence reconstruction. Developing a descriptive system for pottery variation in order to begin the framework for a regional ceramic sequence, and expanding the settlement system analysis, are additional priorities.

CONCLUSION

The MMAP 2005 exploratory survey did much more than identify interesting and potentially significant archaeological sites in Luang Prabang province. The survey in and of itself provides data for understanding a long term and evolving settlement system in the uplands of the middle Mekong River basin. This evolving settlement system encompassed major changes in technology (flaked stone to iron implements, earthenware to stoneware), religion (pre-Buddhist to Buddhist), and likely saw shifts in trade patterns among the various riverine arteries with the ebb and flow of peoples and commodities across the region.

Similar regionally-focused research in adjacent areas and countries along with expanded research along the three tributaries can eventually create a comparative framework to understand in rich detail the evolving socio-economic network at the heart of mainland Southeast Asia – from Yunnan to northeast Thailand, Mae Hong Son to the Gulf of Tonkin. The history and development of stone age Hoabinhian tool-using societies could thereby be elucidated as the habitation of the karstic systems from

northern Vietnam to the Salween basin are interrelated by dated and well-studied archaeological assemblages. Colani's (1932) suggestion that the Tran Ninh Plateau flourished during the metal age as trade routes criss-crossed the Plain of Jars can be not only verified, but comprehensively mapped and its rise, permutations, shifts, and denouement specified. And the story of the emergence of agriculture in mainland Southeast Asia can be enhanced, whatever theory in the long run turns out to be correct. However, only long term on-going archaeological research will reveal these now hidden currents of the distant past.

The MMAP 2005 survey was also important for the implementation in Laos of some current methodologies for cultural resource assessment. A regional GIS database of long term human settlement and land use has been initiated which can form the basis of a cultural resource management system for Luang Prabang and beyond. The structure of the GIS and Access databases can be used elsewhere in Laos, and even other countries in the region. This database will provide evidence and structure to help plan for future archaeological investigation in Laos and elsewhere, including future well-thought out excavations and intensive surveys. In sum, the archaeology of the middle Mekong is taking off in new exciting directions.

Addendum: Since the text of this article was written, the Middle Mekong Archaeology Project has conducted test excavations at two of the rockshelter sites found during the MMAP 2005 survey. The test at Phou Pha Khao Rockhelter in the Khan drainage in July 2007 revealed iron age burials dug into stone age deposits with Hoabinhian tools.

Tham Vang Ta Leow was tested in March 2008. The deposit is mostly stone age with very few ceramics. Typical Hoabinhian lithics were found in most of the deposit, but characteristics of the lower lithic assemblage raise the possibility of a pre-Holocene date. Charcoal samples from basal in situ deposits will be submitted for radiocarbon dating in April.

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www.museum.upenn.edu/mmap

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