

**Ideology, Identity and the Construction of Urban Communities:
The Archaeology of Kamphaeng Saen, Central Thailand
(c. Fifth to Ninth Century CE)**

by

Matthew D. Gallon

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Anthropology)
in The University of Michigan
2013

Doctoral Committee:

Professor Carla M. Sinopoli, Chair
Professor Victor B. Lieberman
Professor Henry T. Wright
Emeritus Professor Norman Yoffee

© Matthew D. Gallon 2013

For Diana

Acknowledgements

It is fitting that this dissertation on the formation of urban communities is itself the product of a large and diverse community of people. I have benefited from the encouragement and support of friends, family, colleagues and mentors on two continents and over more than a decade. Any shortcomings in this dissertation are probably a result of my failure to follow their advice, and are my own responsibility.

My interests in anthropology and archaeology were first cultivated during my undergraduate training at Bowdoin College. Through the mentorship of Susan Kaplan, Genevieve LeMoine and Scott MacEachern, I was introduced to the insights an anthropological perspective can bring to the study of societies both past and present. They also gave me the opportunity to participate in international field projects, where they patiently explained basic field methods to me while also attending to the many other concerns of a project director. I have attempted, at times unsuccessfully, to model their equanimity while directing my own fieldwork.

Following my undergraduate training, I spent two years assisting William Fitzhugh in the field and at the Smithsonian Institution's National Museum of Natural History. Through the example of his wide-ranging activities that spanned multiple continents, Bill taught me the pivotal role museums can play in integrating research and public outreach. I am grateful for his mentorship and continued support. Also at NMNH, I would like to thank J. Daniel Rogers, who graciously allowed me to participate in his fieldwork on early urban centers in Mongolia. Dan encouraged me to think about alternative models of urbanism, effectively laying the first stones in the intellectual foundation of this dissertation.

During my time as a graduate student at the University of Michigan, the faculty and my fellow graduate students have provided invaluable sources of support

and inspiration. Being part of a community of archaeologists with a comparativist orientation and research experience from throughout the world provided a rich intellectual environment for generating and refining ideas about communities of all sizes. While I have crossed paths with many inspiring fellow students at Michigan, I would especially like to thank Véronique Bélisle, Jamie Clark, Cameron Gokee, Hemanth Kadambi, Amanda Logan, Uthara Suvrathan and Howard Tsai for their insights, support and humor.

While in Thailand, I benefited from the advice and support of many people and organizations. My field work at Kamphaeng Saen was made possible by generous financial support from The National Science Foundation (U.S.A), Henry Luce Foundation/ American Council of Learned Societies, Rackham Graduate Student Research Grant, Rackham International Research Award, and the University of Michigan Museum of Anthropology Griffin Scholarship.

At Silpakorn University, Bangkok, Dr. Phasook Indrawooth and Dr. Rasmi Shoocongdej graciously introduced me to the Thai archaeology community. I am particularly grateful to Dr. Phasook who allowed me to audit her graduate course on Dvaravati archaeology, and accompany her class on field visits to Dvaravati sites. This introduction to Dvaravati archeology from a pioneer in the field was invaluable. The staff of the 2nd Regional Office of Fine Art, Suphanburi provided essential support with the Kamphaeng Saen Archeology Project's permits and logistics. In particular, Mr. Wasan Thepsuriyanont and Ms. Supamas Doungsakun helped narrow the focus of the research project and provided encouragement throughout the fieldwork. The staff of the National Research Council of Thailand (NRCT) also helped obtain research permits.

I owe special thanks to Mr. Anusorn Amphonsri and Ms. Nattha Chuenwattana for analyzing the faunal and archaeobotanical materials, respectively. Dr. Alison Carter kindly agreed to look at photos of my small collection of beads from Kamphaeng Saen and directed me to useful literature on Indo-Pacific trade beads. Dr. Pariwat Thammapreechakorn generously provided his expertise for identifying the stoneware sherd from Kamphaeng Saen. Ms. Pimchanok Pongkasetkan provided much appreciated

help both with the fieldwork and translation of Thai text. I am also grateful to the following students from the University of Silpakorn who assisted with various phases of the fieldwork and provided good conversation and camaraderie in the field: Ms. Panawii Thanasarn, Mr. Anusorn Amphonsri, Mr. Jean-Pierre Gaston-Aubert, Mr. Panuwat Eusamarn, and Ms. Khanittha Alangkorn. I am particularly indebted to Mr. Boontaam Muatsantiah, who was not only an excellent driver and guide to Dvaravati sites throughout central and northeastern Thailand, but also a good friend.

A successful archaeological field project often depends on the assistance of many people within the local community. My fieldwork would not have been possible without the hard work and encouragement of a dedicated field crew. Mr. Pisit Thonatanat, his son and his grandson assisted with all phases of the fieldwork and served as expert guides to the history of the Kamphaeng Saen area. Mr. Cham Nokdam and Ms. Nongrak Ekchin also assisted with all phases of the fieldwork, and enthusiastically took on additional duties including sherd washing, screen construction and educating me about the best local *gai yang*. Khun Noi helped with the topographic survey. Khun Mai, Khun Meow, Khun Dong, Khun Pai and Khun Koi helped with the excavations, screening and flotation. The manager of the Kamphaeng Saen scout camp, Mr. Prapakorn Sompong, also provided encouragement throughout the project. I was also fortunate to have a great cook, Ms. Thanporn “Yai” Watatarangchot, who ensured that my *pad krapow* was spicy, and my coffee and beer were cold. In Bangkok, the analysis phase of the project greatly benefited from the efforts of Khun Noi and Khun Yom, who proved to be dedicated and able sherd sorters.

Early during my residence in Thailand, I had the good fortune to meet Stephen Murphy. I have benefitted from his advice and insights throughout my fieldwork and the writing of this dissertation. More recently, I have also greatly benefitted from conversations with Wesley Clarke. Together, Stephen and Wes have provided an invaluable sounding-board for ideas on Dvaravati archaeology.

I am extremely grateful to the members of my dissertation committee, who gave me the intellectual freedom to pursue the ideas and research problems that I

found most intriguing. Victor Lieberman graciously agreed to join the committee late in the dissertation process, and made excellent comments that grasped the challenges of working with archaeological data. Henry Wright has served as a tireless mentor, constantly challenging me to find creative solutions to theoretical and methodological problems. I have greatly benefited from Norm Yoffee's close reading of this dissertation. His insightful comments, and our subsequent exchanges, encouraged me to reexamine some of my assumptions about urban communities, resulting in a stronger dissertation and a wealth of ideas to pursue in future research. I am especially thankful for the mentorship and patience of my committee chair, Carla Sinopoli. Her unwavering support and insights have been fundamental to this dissertation and my intellectual development.

During my fieldwork and the writing of this dissertation, I have been bolstered by the love and support of my family. I would like to thank my parents-in-law, Carol and Richard Blazar, who have provided constant optimism and support. I thank my parents, Anne and Dale Gallon, who taught me the value of creativity and the life of the mind. Their encouragement and support gave me the confidence to pursue my love of archaeology. I also thank my children, Ben and Elsie, whose laughter and wonder provided a welcome antidote to the monotony of writing and editing. Finally, without the love, patience and support of my wife and best friend, Diana Blazar, this dissertation would not have been possible. I gratefully dedicate it to her.

Table of Contents

Dedication	ii
Acknowledgements	iii
List of Figures	vii
List of Tables	xiii
List of Appendices	xiv
Abstract	xv
CHAPTER 1: The Creation and Character of Urban Communities	1
CHAPTER 2: The Environmental and Cultural Foundations of the Dvaravati	27
CHAPTER 3: The Dvaravati Culture	79
CHAPTER 4: Dvaravati Urban Landscapes	118
CHAPTER 5: Archaeological Investigations at Kamphaeng Saen	193
CHAPTER 6: The Political, Economic and Sacred Landscapes of Kamphaeng Saen	282
CHAPTER 7: Dvaravati Urbanism in Comparative Perspective	309
Appendices	332
Bibliography	687

List of Figures

2.1. Physiographic regions of Thailand	28
2.2. Distribution of Significant Ore Deposits in the vicinity of central and northeast Thailand	36
2.3. Prehistoric hunter-gatherer sites mentioned in the text	41
2.4. Neolithic sites mentioned in the text	46
2.5. Bronze Age sites mentioned in the text	51
2.6. Iron weapons from Tham Ongbah	55
2.7. Iron tools from Ban Pong Manao	55
2.8. Iron Age sites mentioned in the text	57
2.9. Distribution of Dong Son drums and Sa Huynh ornaments in Thailand	61
2.10. Dvaravati period metal earrings or pendants from Chansen	62
2.11. Nephrite Sa Huynh-style bicephalous pendant from Ban Don Ta Phet	62
2.12. Dong Son drum from Ku Bua	63
2.13. Ban Kao boat coffins	65
2.14. Plan Views of Iron Age moated sites in northeast Thailand drawn from SPOT satellite images	70
3.1. Principle Dvaravati sites and other contemporaneous sites mentioned in the text	80
3.2. Silver coin or medallion inscribed with the phrase “sridvaravati svarapunya” or “meritorious act of the King of Dvaravati” in the Pallava script, from Ku Bua	82
3.3. Bronze Buddha from U-Thong, Stupa No. 11, displaying South Asian stylistic conventions with local facial features	87
3.4. Dharmachakras, a pillar and socle	88
3.5. Typical Dvaravati bricks	92
3.6. Stucco sculpture of “dwarves” and decorative motifs at the base of the Khao Klang Nai monument, Sri Thep	93
3.7. Terracotta image of monks carrying alms bowls, U-Thong	94
3.8. Shivalinga, U-Thong	95
3.9. Sema stone depicting the Buddha’s Return to Kapilavastu, Muang Fa Daed	96

3.10. Significant Dvaravati ceramic forms	100
3.11. Decorations and surface treatments on Dvaravati ceramics	101
3.12. Dvaravati Buddhist votive tablets	102
3.13. Stone saddle querns and rollers from Dvaravati sites	102
3.14. Inscribed copper plaque found at U-Thong	106
3.15. Dvaravati Coins or medallions bearing symbols found in South Asia and elsewhere in Southeast Asia	110
4.1. Stupa, Thung Setthi	121
4.2. Roughed out dharmachakra, Khao Yoi District, Petchaburi Province	123
4.3. Stucco sculptures of “Semitic traders”, Ku Bua	125
4.4. Wat Klong monument, Ku Bua	125
4.5. Stucco sculpture of a bodhisattva, Ku Bua	126
4.6. San Chao monument, Pong Tuk	127
4.7. Vishnu stele, Wat Dong Sak Monastery, Pong Tuk	129
4.8. Stucco sculptures, Chulapathon Chedi, Nakhon Pathom	132
4.9. Phra Pathom Chedi, Nakhon Pathom	133
4.10. Wat Phra Men, Nakhon Pathom	134
4.11. Quartzite Buddha in <i>bhadrasana</i> posture at Phra Pathom Chedi, Nakhon Pathom	135
4.12. Stupa No. 2, U-Thong	142
4.13. Rectangular laterite foundation, Ruin No. 6, Kok Chang Din	144
4.14. The KSTUT survey area showing the distribution of Late Iron Age and Proto-historic villages and hamlets around Chansen	149
4.15. Mudar’s settlement hierarchy and administrative territories for Dvaravati period moated centers	151
4.16. Settlement hierarchy of enclosed Dvaravati centers	153
4.17. Enclosure sizes of Dvaravati sites in central Thailand (with comparative sites from northeastern Thailand)	156
4.18. Enclosure sizes of Dvaravati sites in central Thailand (without comparative sites from northeastern Thailand)	156
4.19. Khao Klang Nai monument, located near the center of the inner enclosure at Sri Thep	159
4.20. Early Historic Indian fortified settlement plans	161
4.21. Wales’s developmental typology of Dvaravati moat plans	162
4.22 The typology of moat plans used in Appendix B	163

4.23. Halin, Myanmar	165
4.24. Oc Eo, Vietnam	166
4.25. Angkor Wat, Cambodia	167
4.26. Idealized plan of a capital city based on the text of the Arthasastra	169
4.27. A fifteenth-century stylized depiction of the plan of the 7th to 3rd c. CE Eastern Zhou capital city of Giwang-dieng (Wang-Ch'eng), which was supposedly laid out according to the prescriptions of the K'ao-kung Chi	171
4.28. Anuradhapura, Sri Lanka	182
4.29. Jetavana Stupa and surrounding monastic complex, Anuradhapura, Sri Lanka	183
4.30. Looking east at Anuradhapura from the Mihintale monastery, Sri Lanka	183
5.1. Aerial photo of Kamphaeng Saen taken in 1975	198
5.2. Dvaravati centers in west-central Thailand	200
5.3. Moat along the east side of enclosure at Kamphaeng Saen	201
5.4. Earthen wall along the east side of enclosure at Kamphaeng Saen	201
5.5. A map of Kamphaeng Saen showing modern development inside the enclosure, reservoirs, the enclosure wall and moat, exterior religious monuments and the KSAP test excavations	202
5.6. Typical secondary forest and ground cover inside the enclosure	203
5.7. Two of three stucco on laterite Buddhas recovered at Kamphaeng Saen in the early twentieth century CE	204
5.8. The dharmachakra from Kamphaeng Saen (in the Phra Pathom Chedi National Museum)	205
5.9. The inscribed socle from Kamphaeng Saen (in the Phra Pathom Chedi National Museum)	206
5.10. Flagpole located at the center of the site	210
5.11. Three dimensional reconstruction of southern section of the enclosure wall	213
5.12. Features identified in the interior survey	214
5.13. A typical earthen mound found inside the enclosure	216
5.14. Areas surveyed outside the enclosure	218
5.15. KSAP team members surveying fields outside the settlement enclosure	219
5.16. Mr. Pisit Thonatanat interviews a local resident about the presence of archaeological materials in exterior fields	219
5.17. Ruins of the north stupa mound covered with brush	221
5.18. A scatter of Dvaravati-style bricks in a field east of the settlement enclosure	221

5.19. A complete example (top) and cross-section through the width (bottom) of Dvaravati-style bricks found in a field east of the settlement enclosure	222
5.20. Fragment of a terracotta finial, found in a field east of the settlement enclosure	224
5.21. Leg from an earthenware vessel stand, found in a field east of the settlement enclosure	224
5.22. Terracotta deer head fragment, found in a field east of the settlement enclosure	225
5.23. Bronze lotus base with feet, found in a field east of the settlement enclosure	225
5.24. Stucco face, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)	227
5.25. Stucco face, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)	227
5.26. Terracotta Hands, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)	228
5.27. Two terracotta heads, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)	228
5.28. Stratified unaligned systematic sample locations and judgmental locations sampled with surface collections and bucket auger cores	230
5.29. KSAP team members collecting a 2 m radius surface collection unit	232
5.30. KSAP team members collecting sediment from a bucket auger core in a field outside the enclosure	232
5.31. Interpolated surface of ceramic distribution based on weight in surface collections	234
5.32. Fired clay recovered in the test excavations	235
5.33. Interpolated surface of ceramic distribution based on weight of sherds in bucket auger cores	237
5.34. Depths of ceramic sherds in bucket auger cores	238
5.35. Test excavation salvage unit locations	240
5.36. The enclosure wall cut prior to profile cleaning	241
5.37. The cleaned profile and start of the excavation to the base of the enclosure wall	241
5.38. Salvage Unit 2	243
5.39. TP-01	245
5.40. Students from the Kamphaeng Saen primary school watch screening at TP-01	245
5.41. TP-02	246
5.42. TP-03	247

5.43. TP-04 units demarcated with line on mound prior to excavation	247
5.44. Saddle Quern in the profile of east wall of TP-01	249
5.45. Informal surface with flat laying sherds in TP-03 at base of Stratum 4/1	251
5.46. South wall profile and base of pit feature in TP-04	252
5.47. Profiles of rim sherds from KSAP excavations showing different oxidation states	257
5.48. Fragments of carinated vessels from Kamphaeng Saen	257
5.49. Mat and cord-marked sherds from excavated contexts at Kamphaeng Saen	258
5.50. Spout fragments from three 'kendi' vessels shown in profile and front view	258
5.51. Decorated sherds from the KSAP excavations	259
5.52. Linear patterned burnished bowls from the KSAP excavations	260
5.53. Densities of non-diagnostic ceramic sherds by excavation unit	262
5.54. Densities (g/m ³) of non-diagnostic ceramic sherds by stratum in each excavation unit	262
5.55. Vessel classes based on rim fragments	264
5.56. Type BRM semi-fine bowls from the KSAP excavations	265
5.57. KSAP team member Khun Mai pouring off the light fraction during flotation sample processing	270
5.58. A burned grain of rice recovered from a light fraction floatation sample from TP-04, Feature 1, Level 5 (PD 144)	271
5.59. Relative Frequencies of wild and domesticated faunal fragments (count) by KSAP excavation unit	272
5.60. Examples of the types of mollusk shells found in TP-04	273
5.61. Drilled turtle carapace from TP-04, Feature 1, Level 4B (PD 143)	274
5.62. Stone and glass beads from KSAP excavations	277
5.63. Side view of a fragmented saddle quern from TP-01, Feat. 1	278
5.64. Ground stone axe from Salvage Unit 2 backdirt	279
5.65. Metal objects from the KSAP excavations	280
5.66. A selection size of clay balls from the KSAP excavations showing their variability in size	280
6.1. Old and broken spirit shrines and religious statues deposited at Kamphaeng Saen	287

List of Tables

3.1. Types of Dvaravati Buddhist structures and monuments	90
4.1. Distribution of <i>dharmachakras</i> within the settlement hierarchy of moated Dvaravati sites	158
5.1. Absolute Frequencies of vessel-classes by excavation area	267
5.2. Relative Frequencies of vessel-classes across excavation areas	268
5.3. Relative Frequencies of vessel-classes by excavation areas	268
5.4. Frequency and Density of Faunal Remains by Excavation Unit	274
5.5. AMS radiocarbon dates from KSAP excavation units	276
6.1. Estimates of population density of prehistoric settlements in Southeast Asia	294
7.1. Site-sizes and locations of selected first millennium CE centers in mainland Southeast Asia (from Stark 2006:Table 1 with modifications to the Dvaravati data)	313

List of Appendices

Appendix A.	Absolute dates from Dvaravati sites	332
Appendix B.	A Gazetteer and Atlas of Enclosed Dvaravati sites	337
Appendix C.	Locations of Dvaravati <i>dharmachakras</i>	398
Appendix D.	KSAP Site Datum, Coordinate System and Designations	404
Appendix E.	Interior Survey Landscape Features	409
Appendix F.	Bucket Auger Cores and Surface Collections	439
Appendix G.	Enclosure Wall Profile	444
Appendix H.	Excavation Provenance Designations, Volumes and Profiles	451
Appendix I.	Diagnostic and Non-Diagnostic Ceramic Variables	479
Appendix J.	Ceramic Rim and Base Forms	491
Appendix K.	Diagnostic Ceramics from the Excavated Contexts	502
Appendix L.	Non-Diagnostic Ceramics from the Excavated Contexts	575
Appendix M.	Faunal Remains from the Excavated Contexts	667
Appendix N.	Miscellaneous Artifacts	679

Abstract

For the more than 12,000 years that humans have lived in permanent settlements, the majority of sedentary communities have had small populations where relationships based on kinship maintained order and provided group identities. The development of urban communities, whose populations far exceeded those of villages and hamlets, overwhelmed the ability of traditional kinship-based mechanisms to maintain social order. New types of relationships and identities that supplemented kinship ties were needed to unite and govern the residents of early urban centers. During the first millennium CE the people of central Thailand faced these challenges as they underwent population nucleation, urbanization and increased political centralization. As part of this process, by the fifth century CE shared forms of material culture, artistic styles, religious ideologies and settlement plans began to spread among the communities of central Thailand and ultimately beyond, marking the development of the Dvaravati culture.

In this dissertation, I examine the origins and dynamics of Dvaravati urban communities from the perspective of regional-level relationships among centers, as well as the socio-economic relationships between the residents within individual centers. I focus on the lower-order Dvaravati center of Kamphaeng Saen, where I used archaeological survey and excavation to investigate the site's chronology and spatial organization. This research revealed that the community formed relatively abruptly in the fifth century CE, likely as the result of the consolidation of several smaller villages, and was then abandoned by the ninth century CE, several centuries earlier than most other Dvaravati centers. I argue that the construction and use of the earthworks and Buddhist monuments at the site played a key role in the development of the community by fostering non-kinship based group identities, as well as allowing emerging elites

to materialize ideological concepts that supported their authority. A regional-level comparison of the configuration of monuments at Dvaravati centers reveals increasing standardization of urban plans that may have partly resulted from emulation and competition between the leaders of these centers. Finally, I compare how the origins and character of Dvaravati centers compare to urban traditions elsewhere in Southeast Asia and other parts of the world.

CHAPTER 1

The Creation and Character of Urban Communities

Childe (1950:3) opened his seminal work on early urbanism with the oft-repeated observation that “the concept of the ‘city’ is notoriously hard to define.” This difficulty has not stopped myriad scholars from numerous disciplines, including archaeology, from attempting to do so. While the criteria considered in these definitions vary wildly, it is clear that both ancient and modern cities have included diverse groups of people that have had to find ways of coexisting in settlements with large populations. The degree of economic and cultural diversity within an urban population has varied, ranging from the earliest cities, which were often home to unrelated kinship groups from their immediate hinterland, to a modern metropolis like New York City with residents from all over the world; however, to succeed, all of these urban communities required their members to forge new identities and relationships, supplementing traditional kinship-based bonds. The means by which urban communities have been created has varied through time and space, and provides fertile ground for comparative research.

In this study I examine how the residents of central Thailand developed urban centers and new social and religious identities with widespread appeal and membership during the first millennium CE. A combination of archaeological, historical, and epigraphic evidence suggests that by at least the seventh century CE, and likely earlier, one or more complex polities, known collectively as the Dvaravati culture, developed in the greater Chao Phraya River Valley. These polities were centered on walled and moated urban settlements that reached sizes of up to 659 ha. Central Thailand, and to a lesser degree Southeast Asia, has been underrepresented in comparative work on both urbanization and the emergence of political complexity; however my focus on this region goes beyond the documentation of another case-study simply for its own sake.

The Dvaravati experiments in urbanism and political centralization did not develop in a vacuum. Situated between and in contact with the much older urban traditions in South Asia and East Asia, the communities who created the cities and complex polities in central Thailand drew on and recontextualized ideologies and aesthetics from these neighboring civilizations, while also making their own innovations. Studying this process contributes to our understanding of how ideas, and not just material objects, move between societies.

Within central Thailand, I focus on the lower order center of Kamphaeng Saen (52.5 ha). While Kamphaeng Saen's size places it in the fourth-tier of the settlement hierarchy of Dvaravati urban centers, its population (approx. 3,570 people; see Chapter 6) would have still exceeded that of earlier villages and moated centers in the area, and would have required the creation of new relationships among its residents. Similar to other Dvaravati centers, the construction of secular and religious monuments at Kamphaeng Saen appears to have played an important role in building and reinforcing these new bonds, among diverse groups within the community and between the community and political and religious leaders. More significantly, Kamphaeng Saen is the nearest neighbor to central Thailand's largest settlement, the 659 ha urban center of Nakhon Pathom. This location makes Kamphaeng Saen well-suited for examining the social and economic impacts of Nakhon Pathom's urbanization on lower-tier centers and its hinterland.

I examine Dvaravati urbanization and urban dynamics from the perspective of regional-level relationships among centers, as well as the social and economic relationships between the residents within an individual center. These two scales of analysis are necessary for adequately understanding the initial and ongoing changes associated with life in Dvaravati urban communities and their hinterlands. To understand the seemingly premature decline and abandonment of Kamphaeng Saen, one must look beyond the individual settlement to the broader dynamics within the constellation of urban centers in central Thailand. Alternatively, the configuration of space and activities within the landscape of individual Dvaravati urban centers also

provide important insights into how their residents created new relationships among themselves and with their emerging political and religious leaders.

In the remainder of this chapter I examine theoretical approaches to understanding the local and regional changes associated with the creation of urban communities. A full review of the literature on urban theory, or even its application in archaeology, is beyond the scope of this chapter. The interested reader will be better served by consulting one of the recent reviews of approaches to early urbanism (Cowgill 2004; Marcus and Sabloff 2008b; Smith 2007, 2009; M. L. Smith 2003b; Yoffee 2009; Yoffee forthcoming). Instead, I highlight the approaches that ground my own perspective, paying particular attention to how a focus on the creation of new social identities and relationships runs throughout them all. Each of these approaches provides different insights into why urbanization required or encouraged the development of new types of social relationships to supplement those present among the residents of villages. Similarly, each provides different nuances on how new urban identities were constructed, expressed and reinforced.

Approaches to the study of early urbanization and urbanism

What is urbanism?

Despite Childe's (1950) warning about the difficulty of defining what constitutes an urban settlement, the ten criteria he outlined to define urbanism have implicitly or explicitly served as the definition of the city for generations of archaeologists. This influence is not unwarranted since Childe's criteria are characteristic of most early cities; however, urban centers are diverse and dynamic forms of social organization, and any strict definition or trait-list of what constitutes 'the early city' will inevitably meet with problematic counter-examples. Consulting any of the recent volumes of cross-cultural studies of early urban centers highlights the diversity in size, population density, location, economy and plan of settlements labeled as "urban" (Hansen 2000, 2002; Marcus and Sabloff 2008a; Nichols and Charlton 1997; M. L. Smith 2003c; Storey 2006). Despite this diversity, a common feature of these early urban centers is their socially and economically heterogeneous population. Drawing on the work of his predecessors

who focused on the social transformations that took place during urbanization (see below), Childe stressed social rather than physical traits in his definition of the city. In particular, he characterized urban communities as constituted by individuals whose relationships were defined through occupational specialization and social stratification, rather than the kinship relations that governed village life. The mutually dependent nature of many of these new social and economic roles within the community provided a solidarity that bound together the larger population. Childe (1950:16) characterized the “complementary functions that united the peasants, craftsmen, priests and rulers” in early cities as one of the first approximations of “organic solidarity based upon a functional complementarity and interdependence between all its members.” Yet it is important to remember that this “solidarity” featured exploitative and often antagonistic relationships between the rulers and the ruled, which required new solutions for maintaining order beyond a functional interdependence. Childe (1950:12) emphasized that cities almost always contained “truly monumental public buildings”, such as temples and their associated granaries, indicating that rulers and priests used ideological justification for concentrating a “social surplus” in the name of the gods. The emergence of pronounced economic and social specialization were also fundamental to the emergence of the state; to Childe the development of urbanism and political complexity were intertwined, although he did not explicitly address the relationship between the two phenomena.

Childe also defined early cities as larger and more densely inhabited than any settlements that had come before, but wisely stopped short of identifying an absolute measure of when a settlement’s size qualifies as urban. Instead he focused on an urban center’s political, social and economic relationship to its surrounding settlements and hinterland. Full-time specialists residing in an urban center conducted administrative, economic and religious activities that affected a much broader hinterland beyond the city limits. In turn, they relied on peasants residing in the city as well as the hinterland to produce their food. As Michael Smith (2007) has argued, by defining urbanism in these functional terms, rather than demographic criteria, a much wider range of non-

western and pre-industrial settlements can be considered as “urban”. Additionally, the boundary between what constitutes a town versus a city also becomes less important, as settlements are situated along a continuum of those with more or less urban relationships and functions. Smith (2007:4-5) described the differences between cities and towns as: “[c]ities are large urban centers with numerous urban functions, whereas towns are smaller urban centers with fewer urban functions.” While this view of urbanism may leave some readers wanting for a more concrete definition that can be used to identify what is and is not a city, this ambiguity is beneficial since it forces us to focus on the social relationships within these communities and with their hinterland rather than a list of absolute traits. The center of Kamphaeng Saen, which I examine in depth in subsequent chapters, can be considered a town, and its nearest neighboring center of Nakhon Pathom qualifies as an early city. Far more interesting than the labels affixed to either of these centers are their interconnected histories and the similar strategies, albeit on different scales, that their residents used to create new identities and landscapes.

Intra-site urban relationships

A fundamental issue Childe considered in his study of the urban revolution was how social and economic relationships were reconfigured as cities developed. Earlier historians and sociologists, particularly Fustel de Coulanges (1963) and Weber (1958), had considered this issue in depth, and provided useful theoretical constructs that continue to permeate archaeological reconstructions of early urban communities. My own approach to the creation and changing nature of Dvaravati urban communities is no exception. In particular, my focus on the creation of new identities within urban environments, and the important role ideology can play in this process, draws on theoretical perspectives rooted in the work of these two theorists. I now turn to a brief overview of some of the crucial points made by Fustel de Coulanges (1864) and Weber (1958) that underpin some of the interpretations I make in later chapters about life in Dvaravati centers.

With the resurgence of interest in urbanism among archaeologists in the past decade, Fustel de Coulanges's (1864) pioneering book, *La Cité Antique*, has received renewed attention (e.g., Marcus and Sabloff 2008b; Yoffee forthcoming). While now more than a century old, Fustel de Coulanges's study took a comparative approach to the foundations of ancient Greek and Roman cities. He viewed the primary challenges confronting the emergence of urban communities as social rather than physical. In particular: emerging urban communities had to find ways to establish bonds between groups of people from several different family lineages, and without connections to the land upon which the city was to be founded. In Fustel de Coulanges's words, translated into English, "[t]he social tie was not easy to establish between those human beings who were so diverse, so free, so inconstant." (Fustel de Coulanges 1963:132; cited in Marcus and Sabloff 2008b).

Fustel de Coulanges believed that ideology was the only force powerful enough to overcome these social challenges. In both the ancient Roman and Greek cases, he believed the presence of a shared religion was essential for uniting a diverse population; although, kinship, namely in the form of family groups and lineages with their own ancestor cults, played an important role in this process. Ancestor worship encouraged the ancient Greeks and Romans to maintain strong ties to the land where their deceased family members were interred, to the extent that they established private ownership of those lands to ensure proper veneration. As family groups were united into wider lineages, a larger group of people came to identify with the same lands. Ultimately, these allegiances to a particular location and lineage were transferred to the city and the state. The earlier family structures continued to exist within this new organization, but a common religion and identification with the lands of the city united these formerly independent groups. In the absence of buried ancestors in the location where a city was to be founded, Fustel de Coulanges believed that religious rituals that identified a sacred or auspicious location, and then consecrated it, were essential for establishing the sacred connection between prospective inhabitants and the city's landscape.

Due to the ability of ideologies to unite diverse groups of people, as well as connect them with political elites and a physical place, other scholars have focused on the role of ideology in the creation of urban communities beyond the two Mediterranean case studies that interested Fustel de Coulanges. Wheatley's (1971) authoritative study of early Chinese cities, *The Pivot of the Four Quarters*, which he dedicated to the memory of Fustel de Coulanges, also focused on the importance of ideology in urban environments. He demonstrated how ancient Chinese cities were physically laid-out to reflect cosmological symbolism, and were established to serve a ceremonial function, unlike conventional views of many western cities. Subsequent studies of other pre-industrial non-western urban centers such as Angkor (C. Higham 2000), Anuradhapura (Coningham 2000), South Indian temple towns (Champakalakshmi 1996; Heitzman 1997) and Teotihuacan (Cowgill 2000) have also examined the importance of ideology in the function and physical plan of urban centers. The approach I take to Dvaravati urban centers throughout the remainder of this study also draws on Fustel de Coulanges and Wheatley's attention to the transformative role ideology can play in uniting a diverse urban population and connecting it to a physical place through rituals and the configuration of the urban landscape according to sacred principles.

Fustel de Coulanges's (1864) work also influenced Weber's (1958) approach to early urbanism. In particular, Weber was interested by the new types of social, economic and political relationships that supplemented kinship when large groups of people came to live in the same settlement. He recognized that ideology and religion could play an important role in overcoming conflict and bringing these diverse groups together; however, he also recognized the importance of other types of group identities such as class, occupation and ethnicity. Weber theorized that as groups from the hinterland migrated or were coerced into cities, the existing urban residents forced these newcomers into subservient economic and social positions due to their outsider status. As the population of the urban center grew, the social and economic disparity between the classes widened and encouraged conflict. The creation of new types of alliances, group identities and legal structures helped maintain social order and political control

within this new social environment characterized by structural conflicts. The significance of Weber's approach to urbanization therefore extended to political theory as well, since it modeled how political authority was expanded, legitimized and institutionalized.

Like Fustel de Coulanges, Weber heavily influenced subsequent approaches to modern and ancient urbanism. Many archaeologists who have recently studied early urbanism take a Weberian approach to examining how the diversity and conflict in early urban centers led to the development of new political, social and economic relationships. The relationships they identify are constructed through both "top-down" efforts by elites and "bottom-up" strategies pursued by non-elite groups. Cowgill (2004: 538) divided the actors in this process into three groups: 1) central political authorities, who may or may not be located within the settlement; 2) lesser elites, such as priests, merchants or nobles; 3) non-elite residents. Each of these groups conducted activities and defined space within urban centers in order to construct relationships and identities that could support or challenge those of the other groups.

By directing the construction of monumental architecture, public spaces, and infrastructure leaders attempted to encourage the development of a shared civic identity among the residents of an urban center (Smith 2007; M. L. Smith 2003a). However, the construction of settlement infrastructure, such as formal streets and walls, also strengthened authority by facilitating revenue collection and directing traffic flow into areas that showcases political ideologies (M. L. Smith 2003b: 19). The creation of residential wards that were well defined both spatially and socially increased the ability of authorities to monitor and control the activities of residents. This top-down ordering of urban spaces can be seen, in a Foucauldian sense, as part of elites' attempts to "discipline" the bodies of urban residents through everyday physical experience (Foucault 1977). By ordering the movement and activities of urban residents, elites increased their ability to monitor the urban population, or at least maintain the appearance of observation and control. This control, or the illusion thereof, was an attempt to mold urban residents into "docile bodies" that would internalize the political and economic agenda and privileged status of the elite ruling class. These top-down

initiatives, however, were not always successful, and could be resisted by non-elites through activities in private spaces or the reappropriation of public spaces.

Archaeologists' recent work on the role of neighborhoods has shown they were not just important for top-down initiatives, but also allowed lesser elites and non-elites to form important alliances through informal or formal neighborhood organizations (e.g., Arnould, et al. 2012; Cowgill 2004: 538; Keith 2003; M. L. Smith 2003b). Problems arising over access to space and infrastructure within the urban environment provided incentive for neighboring households to form associations that adjudicated disputes within the neighborhood as well as advocated on their behalf to the larger city-wide administration (Keith 2003; M. L. Smith 2003b). At least initially, residents were likely to organize neighborhood associations based on preexisting kinship relations or ethnicity, since immigrants to urban centers often resettled near members of their former village (Cowgill 1992; M. L. Smith 2003b: 21). Over time, new 'urban' identities, such as such as social class, occupation or religious affiliation, which in some cases were defined by kinship or ethnicity, provided alternative means for organizing neighborhood groups (Cowgill 1992; Robertson 1999). Even with these new intra-community distinctions, the households within the urban environment grew increasingly interconnected due to the specialization of economic, civic and religious tasks (M. L. Smith 2003b: 22; Zeder 2003).

Trade and craft guilds also provided alternative relationships and identities within many pre-industrial urban centers (Ray 1986; Shen 2003; Sinopoli 2003). Merchants and artisans from elite and non-elite classes created new social and economic networks based on occupation. Similarly, religious affiliation, either as a layperson or clergy, encouraged the formation of relationships and practices within the community that cross-cut kinship ties. While in many early urban societies religious institutions were closely connected to rulers, these ideologies could be co-opted, or curtailed by the development of other competing ideologies in order to challenge the political status quo. All of these new types of religious or occupational organizations provided opportunities for increasing social, economic and political influence through the

mobilization of collective action that could support or challenge political authority (Ray 1986; Shen 2003).

For all of the groups considered above, monuments played an important role for establishing and reinforcing relationships within urban environments. The higher population density of urban centers compared to their hinterlands made them ideal venues for the symbolic messages conveyed by monuments and the unifying power of communal construction projects; however, the mere presence of monuments or earthworks does not qualify a settlement as urban. Childe (1950) emphasized how the construction of monuments provided an important way for elites to assert and materialize their authority and store social surplus. This top-down focus on the importance of monument construction to elites overlooks a second important group of actors in this process: the laborers who built the monuments. As Michael Smith (2007:36) observed:

Commoner laborers took pride in their efforts, and thus the very processes of building, rebuilding, and repairing monumental architecture created some of the effects that the rulers and planners were trying to achieve—their political legitimation and support from their subjects. In this sense, the construction of monumental buildings was not simply a reflection of the political process; instead, the very act of building was a significant part of ancient political dynamics through its role in binding subjects to rulers.

Smith emphasized that he was not suggesting that monument construction took place without the coercion of laborers; however, their involvement in, and perceptions of, the process of building monuments were important aspects of elites' ability to establish and reaffirm political authority. In the case of Early Historic South Asia, Monica Smith (2003a) has made the controversial argument that urban centers developed prior to the creation of territorial states; she believed that the administrative experience and legitimacy local leaders gained by coordinating activities within an urban community, especially through monument construction, enabled them to eventually expand their political authority beyond the urban center to a larger hinterland. Regardless of whether or not this is an accurate characterization of state formation in Early Historic South Asia,

it is clear that coordinating monument construction played an important role in the consolidation of authority by political leaders.

Intermediate elites, such as clergy or merchants, also used the construction of monuments to establish connections within the community and assert their status (Heitzman 1997; Ray 1986). The location, style and inscriptions of such monuments could all be used to convey messages about the sponsors' allegiance to, or independence from, political authorities. The very existence of intermediate elite sponsored monuments in itself indicates a possible lack of centralized political authorities' monopoly on monument construction, or could be the result of a conscious effort by upper elites to encourage the formation of bonds between intermediate elites and specific locations and communities.

Building and maintaining monuments also helped build relationships between the often diverse groups of laborers who worked on them. Working on a public project provided a shared experience for laborers who may have otherwise had little in common. Monica Smith (2003a:282) suggested that some monumental construction projects, such as city walls, represented an "architecture of consensus" because they encouraged cooperation and reinforced a shared civic identity among diverse social groups within an urban center. She emphasized that such highly visible monumental constructions not only transmitted important messages about the unity and strength of the community to its residents, but to outsiders as well. Such messages contributed to the defense of the community, but also heightened the lure of living in such a settlement, encouraging immigration. Marcus and Sabloff (2008b:21) noted that many early villages also had earthwork enclosures, and the presence of such features does not qualify a settlement as urban. So, while non-urban communities were capable of building monumental architecture, in some cases such projects may have actually played an important role in the urbanization of a community by strengthening intra-community bonds and attracting new residents.

In addition to the ability of monuments to strengthen bonds within an urban community both through the act of building and as civic symbols, they also helped

create shared experiences and world-views among the residents by constraining, or “normalizing”, their movements and perceptions of the landscape (Bradley 1998; A. Smith 2003). The spaces created between monuments, such as avenues, plazas, gates or the space enclosed by city walls, directed urban residents’ physical movements and interactions. Such spaces could be intentionally configured to emphasize political or religious messages (Cowgill 2000; C. Higham 2000; M. L. Smith 2003b:19). As noted above, several early urban centers were laid out as cosmograms, with monuments used to materialize religious concepts in physical space. The placement of a ruler’s palace in a location synonymous with the location of deities supported explicit or implicit statements about the ruler’s spiritual power and legitimacy. Alternatively, subversives could avoid entering or viewing such spaces and even go so far as to establish their own alternative public spaces (Colombijn 1994; M. L. Smith 2003b:19; Streicker 1997). As residents navigated the urban landscape during rituals and daily life, they would have consciously or subconsciously internalized the political and religious order coded in the configuration of monuments and urban space. This shared experience would have provided a foundation upon which individuals could establish new connections with their neighbors that went beyond kinship.

Inter-site urban relationships

In the 1960s and 1970s archaeologists turned their attention to the regional-level relationships between urban centers. Blanton (1976:249-250) saw this shift as a much needed move away from “city-centric” theories that he felt overemphasized the role of cities in social and political change. Instead, he suggested that cities need to be viewed as part of a larger regional-level network that included different sized centers and their hinterlands. While I agree with Blanton’s assertion that regional-level relationships need to be considered, such a focus does not exclude attention to the site-level phenomena considered above; in fact, the two approaches are complementary, and taken together can provide a richer and more thorough understanding of where, why and how urban centers develop and change. More recent approaches to urbanism and a focus on landscape archaeology have incorporated both scales of analysis (e.g., A. Smith 2003).

In Chapters 5 and 6, I show how the organization and history of the community at Kamphaeng Saen can only be adequately understood by considering both of these scales of analysis.

The regional-level analyses of early urban centers advocated by Blanton (1976) and his contemporaries (e.g., Adams 1966; Wright and Johnson 1975) were based on central place theories developed by German geographers, such as Christaller (1933, 1966) and Lösch (1940, 1954). These theories provided models of the hierarchical economic, and to a lesser extent political, relationships within a network of towns and cities. Small towns and cities provided basic goods and services to their residents and individuals from their surrounding hinterland. Progressively larger centers each provided a wider range of goods and services. Christaller's (1933, 1966) formulation of the model has been the most influential among archaeologists. He proposed that based on their range of functions, under ideal conditions, urban centers formed a hierarchy of nested sites, with lower order centers located between those of the next tier. The geographers who applied central place theories tended to focus on the economic relationships between centers and the role of marketing and transportation within the system; the location of a lower-order center at roughly equal distances from two or more centers of the next higher level with identical economic functions promoted competition between centers of the same level for consumers from their shared subsidiary centers (Blanton 1976:254-255). Christaller, and the archaeologists who applied his approach to the ancient world, showed that administrative functions could also be examined within a hierarchy of central places; however, administrative centers within the same polity should be expected to follow a different distribution since they were not in competition with one another (Blanton 1976:255; Wright and Johnson 1975). Instead, they would form a nested hierarchy with lower-order centers equally distributed around a single center from the next tier. The number of administrative functions and the amount of political authority vested in the elites residing in a given center increased as one moved up the hierarchy of sites.

Based on archaeological data such as the distribution of site-sizes and administration buildings and objects among the sites, archaeologists used central place models to reconstruct the levels of administrative hierarchy within an ancient polity (Wright and Johnson 1975). Additionally, comparative studies of regional-level configurations of settlements highlighted differences in economic and political organization and their impact on the location and timing of urbanization (e.g., Adams 1966; Johnson 1973a, b). Like Childe, the archaeologists who took regional approaches to early urbanism focused on the transformations in the social and political infrastructure rather than absolute physical or demographic criteria of what constituted urban centers. These approaches tended to conceive of urban centers merely as nodes through which goods and information moved and were processed. As such, the challenges and opportunities associated with urban life were seen as of secondary importance to, and somewhat detached from, the development of social stratification and the institutionalization of political authority. Nonetheless, they highlight how different types of economic and administrative relationships between urban centers can affect the size, location and function of individual settlements.

By conceiving of individual centers within broader landscapes, regional-level analyses demonstrated the importance of considering the relationships between urban centers and their hinterlands. Central place theories highlighted the interdependencies between settlements of different sizes. Many early towns and cities were home to farmers who cultivated the lands and raised animals within a reasonable travel distance from the city; however, the amount of food these farmers produced was in most cases insufficient to support the entire population of the settlement. Additional food resources were needed from lower order settlements and rural farmers and herders to support the non-food producing residents of urban centers (Naroll 1962; Steponaitis 1981; Zeder 2003). The means by which foodstuffs from the countryside were transferred to urban residents varied according to the presence of markets, the type of food-stuffs and transportation systems. Residents in the countryside also provided city-dwellers with other goods, such as crafts or mined or gathered resources. The

transfer of goods, however, was not unidirectional, and urban centers provisioned rural populations with craft goods produced in the urban center as well as those redistributed from other parts of the countryside or through long-distance trade. These economic connections meant that urbanization impacted the entire society; the creation of urban centers brought with it the creation of rural areas. As Cowgill (2004:527) observed, “Societies without cities can be called nonurban, but not rural, because rural has meaning only as a sector within societies that also have an urban sector.”

The connections between individuals residing in the urban and rural areas were not limited to economic transactions and dependencies; social connections between residents in these two areas were also important. The population growth of many early urban centers was heavily based on the arrival of immigrants from the countryside. Groups of urban immigrants often settled in neighborhoods based on their former residences (Cowgill 1992, 2000). Connections with other immigrants with similar origins could provide support networks and employment opportunities in the urban environment. After becoming urban residents, migrants retained ties to relatives and friends from their former villages, and in some cases moved between these two areas in pursuit of seasonal employment opportunities (Anderson 2001; Grieco 1995; M. L. Smith 2003b). Elites also moved between urban and rural areas, occasionally holding lands and even houses in the countryside (Cowgill 2004:539). This fluidity between urban and rural populations meant that it was often difficult to define clear social boundaries between city and countryside. As Monica Smith correctly observed, “[t]he effective boundaries of the city may be quite different depending on the criterion in use, with economic boundaries (e.g., the territory representing the source of most comestibles) differing from social boundaries (e.g., the catchment area of ethnic groups drawn into the city).” Nonetheless, identification with urban and rural spaces played an important part in identity formation. A migrant’s former rural residence could continue to form an important part of their identity even after moving to the city; in other cases, an individual’s rural roots may not have been as important or even repressed as they formed new connections and identities that were more urban-focused.

Just as cities contained a diverse population, their hinterlands were also far from homogeneous. Variations in the resources, subsistence, ethnicity and political organization in different parts of the hinterland affected their perceptions of urban life and their relationships with urban-based administrators. Based on these differences, some groups from the hinterland may have desired to move to cities, seeing them as sources of new economic and social opportunities; whereas other groups may have avoided city-life due to potential losses of autonomy or elevated levels of crime and disease (Miksic 1999). Differences in the ways that rural populations viewed urban centers would have also affected the strategies urban political leaders used to either entice or coerce them to move to urban areas, or in other cases, prevent the arrival of unwanted immigrants.

A regional analysis of urban centers can also identify the degree to which neighboring centers complement each other's functions and encourage site-level specialization. The functions of ancient urban sites encompassed a spectrum of varying degrees and types of specialization in ritual, production, mercantile, and administrative activities (Fox 1977; Smith 2006). Drawing on the theoretical approaches to urban function advanced by Fox (1971) and Redfield and Singer (1954), Miksic (2000) developed a typology of urban forms to characterize the variability he observed in Southeast Asian centers. The typology consisted of two distinct urban forms: "orthogenetic, associated with stability and ritual; and heterogenetic, associated with change and entrepreneurship" (Miksic 2000: 107). Orthogenetic urban centers were frequently located at the center of fertile agricultural zones providing access to surplus agricultural products to support the urban center's population, which was largely focused on administrative and ritual tasks. The urban center itself tended to have a relatively low population density, consisting of a disproportionate number of political and religious administrators and their bureaucratic staff. Production activities in orthogenetic centers were often focused on a single commodity and located away from the monumental core of the city (either scattered throughout the city or concentrated

in a non-ritual area). Miksic (2000: 107) cited Angkor and Pagan as examples of orthogenetic urban centers in mainland Southeast Asia.

Alternatively, heterogenetic urban centers contained a more diverse population and range of activities. They tended to be located at the borders between ecological zones in order to access a broader range of resources and facilitate trade. The residents of heterogenetic towns and cities produced a wide range of commodities. Due to their focus on production and trade, heterogenetic urban centers had a much higher population density and less space devoted to monuments and public ritual activities than their orthogenetic counterparts. Miksic (2000: 107) identified the Early Historic port of Oc Eo in southern Vietnam as an example of a heterogenetic urban center in early mainland Southeast Asia.

Miksic (2000) observed that many urban centers fell somewhere between the purely orthogenetic and heterogenetic urban forms he described. The distinction between orthogenetic and heterogenetic urban centers has important implications for understanding variability in the relative importance of centralized political authorities, intermediate elites, corporate groups, and lineages for structuring the urban community. For example, the higher population density and decreased emphasis on monumentality at heterogenetic cities may have required corporate groups such as neighborhood associations and guilds to play a prominent role in the organization and administration of the community; whereas the lower population density and higher proportion of nobles and political administrators at orthogenetic centers may have limited the role of these groups.

Regional-level analysis can also reveal the degree to which neighboring urban centers had similar forms and functions. A pattern of urban centers with similar or redundant functions may indicate less of a functional interdependence between the centers, particularly if they were home to a broad range of activities as characterized by Miksic's (2000) heterogenetic type of urban center. Alternatively, diversification of different economic functions may indicate that urban centers specialized in different activities to complement one another. Such diversification not only increased the

centers' reliance on one another, but also on political authorities to maintain a politically stable environment that ensured reliable transfer of goods and services between centers. The distribution of economic and administrative activities between centers can also reveal different political strategies and the strength of political authority. The location of administrative and production or trade activities within the same settlement facilitated political control over the economy; whereas, disembedded administrative centers and independent trade centers may indicate a higher degree of autonomy possessed by merchants and craft guilds (Blanton 1976:257-259).

As a polity expanded and integrated a larger number of sites, political leaders may have attempted to encourage some urban centers to take on more specialized ceremonial, economic or administrative functions; during a subsequent period of political breakdown these cities may have resumed more generalized functions as they assumed greater autonomy and self-sufficiency. There are numerous examples of urban centers that persisted through cycles of consolidation and breakdown of states throughout the ancient world (Marcus 1998; Suvrathan 2013). Identifying changes in the function of an urban center and how that function complemented or replicated those of its neighbors, can contribute to a better understanding of broader changes in the degree of regional political and economic integration. Alternatively, identifying ways that guilds and households fought these changes can provide evidence of resistance to centralized control.

In addition to the functional relationships between centers, a regional-level comparison of the degree to which the space and buildings within urban centers followed similar planning concepts can also reveal the coordination of town-planning by centralized political or religious authorities, as well as the emergence of a shared concepts of what constitutes a properly ordered urban environment. Michael Smith (2007) identified indicators of urban planning at both the site and regional levels. Our current data on the layout of space within Dvaravati centers is insufficient for evaluating Smith's indicators of site-level planning (e.g., the coordination between buildings and streets within a settlement); however, the indicators he identified for evaluating

the degree of standardization of plan between centers are useful for examining the relationships between Dvaravati urban centers. A comparison of “urban architectural inventories, spatial layouts, orientation, and metrology” can reveal an “adherence to a common plan or idea of city planning” among urban communities within a region (Smith 2007:7).

Smith cautioned that while these indicators facilitate a more subjective cross-cultural comparison of approaches to urban planning, they are not well suited to quantifying standardization among urban centers. He used such cross-cultural comparison to highlight how standardization can arise in different ways:

In the Inkan case, similarities arose from deliberately imposed imperial construction programs. In the Aztec case, similarities in both building forms and city layouts predated the formation of the empire by several centuries, and can best be attributed to the basic cultural uniformity of central Mexican Aztec peoples and interaction among localized elite groups in the Early Aztec period (Smith 2007:40).

Regardless of the origins of standardization among urban centers, rulers and builders used the configuration of urban environments, both internally and among sites, to convey messages. Drawing on the work of Rapoport (1982), Smith (2007:30) argued that these messages included “high-level meanings” about cosmology, “middle-level meanings” about identity and status and “low-level meanings” about how individuals should interact with the built environment and each other. Rulers could therefore use the implementation of a standardized urban plan to send high and middle level messages about their sacred and political status either in relation to the rulers of other neighboring centers, or as a centralized authority.

The development of a loosely standardized urban plan among Dvaravati centers, which I examine in greater detail in Chapters 4 and 6, more closely resembles the Aztec case of organic development through interaction among local elites than it does the more centrally directed planning of the imperial Inkas. Renfrew’s (1986) peer-polity interaction model and Wright’s (2005) concept of polycentric evolution described how many early complex polities developed through the interaction between

local leaders of small territorial polities. Through emulation, competition, trade and warfare the leaders of these polities developed and adopted similar courtly cultures. Urban centers usually served as the seats of power in these early polycentric political landscapes. The planning and modification of the urban landscape, and particularly the monuments it contained, provided an ideal venue for elites to convey their mastery of regional standards of elite knowledge and status. Recursively, the new identities based on class and religion that were forged in the urban environment provided an important shared vernacular for the interaction between elites in neighboring peer-polities. Kinship based-relationships, such as elite lineages, continued to play an important part in the interactions between competing local leaders as well, but even these relationships became infused with the new urban identities based on class and religion. The connections and cultural similarities that developed between the individual polities and urban centers within a system of peer-polity interaction paved the way for the elites of an individual polity to expand their authority and control over neighboring polities, either through conquest or influence, in order to form a larger territorial state; however, these larger centralized states often were short-lived, collapsing back into a system of polycentric interaction (Marcus 1998; Wright 2005; Yoffee forthcoming). Many urban centers persisted through these cycles of state formation and collapse, highlighting the strength, or at least resiliency, of the relationships within individual urban communities (Suvrathan 2013).

Elites within a system of peer-polity interaction created new types of relationships and practices that emphasized their membership in a regional elite culture. The development of these new identities provided important conduits for regional economic and political interaction between urban centers. Therefore, the creation of new identities and relationships can be seen as a key component to the emergence of both individual urban communities and the development of relationships between them. I now highlight how I examine these concepts in each of the remaining chapters.

Investigating urban relationships in first millennium CE central Thailand

Broadly construed, my examination of the development of urban centers in central Thailand in the first millennium CE focuses on the strategies these communities used for building relationships and group identities among their members. I focus on this process at the level of an individual settlement, namely Kamphaeng Saen, as well as in the context of regional interaction and interconnection among centers.

In Chapter 2, I examine the geography and cultural history of central Thailand and its bordering regions. Few, if any, scholars continue to maintain that the development of cities and states in Southeast Asia were unilaterally created by South Asian migrants or colonizers, as was once more widely implied (e.g., see Majumdar 1952 for one of the most explicit examples). Instead the spread of South Asian ideologies and material culture is now seen as the result of their adoption and adaptation by local communities. By tracing the long-term development of larger community sizes and more complex relationships among them, I emphasize that the creation of urban centers in central Thailand was an indigenous process; however, it did not occur in isolation, and I pay particular attention to the timing and changing nature of long-distance contact. Examining when and why South Asian influences were embraced by local communities is important for understanding the relationship between the spread of South Asian ideologies and the development of significantly larger communities in the Dvaravati period. The natural landscape of central and northeastern Thailand also influenced the socio-economic relationships among Dvaravati communities and their predecessors. The uneven distribution of certain natural resources, such as metal ores, encouraged economic specialization and the accumulation of wealth and influence by some communities and their leaders over others. Similarly, the importance of riverine transportation routes and access to maritime trade meant that some communities had geographic advantages over their neighbors upon which enterprising individuals could capitalize.

Next, in Chapter 3, I turn to the historical and contemporary usages of the term “Dvaravati”. There is evidence from Chinese historical documents, as well as inscriptions

in central Thailand, that by at least the seventh century CE residents of the region used the term “Dvaravati” to describe some sort of social formation in the region; however, whether, this formation was a polity, city or cultural group is unclear. Later, scholars variously applied the term to a chronological period, art style, polity or group of polities and archaeological culture. The chronological and geographic boundaries of each of these entities were not always contiguous, leading to confusion over the meaning of the term. I examine recent debates over what markers should be considered as indicative of the starting and ending dates for the Dvaravati period.

Additionally, there has been considerable disagreement over the political organization of the Dvaravati culture, with characterizations ranging from a single empire to a series of chiefdoms. I weigh the evidence for different models of Dvaravati political organization, and argue for a more polycentric approach that emphasizes the importance of interaction between elites at a series of culturally related centers. These relationships included cycles of hegemony, that possibly led to the centralization of political and economic authority, or at least influence, at some point during the Dvaravati period.

In Chapter 4, I focus on the particular character of Dvaravati urban centers and their relationships with one another. I begin by considering the site chronology and plan of the principle Dvaravati centers within Kamphaeng Saen’s sub-region of west-central Thailand. Much of our knowledge of these sites is based on art historical and archaeological investigations of the monuments and sculpture. I emphasize the importance of the spatial context of these objects and structures within the landscape of these centers. From a focus on individual sites, I turn to the regional connections among Dvaravati centers. Measurements of the area enclosed by the earthen wall and moat at Dvaravati centers provide an indicator of the amount of resources each community had at its disposal for earthwork construction; however, due to occupation outside the enclosure and the presence of open areas inside the enclosed area, these measurements provide only an indirect measure of settlement size. Keeping these limitations in mind, differences in enclosure sizes show a multi-tiered hierarchy among Dvaravati centers.

When considered together with evidence for administrative and religious activities, this hierarchy suggests that at some point during the Dvaravati period, these centers underwent significant integration with Nakhon Pathom emerging at the center of a regional economic network. Similar hierarchies of political and religious influence may have mirrored this economic network. Regional-level analysis of Dvaravati centers also highlights the emergence of shared concepts about how to configure urban space. A comparison of enclosure plans as well as monument inventories and locations reveals the move towards increasing standardization in urban plan among centers over the course of the Dvaravati period. Even though regional-level comparisons of Dvaravati centers are limited by the scarcity of data on the internal organization and chronology of many of these sites, the patterns identified at this scale are useful for placing my more detailed study of Kamphaeng Saen within a broader context of relationships among Dvaravati centers.

At the beginning of Chapter 5, I pose a series of questions about the development and internal organization of individual Dvaravati centers as well as the relationships among them. In particular, I focus on the archaeological indicators of social and economic differences within a community and how and why these may have changed over time. The timing of monument construction within the settlement's history is also important for understanding why such structures were built. Similarly the location of monuments in relation to other spatial differences in consumption and production activities within the community can provide additional details about their social significance and how they created and reinforced social relationships and identities. Finally, I examine how changes in the regional relationships among centers impacted life within an individual center. I spend the remainder of the chapter examining my investigation of these issues through archaeological fieldwork at the center of Kamphaeng Saen. Fieldwork at the site included survey and excavation to document the chronology of the settlement and the distribution of different production and consumption activities within the site.

The field investigations at Kamphaeng Saen provided much needed details about the chronology, density and organization of occupation at a Dvaravati center. In Chapter 6, I examine the implications of these results for understanding the history of the community and the social and economic relationships among its members. The settlement chronology showed that it was settled in the fifth century CE during the Early Dvaravati period. The earthwork wall was built at the time of the center's initial settlement, suggesting that the community formed fairly quickly through the recombination of several smaller villages. I explore possible reasons for this migration and aggregation. Within the settlement there were also some notable differences in consumption practices, possibly indicative of some residents that identified with regional styles of material culture and foods and other community members with stronger ties to the countryside. There were also differences in the use of space inside the enclosed area, including open spaces, reservoirs and domestic areas. The configurations of the earthwork enclosure and religious monuments indicate that the builders of these structures at Kamphaeng Saen followed elements of urban plans found at other Dvaravati sites. Through the construction and interaction with these monuments, the members of the community would have created and reinforced new identities based on the ideologies materialized by these monuments. Dates for the end of Kamphaeng Saen's occupation indicate that it was abandoned, or at least significantly declined, before many other Dvaravati centers. The causes behind this premature decline are not readily apparent based on data from within the community itself, and must be considered within the broader set of regional relationships between Dvaravati centers, in particular the dramatic growth of Nakhon Pathom. I suggest that the development of shared urban identities, expressed and reinforced through similar types of material culture and urban plans, allowed migrants from Kamphaeng Saen to adapt to life in other centers such as Nakhon Pathom.

In Chapter 7, I place my research on the Dvaravati within a broader comparative frame by considering its implications for understanding urban societies elsewhere in Southeast Asia and beyond. Like other societies in Southeast Asia, the development

of urban centers in first millennium CE central Thailand occurred in the context of interaction with individuals from South Asia and East Asia. The Dvaravati case illustrates how local elites and communities adapted and recontextualized ideologies and trade goods from South Asia to serve their own purposes. This process highlights how the creation of urban centers and complex polities in the region were indigenous developments that drew on foreign influences. A comparison with the urban centers in island Southeast Asia (Junker 2006) highlights how foreign contacts were used in different ways, and the different trajectories and character of urban centers within the region. Within this variability, however, there are also important similarities due to the challenges and opportunities presented by a tropical environment. My research at Kamphaeng Saen and on Dvaravati centers in general, emphasizes the importance of monuments in creating and defining urban communities. However, there is a great deal of cross-cultural variability in the size and use of different types of monuments. Few Dvaravati monuments are explicitly connected to the depiction or glorification of a specific individual. While their construction and use may have been connected to specific political elites, their largely “anonymous” character stands in contrast to monuments that explicitly commemorate rulers (e.g., the monumental faces adorning the Bayon in Angkor that may depict Jayavarman VII as the *bodhisattva* Avalokitesvara). I examine the implications of these different types of monuments for various strategies of building urban communities and materializing political authority. Finally, I conclude by suggesting some future directions for research on the creation and organization of urban communities in first millennium CE central Thailand.

Conclusion

The development of urban communities was one of the major “revolutions” in human evolution. For the majority of our existence we have lived in small groups, where each individual could not only trace their kinship relationship to one another, but also rely on those ties for social and economic support when needed. The transition to life in dramatically larger groups required individuals to not only supplement their kinship ties by creating new types of relationships with one another, but also required

the creation of a new world-view. The creation or adaptation of new ideologies provided one powerful way to fulfill this need. The construction and use of monuments allowed abstract ideologies to be materialized within the urban landscape. Ideologies that allowed, or even justified, socio-economic stratification, while simultaneously emphasizing group unity through universal appeal and membership were well-suited to urban communities. No ideology fit these criteria perfectly, and even if it did the social tensions inherent within urban communities would present a constant challenge. In the remaining chapters, I explore how the communities of first millennium CE central Thailand dealt with these challenges and opportunities associated with the transition to an urban society.

CHAPTER 2

The Environmental and Cultural Foundations of the Dvaravati

In order to understand the roles of indigenous and foreign factors in the development of urbanism and political complexity in central and northeastern Thailand it is necessary to examine the region's environmental and cultural history. In this chapter I first examine the geological and ecological settings in which the inhabitants of this region developed urban centers and complex polities. I then examine the cultural changes leading up to the protohistoric period. Historically, some scholars (e.g., Krom 1926; Majumdar 1952) portrayed prehistoric and protohistoric Southeast Asians as passive recipients of South Asian cultural, religious and political practices (see Mabbett 1977 for discussion). Today, most scholars view these Southeast Asian societies as actively adopting foreign ideas as well as building on indigenous cultural practices and economic and social networks. For this reason, examining the societies that preceded and ultimately developed into the Dvaravati culture provides valuable insights into the indigenous practices and beliefs that were syncretically combined with foreign religious ideologies and material culture.

Physiography

Geographers divide the modern Kingdom of Thailand into five primary physiographic regions: the Central Valley, the Continental Highlands, the Khorat Plateau in the northeast, the Southeast Coast, and the Peninsula (Pendleton 1962:35; Fig. 2.1). These divisions follow topography, ecology, geology and to a lesser extent modern and historical cultural differences. Today, the Central Valley contains the country's highest population density and most fertile agricultural land, just as it did during the Dvaravati period. The Chao Phraya River and its broad alluvial plain and numerous distributaries form the southern half of the region. The northern half includes the Chao Phraya's

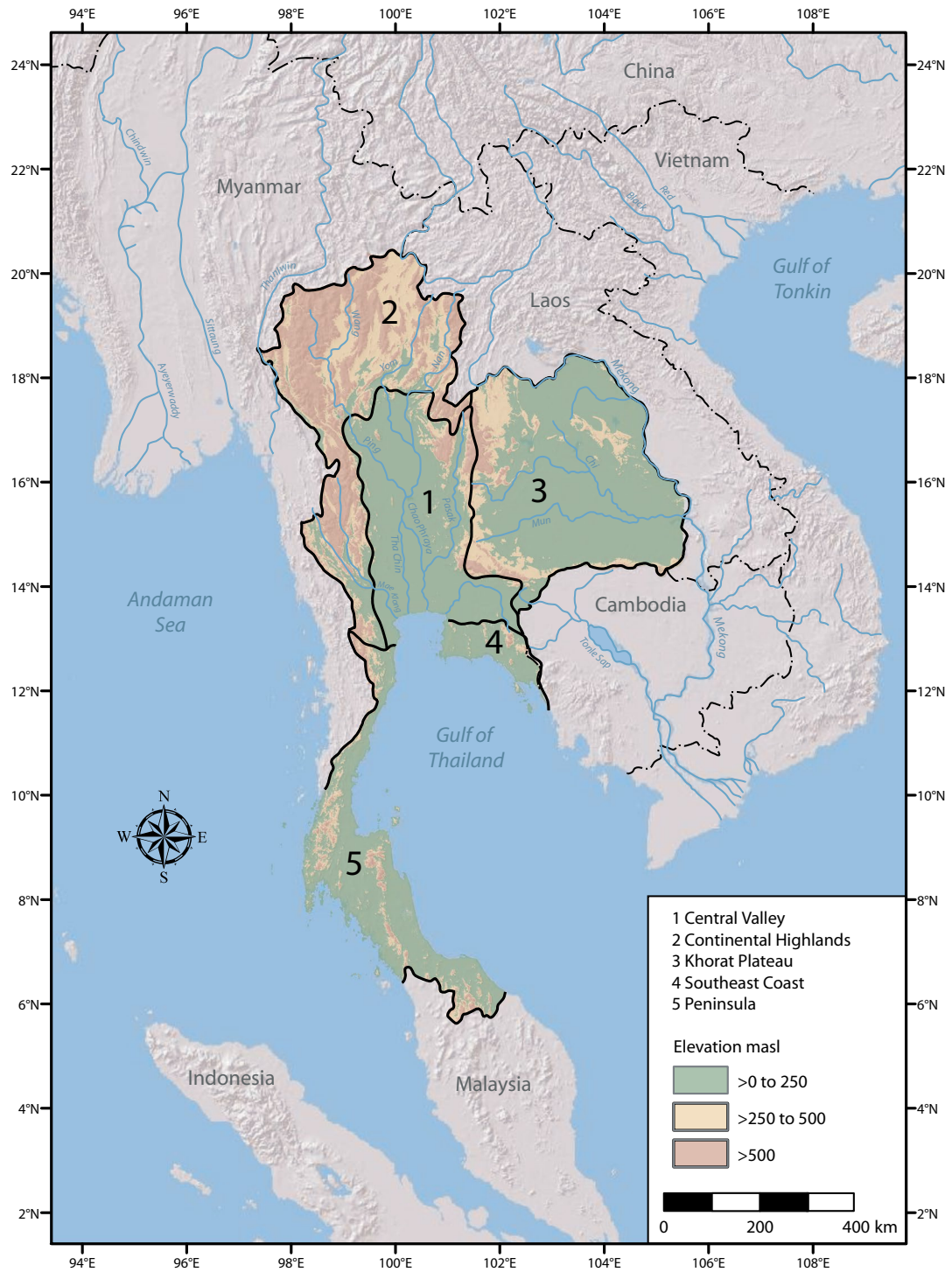


Figure 2.1. Physiographic regions of Thailand

tributaries and their surrounding valleys. From the northern tributary valleys to the Chao Phraya's mouth at the Gulf of Thailand, the Central Valley runs approximately 480 km from north to south and about half that distance from east to west (Pendleton 1962:35).

The topography within the Central Valley warrants dividing the region into three subregions: the Bangkok Plain, the Marginal Plains, and the Upper Plains (Pendleton 1962:35). The Upper Plains begin in the foothills of Thailand's Northern Mountains. The western half of this subregion contains a series of broad valleys bordering the Ping, Wang, Yom, and Nan Rivers as they make their way south to form the Chao Phraya. The eastern half of the Upper Plain contains a narrower valley around the Pasak River, which flows south to join the Chao Phraya near Ayutthaya. The topography of the Upper Plain consists of low river terraces, limestone rock outcrops and alluvial fans. The sandy, limestone derived soils of the Upper Plain, make it poorly suited to wet rice agriculture and dry crops such as maize are more successfully cultivated there (Mudar 1993:27).

The Eastern and Western Marginal Plains consist of piedmont belts that extend southward from the Upper Plain along either side of the Bangkok Plain. The Marginal Plains contain foothills that rise up to the Tenasserim Mountain Range in the west and the Khorat Plateau and Petchabun Mountains in the east. Similar to the Upper Plains, rock outcrops, alluvial fans and old river terraces capped by thick deposits of laterite are typical topographic features in this region (Pendleton 1962:39; Sinsakul 2000:417). The relative lack of water in these areas makes them poorly suited for wet rice agriculture. Instead, residents cultivate dry crops such as fruit orchards, dry field grains and sugarcane (Mudar 1993:27)

In the province of Nakhon Sawan the Ping, Wang, Yom, and Nan Rivers come together to form the Chao Phraya river. This confluence marks the northern boundary of the Bangkok Plain, which extends approximately 200 km to the south where it meets the Gulf of Thailand. This broad alluvial plain is both lower in elevation than the Upper Plain and much flatter. In the northern 100 km of the Plain, the elevation drops from 15 masl at Chainat, near the confluence, to 2.5 masl in Ayutthaya (Sinsakul 2000:417). From

Ayutthaya to the coast it is another roughly 90 km of flat land whose elevation below 2.5 masl and minimal slope makes it prone to regular widespread flooding. The Chao Phraya and its distributaries follow a meandering course through the otherwise featureless plain, leaving oxbow lakes, meander scars, levees and flood plains in their wake (Sinsakul 2000:417). In addition to the Chao Phraya, the Mae Klong, Tha Chin and Bang Pakong Rivers also flow through the Bangkok Plain on their way to the Gulf of Thailand. These rivers have provided the Bangkok Plain with rich deposits of silt, making it the most agriculturally fertile area in Thailand. It is often referred to as the country's 'rice bowl'. This vast system of waterways has also played a key role in transportation within the region. Small creeks and canals, known as *klongs*, branch off of the main river highways and historically provided an extensive network for waterborne movement of goods and people, as well as sources of irrigation water and aquatic food resources.

The sub-surface sediments of the Bangkok Plain provide a valuable record of the dramatic changes in the coastline of the Gulf of Thailand during the Holocene. The history of the coastline is important for understanding both the stratigraphy of the region and settlement patterns during the Protohistoric Period. Based on stratigraphy, palynology and the radiocarbon dating of shells and peats geologists have determined that between 6000 and 5000 CE the sea level began to rapidly rise in the Gulf of Thailand (Sinsakul 1992; 2000:423; Umitsu, et al. 2002). This transgression inundated much of the Bangkok Plain with sea water. By 4000 BCE the transgression reached its maximum height between 2-4 masl (Sinsakul 2000:423; Umitsu, et al. 2002). At this sea level the coastline was somewhere near the city of Ayutthaya, around 100 km inland from its present location (Sinsakul 2000: 423; Umitsu, et al. 2002:203). South of the ancient coastline, much of what is now the lower Bangkok Plain consisted of tidal flats and mangrove swamps. The vegetation in these areas trapped marine sediments and encouraged the southward growth of the intertidal flats (Pramojane and Jarupongsakul 1995; Sinsakul 2000). The resulting intertidal deposits consist of fine-grained clay containing marine shell and thin layers of sand. Underlying these deposits is a soft grey and grey-green marine clay and silt, often referred to as Bangkok clay. These marine

deposits accumulated to an average depth of 15 m in the Bangkok area (Sinsakul 2000:415).

Examination of the marine deposits also shows that following the maximal transgression around 4000 BCE the sea level in the Gulf of Thailand went through several cycles of regression and transgression before reaching its present mean level around the fifth century CE (Sinsakul 1992:29; 2000: 424). It is important to note that Dvaravati period sites, dated to the fifth to eleventh centuries CE, are not located along the modern coastline. Instead, these settlements ring the Bangkok Plain following the location of the coastline at the time of its maximum height around 4000 BCE. No known Dvaravati settlements are located at elevations below 4 masl.¹ In an influential study, Supajanya and Vanasin (1983; 1986) argued that the sixth century CE coastline must have been located further inland from its present location, placing it closer to the Dvaravati settlements ringing the Bangkok Plain. Their proposed coastline closely corresponded to that of the maximum transgression in 4000 BCE. Many archaeologists and historians (e.g. Mudar 1999; Saraya 1999) accepted the coastline proposed by Supajanya and Vanasin and portrayed sites such as U-Thong and Nakhon Pathom as coastal settlements.

More recently, some scholars (Barram and Glover 2008:176; Kanjanajuntorn 2006:101; Pramojane and Jarupongsakul 1995) have noted the discrepancies between the coastline proposed by Supajanya and Vanasin and the geological evidence dating the end of the last regression to the fifth century CE. However, even though the sea had regressed by the early Dvaravati period, it seems likely that large parts of the Bangkok Plain continued to contain permanently or at least seasonally flooded backswamps

¹ Most Dvaravati sites are actually above 5 masl. as documented in the settlement review in Pramojane and Jarupongsakul (1995). One exception is the recently discovered Dvaravati period settlement and Buddhist monument at Thung Setthi. In 2008 I visited the site and took GPS readings and correlated them with Google Earth, giving an elevation of 4.6 masl. for the ground surface around the monument. Barram and Glover (2008) note that the site is only 4 km from the modern coastline in order to challenge the later dating of an inland coastline proposed by Supajanya and Vanasin (1983, 1986). While I support Barram and Glover's general argument against the late inland coastline, the elevation of Thung Setthi is close to other low elevation Dvaravati sites. Its closer proximity to the modern coastline is due to the steeper slope of the Petchaburi coast compared to the Bangkok Plain.

with dense stands of mangrove and nipa palm swamps rendering the area unsuitable for human settlement (Pramojanee and Jarupongsakul 1995). Most of the Dvaravati sites surrounding the delta therefore would not have been coastal settlements, but would have likely maintained access to the Gulf of Thailand and maritime trade by way of the rivers, creeks and canals that cut through the vast mangrove swamp. Even as late as 1687 CE when the French emissary Simon de la Loubère sailed up the Chao Phraya River to the city of Ayutthaya, he noted inundated backswamps and mangrove forests from the mouth of the river to the modern location of Bangkok (Pramojanee and Jarupongsakul 1995:24).

Climate and vegetation

The climate in central Thailand cycles between the wet and dry monsoons. From May through October monsoon winds from the southwest bring warm water-laden air to the Central Valley. These months constitute the rainy season when central Thailand receives a total of around one meter of rain (Chokngamwong and Chiu 2008:259). Flooding in the Central Valley is connected to rainfall in northern Thailand (Pendleton 1962:138). As a result, the worst flooding in the Central Valley occurs during October, even though the month with the highest mean rainfall is September (Chokngamwong and Chiu 2008:259; Kaida 1976:173). The remainder of the year is relatively dry. Beginning in mid to late November the northeast monsoon begins to blow, bringing cool dry air to Thailand from the interior of the Asian continent. The northeast monsoon keeps the temperatures in central Thailand a relatively cool mean of 24-26°C until its end in mid-February. The intervening months between the two monsoons become increasingly hot, reaching mean temperatures of 32°C and higher in April (Pendleton 1962:121). The return of the southwest monsoon in May brings much needed rain and some relief from the heat.

The mountainous areas to the east and west of the Central Plain create minor local variations in climate that are most pronounced during the rainy season. As the southwest monsoon blows over central Thailand, the Tenasserim Mountain Range creates a rain shadow to its east along parts of the Central Valley's western

marginal plains. Further east, these same winds come up against the Khorat Plateau, increasing the amount of rainfall along the eastern marginal plains of the Central Valley (Pendleton 1962:125). These sub-regional variations aside, most of the Central Valley receives around 1.3 m of rainfall annually (Pendleton 1962:123). Despite this abundant rainfall, farmers in the Central Valley must supplement the natural rainfall with water from irrigation or natural flooding in order to cultivate wet rice under local conditions (Pendleton 1962:123). Farmers also plant other cultigens with lower water requirements, such as millet, sugarcane, maize, fruit trees, and vegetables; however wet rice is by far the predominant crop in the Central Valley (Kealhofer and Grave 2008; Mudar 1995). Even with today's extensive irrigation systems, the seasonality of the rainfall in central Thailand means that drought can still be a serious threat to these crops. The opening months of the rainy season are particularly susceptible to drought. A lack of rainfall at this time can leave farmers unable to plant their crops (Mudar 1995:164).

The marked differences between the wet and dry seasons in central Thailand also strongly influence the natural vegetation. Thailand's tropical latitude supports the growth of some evergreen tropical rainforests. However, these forests are most common in the peninsular region. In the Central Valley, the length of the dry season encourages the growth of vegetation that is more deciduous and classified as a 'dry monsoon forest' (Pendleton 1962). Trees in the *Dipterocarpaceae* family are the most common. These trees form a high yet thin canopy under which grasses and bamboo dominate the forest floor. Several species of *Dipterocarpaceae* trees provide economically useful products, including house posts and large leaves used for traditional roof thatching (Pendleton 1962:94-95). The dry monsoon forest also contains areas dominated by bamboo forests and, in more disturbed areas, stands of thorny *Acacia* and *Randia* trees (Pendleton 1962:95-96). Finally, along the bays, estuaries, rivers and their backswamps, tropical swamp vegetation prevails. Mangrove swamps dominate the river mouths and coastal areas inundated with salt-water. Further up the rivers, in brackish

and fresh-water areas the nipa palm (*Nipa fruticans*) becomes more common, and is actively propagated due to its economic value (Pendleton 1962:99-100).

Human alteration of non-cultivated lands in central Thailand is not restricted to the nipa swamps. The composition of the dry monsoon forests reflects millennia of intentional and un-intentional modifications by humans. The selective use and harvesting of particular varieties of trees has had clear effects on forests all over Thailand. Additionally, grazing cattle and regular burning of ground cover effect the forest's understory and regeneration (Pendleton 1962:82-83).

Kealhofer and Grave (2008) have provided an insightful analysis of the antiquity of human modifications to the environment and their relationship to urban growth in central Thailand. Using phytoliths from auger cores collected in a roughly 30 km² study area surrounding the first to second millennium CE walled settlement of Kamphaeng Phet, they documented the replacement of forest land by an agricultural landscape. Even at the beginning of their sequence in the early Holocene c. 6050-7050 BCE, they noted that minor cultural changes to the environment were already underway (Kealhofer and Grave 2008:219). However, around 4550 BCE they detected the beginnings of significant disturbances, apparently related to forest management and horticulture, which include a decrease in trees and a rise in secondary growth in a small area near the future site of the city. By the third century BCE there was clear evidence for the cultivation of rice, slash and burn forest clearance and regrowth in several parts of the study area. This pattern of land-use expanded geographically, with some fluctuations in intensity, until it extended throughout much of the study area by the late first century BCE (Kealhofer and Grave 2008:218). A growing use of irrigation canals likely made the widespread expansion possible, as drier areas were also used for agriculture. Continued expansion of water control enabled additional agricultural intensification throughout the study area during the first millennium CE. This increase in crop production, and probable associated population increase, dates to the start of urban development and growing political complexity in the Dvaravati heartland further south (Kealhofer and Grave 2008:220). Kealhofer and Grave suggested that similar

processes were underway at Kamphaeng Phet around the same time, even though local chronicles date the city's founding to the eleventh century CE (2008:210).

Metallurgical Resources

Southeast Asia contains relatively plentiful deposits of the ores sought by pre-industrial smiths, such as iron, lead, copper and tin (Fig. 2.2). However, in the case of copper and tin, Higham (2004:57) noted that even though these ore deposits are widespread, they tend to be spatially restricted and not located in the areas with the best farmland. Similar patterns characterize the iron and lead deposits, although these are more abundant and not as spatially restricted. Iron ore can also be extracted from laterite, which occurs close to the surface in several areas in Thailand. In northeastern Thailand, prehistoric populations used laterite as a source of iron ore for smelting. Despite the presence of similar laterite deposits in the Central Valley, evidence has yet to be recovered that the populations there used these deposits in the same way (Higham 1996:243; Kanjanajuntorn 2006:105). Their lack of interest in the laterite deposits is perplexing since the Central Valley's alluvial geology leaves it with few accessible metal ore deposits.

One exception is the Khao Wong Prachan Valley, which contains rich deposits of copper and iron ores (Fig 2.2). This valley is near Lopburi, in the northeastern part of the Central Valley. In the mid to late second and first millennia BCE, the copper ore deposits there supported relatively extensive mining operations at the Bronze Age site of Non Pa Wai (Higham 2004; Piggot, et al. 1997). Smiths at Non Pa Wai and its neighboring site of Nil Kham Haeng smelted the ore into ingots. Based on the scale of copper production as well as the recovery of imported objects at Non Pa Wai, it appears that the copper industry allowed the residents to participate in extensive trade networks (Higham 2002:121). Interestingly, the Bronze Age copper produced at Non Pa Wai shows no evidence of alloying with tin to produce bronze (Higham 2004:53). Smiths used the local hematite as flux in copper smelting, which may have encouraged the use of these ores to develop local iron production (Higham 2002:169).

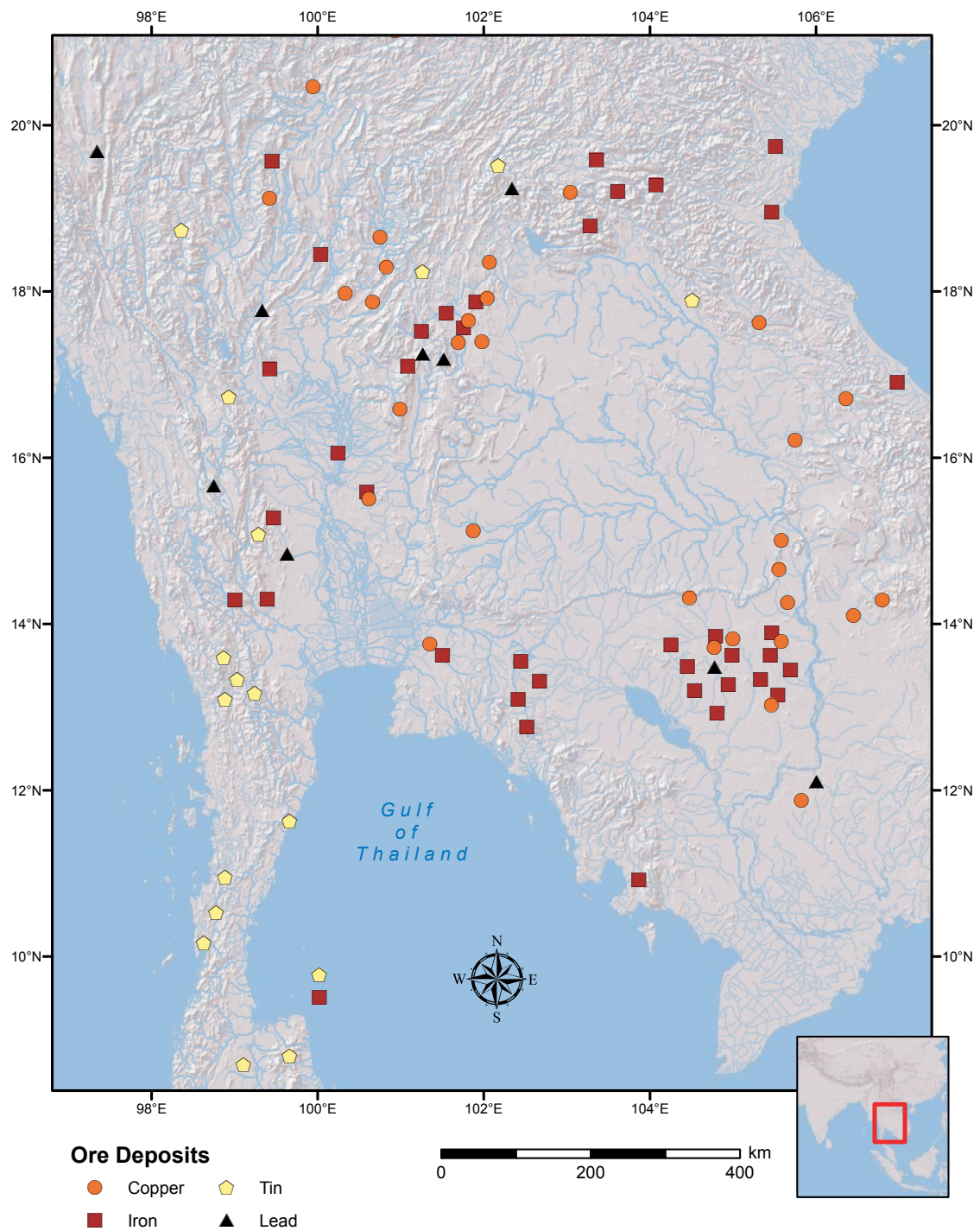


Figure 2.2. Distribution of Significant Ore Deposits in the vicinity of central and northeast Thailand

The lack of tin deposits in the Khao Wong Prachan Valley may have discouraged the production of bronze in this area. In northeastern Thailand, at the mining and smelting site of Phu Lon, crucibles provide evidence of bronze production that is contemporaneous with the copper industry in the Central Valley (Higham 2002:122; Piggot and Weisgerber 1998). Interaction with bronze producing societies in southern China, as well as access to a tin source approximately 100 km away, may have provided the necessary conditions for the Phu Lon smiths to experiment with bronze.

For the smiths in the Khao Wong Prachan Valley, the nearest tin deposits were on the other side of the Central Valley in the Tenasserim Mountain Range. This mountain range contains a rich belt of tin ore, as well as some smaller deposits of iron and lead ores. The spread of bronze working would have made both tin and lead highly valued minerals. Tin is an essential alloy in the creation of bronze, and lead increases the ease with which bronze can be cast (Higham 2004:59). The use of bronze to produce prestige objects (e.g., Dong Son drums) during the Bronze and Iron Ages must have created a significant demand for tin and lead ores during these periods. Based on the richness of the grave goods at the Iron Age cemetery of Tham Ongbah, a cave in the Tenasserim mountains, the lead mines located nearby may have provided an important source of wealth for this community (Higham 2004:59; Sørensen 1979). However, the extent to which populations in the region exploited the more abundant tin deposits in the Tenasserim Mountains is not as well documented.

While the mountain range west of the Central Valley contains important sources of tin and lead, the hills and mountains north and northeast of the Valley contain significant copper and iron ore deposits. There are also several copper deposits southeast of the Central Valley (Higham 1989:143, 191). It is important to note that the crucial ores for making bronze (i.e., copper and tin) generally do not occur in close proximity to one another in Southeast Asia.² While both are relatively abundant, the production of bronze would have required regular trade connections between the

²One exception to this pattern is in the northern mountains in the general region of Phu Lon. Unsurprisingly, this site provides some of the earliest evidence for indigenous bronze production in Thailand.

eastern and western sides of the Central Valley; the nature of these trade connections remains poorly understood. Conversely, iron ore has a more equal and widespread distribution on both sides of the Central Valley, making its trade between these regions unlikely. However, even after the start of iron production, bronze continued to be a coveted metal for the production of weapons and prestige items. As a result, the Central Valley would have enjoyed a strategic position between the key ore deposits required to make bronze in both the Bronze and Iron Ages. The extent to which residents of the Central Valley actually capitalized on this potential is unclear. The lack of bronze production in the copper-rich Khao Wong Prachan Valley, ideally located to access the trade in tin through the Central Valley if it existed, seems to indicate that the trade in tin ore may have followed different routes. Nonetheless, the rise of urbanism and political complexity occurred in the plains between these valuable ore deposits. While the high fertility of the lowland soils clearly facilitated these developments, the trade in ores between the Central Valley's margins may have played a role that has yet to be fully explored.

Predecessors of the Dvaravati

The environment of central Thailand has provided a mixed blessing for the humans who have lived there during the past 27,000 years or more (Shoocongdej 2000). The Central Valley's tropical swamps and floodplains harbored malaria and other tropical diseases that posed significant dangers. Alternatively, the abundant natural resources and fertile soils presented an attractive subsistence base for foragers and later agriculturalists. The river systems that run through the Valley provided access to extensive networks of contact and trade with other parts of Thailand. Later these networks would expand to include other parts of Southeast Asia, and ultimately East Asia, South Asia and beyond. The inhabitants of the Central Valley adapted the materials and ideas that flowed through these networks to their own cultural contexts and socio-political objectives. Population migrations followed these routes as well, and the arrival of Neolithic material culture, subsistence strategies and mortuary practices in the Central Valley may have resulted from one such migration. However, after the Neolithic

there is even less evidence for large scale migrations, and the admittedly incomplete prehistoric record from central Thailand seems to indicate that Dvaravati urbanism and political complexity emerged from a long trajectory of indigenous cultural development.

Even though we can identify a general sequence of cultural continuity after the Neolithic in the Central Valley, there are still significant uncertainties about the timing and nature of socio-political change in the region during prehistory. Since the 1960s, research on prehistoric Thailand has disproportionately focused on the northeastern and central regions. Yet even in these areas the basic chronological framework remains controversial and contains problematic gaps (Barram and Glover 2008; Glover 2010; Higham and Higham 2009). Many of the excavations in the northeastern and central regions have focused on prehistoric cemeteries, which have provided valuable data for chronology building and examining the origins of community leadership and social stratification (Ciarla 1992; Glover 1980; Higham 1996, 2002; Higham, et al. 1984; Ho 1984; Natapintu 2003; Sørensen 1979; White 1995a). Excavations of occupation and craft production areas are less common, but have provided additional valuable data (Bronson 1976; Piggot, et al. 1997; Shoocongdej 2000; White and Piggot 1996). Sub-regional surveys and settlement pattern studies have helped to document changes in site location and hierarchies (Higham, et al. 1984; Higham, et al. 1982; Ho 1992; Kanjanajuntorn 2006; Mudar 1993; Onsuwan Eyre 2006; Welch 1985). The research in these regions has made significant contributions to our understanding of life in prehistoric Thailand; however, continued work is necessary in order to refine the chronology and to better understand intra-regional variation and relationships among these societies.

The Three-Age theory, of Stone, Bronze and Iron Ages, continues to be the dominant framework for the periodization of the prehistory of Thailand, and Southeast Asia in general (e.g., Higham 2002; Higham 2004). However, there are significant variations from the European system, most notably the widespread use of bronze in

Thailand following the Neolithic without an intervening Copper Age.³ Furthermore, the technological changes emphasized by this system do not always directly correspond to the most significant social and political developments in the region (Onsuwan Eyre 2006:35; White 1995a; White and Piggot 1996). The innovation or adoption of a new technology often provided individuals with an important medium for changing their economic or socio-political practices; however, there is not a necessary relationship between the two. In the literature review below, I retain the use of these broad periods for the sake of consistency, but note the unclear relationship between social and technological change in prehistoric Thailand.

Late Pleistocene and Holocene hunter-gatherers

For most of the time that humans have inhabited central Thailand, they have subsisted as hunter-gatherers. Still today many rural Thais pride themselves on collecting wild plants and animals to supplement cultivated foods. Evidence of the earliest foragers in Thailand is scarce. Recovery of *Homo erectus* fossils in Java and Lampang province in Northern Thailand provide tantalizing clues about the early humans that occupied the region (Marwick 2009; Pramankij and Subhavan 2001). In central Thailand, evidence from Lang Kamnan cave in Kanchanaburi Province (Fig. 2.3), indicates that by 27,000 BP hunter-gatherer groups shifted between seasonal camps in this area (Shoocongdej 2000). Most of the evidence of these early foragers comes from karstic rock shelters located in upland areas. The Kwai Yai and Kwai Noi river valleys in Kanchanaburi, where Lang Kamnan is located, contain several other Post-Pleistocene rock shelters, such as Ban Kao, Ment Cave, Heap Cave, Khao Talu and Ongbah Cave (Pookajorn 1984; Shoocongdej 1996b, 2000; van Heekeren and Knuth 1967). This sample is a bit misleading since there were most likely open air sites along the rivers and streams in other parts of the Central Valley that have not survived (Higham 2004:42). It is possible that the abundant resources available along the coast may have even supported permanent settlements (Anderson 2005; Higham and Thosarat 1998b).

³A transitional copper age between the Neolithic and Bronze Age was not part of the original three age system, but gained widespread acceptance in European archaeology after its identification by Sir John Evans in the late 1800s.

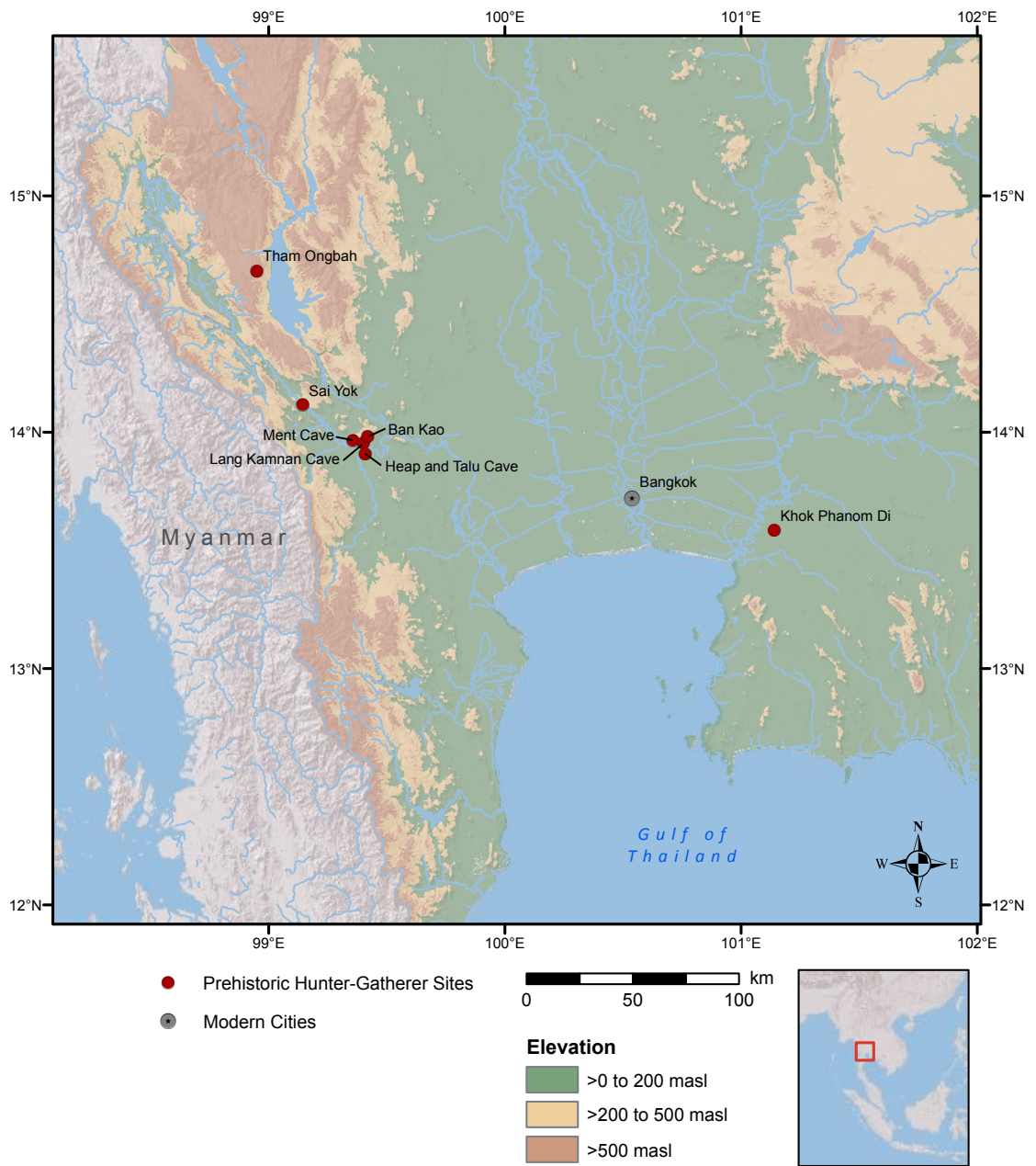


Figure 2.3. Prehistoric hunter-gatherer sites mentioned in the text

The refuse left by the seasonal inhabitants of the caves along the western edge of the Central Valley indicates that they exploited water buffalo, pig, turtles, frogs, land snails, freshwater shellfish, and a wide variety of cervids (Higham 2002:43; Pookajorn 1984; Shoocongdej 2000:26). Remains of the plants they used are less common, but include gourds and nut palms. Shoocongdej (2000:26) concluded that the data from Lang Kamnan indicate that the inhabitants pursued a generalized subsistence strategy in several different environments that ranged from upland forests to grassy areas near the lowland swamps and rivers.

Many of the stone tool assemblages found in the rock shelters in western central Thailand share technological characteristics with those from other sites throughout Southeast Asia. These assemblages feature flaked tools made on river cobbles. The Sumatralith, a type of unifacial discoid, and 'short axes', smaller tools with a convex cutting edge on one end, are among the distinctive artifacts found from Vietnam to Sumatra (Higham 2002; Shoocongdej 1996b). Archaeologists have defined this shared tradition as the "Hoabinhian" after the location of its initial identification in Vietnam (Colani 1927). In addition to the technological features of the river cobble tool industry, the term also refers to a chronological period and cultural group. This broad definition has received criticism from scholars who believe that it does not reflect meaningful social categories or practices in the past (Reynolds 1990; Shoocongdej 2000:34). These critics make valid points; nonetheless, even if the distribution of the Hoabinhian tool technology did not correspond to any socially significant group, its spread throughout Southeast Asia prefigured later sharing of technology, styles of material culture and socio-political practices across this same region.

Between 7500 to 3250 BP the inhabitants of the rock shelters in western central Thailand began using earthenware ceramics, bone and stone beads, and stone axes and adzes (Pookajorn 1984; Shoocongdej 2000:24; Sørensen and Hatting 1967). By the third millennium BCE, the foragers in this area likely began to encounter other groups that practiced agriculture. However, even after groups practicing agriculture spread across central Thailand, hunter gatherers not only continued to occupy the region, but also

began trading for agricultural produce (Anderson 2005; Higham 2002, 2004). While the latest levels in the caves from western Thailand do not contain domesticated rice or other crops, the slightly later open-air hunter gatherer site of Khok Phanom Di has provided evidence that its inhabitants traded for rice from their agricultural neighbors.

Dating to around 2000-1500 BCE, Khok Phanom Di is a cemetery and habitation site located on the eastern side of the Central Valley near the mouth of the Bang Pakong River (Higham 2004; Higham and Bannanurag 1990; Higham and Thosarat 1994). The site's dates place it in the Thai Neolithic period, but the residents appear to have traded for most of their agricultural products. The rivers and mangrove forests around the site provided plentiful marine and freshwater food resources. Excavators recovered dense deposits of marine and freshwater shellfish, as well abundant remains of crabs and fish. These resources were plentiful enough to allow the residents to avoid seasonal migrations and establish a permanent village. They also apparently traded for rice with farming societies that were located farther inland away from the swampy conditions of the mangrove forests. The appearance of granite hoes, shell sickles, and the domesticated dog around the middle of the site's occupation (Phase 4) shows that the residents may have experimented with agriculture during a period when freshwater conditions prevailed. However this experiment appears to have been relatively brief, and the residents resumed trading for agricultural products in the subsequent phases (Higham 2002:80).

Like their earlier cave-dwelling neighbors to the west, the inhabitants of Khok Phanom Di used polished stone adzes and earthenware ceramics. Anvils, burnishing stones and thick deposits of ash reveal that Khok Phanom Di was also home to a flourishing ceramic industry (Higham 2002, 2004). By Phase 4, potter's tools were commonly placed in graves of women, and may indicate that women were the primary potters. In one case, an infant burial contained a miniature version of a potter's anvil and was placed next to an adult female grave. The latter not only included potter's tools and elaborate ceramic vessels, but also had a relatively high number of ornaments (Higham 2002:73). An elaborate male grave is also known from this period, as are

several relatively plain burials. This period also witnessed an increase in exotic imports, such as ivory, slaty shale and *tridacna* shell jewelry. Higham suggests that these objects may have been obtained in exchange for locally made ceramics, which could have raised the prestige of accomplished potters, who, as noted above, appear to have been mostly female (2002:74; 2004:46). The mortuary evidence seems to support such a shift in the status of some women. This shift marks an increase in the importance of achieved status compared to previous phases in the cemetery.

The interaction and trade between the residents of Khok Phanom Di and their agricultural neighbors during the early Neolithic illustrates the diversity of societies in the region at that time. Around 1500 BCE the residents of Khok Phanom Di abandoned their settlement. While their destination and reasons for leaving are unknown, evidence of full-time hunter-gatherer societies on the Central Plain is rare after Khok Phanom Di and suggests that its residents might have moved further inland to adopt the agricultural subsistence practices of their trading partners. It is important to note, however, that other ecological zones in central Thailand, most notably the western hills and mountains, may have been home to foraging societies that interacted with their farmer neighbors for much longer (Shoocongdej 1996a). The prehistory of Thailand holds too many unknowns to discount the possibility that a diverse set of subsistence strategies continued to exist in the region even after the spread of agriculture.

Neolithic

The cultivation of rice, and to a lesser degree millet, provided an important subsistence base for Dvaravati urban centers. Yet, the chronology and processes behind the spread of agriculture in central Thailand continue to be the subject of substantial debate. Wild varieties of rice continue to grow in Thailand and other parts of Southeast Asia, but there is little evidence that indigenous populations ever domesticated them (Higham 2004:46). Instead, it appears that the domesticated rice varieties found across Southeast Asia originated in China's Yangtze River Valley more than 8,000 years ago (Bellwood 2005; Fuller and Qin 2009; Fuller, et al. 2009). From there, domesticated rice spread southward into Southeast Asia following the river systems. With it came a

host of other new cultural practices, including animal husbandry, ceramic styles, spindle whorls, ground stone tools and larger settlements (Bellwood 2004:21).

Domesticates and material culture do not simply spread on their own. In this case, the dispersal of the Neolithic cultural package in Southeast Asia most likely occurred through a combination of a population migration from the Yangtze region and the adoption of their Neolithic technologies and practices by indigenous groups. Evidence from historical linguistics indicates that the Austronesian and Austroasiatic language families likely accompanied the Neolithic cultural complex, providing tenuous support for the theory of direct migration by the speakers of these languages (Bellwood 2004; Higham 2002:109; Pawley 2003). Studies of nuclear and mitochondrial DNA indicate that a migration occurred from Southern China, but also show there was significant mixing with local populations (Bellwood 2004:22; Hurles 2003).

Most scholars date the beginning of the Neolithic in Thailand to the third millennium BCE (Bellwood 2004; Higham 2004; Higham and Thosarat 1998b; Kealhofer and Grave 2008; Rispoli 1997). White (1997:103) has proposed that the Neolithic started as early as the fourth or fifth millennium BCE based on radiocarbon dates from the lowest levels at Ban Chiang (Fig. 2.4). More recently, Higham and Higham (2009) have evaluated numerous radiocarbon samples from Ban Non Wat and concluded that the Neolithic began later than conventionally believed. They argued the Neolithic started in the early second millennium BCE at Ban Non Wat, which they felt is more representative than other sites due to the large area excavated there. The apparent discrepancies between these estimates for the start of the Neolithic in Thailand may actually have been the result of the transition occurring gradually, with different starting dates in different parts of the region. Additional radiocarbon dates collected from systematic excavations at more sites from this period are needed to help refine the dating of this important transition.

A disproportionate amount of the research on the Neolithic in Thailand has focused on the Northeastern region. The excavated material and settlement pattern surveys indicate a spread of Neolithic culture and peoples from the north. The lack of

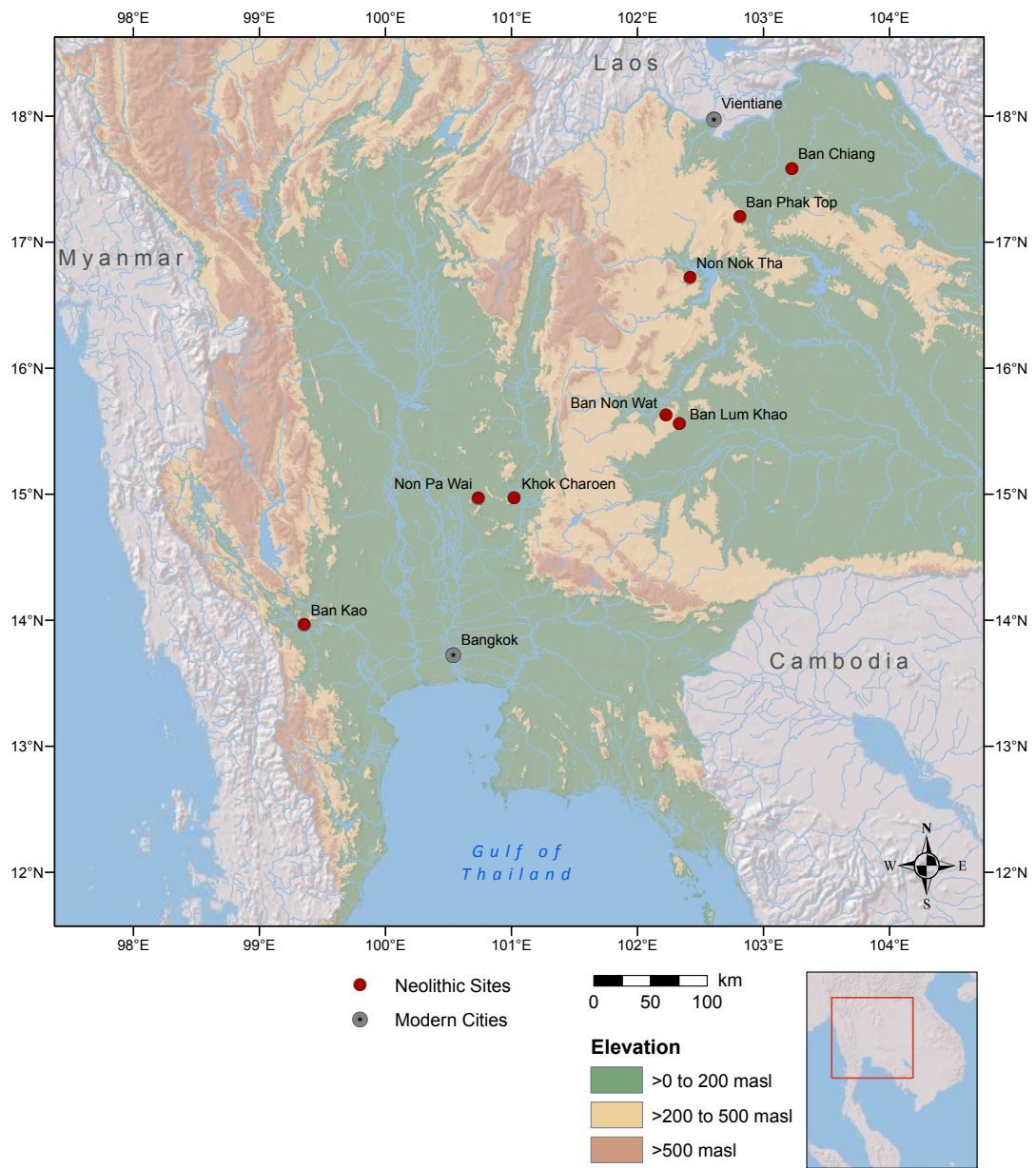


Figure 2.4. Neolithic sites mentioned in the text

a refined chronology in other regions of Thailand leaves open the possibility that future research may make substantial revisions to the timing and pathways of this dispersal. Excavations at sites in the northeast, such as Non Nok Tha, Ban Phak Top, Ban Chiang, Ban Lum Khao and Ban Non Wat, have recovered a distinctive style of incised and impressed ceramics (Bayard 1972; Higham 2002, 2004; Rispoli 1997, 2008; Schauflier 1976). Higham (2004:50) describes these ceramics as an “intrusive” style that resembles the Phung Nguyen ceramics associated with the arrival of the Neolithic complex in Vietnam. Also, like the Neolithic in Vietnam, the intrusive ceramic styles are commonly found in inhumation burials and accompany the spread of this mortuary practice (Higham 2002, 2004).

Studies of settlement patterns in northeastern Thailand have found that Neolithic sites tend to be located on raised areas along the tributaries of the rivers (Higham 2002; Higham, et al. 1982; Kijngam, et al. 1980). These areas are well-suited to the cultivation of wet-rice, but the extent to which Neolithic communities cultivated wet rice versus other dry crops like millet or dry rice continues to be the subject of debate (Higham 2004; Mudar 1995; Weber, et al. 2010; White 1995b). Rice chaff in ceramics from Ban Chiang date to around 2,000 BCE, and provide some of the earliest direct evidence of domesticated rice in Thailand (Kealhofer 2002). As rice farmers established settlements in the lowland areas, they may have encountered communities in the neighboring uplands that had already begun cultivating other crops, such as tubers and dry rice, in these non-wetland areas (Kealhofer 1996, 2002). Paleoenvironmental data from the northeastern (Kealhofer 1996; White 1997) and central regions (Kealhofer and Grave 2008) indicate significant landscape modifications, likely the result of slash and burn agriculture well before the third millennium BCE.

Our understanding of Neolithic life in the Central Valley is even more fragmented due to fewer systematically excavated sites from this period. Fortunately, a few sub-regional systematic surveys provide a glimpse of the Neolithic settlement patterns in the region (Ho 1984; Mudar 1993; Onsuwan Eyre 2006). In the Lam Maleng survey area in Lopburi province, Mudar (1993) noted that Neolithic sites tended to be located in the

uplands, areas poorly suited to wet rice cultivation. The nearby KSTUT survey, directed by Onsuwan Eyre (2006), identified Neolithic sites in the uplands, as well as midland and the lowland areas. The results of these surveys indicate that Neolithic populations in this region pursued a wider range of dry and wet crop cultivation strategies compared to their neighbors to the Northeast. Continued research on this period in both Central Valley and in the Northeast is needed to clarify our understanding of these early agricultural systems.

Possible differences in cultivation strategies aside, the Neolithic material culture found in the Central Valley has strong similarities to that from the Northeast. Although there are few systematically excavated sites from this period in the Central Valley, many of those that have been investigated have produced ceramics and burials that resemble those discussed above. Excavations at the site of Non Pa Wai, just north of Lopburi, produced incised ceramics and inhumation burials considered to be characteristic of the Neolithic culture in the Northeast (Piggot, et al. 1997; Rispoli 1997, 2008). Radiocarbon dates from the site place the start of its Neolithic occupation slightly later than its neighbors to the northeast, providing additional support for a Neolithic dispersal from the north. Also in this part of central Thailand, the site of Kok Charoen has produced similar style Neolithic burials and ceramics (Loofs and Watson 1970; Watson and Loofs 1967). Unfortunately, a lack of radiocarbon dates from the site makes it difficult to establish its chronological relationship to other Neolithic sites. However, Ho's (1984) analysis of the burials excavated by Loofs and Watson (1970) concluded that there were significant differences in wealth between the graves. This glimpse of increasing differences in wealth within the Neolithic communities is interesting, but its full social and political implications remain unclear due to the lack of complementary data from surrounding sites.

Even less is known about Neolithic communities on the western side of the Central Valley. Excavations at the Bang site, located near the modern village of Ban Kao in Kanchanaburi province, produced some of the best documented evidence we have of Neolithic occupations on this side of the Central Valley (Sørensen and Hatting 1967).

Even though the excavators documented 42 inhumation graves, the distinct incised ceramics were not present here. Instead, the ceramic assemblage contains a wide range of vessels, the most notable of which is a carinated bowl with tripod feet. This style of vessel is common in areas south of the site as far as Malaysia (Higham 2002), indicating that the Neolithic populations here may have maintained stronger ties with their southern neighbors than with the Neolithic communities on the other side of the Central Valley. The vessel is also notable for its carinated form. During the Iron Age and Proto-historic periods, carinated vessels became quite common. Some scholars view the use of carinations in Southeast Asian pottery as evidence of the spread of South Asian material culture, but the early occurrence of this feature in these assemblages may indicate that it is an earlier indigenous development.

The differences between the community at the Bang site and the Neolithic populations documented elsewhere in central and northeastern Thailand may also indicate that Neolithic communities were far more diverse than previously thought. The focus on tracking the dispersal of Neolithic technology and material culture from the north may have obscured important aspects of local cultural diversity among farming communities. The variety of environmental zones inhabited by Neolithic groups indicates that they likely pursued several different farming strategies. Discussions of the Neolithic frequently cite the forager community at Khok Phanom Di as evidence of the diversity of forager and farmer subsistence strategies during the Neolithic. However, as research continues in central Thailand, the inland farming societies may prove to be less homogenous as well.

Even if the Neolithic cultures of Thailand pursued a variety of different farming strategies, their dispersal throughout the region marked a significant economic and social transition. The settlements from this period are small (under five hectares) and lack a settlement hierarchy (Higham, et al. 1982; Kijngam, et al. 1980). Nonetheless, this period witnessed increasing differences in wealth that most likely caused new social tensions, and the spread of rice agriculture provided the basis for larger settlements. Over the coming millennia, the ancestors of Thailand's early farmers would have to

adapt to the social problems and opportunities that accompanied these significant changes from life as foragers.

Bronze Age

Between 1500 to 1000 BCE, many communities throughout Southeast Asia acquired the technology to smelt and cast bronze. Unlike European prehistory, a period of widespread copper working did not precede the spread of bronze technology in Southeast Asia. In part, the lack of significant 'Copper Age' in Southeast Asia may be due to the introduction of knowledge about bronze from China; however, it still raises questions about the relevance of the European Three Age System for Southeast Asian prehistory. Whether bronze technology originated in Southeast Asia, China or further west remains unclear (Bayard 1980; Higham 2002, 2004; White 1988). Regardless of the location of its invention, bronze technology spread across Southeast Asia through the exchange networks that had developed during the Neolithic. Bronze Age smiths used the new technology to produce cast objects including, axes, arrowheads, fishhooks, and ornaments. The forms of these objects closely resembled those of similar objects their Neolithic ancestors made using shell, stone, or bone (Higham 2002:118). The introduction of bronze technology to the communities of Southeast Asia did not immediately precipitate dramatic social changes. Both Higham (2002, 2004) and Moore (2007) have noted that the spread of bronze technology had relatively little initial impact on Southeast Asian societies. In most areas, site sizes, settlement patterns and social practices during the Early Bronze Age all show little change from their Late Neolithic predecessors. However, archaeological research during the past two decades has identified a few isolated cases (see below) where there is evidence for incipient social and political hierarchy during the Bronze Age. As systematic research continues on this period, as with the Neolithic, life during the Bronze Age in Southeast Asia will likely prove to have been far more diverse and dynamic than previously believed.

Bronze Age communities in central and northeastern Thailand showed strong continuities with their Neolithic predecessors (Fig. 2.5). Excavations of several cemeteries (e.g., Ban Chiang, Ban Non Wat, Non Pa Wai) documented their continued

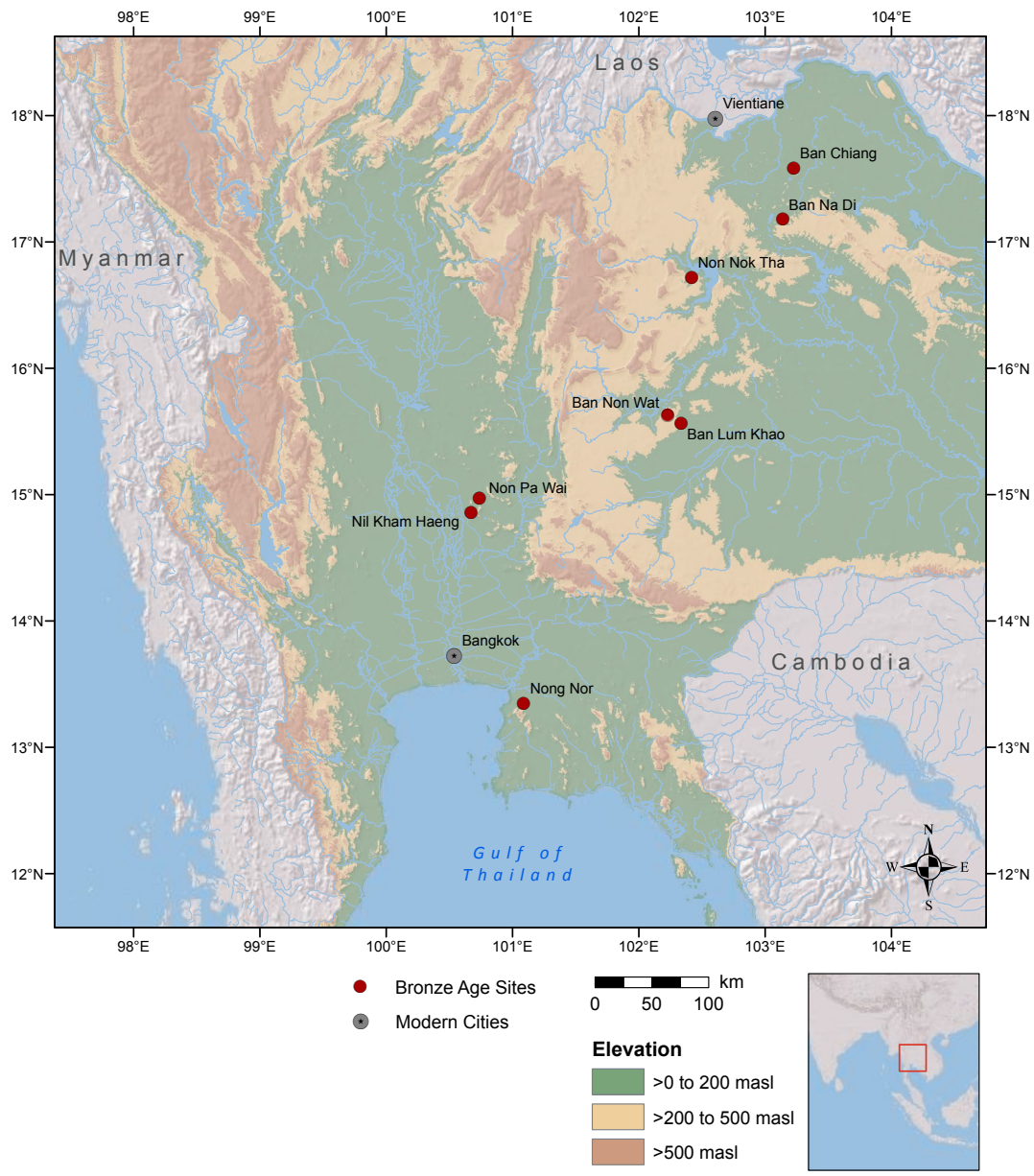


Figure 2.5. Bronze Age sites mentioned in the text

use from the Neolithic through the Bronze Age (Higham 2002, 2004; Higham and Thosarat 1998a). Both domesticated and wild resources still figured prominently in the diets of Bronze Age populations. In the Northeast, the size of settlements continued to be around five hectares with sites located in areas ideally suited for the cultivation of wet rice paddy (Higham 2002; Higham, et al. 1984:167; Higham, et al. 1982). The communities in central Thailand also followed their ancestors' mixed agricultural strategies with settlements in a variety of ecozones from the uplands, suited to dry agriculture, to the lowlands, where wet-rice could be cultivated (Mudar 1993, 1995, 1999; Onsuwan Eyre 2006). Interestingly, it was in the dry upland areas of central Thailand where Mudar (1993) documented some unusual changes in settlement patterns during the Bronze Age. In her surveys of the Lam Maleng Valley, she detected increases in site sizes and a limited site hierarchy between 1500-1000 BCE. Mudar believed these changes might indicate incipient political hierarchy as well. However, after 1000 BCE, before the end of the Bronze Age, the communities in the Lam Maleng Valley abandoned these experiments and returned to smaller undifferentiated communities. Not until the start of the Iron Age, 500 years later, would the Valley again witness these types of social and political developments. At that time, the residents relocated to the lowland areas where the ability to cultivate wet-rice provided a more substantial basis for their expanding communities.

Outside of the Lam Maleng Valley, research on Bronze Age sites and settlement patterns suggests that individual communities were politically autonomous (O'Reilly 2000, 2003; White 1995a; White and Piggot 1996). In the absence of formal political ties, the communities were linked together through extensive trade networks which provided access to exotic trade goods and the ores necessary to produce bronze. As discussed above, the copper and tin ores necessary to produce bronze are both available in Thailand (Fig. 2.2); however they do not co-occur in the same areas and are relatively restricted within the regions where they are found. As a result, the traffic in both of these ores must have been significant in order to support the widespread production

of bronze. Such trade networks functioned during the Neolithic, and the demand for copper and tin ores likely increased the importance of these connections.

Most Bronze Age communities produced their own textiles and ceramics, as evidenced by the distribution of spindle whorls, anvils and burnishing stones (O'Reilly 2000:3). Bronze Age ceramic styles also tend to be highly localized (Wilén 1992:109). Excavations at the sites of Non Pa Wai and Nil Kham Haeng, located in the copper rich Khao Wong Prachan Valley of central Thailand, revealed smelting and domestic debris mixed together throughout the sites (Piggot, et al. 1997). The excavators interpreted this patterning as evidence for independent craft specialists that participated in the community wide focus on metal production. Alternatively, Onsuwan Eyre's (2006:307) KSTUT survey in the eastern side of the Upper Chao Phraya River Valley revealed that large and medium sized Metal Age sites located in the uplands contained evidence for the manufacture of multiple types of specialized products within individual sites.

In addition to the spread of copper and bronze, other exotic objects and materials such as marble, marine shell, carnelian, and fine ceramics began to circulate more widely during the Bronze Age (Higham 2002:57). The increased access to exotic items was correlated with significant increases in the amount of grave goods included in the burials. Excavations at cemeteries such as Non Nok Tha (Bayard 1972, 1980; W.K. Macdonald 1980), Nong Nor (Higham and Thosarat 1998a), Ban Na Di (Higham, et al. 1984), Ban Lum Khao (O'Reilly 1999) and Ban Chiang (Higham 2002:133-134; White 1995a) documented gradations in the amount and quality of grave goods in Bronze Age graves. Assuming that the individuals' mortuary treatment reflected social differences in life, some individuals (including men, women and children) enjoyed slightly greater wealth and status within the community, but these inequalities were relatively minor. Furthermore, there is little evidence that wealthy or elite individuals controlled the production or distribution of resources (O'Reilly 2000:6). Most scholars agree that these communities lacked ascriptive social ranking (Higham 2002, 2004; O'Reilly 1999, 2003; White 1995a), although in their analyses of the cemetery population at Non Nok Tha, Bayard (1972, 1980) and Macdonald (1980) both concluded that this community

showed signs of social ranking based on the differences in grave construction and the number and type of grave goods.

More recently, excavations of the cemetery at Ban Non Wat in northeastern Thailand have documented an interesting exception to the general lack of marked social inequality in Bronze Age mortuary populations (Higham and Higham 2009; Higham and Thosarat 2007). Here, excavators opened a large horizontal exposure (892 sq m) which provided a large sample of Neolithic through Iron Age graves. Most of the Bronze Age burials contained a few ceramic vessels as well as shell and marble ornaments. However, a few individuals received significantly more elaborate mortuary treatment. They were buried with many more ceramic vessels, some that were unusually large in size and others that displayed a particularly fine level of production. The special status burials also included other unusual items such as thousands of shell beads, socketed bronze axes or knives and fine marble bangles (Higham 2004:55). Additionally, these graves were significantly larger than most others in the cemetery. The presence of these burials led Higham to conclude that the community at Ban Non Wat contained a group elite individuals by 1000 BCE that was not characteristic of other sites at this time or historical understandings of Bronze Age social organization. Like the settlement hierarchy in the Lam Maleng Valley, the mortuary evidence from Lam Maleng suggests that Bronze Age social organization was diverse and, in at least a few cases, communities experimented with types of social differentiation that would become far more widespread in the coming millennium.

Iron Age

After 500 BCE, iron objects, and the technology to produce them, spread throughout Southeast Asia, heralding the start of the Iron Age. Like bronze, it is unclear if Southeast Asians developed iron technology independently or acquired it from China or India (Higham 2002:169). Regardless of whether iron technology had a local or foreign origin, the geology of Southeast Asia was well-suited to widespread iron production. Many Iron Age communities had the raw materials necessary for iron production readily available, since iron ore deposits and surface laterite have a

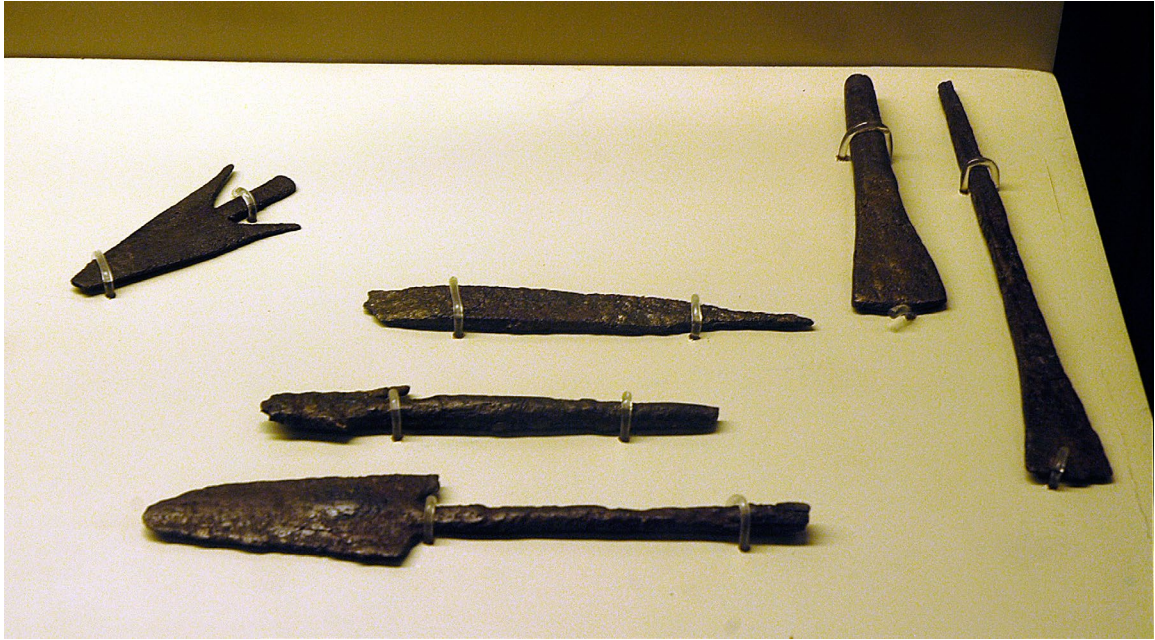


Figure 2.6. Iron weapons from Tham Ongbah (in the U-Thong National Museum)



Figure 2.7. Iron tools from Ban Pong Manao (in the Ban Pong Manao Museum)

much more widespread distribution than the ores required for bronze production (Fig. 2.2; Higham 2004:57). Iron was commonly used to produce agricultural implements and weapons (Figs. 2.6, 2.7; Higham 2002:225). Through such objects, iron played prominent roles in the intensification of agricultural production and warfare during the Iron Age. However, other factors such as increasing contact and trade with societies outside the region also provided Southeast Asians with opportunities to dramatically transform their social relations during the Iron Age. Over the roughly 1000 years of this period, Southeast Asians developed stratified social ranking, more complex political organizations, and settlement hierarchies that included towns with unprecedented population sizes for the region. While the timing and geographic distribution of these changes remain the focus of ongoing research and debate, by the end of the Iron Age the stage had been set for the development of urbanism and dramatic increases in political centralization.

Early Iron Age

Like their Bronze Age predecessors, Iron Age communities in central and northeastern Thailand continued to exhibit significant local variability in material culture (Fig. 2.8). Despite these differences, many of these societies experienced similar economic and demographic changes. They underwent increases in population, expanded their agricultural productivity and developed more specialized craft industries. Surveys in central Thailand have documented population movements to settlements located in the lowlands, with some of these sites becoming significantly larger than their neighbors (Ho 1992; Mudar 1993; Onsuwan Eyre 2006). The location in the lowlands was much better suited to the cultivation of wet-rice, whose higher yield could support a larger population than the dry crops cultivated in the uplands. Several of these settlements (e.g., Chansen, U-Thong) later become prominent Dvaravati towns. In her survey area in the eastern part of the Central Valley, Ho (1984) documented three large sites, roughly 30 km apart, that appeared to have controlled their respective surrounding areas (Higham 2002:223). In the northeast, surveys along the Mun and Chi rivers revealed that settlement density and the sizes of some sites increased significantly

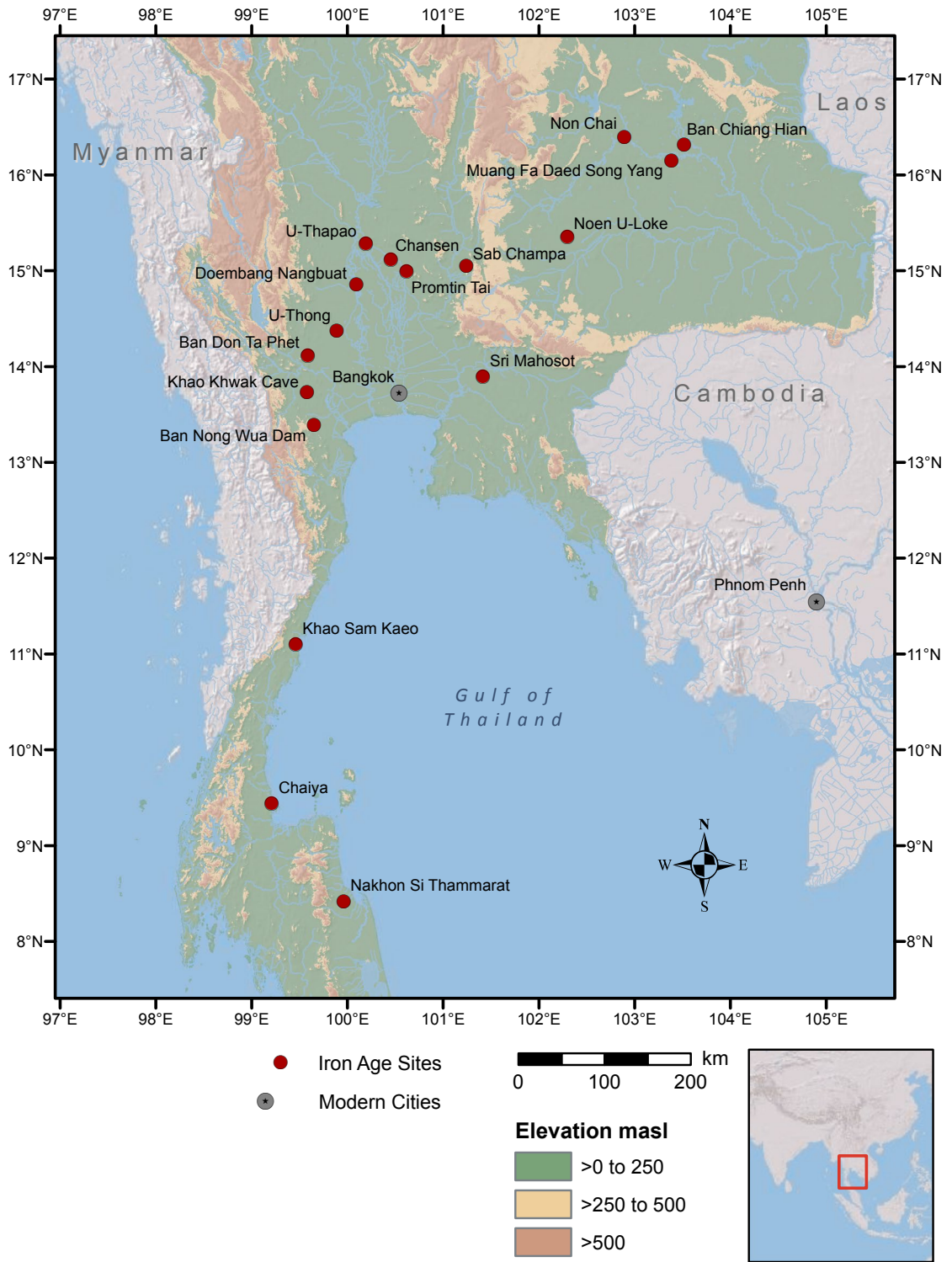


Figure 2.8. Iron Age sites mentioned in the text

compared to Bronze Age settlement patterns (Higham 2002; Moore 1988; Welch 1985). Non Chai and Ban Chiang Hian were around 38 ha in size, making them significantly larger than their Bronze Age predecessors and their contemporaneous neighbors (Higham 2002:187-188). Higham has proposed that these larger settlements served as key centers for the production of salt, iron and specialized crafts as well as important points along exchange networks (Higham 2002:227).

During the Iron Age, the communities of central Thailand had increasing contact and trade relations with members of other societies both within and outside the region. Interaction with South Asians played a particularly important role in the development of religious beliefs, artistic styles and political strategies in central Thailand and elsewhere in Southeast Asia. Chinese merchants also visited the region, although they had less impact on the communities of central Thailand. After 400 BCE, trade between South Asia and South East Asia became increasingly regular (Bellina and Glover 2004). Maritime trade routes across the Bay of Bengal facilitated interaction between the two regions (Ray 1994, 2003). Through these trade networks, communities in Southeast Asia acquired stone and glass beads as well as ceramic and bronze vessels from South Asia (Bellina and Glover 2004:72-78; Rajpitak and Seeley 1979). There is also evidence that local artisans, or in some cases enclaves of South Asian artisans, began to produce several of these objects locally (Bellina 2003; Bellina and Glover 2004).

The goods early Southeast Asian traders sent to South Asia are more difficult to identify. The *Arthaśāstra*, an Indian guide to statecraft finalized sometime around or after the second century CE (Trautmann 1971), noted that Southeast Asia was the source of a type of incense (*Kaleyaka*) and aloe-wood (Ray 1994:87). Unfortunately, direct evidence of trade in organic goods, such as incense, is difficult to identify archaeologically. The rich tin deposits in the Thai-Malay Peninsula and in the Tenasserim Mountain range in central Thailand may have also been of interest to South Asian traders. India has a rich tradition of bronze production, but has relatively few tin deposits. Recent research at the settlement of Khao Sam Kaeo in the Thai-Malay Peninsula has recovered evidence for the production of high-tin bronze ingots, likely

intended for trade to South Asia and other parts of Southeast Asia (Bellina 2006; Murillo-Barroso, et al. 2010). Evidence from the Iron Age cemetery of Ban Don Ta Phet suggests that both trade and high-tin bronze were important to the community interred here as well. The site is located in the foothills of the Tenasserim Mountains, along the route leading to the main pass over these mountains connecting the Central Valley to trade routes with Lower Burma and India. The graves in the cemetery contain a remarkable amount of rare and high quality grave goods, several of which show significant influences (if not direct provenance) from India (Glover 1980, 1990). Some of the most notable of these grave goods are thin walled bowls made of bronze with an extremely high tin content of 19-23% (Higham 2002:218; Rajpitak and Seeley 1979:27). The form and composition of the bowls resemble similar examples from throughout India dating to around the same time (Glover 1998; Rajpitak and Seeley 1979). Scholars disagree over whether the bowls were produced in Southeast Asia and traded to India (Rajpitak and Seeley 1979) or vice versa (Higham 2002).

The high-tin bowls from Ban Don Ta Phet are not the only grave goods that indicate that Iron Age individuals valued Indian material culture. Iron Age consumers throughout Southeast Asia preferred foreign style-beads and pendants made of new materials over the traditional shell and soft-stone ornaments of their ancestors (Bellina 2001; Bellina and Glover 2004; Francis 2002). South Asian style beads made of glass and semiprecious hard stones, such as agate, carnelian and crystal, have been recovered from burials in many parts of Southeast Asia, including central, northeastern and peninsular Thailand. The sophisticated production techniques required to make these beads has a long history of development in South Asia (Francis 2002). Due to the complexity of the production process, the earliest beads found in Southeast Asia were probably produced in South Asia. However, by the early centuries CE some South Asian artisans had resettled to Southeast Asia along the western coast of the Thai–Malay peninsula and possibly in Southern Vietnam to produce the beads closer to their markets (Bellina 2007; Bellina and Glover 2004:73). Studies of trace elements in the stone beads have suggested that these communities used at least some local sources of

stone (Theunissson, et al. 2000). Local Southeast Asian artisans eventually acquired the knowledge to produce South Asian style glass and stone beads; the process by which this knowledge was transmitted is the subject of ongoing research (see Bellina 2003, 2007; Bellina and Glover 2004).

In addition to material culture from South Asia, the Iron Age inhabitants of central Thailand also obtained a few prestige goods from the Dong Son and Sa Huynh cultures in Vietnam. These objects included bronze Dong Son drums and Sa Huynh nephrite, jade and glass ornaments (Figs. 2.9-2.11). It is not clear if these objects arrived in central Thailand through direct trade with the Dong Son and Sa Huynh people, or through middlemen, such as Chinese or Indian merchants. Both groups of objects are extremely rare in Iron Age contexts in central Thailand.

The Sa Huynh ornaments are thought to have been used as earrings and have two distinct forms: a drop-shaped split ring, known as a “lingling-o”; and a horizontal bar with an animal head at both ends suspended by split ring in the middle, referred to as a “bicephalous” pendant (Fig. 2.11; Francis 2002:130; Solheim II 1982-83). They were most commonly made of jade or nephrite, and rarely of blue or green glass. The highest concentration of these ornaments has been found in high status burials in the Sa Huynh heartland of coastal central Vietnam where they were produced (Lam 2009; Reinecke and Le 2000); isolated examples have been recovered throughout Southeast Asia as well (Francis 2002:130-131; Higham 2002:182). In central Thailand, at least two examples of the bicephalous pendants have been found: one in a burial at Ban Don Ta Phet (Glover 1990) and another in an unknown context at U-Thong (Higham 2002:182; Saraya 1999:72).⁴ Further south in the Thai-Malay peninsula, a stone lingling-o pendant was reportedly unearthed by local villagers at Kao Sam Kaeo prior to systematic excavation at the site (Bellina and Silapanth 2006:383). By the Dvaravati period, artisans at several

⁴ Kanjanajuntorn (2006:142) listed three bicephalous pendants from Central Thailand: one from Ban Don Ta Phet, one from Don Ma Kak, and one from an unknown site. The pendant from Don Ma Kak is in a private collection and was recovered from an unknown context at the site. This pendant may be the same as the one Higham listed as from U-Thong. Despite the vague provenience, the pendant reported by Kanjanajuntorn is of interest since it is made of dark green glass. Bicephalous pendants made of this material are rare within Vietnam and previously unknown outside of the country.

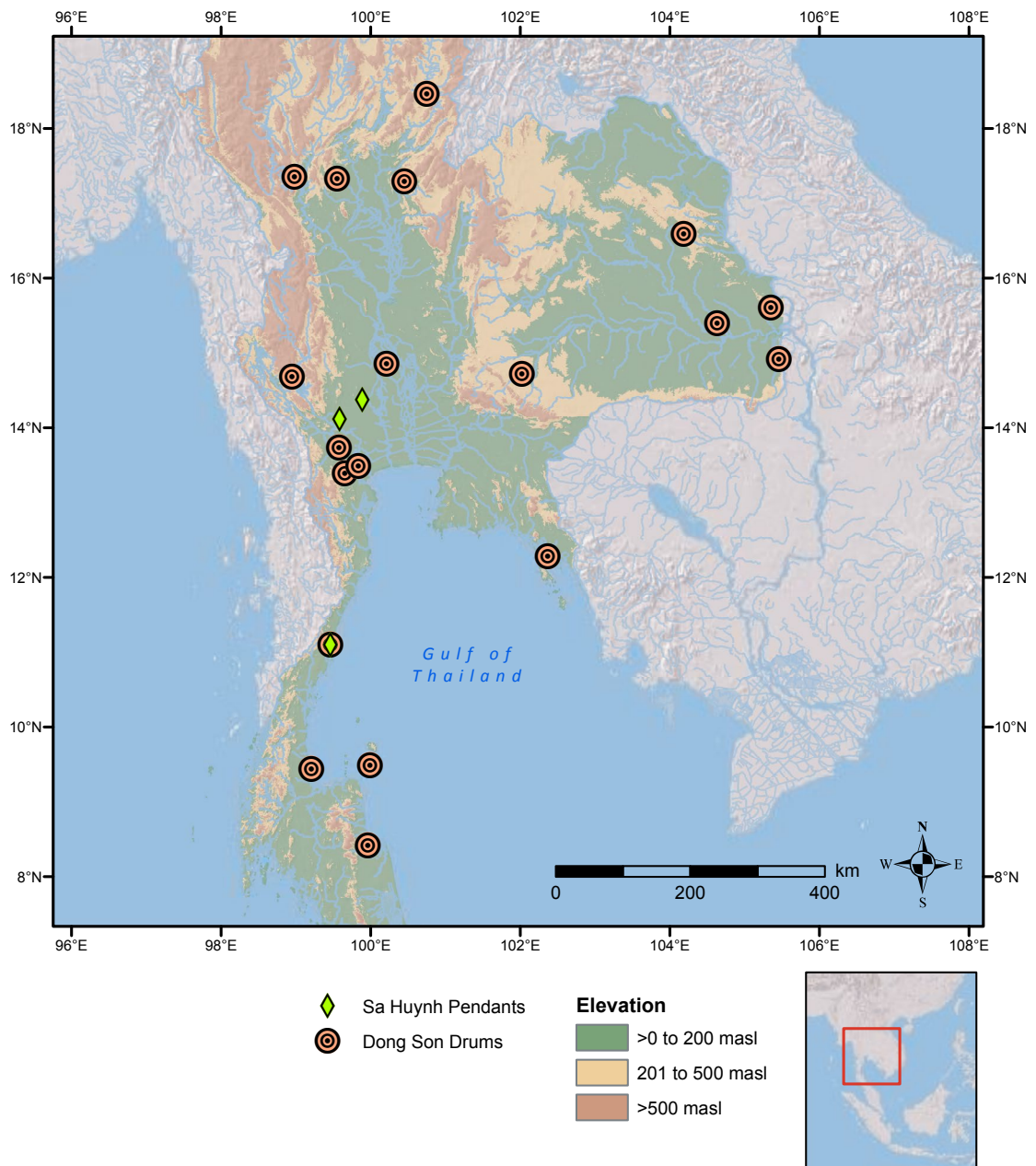


Figure 2.9. Distribution of Dong Son drums and Sa Huynh ornaments in Thailand (adapted from Imamura 2010)



Figure 2.10. Dvaravati period metal earrings or pendants from Chansen (in the Chansen Museum). They resemble Iron Age stone ling ling-o style pendants from Vietnam.

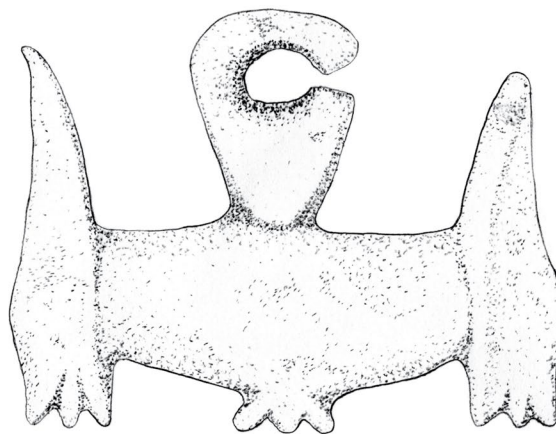


Figure 2.11. Nephrite Sa Huynh-style bicephalous pendant from Ban Don Ta Phet (drawn by author after Bellina and Glover 2004: Fig. 4.3)

sites in central Thailand produced metal-mold made earrings whose forms clearly have their roots in the stone lingling-o style ornaments from Vietnam (Fig. 2.12; Bronson 1976; Indrawooth 1999:pl. 62; Saraya 1999:72-73).

Iron Age populations in central and peninsular Thailand also obtained bronze Dong Son kettledrums (type Heger I) from Vietnam. The Dong Son culture developed in the Red River Valley to the north of the Sa Huynh culture. Their highly accomplished bronze smith's used lost wax casting to create a variety of sizes of kettledrums, the largest weighing as much as 72 kg (Higham 2002:175). Images of animals, daily life, ceremonies, warfare and detailed boats adorn the exterior of the drums. While the highest concentration of Dong Son style drums is in the Red River Valley, they have been found widely distributed in island and mainland Southeast Asia, reaching as far as Southern China, Indonesia and Thailand. The cultural processes leading to their distribution are not entirely understood. Scholars have suggested that the drums served as sacred objects in a regional shamanistic sun cult (Wales 1957) or as regalia for local elites who sought prestige through membership in regional politico-religious networks (Loofs 1991). However, objects frequently change their social meanings or significance as they cross cultural boundaries (Rogers 1990; Yao 2008). In reality, each of the groups that encountered the Dong Son drums would have perceived and used the drums differently based on their own set of cultural beliefs and goals.

Dong Son drums have been found in several locations in northeastern, peninsular and central Thailand (Fig. 2.9). The Dong Son



Figure 2.12. Dong Son drum from Ku Bua (in the Ratchaburi National Museum)

drums found in the northeast are clustered around the confluence of the Mekong and Mun Rivers. The groups in this region appear to have obtained their drums through riverine exchange networks running to the north, unlike their neighbors in the central and peninsular regions who acquired similar drums through maritime routes (Higham and Thosarat 1998b:143; Nitta 1994). The peninsular site of Khao Sam Kaeo, mentioned above for its extensive bead and bronze production, contained three Dong Son drums (Bellina and Silapanth 2006:383). All three drums came from the site's first hill; however they were not discovered during the recent systematic excavations and little additional information is available about their context. South of Khao Sam Kaeo, a few other drums have been reported around Chaiya and Nakhon Si Thammarat (Jirawattana 2003) and at several sites in peninsular Malaysia (Bellina and Silapanth 2006:383; Bernet Kempers 1988; Ray 1994). Further north, several Dong Son drums have been found along the western side of the Central Valley. In Ratchaburi Province, the sites of Ban Nong Wua Dam, Khao Khwak Cave and Ku Bua each contained the remains of a drum (Kanjanajuntorn 2006:131). The discovery of a drum at Ku Bua is especially significant due to the fact that the site later developed into a prominent moated town in the Dvaravati period. Unfortunately, once again there is no information on the context in which the drum was recovered apart from being found in Ku Bua. Further north along the Chao Phraya River, Suchitta (1985) recovered fragments of Dong Son style drums at the site of Doembang Nangbuat, which like Ku Bua also has Dvaravati period occupation (Higham 1989:207).

Some of the only information on the intrasite context of Dong Son drums comes from the cemetery of Tham Ongbah located in the Tenasserim Mountains along the Kwae Yai River and in close proximity to substantial lead ore deposits. Even though most of the cemetery had been heavily looted, Sørensen (1979, 1988) was able to collect information about the more than 90 wooden boat-shaped coffins (Fig. 2.13) known from the site by interviewing the local villagers who had worked for the looters. Radiocarbon dating of a sample of wood from one of the coffins provided a date range of 403 BCE – 25 CE (Higham and Thosarat 1998b:142). According to the workmen, the coffins



Figure 2.13. Ban Kao boat coffins (in the Ban Kao National Museum)

contained numerous ornaments made of bronze, glass and stone, as well as iron tools and weapons. Fortunately, the cave also contained several burials not in coffins, which the looters did not disturb (Higham 2002:220). Sørensen excavated ten of these burials and found that they contained a few ornaments and iron tools and weapons, which reportedly resembled those from the looted graves (Fig. 2.6). He believed these graves to be contemporaneous with the wooden coffin burials, and attributed the differences in burial treatments and amount of grave goods to differences in wealth and status within the community. Sørensen also recovered a group of six bronze Dong Son drums. The drums were placed in pairs either in or next to the coffins burials, which Sørensen believed to contain higher status individuals. Despite the limitations of the data from this site, the inclusion of the relatively large number of Dong Son drums as part of the rich grave offerings at Tham Ongbah suggests that they played an important role in the display of prestige in this community. Higham and Tosarat (1998b:143) emphasized that

the desire and ability of emerging Iron Age elites in Thailand to acquire Dong Son drums, and then effectively destroy them through burial as grave goods, is indicative of the amount of influence and wealth they had accumulated by this time.

Even though the sample size of stone Sa Huynh ornaments and Dong Son drums from Iron Age Thailand is extremely small, their distribution highlights the growing importance of long distance trade networks. Most of the sites where these objects have been found are ideally situated at meeting points between inland river networks and maritime trade routes. Enterprising inhabitants of sites such as U-thong and Ku Bua likely gained influence and wealth through their ability to control interaction and the flow of goods between foreign merchants and inland groups. The exceptions to this pattern (i.e., Ban Don Ta Phet and Tham Ongbah) are located along the key overland route crossing the Tenasserim range to the Bay of Bengal, and near rich mineral deposits likely coveted by foreign merchants. In a study of the distribution of foreign prestige goods in western central Thailand, Kanjanajuntorn (2006:145-147) noted a consistent distance of 30-40 km between the Iron Age sites where exotic prestige goods, such as Sa Huynh pendants and Dong Son drums, have been found in this region. She interpreted the pattern to indicate the development of several centers that controlled similar sized territories. Interestingly, the distance between the primary sites identified by Kanjanajuntorn matches the distance between the Iron Age centers documented by Ho (1984) in her surveys in the eastern side of the Central Valley (see above). The territories identified by Kanjanajuntorn also contained minor settlements whose inhabitants evidently had access to some of the more common types of trade goods (e.g., glass beads). The area around U-Thong is an exception to this pattern, as inhabitants of both U-Thong and its smaller satellite communities had access to rare prestige goods. This distribution may indicate that the settlements in the U-Thong area played a more prominent role in long distance trade, and as a result enjoyed a higher overall level of wealth, at both the primary and satellite communities.

The results of Kanjanajuntorn's (2006) study provided some insights into the importance of prestige goods in the increasing centralization of political authority in

western central Thailand during the Iron Age. The patterns she identified suggest that rarer prestige goods such as Sa Huynh ornaments and Dong Son drums provided important symbols of wealth and prestige for elites at the central sites, who in turn used gifts of less valuable objects, such as beads, to solidify alliances with leaders in the smaller surrounding villages. Even though the number of prestige goods the study is based on is relatively small, they reinforce evidence of emerging social stratification seen in some Iron Age cemeteries. As mentioned above, Sørensen (1979, 1988) interpreted the structure of the cemetery at Tham Ongbah to contain at least two distinct groups separated by significant differences in wealth. At Ban Don Ta Phet Glover (1990) found that a few graves had rare objects such as the Sa Huynh pendant and a carnelian lion. There was also a significant range in the number of beads (two to several hundred), iron implements and bronze objects included in individual burials. However, the burials with abundant beads did not always have numerous metal objects (Glover 1989:19). Taken as a whole, the graves at Ban Don Ta Phet have a level of wealth that far surpasses any other Iron Age cemetery in central Thailand. They are also encircled by a moat and ditch, which is an unusual feature for Iron Age cemeteries. For these reasons, it may have been an elite burial ground rather than a cemetery containing a cross-section of the entire population.

In contrast, the cemetery at the settlement of Noen U-Loke provides a valuable sample of the range of mortuary practices within a single community. Noen U-Loke is located in the Mun Valley of northeastern Thailand and is only 3 km from the site of Ban Non Wat. There is minor chronological overlap between the sites in the late Bronze Age and early Iron Age, but after c. 450-300 BCE Ban Non Wat declined with the rise of Noen U-Loke (Higham and Higham 2009:137; Higham, et al. 2007). Excavations at the cemetery at Noen U-Loke documented one late Bronze Age burial and 125 Iron Age burials (Higham 2002, 2004; Higham, et al. 2007). The Iron Age burials dated to four successive archaeological phases (M2-M5) from c. 250 BCE to 450 CE.⁵ One of the graves from the earliest Iron Age phase (M2) contains a male whose quantity and quality

⁵ Note: Phase M1 consists of a single nondescript burial which Higham identified as Bronze Age.

of grave goods set him apart from other individuals interred in this phase, and may indicate that he held an important leadership role in the community (Higham 2002:197). The following phase (M3) included burials with the earliest agate and glass ornaments, indicating the community's expanding access to exotic trade goods. During this phase, the community also started to fill graves with rice. As population sizes increased during the Iron Age, the symbolic and economic importance of rice likely increased, as reflected in this new mortuary practice. It is notable that after this evidence for the increasing importance of rice and the trade in exotic objects, the cemetery's next phase (M4) revealed pronounced differences in social status and wealth within the community. Phase M4 contained four clusters of burials, each of which contained male and female adults, children and infants. Within each cluster there was one individual whose rich grave goods set them apart from the rest of the cluster (Higham 2004:62). These high status individuals included adult males, and at least one adult female. The cemetery also included an infant whose numerous ornaments and high quality pottery vessels suggest ascribed high status (Higham 2002:203).

Late Iron Age

The excavators (Higham 2004:63; Higham, et al. 2007) dated Phase M4 at Noen U-Loke to between 100 and 300 CE, which places it in the second half of the Iron Age. This period witnessed the intensification of agriculture and a significant wave of newly founded settlements (Higham 2002; Moore 1988; Mudar 1993; Welch and McNeill 1991). Higham (2004:63) noted that the dramatic social changes documented in Phase M4 at Noen U-Loke illustrate the increasing social stratification that occurred in many communities across central and northeastern Thailand during that time. As one of the best documented Iron Age sites in Thailand, Noen U-Loke provides valuable insights into the factors that contributed to these changes. Higham (2004:63) identified the growth in trade networks, agricultural production and salt production as providing increased amounts of wealth that allowed the "swift rise of leaders" in Phase M4 at Noen U-Loke. Not all sites specialized in salt production; in addition to the specialized production of high-tin bronze bowls and beads discussed above (Bellina and Glover 2004), the

burnished fine black ware ceramics found in the Mun Valley at this time suggest the development of increasingly specialized ceramic production as well (Higham 2002:227). Regardless of the particular activity, community level specialization provided more lucrative opportunities for emerging elites to facilitate and profit from inter-community exchange. Coupled with increased agricultural production, the trade in both exotic and locally produced specialty products presented ample opportunities for the rapid rise of political elites in the second half of the Iron Age.

The tenuous nature of the power held by late Iron Age elites is apparent in the final phase (M5) at Noen U-Loke. Dating to roughly 300-400 CE, the individuals in this phase did not enjoy the same level of wealth as their predecessors. The variety and quantity of grave goods markedly decreased, graves were no longer placed in clusters, and rice was no longer used as a grave offering. Perhaps most revealing of the changing political climate, one young male from this phase died from an iron arrowhead in his spine (Higham 2002:63; 2004:203-204). These changes suggest that the community's fortunes declined nearly as fast as they rose. The reasons for the decline of Noen U-Loke are not clear. The clearing of forests to meet the growing demand for agricultural land or charcoal for iron smelting may have increased the flow of silt into the nearby river and caused it to shift away from the settlement (Higham 2004:63). Additionally, competition and even outright conflict with neighboring communities may have been a significant factor. In the second half of the Iron Age, the range and quantity of iron weapons increased, suggesting escalating violent conflict or at least the threat thereof. In particular, iron arrowheads, like the one found in the young man's spine in the last phase at Noen U-Loke, became much more common (Higham 2004:63).

A more controversial form of evidence for increased conflict in the mid to late Iron Age is the widespread construction of irregular ditches and earthworks encircling many communities in northeastern Thailand (Fig. 2.14). When Williams-Hunt (1950) first publicized these features he referred to them variously as "irregular earthworks", "moats" and "ramparts". It's not clear if he intended to do so, but his use of the latter two terms implied a military function, and the use of these terms is now common

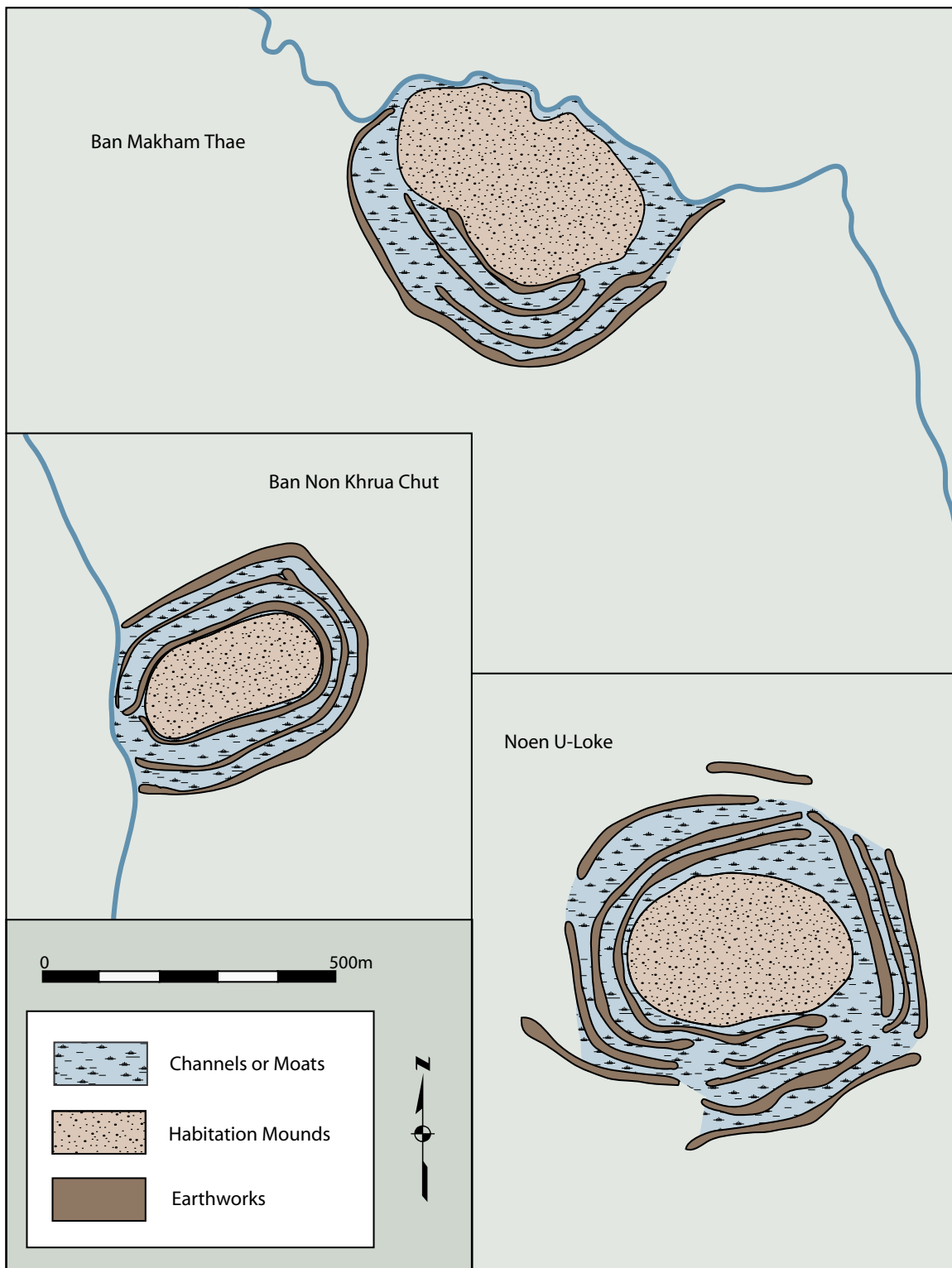


Figure 2.14. Plan Views of Iron Age moated sites in northeast Thailand drawn from SPOT satellite images (see McGrath and Boyd 2001 for radiocarbon dates and trench sections of the earthwork enclosures for these sites)

(Boyd, Higham, et al. 1999:676; McGrath and Boyd 2001:349). Subsequent research on the constructions and the sites they enclosed led archaeologists to propose that the ditches and earthworks had several functions. In addition to military defense, these included irrigation, flood control and the supply of drinking water and aquatic food resources (Boyd, McGrath, et al. 1999; Higham 2002; Moore 1988; Vallibhotama 1984). The increasing population sizes of Iron Age communities meant that existing community infrastructure may have had difficulty meeting the new demands on the supply of irrigation and drinking water during the dry season that existing infrastructure. In some cases, the changing river patterns resulting from agricultural intensification and deforestation would have made access to water even more difficult.

The construction of the earthworks was not a small undertaking. The Iron Age settlements encircled by earthworks reached up to 62 ha in size (e.g., Ban Phra Put)⁶ and typically had several concentric moats and ramparts surrounding them (Moore 1988:81). Chataratiyakarn (1984) estimated that it took 500 adults one year to dig the moats and reservoirs at the settlement of Ban Chiang Hian (37.8 ha). The execution of such large scale earthworks required innovations in community organization and leadership. Initially, scholars assumed that the construction of the earthworks began with the start of the Iron Age. Recent geoarchaeological investigations, which included the systematic collection of AMS dates from several moated sites in northeastern Thailand, revealed that the construction of the earthworks actually occurred in the late Iron Age, between 100 and 500 CE (McGrath and Boyd 2001). These revised dates show that the beginning of earthwork construction coincided with the emergence of community leaders and social stratification at Noen U-Loke (Phase M4). Organizing community participation in the construction of earthworks may have enabled emerging elites to demonstrate their authority and competence. Since many Iron Age settlements were much larger than the villages of the preceding periods, the traditional kinship relations that structured life in smaller villages may have become less effective in the growing settlements.

⁶ Moore (1988:81) listed Ban Muang Fai (68 ha) as the largest site in her Mun River study area; however, based on the site's plan, she classified it as a Type-3 site, which roughly dated to the Dvaravati period, but may have been settled earlier. Ban Phra Put is a Type-2 site which she felt was clearly Iron Age.

Participation in earthwork construction may have provided an additional means to foster community identity and cohesion. Alternatively, the evidence for increased warfare also coincides with the construction of the earthworks. Captives acquired in battle or raids may have provided an excellent labor force to build these large public works.

Central Thailand also contains settlements with moats and ramparts, but the chronology of earthwork construction in this region is less secure. Many of the moated sites have Dvaravati period occupation, and earthwork enclosure construction was clearly an important activity during this period. Several of these sites (e.g., Chansen, Nakhon Pathom, Promptin Tai, Sab Champa, U-Thong, U-Taphao) also have evidence of occupation dating to the Iron Age (Bronson 1976; Khunsong, et al. 2011; Lertcharnrit 2006; Lertrit 2004; Loofs 1970; Veerapan 1979; Wilaikeo 1991a, b). Unfortunately, it is unclear when the construction of the earthwork enclosures began at these sites. Geoarchaeological research on the moats and ramparts is needed to help clarify the chronology of these features and their role in the development of social complexity and intra-community organization in this region.

By the second and third centuries CE, there is clear evidence for the indigenous development of political centralization and social ranking in central and northeastern Thailand. Two- or three-tiered settlement hierarchies, pronounced differences in mortuary wealth and large-scale earthworks all point to the emergence of stratified societies in several parts of the region. Higham (2002:227) has argued that a combination of factors led to these developments. Innovations in iron agricultural tools enabled significant increases in rice production and population growth. Those settlements that were ideally located to control prime agricultural land, or salt production, iron production, or maritime trade contacts, held a significant advantage and were able to support more residents than other sites. Access to a growing range of imported exotic prestige objects provided the emerging elites at these settlements with symbols of their authority and gifts for strengthening alliances (Higham 2002:227). This model accurately depicts what was primarily an indigenous process of cultural change, while still acknowledging the important roles of contact and foreign goods. It

does not explicitly recognize the significant problems that would have faced the growing communities and their leaders as traditional kinship-based mechanisms for adjudicating disputes and fostering unity in villages became less effective in the much larger Iron Age centers. As mentioned above, the organization and construction of earthworks may have provided an important new means for creating community identity and leaders.

Finally, while it is possible to recognize general trends in political and social change that occurred across much of central and northeastern Thailand during the late Iron Age, it is important to note that a high level of cultural heterogeneity remained between the small societies in these regions. In the following centuries, these differences would decrease as a shared set of material culture spread throughout the region.

“Indianization” and increasing inter-regional interaction

After the second century CE, contact between the small territorial polities of central Thailand and the mature states of South Asia and China became increasingly regular (Bellina and Glover 2004; Glover 1989). The growing number of foreigners visiting the region included not only merchants and artisans, but also Hindu and Buddhist religious specialists. A Buddhist text indicates that the Mauryan Emperor Ashoka sent Buddhist missionaries from India to Southeast Asia in the third century BCE (Glover 1998). Regardless if the text is based on legend or fact, there were likely numerous other less publicized Buddhist and Hindu religious specialists who travelled to the region (Indrawooth 2004:125; Ray 1994). Through contact with South Asian merchants and religious specialists, members of the Iron Age societies of central Thailand gained knowledge of South Asian religious, political and material culture. Throughout the first half of the first millennium CE, Southeast Asians adopted many of these beliefs and practices, in what scholars often refer to as the “Indianization” of Southeast Asia (Bellina and Glover 2004; Coedès 1968; Wheatley 1983). Early studies of this process viewed it as the imposition of Indian civilization on the region (Krom 1926) or even as the result of direct colonization (Majumdar 1952). Most subsequent scholars have supported a more nuanced analysis of the Indianization process, and have argued

that local leaders selectively adopted the political and religious concepts that would advance their own goals (e.g., Mabbett 1977; Wheatley 1983; Wolters 1982).

Still, the timing and process of Indianization are not well-understood. It is difficult to document the initial adoption of ideological practices in the absence of written documents. Instead, a few imported objects from the late prehistoric Thailand are frequently cited as evidence for the spread of South Asian religious and cultural practices. These include (Indrawooth 1999; 2004:123-125):

- 1) an ivory comb dating from Phase II at Chansen (third century CE) whose form and engraved auspicious symbols resemble examples from fourth century BCE to first century CE India (Bronson 1976; Bronson and Dales 1972);
- 2) carnelian seals and intaglios with images of boats or text in Brahmi or Karoshti (Bellina and Glover 2004:71; Ray 2003);
- 3) a copper coin issued by the Roman emperor Victorinus (268 -70 CE) found at U-Thong (Bellina and Glover 2004; Indrawooth 2004);
- 4) Silver and copper coins attributed to the Satavahanas (circa second century BCE to third century CE) or possibly the Pallavas (sixth to tenth century CE);
- 5) Indian style ivory or bone dice found in Lopburi Province; such objects were associated with gambling and royal divination ceremonies in India (Indrawooth 1999, 2004).

All of these objects suggest increasing contact with South Asian societies. However, the limited contextual information for most of them makes it difficult to determine if they arrived in Southeast Asia during the Iron Age or were traded centuries later as antiques or curiosities. More significantly, it is nearly impossible to determine if the objects' contexts of use and cultural significance in Thailand was the same as in India. Until additional examples of these types of objects are recovered in systematic excavations, they will remain a problematic indicator of the adoption of South Asian cultural practices or beliefs by Iron Age societies.

Hindu and Buddhist structures provide a second, potentially more revealing, line of evidence for evaluating the adaptation of South Asian ideologies in central Thailand.

Both Hinduism and Buddhism played important roles in the religious and political activities in the Southeast Asian states that emerged from the small territorial polities of the late Iron Age. South Asian concepts of kingship are closely tied to Buddhist and Hindu concepts. These belief systems justified the status of leaders as a reincarnation of the Hindu god Shiva, as Buddhist saints (*bodhisattvas*), or as a universal world sustaining king known as a *Chakravartin* (see Chapter 3). While these concepts were clearly used by later Southeast Asian kings, the timing of their introduction and first use is unclear. Few of the early religious monuments in Thailand have been dated through absolute methods. Art historians and archaeologists have dated early religious sculpture and monuments in Thailand through comparison with art and architectural styles in South Asia (e.g., Boisselier 1968; Dupont 1959). The inaccuracies of this dating technique have recently been highlighted by a growing number of radiocarbon dates for the Dvaravati period (Barram and Glover 2008; see Chapter 3 and Appendix A). Based on the comparative estimates, one of the earliest Buddhist monuments in Thailand is a structure at U-Thong, whose terracotta decorations resemble the Amaravati style from India, and suggest a date between the third and fourth centuries CE (Boisselier 1965b, 1968; Indrawooth 2004:138). Confirmation of these dates through absolute dating of the structure would make a significant contribution to our understanding of the role of Buddhism as a religious and political ideology in the development of complex polities in the region.

Finally, it is important to recognize the potential significance of contact with societies from China. By at least 100 BCE, the Chinese court sent maritime-based missions abroad in search of exotic goods to trade for silk and gold (Higham and Thosarat 1998b:175). The state of Wu, founded in 222 CE in southeastern China, did not have access to the Silk Road. According to official court histories, the Wu emperor was forced to send exploratory missions in search of a maritime route to India. This mission stopped in Southeast Asia and provides some of the oldest descriptions of the region (Higham 2002:234; Wolters 1982). The impact of these early interactions with Chinese states on Iron Age societies in Southeast Asia are poorly understood, and often

overshadowed by scholars' long-standing interest in Indian influences. However, Chinese influences on the development of Buddhism, urbanism and political organization in Southeast Asia may have been more subtle, and it is important not to discount them. Hopefully future archaeological and art historical research will provide information to allow more thorough examination of the nature of these influences.

Summary

After examining the environmental and cultural changes that took place in prehistoric Thailand, it becomes clear that the urbanization and political centralization that took place in the succeeding Dvaravati period emerged out of a long history of indigenous developments. Foreign influences contributed to these changes-- perhaps most dramatically with the arrival of domesticates and greater sedentism as part of the Neolithic package. However, the residents of central and northeastern Thailand adapted these foreign concepts and technologies to the environmental and cultural contexts of their regions, and continued to maintain relatively localized material culture traditions despite similarities in technology. With the spread of bronze technology, the uneven distribution of metallurgical ores meant that some communities found themselves in ideal locations to profit from trade networks. Enterprising individuals within these communities also had the opportunity to accumulate increasing greater wealth and influence; however, these positions of privileged status were highly unstable.

During the Iron Age, a more permanent class of elites clearly emerged with political influence that extended beyond their own community to a few of their smaller neighbors. The ability to take advantage of differences in natural resources continued to play an important role in a given community's success. In particular, the hydrology of central Thailand strongly influenced inter-community inequality during this period. Communities located with access to river networks and the coast acquired substantial wealth and influence as intermediaries in long-distance trade. Those communities that produced specialized crafts, such as iron implements, ornaments or ceramics also greatly profited from these interactions. Differences in hydrology and soils also meant that settlements located in lowland riverine areas, with their access to water for irrigation

and land suited to high yield crops, could support much larger populations compared to their upland neighbors. In order to fully take advantage of these resources, the communities needed to build earthworks to channel water and protect against flooding. Planning the construction of these earthworks, as well as coordinating the labor and resources necessary to build them was a significant undertaking. Directing these efforts provided an important opportunity for community leaders to demonstrate their influence and authority.

Emerging leaders also expanded their authority and network of alliances through the presentation of gifts, often exotic imports, to potential supporters. Through these exchanges, Late Iron Age elites began to foster an identity that incorporated styles of material culture, honorifics, and religious ideologies from South Asia. Non-elites likely emulated elements of the new culture as means of increasing their own status, but also as part of their development of a new identity that forged social bonds within a community whose expanding population likely tested the limits of kinship for maintaining order and unity. Without elites who sought new types of political and religious legitimization, or growing communities who needed cultural and religious ties to unite them in the absence of strong kinship, South Asian culture may have had far less of an impact on the societies of central and northeastern Thailand. The spread of South Asian culture in these regions was therefore more of a result than a cause of the social transformations taking place in Late Iron Age society.

The political centralization, settlement growth and adaptation of South Asian culture underway in the Late Iron Age all continued and intensified during the Dvaravati period. As part of these changes, the relatively localized differences in material culture of Late Iron Age communities diminished with the emergence of shared ceramic styles, settlement plans, art styles and religious practices. These similarities helped to define new cultural and urban identities among members of the Dvaravati culture, and are the focus of the next two chapters.

It is important to remember that discussions of the Dvaravati period tend to focus on the emergence of similar cultural practices that have largely been documented

through the study of the walled and moated towns and cities. This focus overlooks the likelihood that the hinterlands of these settlements were home to groups of people that did not identify with Dvaravati cultural practices and were only loosely integrated into the Dvaravati political and economic systems. These groups were probably diverse and maintained forms of social organization that resembled many of the societies discussed in this chapter, from groups of hunter-gatherers to the small territorial polities of the Late Iron Age. I do not mean to suggest that the groups inhabiting the Dvaravati hinterland were prehistoric holdovers. They too would have been affected by the urbanization taking place among their Dvaravati neighbors. Demand from urban residents for ores, stone and wild forest products from the upland regions, likely caused some of these groups to modify their economic strategies to include the collection of these resources for trade. Therefore, even though these groups were not urban residents or the direct subjects of states, they would have still been affected by the dramatic social transformations that occurred among many of their neighbors during the Dvaravati period.

CHAPTER 3

The Dvaravati Culture

By the first centuries CE, northeastern and central Thailand contained a patchwork of small territorial polities centered on communities whose size and influence surpassed their neighbors. The leaders of these communities sought to expand and maintain their territories through a combination of warfare and the presentation of gifts to lesser elites in satellite communities. More frequent interaction with South Asian traders, artisans, and religious specialists increased awareness of Hindu and Buddhist belief systems that included avenues for the divine sanction or status of leaders. South Asian ideologies spread throughout the region, often crossing the boundaries of relatively localized material culture and mortuary traditions. The broad acceptance of these beliefs and practices may have helped pave the way for the spread of a shared material culture and greater political integration in central Thailand after the fourth century CE.

These cultural and social changes mark the emergence of an archaeological culture known as the Dvaravati, which dates to approximately the fifth to eleventh centuries CE. Archaeological, art historical and philological research continue to make significant contributions to our understandings of the chronology and socio-political organization of this culture. However, the use of the term “Dvaravati” to define an archaeological culture, art style, one or more political entities and chronological period, each with different geographical and chronological limits, has confused cross-disciplinary discussions of these phenomena. As an anthropological archaeologist, I use the term to describe an archaeological culture, defined by a suite of material culture and cultural practices, including the production of Dvaravati-style sculpture. I conceive of the Dvaravati period as the span of time when communities in central and northeastern

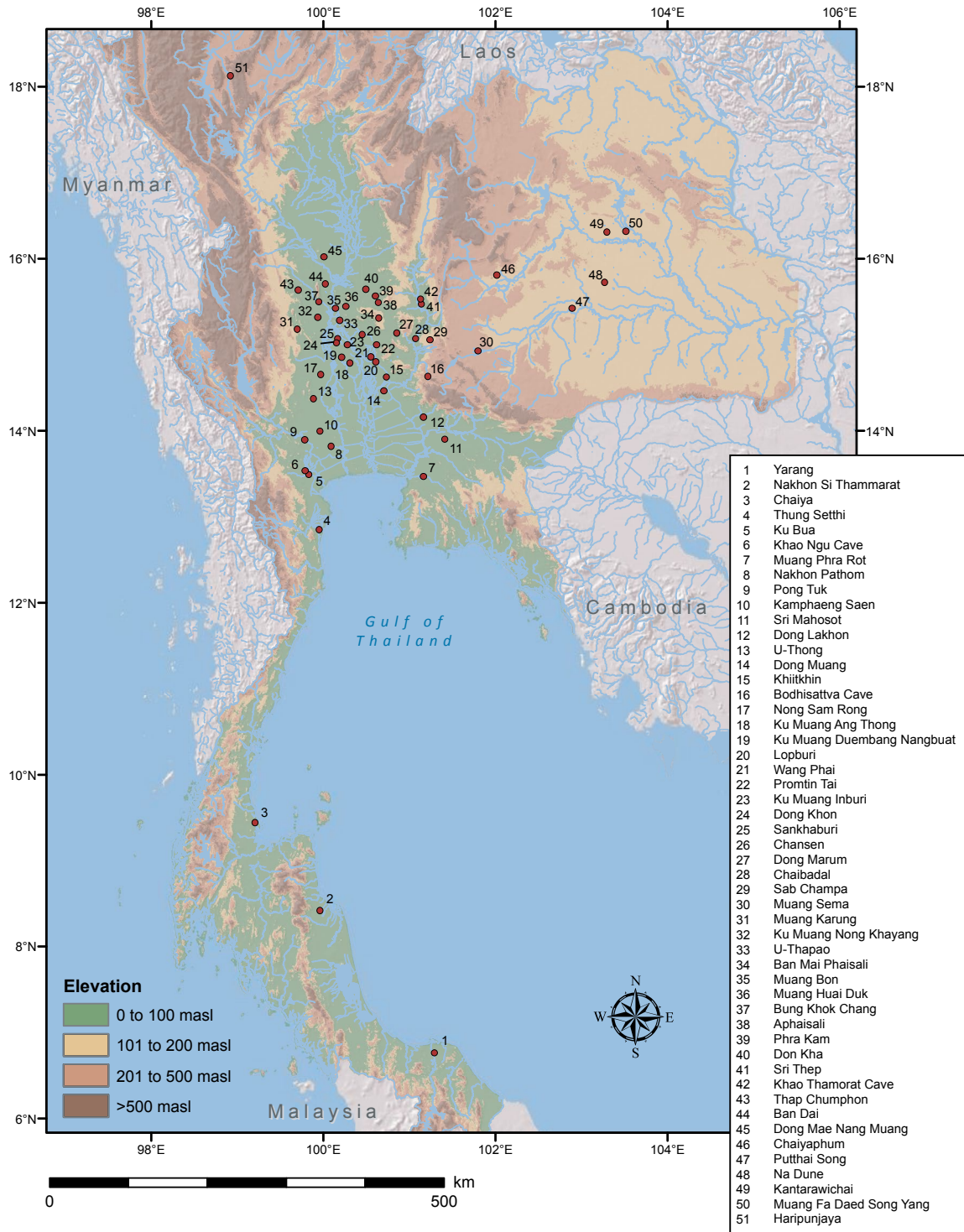


Figure 3.1. Significant Dvaravati sites and other contemporaneous sites mentioned in the text

Thailand produced some, but not necessarily all, of the elements of this suite. In this chapter, I examine the various applications of the term “Dvaravati”, highlighting their historical and disciplinary origins.

The origins of the term “Dvaravati”

Unlike some ancient societies whose endonyms are no longer known, the inhabitants of protohistoric central Thailand used the term “Dvaravati”. Whether they applied the term to the members of their culture, a polity, or a particular town is less clear for reasons discussed below. The term Dvaravati is Sanskrit for “which has gates”(Indrawooth 2004:120). A mythic town by the name of “Dvaravati” (sometimes alternatively transliterated as “Dvaraka”) appears in the Hindu epic the *Mahabharata* as the fortified capital of a kingdom on the coast of modern day Indian state of Gujarat. It is unclear if the use of the term in central Thailand was a reference to this town of *Mahabharata* fame or a description of the earthen ramparts and gates that enclosed many of the Dvaravati settlements. Boeles (1964) noted that the term Dvaravati continued to have significance until the second millennium CE when it was incorporated into the official names of the cities of Ayuthaya (est. 1350) and later Bangkok (est. 1782).

Evidence that the name Dvaravati was in use in the first millennium CE comes from two independent sources: 1) written accounts by Chinese pilgrims and court scribes; and 2) inscriptions on silver medallions from central Thailand. During the seventh century CE Tang Dynasty, Chinese monks Hsuan-tsang and I-tsing took Buddhist pilgrimages to India. In their memoirs, they noted the existence of a polity whose name they recorded as “To-lo-po-ti” and “Tu-ho-po-ti” or “Tu-ho-lo-po-ti,” respectively. They located this polity between regions that have been identified as modern-day Myanmar and Cambodia. The nineteenth century scholars who translated their memoirs proposed that this name actually was a transliteration into Chinese of the Sanskrit name “Dvaravati” (Beal 1884; Chavannes 1894). A similar transliterated version of “Dvaravati” also appeared in Chinese court records from the seventh century CE. These records mention visits to the court from Dvaravati emissaries in 638, 640, and 649 CE (Boeles 1964; Brown 1996:XXIII; Yamamoto 1979:1147).

Archaeological evidence of the use of the term Dvaravati in central Thailand came from the recovery of two silver coins or medallions recovered from a stupa at the Nern Hin location in the urban center of Nakhon Pathom in 1943 (Fig. 3.2; Boeles 1964). Each of the coins bears an inscription in Sanskrit that reads “sridvaravati svarapunya,” which George Coedès (1964) translated as “meritorious act of the King of Dvaravati”. The inscription was written in a script resembling Pallava, a fifth to eighth century CE Tamil script from South India. Since the discovery of the inscribed medallions at Nakhon Pathom, several other medallions with inscriptions that include the term Dvaravati have been found elsewhere at Nakhon Pathom (Khunsong 2009; Khunsong, et al. 2011) and at other sites throughout the Chao Phraya River Valley (Brown 1996:XXII).



Figure 3.2. Silver coin or medallion inscribed with the phrase “sridvaravati svarapunya” or “meritorious act of the King of Dvaravati” in the Pallava script, from Ku Bua (in the Rathcaburi National Museum)

The Dvaravati Period

The Dvaravati period is a chronological designation commonly defined as spanning from the sixth or seventh to eleventh centuries CE in Thailand. These dates are highly problematic and are challenged by absolute dates from systematic excavations at U-Thong (Barram 2003, 2004; Barram and Glover 2008) and Kamphaeng Saen (as documented in this thesis; see Appendix A). Historically, scholars associated the start of the Dvaravati period with a florescence of Buddhist and Hindu art and architecture. Art historians and archaeologists demonstrated that Dvaravati sculpture blends local styles and motifs with those from well-dated artistic traditions in South Asia, namely the Amravati, Gupta, Post-Gupta styles, as well as the Anuradhapura and Polonnaruwa styles from Sri Lanka (Boisselier 1975; Brown 1996; Dupont 1959; Indrawooth 1999,

2004). These similarities provided the basis for relative dates for the chronology of the Dvaravati period. Additional support for the seventh century start to the period came from the earliest references to the Dvaravati in outside sources (i.e., records from the Chinese courts and monks) in that century, as well as the few inscriptions written in a script resembling Pallava (Coedès 1964).

The relative dates based on the connections between Dvaravati and South Asian art and epigraphy provided some of the first chronological estimates for the Dvaravati, but their basis on stylistic conventions from a separate sub-continent make them susceptible to problematic. Due to the possibility that the art styles in question were produced in one region longer than the other, or inaccuracies in the dating of Indian sculptural tradition, it is important to corroborate the relative chronology with absolute dates (e.g., from radiocarbon or thermoluminescence samples). Both independently and together, Barram and Glover (Barram 2003, 2004; Barram and Glover 2008; Glover 2010) have critiqued the established dates for the beginning of the Dvaravati period. The Thai-British Archaeological Expedition obtained several radiocarbon samples in excavations at U-Thong between 1966 and 1970 (Loofs 1970, 1979; Loofs and Watson 1970; Watson 1968; Watson and Loofs 1967). Barram (2003) has recalibrated some of the original dates published by Loofs (1979) and run an additional five new samples collected by the expedition in the original excavations at U-Thong (see Appendix A). The new and recalibrated dates from contexts with Dvaravati-style ceramics and other objects fell between the first and seventh centuries CE (Barram 2003; Barram and Glover 2008). Barram noted that Dvaravati-style objects were present in levels after those with the seventh century CE dates, but no radiocarbon samples were available from these upper levels.

Barram and Glover noted important similarities between the Dvaravati objects, especially the ceramics, from U-Thong (Boisselier 1965b, 1968) and Chansen (Bronson 1976; Bronson and Dales 1972) that had been described as pre-Dvaravati. Radiocarbon dates for these contexts at Chansen placed them at 200-600 CE (see Appendix A). Bronson and Boisselier described these objects as Funan-related due to what they

believed to be strong similarities with material from the prominent Funan site of Oc Eo in southern Vietnam. However, subsequent work at other so-called Funan sites and in central Thailand has shown that these similarities are not as strong as previously thought (Glover 2010). Furthermore, Barram and Glover (2008) noted that the so-called Funan material from Chansen and U-Thong resembles that from typical Dvaravati material culture assemblages. They suggested that due to the sixth or seventh century starting date for the Dvaravati, derived from the relative dating of Dvaravati art and monuments, past scholars have been reluctant to describe material from before this date as Dvaravati. Yet Dvaravati ceramic styles changed very little over time, and the assemblages from Chansen and U-Thong from before the sixth century CE display Dvaravati characteristics (Barram 2003; Barram and Glover 2008). In particular, they noted that between the first and fourth centuries CE at U-Thong “the first simple clay lamps, spouted vessels and carinated sherds, so typically associated with Dvaravati, appear. Vessel forms and decorative techniques such as wave and line decoration, associated with Dvaravati ceramics. . .” also make their first appearance in this phase and continue until after the seventh century CE (Barram and Glover 2008:180). For this reason, Barram and Glover argued that it is unwarranted to describe this early material as part of a separate archaeological culture or period (i.e., “Funan”). Instead they described it as “Early Dvaravati” (Barram and Glover 2008:181).

Barram and Glover (2008) also noted that if the development of Dvaravati culture, urbanization and political complexity actually began around the third century CE, it would then correspond with the timing of similar developments throughout the rest of Southeast Asia. This revised chronology would not only date the development of the Dvaravati roughly around the time of other early complex polities in Southeast Asia, but it would also close the chronological gap between the end of the Iron Age and the beginning of the Dvaravati in Thailand. Previously, the roughly three centuries that fell between these periods had been only vaguely mentioned or gone unaccounted for in discussions of the prehistory and protohistory of Thailand (Higham 2002; Indrawooth 2004; O’Reilly 2006). As Barram and Glover suggested, it may be necessary to introduce

a different chronological label such as “Early Dvaravati” or “Proto-Dvaravati” for this early phase. In the 2009-2010 test excavations I conducted at Kamphaeng Saen (see Chapter 5), radiocarbon samples collected from contexts with Dvaravati style material culture provided dates as early as the fifth century CE. These dates support the argument for an earlier starting date or phase for the Dvaravati period. Additional absolute dates from other Dvaravati sites and a more refined ceramic chronology for first millennium CE central Thailand will help to establish the start of this period with greater confidence.

Art historians have attempted to subdivide the Dvaravati period into a sequence of phases based on changes in the style of Dvaravati art (Brown 1996; Dupont 1959; Wales 1969; Woodward 1997, 2005). Brown (1996:137) correctly warned that it is unclear if these stylistic phases developed slowly during the entire Dvaravati period, or rapidly unfolded within 150 years. Similarly, our understanding of the relationships between settlements within the Dvaravati period is as of yet too unrefined to identify chronological subdivisions that correspond to changes in socio-political organization. It is possible that only a short phase of 100 to 200 years within the Dvaravati period witnessed the presence of a socially and politically unified society.

The lack of chronological resolution within the Dvaravati period also makes the identification of an ending date problematic. The eleventh century CE date that is commonly given corresponds to the westward expansion of the Khmer empire into central Thailand. However, when the Khmer incorporated central Thailand into their empire, it is unclear if they confronted a culturally cohesive and politically integrated Dvaravati society, or a series of relatively autonomous and culturally heterogeneous towns that had already experienced decline and decentralization. As part of their incorporation of central Thailand into their empire, the Khmer established a provincial capital at the town of Lopburi around 1000 CE (Indrawooth 2004:131). Excavation of the Khmer period temple Wat Nakhon Kosa in Lopburi revealed it was built over a Dvaravati-style monument, likely a stupa (Bhumadhon 1983; Indrawooth 2004:131). It is unclear if the replacement of the Dvaravati monument indicates that the Khmer needed to

send a potent message to a restive local population about the new imperial political and religious order, or if the locals welcomed the new structure as a replacement of an outmoded Dvaravati architectural style with which they no longer identified. As archaeologists continue to refine the chronology of the Dvaravati period through the collection of absolute dates from controlled excavations, we will be able to bring new insight to bear on the dramatic social changes that took place in the Chao Phraya River Valley during the first millennium CE.

Dvaravati Art

Much of the early scholarship on the Dvaravati focused on religious art and architecture (Boisselier 1975; Coedès 1928b; Dupont 1959; Rajanubhab 1973 [1926]). These studies examined Buddhist and Hindu stone sculptures, stucco bas reliefs, votive tablets, coins and religious monuments. Prince Damrong Rajanubhab (1973 [1926]) used the sculpture and religious monuments at Nakhon Pathom as the basis for a formal classification of a Dvaravati art style that was later refined by other scholars (e.g., Boisselier 1975; Dupont 1959). A distinctive characteristic of Dvaravati art is the combination of indigenous and South Asian influences. This hybridization is clearly visible in the sculptural images of the Buddha and other Buddhist and Hindu religious figures that combine Indian stylistic conventions with Southeast Asian facial features (Fig. 3.3). Dvaravati sculptors created these images in various media including stone, bronze, gold and stucco. Many of the symbols and stylistic conventions of Dvaravati art show influences from artistic traditions in South Asia, namely the Amravati, Gupta, and Post-Gupta styles, as well as the Anuradhapura and Polonnaruwa styles from Sri Lanka (Brown 1996; Dupont 1959; Gosling 2004; Indrawooth 1999, 2004). Additionally, Revire (2010:88, 91) has identified possible influences from China in the sculptures from Nakhon Pathom depicting the Buddha in the seated (*bhadrasana*) posture with legs hanging pendant (see Chapter 4; Fig. 4.11).

Dharmachakras, or Buddhist wheels of law, are one of the most distinctive types of Dvaravati sculpture (Fig. 3.4). These large wheels were carved from stone in three dimensions with diameters of roughly 65 to 105 cm (Brown 1996). It appears that some

of the *dharmachakras* were placed atop a pillar (*stambha*) that rested in a base (socle), although few of these lower fragments have been recovered. One of the best known bases was recovered at Kamphaeng Saen and bears an inscription regarding the Buddhist Four Noble Truths written in Pali using a script resembling Pallava. *Dharmachakras* have been found at many Dvaravati sites in the Central Valley (see Appendices B and C). At least eighteen *dharmachakras* have been found in and around, Nakhon Pathom, making it the site with by far the largest number of these sculptures (Wales 1969:44). A few of the *dharmachakras* from Nakhon Pathom were located near images of resting deer, another important Buddhist symbol (Coedès 1928b; Wales 1969:135). At U-Thong, excavations at Stupa 11 recovered a *dharmachakra* in situ with a pillar and base (Indrawooth 1999; 2004:138; Wales 1969:139). Unfortunately, apart from these few examples, there is relatively little information on the intra-site context of most Dvaravati *dharmachakras*. Examples of *dharmachakras* from outside of the Central Valley are rare, but a few examples have been found in the south (at Chaiya, Nakorn Si Thammarat and Yarang), in the north (at Haripunjaya) and in the northeast (at Muang Sema, Fa Daed, and Na Dune)(Indrawooth 1999:232).

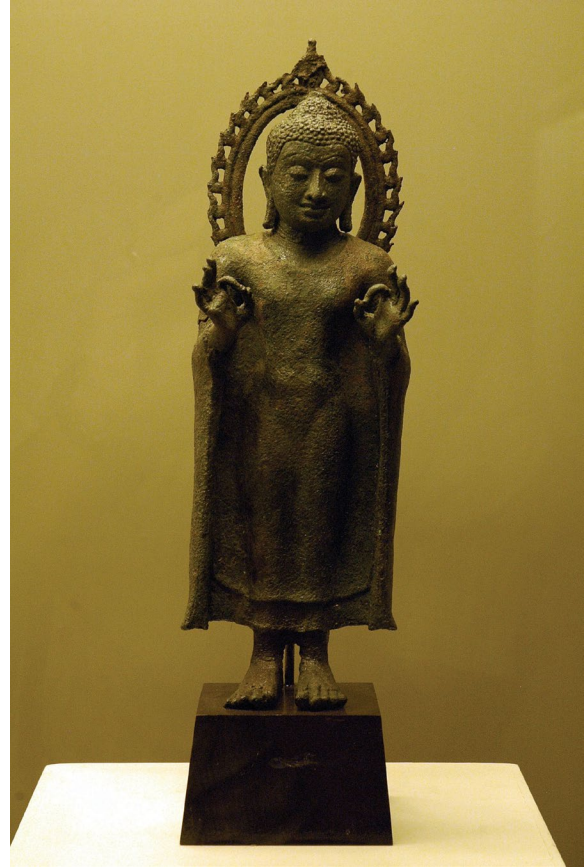


Figure 3.3. Bronze Buddha from U-Thong, Stupa No. 11, displaying South Asian stylistic conventions with local facial features (in the U-Thong National Museum)

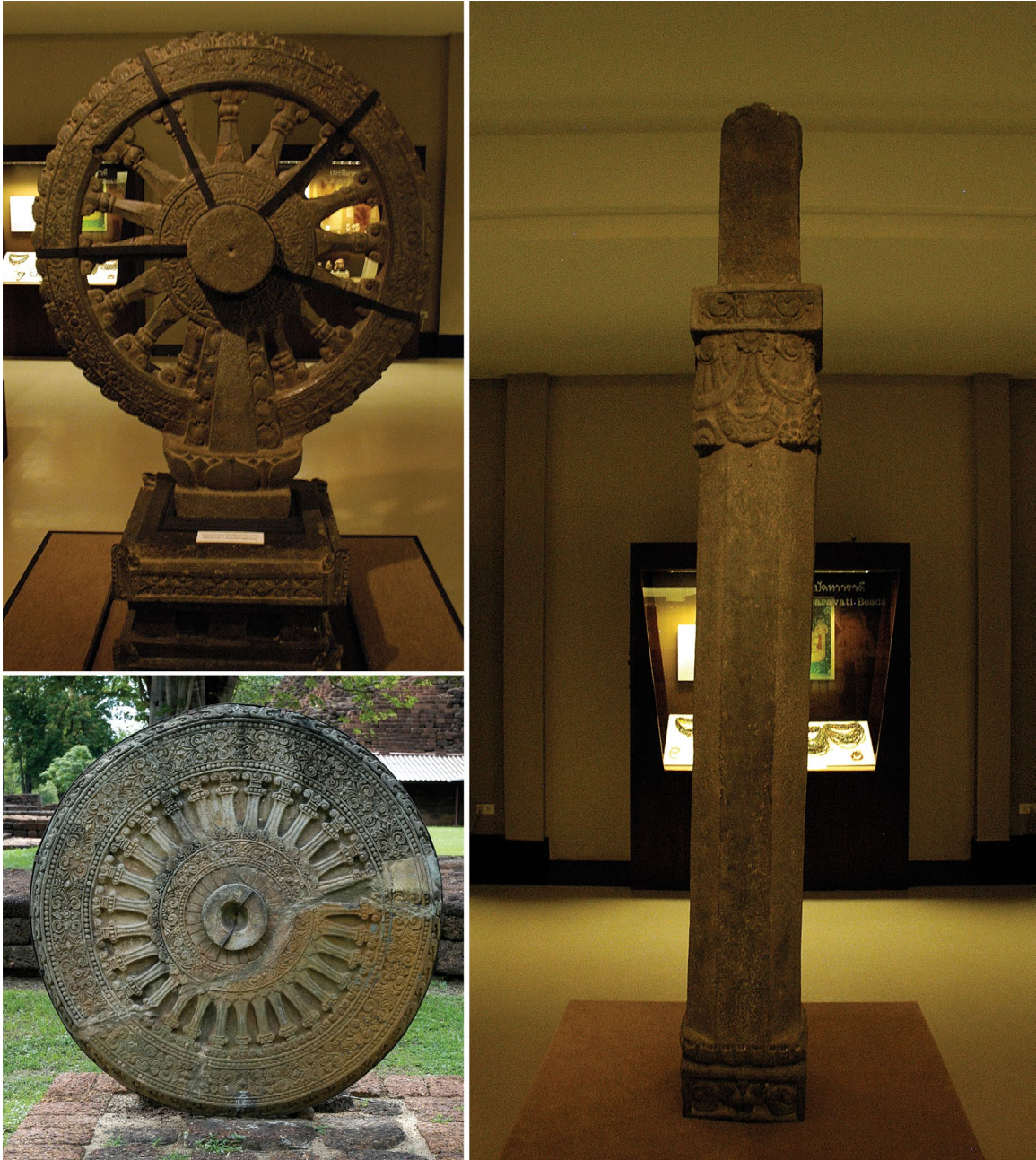


Figure 3.4. *Dharmachakras*, a pillar and *socle*. Clockwise from top left: *dharmachakra* (dia. 0.94 m) in a *socle* (.48 m wide by .50 m long), *Stupa* No. 11, U-Thong (in the U-Thong National Museum); pillar (ht. 2.8 m), *Stupa* No. 11, U-Thong (in the U-Thong National Museum); *dharmachakra* (dia. 1.78 m), Sri Thep (in Sri Thep Historical Park)

Like other forms of Dvaravati sculpture, *dharmachakras* embody a composite of South Asian and Southeast Asian traditions (Brown 1996; Wales 1957). They combine the Indian religious and political symbol of the wheel with Khmer influenced decorative motifs (Brown 1996). In India there are only four examples of stone *dharmachakras* that are carved in three-dimensional form like the Dvaravati counterparts. These examples come from Sarnath, Butkara, Amaravati and Sanchi (Brown 1996:160). Images of *dharmachakras* carved in relief are far more common, indicating the importance of the symbol in early historic India. The image of the *dharmachakra* symbolizes the Buddha's first sermon. In this sermon, the Buddha taught five ascetics the path to enlightenment, and in so doing set the Wheel of Law in motion. For some Buddhist sects the wheel also represented the spread of the Buddhist doctrine as it metaphorically rolled from one region to the next.

The imagery of a rolling wheel also symbolizes the ideal Buddhist monarch, known as a *chakravartin*, or wheel-turning king. Through the nature of their virtue and perfect ethical rule, a *chakravartin's* realm encompassed the entire world, symbolized by the ability of a wheel to roll anywhere without meeting resistance (Indrawooth 2004:137; Strong 1983:46). Furthermore, through their virtuous rule, the *chakravartin* also served as a vehicle through which the wheel of law turned. As a result, the *chakravartin* represents the secular counterpart to the Buddha. Historically, the third century BCE Mauryan emperor Asoka received the title of a *chakravartin* and was the subject of subsequent Buddhist texts, such as the *Asokavadana* (Strong 1983), that highlighted the virtues of his rule. There is no direct textual evidence that Dvaravati rulers were familiar with the Asokan legends or even the *chakravartin* concept. However, Brown's (1996) argument that the *dharmachakra* served as both a religious and political symbol in Dvaravati period Thailand is convincing. Even if Dvaravati rulers did not claim to be *chakravartin*, the use of religious concepts and symbols would have provided a powerful tool for maintaining political authority. Additionally, the Buddhist monastic order may have been an influential political entity in its own right that could either undermine or support the authority of a ruler.

In addition to religious sculpture, Dvaravati artisans also created religious monuments with distinctive architectural styles. The majority of documented religious structures are believed to be affiliated with Buddhist practices, but Hindu structures are also known (Table 3.1; Dupont 1959; Indrawooth 1999). Buddhist structures built in first millennium CE Thailand included what have been identified as stupas (reliquary or commemorative mound-like structures), *viharas* (assembly halls) and *ubosots* (halls for monastic ordinations or other prescribed rituals) (Murphy 2010b:269-270; forthcoming). Each of these structures has rough counterparts in early historic South Asia (Coningham 2001); however, in South Asia the term “*vihara*” may refer to an entire monastery or a block of monastic cells, and “*ubosots*” are largely restricted to Sri Lanka (Murphy forthcoming).

Stupas are found throughout much of the Buddhist world with regional and temporal differences in their form and function. They are mound-like monuments that in some cases are believed to contain a relic from the Buddha, a Buddhist saint, or powerful monk. They are also used to commemorate spiritually significant locations,

Table 3.1. Principle types of Dvaravati Buddhist structures and monuments.

Name	Description
<i>griha</i>	an assembly or worship hall containing a sacred image or object
<i>mahachaitya</i> or <i>mahastupa</i>	literally “great <i>chaitya</i> ” or “great stupa”; typically large versions of these monuments, although identification is highly subjective
<i>sema</i>	stone or wooden boundary markers used to define and empower a consecrated space, usually an <i>ubosot</i> , required for some monastic rituals
stupa	a mound-like monument that either 1) contains relics of the Buddha, Buddhist saints, or other important individuals; or 2) does not contain relics but is used to commemorate a significant event, location or individual. These commemorative stupas are know as a “ <i>chaitya</i> ” or “ <i>chedi</i> ” in Thailand.
<i>ubosot</i>	a structure restricted to use by monks during special rituals such as ordinations
<i>vihara</i>	unlike the South Asian use of the term to refer to the entire monastery or a block of monastic cells, in Southeast Asia it denotes a monastic assembly hall whose use does not require a surrounding sacred field formed by <i>sema</i> .

events or individuals (Coningham 2001; Woodward 1993:75-77). In Thailand, the term “*chaitya*” describes commemorative stupas that do not contain relics (Woodward 1993:75-77)¹, whereas in South Asia this term is most often applied to a type of *griha*, or hall, containing an image or stupa (Coningham 2001). Typical Dvaravati *stupas* have a brick core or façade and a rectilinear base (Indrawooth 2004:138); although there are also examples with octagonal, cruciform or round bases and variable stairway configurations. Dvaravati monuments that are characterized as stupas or *chaityas* also include rectilinear mound-like structures that have flat tops, which likely served as the platform for a hall or other structure that was built of perishable materials (e.g., Wat Khlong at Ku Bua). The religious function of these perishable structures is unclear, and they may have been a type of image or assembly hall, or been related to political activities. The entire structure, therefore, may have been conceived of as a combination of stupa and hall, or had a distinct designation that defies these categories.

Rectilinear structures made of brick or laterite, often with interior spaces that could be entered have been identified at several Dvaravati sites, including U-Thong, Pong-Tuk, Muang Sema and Dong Sri Mahosot (Figs. 5.6, 5.13). Based on their form and the remains affiliated with them, archaeologists have interpreted these structures as Buddhist *viharas*, *ubosots*, or Hindu temples (Coedès 1928a; Kaongoen 2002; Lewchaichan 2006; Murphy forthcoming; Wales 1969). Additionally, *sema* stones are found at many Dvaravati period sites in northeastern Thailand (Fig. 3.9). These carved markers are used to establish the boundary around a consecrated space necessary for performing certain monastic rituals such as ordinations. The consecrated spaces established by *sema* are typically occupied by *ubosot* structures, but the absence of brick or stone structures associated with Dvaravati *sema* in northeastern Thailand suggests

¹Dupont (1959:132-137) and Revire (2010:80) classified stupas and *chaityas* as separate types of monuments, with the former containing relics while the latter did not. This distinction, with stupas including *only* reliquary monuments, is not universally accepted by scholars working in Thailand (see Woodward 1993:75-77), and does not follow the use of the term “stupa” in South Asia or other parts of the Buddhist world. Following Woodward (1993:75-77), I conceive of Dvaravati stupas as including both reliquary and commemorative monuments, making the *chaitya* a type of stupa.



Figure 3.5. Typical Dvaravati bricks. Clockwise from upper left: the cross-section (width) of a brick from Kamphaeng Saen; compelte brick from Kamphaeng Saen; bricks in a *stupa*, Dong Mae Nang Muang; finger marked brick from Chansen.

that some *ubosot* structures at that time may have been built of perishable materials, or the ritual space they established was left open (Murphy 2010a, b, forthcoming).

Typical Dvaravati bricks used in the construction of monuments are relatively large, often contain rice chaff temper and are incompletely oxidized with dark cores. They occasionally bear finger marks (Fig. 3.5), a common feature of bricks from contemporaneous centers in Lower Myanmar (cf. Moore 2007:132). Dvaravati-style bricks from Kamphaeng Saen typically measured around 32-36 cm long by 16-18 cm wide x 7-8 cm thick. In several cases laterite blocks were also used in monument construction (Coedès 1928a; Indrawooth 2004:130). Many of the more prominent Dvaravati settlements have more than one Buddhist monument, located both inside and outside of the area enclosed by the sites' moats and ramparts. Some of these sites, such as Nakhon Pathom, Ku Bua and Sri Thep, have unusually large monuments located at or near the center of the settlement (Figs. 4.4, 4.19). These large monuments could be considered *mahachaityas* or *mahastupas* ("great" *chaityas* or *stupas*), and required

a significant amount of labor and resources to build (see Chapter 4).

Many Dvaravati Buddhist monuments had stucco or terracotta sculpture adorning their exterior, often placed in niches built into the structures. In addition to depictions of the Buddha and Bodhisattvas, these images portray demons, lions, dwarves, and scenes from the *jatakas*, a collection of Buddhist parables (Figs. 3.6, 4.3, 4.5, 4.8). The images from the latter not only show that the Dvaravati were familiar with this part of the Buddhist canon, but also provide valuable information about Dvaravati ornaments, hairstyles, musical instruments and other aspects of material culture and everyday life. At U-Thong, a terracotta image of monks with their alms bowls provides valuable information about the possible form of these vessels (Fig. 3.7). Some *stupas* also featured carved stone images of the Buddha placed in niches on their exteriors. The large (over 3.5 m high) quartzite seated Buddha images from Wat Phra Men in Nakhon Pathom are some of the most impressive and clearly the product of a significant amount of labor by skilled artisans (Fig. 5.11).

The sculpture and other objects affiliated with Dvaravati monuments provide insights into some of the religious traditions in protohistoric Thailand. Evidence of Hindu traditions include stone *shivalingas* and sculptural images of Shiva and Vishnu (Figs. 3.8, 4.7), suggesting the presence of both Shaivite and Vaishnavite influences (Indrawooth



Figure 3.6. Stucco sculpture of “dwarves” and decorative motifs at the base of the Khao Klang Nai monument, Sri Thep. Note the laterite blocks visible behind the stucco façade.



Figure 3.7. Terracotta image of monks carrying alms bowls, U-Thong (in the U-Thong National Museum)

2004). Buddhist imagery suggests familiarity with images and concepts from what would later be understood as both Mahayana and Theravada Buddhism, although the latter seems to have been more popular in central Thailand (Indrawooth 2004; O'Reilly 2006:70). It is important to note that these distinctions within Buddhism as we now understand them had not fully coalesced during the Dvaravati period, and it is unclear how the Dvaravati conceived of the relationship between these traditions. Vallibhotama (1986) has argued that the distribution of religious sculpture and architecture indicates that central Thailand was divided between a Hindu society in the east and a Buddhist society in the west. However, sites from both of these sub-regions, such as U-Thong in the west and Sri Mahosot in the east, actually contain evidence for both religious traditions. Most scholars (Brown 1996; Indrawooth 2004; Saraya 1999; Wales 1969) have recognized that Dvaravati society incorporated a mixture of Hindu and Buddhist



Figure 3.8. Shivalinga, U-Thong (in the U-Thong National Museum)

practices and beliefs. Saraya (1999) proposed that the Dvaravati elite were Hindu, while the majority of the population was Buddhist. However, evidence for the socio-economic and political roles of these religious affiliations in protohistoric Thailand is limited. Furthermore, the extent to which the Dvaravati recognized the divisions between Hinduism, Buddhism, their respective sects, and local religious traditions is unclear. It is possible that the Dvaravati conceived of these various traditions as one multifaceted belief system, or as several distinct religions (e.g., Theravada, Mahayana, Shaivite and Vaishnavite).

The geographical extent of the Dvaravati art style extends beyond the Central Valley to areas where other objects historically seen as markers of Dvaravati material culture are not as common. Dvaravati style sculpture occurs as far south in peninsular Thailand as the sites of Chaiya, Nakhon Si Thammarat, and Yarang (Brown 1996:11; Indrawooth 2004:141). These sites are more than 500 km from large center of Nakhon Pathom in the Dvaravati heartland of the western Chao Phraya Valley. To the north and northeast of the Chao Phraya Valley, Dvaravati style sculpture and motifs have been found at sites as far away as Muang Fa Daed (Kalasin Province), Lamphun (Lamphun



Figure 3.9. *Sema* stone depicting the Buddha's Return to Kapilavastu, Muang Fa Daed. Note the depictions of the city wall and gate with armed guards (image courtesy of Stephen Murphy).

Province), and even western Laos (Murphy 2010a). There are some significant regional variations in Dvaravati art. One of the most notable is the popularity of carved *sema* stones on the Khorat Plateau (Fig. 3.9; Murphy 2010a, b). The carvings of scenes from the *jatakas* found on these stones clearly incorporate Dvaravati style imagery; however, the stones themselves are rare outside of the northeastern region.² Conversely, the large carved stone *dharmachakras* found at Dvaravati sites throughout the Central Valley appear only as images on *sema* stones in the Northeast (Murphy 2010a).

The social and political processes that produced the wide geographic distribution of the Dvaravati art style remain unclear. In the past, some archaeologists have equated the boundaries of the art style with those of a Dvaravati empire (Lyons 1979), kingdom (e.g. Rajanubhab 1973 [1926]) or at least a Dvaravati political presence (e.g., Wales 1969). These characterizations become problematic when confronted with the lack of additional evidence of administrative integration or secular Dvaravati material culture at sites in the outlying regions. It seems more likely that the distribution of objects displaying the Dvaravati art style represents the spread of artistic and religious ideas. As monks, priests and artisans travelled throughout the region, they could have spread the Dvaravati art style across political and even cultural boundaries.

Dvaravati Material Culture

Among the sites with Dvaravati style art and architecture there are some significant differences in other types of material culture. By identifying a larger suite of types of shared material culture, it becomes possible to differentiate the sites whose residents imported or created a few Dvaravati style objects from those that participated in shared cultural practices and potentially self-identified as part of the same cultural group. In addition to the art and architecture described above, Dvaravati material culture includes similar styles of settlement plan, ceramics, bricks, tools, ornaments, seals and coins (Indrawooth 2004:132-135). The spread of this suite of Dvaravati material culture throughout central Thailand resembles what is often referred to as

²Although what may be crude *sema* stones have been found at sites in central Thailand, including a Muang Bon (Wales 1969:79) and possibly Dong Mae Nang Muang (Murphy and Pongkasetkan).

an archaeological or cultural horizon in other parts of the world, particularly North and South America (e.g., Crown 1994; Kolata 1993; Willey 1945). While the spread of shared forms of Dvaravati material culture and art styles marked a shift from the much more locally distinct Iron Age material culture, it is important not to overemphasize the homogeneity of Dvaravati material culture. Regional and even local differences can be seen in Dvaravati sculpture, ceramics and other forms of material culture.

It is also important to keep in mind that a shared set of material culture does not always correspond to an ethnic or linguistic group. Scholars have frequently characterized all, or at least a majority of, the members of Dvaravati society as belonging to the Mon linguistic or ethnic group (e.g., Coedès 1968; Dupont 1959; O'Reilly 2006). Mon is an Austroasiatic language whose modern form is found in Lower Myanmar and parts of Thailand today. Several protohistoric inscriptions in Old Mon have been found at sites in central Thailand. However, as Indrawooth (2004:135) has noted, the presence of these inscriptions only shows that some members of Dvaravati society were familiar with the Mon language. Additionally, Saraya (1999) has argued that together with Mon, Dvaravati society included other ethnic and linguistic groups, such as the Khmer and Tai. Identifying these groups in the archaeological record is problematic. Despite the similarities in Dvaravati material culture, it is important to keep in mind that additional identities based on ethnicity, language or locality likely coexisted with whatever shared identity was tied to the production and consumption of Dvaravati style objects.

Similar to Iron Age settlements, many Dvaravati towns were enclosed by a moat and earthen rampart and were in close proximity to a natural waterway. However, unlike the Iron Age sites, the Dvaravati moated sites exhibit a greater range in size (enclosing areas of 7-659 ha), and have more regular plans that vary from irregular ovals to rectilinear forms (see Chapter 4 and Appendix B). At some sites, the enclosed area was expanded through the construction of a second moat and rampart either surrounding or adjoining the original enclosure (Indrawooth 2004:132-33). The earthworks likely served multiple functions: defensive fortifications, irrigation works, and flood controls. At many sites, religious monuments are located both inside and outside the enclosed area. The

organization of secular activities and space within these sites remains unclear, although habitation areas have been documented at several sites (Indrawooth 1983; Indrawooth, et al. 1991; Khunsong 2009; Pisupong 1992, 1993; Wales 1969) demonstrating that the sites were not vacant ceremonial centers. Additionally, little is known about the smaller unmoated villages and hamlets that surrounded the moated towns. In part, the scarcity of information on these smaller sites is due to the fact that their lack of a moat has made them difficult to detect until recent systematic survey work (Mudar 1993; Onsuwan Eyre 2006).

The objects recovered from Dvaravati settlements in the Central Valley show some inter-site variation, but their overall similarity is significant enough to be identified as a single material culture tradition. Dvaravati ceramic vessels incorporate forms and decorative techniques from both indigenous and South Asian traditions (Fig. 3.10). Most Dvaravati ceramics are low-fired mineral tempered earthenware, but high-fired fine wares are also present. Dvaravati pottery shows a mixture between highly standardized forms that were likely the product of specialized workshops (e.g., Bronson's (1976:433) type BRM) and less standardized types that were produced at the household or individual community level (see Chapter 5 for additional discussion of Dvaravati ceramic types). Many Dvaravati vessels have carinated shoulders and, similar to early ceramic traditions elsewhere in Southeast and East Asia, commonly have cord or mat-wrapped paddle marks on their exterior. More diagnostic Dvaravati ceramic decorations include line and wave incising and stamp, triangular or shell impressions (Fig. 3.11; Bronson 1976; Indrawooth 1985, 2004). Spouted jars, known as *kendi* are also commonly found in Dvaravati ceramic assemblages. Ceramic objects also include small votive tablets with Buddhist images (Fig. 3.12) and figurines. Common Dvaravati tools consist of clay spindle whorls, an assortment of iron implements and distinct styles of grinding stones and saddle querns, or grinding platforms (Fig. 3.13; Indrawooth 1999; Indrawooth 2004:134). Objects such as large finger-marked bricks, silver coins and ornaments made of glass, stone, and metal are characteristic of Dvaravati assemblages, but also occur at contemporaneous sites throughout Southeast Asia.



Fig. 3.10. Significant Dvaravati ceramic forms. Clockwise from top left: carinated vessel, Nakhon Pathom (in the Phra Pathom Chedi National Museum); carinated vessel, Kamphaeng Saen; a rim from a standardized type BRM bowl, Kamphaeng Saen; pinched rim lamps, Chansen (in the Chansen Museum); a long-necked lamp, Chansen (in the Chansen Museum); spout fragment of a kendi, Kamphaeng Saen.



Figure 3.11. Decorations and surface treatments on Dvaravati ceramics. Clockwise from top left: shell impressed sherd, Ku Bua (in the Ratchaburi National Museum); circle impressed sherd, Ku Bua (in the Ratchaburi National Museum); incised and “hanging triangle” impressed sherd, Chansen (in the Chansen Museum); horizontal cord-marked sherd, Kamphaeng Saen; criss-crossed cord-marked sherd, Kamphaeng Saen; stamp impressed sherd, Chansen (in the Chansen Msueum).



Figure 3.12. Dvaravati Buddhist votive tablets. From left to right: Ku Bua (in the Ratchaburi National Museum); U-Thong (in the U-Thong National Museum).



Figure 3.13. Stone saddle querns and rollers from Dvaravati sites. Clockwise from top left: Complete examples from Chansen (in the Chansen Museum); fragmentary saddle quern, Kamphaeng Saen; fragmentary saddle quern, Promtin Tai (in the monastery museum); fragmentary saddle quern and roller, Ku Muang Ang Thong.

Based on the distribution of sites containing these materials, the core area of the Dvaravati culture appears to have been in Thailand's Central Valley. However, excavations at the settlements of Muang Sema and Muang Fa Daed in northeastern Thailand have documented ceramic assemblages and votive tablets that resemble those found in the Central Valley (Indrawooth, et al. 1991). As noted above, sema stones with Dvaravati style images are almost exclusively found in the northeast, while *dharmachakra* are conspicuously absent (Murphy 2010a). These differences may indicate that the societies in the Northeast shared many cultural similarities with their neighbors in the Central Valley, albeit with some regional variations. Unfortunately, the chronological relationship between the production of Dvaravati style material culture in the Northeast and Central Valley is unclear. As earlier dates emerge for the development of the Dvaravati in the Central Valley, it may become clear that Dvaravati culture emerged in the Central Valley and then later spread to the Northeast. More absolute dates from both regions are required to make such a determination.

A few sites in southern and northern Thailand have yielded an even a more limited set of Dvaravati style objects. In the north, the settlement of Haripunjaya contained several inscriptions in the Mon language, as well as sculpture and some ceramics that share stylistic similarities to those from sites in the Dvaravati heartland in central Thailand (Brown 1996:62; Indrawooth 1994), but much of the material culture from the site appears to be more locally distinct. Both Brown (1996:62) and O'Reilly (2006:86) emphasized that Haripunjaya lacks some types of objects and art, such as a *dharmachakra* or Hindu sculpture, found at Dvaravati sites to the south. They suggested that the cultural ties between the residents of Haripunjaya and the Dvaravati were relatively weak for much of the Dvaravati period, but may have become stronger after the tenth century CE.

In peninsular Thailand, Dvaravati influences are apparent in a few sculptural pieces, such as the *dharmachakras* from Chaiya and Nakhon Si Thammarat. Chinese sources (Yamamoto 1979) described several polities, believed to be located in peninsular Thailand from Chaiya southward, that had "customs similar to the Dvaravati" (Brown

1996:42). One of these polities, T'an-ling, is also described by the Chinese as a "vassal state" of the Dvaravati (Brown 1996:41; Yamamoto 1979). As Brown (Brown 1996:42) noted, there is a significant gap of several hundred kilometers where little Dvaravati style art is found, between the southern limit of Dvaravati sites in central Thailand and Chaiya. This distribution highlights the fact that Dvaravati cultural and political influence may not have been continuously distributed across the landscape. Continuing research (e.g., Noonsuk 2009) targeting the archaeology of sites in peninsular Thailand around Chaiya and Nakhon Si Thammarat during the first millennium will help to clarify the social and political relationships between this region and central Thailand.

Differences in material culture do not always follow linguistic, ethnic, or political boundaries and it cannot be assumed that the boundary of the area of Dvaravati material culture corresponds to one of these other divisions. In fact, within the core area of Dvaravati culture, there were likely multiple ethnic and linguistic groups and, at least in the early Dvaravati period, more than one polity. For these reasons, it is important to remember that the Dvaravati culture is an 'archaeological culture'. It is defined by a shared material culture, whose broad geographic similarities very likely had significant meaning for those who used and produced it, but may not have corresponded to a single social or political entity.

Dvaravati polities

Finally, the term Dvaravati is also used in reference to one or more polities (e.g. the "Dvaravati kingdom"). The political relationships between the inhabitants of the sites with Dvaravati style art and material culture are a source of considerable disagreement. Studies of Dvaravati political organization have primarily focused on two questions: 1) How many polities existed within the Dvaravati culture area, and 2) were these polities organized as states, complex chiefdoms, or something else? The debates over these questions have led archaeologists and historians to characterize Dvaravati political organization as the following: a single kingdom (Coedès 1929; Rajanubhab 1973 [1926]); distinct regional groups or territories ruled from a single capital (Wales 1969); an empire (Lyons 1979); complex chiefdoms (Wheatley 1983); a Buddhist kingdom and a

Hindu kingdom in the western and eastern halves of the Chao Phraya basin respectively (Vallibhotama 1986); and regional federations of cities or proto-states (Saraya 1999:33). Additionally, some scholars have proposed that Dvaravati political organization may have fit the *mandala* model of expanding and contracting spheres of political influence centered on charismatic individuals (Brown 1996; Higham 1989; Tambiah 1976; Wolters 1982). It is likely that as Dvaravati political organization changed over the course of the fifth to eleventh centuries CE it resembled more than one of these models; however, evidence of Dvaravati administrative activities is not yet sufficient to identify these changes with much certainty. As a result, contemporary scholars tend to be more cautious about making definitive statements regarding Dvaravati political organization (Higham 2002:263; Indrawooth 2004; O'Reilly 2006:88-90). I will now examine in greater detail some of the more prominent models for Dvaravati political organization.

Initial assessments of Dvaravati political organization grew out of studies of Dvaravati art. In their attempts to explain the wide geographic distribution of Dvaravati style art, early scholars such as Prince Rajanubhab (1973 [1926]) and George Coedès (1929) equated the geographic and chronological distribution of Dvaravati art with a single Dvaravati kingdom, or 'royaume'. This interpretation not only identified the territory of the Dvaravati kingdom as roughly the same as the modern kingdom of Thailand, but also implied that the Dvaravati were organized as a monarchy or state. Later, Wales (1969) also identified a single Dvaravati kingdom, albeit with a slightly reduced territorial extent and regional divisions of west, north-central, east and northeast. The idea of a large unified regional polity continued even as late as 1979 when Lyons (1979) interpreted the Dvaravati as an empire. The argument that the distribution of an art style is synonymous with a political territory has obvious weaknesses, especially when one considers Dvaravati settlement patterns and material culture. Few scholars today would claim that the Dvaravati political territory encompassed all of modern Thailand. Problems regarding territorial boundaries aside, the early scholars' identification of a single unified Dvaravati state warrants further examination.

The identification of a single Dvaravati kingdom is primarily based on evidence from the settlements of Nakhon Pathom and U-Thong. Both sites contain coins or plates bearing South Asian style royal epithets and symbols. An inscribed copper plaque from U-Thong provides an interesting glimpse at the activities of the largely anonymous Dvaravati elite (Fig. 3.14). Coedès (1958) translated the plate's first section as "Sri Harsavarman, grandson of the king, Sri Isanavarman, who spread the mass of his glory, obtained the throne of lions through regular succession".³ The prefix "Sri" and the suffix "varman" are both honorifics derived from South Asia. The next two sections of the plate record the various offerings the king offered to a *shivalingam* (or phallic representation of the Hindu god Shiva). Coedès identified the script used to write the inscription as post-Pallava, dating to the mid-seventh century CE.

Several scholars have explored connections between the names of the two individuals in the plate and those of historically known rulers from Cambodia and Vietnam (Brown 1996:50-52; Higham 1989:271; Jaques 1986:85). A few other rulers with the name Harsavarman are known from Cambodia, but they post-date the supposed date of the plate by several centuries. However, a ruler by the name Isanavarman ruled at Isanapura (Sambor Prei Kuk) in Cambodia from 611-636 CE (Higham 1989:271; O'Reilly 2006:77). It is possible that this is the same individual

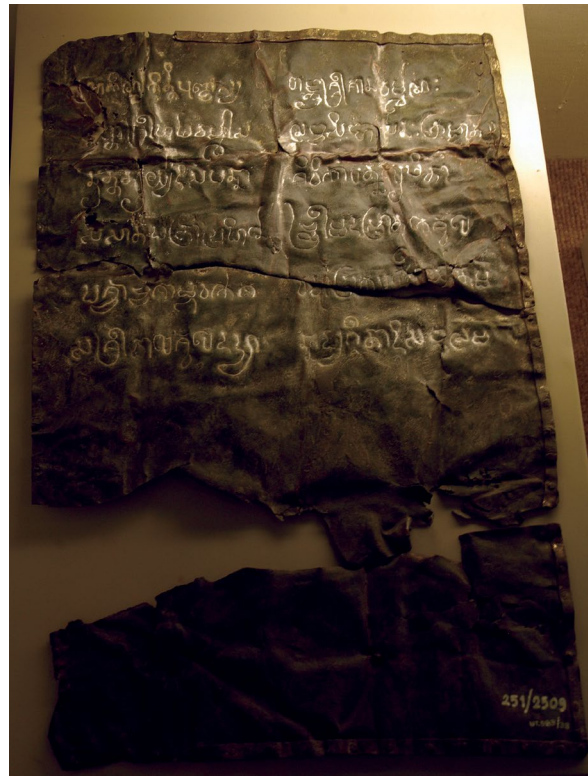


Figure 3.14. Inscribed copper plaque found at U-Thong (in the U-Thong National Museum).

³ "Sri Harsavarman, petit-fils du roi, Sri Isanavarman, qui avait épandu la masse de sa gloire, a obtenu par succession régulière le trône aux lions." English translation from Brown (1999:49).

named in the plate. Sri Harsavarman may have been his grandson who was granted the territory around U-Thong (Jaques 1986) or a local Dvaravati ruler who traced his lineage to Isanavarman through connections such as a marriage alliance (Murphy 2010a:61). Alternatively, both Isanavarman and Harsavarman may have been indigenous Dvaravati rulers who selected Indic names and titles to assert their religious affiliation and accentuate their prestige.

The inscribed copper plaque from U-Thong is a portable object and does not name any geographic locations. It is therefore not possible to determine where the individuals named in the plate actually ruled. Coedès (1958) identified the script as a local modification of Pallava, and concluded that the plate was inscribed *in situ* rather than imported from South Asia or Cambodia. As a result, he identified U-Thong, as the Dvaravati capital during the mid-seventh century CE based on his estimate of the age of the script. While the plate provides valuable information about the use of political titles and what appears to be hereditary succession in protohistoric Thailand, it is in no way sufficient evidence for identifying U-Thong as the capital of a unified kingdom. U-Thong was clearly an important settlement at this time, but it is similar in size or smaller than several other Dvaravati settlements, and it does not contain any known administrative structures that would set it apart from these other settlements. Additionally, the events and individuals which the plate commemorated could have easily been located at a different settlement with the plate merely providing notice to the inhabitants of U-Thong, or brought to the settlement much later as a curiosity. Finally, simply because the rulers named in the plate used royal titles, does not mean that the political entity they ruled was a fully formed state.

The second settlement often identified as the capital of the Dvaravati is Nakhon Pathom, located only 65 km south of U-Thong (Boeles 1964; Coedès 1968; Dupont 1959; Indrawooth 1983, 2004; Wales 1969). With an area of 659 ha enclosed by its moat, Nakhon Pathom is by far the largest Dvaravati site. However the chronology of its development is not well understood and it is unclear when it reached this size. It has yielded at least eighteen *dharmachakra* and abundant other Dvaravati religious

sculptures, as well as seals and sealings indicating it was a thriving economic and religious center. Its political role is less clear. The identification of Nakhon Pathom as a capital rests on its large size relative to other Dvaravati settlements, as well as the two inscribed silver medallions or coins found at a Buddhist sanctuary at the site (Boeles 1964). As I noted, both coins bear the phrase “sridvaravati svarapunya” written in Pallava, which Coedès (1964) translated as “meritorious act of the King of Dvaravati”. Presumably this inscription referred to the construction of the sanctuary under which the medallions were buried. Coedès dated the script to the seventh century CE. Similar to the copper plaque from U-Thong, these inscribed coins are more informative about kingship and the use of South Asian titles in protohistoric Thailand than they are about Nakhon Pathom’s status as a capital.

The identification of both Nakhon Pathom and U-Thong as Dvaravati capitals was consistent with the single kingdom model. Wales (1969:33) suggested that U-Thong was the first capital, but that power shifted to Nakhon Pathom around the last quarter of the seventh century CE. The more abundant, and presumably later, religious sculpture and monuments at Nakhon Pathom suggested its influence surpassed U-Thong during the eighth century CE. Wales believed that the relocation of the capital corresponded to a period of political upheaval among the Chenla to the east, which would have provided opportunities for the Dvaravati to capitalize on maritime trade. He also believed that Nakhon Pathom would have had better access to the coast due to the continuing expansion of the Chao Phraya delta. With these conditions prompting the relocation of the capital, Wales viewed the move to Nakhon Pathom not as the result of a change in power or military defeat, but as a peaceful and intentional effort directed by the rulers of a unified kingdom. He therefore saw Nakhon Pathom as a deliberately planned city.

Unfortunately the modern city of Nakhon Pathom now covers many of the ruins of the ancient city, and limits our ability to assess the extent to which the ancient settlement exhibited central planning. Recent excavations by Khunsong (2009; 2011) at the Hor Ek site inside the city have shown occupation began as early as the third century CE, but in order to determine the chronology and pace of its urbanization we

require similar excavations and absolute dates from throughout the site. By the mid to late Dvaravati period, the large settlement size and number and quality of religious monuments at Nakhon Pathom indicate it had become an influential center. However, its political role remains unclear, in part, due to the limited amount of evidence for administrative activities. Additional research at the site will hopefully address this issue. Nakhon Pathom's political role aside, the apparent rise in its economic and religious influence during the eighth century CE has important implications for understanding the decline of the neighboring community at Kamphaeng Saen. The details of this relationship will be explored in Chapter 6.

Even though Wales's (1969) argument for the identification of ancient Dvaravati capitals now appears flawed, his emphasis on the differences between the Dvaravati's "sophisticated" urban centers and provincial towns is still of value. His approach to the differences between these types of sites resembles what archaeologists today would refer to as a core-periphery model. Wales identified differences in the quality and type of religious sculptures and monuments present at the large urban centers compared to the smaller towns. In the case of the peripheral town of Muang Bon, Wales (1969:76-80) observed that not only was the sculpture and religious architecture crudely executed compared to examples from larger settlements, but the range of religious practices was also more limited. At Muang Bon, only Theravada Buddhism was represented in religious art, whereas the more "sophisticated" urban centers also had evidence for Hindu and Mahayana Buddhist iconography (Wales 1969:80). While Wales implicitly used the differences between core and periphery in support of his argument for a single kingdom centered on a cultural and political capital, the differences he identified are consistent with other models of political organization and help to highlight some of the diversity within Dvaravati society associated with urbanization.

As archaeologists have studied a larger sample of protohistoric sites in central Thailand, few continue to support the idea that a unified Dvaravati kingdom existed by the seventh century CE. Additional evidence for multiple centers of power among the Dvaravati comes from other inscriptions documented within the past three decades.

Three other inscriptions in Mon have been documented at the settlement of Lopburi, one of which refers to “a person called Arshva, son of the King of Sambuka” (Higham 2002). Yet another seventh century CE inscription referring to royal persons comes from Sri Thep. It reads: “In the year... a king who is nephew of the great King, who is the son of Pruthiveenadravarman, and who is as great as Bhavavarman, who has renowned moral principles, who is powerful and the terror of his enemies, erects this inscription on ascending the throne” (Higham 2002:261; Weeraprajak 1986). Similar to the inscribed coins from Nakhon Pathom, six other coins referring to the King of Dvaravati have been found at Muang Dongkorn (Bhumadon 1987; Higham 2002:260).

Coins or medallions without inscriptions, but with South Asian symbols of royalty and prosperity (cow, conch shell, vase of plenty, and *srivasta* have been found at several other Dvaravati sites, and resemble similar objects from throughout Southeast Asia



Figure 3.15. Dvaravati coins or medallions bearing symbols found in South Asia and elsewhere in Southeast Asia. Top row: sun symbol and a *Sri Vatsa* on the reverse side, found at U-Thong (in the U-Thong National Museum) . Bottom two rows: conch symbol and a *Sri Vatsa* on the reverse side, found at Kok Chang Din (in the U-Thong National Museum).

(Fig. 3.15). Indrawooth (2004:136) noted that the Chinese encyclopedia compiler Tu-Yu observed in the late eighth century CE that among the Dvaravati if someone was caught casting silver coins without authorization, their arm would be cut off. Molds for casting these coins have been recovered at U-Thong and Chansen, suggesting that production took place at more than one prominent site, rather than exclusively at one capital under the authority of a single king. However, the production and function of these coins are poorly understood. It is still unclear if they were used as currency or as medallions. In either case, they may have represented political authority both through the actual symbols on their surface and the inference of their tightly controlled production.

Another set of objects that may provide evidence about the construction of Dvaravati elite identity are two terracotta trays from Nakhon Pathom (Boeles 1964), and the fragment of a third from Dong Khon (Bhumadon 1987; Higham and Thosarat 1998b:184; Indrawooth 2004:136). Carved into the surface of the trays are symbols often found as part of South Asian royal insignia, including fly whisks, conch shells, thunderbolts, fans, elephant goads and umbrellas (Boeles 1964; Lyons 1979:13). The centers of the trays contain a small rounded depression that may have held a bowl. Based on the iconography and the presence of the depression in the center, some scholars (Indrawooth 2004:136; Lyons 1979) have suggested these trays were used in the sprinkling ceremony (*abhisecaniya* or *abhiseka*), one of a series of rituals used in the consecration or inauguration of kings in India and Sri Lanka. During the sprinkling ceremony, a priest or other members of the court representing different factions or castes within the society poured water (ideally from the Ganges) from a bowl over the head of the king to be (Wright 1907:21). This ceremony is known from the *Satapatha Brahmana*, a Vedic text from India that describes the rituals associated with the consecration of a ruler, as well as the *Mahavamsa*, a chronicle of the kings in Sri Lanka up to the fourth century CE. Since the texts do not explicitly describe such trays, their use in this ceremony among the Dvaravati remains speculative. Nonetheless, it would not be surprising if Dvaravati elites' appropriation of South Asian royal culture extended beyond titles and symbols to consecration ceremonies as well. If the trays were used in

royal ceremonies, their presence at both Nakhon Pathom and Dong Khon, suggests that these ceremonies were performed in more than one location.

Several scholars have proposed models for Dvaravati political organization that move beyond the single kingdom model and identify several, sometimes shifting, centers of political authority. Vallibhotama (1986) argued that two separate kingdoms ruled the eastern and western halves of the Central Valley. As noted above, he based this assessment on what he saw as religious divisions between the two regions, with Hindu iconography predominating in the east and Buddhist material in the west. He also emphasized the importance of river travel in the protohistoric landscape and how these polities conformed to different river systems. Brown (1996:48-49) and others have largely dismissed the two state model due to the problems of equating religious divisions with a political entities as well as the significant amount of evidence for both religions in the eastern and western regions. However, Vallibhotama's work is still valuable for its emphasis on the importance of looking at river systems as primary factors in the organization of travel, communication and political territory in protohistoric Thailand.

As I noted above, the fact that Dvaravati rulers adopted the titles and insignia of kings in South Asia did not necessarily make the polities they ruled fully formed territorial states. In fact, Wheatley (1983:303) considered the use of Indic titles and religious ceremonies as an important means for the leaders of chiefdoms in first millennium CE Southeast Asia to build status and expand their influence. Instead of remaining under the provenance of a single ruler, the system of sacred political symbols could have been adopted by competing elites to increase their own influence and challenge one another's political power. Wheatley (1983:305) based much of his model on the epigraphic sources and Chinese historical records of the early polities of Cambodia. He believed these sources indicated a repeated rise and fall of different descent groups as part of a "continually changing pattern of chiefdoms"(Wheatley 1983:143). While he acknowledged the limited amount of supporting archaeological and textual evidence from central Thailand, he felt his model also applied to the Dvaravati. Wheatley (1983:306) characterized Dvaravati political organization as divided

between several competing chiefdoms that occasionally united under a paramount chief before decentralizing again.

Saraya (1999) also concluded that the Dvaravati never formed a centralized state. Her interpretation of Dvaravati political organization closely resembled that of Wheatley, although she used the term “proto-states” to describe the units of political organization (Saraya 1999:30-31). The Dvaravati proto-states consisted of individual autonomous towns or cities and their surrounding landscapes of religious sites and roads. Saraya is largely silent on the role of the satellite villages and hamlets that also surrounded these settlements. Based on what she identified as significant differences in art style, popular symbols and geographic conditions, she concluded that the Dvaravati proto-states joined together to form five “federations”. She considered the formation of these federations to be the result of trade relationships, rather than political consolidation (Saraya 1999:31). Citing a lack of sufficient evidence, she is largely silent on the details of how the federations functioned or were administrated.

Both Wheatley and Saraya argued for multiple, often shifting, centers of political authority among the Dvaravati. This characterization is also a central feature of the models that characterized the organization of Southeast Asian polities as a *mandala* (Brown 1996; Higham 1989; Mabbett 1978; Wolters 1968, 1982). The term “*mandala*” originates from Hindu and Buddhist diagrams featuring concentric circles or squares that represent spiritual or cosmological space. Ancient Indian political treatises such as the *Arthashastra*, compiled between the third century BCE and the first century CE, applied the term to the relationships between Indian states (Kautilya 1967; Trautmann 1971). One state and its ruler occupied the center (*vijigisu*) of the *mandala*. Four rings of alternating enemy and ally states surrounded the center (Dellios 2003; Kautilya 1967:293). So while the central state was surrounded by enemies, it could appeal to the ring of allies just beyond to form alliances and hopefully gain the submission of their enemies. For this reason, political power within a *mandala* originated from the ability of rulers to form alliances and expand their influence.

In their attempts to describe the political organization of Southeast Asian polities, scholars such as Wolters (1968, 1982) and Mabbett (1978) found the ancient Indian *mandala* concept to be preferable to the western and Chinese models of the state. Subsequent scholars have continued to apply the *mandala* concept to understand the operation of early polities throughout Southeast Asia including the Dvaravati (Brown 1996; Higham 1989; Murphy 2010a)⁴. Tambiah's (1976) model of the galactic polity also incorporated many features of the *mandala* concept. The proponents of the use of the *mandala* model saw the early Southeast Asian polities as centered around a charismatic individual whose influence was based on a combination of sacred power and charisma. The ruler's influence held the polity together by attracting tributary rulers. Such tributary leaders could easily shift their alliances to a more influential leader, or split off to consolidate their own network of followers (Wolters 1982:17). Therefore, political territories within a *mandala* were in a constant state of flux corresponding to the extent of the ruler's expanding and contracting influence and alliances. Tambiah (1976:92) emphasized that within this system, the influence and control over people was far more important than the control of physical territories. Furthermore, the importance of a ruler's influence meant that as they physically moved so did the center of the polity. Brown (1996:7) generalized that the "Southeast Asian ruler moved frequently, taking with him the court and major followers." As a result, contrary to most western concepts of the state, a *mandala* did not have a fixed physical capital (Brown 1996:7; Higham 1989:239).

The relative lack of Dvaravati textual sources and still limited documentation of protohistoric sites in Thailand has made it difficult to evaluate the extent to which the *mandala* model fits Dvaravati political organization. Societies with more abundant historical and epigraphic evidence, such as seventh and eighth century CE Cambodia, have provided more convincing examples of the applicability of the model (Brown 1996:10-18; Wolters 1982). Brown (1996) recognized that evidence from protohistoric Thailand was more limited, but felt that there were sufficient similarities to the

⁴In later works, Higham (e.g. 2002) replaces the *mandala* term and concept in favor of "states". He does not directly address his reasons for this shift.

contemporaneous Cambodian societies, to conclude that the Dvaravati were also organized as a mandala. He argued that the *dharmachakra* sculptures were important political symbols within the Dvaravati *mandalas*. Their widespread distribution is evidence of local elites attempting to replicate the symbols and influence of the center. The dual political and religious symbolism of the *dharmachakra* would have made it well suited as a symbol of the ruler at the center, whose political influence was partly based on their demonstrated religious devotion. This interpretation of the *dharmachakra* is useful for understanding how they may have operated as political and religious symbols. However, the symbolism and distribution of the *dharmachakra* are consistent with several models of political organization other than a mandala.

The *mandala* provides an indigenous model for understanding Dvaravati political organization; however this model is largely based on the extensive inscriptional evidence from later Southeast Asian polities. Dvaravati inscriptions are more limited, and it is unclear if the *mandala* model accurately characterizes Dvaravati political relations. I argue that a more useful model is that of peer-polity interaction (Renfrew and Cherry 1986) as its expectations can be more clearly articulated in terms of material culture and is conducive to cross-cultural comparison. This model and that of the *mandala* are not mutually exclusive. As articulated by Renfrew (1986), the peer-polity interaction model focuses on how long-term interactions between neighboring polities that are politically autonomous led to a shared systems of writing, language, religion and material culture. The range of interactions between the polities includes “imitation and emulation, competition, warfare, and the exchange of material goods and information” (Renfrew 1986:1). According to Renfrew, peer polity interaction was most common among complex chiefdoms or early states, but is not restricted to polities at these levels of complexity. He noted that what are often seen as early civilizations, frequently contain several politically autonomous territorial polities that he described as early state modules (Renfrew 1975, 1986). Frequently one or more of the individual polities eventually gained dominance over its neighbors and united the culturally similar polities into a single state. In a cross-cultural comparison of early civilizations, Wright (2005) has

demonstrated that this type of polycentric interaction was common during the formative phase of many early states, and provided an important context for the development of more centralized political authority.

The model of peer-polity interaction provides the best fit for the admittedly limited evidence of Dvaravati socio-political organization. The model accounts for the widely shared material culture as well as multiple centers of political power apparent during the early Dvaravati period. Brown's identification of the *dharmachakra* as important symbols in political theater can also be accommodated by the model's focus on the importance of imitation and emulation among the rulers of the peer polities. The ramparts encircling many Dvaravati settlements suggest that warfare, or at least its threat, was also a common feature in their interaction. The seemingly contradictory evidence for multiple centers of power and a single kingdom centered at Nakhon Pathom, are consistent with the unification of peer polities as described by the model. The early centers likely represent peer polities that were at some point united under a state centered at Nakhon Pathom.

Mudar's (1999) analysis of Dvaravati settlement patterns in the Central Valley provided a preliminary idea of the boundaries of some of the peer polities.⁵ Using aerial photographs of moated sites compiled by Supajanya and Vanasin (1983), she examined the site-size hierarchy of Dvaravati period moated settlements in the Chao Phraya River Valley, and concluded that by the end of the Dvaravati period they displayed a pattern indicative of a single centralized state. She identified a settlement hierarchy of at least six tiers, with Nakhon Pathom as the top tier. Using estimates for each site's population and their rice growing catchment areas, Mudar also identified several regional centers that likely extracted agricultural tribute to sustain their populations. Based on site-size and location, Mudar identified an administrative hierarchy of four levels with seven, roughly similar sized, administrative territories (fig. 5.15). However, she recognized the limitations of her dataset since it necessarily assumed that all Dvaravati sites were

⁵See Chapter 4 for additional discussion of Mudar's work and its significance for Dvaravati settlement hierarchies and the relationships between urban centers.

contemporaneous and did not include material indicators of administrative activities (Mudar 1999:22-23). Also, as I show in Chapter 4, the site of Sri Thep, which is located along the Pasak River Valley at the interface between the Khorat Palteau and the Central Valley was just outside of the area Mudar included in her sample. At 469 ha Sri Thep is larger than all of the sites in Mudar's sample except for Nakhon Pathom. Even though she did not include this second urban center, she did note that earlier in the Dvaravati period there may have been several small competing polities in the Chao Phraya River Valley, but without better chronological resolution it is not yet possible to determine when they were unified into a single state (Mudar 1999: 23). She noted that the size of the seven administrative territories roughly corresponded to Renfrew's early state modules, and also ultimately concluded that the peer-polity interaction model fit the Dvaravati evidence.

In order to better evaluate Dvaravati political organization, archaeologists need to determine if there is material evidence for administrative activities at a range of different sized first millennium CE settlements in the Central Valley. Anthropological archaeologists identify one of the key traits of state-level polities as the ability to control a range of economic and social activities by successfully delegating different administrative tasks to specialized officials (Feinman and Marcus 1998; Wright 1977). Archaeologically these divisions can be detected through the distribution of the material remains of administrative activities, such as seals, sealings, warehouses, public buildings, and site-size hierarchies (Flannery 1998; Wright and Johnson 1975). Systematically documenting the presence (or absence) of these objects at a wide range of Dvaravati sites will provide much needed evidence upon which to evaluate and develop models of Dvaravati political organization. In the next chapter, I examine the limited evidence for some of these activities at the enclosed towns and cities of central and northeastern Thailand.

CHAPTER 4

Dvaravati Urban Landscapes

In this chapter I examine Dvaravati urban landscapes at several different scales. First, I look at how the Dvaravati configured space, particularly through public architecture, at individual settlements around Kamphaeng Saen in western central Thailand. After considering these specific examples, I turn to the regional relationships between urban centers by examining the site-size hierarchy of Dvaravati settlements and the distribution of administrative objects, monuments and political and religious symbols within the hierarchy. I also identify a set of shared approaches to configuring the moats and walls that enclosed these settlements. As major public works, these enclosures provided residents with important opportunities for building community identity and leadership. The residents of Dvaravati urban centers also used the construction of Hindu and Buddhist monuments to define the landscape in and around their settlements. Through an analysis of the spatial distribution of religious monuments at Dvaravati urban settlements, I suggest that the location of these structures reveal how the Dvaravati incorporated South Asian concepts of space, and then manipulated them according to their own cultural and political needs. Through my examination of Dvaravati urban landscapes from the scale of individual structures within a settlement to the regional scale of settlement hierarchies and shared settlement plans, I show how the Dvaravati configured urban space in order to build and maintain new socio-political relationships and identities.

Investigating moated towns and cities

Few moated Dvaravati settlements have been the subject of systematic archaeological investigation, but the visibility of many types of public architecture,

such as moats, ramparts and religious monuments, means that the location and form of these features can be assessed through other methods. My information on these features comes from a combination of the literature on Dvaravati archaeology, satellite imagery and my own field observations during informal site visits to twenty-three moated settlements in central and northeastern Thailand between 2007 and 2009. For most of the moated sites, I was also able to assess the plan of the moats and ramparts by using the software Google Earth to view Landsat (15 m resolution) and SPOT (2.5 m resolution) satellite images. The program's polygon measurement tool provided a fast and relatively accurate means for measuring the area of these enclosures. At some moated sites, archaeologists have documented occupation areas outside of the moated enclosures, but in the absence of systematic survey data from many of the sites the area of the moated enclosures provided a means for comparing the sizes of moated sites. Informal visits to over half of the sites also allowed me to ground truth the satellite images and to document the presence and location of ramparts and other monuments not visible remotely. The visits were not systematic and primarily served to complement the data recorded from the satellite images. Undoubtedly there are additional brick monuments at many of these sites that await future documentation through systematic investigations.

In Appendix B, I have compiled maps and information about the size, plan and monuments of individual Dvaravati towns and cities. Below, I examine in greater detail the settlements within Kamphaeng Saen's sub-region of west-central Thailand. Both in Appendix B and below, I group the sites by river drainages. This organization reflects the significance of riverine travel in the past, and still today, in central Thailand. Vallibhotama (1986) has suggested that early political relationships in this region first developed along these important arteries of communication and travel, before expanding to encompass larger territories. The extent to which the boundaries of political or administrative units followed river drainages during the Dvaravati period is unknown. I still prefer to organize the sites according to river drainages since distance as measured along these waterways, rather than in a direct line, likely provides a

better indicator of the economic, social and political relationships between Dvaravati settlements.

Phetchaburi River sites

Based on Supajanya and Vanasin's (1983) study of aerial photographs, Mudar identified a 161 ha moated site in Phetchaburi. Unfortunately, the exact location and age of this site are unclear. I have been unable to locate any moated sites in this area on satellite imagery. It is possible that the development of the modern city of Phetchaburi has obscured traces of the moated settlement identified in the aerial photographs. Vallibhotama (1991) noted that the city of Phetchaburi dated to before the thirteenth century CE, but its size during the Dvaravati period remains unclear. Field investigations in Phetchaburi Province have not identified a Dvaravati period moated site (Silapanth 2006). Instead, evidence of the Dvaravati in this area comes from caves with carvings of Buddhist images, the stupa and small village site at Thung Setthi and a series of stone workshop sites (Indrawooth 2008; Silapanth 2006; Skilling 2003; Vallibhotama 1991). The latter two groups of sites have been the focus of recent systematic survey and excavation (Fine Arts Department of Thailand 2000; Krachaechan 2001).

Thung Setthi

Even though Thung Setthi is a small unmoated settlement, it is significant for the current discussion due to its geographic location and stupa. Isolated Dvaravati-style objects have been found at sites on the Thai-Malay peninsula (e.g. Nakhon Si Thammarat), but Thung Setthi is the southernmost known Dvaravati settlement. It is also the closest Dvaravati settlement to the modern coastline at only 4 km away from the sea. The landscape around Thung Setthi contains a series of sand barriers formed by the Holocene marine transgression (Silapanth 2006). The settlement and stupa are located at an elevation of 4.6 masl on the sand barrier that is closest to the modern coastline. The site's elevation is similar to that of the lowest Dvaravati period settlements on the Bangkok Plain that are much further inland (see Chapter 2). The difference in the distances of these sites from the modern coastline is due to the greater slope of the Phetchaburi coastline compared to the Bangkok Plain. However, Thung

Setthi was not necessarily located directly on the Dvaravati Period coastline. As Barram and Glover have argued the Dvaravati Period coastline may have been considerably lower than the lowest Dvaravati period sites with mangrove swamps filling the intervening space.

The most prominent architectural feature of Thung Setthi is the square brick stupa measuring roughly 25 x 25 m (Fig. 4.1; Fine Arts Department of Thailand 2000; Silapanth 2006:269). It is located at the base of a large limestone hill known as Khao Chomprasat (Fig. B.1). When the Fine Arts Department began excavations in 1998 looters had already extensively damaged the stupa. Despite the damage, more than one thousand Dvaravati style stucco sculptures were found in association with the stupa. These included images of the Buddha, demons, lions, dwarves, ordinary people and decorative motifs (Silapanth 2006:269; Skilling 2003). The style of the stucco sculpture closely resembles that recovered from other Dvaravati sites in western central Thailand, such as Ku Bua, Nakhon Pathom and U-Thong. The Fine Arts Department also documented traces of a smaller brick monument on top of the adjacent limestone hill



Figure 4.1. *Stupa*, Thung Setthi

(Fine Arts Department of Thailand 1998; Silapanth 2006:269-270). Approximately 500 m east of the stupa, the modern town of Ban Khok Setthi sits on a mound (approx. 5 ha) containing Dvaravati habitation debris. The Fine Arts Department excavated a 2 x 2 m test unit at the edge of the mound. A 25 cm thick Dvaravati cultural level lay directly below the unit's surface and contained Dvaravati style earthenware sherds and domestic refuse (Silapanth 2006:270).

The location of the stupa several hundred meters outside the habitation area at Thung Setthi is notable. Many of the moated Dvaravati settlements contain brick monuments inside their enclosures, but more frequently, monuments are located outside the enclosure. The location of the Buddhist monuments several hundred meters outside the habitation area at Thung Setthi, despite its small size and lack of a moat, suggests that Dvaravati concepts about secular and sacred space influenced the landscape of both large and small settlements. Since so few smaller unmoated Dvaravati settlements have been systematically investigated, Thung Setthi provides a valuable example of how some of the spatial patterns observed in the larger settlements may have also characterized their smaller neighbors.

Stone quarries and workshops

Several stone quarry and workshop sites have been located north of Thung Setthi in Khao Yoi district of the Petchaburi Province (Indrawooth 2008; Silapanth 2006). The largest workshop site is Nong Chik, where surveys and excavations have recovered evidence for the production of Dvaravati style stone sculpture and tools (Krachaechan 2001). Unfinished or fragments of images of the Buddha, *dharmachakra*, crouching deer, as well as roughed-out saddle querns and grinding stones have been found at the site (Fig. 4.2; Indrawooth 2008; Krachaechan 2001). The site also contained numerous stone flakes produced during the sculpting of these objects at the site. The incomplete objects resemble examples from other Dvaravati centers in central Thailand. Additional incomplete *dharmachakra* and Buddha images have also been found at other locations in the Khao Yoi district and the nearby Ban Lat District, suggesting that there may have been several workshops in the area (Indrawooth 2008).



Figure 4.2. Roughed out *dharmachakra*, Khao Yoi District, Petchaburi Province

The quarry site of Khao Phra and surrounding locations in the hills roughly 5 km from Nong Chik, likely provided the stone used in the workshops. Most of the Dvaravati stone images are made of green sandstone, mudstone, andesite and argillite (Silapanth 2006:269). The outcrop where Khao Phra is located is composed of mudstone, shale and sandstone, which led Silapanth (2006:269) to suggest that additional quarry sites may be located in the area. A few unfinished Buddha images have been found at the Khao Phra quarry (Skilling 2003). These images indicate that at least some of the preliminary sculpting was conducted at the quarry site. Indrawooth (2008:311) noted that unfinished images of the Buddha resembling those from the Khao Yoi district have also been found at the moated centers of Nakhon Pathom and Ku Muang Inburi in central Thailand. She observed that it is possible that the workshop sites in Khao Yoi may have been intermediary production sites, with the final stages of sculpting taking place when the objects reached their final locations in the towns and cities of central Thailand.

Maeklong River sites

Ku Bua

The settlement of Ku Bua is located near the mouth of the Maeklong River, which winds down from the Tenasserim Mountains and provides access to Three Pagodas Pass and the Bay of Bengal beyond. Due to this key location along trade and transportation routes, Ku Bua likely served as an important center of trade during the Dvaravati period (Indrawooth 2004; Wales 1969). Indrawooth (2004:130) reported that Chinese ceramics from the Tang (618-906 CE) and Song (960-1279 CE) periods have been found in the nearby Maeklong River. Additionally, the recovery of stucco images from a stupa at U-Thong depicting what have been interpreted as “Semitic traders” due to their distinctive high peaked hats (Fig. 4.3; Lyons 1965; Rattanakun 1992) suggests the town’s residents had at least limited interaction with foreigners from both the east and west.

Like most of the larger Dvaravati settlements, a stream-fed moat encloses much of the site (Fig. B.2). During his visit to the site in the 1960s, Wales (1969:51) reported that the moat was roughly 50 m wide with low ramparts on the interior and exterior edges. Since Wales’s visit, sections of the moat have been extensively modified for modern agricultural purposes. Fortunately, Rattanakun (1992:76) published a detailed map of the site based on his work in the early 1960s. The moat encloses an area of 161 ha and approaches a rectangular plan, making it one of the more formally laid out Dvaravati period moats. A small stream also runs through the southern half of the site and may have provided an important water source for the residents. Profit from trading activities at Ku Bua may have helped finance the large number of Buddhist monuments built at the site. Surveys and excavations have documented at least eleven Buddhist monuments inside the moated enclosure, and thirty-three monuments in the exterior area within 1 km (Rattanakun 1992). Many of these monuments are typical Dvaravati style square or rectangular Buddhist stupas built of brick on laterite foundations. One of the most significant monuments at Ku Bua, is a large rectilinear mound-like structure, known as Wat Khlong (Fig. 4.4). While roughly resembling a stupa or *chaitya*, it has a single staircase leading to a flat top, suggesting it may have played a different or



Figure 4.3. Stucco sculptures of "Semitic traders", Ku Bua (in the Ratchaburi National Museum)



Figure 4.4. Wat Klong monument, Ku Bua

additional function. It is located near the center of the moated enclosure, similar to the placement of the Pra Paton Chedi at Nakhon Pathom.

Excavations in the 1960s by Rattanakun (1992) of several of the monuments at Ku Bua produced an extensive collection of Dvaravati period stucco and terracotta sculpture (Fig. 4.5). The images adorned the exteriors of the monuments, and included depictions of the Buddha and Bodhisattvas, as well as elites, servants, musicians, soldiers and prisoners. It is unclear if the latter group of images depicted actual individuals and groups of people in Dvaravati society or were based on individuals from the Buddhist *jataka* parables. The images of the foreign traders mentioned above (Fig. 4.3) were among these sculptures. Lyons (1965) noted that their distinctively shaped hats and heavy clothing closely resemble those seen in depictions of Semitic traders in Tang and Ming period Chinese ceramics. Indrawooth (2004:130) observed that they might be Indo-Scythians from western India who are known to have sent traders to Southeast Asia. Similar stucco images have also been found at Nakhon Pathom. Regardless of their precise identity, the depictions of these strangely dressed foreigners



Figure 4.5. Stucco sculpture of a *bodhisattva* from monument 40, Ku Bua (in the Ratchaburi National Museum)

at both Ku Bua and Nakhon Pathom suggests that the residents of these coastal settlements were involved in interregional trade and contact.

Pong Tuk

Located further up the Maeklong River from Ku Bua, on the way to Three Pagodas Pass, the site of Pong Tuk also appears to have been an important site along Dvaravati period trade routes. Today, Pong Tuk is not surrounded by a moat or rampart, but earthworks at the site may have been destroyed by agricultural modification of the landscape. Systematic survey and research at the site is needed to explore this possibility. Fieldwork at the site has focused on the foundations of several structures thought to be Buddhist monuments (Figs. 4.6, B.3). The site first received systematic study in 1927 from Coedès (1928a) when he examined what he believed to be a bronze Byzantine style lamp (stylistically dated to fifth or sixth century CE) and a Bronze Buddha statue (stylistically dated to post 550 CE) recovered by local residents at the site (Brown and MacDonnell 1989; Higham and Thosarat 1998b). Coedès (1928a) then teamed with the Royal Institute's Archaeological Service (predecessor to the Fine Arts Department) to map and excavate the foundations of several laterite structures, which they interpreted as a small Buddhist structures due to the associated sculptural remains, and a larger *vihara*. In 1935, Wales (1969:66-67) excavated an additional stupa with an octagonal



Figure 4.6. San Chao monument, Pong Tuk

base and a structure that he interpreted as a Buddhist *vihara*. Associated with several of the excavated monuments were stucco sculptures similar to those found at Ku Bua.

The two *vihara* structures are relatively well-preserved examples of these types of structures from Dvaravati period Thailand, and reveal the ambiguity in interpreting the religious function of such features. Coedès (1928a) and the Royal Institute excavated the more complete of the two structures, known as the San Chao, which included a rectangular platform with a stairway at one end and small outcrops on the other three sides (Fig. 4.6). The sides of the platform are faced with carved laterite blocks, similar in style to Pra Paton Chedi and Wat Pra Men structures at Nakhon Phatom (Dupont 1959:64). Associated with the structure were the fragments of several columns, which the excavators believed would have supported the structure's roof. Coedès believed the structure resembled *viharas* from Anuradhapura, Sri Lanka and suggested it played a similar role at Pong Tuk, but in the absence of more material remains or texts it is difficult to verify if the Dvaravati used the structure in the same way.

Through recent reexamination of Wales's unpublished excavation notes from his excavations of the other *vihara* and a stupa, Clarke (2011) has drawn attention to several human burials found around and below the structures. Wales interpreted these burials as predating the structures, but Clarke has shown that their orientation suggests that some of the burials were interred as part of the monuments' initial construction and others were buried after the structures were completed. If the burials were associated with the structures, it suggests that the Dvaravati may have treated and conceived of the structures in ways that vary from the roles of *viharas* and stupas in other Buddhist societies.

Additionally, in 2008 when I visited Wat Dong Sak, the modern monastery at Pong Tuk that houses many of the artifacts found at the site, I saw a Dvaravati-style stone bas-relief sculpture of a four-armed Vishnu that was still venerated (Fig. 4.7).¹

¹The monastery collection also contained a second, nearly identical, image that appeared to be a cast of the first.

Clarke (2011) has investigated this otherwise undocumented image and determined that it was found during road construction near Pong Tuk in the mid-twentieth century. The presence of this image is significant since it demonstrates that the religious iconography from the site was not solely Buddhist.

While much of the attention on Pong Tuk has focused on the monuments, Dvaravati period domestic refuse has also been recovered by local villagers and the excavators. Much of this material is on display in the local monastery, and during my informal visit I saw several grinding stones, a kendi and numerous other Dvaravati style earthenware vessels. The size of the site beyond the distribution of the monuments is unknown and difficult to even estimate due to the lack of a visible encircling moat or rampart. The apparent lack of these features led Wales (1969) to believe that the site was founded in the later part of the Dvaravati period, when the boundaries and military control of a centralized state would have extended well beyond Pong Tuk making defensive structures at the site unnecessary. Wales also agreed with Coedès's (1928a:208) characterization of the site's function as a "natural halting-place for travelers" on their way to the larger neighboring settlements of Ku Bua, Nakhon Pathom or Kamphaeng Saen. The location of the site is ideal for this purpose, but additional research on the habitation areas of the site will likely reveal some of the other activities conducted by the Dvaravati period residents of Pong Tuk.



Figure 4.7. Vishnu stele, Wat Dong Sak Monastery, Pong Tuk

Tha Chin River sites

Nakhon Pathom

The urban center of Nakhon Pathom is currently about 8 km west of the Tha Chin River and 40 km from the coastline, but during the Dvaravati period the site likely had better access to both riverine and maritime transportation routes. Indrawooth (Indrawooth 2004) noted that during the Dvaravati period the course of the Tha Chin River ran much closer to Nakhon Pathom, and shifted away toward its modern location shortly after the tenth century CE. The Tha Chin River would have provided important access to both the Bay of Bangkok and settlements further upstream in both the Tha Chin and Chao Phraya drainages. Wales (1969) believed that Nakhon Pathom was located on the coast and served as an important seaside port. He argued that as silt accumulated in the Bangkok delta, access to the sea from U-Thong would have become increasingly restricted, and that a new capital city was deliberately planned and settled on the coast at Nakhon Pathom at the end of the seventh century CE. We now know that Nakhon Pathom was actually settled by the first few centuries CE (Khunsong 2009; Khunsong, et al. 2011). Additionally, the revised reconstruction of the location of the coastline during the Dvaravati period (see Chapter 2) suggests that Nakhon Pathom would have been several kilometers from the coast with access to the Bay of Bangkok primarily via the Tha Chin River. Even if Nakhon Pathom was not located on the coast, it would have been the closest urban center to the sea in the Tha Chin drainage. It was therefore ideally situated to serve as a redistribution point between maritime and upriver trading networks. A clay sealing bearing the image of a ship, and a seal with the words “excellent seaport”, written in Prakrit using the Brahmi script, were both found at Nakhon Pathom and suggest the residents were at least peripherally involved in maritime trade networks (Khunsong, et al. 2011).

Nakhon Pathom’s moat encloses a 659 ha area, making it the largest Dvaravati urban center by over 200 ha (Fig. B.5). Today, much of the ancient settlement lies under the modern city of Nakhon Pathom, but the plan of the moat is still visible in satellite images and aerial photographs. It is relatively irregular in plan for a Dvaravati moat;

although, Wales argued that it began to approach the rectangular form more fully executed at Ku Bua and was more regular than U-Thong's moat. Based on these degrees of regularity in enclosure plan, he placed the founding of U-Thong, Nakhon Pathom and Ku Bua in a relative sequence from early to late. Wales (1969:32) also noted the presence of "scarcely recognizable" ramparts at Nakhon Pathom in the 1960s. Despite the destruction brought on by modern development, numerous religious monuments have been documented both inside and outside the moated enclosure. Several canals and channels also run through the enclosed area and extend beyond the city into the surrounding landscape (Boisselier 1970; Dupont 1939, 1959; Indrawooth 1999).

A large Buddhist brick *mahachaitya*, known as the Chulapathon Chedi, sits near the center of Nakhon Pathom's moated enclosure. Wales (1969:38) identified this location as the "cosmic centre" of the city, and suspected that the initial phase of the monument's construction dated to the founding of the settlement, which he placed at the end of the seventh century CE. Dupont (1959) excavated the Chulapathon Chedi in 1940, in what has become a highly influential study of Dvaravati art and monumental architecture. In his excavations he documented a square basement structure (24.5 m x 24.5m) with stairs on each side and several layers of renovations and stucco decorations (Fig. 4.8). On top of the base was a square central structure, roughly 17 m long on each side, with multiple offsets and ledges. Each wall had five niches that each held a stucco image of the Buddha. Dupont's excavations also identified at least two extensive resurfacings of the monument, with entirely new Buddha images being installed. The outer layer of the monument contained and stucco images of elephants and *garudas* (anthropomorphic birds from Hindu and Buddhist mythology that served as the Lord Vishnu's mount). Wales (1969) noted that some of the images from the outer layer display Khmer influences and therefore may date from the eleventh century CE. On the original layer of decorations adorning the monument's base, Boisselier (1970) documented stucco images from the *jatakas* (Buddhist parables), which he dated to the end of the eighth or early ninth centuries CE. Under the base of the central tower, Dupont (1959) recovered consecratory offerings including a bronze chandelier,



Figure 4.8. Stucco sculptures, Chulapathon Chedi, Nakhon Pathom (in the Phra Pathom Chedi National Museum)

two bronze cymbals, a bronze cup, a bronze mirror, a bronze top to a monk’s staff or *khakkara*² and a bronze plaque bearing an image of the Buddha.

Around 100 meters to the northwest of Chulapathon Chedi is a second substantial brick stupa known as the Phra Pathon Chedi. The upper part of this monument consists of a post-Dvaravati period “Phra Prang” style Buddhist monument, but recent excavations of the monument have discovered an underlying Dvaravati period monument foundation (Nguanphienphak 2009). This discovery showed that the Chulapathon Chedi was part of a complex of Buddhist monuments at the center of Nakhon Pathon.

Also inside the moated enclosure, located roughly 500 m to the west of the Phra Pathon Chedi and Chulapathon Chedi complex, are the ruins of a Buddhist monument

²Dupont was unable to identify this object. Only recently has Revire (2010) made the convincing argument for its identification as the top of a *khakkara*.

at Nern Hin. This location has received notoriety due to the recovery of the two silver coins bearing the inscription of “Sridvaravati Svarapunya” that have provided evidence for the ancient use of the term Dvaravati, and less convincingly for the identification of Nakhon Pathom as a seat of political power (see Chapter 3). The coins were found in a terracotta jar beneath a ruined Buddhist monument at Nern Hin (Boeles 1964). Dupont (1959) identified Nern Hin as part of the larger eastern group of monuments at Nakhon Pathom, which included the Phra Pathon Chedi; however, Nern Hin and Phra Pathon Chedi are more than 500 m from each other and there is not a clear association between the monuments, raising doubts about the significance of Dupont’s grouping for the city’s residents during the Dvaravati period.

There are at least five more Buddhist monuments outside the moated enclosure. A little under two kilometers west of the moat, the massive stupa known as Phra Pathom Chedi (Fig. 4.9) continues to serve as an important landmark and center of religious activity today. In its current form the stupa is the tallest in the world at 127 m high. It is believed that its core dates to the Dvaravati period, but several later resurfacings have greatly expanded the monument making research on the Dvaravati period remains difficult. The style of sculptural fragments found in the vicinity of the stupa suggests the early phase of the stupa dates to the late sixth or early seventh century CE.

Approximately one kilometer southeast of the Phra Pathom Chedi, Dupont (1959)



Figure 4.9. Phra Pathom Chedi, Nakhon Pathom



Figure 4.10. Wat Phra Men, Nakhon Pathom

excavated a large brick monument, which he identified as a stupa, known as Wat Phra Men (Fig. 4.10). This stupa had concentric cruciform terraces at its base and a square central massif. Dupont noted its plan was unusual for a Dvaravati stupa, and suggested it might incorporate influences from Bengal or Myanmar. In his excavations, Dupont also recovered several fragments of a large quartzite Buddha. These fragments closely resembled an intact example housed at Phra Pathom stupa that reportedly originated from the ruins at Wat Phra Men (Fig. 4.11). The remains of nearly identical statues were also recovered at the historic capital of Ayutthaya and in Bangkok antique shops (Wales 1969; Yupho 1967). These other statues are also believed to have been removed from Wat Phra Men. In his excavations, Dupont identified the locations where four massive Buddhas likely sat with their backs to the central massif of Wat Phra Men. The complete statues were large (over 5 m high) with bodies that were each carved from a single piece of stone, possibly quartzite. They depict the Buddha in a *bhadrasana* posture, which scholars (e.g., Dupont 1959; Wales 1969; Yupho 1967) have historically described as resembling a “European” style of sitting with the legs extended downward as if on a chair. Revire (2010) has dated the monument based, on stylistic and iconographical evidence, to the seventh to eighth centuries CE. If this date is accurate, it suggests the presence of individuals or groups at Nakhon Pathom by this time with significant

resources at their disposal, since the ability to both transport and carve monolithic images on this scale would have required a large amount of labor.

Additional Buddhist monuments are also located to the south and east of the city, as well as to the northwest of the Phra Pathom Chedi. One of the most interesting Buddhist sites at Nakhon Pathom is Nern Phra, located approximately seven kilometers south of the city. Dupont (1939, 1959) excavated here for three days in 1937 and recovered a fragmentary *dharmachakra*, a decorative stone pillar (2.2 m high), several Dvaravati style saddle querns and stucco architectural ornaments. Although Dupont did not document any structures in his excavations, there is a rectilinear foundation of a brick monument at the site. While there is only limited evidence of Dvaravati Buddhist practice at Nern Phra, it is significant for two reasons. First, it suggests the presence of a Buddhist site that is removed from the immediate vicinity of the city. As I discuss below, Buddhist monastic retreats are well documented among historic and modern monastic communities in Thailand (Murphy 2010b, forthcoming) and other parts of the Buddhist world (Coningham 1995; Ray 1986; Schopen 1997). Nern Phra may have served as a full or part time refuge from city life for Buddhist monks affiliated with Nakhon Pathom. Secondly, Nern Phra provides a rare example of a *dharmachakra* whose *in situ* location is documented. At least 18 individual examples and over 30 fragments of *dharmachakras* have been found at Nakhon Pathom, but the



Figure 4.11. Quartzite Buddha in *bhadrasana* posture, Phra Pathom Chedi, Nakhon Pathom (likely originally from Wat Phra Men)

example from Nern Phra is the best provenienced example from the site. Other sites with *dharmachakras* whose intra-site provenance are known include Kamphaeng Saen, U-Thong, and U-Taphao. All of these examples were recovered with brick Buddhist monuments located outside the moated enclosure. While the *dharmachakra* is a possible symbol of a Buddhist monarch or *chakravartin* (see Chapter 3), these locations at Buddhist sites outside the settlement cores suggest that among the Dvaravati the *dharmachakra* may have been more closely identified with Buddhist monastic communities than with the political elite.

Despite decades of research on Nakhon Pathom's Dvaravati period Buddhist monuments, relatively little is known about the domestic and economic activities of the settlement's residents. Indrawooth (1983) and more recently Khunsong³ (2009; 2011) have made important contributions toward remedying this problem through their excavations targeting habitation areas at Nakhon Pathom. Indrawooth's (2004:130) test excavations inside the moated area of the city documented abundant Dvaravati-style ceramics and glass beads associated with a group of objects, which included bronze ornaments, iron tools and weapons, and spindle whorls, with traits that "resemble(d) those common in earlier prehistoric objects". Based on a stylistic analysis of the pottery recovered in her excavations, and a consideration of the stylistic dating of the sculpture and epigraphy from the site, Indrawooth concluded that Nakhon Pathom was founded between the eighth and ninth centuries CE. She proposed that the older style of the tools and weapons was due to the continued use of these forms during the Dvaravati period. Unfortunately, Indrawooth was unable to date the lower or middle occupation layers in her excavation through absolute means, but a single radiocarbon date from the upper level dated the last phase of occupation to 1100 – 1156 CE (Indrawooth 1983:82).

More recently Khunsong (2009; 2011) conducted additional test excavations at the Hor Ek site located along the ancient Ban Kaeo canal inside the northern portion of the settlement enclosure at Nakhon Pathom. In 2003, following the construction of a primary school after which the site is named, local residents began reporting Dvaravati-

³ Khunsong directed the excavations and published the results in his Thai thesis (2009). He has subsequently co-authored a report on the excavations with Indrawooth and Natapintu (2011).

style material, including ceramics, beads, figurines, votive tablets, and an inscribed coin from this area. Surveys by a team from the Phra Pathom Chedi National Museum in 2006, and then by Khunsong in 2008 and 2009, documented a dense concentration of Dvaravati-style material in the vicinity of the new school, but no ancient monuments or structures were visible on the surface. In 2009 Khunsong excavated a 2 x 8 m test unit just south of the school. His excavations documented at least three phases of occupation spanning from what he identified as “Pre or Proto-Dvaravati” to late Dvaravati, with subsequent evidence of Khmer period occupation notably absent. Thermoluminescence dating of ceramics and bricks dated the occupational sequence from the third to ninth centuries CE, and Khunsong believed the occupation extended to the eleventh century CE based on relative dating (see Appendix A).

The starting dates for the sequence Khunsong documented at Hor Ek posed a significant challenge to the historically held view that Nakhon Pathom was initially settled in the seventh or eighth centuries CE. Khunsong et al. (2011:161) noted that “most of the artifacts from [the excavation] can be dated by typological analysis to the Dvaravati period”, but he also recovered a few objects which he considered to predate typical Dvaravati style material. In the first phase of occupation, Khunsong et al. (2011) recovered the rim of a kendi (a spouted jar) resembling Bronson’s type TQE from Chansen. Bronson (1976:337) dated this type to the third to seventh centuries CE, a period he viewed as predating the Dvaravati and designated as “Funan”. In addition to the kendi fragment, Khunsong et al.’s (2011:162) first phase also contained several sherds with burnished interior stripes resembling techniques used on Phimai Black Ware. This style of pottery is best documented in late prehistoric Northeast Thailand (Welch and McNeill 2004), but wares with similar burnishing patterns have been found in central Thailand at sites such as Chansen (Bronson 1976) and in my own excavations at Kamphaeng Saen (see Chapters 5 and 6). At Chansen, Bronson (1976:134-135, 272-273, 389-391) identified two ceramic ware types with patterned burnishing. Type RBB vessels, recovered from contexts Bronson termed “Metal Age” (c. 600 BCE to 250 CE), strongly resembled Phimai Black Ware, and he believed they were imported, possibly

from the Phimai region. The second type of patterned burnished ware from Chansen, Type PBB, was found in “Late Funan” (c. 500 to 600 CE) contexts, and had strong linear burnish marks on the vessel interiors. Despite these similar surface treatments, Bronson (1976:135) felt there was “probably no connection” between Type PBB and Phimai Black Ware. The linear burnish marks on the bowls recovered in my excavations at Kamphaeng Saen resemble both Bronson’s type PBB and Khunsong et al.’s (2011:fig. 12) burnished vessels, suggesting these vessels had a wider distribution in central Thailand than previously thought.

Khunsong dated the first phase of occupation at the Hor Ek site to the third to sixth century CE based on relative dating of the ceramic assemblage, and his own supporting thermoluminescence dates. He described this phase as “Pre- or Proto-Dvaravati”, and felt it was contemporaneous with Phase III from Chansen, which Bronson (1976) labeled “Funan”, and Phase II from U-Thong which Barram and Glover (2008) labeled “Early or Proto-Dvaravati” (see Appendix A for a comparison of the absolute dates and varying chronological designations from these sites).

Even though Khunsong recognized the similarities between the material from Phase One at Hor Ek and the ceramics from U-Thong which Barram and Glover (2008) labeled “Early Dvaravati”, he reserved the use of this label for material after the sixth century CE when the name “Dvaravati” appeared in Chinese sources. He identified the transition between the first and second phases at Hor Ek based on some significant changes in the ceramics, fauna and other artifacts. The lower levels of Phase One contained abundant freshwater and marine shells that are not present in the second half of Phase One or in the later phases. However, Khunsong identified the actual transition to Phase Two by the absence of ceramics resembling Phimai Black Ware found in phase one and the presence of beads, metal objects and Dvaravati style ground stone tools.

Khunsong dated the second phase of occupation at Hor Ek to the seventh to eighth centuries CE and labeled it as “Early Dvaravati”. This phase produced an earthenware sherd with a stamped floral design, which closely resembles similar examples from seventh to eighth century CE Dvaravati levels at Chansen (Bronson

1976:434-440) and Beikthano in Myanmar (Indrawooth 1985:30-32). He saw the appearance of beads in this phase as evidence of increasing trade activities with communities in peninsular Thailand and the expansion of Nakhon Pathom's influence. These connections intensified during the final phase which Khunsong et al. (2011:169) identified as "Late Dvaravati" and dated to the ninth to eleventh centuries CE.

The significance of Khunsong's work at the Hor Ek site extends beyond the much needed absolute dates for the occupation at Nakhon Pathom that it has provided. In addition to the domestic materials discussed above, the site also contained terracotta roof tiles and a few bricks. Roof tiles are rare in Dvaravati contexts and the bricks are generally assumed, perhaps erroneously, to only occur as part of religious monuments. Based on the Dvaravati-style Buddhist votive tablet found on the surface Khunsong et al. (2011:160) suggested that a structure used for Buddhist activities may have been located at the site, although they recognized that there was no evidence for specific ceremonies or rituals. While the building materials may have been used in a Buddhist structure, it is also possible that they were part of a non-religious structure, used for elite housing or administrative activities, with the votive tablet used as a personal devotional item. Without additional evidence, interpretations of the function of the Hor Ek site will remain speculative; however, the absolute dates and ceramic evidence from the site have already made significant contributions to our understanding of the development of the largest Dvaravati urban center.

Kamphaeng Saen

In Chapters 5 and 6, I provide an in depth description and analysis of the organization of space at Kamphaeng Saen, but the following brief description of the settlement is useful for placing it in the broader discussion of Dvaravati towns and cities in west-central Thailand. Kamphaeng Saen has a moat and rampart enclosing a 52.5 ha area with an irregular plan (Fig. B.4). The Huai Yang stream, a small tributary of the Tha Chin River, feeds the moat and runs along its northern edge. Kamphaeng Saen is located about 25 km from Nakhon Pathom and 40 km from U-Thong. Despite this central location between two larger well-known Dvaravati urban centers, Kamphaeng

Saen had not been systematically investigated prior to the 2009-2010 Kamphaeng Saen Archaeology Project detailed in Chapters 5 and 6. Dupont (1939), Boisselier (1965a) and Wales (1969) each made brief visits to the site to inspect Dvaravati-style sculptures and make preliminary observations. Additionally, local residents have recovered Dvaravati style ceramics, ground stone and beads both within the enclosure and up to 4 km away (Nuamboonlue 1996). Together with the plan of the wall and moated enclosure, these chance finds all indicated that there was Dvaravati period occupation at Kamphaeng Saen, but the details and full range of the site's chronology were unknown.

The first Dvaravati sculptural objects reported from the site were three Dvaravati-style Buddha statues made of stucco and laterite that local Buddhist monks had recovered from a group of small brick mounds and then showed to Dupont (1939). Dupont (1939, 1959) felt the statues stylistically dated to the Late Dvaravati Period and displayed a relatively unique local sculptural style. Dupont reported the mounds where the statues were recovered were located northwest of the settlement enclosure, but subsequent investigation and local oral histories have shown they were located northeast of the enclosure (Nuamboonlue 1996; Chapter 6; Wales 1969). In 1963 a blue-green limestone *dharmachakra* and a stone socle bearing an inscription about the Buddhist Four Noble Truths, written in Pali using a South Indian derived script, were also found at Kamphaeng Saen (Chongkol and Woodward 1966). The *dharmachakra* and socle were found together, east of the settlement enclosure, beyond the brick mounds where the statues were recovered (Nuamboonlue 1996; Wales 1969). In addition to the group of brick mounds east of the enclosure, local residents have also identified ruins of brick structures, probably Buddhist stupas, within 400 m to the north and south of the enclosure, as well as approximately 2 km to the west (Nuamboonlue 1996). It appears that these structures are contemporaneous with the Dvaravati period occupation of the site, but they require additional investigation.

Despite local legends about the existence of a stupa at the center of the site (Nuamboonlue 1996), there is little evidence for any monuments inside the settlement enclosure. Boisselier (1965a) reported finding no surface sherds inside the enclosure,

but Wales (1969:50) identified low densities of Dvaravati-style sherds on the surface in some parts of the site, with other areas void of any surface material. Based on the irregularity of the plan of the moat and rampart and the low density of surface material, Wales (1969:51) speculated that Kamphaeng Saen was founded as “an early outpost towards the sea which stagnated rather than developed with the establishment of a definitive seaside capital at Nak’on [sic] Pathom.” The surveys and excavations we conducted in 2009 and 2010 confirmed Wales’s initial impressions about the irregular distribution and relatively brief occupation of the site. Wales may also have been correct about Kamphaeng Saen’s limited growth being tied to the increasing urbanization and influence of Nakhon Pathom. Even though the absolute dates from both sites now indicate that Nakhon Pathom was actually established before Kamphaeng Saen, the evidence for expanding long-distance trade relations at Nakhon Pathom after the eighth century CE corresponds to the final phase of occupation at Kamphaeng Saen and may explain the decline of the settlement. In Chapter 6, I examine in greater detail how the changes at both of these neighboring centers were interconnected and contributed to a dynamic urban landscape in west-central Thailand.

U-Thong

The eastern side of the settlement of U-Thong is located adjacent to a seasonal tributary of the Tha Chin River, which is several kilometers to the east. It is unclear how the hydrology around U-Thong has changed since the Dvaravati period, and if the site formerly had more direct access to larger rivers and the sea (see Doungsakun 2005). The seasonal stream, as well as several streams from the hills to the west, feed an elongated irregular oval shaped moat that encloses a 96 ha area. The site is also encircled by a clay rampart that, unlike most Dvaravati ramparts, reportedly had traces of a stone wall along its top (Indrawooth 2004:127). Roughly 1 km west of the settlement limestone and sandstone foothills of the Tenasserim Mountains abruptly rise from the alluvial plain. There are several brick foundations of Dvaravati period monuments at the base of these foothills, as well as surrounding and inside the settlement enclosure.

Compared to many Dvaravati settlements, U-Thong's significance was recognized relatively early. In 1904, Prince Damrong identified the settlement as a potentially significant archaeological site, although its age was unknown (Wales 1969:5). Since that time, several research projects (Boisselier 1965a, b, 1968; Loofs 1970; Wales 1969) have investigated the archaeology of the site. These projects targeted both habitation areas and the brick monuments, although the results from the latter have received the most attention. Two Buddhist stupas and what have been interpreted as the foundations of two *viharas* have been found inside of the enclosure (Kingmani, et al. 2002). Additional Buddhist monuments were identified within 250 m to the north, east and west of the outside of the enclosure. These included stupas with round, square or octagonal bases made of large Dvaravati style bricks (Fig. 4.12, B.6). Boisselier (1965b, 1968) excavated several of these stupas. In the excavations around Stupa No. 1 east of the enclosure, he noted a long sequence of continuous occupation at the site. In the earliest levels he identified ceramics, ornaments and seals that he felt closely resembled material from the Funan site of Oc Eo in southern Vietnam, and as a result he dated the initial occupation of U-Thong to the first centuries CE. In the cluster of monuments east of the enclosure,



Figure 4.12. *Stupa* No. 2, U-Thong

Boisselier (1968) also excavated what he interpreted as the laterite base of a *vihara*. An additional large square-based stupa (No. 2) is located adjacent to the north end of the moat, and had a carved stone dharmachakra and small Buddha head made of gold associated with it (Fig. 4.12). Finally, over 1 km to the west of the site, several Buddhist monuments were built at the base of the foothills. A second dharmachakra, together with its pillar and base, was found in this area associated with Stupa No. 11 (Indrawooth 2004; Wales 1969:24).

In addition to the Buddhist monuments in and around the settlement enclosure, Wales (1946, 1969) also reported a stela with a carved image of Vishnu in a modern shrine a U-Thong. The stela resembles the four-armed Vishnu with a mitred crown recently documented at Pong Tuk (see above), and Wales (1969) felt it displayed the same Pallava influences as the more refined Vishnu sculptures from the settlement of Dong Sri Mahasot in east-central Thailand.

The original provenance of the Vishnu stela is unknown, but several other Hindu objects have been recovered a little over 3 km southwest of U-Thong at the site of Khok Chang Din. The site contains four large earthwork reservoirs and fifteen Dvaravati period brick or laterite monuments (Doungsakun 2005; Kaongoen 2002; Kingmani, et al. 2002). Rattankaun's (1968) excavation of one of the laterite monuments (Ruin No. 5) revealed a rectangular (9 x 12 m) laterite foundation. Associated with the monument were Dvaravati ceramics, silver medallions and a large carved green-stone *mukhalingam* (a *shivalingam* with the face of Shiva carved into its surface). Wales (1969:22) observed that the features of the carved face on the *lingam* displayed a Pre-Angkorian style from the seventh to eighth centuries CE. At least one other large stone *shivalingam* with its base has also been found at the site (Kingmani, et al. 2002:83).

Additional excavations by the Fine Arts Department (Kaongoen 2002:15; Kingmani, et al. 2002:83) at the site documented other structures with similar rectangular foundations (Fig. 4.13), Dvaravati-style earthenware ceramics (including several spouted jars known as *kendi*), and imported blue-glazed Persian wares and Chinese Tang Period glazed wares. Iron slag was found in several locations at the site.



Figure 4.13. Rectangular laterite foundation, Ruin No. 6, Kok Chang Din

Several rare metal objects were also recovered from the structures such as a bronze bowl and “candlestick”, as well as silver medallions bearing motifs seen on similar examples from other Dvaravati sites. Three of the medallions also had the inscription, in Pallava-derived script, of “Sri Dvaravati Savarapunyua” (“meritorious act of the King of Dvaravati”) seen on the medallions from Nakhon Pathom and a few other sites. A large earthenware jar containing a horde of silver medallions stamped with a conch motif was also found at the site.

In addition to the stone and brick monuments, Kok Chang Din contains four earthen enclosures up to five meters high and roughly 20 to 200 m in diameter. These structures were previously thought to be elephant corrals, but excavations and subsequent pollen and sediment analyses has shown that they actually served as reservoirs (Doungsakun 2005). Through these analyses Doungsakun (2005) showed that the area around U-Thong experienced significant droughts during the Dvaravati period. The reservoirs would have provided a valuable source of irrigation water for fields

south of U-Thong. Doungsakun (2005:113) also suggested that the evidence for Hindu sculpture and what have been interpreted as temples around the reservoirs may be due to the importance of water in some Hindu ceremonies and a ritual focus at the site on fertility. *Shivalingams* are connected with fertility, and it is significant to find several of these objects at the site considering the widespread evidence for Buddhist monuments at U-Thong and at Dvaravati settlements in general. If the drought in the U-Thong area caused the community to turn to fertility rituals associated with *shivalingams*, it suggests that for the Dvaravati the lines between Hindu and Buddhist practices were fluid.

Compared to the religious monuments in and around U-Thong much less is known about domestic, administrative and craft production activities at the site. Stone moulds for making medallions have been found at U-Thong (Indrawooth 2004:127), although it is difficult to say how tightly the production of these objects were regulated by administrators since their function is unclear. More convincing evidence for the presence of political elites at U-Thong comes from the inscribed copper plaque (discussed in Chapter 3) that documents the ascension of Sri Harsavarman to the throne and the offerings he made to a *shivalingam* upon this occasion (Coedès 1958). According to Wales (1969:20) the plaque was recovered, apparently by chance, in the northern end of the settlement enclosure with other Dvaravati-style objects such as a silver medallion with a sun emblem, sealings and a Buddhist votive tablet. As I discussed in Chapter 3, it is unclear if the plaque referred to individuals who actually ruled at U-Thong, and it is unclear where it was actually created. However, the recovery of the plaque in the north end of the site together with other relatively rare objects suggests that this area of the settlement may have been the site of elite activities.

Between 1967 and 1970 the Thai-British archaeological expedition carried out test excavations of a non-monumental area in the southeastern part of the enclosure at a location known as Tha Muang (Loofs 1970:180-181; Loofs and Watson 1970).

⁴ The area contained abundant Late Iron Age and Dvaravati earthenware ceramics as well as iron implements, slag, spindle whorls, glass beads and ground stone, leading

⁴Unfortunately a complete report of the Thai-British project at U-Thong was never completed, and many of the details of the project's excavations and results remain unknown.

the excavators to interpret the areas as both domestic and craft production space. Additionally, the excavators identified successive layers with concentrations of plaster, burnt clay and brick rubble, which they interpreted as evidence of the repeated destruction and rebuilding of a group of structures. It is unclear if they were able to document the ground plan of any of these structures, but the excavators felt some of the buildings were built of bamboo with clay walls (Loofs 1970:181). The presence of brick rubble is also significant, since it suggests that bricks may have been used to build structures other than monuments, but there are few details on how it was used in this area other than as fill in postholes. Below the group of structures the excavators identified several large 'postholes' that they felt were spaced too closely to be from domestic structures. They were uncertain about their use, but thought they may have been from special structures such as animal pens, or used in iron or glass production.

In their analysis of the ceramics from the site, the Thai-British expedition (Loofs 1979; Loofs and Watson 1970) followed Boisselier (1965b, 1968) in identifying an early Funan-related phase followed by a Dvaravati phase of occupation at the site. They dated the transition between the two periods to the sixth century CE, following the established starting date for the Dvaravati even though the five radiocarbon dates from the excavation fell between the first and seventh centuries CE. More recently, Barram (2003, 2004) reanalyzed the ceramics from the Thai-British excavations now housed at the Australian National University. He also processed an additional five radiocarbon samples from the original excavations (see Appendix A). Barram found that typical Dvaravati-style earthenware ceramics (e.g., simple clay lamps, spouted vessels or kendis and carinated vessels) first appeared in Phase 2, which the original excavators had described as Funan. Radiocarbon samples from this phase produced dates between the first to fourth centuries CE. As I noted above, the results of the reexamination of the assemblage from Phase 2 at U-Thong, have led Barram and Glover (2008) to argue that material from this period should be designated "Early or Proto-Dvaravati" rather than "Funan", and the starting date for the Dvaravati period should be revised to at least the fourth or fifth century CE.

Regardless of the differences in their cultural chronologies, both Barram and the Thai-British Expedition's analyses showed a continuous occupation of U-Thong extending to at least the first century CE. Wales (1969) and Wheatley (1983) both considered the moat's irregular plan as evidence of its relatively early construction compared to other enclosed settlements in central Thailand (see below). The resources and political influence required by the U-Thong community to construct these early earthworks may have come from its role in interregional trade networks. Late Iron Age and early Dvaravati period material culture from the site resembles contemporaneous material from India, Myanmar and southern Vietnam, and some objects appear to have been directly imported from these regions. This evidence suggests that U-Thong was a thriving center of interregional trade and interaction by the early Dvaravati period (Boisselier 1965b; Indrawooth 2004; Vallibhotama 1986; Wales 1969). As I discussed in Chapter 3, the presence of the inscribed copper plaque that named the succession of specific rulers also led scholars (e.g., Coedès 1958; Wales 1969) to argue that U-Thong was an early royal capital of the Dvaravati. While the early occupation and prosperity of the community likely meant that it yielded considerable political influence, the inscribed plaque does not provide sufficient evidence for the settlement's status as a political capital.

Radiocarbon dates from the Thai-British Expedition provided absolute dates for occupation at U-Thong as late as the seventh century CE, and the presence of contexts with Dvaravati ceramics above those where the samples were collected suggest the community continued to exist even later (Barram 2003; Loofs 1979). However, Wales (1969) argued that the relatively small scale and early style of the monuments at U-Thong indicated that its prosperity and influence waned in the last quarter of the seventh century CE. He saw this decline as the result of U-Thong's diminished access to maritime trade due the marine transgression of the coastline and the founding of Nakhon Pathom. Even though Khunsong's (2009; 2011) excavations at Nakhon Pathom have pushed the dates of the initial settlement of the city back to the early centuries CE, Wales's hypothesis may still be partially accurate. After its initial settlement, the

urbanization of Nakhon Pathom may have taken several centuries, at which point it may have drawn political and economic influence away from U-Thong.

Local environmental changes may have also contributed to the decline of U-Thong. As discussed above, Doungsakun (2005) suggested that the reservoirs at Khok Chang Din may have been built as a response to significant droughts in the U-Thong area. Alternatively, in his excavations around Stupa No. 1, outside the eastern side of the enclosure, Boisselier documented what he interpreted as evidence of significant flooding around the twelfth century CE. He felt the flooding breached the eastern rampart of the settlement, and led to the town's abandonment. Doungsakun's and Boisselier's observations are not necessarily contradictory, and when considered together create a picture of a community grappling with significant environmental unpredictability tied to water shortages and surpluses over the course of the Dvaravati period. Unlike other major Dvaravati centers (e.g., Nakhon Pathom, Lopburi, Sri Thep) there is no evidence at U-Thong for direct occupation or even influence from the Khmer in the eleventh to twelfth centuries CE, providing additional support for Boisselier's argument that the site was abandoned by this time or even earlier. An Ayutthaya period ruler returned to U-Thong to restore a Dvaravati period stupa in the seventeenth century (Wales 1969), suggesting that the settlement continued to hold importance, perhaps legendary, long after its abandonment.

Settlement patterns

Most moated Dvaravati settlements would not qualify as 'urban' based on their sheer size when compared to modern cities. Nevertheless, based on social and functional definition of pre-industrial urban centers discussed in Chapter 1, I feel they can be accurately and usefully described as cities and towns. As I demonstrate below, the populations of Dvaravati centers contained migrants from a diverse group of smaller settlements and this coming together of unrelated people required them to develop new relationships. Additionally, Dvaravati centers provided a range of administrative, economic and religious services to the smaller villages and hamlets that surrounded them.

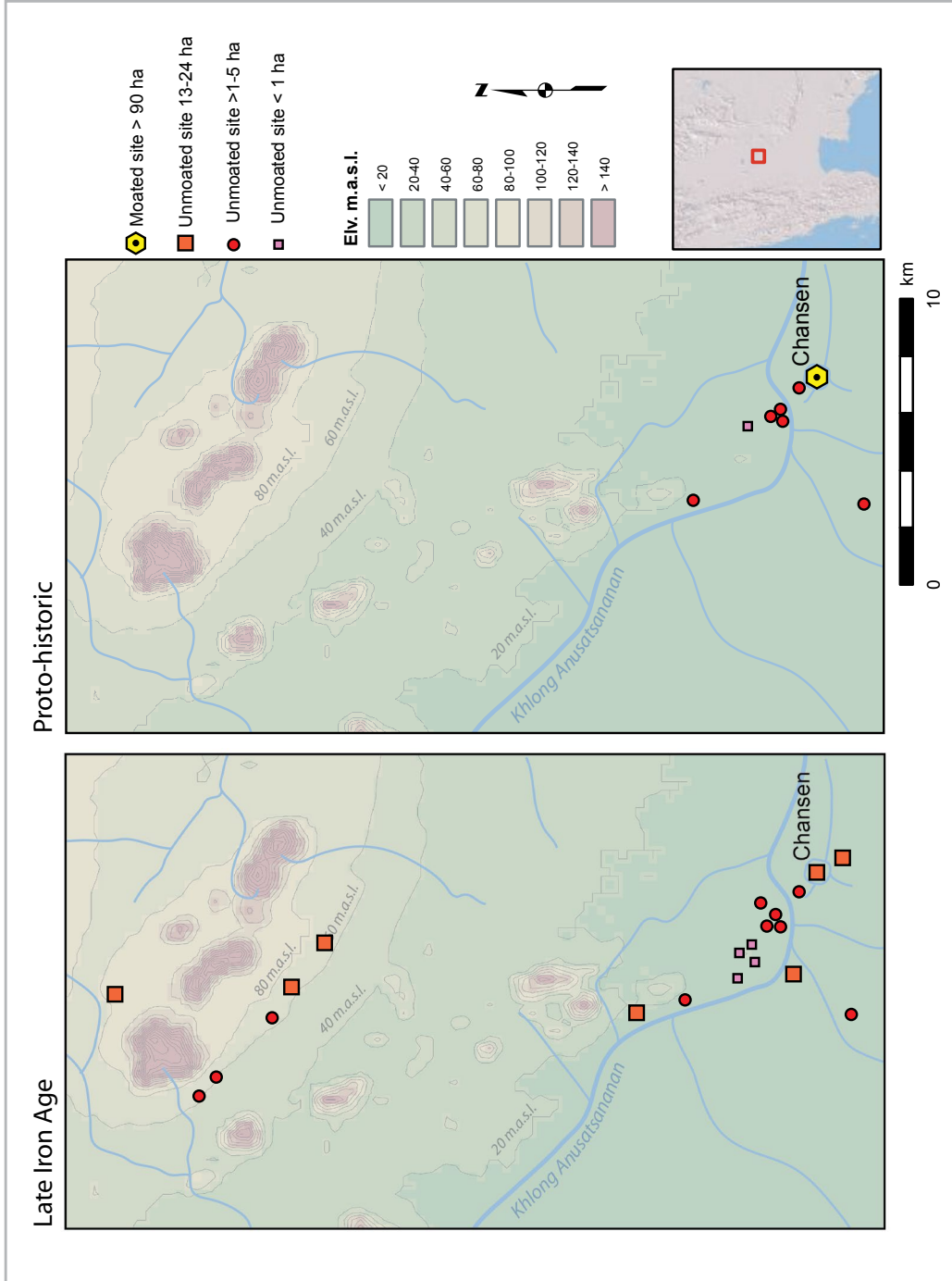


Figure 4.14. The KSTUT survey area showing the distribution of Late Iron Age (l) and Proto-historic (r) villages and hamlets around Chansen (adapted from Onsuwan Eyre 2006: Fig. 9.6 and 9.7 and Appendix D; elevation data source: 300 m DEM, Marc Souris, IRD). Note: the enclosed area of Chansen is only 43 ha.

Systematic surveys of the areas around the Dvaravati moated sites of Chansen (Onsuwan Eyre 2006), Lopburi (Mudar 1993) and Muang Phra Rot (Sulaksananont 1987), have shown that they were surrounded by smaller contemporaneous unmoated villages and hamlets. Around Chansen these outlying unmoated sites clustered within a 3 km radius of the enclosed center, a distinctly different distribution from the more dispersed settlements of the preceding late Iron Age (Fig. 4.14; Onsuwan Eyre 2006). The unmoated sites around Lopburi ranged in size from 0.1 to 12.1 ha (Mudar 1999:Appendix II). The moated sites likely served a combination of administrative, religious and redistributive functions for their smaller neighboring unmoated settlements, although the nature and extent of these activities need to be investigated further. Mudar (1999) provided a glimpse of some of these relationships. She calculated that the catchment areas around many of the large Dvaravati moated settlements would not have produced sufficient amounts of food to support the centers' residents. The inhabitants of the villages, hamlets and smaller moated towns likely produced food surpluses to support the populations of the larger urban centers.

In addition to differences in agricultural surpluses, there may have been significant differences in other economic, religious and political functions of individual settlements. There is considerable variability among Dvaravati moated settlements, most readily visible in their size. Mudar (1999) also used her measurements of site size and catchment areas to examine possible administrative hierarchies among Dvaravati moated sites (Fig. 4.15). There was insufficient data on the smaller unmoated villages and hamlets to also include them in her study, so her hierarchy only accounted for the sites in the upper tiers, which were the settlements with public architecture in the form of earthwork enclosures. Among the enclosed sites, she identified five tiers of site sizes, and with the addition of unmoated sites the total settlement hierarchy would have had at least six tiers. This settlement hierarchy only partially corresponded to the administrative hierarchy. After also considering site location and catchment, Mudar identified four tiers of administrative sites, with seven administrative territories.

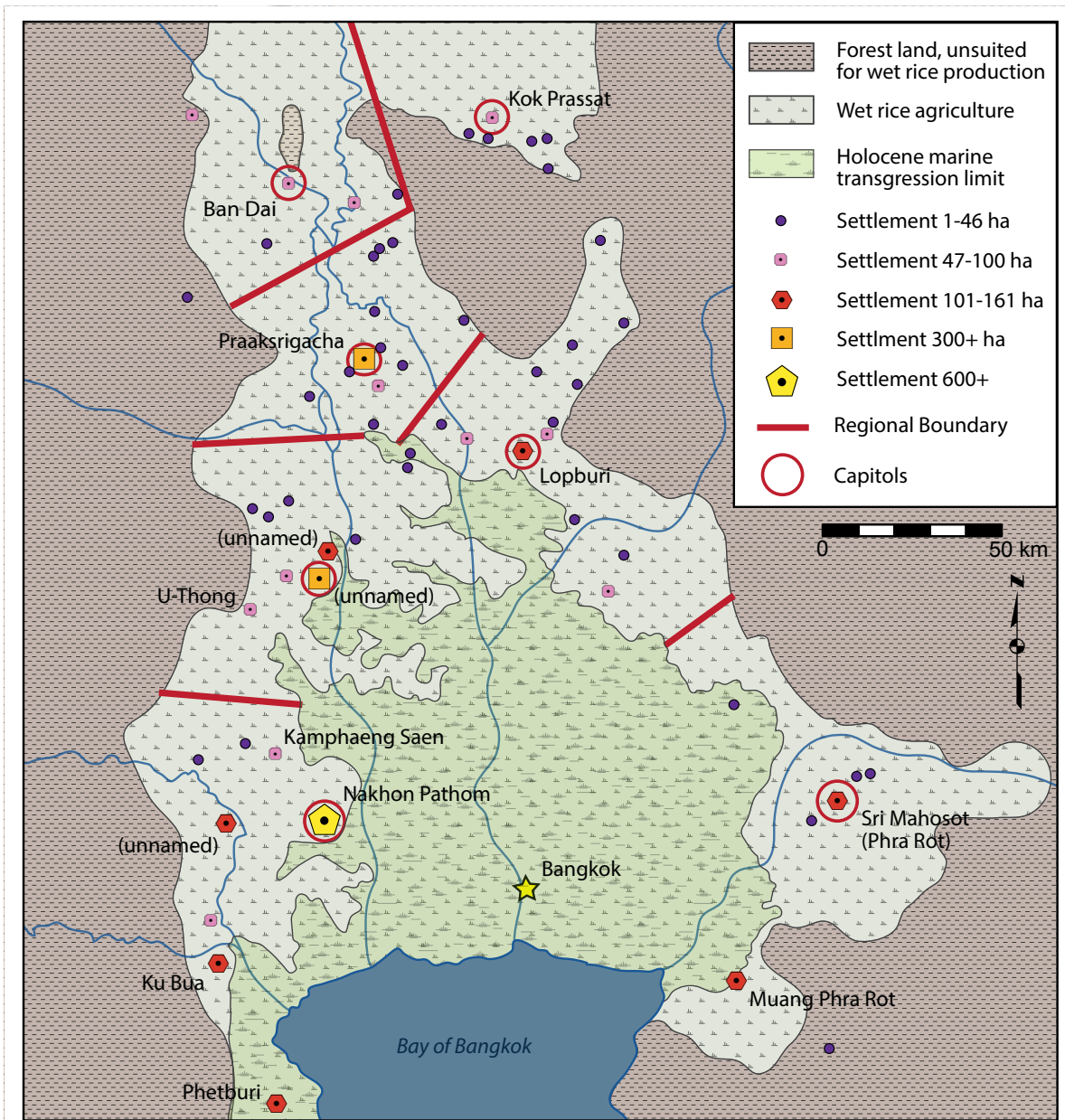


Figure 4.15. Mudar's settlement hierarchy and administrative territories for Dvaravati period moated centers (adapted from Mudar 1999: Fig. 2 and Appdx. I)

As Mudar recognized, her study had several limitations, including the fact that her settlement hierarchy did not account for the presence of monuments other than moats, administrative objects or evidence of craft production. Additionally, her identification of sites as Dvaravati was based on Supajanya and Vanasin's (1983) assessment of moat form from aerial photographs; in several cases it is unclear if the identified sites actually have Dvaravati period occupation. I have attempted to visit several of these questionable sites with mixed results. Some of the sites they identified are actual sites with Dvaravati period material, while others do not appear in other inventories of Dvaravati sites and are not identifiable on satellite images or on the ground (e.g., the 315 ha site of "Praaksrigacha" that Mudar listed as a second tier regional administrative center). A systematic evaluation of all of the sites listed by Mudar was beyond the scope of my research, but a future effort to survey and determine the chronology of these sites would greatly benefit our understanding of the settlement and administrative hierarchies in central Thailand. Her study also focused on the Central Valley and therefore did not include sites further to the northeast, such as Sri Thep and Muang Sema whose sizes exceeded her second tier sites.

For these reasons I have chosen to take a more conservative approach to the Dvaravati settlement hierarchy and include only the moated sites with documented Dvaravati period occupation in central Thailand. Indrawooth (1999:85-124; Map 127) provided the most comprehensive inventory of Dvaravati towns and cities.⁵ It is important to note that four of the seven sites Mudar (1999) identified as second tier regional administrative centers do not appear on Indrawooth's map (i.e., Suphanburi, Praaksrigacha, Kok Prassat and Ban Dai). Using satellite images (Landsat and SPOT) provided by Google Earth, I have located 34 of the sites from Indrawooth's inventory and have supplemented her thorough map with site-size data for these settlements (Fig. 4.16; Appendix B). The majority of these sites are located in central Thailand.

⁵ Indrawooth (1999) includes a summary in English, but the majority of the information on individual Dvaravati sites is in Thai. English language reviews of some of the more prominent Dvaravati sites include Indrawooth (2004), Higham (2002), O'Reilly (2007), Wales (1969) and Wheatley (1983).

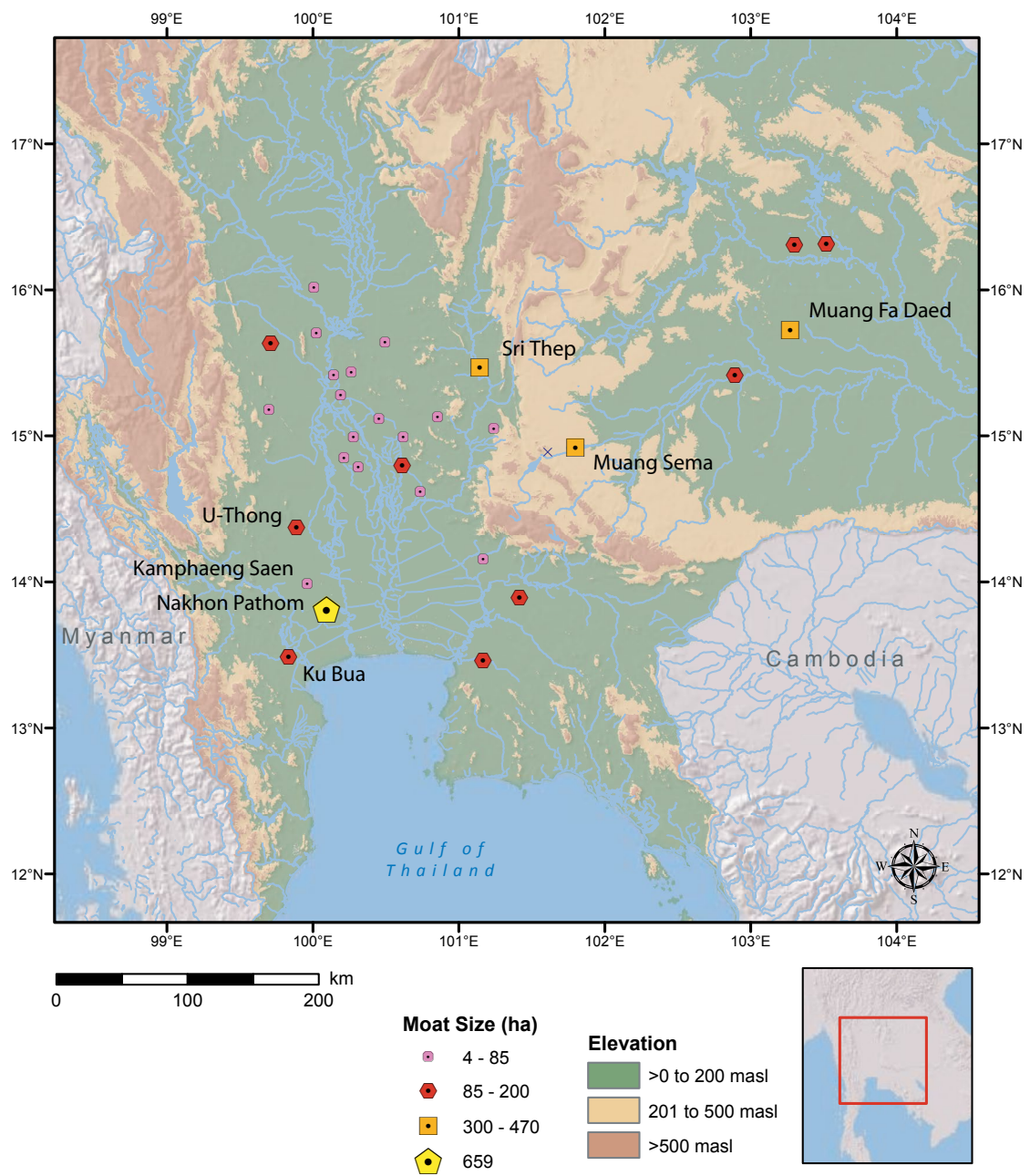


Figure 4.16. Settlement hierarchy of enclosed Dvaravati centers (elevation data source: 300 m DEM, Marc Souris, IRD)

I have also included a few of the most prominent sites from northeastern Thailand with Dvaravati material. In this region, Moore (1988:8-9) identified two types of moated settlements in the Mun River basin: water-harvesting and territorial sites. The water-harvesting sites typically have several concentric moats whose courses are defined by the local topography and hydrology. The territorial moated sites tend to be larger and have moats that are wider and, when built as extensions, enclose new spaces rather than following the pre-existing moats. Some territorial sites appear to have begun as water-harvesting sites. Murphy (2010a:136) documented the location of a total of 45 Dvaravati period moated settlements in the Mun and Chi River basins, including both water-harvesting and territorial sites. Unfortunately site-size data is not yet available for all of these sites. It appears that most, if not all, of the Dvaravati moated settlements in central Thailand fit Moore's definition of the territorial site. The lower density of moated sites and the lack of water-harvesting sites in central Thailand may be due to the more abundant water resources in this region. For northeast Thailand, Indrawooth's (1999) inventory included a few of the larger and better documented moated centers (all territorial sites) with Dvaravati material, and I include measurements for these sites in the analysis below, but the higher density and variability of moated sites in the northeast makes a systematic study of all of the moated sites in this region beyond the scope of this study. Additionally, even though many of these sites have Dvaravati material on their surface, we are just beginning to understand the cultural and political relationships between these communities and those located in the Central Valley.

All of the sites to be measured were located on 2.5m SPOT satellite imagery in Google Earth. Measurements of the moat enclosures were then collected using the program's polygon tool. Like Mudar, I have measured site-size as the area enclosed by the moat. At sites with concentric moats or moat extensions I used the area enclosed by the outer-most moat. In many cases, my measurements for site sizes vary significantly from Mudar's measurements (e.g., for Kamphaeng Saen, I measured 52.5 ha versus Mudar's 71 ha). These differences may be due to the higher accuracy provided by

computer-based GIS measurement tools. It is also possible that modifications of moats through modern development and agriculture may have altered the size of some sites, although comparison of satellite imagery with historic aerial photos and maps suggests this is not a significant factor at most sites. Many of the sites have religious monuments and possible occupation areas outside of the moated enclosures. Unfortunately there is insufficient data on these areas at most sites to include them in the calculation of site-size. Additionally, there is little information on the density of occupation within the moated enclosures. As I demonstrate in Chapter 5, significant areas inside the enclosure at Kamphaeng Saen were left as open space. Even if moated enclosure size is an inexact measure of actual site-size, it provides the most widely available measurement of the approximate size of the settlements, as well as a relative comparison of the resources available to these communities to spend on their earthworks.

A Histogram (Fig. 4.17) of the site-size data I collected for moated Dvaravati sites in central and northeastern Thailand shows at least four distinct tiers of moated settlements. These include the top-tier city of Nakhon Pathom (659.4 ha), a second tier of smaller cities (469.2 - 311 ha), a third tier of small cities and towns (195.2 - 93.4 ha), and a fourth tier of towns (78.5 - 4.3 ha). A few of the unmoated sites would have also fallen in this fourth tier, but for the most part would have formed a fifth, and possibly sixth, tier of villages and hamlets not included on the histogram. It is interesting to note that the third and fourth largest sites are both located in the northeast, and the second largest site, Sri Thep, is located at the border between the central and northeastern regions. The settlement hierarchy is not synonymous with the administrative hierarchy and the extent to which these settlements were politically integrated is unclear. The second-tier sites in the northeast may have actually been the centers of their own polities, or maintained semi-independence as vassal polities.

A second histogram (Fig. 4.18) including only the sites in central Thailand (i.e., no sites in the Mun or Chi River drainages) still shows a four tier hierarchy, although the second-tier now only includes Sri Thep. Also the gap between the top two-tiers of sites and the third-tier is now much larger. It is interesting to note that the top second-tier

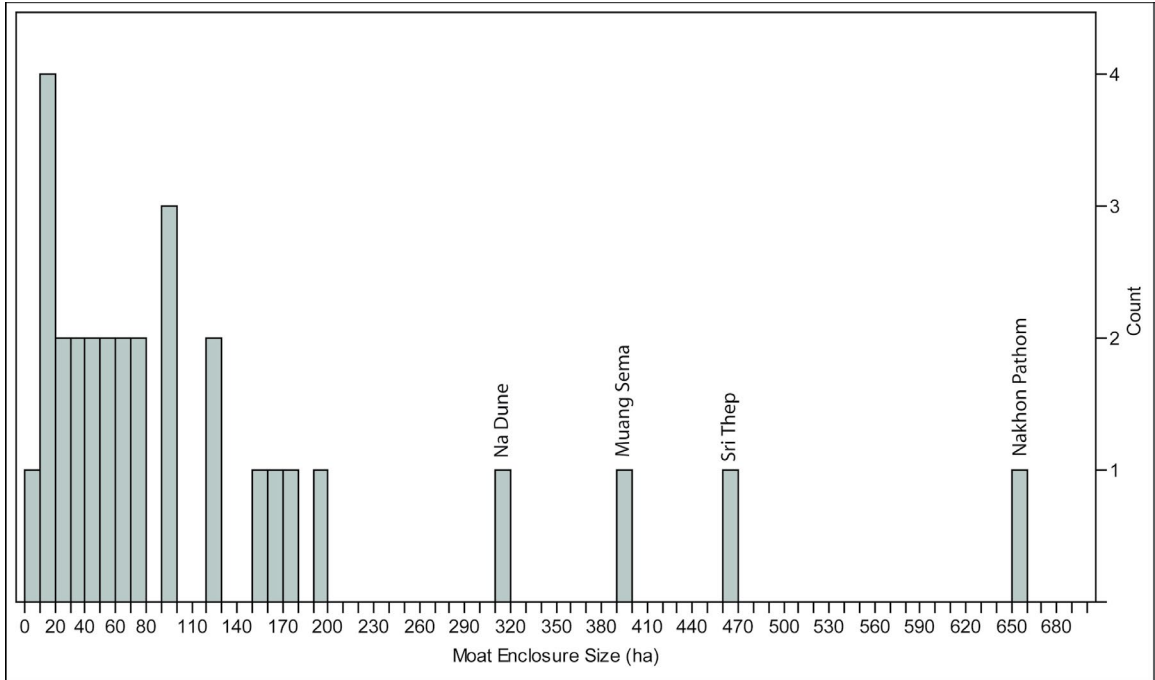


Figure 4.17. Enclosure sizes of Dvaravati sites in central Thailand (with comparative sites from northeastern Thailand)

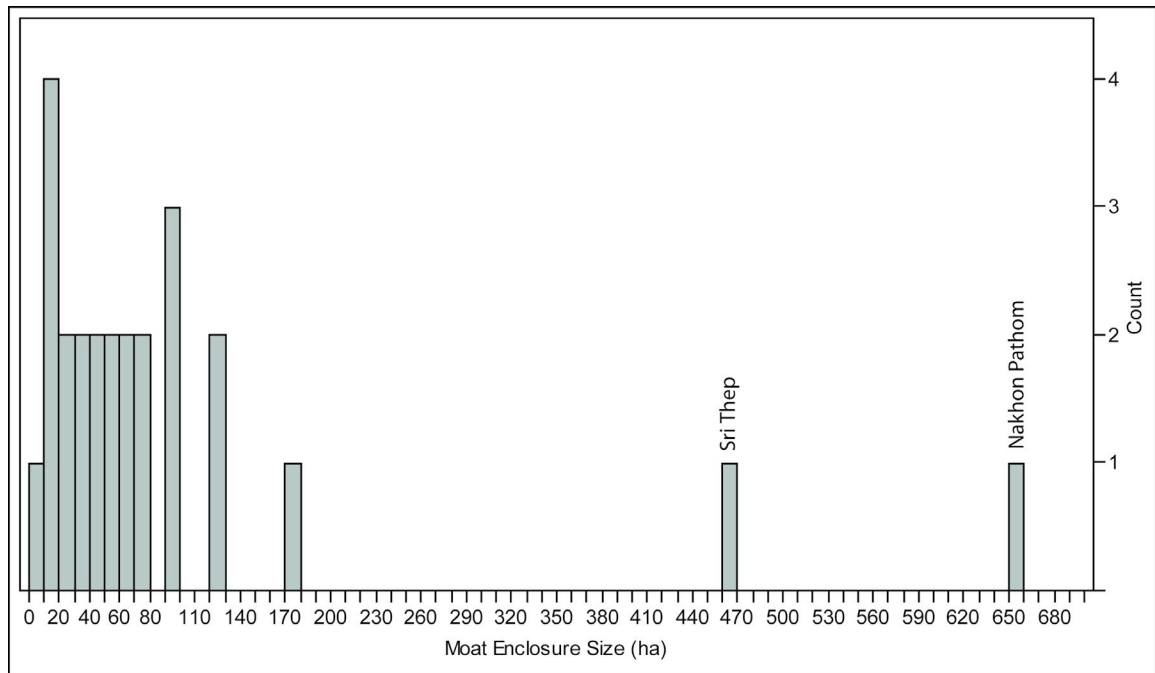


Figure 4.18. Enclosure sizes of Dvaravati sites in central Thailand (without comparative sites from northeastern Thailand)

sites, Sri Thep and Nakhon Pathom, are both in locations with access to interregional trade networks. Nakhon Pathom is situated at the intersection between the coast and the upriver networks. Sri Thep is located on a major river route at the boundary between central Thailand and the Khorat Plateau. The fact that the largest urban centers developed in locations situated at key points linking central Thailand with other regions of Thailand or beyond, rather than in the center of the Chao Phraya River basin, suggests that long distance trade and interaction played an important role in the emergence of Dvaravati urbanism.

In studies of early civilizations in other parts of the world, the presence or absence of different types of administrative objects and public buildings at different sizes of settlements has been useful for examining the relationship between the settlement hierarchy and the hierarchy of administrators (Flannery 1998; Marcus and Flannery 1996; Wright and Johnson 1975). Few administrative objects have been reported at Dvaravati sites, either due to a lack of ability to detect these objects, or their absence. However, seals have been documented at the top-tier site of Nakhon Pathom (Indrawooth 1983; 2004:129) and the fourth-tier site of Chansen (Bronson 1976); sealings have been recovered at both of these sites, as well as the third-tier site of U-Thong (Indrawooth 1999:Fig. 41b). While this sample is very limited, it suggests that administrative officials, or possibly merchant or trade guild members, monitored the contents of packages at each of these tiers of the settlement hierarchy.

The *dharmachakras* discussed in Chapter 3 may have served as political symbols of a Buddhist monarch or the monastic order (*sangha*). The degree to which Dvaravati political and religious institutions were independent of one another is not entirely clear, and the *dharmachakra* may have symbolized both institutions concurrently or at different points during the Dvaravati period. On the other hand, as I examine in greater detail below, the small number of *dharmachakra* recovered *in situ* ($n = 4$) have been found a few hundred meters to a few kilometers outside of the moated enclosures, at what may have been outlying Buddhist monasteries. This admittedly small sample suggests that the *dharmachakras* may be more closely affiliated with monastic

Table 4.1. Distribution of *dharmachakras* within the settlement hierarchy of moated Dvaravati sites

Tier	Number of sites	Number of <i>dharmachakras</i>	Percentage of all <i>dharmachakras</i>	Mean number of <i>dharmachakras</i> per site	Perct. of sites with <i>dharmachakras</i>
1	1	18	56.3%	18	100.0%
2	3	6	18.8%	2	66.7%
3	9	5	15.6%	0.6	44.4%
4	17	3	9.4%	0.2	0.2%

activities than those of political administrators. If so, their distribution in relation to the settlement hierarchy can inform us about possible heterarchical relationship between political and monastic authority among the Dvaravati.

Despite the uncertainty surrounding the meaning of the *dharmachakra*, their distribution closely follows the settlement hierarchy (Table 4.1; Appendices B and C). By far the highest number of *dharmachakras* from a single site is from the first-tier settlement of Nakhon Pathom ($n > 18$).⁶ Both the number of *dharmachakras* and the percentage of sites with *dharmachakras* decreases dramatically in the subsequent settlement tiers. This pattern may be biased by the fact that larger sized settlements have generally received more attention from archaeologists, but the relatively large size and interest in *dharmachakras* means that even chance finds of these objects by local residents at smaller sites usually draws publicity and the attention of the Fine Arts Department. Based on the distribution of the *dharmachakras*, it appears that the activities, groups or individuals that they were associated with primarily (but not exclusively) occurred at the upper three-tiers of the settlement hierarchy.

Evidence for buildings related to the administrative hierarchy is even more limited. If the Dvaravati had palaces, administrative offices, or warehouses, these structures were likely built of wood, and have not been documented. The moats and earthworks, which are present at nearly all of the sites in the top four-tiers of the

⁶ Indrawooth (2004: 129) stated that over 30 pieces of stone *dharmachakras* have been found at Nakhon Pathom, but it is unclear how many individual sculptures are included in this sample. My count of at least eighteen individual *dharmachakras* is based on the clearly distinct sculptures recorded in Brown (1996), but this number is probably an underestimate.



Figure 4.19. Khao Klang Nai monument, located near the center of the inner enclosure at Sri Thep

settlement hierarchy, qualify as a form of public architecture and would have required at least community-level leadership and significant resources to build. The construction of these earthworks may have served as an important means of fostering community identity and cohesiveness, and in this sense served an indirect administrative function, but they do not necessarily indicate the regular presence of an administrator at the settlement.

Religious structures have been identified at almost all of the moated settlements that have been systematically investigated, as well as a few smaller unmoated settlements (e.g., Thung Setthi). Like the *dharmachakras* many of these structures are located on the periphery of the settlements and may be more informative about the organization of religious institutions, such as the Buddhist monastic orders (*sangha*), than of the political administrative hierarchy (see below). One exception is what can be loosely defined as a *mahastupa*, or great stupa. The two largest settlements, Nakhon Pathom and Sri Thep (Fig. 4.19), both contain what can be considered *mahastupa*

or *mahachaitya*, located both outside the enclosure and near its center. Only a few other settlements (e.g., the third tier site of Ku Bua) have large religious structures at the center of the site. Their presence at the two largest sites and their public visibility suggest that they may have played an important role in the activities of the top-level political and religious elite.

Enclosure plans

Thailand's earliest moated settlements, built in the northeast during the first millennium BCE, had irregular oval plans often with multiple concentric moats and ramparts that largely followed the local hydrology (McGrath and Boyd 2001; Moore 1988). The plans of Dvaravati moats ranged from irregular shapes similar to the Iron Age enclosures in northeast Thailand, although usually with only one moat, to more regular squares or rectangles. The more regular rectangular and square Dvaravati enclosures resemble similar constructions present in Cambodia by at least the seventh century CE, and are therefore typically considered to be later (Guillon 1999:78; O'Reilly 2006:75; Wales 1969). It is important to note that few Dvaravati moats or ramparts have actually been dated (for a relative dating see Bronson 1976; Murphy and Pongkasetkan 2010; Chapter 5), and at this time it is not possible to determine chronological sub-divisions in moat construction style within the Dvaravati period. Despite this lack of chronological resolution, the development of more regular moat plans at some time during the Dvaravati period suggests that community leaders, and probably even the communities themselves, changed their perceptions of spatial order as materialized in the construction and configuration of the moat, rampart and the settlement they enclosed.

Like many other aspects of Dvaravati culture, changes in enclosure plans have often been viewed as an adaptation of outside influences. Phasook Indrawooth (1999:228-229) suggested that the single moat and rampart surrounding many Iron Age and Early Historic period settlements in India (Fig. 4.20) may have provided the model for the first Dvaravati moated sites built in central Thailand, since in many cases they have one rather than multiple concentric moats like the Pre-Dvaravati moated

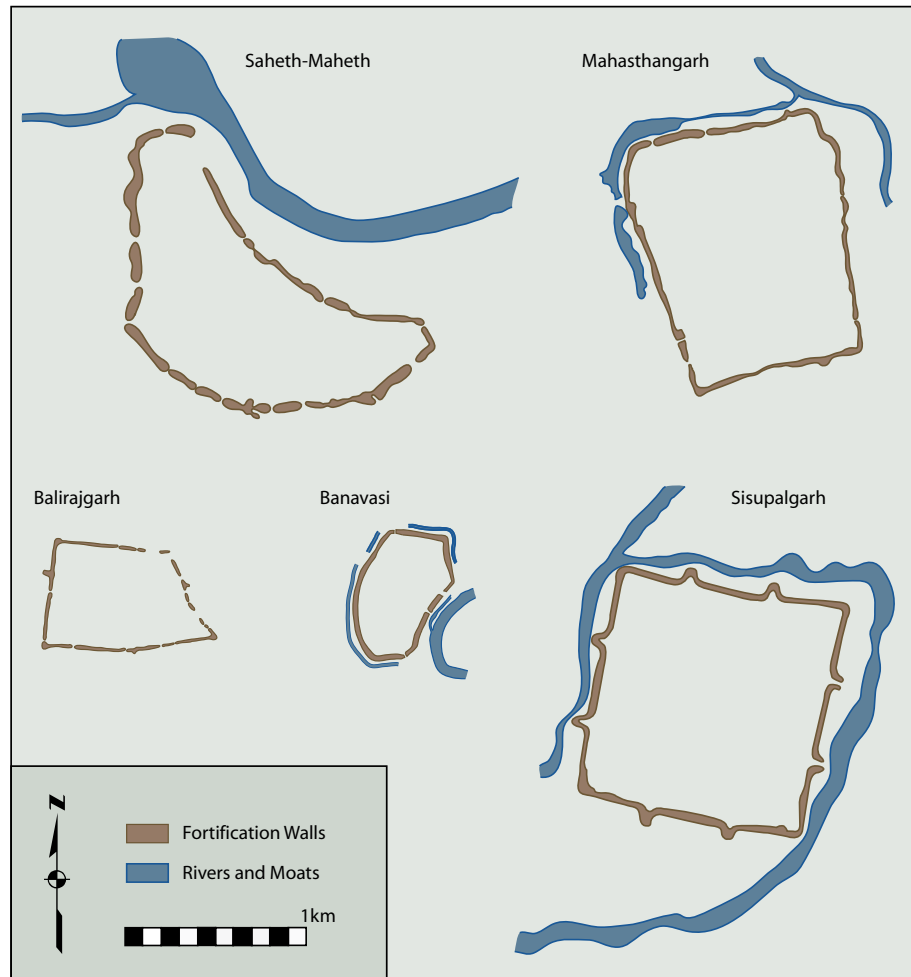


Figure 4.20. Early Historic Indian fortified settlement plans (adapted from Smith 2000: fig. 11.2 and Suvrathan 2013: fig. 6-1)

sites in Northeastern Thailand. However, it is also possible that the single moat was an indigenous Dvaravati development that modified moat construction techniques from northeastern Thailand to the hydrology of central Thailand.

Wales (1969:116-117) proposed a developmental typology of Dvaravati settlements based on the plan of their earthwork enclosures (Fig. 4.21). He saw the irregular oval shaped enclosures at sites such as, Kamphaeng Saen and U-Thong, or the inner enclosures of sites such as Muang Fa Daed and Sri Thep, as the earliest type of Dvaravati earthworks, developing out of the irregular Iron Age enclosures. In the next phase, Wales believed a moat extension was added to some sites, such as Sri Thep and Muang Fa Daed, to make their plans more rectangular. At other sites such as Nakhon

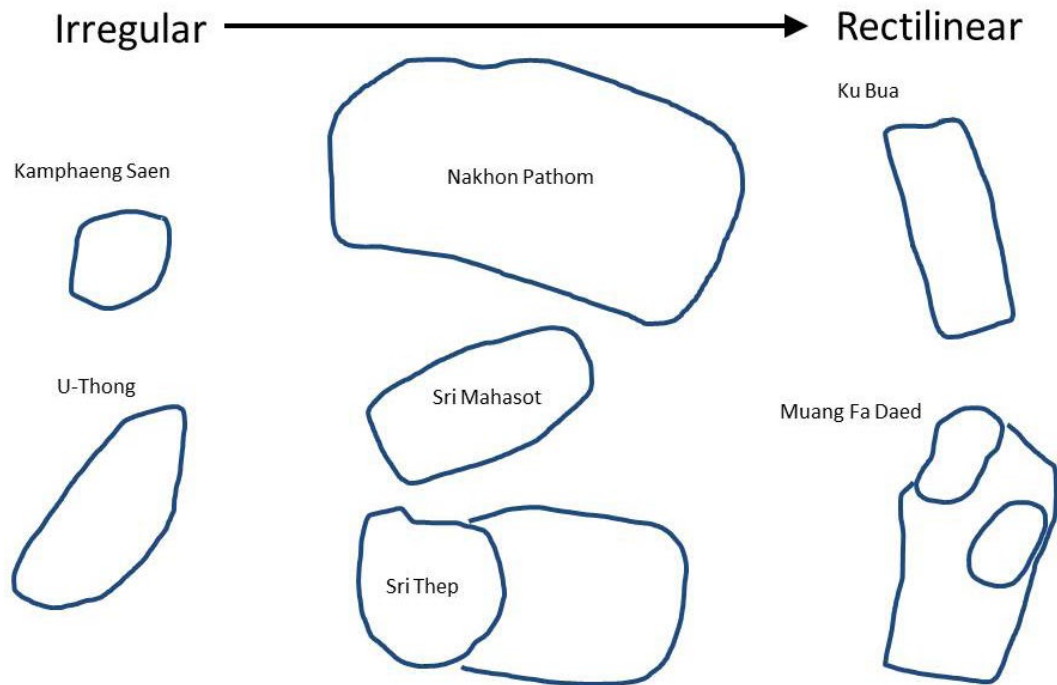


Figure 4.21. Wales's (1969) developmental typology of Dvaravati moat plans

Pathom and Dong Si Mahosot, the enclosures were built with this more rectangular form from the start. Wales saw this trend toward more regular rectangular enclosure plans as part of the general process of “Indianization”, although he does not cite specific examples of South Asian urban centers that served as models. While he identified the middle phase Dvaravati sites as more rectangular, he noted that they still lacked sharp corners and a formal plan that characterized the final phase of moat construction, exemplified by sites such as Ku Bua and the moat extension at Muang Fa Daed. Wales (1969:117) described these features as “characteristic of Khmer planning”, and noted a similar transition in Cambodia from the irregular plan of the brick wall built between the first and sixth centuries CE at Angkor Borei (Stark, et al. 2006:117) to the more regular rectangular enclosures at Sambor Prei-kuk by the seventh century CE (Groslier 1974). He did not explicitly identify Khmer influence as responsible for the similar transition among the Dvaravati, perhaps in order to leave open the possibility of cross-cultural exchange, although he did not go so far as to directly examine this question.

The sample Wales (1969) used for his typology was limited to a small set of sites with published maps at time of this study; later, using aerial photographs, Moore (1988) developed a more extensive typology of prehistoric to Khmer period moat plans in northeastern Thailand. Additionally, the maps of many of the more prominent Dvaravati sites in both central and northeastern Thailand are available in site reports and a few regional studies (e.g., Indrawooth 1994; Moore 1988; Pisonpong 1992, 1993; Rattanakun 1992; Saraya 1999; Wales 1969). I have used the 2.5 m resolution SPOT satellite imagery in Google Earth to assess the plans of several sites whose maps are not available in the existing literature and provide a more complete inventory of Dvaravati enclosure plans (see Appendix B). I classified the types of Dvaravati moat plans into the following categories: irregular oval, irregular polygon, semi-rectangular, rectangular, square

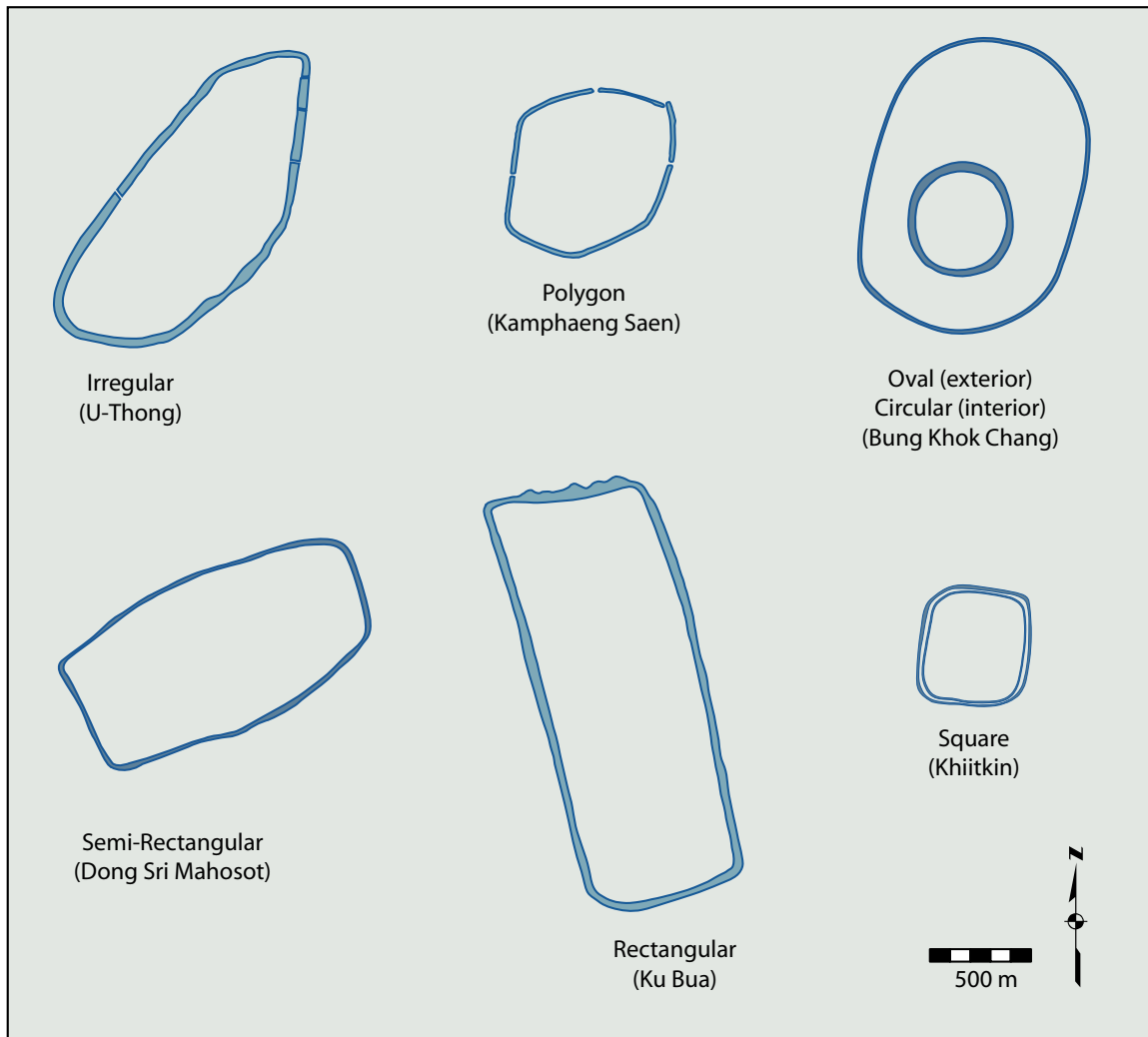


Figure 4.22. The typology of moat plans used in Appendix B

(Fig. 4.22). Unfortunately, there is insufficient information on the chronology of the occupation at these sites and the construction of their enclosures to evaluate the extent to which the differences in their plans are the result of temporal differences. Many of the sites with outer enclosures or enclosure extensions follow the pattern Wales observed of irregular inner enclosures and more regular outer enclosures, suggesting that there was a move toward more regular enclosure plans over time. However, even the more regular plans are not highly standardized.

Other societies throughout mainland Southeast Asia also began building rectangular fortification plans during the first millennium. In Myanmar, the settlements of Halin and Thaton have walled enclosures with rectangular plans (Fig. 4.23; Moore 2007; Moore and Win 2007). Unlike the earthen walls at Dvaravati sites, the walls enclosing these sites are made of brick, demanding a significant investment of resources. Dating of the construction of these enclosures is still inexact, but the rectangular configuration of the walls at Halin was likely completed around the ninth century CE and begun centuries earlier (Moore 2007:184). Other enclosed settlements near Thaton in Lower Myanmar, and from roughly the same period, were also built following the local topography in order to control water, but had highly irregular plans (Moore and Win 2007:220-222). Moore (2007:182) has observed that even though both Halin and Thaton had rectangular plans, their configurations followed the local topography and hydrology.

To the east of Thailand there is more abundant evidence for the construction of square and rectangular enclosures. In southern Vietnam, the first millennium CE urban center of Oc Eo has a large (450 ha) rectangular enclosure with five ramparts and four moats (Fig. 4.24; Mallert 1959-63; Manguin and Vo 2000). The high-degree of planning evident in the regularity of the walls and moats at Oc Eo led Wales (1969:117) to postulate that the residents “were able to enlist the aid of advanced defense experts from an unknown quarter” when building the enclosure. In Cambodia, the rectilinear enclosures of the seventh century CE center of Sambor Prei-kuk (Groslier 1974) present a marked contrast to the informal enclosure of the earlier Angkor Borei. In the following

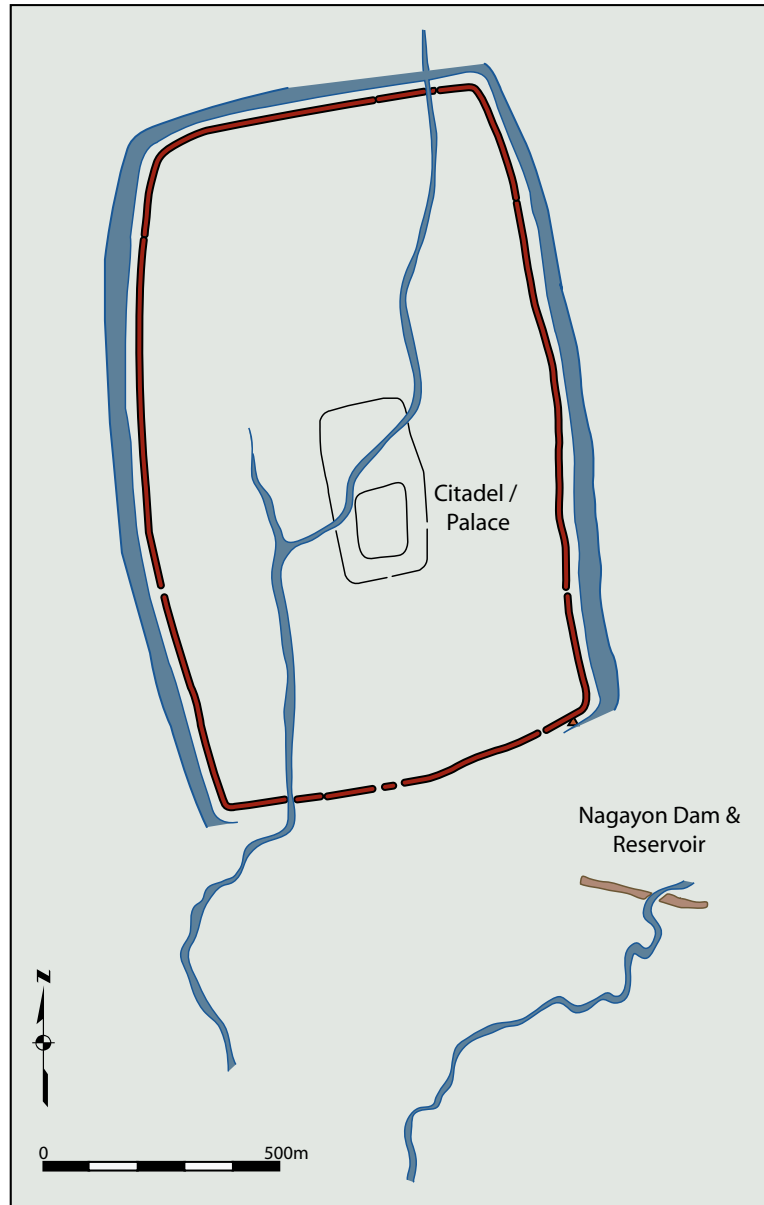


Figure 4.23. Halin, Myanmar (adapted from Myint Aung 1970 in Moore 2007:182)

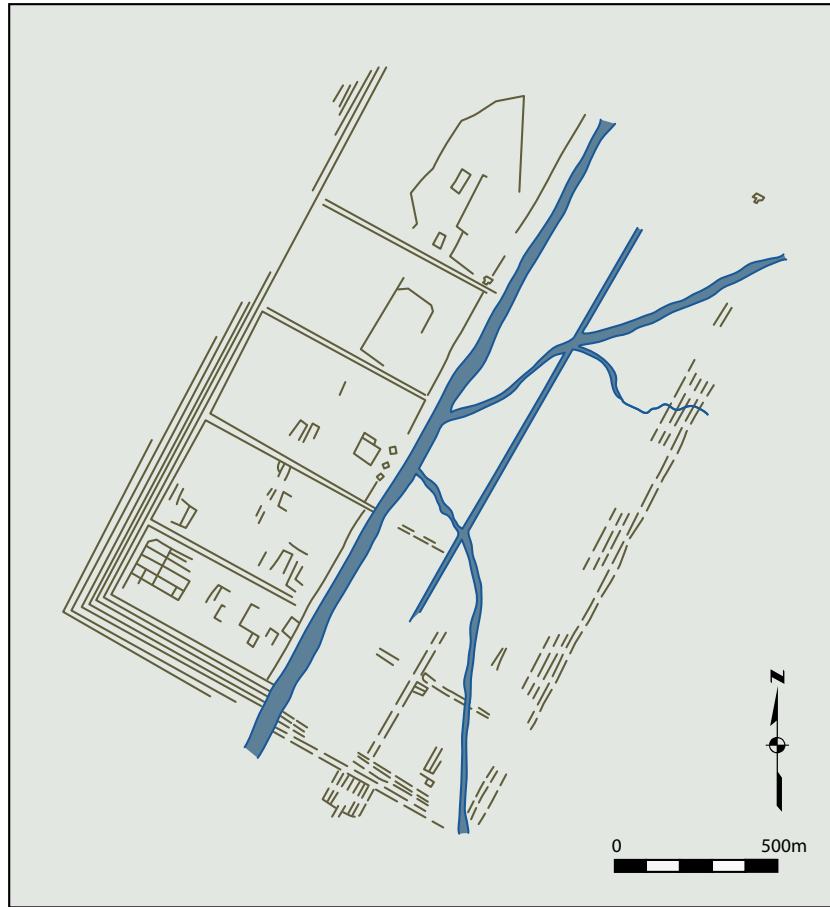


Figure 4.24. Oc Eo, Vietnam (adapted from Wheatley 1983: Fig. 10). Note: Wheatley’s map is based on aerial photographs in Mallert (1959: pl. XV, XLIV and L). Mallert identified four ramparts and five moats encircling the site; however, these features are difficult to distinguish from each other on Wheatley’s map and in satellite images, and as a result I have depicted them as solid or dashed lines following the conventions used by Wheatley.

ninth to fifteenth century CE Angkorian period, rectilinear moats around settlements or temples, as well as rectilinear reservoirs (*baray*) dotted the landscape of the Khmer Empire (Fletcher, et al. 2004; Moore 1989; Stark 2006).

Sanskrit or ancient Khmer inscriptions associated with the Angkorian period sites provide rare insights into some residents’, likely elites, perceptions of the spaces defined by these features. From these inscriptions we learn that in addition to their defense and irrigation functions, the Khmer moats also defined a cosmological landscape



Figure 4.25. Angkor Wat, Cambodia (image source: © 2013 Google Earth and © 2012 GeoEye)

based on Hindu conceptions of the universe (Coedès 1963; C. F. W. Higham 2000:356; Moore 1989; Wheatley 1971, 1983). The settlement or temple at the center of the enclosure represented a sacred mountain, namely Mount Meru, the mythological home of Hindu deities. According to the Hindu cosmology, this mountain was encircled by a series of seven mountain ranges and seven oceans. The water in the city's or temple's surrounding moat or nearby *baray* symbolized the oceans surrounding the central mountain. If walls were present, these symbolized the mountain ranges (C. F. W. Higham 2000:356). This cosmological landscape was most clearly expressed in the monumental temple and hydrological constructions at Angkor Wat, which placed the Khmer ruler at its center, a location synonymous with that of a deity (Fig. 4.25).

The Khmer records reveal a landscape based on Hindu cosmology during the Angkorian period, but it is unclear how early the Khmer adapted these concepts, or the extent to which cultures elsewhere in Southeast Asia conceived of their urban landscapes in the same way. The Khmer example highlights the possibility that the Iron

Age and Dvaravati period enclosures in Thailand may have delineated different types of symbolic space within their landscapes. Despite the value of the Khmer inscriptions for reconstructing perceptions of the Angkorian landscape, they provide little insight into the significance or necessity of a *rectangular* plan for the walls or moat. Wales (1969) seemed to assume that the rectilinear plan accompanied the other cosmological concepts of space from India.

In India, many settlements from the Iron Age (c. 700 – 320 BCE) and Early Historic (c. 320 BCE – 500 CE) periods had moats and ramparts for military defense and flood control (Allchin 1995; Deloche 2007; M. L. Smith 2003a; Smith 2006). The enclosures of a few of these sites such as Sisupulgarh and Mahasthangarh have a roughly rectilinear plan, although there is quite a lot of variability in Early Historic urban plans in India (Fig. 4.20). When the Greek traveler Megasthenes visited the North Indian city of Pataliputra in the 4th century CE, he noted that it was surrounded by a wall with towers, gates and a moat (McCrinkle 1877). He described the plan of the settlement as a parallelogram measuring 18 x 50 stadia, or roughly 1460 x 9000 m. Excavations at Pataliputra since the late nineteenth century have documented a wooden palisade over a clay rampart, but the excavations have not revealed the overall plan of the ancient city due to the overlying modern city of Patna.

The architects and elites at Pataliputra would have been familiar with sections of the *Arthashastra*, a North Indian political treatise compiled sometime between the third century BCE and the first century CE (Trautmann 1971). This text includes a section on urban planning which provides directions for choosing the location of urban centers and then configuring their layout (Fig. 4.26; Coningham 2000). According to this idealized plan, the settlement should be configured as a square with gridded streets and city gates appointed to specific deities (Coningham 2000:349-350; Wheatley 1971:414). It also prescribed three concentric moats surrounding the city (Allchin 1995:274), which in addition to their economic and defensive benefits symbolized oceans surrounding Mount Meru in the Hindu cosmological landscape as discussed above. Therefore, the plan not only addressed civic concerns of managing an urban population (see below

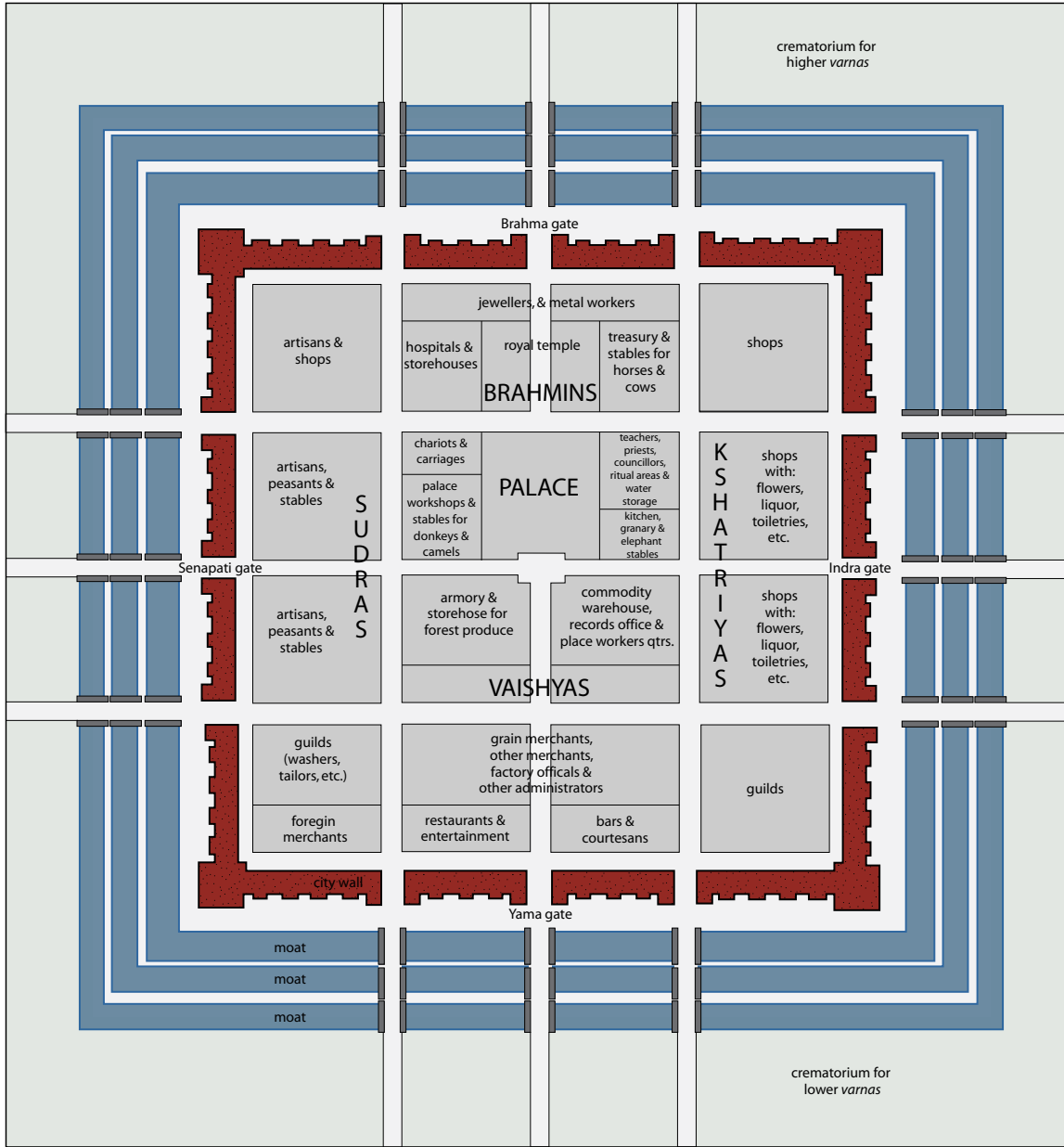


Figure 4.26. Idealized plan of a capital city based on the text of the *Arthashastra* (adapted from Kirk 1978:fig. 1 and Coningham 2000:fig. 5). Note: There are some significant differences between the plans in Kirk (1978) and Coningham (2000) which highlight the difficulty in interpreting the *Arthashastra's* prescriptions.

as well), but also mapped cosmological space on to the urban landscape. Portions of this idealized plan were evidently incorporated into some South Asian urban centers (Coningham 2000); although as Allchin (1995:274) cautioned there are no known Early Historic cities in South Asia with the ideal configuration of three moats, and the impact of the text on urban planning may be overstated (M. L. Smith 2003a:274). The Dvaravati clearly incorporated religious concepts from South Asia, as well as royal insignia, honorifics and possibly even concepts of kingship such as the *chakravartin*. It is therefore possible that they were familiar with the *Arthasastra* and were influenced by some of its concepts of urban planning into their own emerging urban society.

Often overlooked in discussions of Dvaravati urban planning is the fact that some Chinese urban plans, both idealized and in some cases actual, also followed a rectilinear plan by at least the second half of the first century BCE (Fig. 4.27). As Wheatley (1971:411) observed, the *K'ao-kung Chi*, a Chinese document from this period, prescribed the layout of the royal Chou capital as a square with sides nine *li* long and with three gates each. The text also details the number and configuration of major avenues within the city. The plan was at least partially adopted in the planning of Chinese cities such as Chang'an. Wheatley (1971:414) noted that this idealized plan is nearly identical to components of the *Arthasastra*.

The construction of rectilinear moat forms in Southeast Asia clearly post-dated the development of rectilinear plans at urban centers in India and China. The settlements and treatises on urban planning from these neighboring civilizations may have provided the original inspiration for the construction of rectilinear enclosures in Southeast Asia. It is also possible that the rectilinear plan was an independent innovation in Southeast Asia that subsequently spread throughout the region through interaction and emulation between neighboring cultures, including the Dvaravati. In order to understand the reasons behind the spread of the rectilinear enclosure plan it is essential to consider the reasons why the members of these cultures decided to change the way they configured their settlements through these defining features.

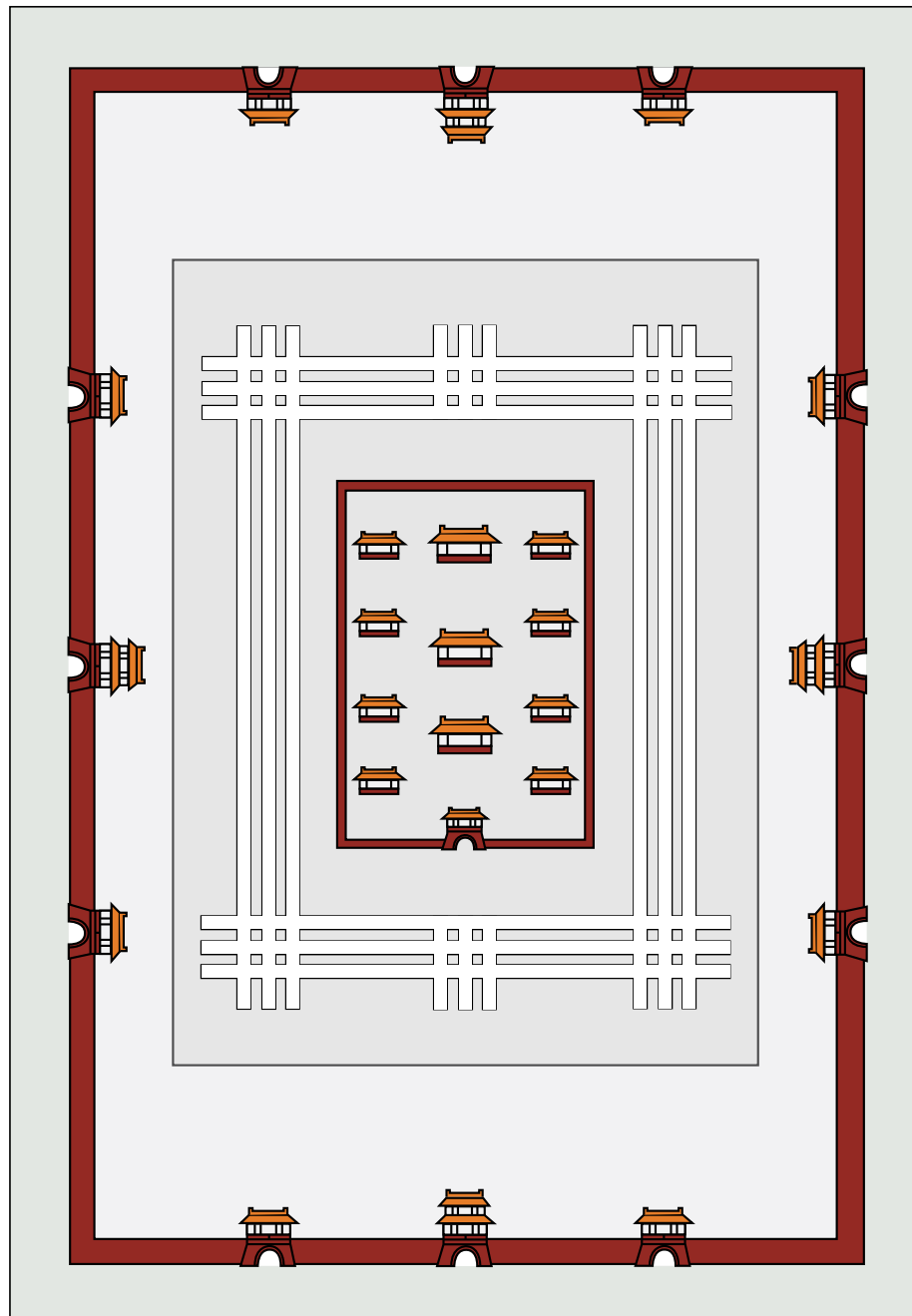


Figure 4.27. A fifteenth-century stylized depiction of the plan of the 7th to 3rd c. CE Eastern Zhou capital city of Giwang-dieng (Wang-Ch'eng), which was supposedly laid out according to the prescriptions of the K'ao-kung Chi (adapted from Wheatley 1971: Fig. 23). Note: despite the stylized convention of depicting the site as a rectangle, investigations of the city's remains show it had a roughly square plan of 3,000 m per side (Wheatley 1971:138)

The plan of the enclosure at most sites is not readily apparent to an observer on the ground. A sharp or roughly ninety degree corner in the moat or rampart at rectilinear sites is discernible from a continuously curving enclosure, but the overall plan of either type of site can only be seen when one is elevated several hundred meters above the settlement. Few enclosed Dvaravati settlements have neighboring hills where the enclosure plan would could have actually been viewed (exceptions being Muang Bon and Don Kha), and there is no association between those settlements with rectilinear plans and the presence of such topography. This lack of visibility on the ground raises questions about the meaning and intended audience of the rectilinear enclosure plans. Individuals involved in the planning and construction of enclosures, probably including political and religious elites, foremen and workers, would have been aware of the overall plan even if they could not actually see it. As I discussed above, Angkorian period texts revealed that Khmer planners clearly incorporated cosmological symbolism into the design of their enclosures and urban landscapes (C. F. W. Higham 2000; Wheatley 1971:437; 1983). It seems likely that the Dvaravati enclosures also had cosmological symbolism or power, but in the absence of inscriptions or texts on the subject it is difficult to determine what their meaning may have been.

The construction of both irregular and regular shaped enclosures required a significant amount of labor and at least community-level leadership. Chataratiyakarn (1984) estimated that 500 adults would have needed to work for one year to complete the Iron Age enclosure at Ban Chiang Hian (37.8 ha). Even in the absence of strong political authority and coercion, the defensive and economic benefits of a settlement enclosure may have been sufficient incentive for community members to contribute to its construction. If the enclosure also provided sacred or spiritual protection, then the project would have taken on additional importance. Since a more regular rectilinear plan did not provide any additional economic or defensive advantages, it may have been related to a spiritual function of the enclosure.

In her study of walled cities in first millennium CE India, Smith (2003a) suggested that in addition to providing military defense and protection from flooding,

the construction of earthen walls also played important social and political roles. For emerging or established community leaders, organizing wall construction served to demonstrate their influence and organizational efficacy. The shared experience of participating in the construction process by members of the community helped to build community cohesion. In turn, the finished city walls would have served as a symbol of community identity both to the residents and outsiders. These processes are not unique to Early Historic India (e.g., McIntosh and McIntosh 1993), and they likely accompanied the independent development of settlement enclosures in Thailand from its earliest phase in the Iron Age. However, compared to the early irregular enclosures that largely followed local hydrology and topography, the planning and construction of an enclosure with straighter walls and a more regular rectilinear plan would have required additional coordination and organizational efforts. This increased level of planning may still have been within the capabilities of community leaders at individual settlements.

The significance of the more regular plans is more apparent when considered on the regional scale. Several settlements with a semi-rectilinear or rectilinear enclosure plan, either formed through a moat extension (e.g., Sri Thep, Dong Mae Nong Muang) or planned with such a form from the start (e.g., Nakhon Pathom, Dong Sri Mahasot, Muang Phra Rot) have a roughly similar configuration and east-west orientation; although some rectilinear settlements have a more north-south orientation (e.g., Ku Bua, Muang Fa Daed). While it is not a robust pattern, the similar configurations within these groups of settlements seem to suggest at least some communication and coordination between the architects of these enclosures. Centralized political or religious authorities could facilitate such coordination as they sought to integrate formerly autonomous and heterogeneous communities throughout the region. If the regular enclosure plans were related to the activities of a centralized authority we would expect them to be most common either at the centers of power, such as the top tier administrative centers, or at the fringes of control where the materialization of political authority through the urban landscape. In reality, settlements with the more regular plans can be found in all tiers of the site-size hierarchy and they are not geographically clustered either at the core or

periphery of the Dvaravati region. This pattern is more consistent with the spread of the shared enclosure plans and orientations as part of the emergence of an urban identity that included concepts about how to properly configure the urban landscape.

Settlement plans

In addition to similarities in the plans of settlement enclosures, the configuration of buildings and spaces at a settlement can reveal the degree of coordinated planning both within and between settlements (Smith 2007). Similar alignments of buildings, public spaces and streets throughout, or in portions of, a settlement can indicate efforts by community authorities to impose order on the settlement's space and residents. The top-down planning of space within a settlement can strengthen political authority by facilitating revenue collection and directing traffic flow into areas that showcase political ideologies and administrative monitoring (M. L. Smith 2003b: 19). The creation of residential wards that are well defined both spatially and socially can also increase the ability of authorities to monitor and control the residents. In turn, urban residents may create spaces within the urban landscape that enable them to avoid being monitored and facilitate resistance to authorities. Additionally, like the plan of enclosures, both political authorities and residents may have configured spaces within the settlement to reflect urban identities or cosmological principles. Similarities in the way urban space was configured at more than one settlement may be the product of strong centralized political authority or the emergence of common concepts and practices associated with life in a town or city.

With the exception of the moats, ramparts and religious monuments (see below), data on the location of different activities or types of buildings within Dvaravati settlements is insufficient to assess the standardization of space across multiple settlements. In Chapters 5 and 6, I detail my efforts to investigate differences in the use of space within the Dvaravati town of Kamphaeng Saen. My research identified clusters of residential and religious objects as well as open spaces. Unfortunately, the lack of surface architecture and the small horizontal size of the test excavations did not permit me to evaluate the configuration of buildings or infrastructure within the site.

Other archaeologists studying the Dvaravati period have also increasingly focused on investigating habitation and production spaces at enclosed settlements (e.g., Indrawooth 1983; Indrawooth, et al. 1991; Khunsong 2009; Khunsong, et al. 2011; Lertrit 2004; Lertrit, et al. 2001; Murphy and Pongkasetkan 2010). Like my research at Kamphaeng Saen, these projects represent the preliminary stages of documenting the configuration of different types of space within Dvaravati settlements. Continued efforts such as these will hopefully enable future cross-settlement comparisons of the organization of space within Dvaravati settlements.

As these efforts proceed it is important to remember that in addition to the configuration of city walls and gates, the ancient Indian and Chinese texts on urban planning mentioned above also addressed the layout of streets and neighborhoods. The Chinese urban planning text the *K'ao-kung Chi* recommended the division of the city into sixteen quarters or wards defined by a grid system of avenues, each nine chariot-tracks wide (Wheatley 1971). The *Arthashastra's* idealized plan also instructed that the settlement should be divided into gridded districts, and went on to designate areas for the four *Varnas* (hereditary social groups within the religious hierarchy) and subdivisions based on occupation or economic activity (Fig. 4.26). Coningham (2000:349-350) observed that the *Arthashastra's* plan sought to maximize social stability between these groups, as well as lend a sacred mandate to the city by mapping cosmological concepts onto its plan and residents. As an elite text, this idealized plan also may have been designed to ensure that the elite status sanctioned through this social order was reinforced in through the landscape of the city. Again it should be emphasized that this was an idealized plan that when confronted by the realities of urban life may have been difficult to enforce. In his evaluation of the fit between the *Arthashastra's* idealized plan and the archaeological evidence from the Early Historic period occupation (c. 320 BCE – 500 CE) at the city of Anuradhapura in Sri Lanka, Coningham (2000) found little evidence for the influence of the text on city planning. The site was divided into four quarters, nominally following the *Arthashastra's* plan, but evidence of different craft production

activities and faunal evidence indicative of the residents' diet, were distributed throughout the city without evidence for spatial segregation (Coningham 2000: 353).

Even though Coningham found only limited evidence of potential influence from the *Arthashastra* on the plan of Early Historic Anuradhapura, the text may have had a different impact among the Dvaravati, if they were familiar with it. That they were familiar with the text is speculative, but it will be an interesting possibility to consider as we develop a better understanding of the configuration of space within Dvaravati urban centers. Additionally, even though the Chinese influence on Southeast Asian urban planning seems to have been most directly felt in northern Vietnam (Wheatley 1983), Chinese influence in other parts of the region should not be dismissed in future research.

Religious monuments and sacred spaces

Religious monuments, such as Buddhist stupas, *viharas* and *ubosots* (see Table 3.1), as well as Hindu temples, provide valuable evidence for the configuration and conception of space within the Dvaravati urban landscape. Built of brick or laterite with stucco facades, these monuments were remarkably durable compared to the majority of Dvaravati structures. Buddhist boundary markers, known as *sema* and most commonly made of stone, also defined consecrated spaces that may have been left as open space or occupied by buildings, likely *ubosots*, made of perishable materials like wood and thatch (Murphy 2010a, b). Most monuments are associated with Buddhist or Hindu iconography, but in some cases their use or affiliation is unknown. Some of these latter structures may have been dedicated to local deities, or had a secular use. Historically, scholars (e.g., Boisselier 1975; Coedès 1928a; Dupont 1959) studying the Dvaravati period have disproportionately focused on religious monuments due to their preservation, visibility and wealth of associated sculptural materials. These studies have tended to take an art-historical approach to the analysis of monuments, concentrating on their architectural and sculptural style. Few studies have considered the intra-settlement spatial context of these monuments and sculpture, although notable exceptions include Krairiksh's (1975:173) and Revire's (2010:81-82) brief examination of

the significance of monuments outside the enclosure within the site-specific context of Nakhon Pathom, as well as Murphy's broader landscape approach, which I now examine in greater detail.

Northeastern Thailand

An analysis of the spatial distribution of religious monuments provides an added dimension to our understanding of their significance, as Murphy (2010a, b) has shown in his survey of the distribution of Dvaravati period Buddhist monuments and artifacts in northeastern Thailand. He found that Buddhist monuments and sculpture tended to be associated with the moated or mounded settlements along the Mun and Chi river systems. These larger settlements and their agricultural surpluses provided the necessary support for monastic communities and the creation of Buddhist monuments, and art. In a closer inspection of five moated settlements in the northeast, Murphy (forthcoming) also showed how Buddhist monuments were located both inside and outside of the settlement enclosures. He noted the presence of an *ubosot* close to the center of Muang Fa Daed, and both an *ubosot* and *vihara* near the center of the inner enclosure at Muang Sema. These structures suggest that a monastery or, at the very least, monastic rituals were located at these central locations. Additionally, seven stupas ringed the exterior of the moat at Muang Fa Daed. Murphy (forthcoming) argued that the construction of monuments outside of the moated enclosures at Muang Fa Dead and other sites signified a change in the way residents conceived of the boundaries of moated settlements, as built space now extended beyond the enclosure.

Murphy (2010a, forthcoming) also identified a second category of Buddhist sites in northeast Thailand. These sites were located on the tops or sides of mountains and hills, removed from the major settlements and river networks. Most of these sites consist of rock shelters or caves often with Buddhist images carved into their surfaces and *sema* stones located nearby. These natural structures likely served as living quarters for Buddhist monks seeking to retreat from the urban life of the lowland monasteries for a more ascetic lifestyle. The number of caves or shelters varies between sites, but the population of monks at these sites ranged from one or two individuals to up to a

hundred. Even though these monks would have been largely removed from the urban populations of the urban centers, Murphy (forthcoming) emphasized that they were not entirely disconnected from these settlements, as laymen made pilgrimages to consult them or lowland monastic communities may have removed to the upland sites during the rainy season retreats.

Based on the spatial distribution of Buddhist sites between the large lowland settlements and the smaller highland retreats, Murphy (2010a, forthcoming) argued that Buddhist monastic practice during the Dvaravati period was divided between urban monasticism and forest asceticism. Due to the urban monastic communities' access to surplus food and labor, they were able to support a larger number of monks and build Buddhist monuments. They were also able to spread the Buddhist doctrine to a much larger population of laypersons through their presence in the towns and cities along the riverine transportation routes. Despite the Buddhist ideal of withdrawing from society, historically Buddhist monastic orders maintained symbiotic relationships with urban communities, both relying on them for support and providing them with educational, economic, political and ritual services (Fogelin 2003, 2006; Morrison 1995; Ray 1986, 1994). Murphy (forthcoming) hypothesized that in return for the support of the residents of the urban centers in northeast Thailand, Buddhist monks may have assisted with the management of irrigation projects, as they historically did in India and Sri Lanka (Gunawardana 1979; Heitzman 1984; Morrison 1995; Ray 1986; Shaw and Sutcliffe 2003). Regardless of whether or not the monastic community was directly involved in agricultural activities, the spread of Buddhism in northeastern Thailand clearly followed and relied on the network of towns and cities with agricultural surpluses (Murphy 2010a, forthcoming). As the residents of these communities adopted components of Buddhism they transformed their settlements' landscapes to reflect their new identity and beliefs by building, or at least sponsoring, Buddhist monuments.

Central Thailand

Similar to the northeast, the monuments in central Thailand are almost all Hindu or Buddhist structures; although the affiliation of a few is unclear. Buddhist monuments

are by far the most common and were built in locations similar to those in northeast Thailand, albeit with a few significant differences. There are a few relatively isolated cave sites with Buddhist carvings (e.g., Khao Ngu Cave and Khao Thamorat Cave) that may have served as the residences of ascetic monks, but most sites are associated with unmoated settlements (e.g., Thung Setthi and Pong Tuk) or, more frequently, large moated settlements. At these enclosed settlements the monuments were built both inside and outside the settlement's moat, just as Murphy (2010a, forthcoming) noted in northeast Thailand. In Appendix B, I have tabulated the known monuments at moated settlements by their religious affiliation and location on the interior or exterior of the enclosure. Unlike Murphy's sample from the northeast, monuments in central Thailand appear to be more commonly built outside the moat. Additionally, the distribution of the monuments at sites in the central region fall into three general locations: 1) approximately 1.5 to 3.5 km outside the settlement; 2) within five hundred meters of the outside of the moat; 3) inside the moated enclosures. There are exceptions, including some monuments up to 6.7 km outside the enclosure (e.g., Nakhon Pathom's Nern Phra), but these three categories are the most robust.

All three of these locational groups have correlates in the monumental landscapes of Early Historic cultures in South Asia, albeit with some differences that reveal Dvaravati modifications of these traditions. In Early Historic India (c. 320 BCE-500 CE), the monumental structures built within urban centers included administrative buildings, royal palaces or Hindu temples, whereas Buddhist monasteries and monuments tended to be located outside of major settlements or along trade routes. Large Hindu temple complexes formed the ritual, political and administrative center of many cities and towns, particularly in South India (Champakalakshmi 1996; Heitzman 1997). These temple complexes were usually built and sustained through patronage from elites, who used their donations both to ensure continued support from the gods and to demonstrate their authority to society. Situated at the center of many towns and cities, the public setting of these temples, and their inscriptions recording the individuals

who gave donations in their support, made them highly visible daily reminders of the divine sanction for the established political and social order (Heitzman 1997).

Alternatively, as I briefly discussed above, early Buddhist monastic communities had to find ways to reconcile the contradiction of withdrawing from society, while still being dependent on the lay population for patronage as well as new monks to fill their ranks (Fogelin 2003, 2006). In early historic India, Buddhist monasticism initially took hold at the largest urban centers where there were sufficient agricultural surpluses (and perhaps interest) to support a population of resident monks (Ray 1986:136-143; 1994). From 200 BCE – 300 CE monastic communities greatly expanded and spread to smaller cities and towns as well as locations along key trade routes (Champakalakshmi 1996; Heitzman 1984; Morrison 1995; Ray 1986). The monasteries affiliated with urban centers were usually located outside of the settlements (Fogelin 2003, 2006; Morrison 1995; Ray 1986; 1994:136-143; M. L. Smith 2003a). The largest cluster of Buddhist caves in the Deccan were the sites within 8 km of the town of Junnar, a location near a key pass along transportation routes (Ray 1994:140). Many of the ports on India's east and west coasts also had monasteries either overlooking them or in their vicinity (Ray 1994:138-142). These locations near key centers of trade, but outside habitation areas, allowed the monks to strike a balance between separation from ordinary domestic and urban space, while still maintaining access to urban populations to provide them with ritual services and ensure their continued patronage. In particular, donations from the growing trade and merchant guilds provided an important source of income, and the monasteries in turn purchased large amounts of goods from these donors (Ray 1986). This relationship proved beneficial to both parties and enabled them to expand their influence and authority outside of the traditional Brahman-based political structure.

During the Dvaravati period, Sri Lanka was one of the primary centers of Buddhism and a central node in maritime trade networks connected with central Thailand. These two regions were most likely in contact with one another, and the development of Buddhism in Thailand drew on Sri Lankan contacts and sources. The locations of monuments in and around Sri Lanka's Early Historic capital of Anuradhapura

provide valuable insights into the configuration of different types of Buddhist sites and their relationship to urban centers during this period (Fig. 4.28). Several large monastery complexes of differing Buddhist sects, were situated around the enclosed core of Anuradhapura (Coningham 1999; Coningham and Allchin 1995). These monasteries had large monumental stupas, as well as numerous smaller buildings for monastic activities and housing (Fig. 4.29). Their location on the edge of the city core meant that they retained easy access to the urban residents while still occupying a symbolic space on the urban periphery. An additional large monastic complex, known as Mihintale, was situated on a mountain ridge 11 km east of Anuradhapura. Like its urban counterparts, Mihintale also contained a large stupa and numerous other monastic buildings, including a hospital. Despite its distance from Anuradhapura, Mihintale's elevation meant that an observer at the monastery could still see the city, particularly the large stupas of the monasteries on its periphery (Fig. 4.30). In addition to this visual incorporation into Anuradhapura's landscape, Mihintale served as an important center of pilgrimage. The monastery was founded on the site where, according to legend, the Buddhist monk Mahinda converted the early Sri Lankan King Devanampiyatissa, heralding the arrival of Buddhism to Sri Lanka and the start of Buddhist monarchical rule in the country. The significance of these events to the political elite and monastic and lay Buddhist communities meant that Mihintale likely figured prominently in the way they conceived of Anuradhapura's political and religious landscapes, despite its geographic distance from the city.

In addition to the Buddhist sites in the vicinity of Anuradhapura, the landscape of Early Historic Sri Lanka also contained small forest and cave retreats inhabited by ascetic Buddhist monks. While these retreats provided refuge from the distractions of urban life, the monks who resided here still relied on patronage from city dwellers, particularly the political elite, as evidenced by the inscriptions recording donations on the walls many of the cave retreats (Coningham 1995).

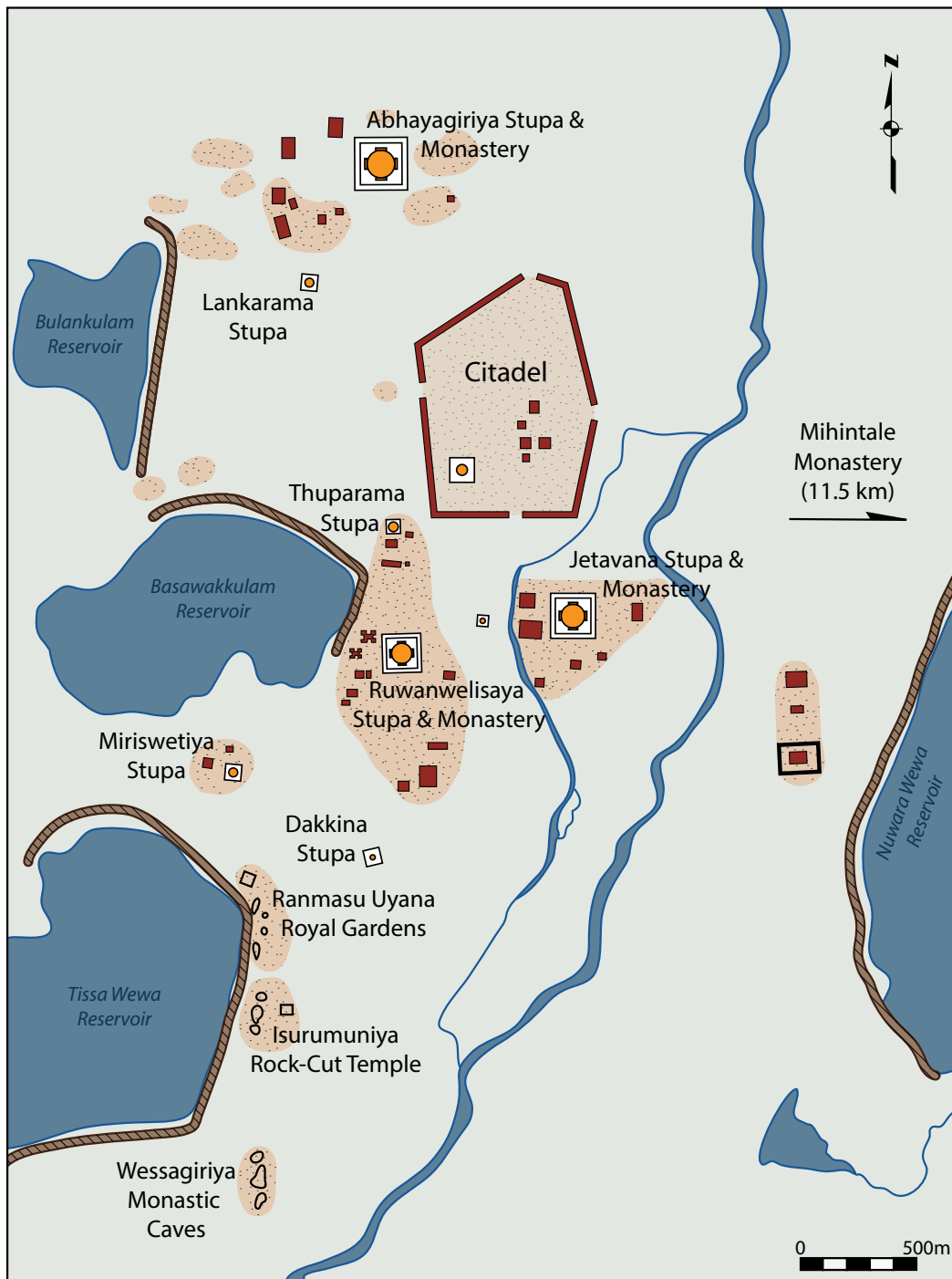


Figure 4.28. Anuradhapura, Sri Lanka (adapted from Allchin 1995:160)



Figure 4.29. Jetavana Stupa (appx. 122 m high) and surrounding monastic complex, Anuradhapura, Sri Lanka



Figure 4.30. Looking east at Anuradhapura from the Mihintale monastery, Sri Lanka. The arrow indicates the location of the Jetavana Stupa seen in Fig. 4.29. The large white Ruwanwelisaya Stupa is also visible to its south.

There are interesting similarities and differences between the spatial distribution of Dvaravati religious monuments and similar structures in India and Sri Lanka. The similarities suggest that the religious concepts the Dvaravati adapted from these regions were not restricted to doctrine and iconography, but also included ideas about how to configure the sacred landscape. The majority of evidence about the spatial component of Dvaravati religious practices comes from Buddhist structures, since the Hindu sculptures generally lack detailed intra-site provenance. Two exceptions are the Hindu temple foundations inside the moated enclosure at Dong Sri Mahasot and near the reservoir earthworks at the site of Khok Chang Din outside U-Thong. In both cases, the Hindu structures are at the smaller end of the range of sizes of Dvaravati monuments, and are not situated in central locations within their sites. The sample of documented Dvaravati Hindu monuments is extremely small and incomplete, judging by the number of Hindu sculptures without exact provenance. The nature of this sample limits our ability to identify significant patterns in the spatiality of Hindu practices among the Dvaravati. However, it is clear that large Hindu temples, such as those found at the center of South Indian temple towns, did not exist in the Dvaravati urban landscape

Alternatively, with the larger sample of Buddhist monuments from the Dvaravati period, more similarities can be identified between the spatial distribution of Dvaravati and South Asian Buddhist monuments. As in Sri Lanka and India, the Dvaravati Buddhist landscape included both cave retreats and urban sites. The cave and forest sites in northeast Thailand and central Thailand likely served a similar function to the cave and forest retreats in Sri Lanka. They served as places for mediation and reflection away from urban life, while still maintaining connections to the urban populations through pilgrimage and minimal donations.

The distribution of Buddhist sites and monuments at Dvaravati moated settlements bear many similarities with those in South Asia, but also display some important differences. As I noted above, a majority of Dvaravati Buddhist monuments at moated settlements in central Thailand were located outside the moated enclosure, generally within five hundred meters of the moat, or approximately 1.5 to 3.5 km

outside the settlement. The group of Buddhist structures directly on the exterior of the city may have been directed toward the urban laity. The more distant group may have been devoted to a range of activities including providing services to rural commoners and aiding with the management of irrigation (as they did in Sri Lanka, India and possibly northeast Thailand, see above). Additionally, they may have enabled the monastic community to withdraw from the laity for more monastic concerns, such as rain retreats. The locations of monuments immediately outside the center and at a distance of a few kilometers, reflect the monastic communities' need to reconcile the ideal of distance from urban life with the economic dependence on the patronage that could be provided by urban residents with access to substantial surpluses and wealth.

There is no evidence for the actual quarters inhabited by Buddhist monks, but as Murphy (Murphy 2010b, forthcoming) observed, the presence of spaces used for monastic rituals (e.g. *ubosots* and *viharas*) are suggestive of where monastic compounds were likely located, and at the least where a portion of the monastic community spent time performing religious ceremonies. At both U-Thong and Muang Sema, two of the few moated settlements where *vihara* structures have been identified, *viharas* were located both inside and outside these centers' enclosures (Boisselier 1968; Kingmani, et al. 2002; Murphy forthcoming; Wangsook 2000). The presence of *vihara* structures outside the enclosure, and the higher number of stupas found in these exterior locations, suggest that at least some portion, perhaps even a majority, of the monastic community operated outside of the settlement enclosure. By conducting their affairs in these peripheral locations monks may have been able to accumulate political and economic influence independently of political elites, who could monitor and control them more easily if they were located within the core of the settlement. The ability of the monastic community to operate outside the supervision of political elites suggests that political administrators and the monastic communities may have formed separate hierarchies of authority within Dvaravati society. Even within such a heterarchical organization, both groups were still interdependent, as the monastic communities

required patronage and military defense, and the political elite needed the monks to perform certain ceremonies and receive donations to build their merit.

Similar to the cosmological significance of earthwork enclosures around Dvaravati settlements, the spatial configuration of Buddhist monuments around Dvaravati settlements may have also served to establish a protective sacred field. Due to the relics they contain, stupas are considered to emit a sacred energy. As noted above, Murphy (forthcoming) noted that the enclosed settlement of Muang Fa Daed in northeast Thailand was surrounded by seven stupas, possibly in order to protect the settlement. The configuration of the Buddhist monuments, likely stupas, in the four cardinal directions around Kamphaeng Saen may have served a similar purpose. Other enclosed Dvaravati centers in west-central Thailand, such as Nakhon Pathom, U-Thong and Ku Bua, also have Buddhist monuments ringing the outside of their enclosures, although they are not always placed in the four cardinal directions like at Kamphaeng Saen (see maps in Appendix B). These patterns may represent a translation of cosmological concepts about the power of earthwork enclosures into the configuration of Buddhist monuments within the landscape. A better chronology for both the construction of Dvaravati earthworks and brick monuments in central Thailand is needed to more fully understand the relationships between these two types of monuments.

Even though the majority of Dvaravati Buddhist monuments in central Thailand were located outside settlement enclosures in the locations discussed above, some monuments were built in the settlement interior. Despite the smaller number of these monuments, the Dvaravati's construction of Buddhist structures within the settlement enclosure represented a significant modification of the South Asian tradition. In particular, the monuments built inside the settlements included the impressive *mahastupas* and *mahachaityas* located near the center of sites such as Nakhon Pathom, Sri Thep and Ku Bua. Such structures were also built outside the enclosure, but their construction at these settlements' centers represents a modification of the *mahastupa* tradition in South Asia. Communities in Early Historic India and Sri Lanka built large stupa structures, but as discussed above, they located them on the settlement periphery

or several kilometers away from major urban centers. The location of these large stupas at the center of major Dvaravati urban centers more closely resembles the spatial context of temples in South Indian temple towns than it does the general configuration of Buddhist monuments in South Asia. The Dvaravati construction of *mahastupas* in a more publicly visible location at the center of the settlement suggests that they may have played an important role in political and monastic ceremonies intended for a broad audience. If Dvaravati rulers incorporated concepts of Buddhist kingship, such as the *chakravartin*, into their court rituals, royal personae and governance, then they may have modified the traditional Buddhist spatial ideals of building monuments outside habitation areas in order to pursue their own political and religious agendas. Additionally, the location of these monuments within the urban core may also indicate that the monastic community, or perhaps a sect within it, altered their beliefs about ideal and acceptable locations for Buddhist monuments. The increased visibility of the monuments within the heart of the settlement may have also facilitated greater engagement with the lay community and ultimately the spread of Buddhism in Thailand.

The locations of Buddhist monuments in Dvaravati settlements and their hinterlands reveal how the spread of Buddhism in Thailand brought with it ideas about the relationship between sacred and urban space. However, just as the Dvaravati modified Buddhism to their cultural beliefs and political goals, they also altered the forms, functions and spatial configurations of Buddhist monuments to fit their own agendas.

Discussion

The Dvaravati period was a time of dramatic changes in the social and political organization of the societies in central and northeastern Thailand. The development of settlements during this period that were in some cases up to ten times larger than the largest Iron Age settlements, forced the growing number of Dvaravati urban residents to confront new challenges related to maintaining order within their communities. The smaller size of villages meant decision making and mitigating problems relied on familiarity and kinship ties between community members. The larger populations in the

Dvaravati cities and towns, and the likelihood that they included at least some unrelated individuals who had immigrated to the settlement from smaller villages, required new types of leadership and community organization. Dvaravati leaders and urban residents overcame these challenges in part by creating new identities that held meaning for larger groups of people beyond a single village or cluster of villages. Individuals may have begun to identify as “urbanites” in addition to their membership in a specific kinship group. Residents may have also forged social connections through occupational groups or guilds. Devotion to Buddhist or Hindu deities, rather than animist spirits that were tied to specific locations, may have also provided an important source of common identity. Examining Dvaravati urban landscapes at a variety of scales, from the distribution of monuments within individual settlements to a regional consideration of the emergence of similar approaches to planning, provides a valuable window into how the residents of these settlements created spaces to reflect and reinforce their new identities.

The construction of ramparts, moats and religious monuments provided publically visible investments of community labor, both during their construction, and as a lasting physical presence in the urban landscape. Participation in monument construction may have been an important means of bringing residents together in growing Dvaravati communities that sought to develop stronger social bonds and a group identity that transcended kinship. Just as Monica Smith (2003a) suggested for Early Historic period cities in India, the construction of ramparts and moats that encircled and physically defined Dvaravati settlements likely provided an important source of civic pride and identity. This is not to say that there was one singular experience or perception of these monuments universally shared among all the members of the community. *Corvée* laborers or slaves who were forced to work on these monuments likely perceived them in different ways from elites; however, physically working to build and maintain these monuments, which likely included significant suffering and hardship, would have provided a common experience and source of identity among laborers. The construction and use of monuments also

played a key role in establishing elite identities. For the prehistoric communities who built settlement enclosures in northeastern Thailand, the organization of earthwork construction may have provided opportunities for early community leaders to emerge and exert their organizational authority. The larger size and, eventually, more formal plan of the Dvaravati period earthworks would have clearly required at least community-level leadership. By coordinating the construction of the enclosures, leaders had the opportunity to prove their ability to organize large scale projects, solidify residents' loyalty, and display their authority through highly visible structures.

Additionally, in the case of Dvaravati religious monuments, the act of building may have provided an important means for monastic groups to challenge or support political elites within a heterarchical system of authority. By situating Buddhist monuments and monasteries on the periphery of urban centers, the monastic orders demonstrated their relative independence; whereas those monuments built within the settlement, and particularly the large *mahastupas*, may represent the monastic community's participation in the legitimization of a Buddhist monarch. In both cases, monument construction would have played an active role in the negotiation of authority between political and religious leaders.

These groups also used the locations and plans of the monuments they sponsored to project messages, at times subtle, about their connections to other civilizations. Dvaravati political and religious elite adopted honorifics, concepts of kingship, religious practices and sculptural styles from foreign civilizations and then recontextualized them within their own culture in order to reinforce their status within Dvaravati society. The incorporation of foreign concepts in Dvaravati town planning and monument construction was part of the same process. The builders of the early Dvaravati moated towns drew on the tradition of moat and rampart construction from Iron Age Northeast Thailand. This tradition lent itself to incorporating spatial plans from other societies, as the interests and objectives of the community and its leaders changed. By incorporating foreign concepts into the location and plan of both the earthworks and religious monuments the community, the Dvaravati elite and the

monastic community reinforced messages about their real or implied connections to other civilizations. References to other urbanized civilizations, and the long-distance trade connections they implied, may have been an important feature of an emerging urban identity among traders, merchants and artisans that contrasted with the more local focus of the village farmer. The fact that some of the foreign concepts incorporated in to the Dvaravati urban landscape were encoded in a medium that was not readily detectable to an observer on the ground (e.g., the increasingly rectilinear enclosure plans) suggests that the town planners may have intended or understood these features to have a supernatural audience or to evoke cosmological power. The projection of messages about the planners' identity, particularly their connections to foreign civilizations, would have been limited to informed residents and the planners themselves, and not readily apparent to outsiders such as villagers visiting from the hinterland.

The similarities between the configuration of monuments at Dvaravati urban centers in central and northeastern Thailand, as seen in the development of similar enclosure forms and monument locations, suggests that the residents of these settlements from across the region shared a common urban identity. Local differences, such as the greater representation of Hindu monuments at sites like Dong Sri Mahosot, continued to exist, and allegiance to one's home settlement also likely played a prominent role in urbanites' identities; however, the more common moat forms and Buddhist monuments indicate the existence of shared ideas about life in an urban center. That these similarities are evident in the monumental architecture, suggests that, at least initially, emulation between the leaders organizing the construction of these features may have caused them to configure their settlements in similar ways. As political centralization increased, similar monumental landscapes may have been the result of planning activities by authorities outside of the community.

Additionally, there were likely strong incentives to configure enclosures and religious monuments in a certain way in order to ensure their cosmological efficacy or to follow monastic prescriptions. As the residents of different settlements built,

maintained and experienced these monuments according to these prescriptions, they developed similar ideas about what constituted properly ordered urban space, as well as formed an identity about what it meant to live in an urban center. As Murphy (2010a) has shown for northeast Thailand, Buddhism first spread between urban centers. Knowledge of and participation in the new religious tradition would have provided an important unifying thread between urban residents and likely figured prominently in their identity. Inter-community connections are evident in other forms of material culture, including shared types of ceramics, grinding stones and ornaments. The distribution of these objects is not restricted to urban centers, but they suggest that the development of a shared urban identity was accompanied by a more broadly shared cultural identity as well.

The emergence of regionally shared identities based on cultural affiliation, urban residence and religious practice, both facilitated and resulted from the process of political consolidation and increasing urbanization in central Thailand. The Iron Age communities in central and northeastern Thailand produced relatively localized material cultural traditions. By the Dvaravati period the degree of differences between the material culture from different settlements had substantially decreased, suggesting that their residents held an increasingly similar set of identities. These similarities meant that urban residents who relocated to another town or city arrived with an existing knowledge of important spatial and cultural aspects of their new home. More importantly, these commonalities allowed large numbers of unrelated urban residents to successfully coexist in the absence of traditional kinship bonds, and enabled the growth of urban centers of unprecedented size in the region. Also, a network of communities whose leaders shared common identities and cultural points of reference with each other and potential paramount rulers paved the way for political integration and administration of larger polities. I will return to examine the relationship between expanding urbanism and political centralization among the Dvaravati in Chapter 6.

In Chapter 5, I propose a series of questions about the relationships among and within Dvaravati centers, and then describe how I explored these questions through

fieldwork at Kamphaeng Saen. Some of the spatial patterns I identified at this mid-sized Dvaravati town only revealed their full significance when compared to other settlements and viewed within the broader context of regional trends in Dvaravati urban planning. For other patterns at Kamphaeng Saen, there is inadequate evidence from other settlements to enable meaningful comparison. In particular, systematic evaluation of the distribution of different production and consumption activities within Dvaravati urban settlements requires additional investigation. Data on the locations of these activities at a range of sites can help to evaluate the extent to which similarities in the ways the Dvaravati configured their urban spaces extended beyond monuments to domestic, administrative and production areas. Just as the configuration of monuments at Dvaravati centers show the adaptation and recontextualization of foreign spatial concepts, the organization of other spaces could reveal the use and manipulation of foreign urban planning prescriptions, such as those outlined in the *Arthashastra*, as part of the emergence of a Dvaravati urban planning vernacular. Alternatively, these spaces may just as likely reveal indigenous solutions to the challenges of living in an urban landscape.

CHAPTER 5

Archaeological Investigations at Kamphaeng Saen

In Chapter 1, I discussed how the emergence of urban centers with populations that greatly exceeded those of traditional villages required urban residents to form new relationships and identities to supplement those based on kinship. The groups who shaped these new relationships might have included: centralized authorities located at a paramount center, intermediate elites, or other corporate groups. The configuration of space within settlements is one way that these groups created, reinforced and challenged new urban relationships and identities. Additionally, the regional dynamics between urban centers, possibly influenced by changes in political or economic centralization, could result in significant changes to the population size or functional specialization of individual centers. The evidence in Chapters 3 and 4 laid the groundwork for me to address several questions about how these processes affected the configuration of Dvaravati urban landscapes, both at the scale of the internal organization of individual centers and the broader social, political and economic relationships between centers. In this chapter I highlight some of these questions and my attempt to answer them through archaeological field investigations at the center of Kamphaeng Saen.

As I detailed in Chapter 4, together with supporting evidence of religious monuments and administrative objects, the settlement hierarchy of Dvaravati centers in central Thailand suggests a concentration of economic, and possibly political, influence at Nakhon Pathom at some time during the Dvaravati period. This hierarchy is based on the area of settlement enclosures, but as I noted, this is an imperfect measure of actual settlement size. Like religious monuments and monastic areas, habitation and craft production areas may have extended beyond the enclosures at some sites (e.g., Dong

Sri Mahasot) and the area inside the enclosure may not have been uniformly occupied. Data on the density of occupation within and beyond Dvaravati enclosures will provide allow for more accurate estimates of site-size and enable us to better reconstruct the settlement hierarchy.

Obtaining better estimates of the size of enclosed settlements is just a start; we also need to evaluate the degree to which these settlements were functionally differentiated. For example, understanding the degree to which a center focused on producing a single product, such as iron, ceramics or agriculture crops, or other activities, such as trade or administration, can reveal if Dvaravati urban centers were functionally specialized. Such community-level specialization may have provided an important new source of identity for a settlement's residents, as well as increased their dependence on a centralized authority to ensure reliable exchange with other specialized centers. Within the political landscape of the early Dvaravati period, characterized by relatively independent small peer-polities centered on urban centers, increases in the functional differentiation and interdependence of centers could have provided the incentive for relinquishing autonomy to a more centralized authority.

Our understanding of the timing, extent and nature of Dvaravati political centralization all require additional research. It is clear that at some time during the Dvaravati period, Nakhon Pathom emerged as a first-tier urban center with substantial cultural, religious and economic influence over a larger region. Determining if this influence extended to direct or indirect political control as well requires a more comprehensive set of data on the presence and nature of administrative activities at Dvaravati centers. The recovery of a few seals, sealings and weights suggests this evidence exists, but it needs to be more systematically reported and collated before we are able to more accurately characterize the Dvaravati political administrative hierarchy.

Even if we do not yet have enough evidence to adequately evaluate Nakhon Pathom's status as the capital of an integrated regional polity, its dramatic scale, in both size and monumentality compared to other Dvaravati centers, has implications that can be investigated more immediately. In particular, we can explore the ways in

which large scale urban dynamics, such as the dramatic growth of Nakhon Pathom, affected life in individual settlements. Did the rise of Nakhon Pathom drain resources and people from neighboring enclosed centers, as Wales (1969) suspected? Or did people move to Nakhon Pathom from smaller villages and hamlets with non-urban populations in the countryside? In either case, did the immigrants to Nakhon Pathom move there voluntarily seeking economic opportunities or protection, or were they forcibly relocated? Additional research at Nakhon Pathom will undoubtedly make significant contributions toward answering these questions, but investigating social, economic and environmental changes at its neighboring centers will also contribute to our understanding of regional urban dynamics as well as individual settlement histories.

Better documentation of the developmental histories of individual Dvaravati enclosed centers will enable us to evaluate whether they developed through gradual accretional growth or were established more rapidly, possibly as intentional or planned communities. Ideally, obtaining evidence that all or parts of the settlement exhibit coordinated planning, either from the start or at particular times during the settlement's history, would enable us to identify attempts by different groups, such as central elites, intermediate elites or corporate groups to control space within the community for various reasons. These might include attempts by authorities to monitor and control the activities of residents, or a desire to follow social or religious prescriptions about the configuration of space (e.g., the ideals laid out in the *Arthashastra*, discussed in Chapter 4). Similar plans among Dvaravati centers could indicate a central political authority's standardized use of town planning to impose order and highlight their authority, or could result from competition and emulation between local leaders in neighboring centers. Unfortunately, the level of preservation in central Thailand has limited our ability to document the configuration of Dvaravati houses, streets, or public administrative buildings. The best indicators we have of Dvaravati town-planning are the earthwork enclosures and religious monuments. As I noted in Chapter 4, there is evidence that Dvaravati enclosure plans became more formal and standardized over time, suggesting increasing coordination. To better understand the implications of

these limited indicators of settlement planning, we need to determine when specific monuments were built during their settlements histories. Were the earthworks and religious monuments fundamental features that defined the community's landscape from the start, or were they added later to increase the community's physical or spiritual defenses, cope with changes in hydrology, or redefine or reinforce spatial differences?

In order to understand the significance of the earthwork enclosures and religious monuments we also need a better understanding of spatial differences in the distribution of production and consumption activities within urban sites. The distribution of different activities within a site can help us assess the degree to which public architecture defined social, economic or religious differences within the community. For example, did the community members residing outside the enclosure consume different types or qualities of foods or craft products from those residing inside the enclosure? Was the production of certain types of crafts spatially restricted to areas either inside or outside the enclosure? Some production activities like the smelting of iron are considered by some cultures to be spiritually polluting and require a spiritually protected location (e.g., Childs 2000; Haaland, et al. 2002; Rowlands and Warnier 1993). The physical pollution that comes with activities such as iron smelting could also encourage its location in segregated areas. The presence of such prescriptions among the Dvaravati could result in certain production activities being restricted to locations either within or outside the settlement enclosure, depending on the beliefs associated with the particular craft. In addition to contributing to our understandings of the significance of public architecture, the spatial distribution of craft production activities can indicate how production within the community was organized, such as in a single large workshop located in one area of the site, or across many households dispersed throughout the community. Additionally, the presence or lack of strong spatial differentiation in the consumption of different types of food or objects can provide an indicator of the relative economic and social homogeneity of the populations within individual Dvaravati settlements. Identifying the presence of distinct social or economic

groups, and changes in their composition or size over time, can enable us to evaluate if Dvaravati communities were reconfigured during urbanization.

As the closest enclosed center to Nakhon Pathom, Kamphaeng Saen is particularly well suited for investigating many of these issues, from the impacts of regional urban dynamics on individual centers to the more site-specific organization of individual communities. For this reason I chose Kamphaeng Saen as a research site to investigate some of the questions I pose above about Dvaravati urbanization and political change. While many of these issues were beyond the scope of such a limited scale project at a single site, it is my hope that my research efforts at Kamphaeng Saen provide one piece to a larger puzzle that can only be solved through the joint efforts of many teams working at Dvaravati sites throughout central and northeastern Thailand. In the remainder of this chapter, I provide a brief description of Kamphaeng Saen and the limited prior research there, before turning to the specific questions, methods and results of my fieldwork. In Chapter 6, I use these results to examine some of the broader questions about the organization and mechanics of Dvaravati urban centers and polities.

The setting and prior research at Kamphaeng Saen

Today the archaeological site of Kamphaeng Saen (13° 59' 27"N, 99° 57' 45"E) is located a little over 2 km west-south-west of a modern town bearing the same name (Fig. 5.1). Both the ancient and modern settlements are located in the Kamphaeng Saen district of the Nakhon Pathom Province in west-central Thailand. Geologically, the site is situated between the edge of the Bangkok Plain and the foothills of the Tenasserim Mountains (Fig. 3.1). At 8-10 m.a.b.s.l., the elevation of the ground surface inside and around Kamphaeng Saen is well above the high-water mark of the most recent marine transgression (i.e., 2-4 m.a.b.s.l.; see Chapter 2). Based on elevation measurements, the coastline at the maximal transgression around 4000 BCE may have been as close as 7 km east of the future location of Kamphaeng Saen, but by the Dvaravati period the coastline would have receded leaving back-swamps and mangroves in this area (see Chapter 2). The site is situated on a geological formation known as the Kamphaeng Saen group, which is composed of deep alluvial soils deposited as river deltas when the Central



Figure 5.1. Aerial photo of Kamphaeng Saen taken in 1975

Valley was inundated by one of the past marine transgressions (Pendleton 1962:70). These soils are highly fertile and well-suited to the cultivation of either dry crops or rice paddy, which surround the site today.

Kamphaeng Saen is located in the west-central group of Dvaravati sites, which also includes U-Thong, Nakhon Pathom, Pong Tuk and Ku Bua, and is often considered the heartland of the Dvaravati civilization (Fig. 5.2). Kamphaeng Saen (52.5 ha) is in the fourth-tier of the settlement hierarchy of enclosed Dvaravati centers (Figs. 5.16-5.18), and is the smallest enclosed settlement with identified Dvaravati material in the west-central region.¹ By contrast, Kamphaeng Saen's nearest neighboring moated settlement, only 25 km to the south, is Nakhon Pathom, whose impressive 659 ha moated enclosure is the largest of any Dvaravati settlement. U-Thong, located roughly 40 km to the north of Kamphaeng Saen, is the next closest moated center and has an enclosed area of 96 ha.

Even though the size of Kamphaeng Saen's enclosure is significantly smaller than the other moated settlements in west-central Thailand, it shares some key features with its larger neighbors and Dvaravati settlements elsewhere in central Thailand. Like most Dvaravati moated settlement, Kamphaeng Saen is located near a waterway that feeds its moat. At Kamphaeng Saen, a small stream, the Huai Yang, which eventually becomes a tributary of the Tha Chin River, feeds a moat that encircles the settlement core. The moat is 16 to 20 m wide, and even today is filled with water throughout the entire year (Fig. 5.3). The earth removed during the moat's construction was piled along its interior edge forming a rounded earthen wall, which is currently 2.6 to 5.1 m above ground surface and 18 to 30 m wide (Fig. 5.4).² There are several openings in the wall that may have been gates, although some of these are most likely later modifications. The moat

¹Mudar (1999) identified several moated settlements in west-central Thailand that are smaller than Kamphaeng Saen, but it is unclear if they contain Dvaravati period material and they are not included in other lists of moated Dvaravati sites (e.g. Indrawooth 1999, 2004).

²After his two visits to the site in the 1960s, Wales (1969) noted the presence of a second wall, possibly lining the moat's exterior edge, but no traces of this wall remain today. In the 1930s, Dupont (1939) noted only a single wall on the moat's interior edge.

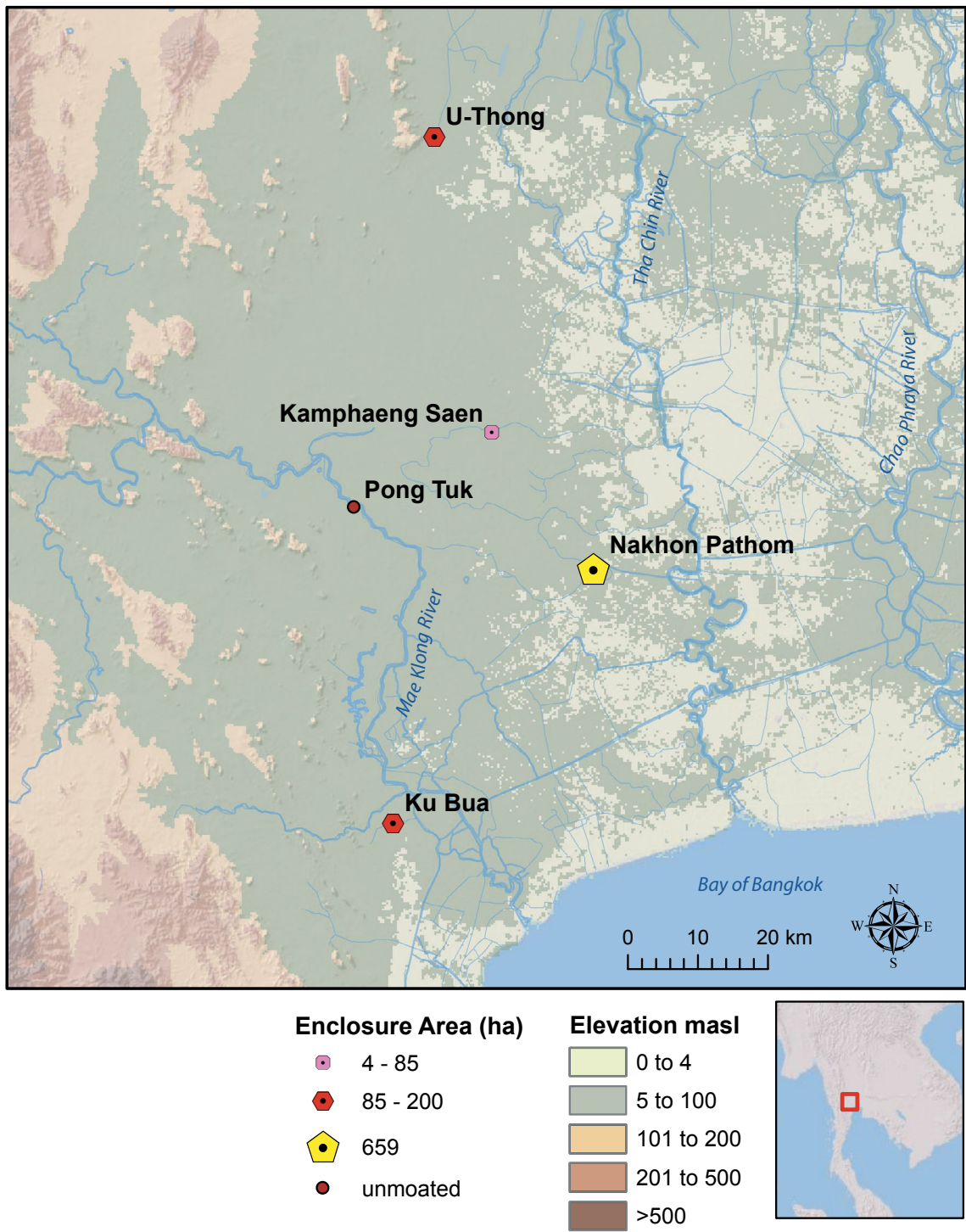


Figure 5.2. Dvaravati centers in west-central Thailand



Figure 5.3. Moat along the east side of enclosure at Kamphaeng Saen (view north)



Figure 5.4. Earthen wall along the east side of enclosure at Kamphaeng Saen (view north)



Figure 5.5. A map of Kamphaeng Saen showing modern development inside the enclosure, reservoirs, the enclosure wall and moat, exterior religious monuments and the KSAP test excavations

and wall enclosure follow an irregular polygon plan that is roughly 750 x 780 m (Fig. 5.4). This plan is consistent with irregular to oval plans of some, presumably early, Dvaravati enclosures (Mudar 1999, 5; Vallibhotama 1992, 123; Wales 1969).

Today, the area inside the moat and wall is divided between a scout camp, primary school and arboretum, leaving much of the site open and undeveloped (Fig. 5.5). Modern groundcover in the site's interior is a mixture of open grassland and secondary forest, generally with minimal understory, although some areas are covered with dense brush (Fig. 5.6). The land cover outside of the moat is mostly used for rice paddies and dry agricultural fields. At the time of the construction of the scout camp in the mid-1960s, Wales (1969) reported that the site interior was deserted; however, Dupont (1939) made an even earlier visit to the site in the 1930s and reported that a few areas inside the enclosure were used for rice fields, traces of which are still visible today. As part of these agricultural activities and the construction of the scout camp, several reservoirs and canals were dug inside the enclosure, including an irregular moat-



Figure 5.6. Typical secondary forest and ground cover inside the enclosure (in the SE quadrant)



Figure 5.7. Two of three stucco on laterite Buddhas recovered at Kamphaeng Saen in the early 20th century CE (left, currently in Wat Kamphaeng Saen; right, currently in Wat Sawang Chat Pracha Banrung)

like feature in the northeastern part of the site. It is possible that some of the reservoirs originally date to the Dvaravati occupation of the site, but additional investigation is required to be certain.

Dupont (1939), Boisselier (1965a) and Wales (1969) all made brief visits to Kamphaeng Saen to investigate Dvaravati-style sculpture found by local residents. During a visit to the site in the late 1930s, Dupont (1939: 364 - 365; 1959: 144) examined three small sculptures of standing Buddhas (approx. 50 cm high) found outside the settlement enclosure and then moved to the modern Kamphaeng Saen monastery (Fig. 5.7).³ The sculptures had been carved out of laterite and then covered with plaster. The production technique and style of the images led Dupont (1939: 364 - 365; 1959: 144) to characterize them as part of a localized sculptural tradition that dated to the late

³ When Dupont (1939) examined the three sculptures they were all housed at Wat Kamphaeng Saen. Today the set of images has been divided between three monasteries in the area (Wat Kamphaeng Saen, Wat Sawang Chat Pracha Banrung and Wat Bohnamchut). They have been covered with gold leaf as a result of continued veneration, making it difficult to assess their features or construction.



Figure 5.8. The dharmachakra from Kamphaeng Saen (in the Phra Pathom Chedi National Museum)

Dvaravati period. They had slab backs and Dupont hypothesized that they were made to be set in niches of a religious structure (Dupont 1959, 144). Dupont (1939:364-365) noted that the monks had recovered the images from small brick-covered mounds⁴ that were located outside the settlement enclosure to the northwest; however, Wales (1969: 50) later observed that the mounds where the statues were found were located “outside the eastern gate of the town”, and in 1992 Nuamboonlue (1996:29) and his team documented an oral history by a local resident that also described the recovery of the statues east of the settlement.

⁴These mounds likely represent Buddhist stupas, although it is unclear whether or not they contained relics and could therefore be classified as *chaityas*. I therefore refer to them as stupas in the general sense of the term while recognizing that their advanced state of decay makes it difficult to identify their function with certainty.

In 1963 a *dharmachakra* (Buddhist wheel of law; Fig. 5.8; 67 cm diameter) carved from blue-green limestone and a carved stone socle (base or mount for the *dharmachakra*; Fig. 5.9; 36.5 cm wide x 38.5 cm long) were found at Kamphaeng Saen (Chongkol and Woodward 1966; Nuamboonlue 1996; Wales 1969:50). Little is known about their *in situ* context, but Wales (1969:50) mentioned that they were found “somewhat further to the east” of the brick mounds where the three statues of the Buddha were recovered. The triangular base of the *dharmachakra* frames a figure that (Chongkol and Woodward 1966) identified as “a divinity or royal personage holding an unopened lotus in each hand.” Due to the simplification of the decoration around its rim, both Wales (1969:138) and Brown (1996:132) placed the *dharmachakra* from Kamphaeng Saen in a late group in their typologies of Dvaravati *dharmachakras* (Wales’s Type 4; Brown’s Group 5). Brown (1996: 136-137) suggested that the late group of *dharmachakras* may date to the late seventh or eighth centuries CE, but cautioned that this dating was highly speculative. The socle found with the *dharmachakra* bears an



Figure 5.9. The inscribed socle from Kamphaeng Saen (in the Phra Pathom Chedi National Museum)

inscription on either its top or bottom (depending on how it was originally oriented). The inscription is written in the Pāli language with a script derived from South India (similar to Pallava), which Coedès's dated to the eighth century CE.⁵ The inscription refers to the four noble truths of Buddhism. (Chongkol and Woodward 1966:object 22) transliterated and translated the inscription as:

saccakiccakataññaṃ
catudhācatudhākataṃ
tivaṭṭaṃdvādasākāraṃ
dhammacakkaṃmahesino

The knowledge of each of the Four Noble Truths, the knowledge of the obligation entailed by each, and the knowledge that these obligations have been fulfilled, making three revolutions for a total of twelve aspects of knowledge, are the foundation of the Buddha's *dhammacakka* (wisdom).

According to Brown (1996:98, 108), this same inscription occurs on the inner hub of an early *dharmacakra* from Nakhon Pathom translated by Coedès (1956:225). Brown (1996: 108) also observed that the inscription on the Kamphaeng Saen socle is written in an oversized script, which he suggested might indicate that it was meant to be read from the ground by a viewer looking upward at the bottom of the socle as it sat atop a pillar supporting a *dharmacakra*. Literacy in Pāli was likely quite low, and the inscription's primary function may have been to spiritually empower the sculpture or impress viewers rather than provide information about Buddhist doctrine.

More recently, additional evidence about the archaeology of Kamphaeng Saen's surrounding landscape has been documented. In 1991 the Fine Arts Department conducted a small excavation on the campus of Kasetsart University, roughly 3 km north of the moated settlement (Nuamboonlue 1996:21). They documented an Iron Age burial, confirming the presence of occupation in the vicinity of Kamphaeng Saen

⁵ Coedès's chronological assessment of the inscription is mentioned by Wales (1969), but it is unclear if this was based on their personal communication or Coedès's work on similar inscriptions.

during this period. Additionally, Dvaravati style ceramics and beads have been reported within a 4 km radius of Kamphaeng Saen. In 1992, Nuamboonlue (1996:31-34) and his team documented some of this material in addition to oral histories about the site from local residents living in its vicinity. Perhaps most importantly, he identified the general locations of the ruins of brick monuments located in four groups to the north, east, south and west of the exterior of the settlement enclosure. He interpreted the structures as stupas. The ruins to the north of the enclosure were located on the opposite side of the Huai Yang stream and included a large mound with a base roughly 12 x 12 m (Nuamboonlue 1996:33). It reportedly had four smaller (2 x 2 m) structures located at each of its corners, but they had been destroyed by plowing. The structures located east of the settlement were described by the Nuamboonlue (1996:32) as seven mounds in a line, running east to west, with a small circular pool of water at its eastern end. Unfortunately he did not specify the mounds' dimensions or their distances from each other and the settlement. We later identified what we believe to be the remains of these mounds approximately 50 to 300 m east of the moat (see below).

About 400 m south of the settlement enclosure, Nuamboonlue (1996) identified a third group of ruins with six brick mounds. They had bases approximately 4 x 4 m, and like the eastern group were configured in an east-west line. Based on this similarity, he speculated that there had been a seventh stupa mound in the southern group that had subsequently been destroyed and was no longer visible. The final group Nuamboonlue (1996) identified was located about 2 km west of the town, a significantly longer distance from the site than the other groups. Half of the main stupa mound in this group had been destroyed by road construction, but the base of the ruins of the remaining structure was 15 x 24 m. He also identified the base (roughly 12 x 12 m) of a smaller structure in a line east of the main structure, as well as a 45 m square water pool 100 m east of the structures. Nuamboonlue's (1996) documentation of ruins and local oral histories in the area around Kamphaeng Saen provided a valuable record of this landscape, which has undergone significant changes even since his study in the early 1990s. While there is a strong likelihood that many of the structures he documented are

contemporaneous with the Dvaravati occupation of Kamphaeng Saen, it was beyond the scope of his study to conclusively determine the age and function of the structures and to more precisely map their location and configuration.

In contrast to the area outside the settlement enclosure, documentation of Dvaravati materials inside the enclosure has been more limited. Boisselier (1965a) reported that he did not identify any potsherds or other cultural materials on the surface inside the enclosure, and Dupont (1939) is silent regarding this subject. Conversely, with the assistance of the scout camp watchman, Wales (1969) identified low densities of Dvaravati-style potsherds on the surface in some parts of the site, with other areas void of any surface material. The scout camp watchman also showed Wales a broken Dvaravati-style saddle quern and two stone grinders.⁶ Based on the irregularity of the plan of the enclosure and the low density of surface material, Wales (1969:51) speculated that Kamphaeng Saen was founded as “an early outpost towards the sea which stagnated rather than developed with the establishment of a definitive seaside capital at Nak'on [sic] Pathom.”

Dupont (1939), Boisselier (1965a) and Wales (1969) did not report seeing any monuments inside the settlement enclosure during their visits to the site. On the other hand, Nuamboonlue (1996:32) recorded oral histories from local residents who claimed a stupa base had been located at the center of the settlement enclosure. Nuamboonlue (1996:32) did not provide any details on the size or construction of the monument, although he noted that one informant said there was an inscription on the center of a stone that was apparently part of the monument. Attempts to plough this area with a tractor were unsuccessful and as a result, a flagpole for the scout camp was built over the location of the structure base (Fig. 5.10; Nuamboonlue 1996:32). Today no pre-modern construction materials are visible below the flagpole base. Elsewhere inside the settlement enclosure, somewhere in the southeast quadrant of the site, Nuamboonlue

⁶Today, the scout camp director maintains a small museum devoted to materials found at the site. The collection contains a stone saddle quern and several grinders, which may be the same objects Wales saw during his visit. The collection also contains several bricks found east of the enclosure, and earthenware ceramic sherds.



Figure 5.10. Flagpole located at the center of the site

(1996:34) was shown more substantive evidence for a monument in the form of a pile of bricks, whose base he felt resembled that of a monument. Unfortunately he did not report the exact location of the pile, its dimensions, or the sizes of the bricks it comprised. In the north part of the site around the area of the school, Nuamboonlue (1996:34) documented the recovery of numerous Dvaravati-style glass beads and a clay Buddha image, whose age is uncertain. Two bronze Buddha images were reportedly found in the northeast part of the site in area of the Boy Scout camp. One is small and eroded making its age difficult to determine, and the other appears to be a twelfth to thirteenth century CE Khmer-style Buddha. These opportunistic finds and observations confirmed that the site was occupied during the Dvaravati period, but raised additional questions about the chronology of the settlement and its surrounding monuments.

The Kamphaeng Saen Archaeology Project

From January 2009 to August 2010 I directed the Kamphaeng Saen Archaeology Project (KSAP) under the supervision of the Second Regional Office of the Fine Arts

Department (FAD). In addition to the FAD's guidance, I also benefited from the input and hard work of local residents and students from Silpakorn University, Bangkok. Despite the chance finds of Dvaravati sculpture and cultural materials discussed above, no systematic archaeological investigation had been conducted at Kamphaeng Saen. As a result the project addressed fundamental questions about site chronology, organization and function. The objectives were to document:

1. the chronology of occupation at Kamphaeng Saen;
2. the spatial and chronological distribution of artifacts indicative of different types of consumption, production or administrative activities;
3. the date and method of construction of the earthen wall and moat enclosure;
4. the distribution of surface architecture such as religious monuments, mounds and reservoirs.

This baseline information would in turn allow an exploration of some of the more complex issues about Dvaravati urbanism and political organization I raised at the beginning of this chapter. In particular, documenting the chronology of Kamphaeng Saen would allow me to evaluate how its establishment and abandonment corresponded with the chronology of neighboring Dvaravati centers such as U-Thong and Nakhon Pathom. Identifying the presence or lack of spatial differences in occupation density, production or consumption would provide insights into how the community was organized. Changes in this organization over time would highlight how the residents dealt with the center's population growth or decline, as well as regional shifts in urbanism and political centralization. Documenting the chronology and configuration of the earthworks and religious monuments would provide insight into how the construction of public corresponded to periods within Kamphaeng Saen's settlement history when fostering leadership or civic identity may have been especially needed.

To investigate these aspects of life at Kamphaeng Saen the KSAP used a combination of archaeological methods that included: 1) mapping, 2) pedestrian survey, 3) bucket auger coring, 4) profiling of the rampart, 5) profiling of disturbed areas, 6) test

excavations, and 7) analysis of artifacts and samples. Below I outline the methods and results of each of these research activities. Where relevant, I have provided additional details in the Appendices.

Topographic mapping

Methodology

After establishing a site datum and coordinate system (see Appendix D), Kamphaeng Saen's earthwork enclosure was mapped using a combination of measurements taken with a total station and handheld GPS. The enclosure wall, moat and gates around the southern half and northeast portion of the site were mapped in greatest detail using a total station to capture elevation changes of more than approximately 50 cm. Unfortunately, the density of vegetation covering the remainder of the enclosure prohibited the use of a total station to map these sections, forcing us to rely on a combination of handheld GPS measurements and aerial photographs. The total station was also used to map a 40 m wide transect through the middle of the site from the west gate to the east gate and to take spot elevations throughout the site interior. Additional features visible inside the enclosure (e.g., mounds, reservoirs, canals) were mapped using a handheld GPS and measuring tape during the pedestrian survey of the interior (see below). The mapping data from the total station and GPS were combined in ArcGIS with aerial photographs to produce site maps (Figs. 5.5, 5.11, 5.12).

Results

By systematically mapping the earthwork enclosure, we identified significant variability in its dimensions (Fig. 5.11). The wall's height varied from 2.6 to 5.1 m above the elevation of the ground surface inside the enclosure, and its width ranged from 18 to 30 m wide, with some sections having a steep slope and narrow top, while others have a gentle slope and wider top. It is difficult to determine the extent to which this variability represents differences in the erosion and weathering of the wall versus differences in original construction. The moat surrounding the site ranged in width from approximately 12 to 20 m, but has been dredged in recent memory, possibly altering

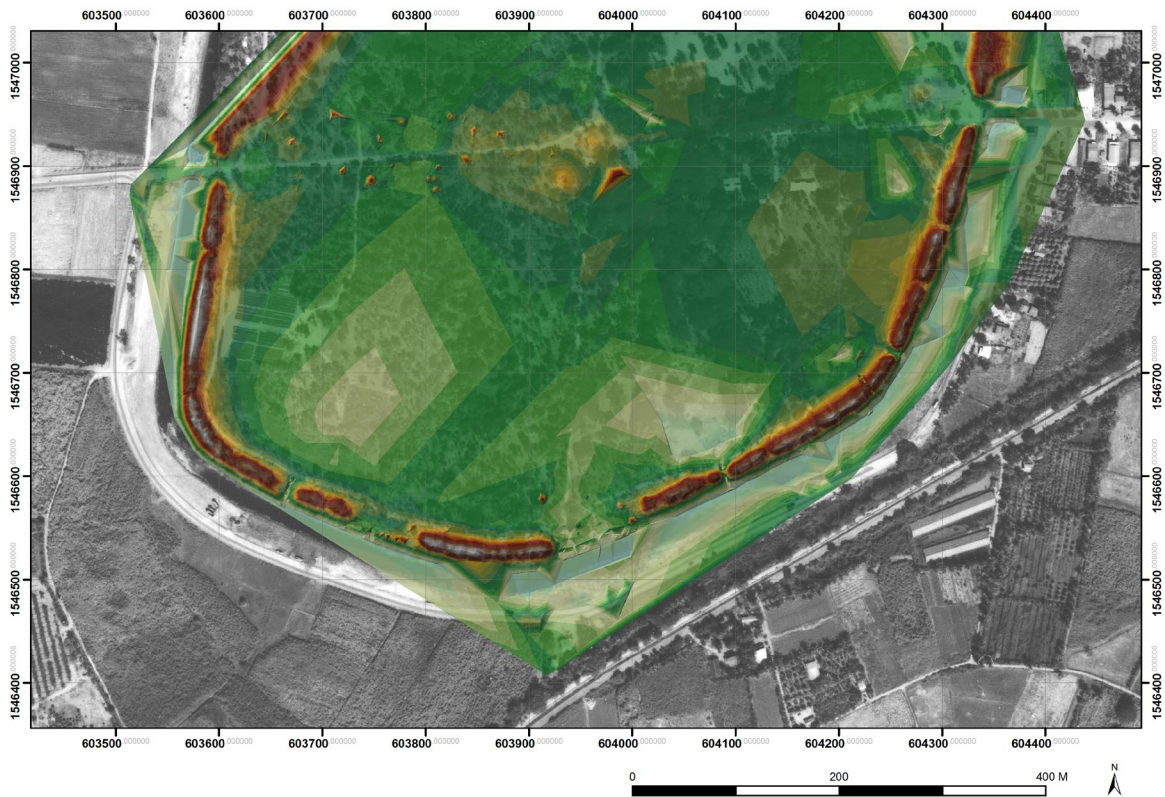


Figure 5.11. Three dimensional reconstruction of southern section of the enclosure wall

its width. Most of the moat still contains water throughout the year, but during our topographic survey we identified an area of low elevation northeast of the wall, where there is currently no moat. This low area appears to be traces of a section of the moat that once ran through this area, and our survey was able to reconstruct this section.

There were also numerous openings in the moat that ranged from 85 to 3 m across. Some of these openings served as gates for the site's Dvavati period inhabitants; others were clearly modern alterations, reportedly made to bring water *inside* the enclosure for irrigation purposes. This highlights the moat and wall enclosures' effectiveness at protecting the interior of the site from significant flooding. Spot elevations taken inside the enclosure showed this area to be relatively level with elevations of flat ground surfaces (i.e., not on mound features) within 0.5 m of each other. The area around the southeast reservoir was slightly lower (approx. 0.5 m) than other areas inside the site. The elevation of the surrounding ground surface outside the

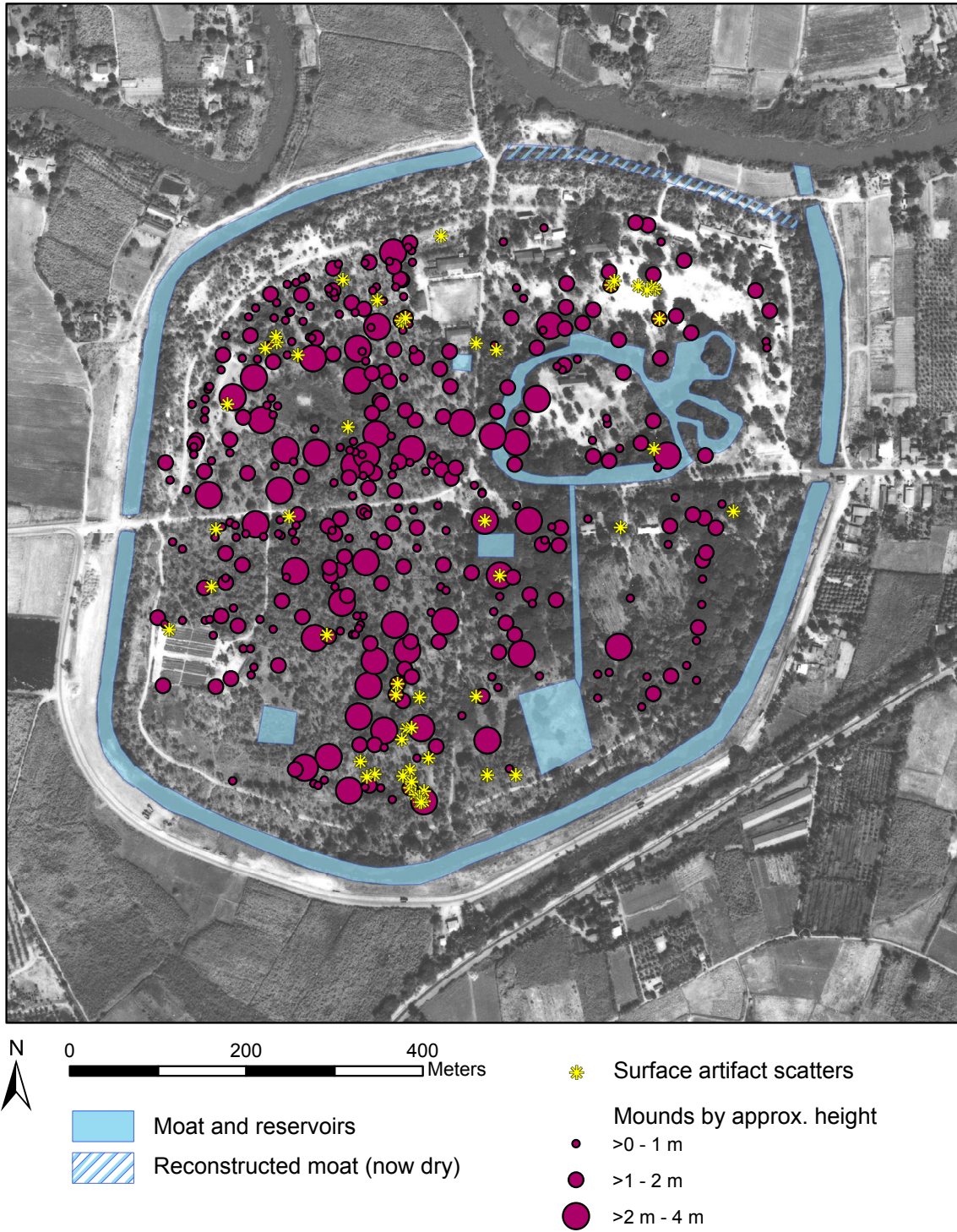


Figure 5.12. Features identified inside the enclosure during the interior survey (mounds and artifact scatters are not to scale)

enclosure was within the range documented inside the enclosure; however, there has been substantial modern modification of the ground surface outside the site due to road construction and agriculture.

Interior survey

Methodology

In order to systematically document and map all architectural features (e.g., mounds, reservoirs, canals) inside the settlement enclosure, as well as evaluate the density and distribution of surface artifacts, our team surveyed transects (20 m apart) throughout the site interior. All architectural features were located with a GPS, photographed, mapped and described using a standardized landscape feature (LF) form. During this survey if more than two artifacts were identified on the surface within 5 m of each other, the extent of the artifact scatter was mapped, and one or more 2 m radius 'dog-chain' surface collections were made. While the spacing of the transects ensured all architectural features were documented, they were probably not close enough to identify every artifact scatter. However, we also evaluated the distribution of artifacts within the settlement enclosure using a stratified unaligned systematic sample of 2 m radius surface collection units and bucket auger cores (see below).

Results

Details on the landscape features identified in the interior survey are provided in Appendix E. In general, our survey of the area inside the enclosure confirmed Wales's (1969) observation of low densities of cultural material, almost exclusively Dvaravati-style earthenware sherds, on the ground surface. Areas where surface artifacts were visible were most often located near disturbed areas such as recently dug canals or small pits. More commonly, the survey documented large areas throughout the site without any surface artifacts. This pattern was confirmed and much better defined through a systematic sample of bucket auger cores and surface collection units (see below).

The pedestrian survey documented 384 earthen mounds inside the site enclosure (Figs. 5.12, 5.13). Twenty five of the mounds were clearly the result of



Figure 5.13. A typical earthen mound found inside the enclosure

modern activity, but the origins of the other 359 mounds were unclear. Many had anthill or termite mounds visible at their peak or on their side, and may have been created or enlarged by insect activity. The mounds that were not clearly the result of modern activity varied in height (range = 0.2 to 4 m; mean = 0.96 m), circumference (range = 2 to 84 m; mean = 18.9 m) and shape (from conical to long rows). Subsequent bucket auger coring of a sample of the mounds did not reveal any cultural features inside the mounds. In a few cases, earthenware sherds were present below, but never inside, the mounds. The excavation of Test Pit 4 (see below) cross-sectioned one of the mounds. No cultural features or materials were found inside the mound, and the proto-historic strata ran 20 to 40 cm below the base of the mound without any apparent disturbance or change related to the location of the mound, indicating the mound post-dated the proto-historic occupation of the site. The origin of the mounds remains unclear, but may be related to the scout camp construction or post-Dvaravati agricultural activities.

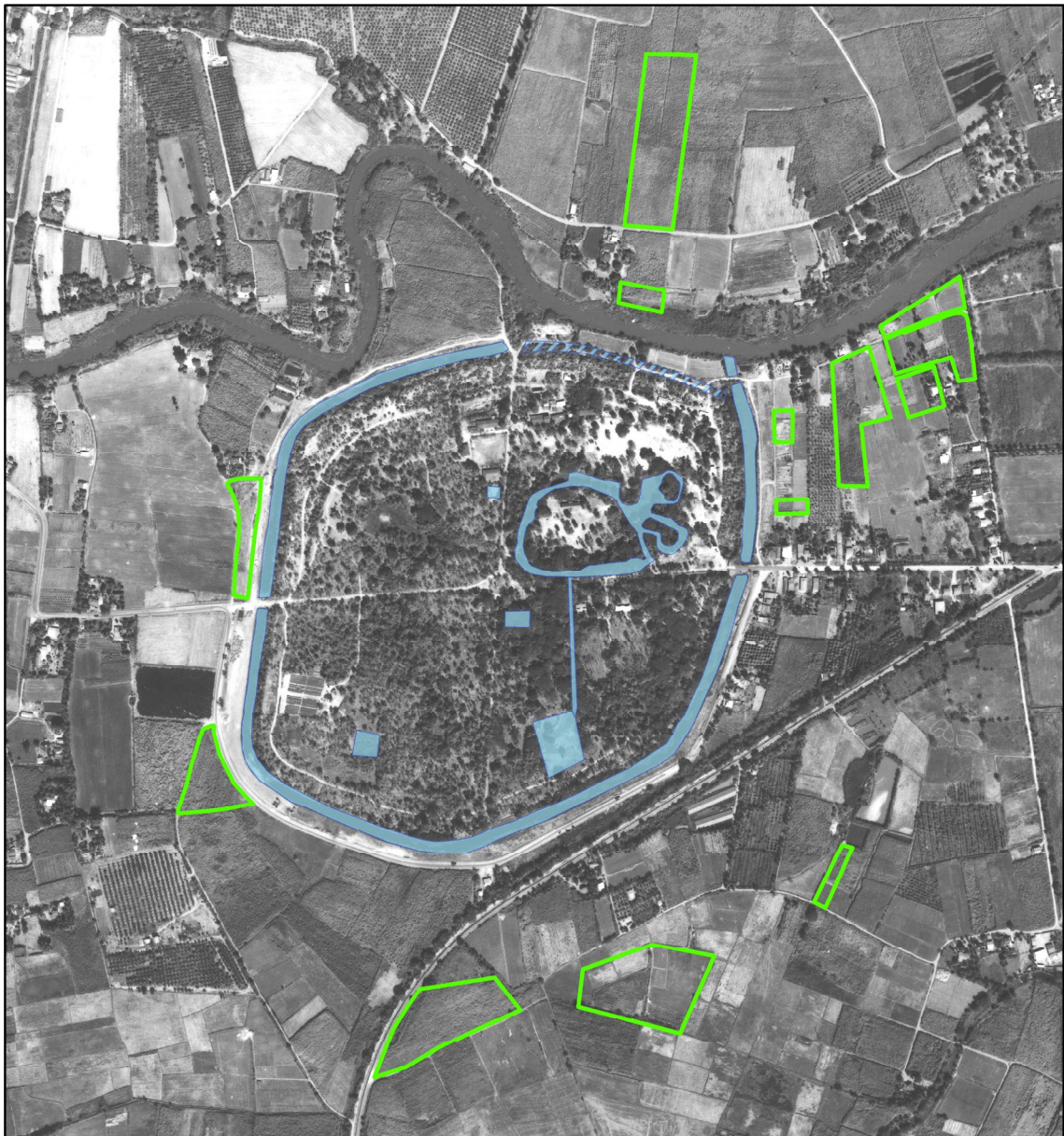
We did not find any mounds of *in situ* Dvaravati-style bricks inside the site interior. This includes the mound of bricks Nuamboonlue reported as located inside the eastern gate of the site. We documented a few isolated bricks of indeterminate age in all quadrants of the site, but they were not affiliated with any identifiable structures. There were a few concentrations of Dvaravati style-bricks around the arboretum office. Staff members told us that the bricks had recently been brought in from the area outside and east of the site for various uses. We also identified a mound of bricks of indeterminate age roughly 180 m northeast of the site center; however the mound also had modern construction materials embedded in it, and if the bricks date to the Dvaravati period they have clearly been heavily disturbed and likely moved.

Additionally, we identified remnants of the rice fields reported by Dupont (1939), and one small field in the northwest quadrant was still actively cultivated. Several reservoirs and canals were also mapped in the site interior. Most of these are recent, and some older local residents recalled their construction. Two possible exceptions are the large reservoir in the southeastern part of the site and the reservoir near the center of the site. While the banks of both reservoirs appear to have been altered to make them more regular in shape, both seem to be natural in origin. The relatively high density of Dvaravati material recovered in the auger cores and salvage units around the southeastern reservoir suggests that it may have been an important source of water and aquatic resources for the ancient residents.

Exterior survey

Methodology

Five areas (a total area of 12 ha) within 1 km of the moat were also surveyed (5 m wide transects) by a team of five surveyors (Figs. 5.14, 5.15). Some of the survey areas had to be sub-divided due to field boundaries. In the exterior survey areas, if more than two artifacts were found within 5 m of one another, a 2 m radius surface collection was conducted. Our field investigations outside the enclosure also included systematic pedestrian surveys (at 5 m intervals) in a selection of fallow fields (a total area of 0.12 km²) within 1 km of the enclosure exterior. The purpose of these preliminary



0 500 Meters




-  Surveyed Fields
-  Moat, Reservoirs and Canals
-  Reconstructed Moat (now dry)

Figure 5.14. Fields surveyed outside the enclosure



Figure 5.15. KSAP team members surveying fields outside the settlement enclosure



Figure 5.16. Mr. Pisit Thonatanat (left) interviews a local resident about the presence of archaeological materials in exterior fields

surveys outside the settlement enclosure was to determine if there was evidence of habitation or craft production in these exterior areas, as has been documented at some other Dvaravati enclosed settlements (e.g., Sri Mahasot, Nakhon Pathom, U-Thong).

Additionally, our survey attempted to locate and more precisely document the exterior stupa mounds described by Nuamboonlue (1996). Mr. Pisit Thonatanat, who is a long-time local resident, member of a local historical society and member of our field crew, helped to direct this portion of the work contributing his contacts and knowledge of the area (Fig. 5.17).

Results

We were unable to locate either the south or west stupa groups, but Mr. Thonatanat showed us where the dharmachakra was found east of the site and the ruins of the stupa north of the site. Using a GPS we mapped the position of the north stupa, 155 m north of the settlement enclosure on the opposite side of the river (Fig. 5.5). The stupa ruins were covered by dense brush, making its plan difficult to document; however it appeared to have a square plan, roughly 12 x 12 m, a solid core roughly 2 m high and an approximate cardinal orientation of 9° east of north (Fig. 5.17). We were unable to clearly identify the smaller structures at its four corners noted by Nuamboonlue (1996). On average the bricks of this stupa were slightly smaller than those found in the field east of the site (see below), but they contained a similar temper of rice grains and chaff. Despite their smaller size, the bricks in this stupa still appear to fall within the range of variability for Dvaravati style bricks, and it seems likely that the monument is contemporaneous with the occupation of the enclosed settlement. There were no stucco ornamentation or sculptural pieces visible on the surface of the stupa mound or the surrounding ground surface, and a survey of fallow fields adjacent to it encountered no other archaeological material. Future clearance and excavation of the monument are needed to more conclusively determine its plan and age.

Our pedestrian surveys identified only a few modern ceramic sherds in fields to the north, south and west of the site, but in an area east of the enclosure we identified complete and fragmentary Dvaravati-style bricks scattered around a recently dug



Figure 5.17. Ruins of the north stupa mound covered with brush (view north)



Figure 5.18. A scatter of Dvaravati-style bricks in a field east of the settlement enclosure (view north-north-west)

reservoir and in nearby fields (Fig. 5.18). We were unable to identify any *in situ* bricks or structures in this area other than one small mound of bricks (approximately 2.5 m diameter), that appeared to be the product of modern field clearance. The bricks had variable dimensions and levels of oxidation, but were on average 32 x 16 x 8 cm, incompletely oxidized (i.e., had a black core) and tempered with rice husks and grains (Fig. 19). These bricks resemble examples from other Dvaravati sites, including U-Thong, Nakhon Pathom and Ku Bua.

It is conceivable that these scatters of bricks represent the remains of the “much dug-over” brick mounds described by Wales (1969: 50) and the seven mounds described by Nuamboonlue (1996). Despite the destruction of the monuments that originally comprised the bricks, our documentation of the brick scatters provides a more precise location for where they likely once stood. Just east of the brick scatters, Mr. Thonatanat showed us the general location where the *dharmachakra* and socle had been recovered in 1963, roughly 350 m east of the moat and 100 m south of the river (Fig. 5.5). This location placed these objects on the eastern limit of the scatter of brick fragments, which is



Figure 5.19. A complete example (top) and cross-section through the width (bottom) of Dvaravati-style bricks found in a field east of the settlement enclosure. Note the incompletely-oxidized core and rice grain and husk temper in the cross-section.

consistent with Wales's (1969: 50) description of their discovery "somewhat further to the east" of the mounds.

A future full-coverage survey and auger coring of the area east of the site, including the fields that were not fallow at the time of our fieldwork, is needed to fully document the extent of material in this area. However, in the sample of fields in this area that we were able to survey, we identified only brick fragments and no other materials such as ceramic sherds. This initially perplexed us, but through discussions with a local farmer we learned that he and other farmers had found and collected a few earthenware sherds and sculptural fragments in the fields with the bricks scatters. His small collection of sherds that we saw comprised fragments of earthenware vessels with features common in Dvaravati assemblages, including incompletely oxidized cores, cord-impressions, incising, and Dvaravati -style rims. More diagnostic Dvaravati-style earthenware objects in the collection included: a rim that resembles those typically found on a type of high-necked vessels that are referred to as "water pots" (see Indrawooth 1985: pl. 27, figs. 10.1-5, 10.10); a fragment of a tall tubular finial that came from either a small stupa or an ornate lid (Fig. 5.20; see Indrawooth 1985: fig. 15); and a leg from a vessel stand (Fig. 5.21; see Indrawooth 1985: pl. 45, fig. 16).

The farmer also found two sculptural objects in the field east of the settlement enclosure. The first was a terracotta head of a deer (Fig. 5.22), a symbol commonly associated with Buddhism and documented at other Dvaravati sites albeit in stone (c.f. Brown 1996: figs. 69-75). The second sculptural fragment was a bronze pedestal in the shape of a lotus with the feet of a standing figure on its top (Fig. 5.23). Unfortunately the sculpture had broken at both the lotus's stem and just above the figure's ankles making the identification of the figure impossible. Two Dvaravati stone sculptures, one from Lopburi (F.A.D. 2009: fig. 22) and another from Nakhon Pathom (Brown 1996: fig. 79; F.A.D. 2009: fig. 25), depict the Buddha atop a mythical beast (either *Phanasbodi* or *Sūrya* respectively) and flanked on either side by an attendant (variously identified as *Bodhisattvas*, *Indra* or *Brahmā*) who is standing on a stemmed lotus. The attendants' bases in these two sculptures resemble the bronze fragment from Kamphaeng Saen, and



Figure 5.20. Fragment of a terracotta finial, found in a field east of the settlement enclosure



Figure 5.21. Leg from an earthenware vessel stand, found in a field east of the settlement enclosure



Figure 5.22. Terracotta deer head fragment, found in a field east of the settlement enclosure



Figure 5.23. Bronze lotus base with feet, found in a field east of the settlement enclosure

raise the possibility that it may have come from a similar image. The depiction of the Buddha on a mythical beast flanked by attendants is unique to Dvaravati art, and based on stylistic evidence art historians believe the motif developed between the end of the eighth and the ninth century CE (F.A.D. 2009:155). This overlaps with the time frame given for the *dharmacakra* and inscription from Kamphaeng Saen, so if the bronze base came from this type of image it would add additional support to the stylistic dating of the site's religious material to this period. Additionally, if the base held the image of a *bodhisattva*, as the example from Lopburi did, then it also raises the possibility that there were practitioners of Mahāyāna traditions at the site.

In addition to the sculptural pieces whose provenance the farmer could verify in the area east of the site, the modern Buddhist monastery of Wat Kamphaeng Saen also has several Dvaravati-style stucco and terracotta sculptural pieces that were reportedly recovered at Kamphaeng Saen.⁷ Neither Dupont (1939), Boisselier (1965a) nor Wales (1969) reported seeing any stucco sculptural objects other than the three laterite and stucco Buddhas discussed above during their visits; however Nuamboonlue (1996) later documented several of the pieces, albeit with limited background information, raising the possibility that they were discovered since the late 1960s. During a visit to the museum in 2010 we were able to examine two stucco faces (Figs. 5.24, 5.25) whose features resemble those of the many stucco faces from Buddhist monuments at other Dvaravati settlements in western Thailand such as Thung Setthi, Nakhon Pathom, Ku Bua and U-Thong. These faces share distinctive features such as connected eyebrows, thick lips and a large nose. Nuamboonlue (1996) reported additional stucco objects from Kamphaeng Saen, including a third face with similar features to the two we saw, a hand

⁷ Monastery museums often serve as repositories for objects members of the community suspect to be old or spiritually empowered, regardless of their original provenance. Archaeological materials obtained on trips outside the local area occasionally find their way into these collections, and for this reason the provenance of material in monastery collections must be treated with caution. In the case of the Wat Kamphaeng Saen sculptural fragments, the monastery curator, members of the local historical society and Nuamboonlue (1996) all claimed that the material was found at Kamphaeng Saen. However, questions about the provenance of these objects do arise since more stucco objects have not been reported from the site and there is no evidence of stucco fragments on the surface in the areas around the destroyed brick structures we surveyed.



Figure 5.24. Stucco face, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)



Figure 5.25. Stucco face, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)



Figure 5.26. Terracotta Hands, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)



Figure 5.27. Two terracotta heads, reportedly found at Kamphaeng Saen (now in Wat Kamphaeng Saen)

fragment, the hind leg of a lion and a scroll-like architectural ornament; unfortunately, these pieces could not be located at the time of our visit. Additionally, in 2009 I saw a typical Dvaravati-style lion made of stucco whose provenance was listed as Kamphaeng Saen on display in the U-Thong National Museum.⁸

We also examined two terracotta sculptural fragments in the Wat Kamphaeng Saen collection. The first terracotta fragment we examined was the upper torso and arms of a figure in the *namaskara mudra*, signifying homage or worship (Fig. 5.26). The figure has what appear to be arm bands around both upper biceps and bracelets around both wrists. In Dvaravati art these types of ornaments are not generally worn by individuals such as *Bodhisattavas*, Hindu deities, celestial beings, or the laity, who are in some cases shown worshipping or assisting the Buddha who is almost always depicted without ornaments (see F.A.D. 2009: pic. 7, 40, figs. 24, 25, 36, 37; Rattanakun 1992: fig.25, 26, 71). The excavation of a Dvaravati period stupa at the small unmoated site of Thung Setthi (Chapter 4; Fig. B.1) recovered two fragments of stucco figures in the *namaskara mudra* that have slightly more ornate arm ornaments, but otherwise closely resembles the figure from Kamphaeng Saen (F.A.D.2000:108, 113). The second terracotta fragment we examined was not documented by Nuamboonlue (1996), and depicts two adjacent heads (Fig. 5.27). The hairstyle of the figure on the left in this group resembles that of the female musicians and a noble woman and her attendant depicted in the stucco panels recovered from stupa no. 10 at Ku Bua (Rattanakun 1992: figs. 71, 72).

Bucket auger coring and surface collection

Methodology

The locations sampled for bucket auger coring and surface collection were chosen with a stratified unaligned systematic sample of one random point in every 100m x 100 m block (n = 70; Fig. 5.28). This sampling strategy was designed to ensure even coverage of the site without accidentally aligning sample locations with underlying

⁸Seen by the author on display in 2009.

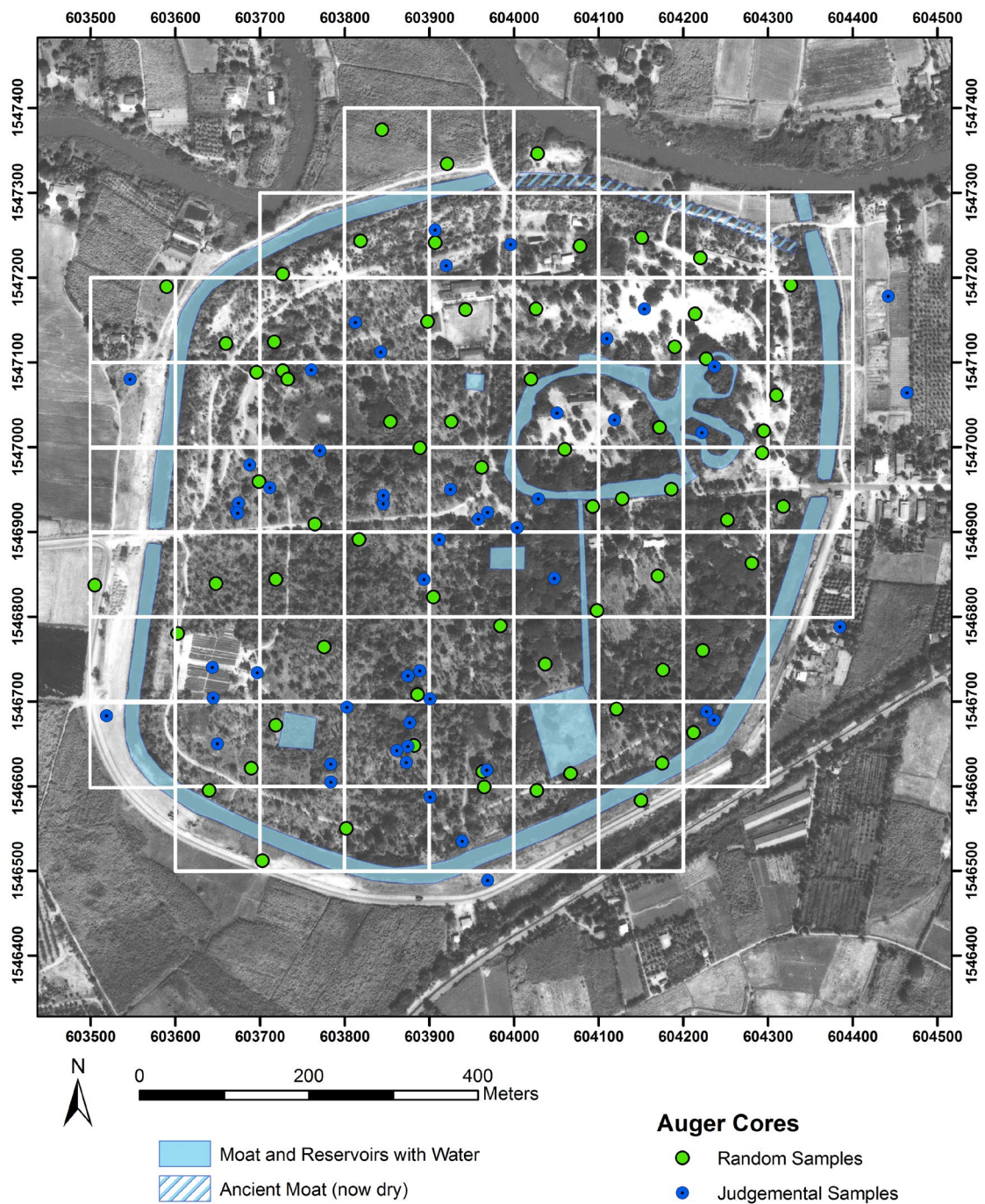


Figure 5.28. Stratified unaligned systematic sample locations and judgmental locations sampled with surface collections and bucket auger cores

regularities (e.g., a street). I used ArcGIS software to both establish the grid and generate the random points in each block. Additional judgmental locations (n = 53) were chosen to fill gaps in the original random selection of points, or to test features identified on the surface of the site (e.g., mounds or artifact scatters). Seven of the random locations and four of the judgmental locations were located outside of the settlement enclosure, and provided some initial insights into the distribution of material in this area. These need to be complemented with a more widespread sample in the future.

Each sample location was identified with a handheld GPS, photographed and described on a standardized field form. All surface artifacts within a 2 m radius 'dog-chain' area of the sample location were collected (Fig. 5.29). Following the surface collection the location was cored using a 10 cm diameter stainless steel bucket auger (Fig. 5.30). Matrix from each core was collected in 10 cm increments and characterized based on the matrix texture, color and cultural and natural inclusions. The profile of each auger core was recorded on a standardized field form.

All matrix from the core was screened through 5 mm mesh screen in the field, and any identified cultural materials were collected. Sediment samples from contexts with cultural materials were collected for fine wet screening for microdebris, such as smithing slag or glass cullet, that might go undetected during field screening. The sediment samples were measured for weight and volume. After soaking in water for 30 minutes, the sediment was wet screened through 1.5mm mesh. Cultural material left in the screen was collected, weighed, and recorded in a database.

I then used the data collected in the auger cores and surface collections to generate maps of the spatial distribution of artifacts within the settlement enclosure. Using the spatial analyst tool in ArcGIS software, I conducted a natural neighbor interpolation of the total weight of ceramic sherds from each sample location in the surface collections and then the auger cores. The resulting raster surfaces (Figs. 5.32, 5.34) presented a model of the spatial differences in the amount of ceramics across the site based on the known values at the sample locations. These surfaces provided an accessible way to explore the horizontal spatial differences in the auger coring and



Figure 5.29. KSAP team members collecting a 2 m radius surface collection unit



Figure 5.30. KSAP team members collecting sediment from a bucket auger core in a field outside the enclosure

surface collection data, and informed our selection of locations for additional testing through excavation.

Results

The systematic sample of surface collection units and bucket auger cores revealed that the interior of the site had an uneven distribution of cultural material. We documented dense concentrations in the north and south-central parts of the site, and almost no cultural material in the south-western or center areas of the site. Similar to the pedestrian survey, the surface collection units encountered very low densities of surface artifacts (Fig. 5.31; Appendix F). Only 59 of the 123 collection units contained any surface artifacts. However, the absence of artifacts in the surface collections was not always a good indicator of the presence of sub-surface artifacts, since 50 of the sample locations without surface artifacts contained archaeological materials in the core samples. Due to the low density of surface material at Kamphaeng Saen, the bucket auger cores proved to be a much more effective means than surface collection for documenting the distribution of material inside the settlement enclosure.

The majority of materials recovered from the core samples were either earthenware sherds or small (<1cm dia.) fragments of fired clay (Appendix F). A total of 71 out of 123 core samples contained pottery sherds. Almost all of the cores contained amorphous fragments of fired clay (Fig. 5.32). I have observed similar fired clay fragments in exterior fields, and they likely result from natural or field clearance fires; however, it is possible that the abundant fired clay fragments we recovered in both the auger cores and excavations are burned daub from wattle-and-daub structures, a common form of architecture throughout the tropics. The fired clay fragments in the auger cores were most dense between 0.1 – 0.7 m below surface. Other materials encountered were bone fragments in 11 of the cores, charcoal fragments in 12 of the cores, and metal fragments in six of the cores. A few small fragments of metal might be pieces of smithing slag, but this identification is highly speculative since they were found in such small amounts. The cores with possible slag were distributed throughout the northern half of the site. We did not identify any other clear evidence for craft

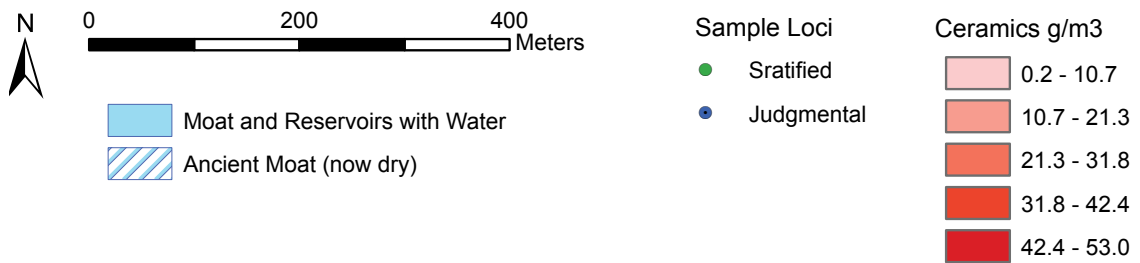


Figure 5.31. Interpolated surface of ceramic distribution based on weight in surface collections



Figure 5.32. Fired clay recovered in the test excavations. Note: the size of the fired clay fragments documented in the auger cores were much smaller.

production (e.g., glass cullet or mason's flakes) in the cores. Furthermore, none of the auger cores produced brick or stucco fragments suggesting the presence of subsurface religious monuments. Two auger cores were collected around the flagpole monument at the center of the site, the location of the supposed stupa base identified by Nuamboonlue (1996), but they did not encounter any subsurface impediments or architectural debris, and only one brick fragment of indeterminate age was identified in this area on the surface roughly 5 m east of the flagpole base. The lack of architectural debris in this area raises serious doubts about the existence of a stupa in this location, but it is possible that the base underlies the flagpole base (approximately 3.5 x 5 m) as reported or that the stupa was completely destroyed and removed during the construction of the flagpole and the surrounding road.

The pottery collected in the auger cores and surface collection is almost completely comprised of earthenware pottery (greater than 99%). Even though most

of the ceramics collected by these methods were small or eroded, their paste, level of oxidation and surface treatment were consistent with Dvaravati ceramics. A few unglazed stoneware sherds were recovered in surface collections and auger core samples inside the site. Unfortunately all but one of these sherds was too small or eroded to be conclusively identified as stoneware. The exception is an unglazed stoneware jar fragment, identified by Dr. Pariwat Thammapreechakorn, Director of Southeast Asian Ceramics Museum, as originating from the Cizao Kiln, China during the twelfth to thirteenth century CE Southern Song dynasty. The fragment was recovered from 0.25 m below surface in an auger core sample just inside the northern gate. Based on the depth and age of the sherd, it post-dates the primary occupational deposits at the site and appears to be an isolated find.

The highest concentrations of artifacts in the cores were in the northern part of the site and in the southeastern part of the site around the reservoir, two locations with easy access to freshwater (Fig. 5.33). In areas of the center and southeastern parts of the site no artifacts were recovered in the cores. The differential distribution of materials between some areas with high concentrations of artifacts and others without artifacts suggests there were significant differences in the use of space within the site. I explore possible explanations for these differences in Chapter 6. Additionally, the only core collected outside the enclosure with artifacts was located north of the site between the enclosure and the Huai Yang stream. This pattern partially reinforced the results of pedestrian survey which failed to identify any evidence of occupation areas outside the enclosure apart from the monument ruins noted above.

In the areas with sherds, the depth of the highest concentration of sherds was between 0.2-0.8 m.b.s. (Fig. 5.34). In the southern half of the site, few sherds were found below 0.8 m.b.s.; however, the northern half of the site was more deeply stratified with sherds present in some cores up to 0.8-1.2 m.b.s. It would not be surprising if the site was initially settled in the northern area due to its proximity to the Huai Yang stream's supply of water and aquatic resources, resulting in the additional deep strata in this area. However, our test excavations (see below) did not identify significant

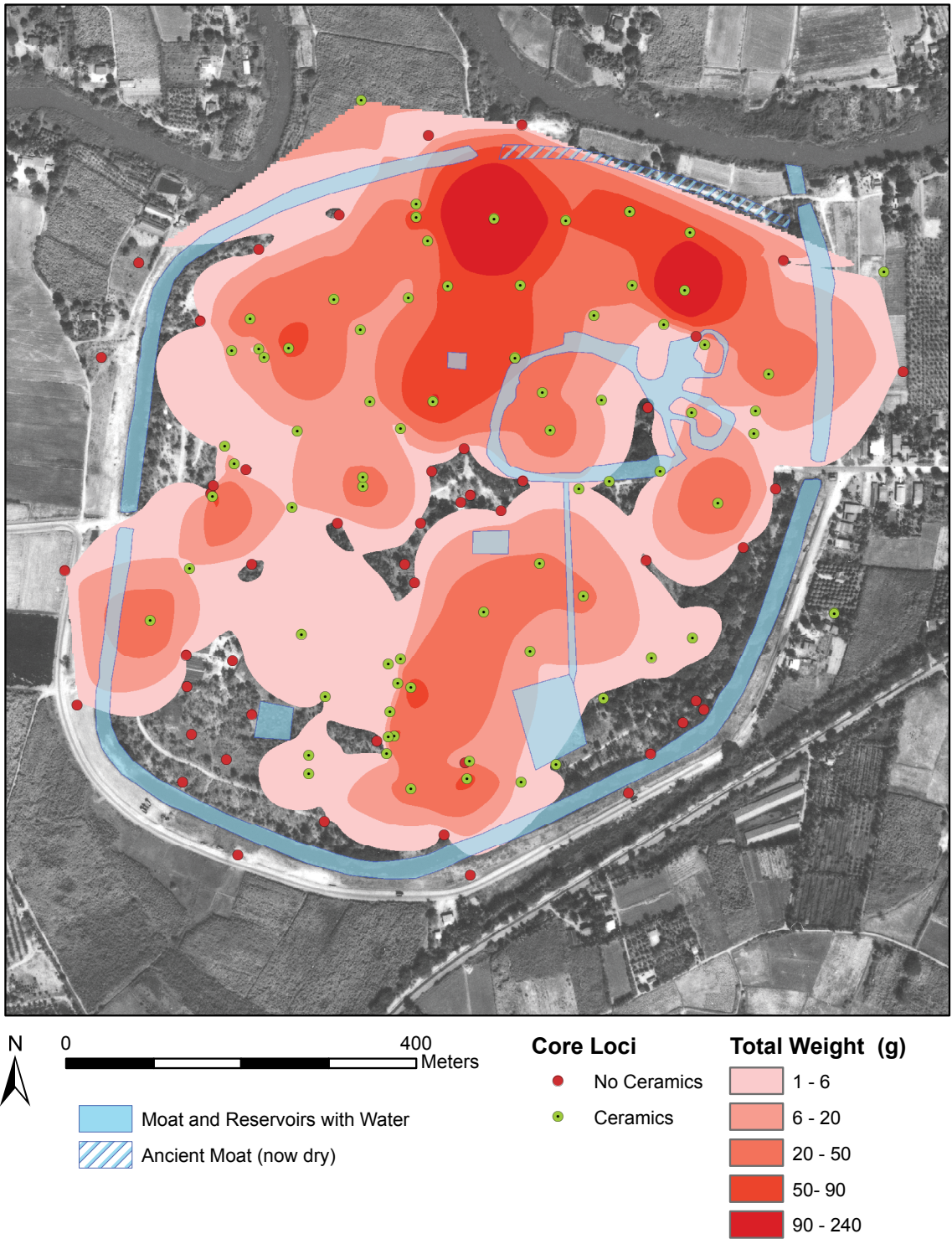


Figure 5.33. Interpolated surface of ceramic distribution based on total weight of sherds in bucket auger cores

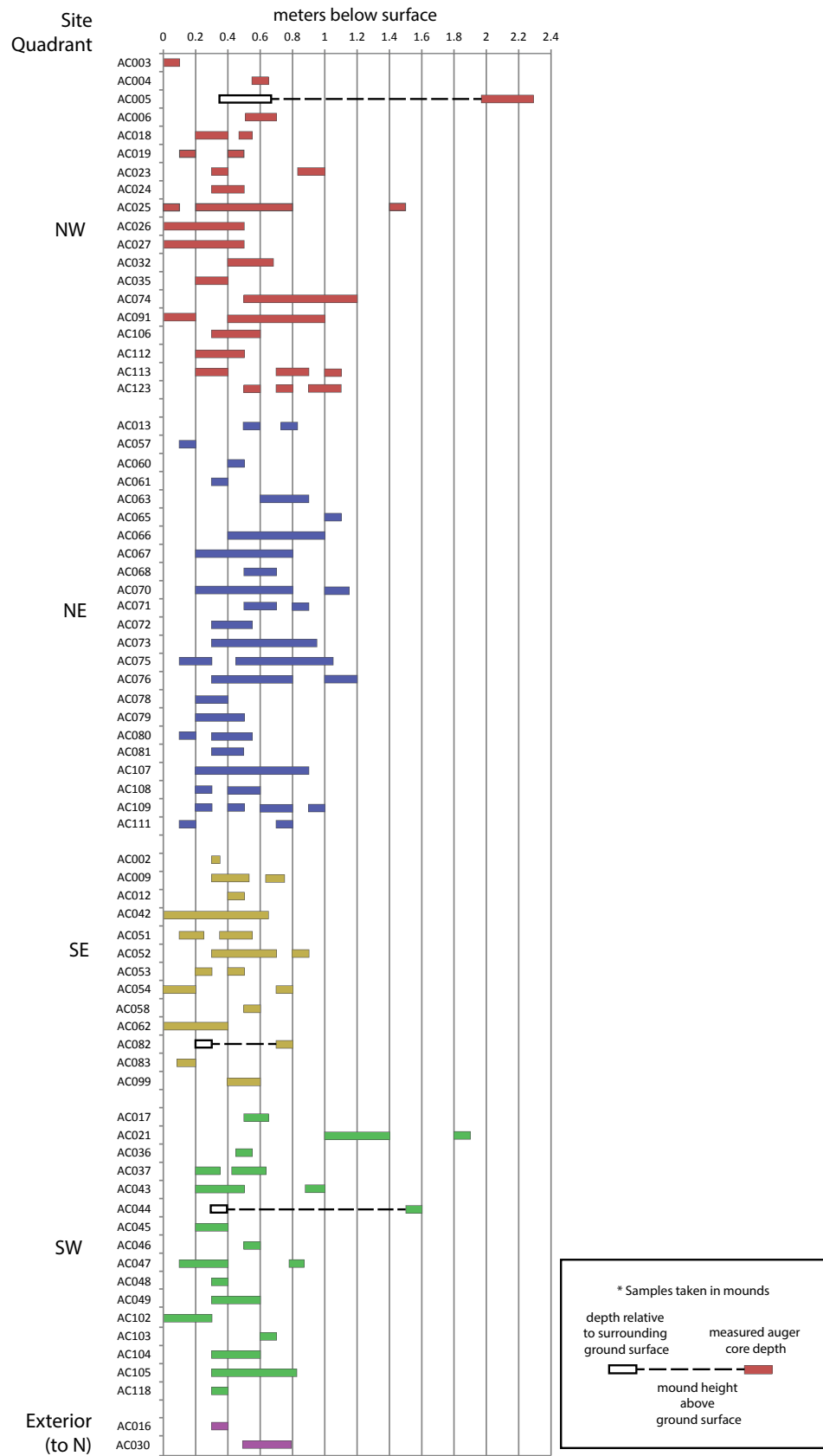


Figure 5.34. Depths of ceramic sherds in bucket auger cores

chronological differences between the northern and southern parts of the site. Instead, the additional stratigraphic layers in the northern part of the site identified in the auger cores are probably the result of more intensive occupation of this area.

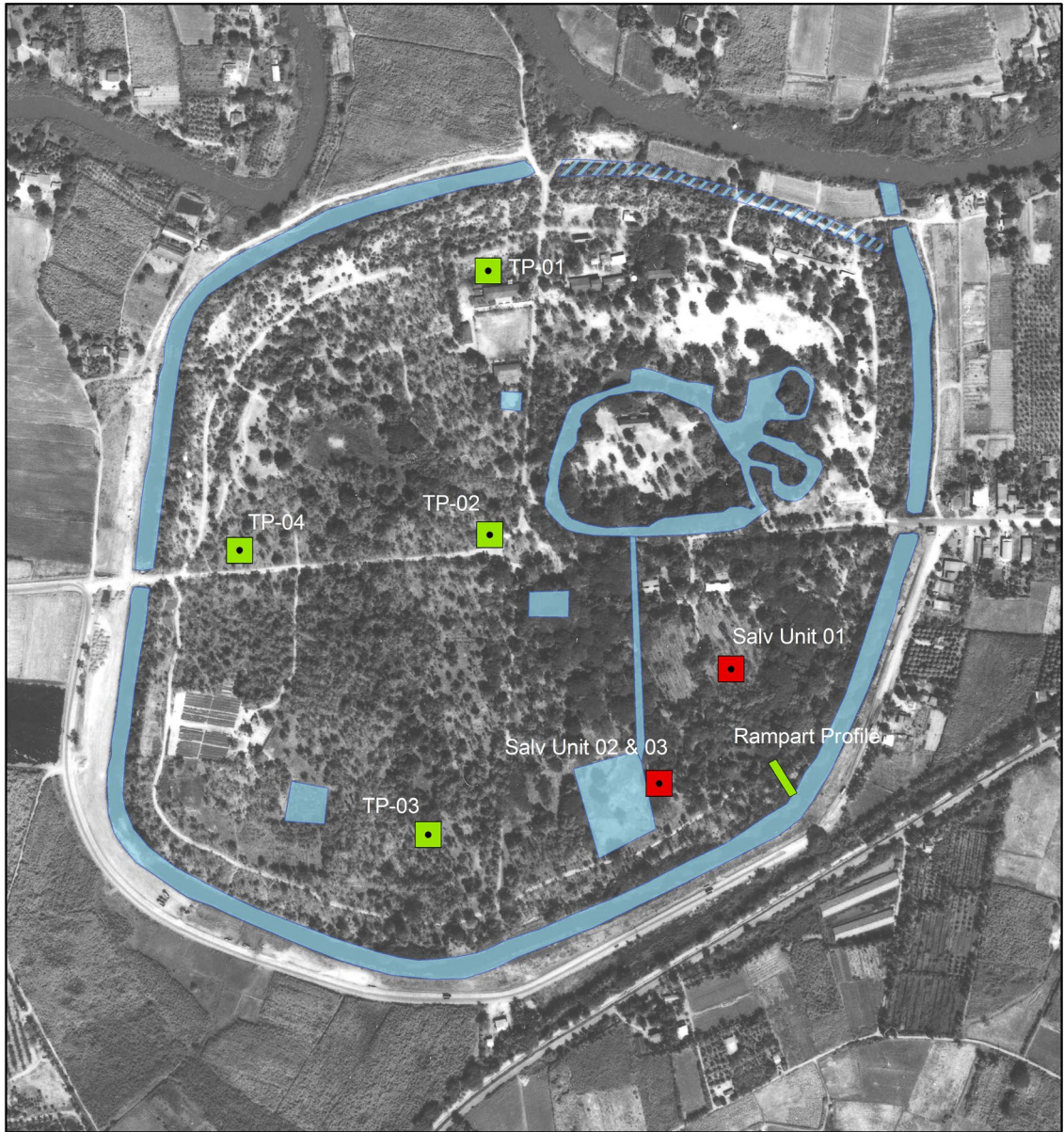
Enclosure wall profile

Methodology

In 2007, members of the arboretum staff dug a trench through a section of the enclosure wall in the southeastern part of the site (Figs. 5.35, 5.36). The trench was made in order to install a drainage pipe to bring water from the moat into the site interior. Using trowels and Ingalls handpicks we cut back the existing northeast face of the trench by an additional 25-40 cm to expose a clean and uniform profile (Fig. 5.37). The profile spanned a length of 34 m through the rampart, starting at ground surface at either end and reaching a height of 3.6 m above ground surface at its peak. The cleaned profile runs between points (UTM47N) E 604216.397/ N 1546703.164 and E 604238.303/ N1546676.897. Two 2 m wide sections of the profile were excavated down by an additional 0.96 -1.65 m to expose the profile to the natural strata at its base. The units were excavated in 10 cm levels that followed and stopped at natural breaks in stratigraphy. All sediment excavated from these units was screened through 0.5 cm mesh screens. The profile was drawn and photographed and soil characterizations were made for the identified strata. I provide the profile drawing and details of the strata descriptions in Appendix G.

Results

The enclosure wall profile contained thirteen major stratigraphic divisions with several subdivisions in some sections. The rampart was entirely built with sediment evidently obtained during the excavation of the adjacent moat. No stone or brick materials were used in the construction of the wall. Furthermore, the matrix in the profile and excavated units did not identify any cultural materials either within or below the enclosure wall. This reinforced the results of the auger cores samples from the wall in other parts of the site that also failed to identify any cultural material either within or



0 200 400 Meters

Moat and Reservoirs with Water

Ancient Moat (now dry)

Test Excavations

Salvage Units

Figure 5.35. Test excavation and salvage unit locations



Figure 5.36. The enclosure wall cut prior to profile cleaning



Figure 5.37. The cleaned profile with excavation units to the base of the enclosure wall

below the wall. This suggests that the moat was dug into soil where there had not been substantial prior occupation and dates to the initial occupation of the site. Alternatively, at the time of the wall and moat's construction it is possible that what was to become the southeastern part of the site had not yet been occupied. While the lack of artifacts in auger cores from other sections of the enclosure wall suggest similar patterns elsewhere, a profile through the enclosure wall in the northern, more deeply stratified, portion of the site would more securely establish if the construction of the enclosure dated to the settlement's initial occupation.

The sediment in the wall was compared to the natural stratigraphic sequence in an auger core samples collected on either side of the moat. Based on the order of the stratigraphic levels in the wall, two major construction phases were identified. The absence of artifacts in the sediment of the second construction phase, however, seems to indicate that both phases occurred within a relatively short span of time.

Due to the complete lack of artifacts in the rampart profile the absolute date of its construction remains unclear. Some charcoal was recovered from the fill making up the initial level of construction. It was unclear if this charcoal was natural or cultural in origin. The AMS radiocarbon dating of this sample (Beta-293467) gave a calibrated date of 7939 - 7587 BCE (Table 5.5). This date indicates the charcoal was natural in origin.

Salvage units

Methodology

As we were excavating the enclosure wall profile, three unauthorized pits were dug without our knowledge in the site's southeast quadrant by a film company for the movie "Ghost Hotel" being filmed at the site (Figs. 5.35, 5.38). The pits were intended to be 'traps' in the film, and as a result, were roughly square with straight walls. The two largest pits were approximately 2x2 m and 3x3 m, while the third pit was smaller and more irregular. Both of the large pits were excavated well into sterile sediment and contained a moderate amount of earthenware pottery, a few brick fragments, and a few bone fragments. These pits were designated Salvage Units 1 and 2. The smaller



Figure 5.38. Salvage Unit 2 (view southeast)

more irregular pit was designated Salvage Unit 3, but was not systematically collected or documented. The FAD was notified of the unauthorized digging, and we were allowed to document the unit profiles and screen all of the units' backdirt. After receiving a warning from the FAD, the film company refilled the pits. The profiles of Salvage Units 1 and 2 are provided in Appendix H.

Results

The profile of the salvage units were consistent with the auger cores collected in the southeast area of the site. The profiles of the salvage units both contained artifact rich levels from 0.4-0.7 m below surface and reached sterile sediment at approximately 1.0 m below surface. Artifacts recovered from the units' backdirt included fragments of brick, earthenware sherds (including a kendi spout, Fig. 5.50), and a small proto-historic style ground stone adze (see below, Fig. 5.64). The non-diagnostic sherds from the salvage units were analyzed using the same methods followed for the regular excavation

units. Unfortunately, we did not have sufficient time to analyze the diagnostic ceramics or fauna from the salvage units.

Excavations

Methodology

The systematic surface collections and bucket auger coring allowed us to identify significant spatial variability in the amount of artifacts present in different areas within the settlement enclosure. In order to better understand the chronological and functional relationships between these different areas, we needed to conduct test excavations to document the nature of the cultural deposits in these areas, obtain larger sample-sizes of artifacts, and collect samples for absolute dating. We selected a total of four test units for excavation inside the site's enclosed area (Fig. 5.35). Each unit was started as a 2 x 2 m unit and expanded as required to investigate relevant features or contexts. The final unit dimensions and coordinates are as follows:

Test Pit 1: 2 x 3 m
(UTM 47N) E 603921 to 603923 / N 1547216 to 1547219

Test Pit 2: 2 x 2 m
(UTM 47N) E 603932 to 603934 / N 1546940 to 1546942

Test Pit 3: 2 x 2 m
(UTM 47N) E 603869 to 603871 / N 1546633 to 1546635

Test Pit 4: 2 x 4 m
(UTM 47N) E 603674 to 603678 / N 1546923 to 1546925

Test Pit 1 (TP-01) was located just southwest of the northern gate (Figs. 5.35, 5.39). This was within the area of high amounts of artifacts in the northern part of the site, but avoided areas around the scout camp where there has been significant earthmoving. Additionally, TP-01 was in a field behind the Kamphaeng Saen primary school, which also encouraged frequent observation and assistance from the students (Fig. 5.40). These interactions with the students provided the opportunity for them to ask questions about ancient life at the site and how archaeologists learn about the past.



Figure 5.39. TP-01 (view southeast)



Fig. 5.40. Students from the Kamphaeng Saen primary school watch screening at TP-01



Figure 5.41. TP-02 (view southeast)

Through their direct observation of excavation we were also able to discuss and illustrate the importance of an artifact's *in situ* context and the destruction caused by looting.

TP-02 was located just to the northwest of the center of the site in an area that had no material in the auger cores or surface collection (Fig. 5.35, 5.41). Since TP-01 targeted an area with high concentrations of artifacts, we wanted to test the areas with a lower density to see if they had been maintained relatively free of trash due to their use for occupation, administrative or religious purposes.

TP-03 was located in the south center of the site, near the northern edge of an approximately 200 x 200 m area that was raised 40 cm above the surrounding ground level (Fig. 5.35, 5.42). After the northern part of the site, the area around the southern gate and southeastern reservoir produced the next highest density of cultural material in the surface collections and auger core samples. Since the salvage units provided artifacts and profiles from the eastern side of the reservoir, we located TP-03 on the opposite side of the reservoir, closer to the gate, in order to expand the areas we



Figure 5.42. TP-03 (view northwest)



Figure 5.43. TP-04 units demarcated with line on mound prior to excavation

sampled in the southern part of the site. Additionally, we wanted to investigate if the approximately 200 x 200 m raised ground surface in this area represented a significant architectural feature. The results of our auger tests in this area had not provided clear evidence for why this area was raised.

TP-04 was located in the west-central part of the site, an area with moderate amounts of artifacts in the surface collections and auger cores (Fig. 5.35). Since TP-01 and TP-03 had targeted areas with high amounts of artifacts and TP-02 had targeted the seemingly empty area at the site center, we located this unit to investigate the types of activities that might occur in areas between these two extremes. TP-04 was also laid out as a trench through one of the conical shaped mounds documented during the interior survey (Fig. 5.43). We hoped that documenting the internal structure of one of these mounds, as well as its relationship to the surrounding ground surface and any archaeological surfaces would improve our understanding of the mounds.

The test units were excavated in 10 cm levels that followed and stopped at natural breaks in stratigraphy. Excavated sediment was screened through .5 cm mesh screens. All pottery sherds, bone, and other artifacts identified in the screens were collected. Sediment samples and radiocarbon samples were collected from relevant contexts. The base of each level and wall profiles were photographed and mapped. Profiles of each unit and the volume and dimensions of each excavated provenance are provided in Appendix H. I provide additional details on the artifacts recovered from each unit in the respective sections below, and discuss the relationships between these areas in Chapter 6.

Results

Test Pit 1: The excavation of this unit revealed an upper 10-20 cm stratum of plowed sediment, followed by an 18-22 cm stratum of what appeared to be domestic midden fill with a high artifact density. This second stratum contained abundant earthenware sherds, including Dvaravati-style carinated and cord and mat-impressed pottery and a few kendi fragments. This level also contained bone fragments and a few small pieces of iron. The test pit began as a 2 x 2 m unit, but was expanded by 1 m



Figure 5.44. Saddle Quern in the profile of east wall of TP-01 (stadia increments = 10 cm)

to the north when we encountered a small pit feature along the northern edge of the original unit in Stratum 2. The pit feature in the 1 m extension contained fragments of a Dvaravati style stone saddle quern (Fig. 5.44) and a red-glass tubular bead. It also contained a few brick fragments, whose form and paste do not resemble typical Dvaravati-style bricks (e.g., the ones found in the fields east of the settlement), but their age is unclear. The bricks were part of the fill and were not articulated with any features. Below the stratum of fill is an ephemeral surface that did not contain any distinguishing features. The fill below this surface is approximately 20-30 cm thick and contains a low density of earthenware sherds and bone fragments that may have been carried downward from the above levels through bioturbation. Sterile soil was reached at 110 cm below surface.

Two charcoal samples from TP-01 were used for radiocarbon dating. The first sample (Beta-293468) came from the context with high artifact density that is likely midden fill (Stratum 2). The sample provided a calibrated date of 553-648 CE.

The second sample (Beta-293469) came from the lower level of the pit feature that contained the stone saddle quern. The sample provided a calibrated date of 420-557 CE (Table 5.5).

Test Pit 2: Unfortunately, this 2 x 2 m unit did not encounter any in situ features that could reveal the use of this area. Cultural material consisted of an extremely low density of sherds, a few small non-articulated brick fragments and little else. Interestingly, the cultural levels also contained gravel and sand layers not seen at these elevations in the other test units. Sterile soil was reached at 72 cm below surface and the unit was excavated to a final depth of 110 cm below surface. The function of this area remains unclear, but the low density of artifacts, and complete lack of fauna, suggest it may have been intentionally maintained as an open space free of refuse. The presence of gravel and sand layers may be related to the maintenance of such a surface. Alternatively, the area may have been extensively disturbed during earthmoving associated with construction of the scout camp and flagpole monument.

A single charcoal sample (Beta-293470) from this unit was used for radiocarbon analysis. The sample came from a context of cultural fill. The level contained a few brick fragments and the highest amount of pottery in this unit, although this was still relatively low compared to other contexts at the site. The brick fragments are of variable size and do not resemble traditional Dvaravati style bricks. There was a moderate increase in the number of ceramics at the depth of the base of the bricks although no surface was detectable. The artifact density abruptly drops below the level and gravel becomes more common. The radiocarbon sample provided a calibrated date of 694 - 892 CE, the latest obtained at the site (Table 5.5).

Test Pit 3: Like Test Pit 1, this unit contained a relatively high density of ceramics; however, unlike Test Pit 1 the sherds were larger and many lay flat. It appeared there was a succession of informal surfaces from 30-50 cm below ground surface (Fig. 5.45). The presence of these surfaces suggests that the higher elevation of this area may be the result of the maintenance and build-up of the ground surface in an area with significant continued use, possibly as a habitation area. Unfortunately, we did not encounter any



Figure 5.45. Informal surface with flat laying sherds in TP-03 at base of Stratum 4/1 (stadia = 1 m)

post holes or other significant features associated with the surfaces to provide additional means of interpreting the nature of activity in this area. The artifacts recovered in the unit included abundant Dvaravati-style carinated and cord and mat-impressed pottery, two glass beads, a lead ring, and a lead disc. The amount of faunal remains was relatively low, possibly due to preservation conditions, or attempts to maintain this area free of refuse by residents. Sterile soil was reached at 114 cm below surface and the unit was excavated to a final depth of 125 cm below surface.

One of the charcoal samples collected from Test Pit 3 was selected for AMS radiocarbon dating. The sample (Beta-293471) came from a context with abundant relatively large sherds, several of which were lying flat and refit. As with the other informal surfaces identified in this unit, there was no clear evidence of architectural features, but the position and density of the sherds seemed to indicate that this may have been a short-lived surface. The sample provided a calibrated date of 426 - 578 CE (Table 5.5).

Test Pit 4: The few earthen mounds that we auger cored in the site interior did not contain any archaeological material and likely post-dated the proto-historic occupation of the site. Our investigation of one of these mounds with the TP-04 trench confirmed this suspicion. We documented approximately 30 cm of natural almost sterile deposit between the base of the mound and a clear Dvaravati occupational surface. The cultural material in the upper stratum between the base of the mound and the occupational surface consisted of few small sherds that were likely carried upward from the cultural level below by bioturbation. Compared to the other three test pits the occupational stratum in this unit was relatively thin, at only 5-12 cm thick. It was at a depth of 50-60 cm below surface. However, this stratum contained a relatively high density of large sherds many of them lying flat. It is likely that this level represents a succession of informal surfaces. Along the southern edge of the unit a pit extended another 60 cm below the base of the occupational surface. The pit was relatively ashy and contained the remains of turtle, fish and large amounts of shell (both freshwater and marine). It also contained relatively large potsherds, some of which refit into half complete vessels (Fig. 5.46). The ashy contents of the pit and abundant fauna suggest it may have been used for roasting; although it may also have been used as a midden



Figure 5.46. South wall profile and base of pit feature in TP-04 (stadia = 1 m)

either instead of or after its use as a roasting pit. The unit reached sterile sediment at 137 cm below surface and was excavated to a final depth of 146 cm below surface (225 cm below the surface of the top of the mound).

Due to the relatively intact nature of the deposits in TP-04 compared to the other test units, three charcoal samples from this unit were selected for AMS radiocarbon dating. The first sample (Beta-293472) came from the thin informal occupational surface with abundant flat-lying sherds. It provided a calibrated date of 597-670 CE (Table 5.5). The second sample (Beta-293473) came from the upper level of the fill in the ashy pit (approx. 10 cm from the top of the pit). The sample provided a calibrated date of 411-543 CE. The third sample (Beta-293474) came from the lower level of the pit feature (approximately 15 cm from the base of the pit). The sample provided a calibrated date of 467-645 CE.

Ceramic analysis

Methodology

The ceramic sherds recovered from the auger cores and surface collection were often small or eroded. In my analysis, I counted and weighed these sherds and then assessed them for a limited set of qualitative attributes based on the presence of rims, paddle marking, carination, or glaze, and then counted and weighed. Due to the better preservation and provenance of the ceramics from the excavated contexts, I selected a more extensive set of qualitative and quantitative variables that targeted characteristics of the pottery related to possible differences in the age, style, function, location of production, and quality of the original vessels. Appendix I lists the specific variables I assessed for the diagnostic and non-diagnostic sherds, and in Appendix J I include drawings of the diagnostic rim and body types. Lists of the recorded values for the diagnostic and non-diagnostic sherds are given in Appendices K and L respectively. Many of the variables I chose have been used in the analysis of Late Prehistoric through Early Historic ceramics at other sites in central Thailand (Aussavamas 2012; Bronson 1976; Indrawooth 1985; Lertrit 2001; Mudar 1993; Onsuwan Eyre 2006). By assessing

the presence of similar variables in my own analysis, I hoped to facilitate comparison with these other studies.

The ceramic assemblages from the salvage units and test pits were divided into non-diagnostic body sherds and diagnostic sherds (e.g., rim sherds, base sherds, decorated sherds, spouts). The non-diagnostic sherds from each provenance were counted, weighed and assessed for the following qualitative variables: oxidation, paste texture, temper, cord marking, carination, interior surface treatment and exterior surface treatment.

Both quantitative and qualitative variables were recorded for the diagnostic sherds. Quantitative variables included measurements of vessel metrics (e.g., body thickness, rim diameter, rim angle, rim height). I also made qualitative estimates of the percentage of different types of visible inclusions using a hand lens and the section in the Munsell Soil Chart for estimating proportions of coarse fragments. Dvaravati ceramics commonly contain inclusions of igneous minerals present in the clay (e.g., mica, quartz, feldspar) and tempers (e.g., organic rice husks, grog or sand) that were intentionally introduced to manipulate the clay's plasticity and make the vessels more resistant to breakage during heating and cooling (Aussavamas 2012). Variations in the proportions of these inclusions in different Dvaravati ceramics have been used to identify fabric types and the presence of multiple centers of production (Aussavamas 2012; Bronson 1976). Initially I evaluated the color of each sherd's exterior paste, interior paste, core and interior and exterior surfaces using a Munsell Soil Chart. It became apparent that the variability in the color of these parts of the sherds could be adequately described using a set of categorical values, which I used for the remainder of the diagnostic sherds.

Qualitative variables I assessed for diagnostic sherds included those related to the vessels' surface treatment such as the presence of slip, polish, burnishing or wiping on the exterior and interior surfaces. I also documented different types of paddle marking and decoration. As an indicator of variations in firing environment, I recorded if the vessel had been completely oxidized, incompletely oxidized or reduced (Rice

1987:335, 343). I recorded the texture of the paste in order to differentiate vessels with dense fine to semi-fine paste that had few inclusions or pores and was usually high-fired, from those with coarse paste with abundant pores and large or abundant inclusions. Finally, I recorded the part of a vessel from which a sherd likely originated. For sherds from vessel bases I recorded their general form (e.g., flat, ringed, pedestaled). Sherds from vessel rims were drawn and in some cases photographed and given a categorical type. Ceramic analysts developing classifications for rims from surveys in east-central Thailand (Mudar 1993; Onsuwan Eyre 2006) have defined their own rim-types for the more locally variable prehistoric vessels, but adopted Bronson's (1976) typology from Chansen for the proto-historic period vessels. I have identified some of Bronson's rim-types to facilitate comparison, but also identified local types. The existence of these additional types does not come as a surprise since Bronson (1976:391) noted a large number of "specials" and "non-uniform" rims in the proto-historic assemblage at Chansen that could not be placed into his types. He did not believe these rims were products of small-scale local potters, but rather resulted from a diversification of the forms produced by several large workshops with regional distribution.

With the assistance of two sorters, all of the non-diagnostic body sherds from the salvage unit collections and all four test pits were analyzed. The total number of non-diagnostic sherds analyzed from these units was 42,170 (93,270 g). The greater number of variables assessed for the diagnostic ceramics meant that it was necessary to leave the diagnostic sherds from the salvage units for later analysis and select a 53.2% sample of the diagnostic sherds from the excavated units for analysis. The contexts not analyzed in the sample from the excavated units were all from fill (i.e., no features or surfaces) in TP-01 or TP-04. Unlike TP-02 and TP-03, these areas were both expanded beyond the initial 2 x 2 m unit to include additional excavation units (i.e., an additional 1 x 2 m in TP-01 and an additional 2 x 2 m unit in TP-04). The division of these excavation areas into two separate excavation units allowed diagnostic ceramics from fill contexts that spanned the excavation area to be sampled from one unit (i.e., half of the excavation area). A total of 880 (9,770.8 g) diagnostic sherds were analyzed from the

four excavation units. The data collected on the ceramic assemblage was then explored using descriptive statistics to identify significant patterns both within the assemblage as a whole and between the different excavation areas. Below, I summarize some of the significant patterns in the ceramic assemblage. In Chapter 6, I examine the implications of these patterns for understanding the social and economic relationships between the residents of Kamphaeng Saen and their participation in regional systems of exchange.

Results

The preservation of the ceramic assemblage at Kamphaeng Saen was poor. Many of the ceramics showed a high level of erosion and were highly fractured. No complete vessels were recovered, and there were only three examples of vessels whose profile could be reconstructed from rim to base. In part, this is a product of the types of contexts that were excavated. These included what have been interpreted as informal surfaces in open areas and domestic middens, where few complete vessels would be expected to be found. Overall, the ceramic assemblage was consistent with the interpretation from the excavations and radiocarbon dating of a relatively short occupation at Kamphaeng Saen beginning in the early or proto-Dvaravati period.

All of the excavated pottery was unglazed earthenware, with no porcelain or stoneware ceramics. A majority of the sherds contain mineral inclusions; however fiber-tempered wares are also present. Several different types of mineral inclusions, with nominally the same function, were identified (e.g., coarse sand and coarse quartz, fine sand and fine quartz). When considered along with the proportion of other mineral inclusions such as calcite or mica, these differences in inclusion 'signatures' indicate different clay preparation techniques or sources, and suggest the presence of several production centers. A less sensitive indicator of differences in ceramic production technique includes the level of oxidation. Incompletely oxidized sherds (red to orange surface with dark core), frequently found in Dvaravati assemblages at other sites, are most common in the Kamphaeng Saen assemblage, but completely oxidized and reduced ceramics were also present (Fig. 5.47). Carinated vessels (Fig. 5.48) and vessels with mat of cord-marking (Fig. 5.49) were also documented throughout the site. A kendi

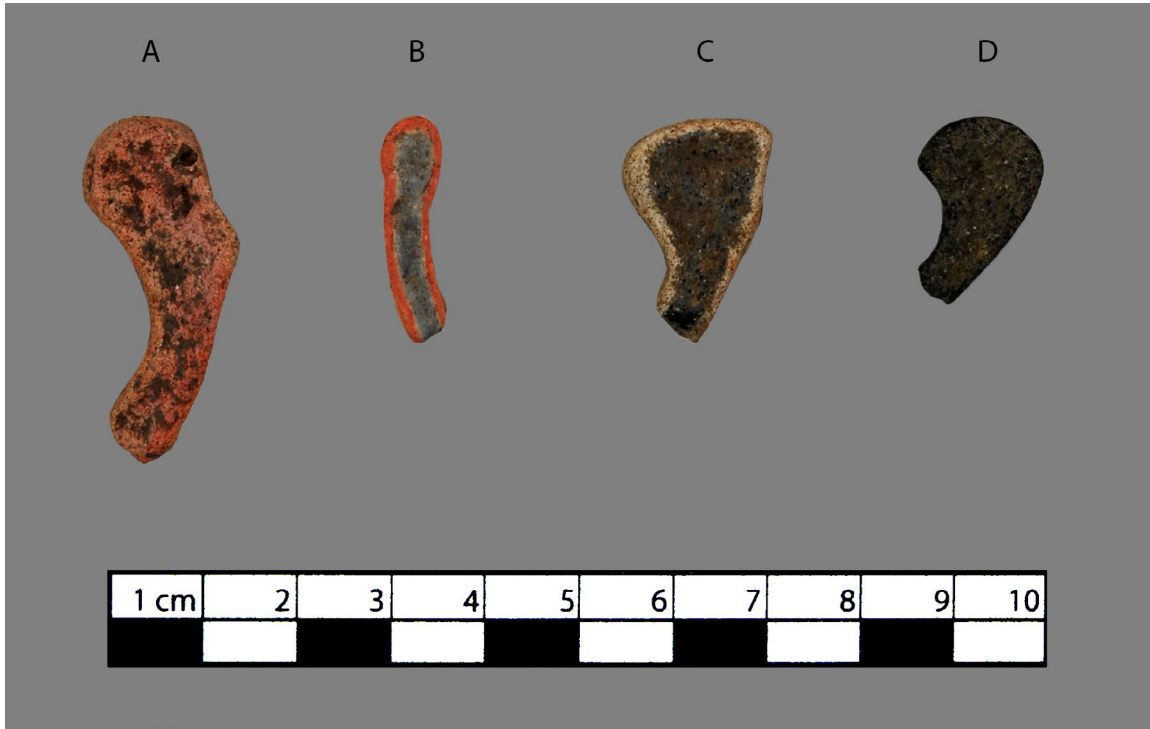


Figure 5.47. Profiles of rim sherds from KSAP excavations showing different oxidation states (A: well-oxidized; B and C: incompletely oxidized; D: reduced)



Figure 5.48. Fragments of carinated vessels from Kamphaeng Saen



Figure 5.49. Mat and cord-marked sherds from excavated contexts at Kamphaeng Saen (A: cord-marked; B: mat-marked; C and D: cord-marked incised or crossed cord-marked)



Figure 5.50. Spout fragments from three 'kendi' vessels shown in profile (top) and front view (bottom). Provenance (l-r): TP-01, diag. ID, No: 050.001; isolated surface find near arboretum office; Salvage Unit 02.

spout and a tip were recovered from TP-01, and additional kendi fragments were found in Salvage Unit 2, and on the surface near the arboretum office (Fig. 5.50).

Few decorated sherds were documented in the ceramic assemblage. There is a notable lack of any imported blue-glazed Basra wares (commonly described as Persian wares in Thailand) or roller-stamped sherds documented at other Dvaravati sites (Indrawooth 1985). The lack of these types of vessels may partly be the result of the relatively small sample size and degree of erosion at Kamphaeng Saen. Alternatively, it is also possible that these styles are not found at Kamphaeng Saen because their distribution is limited to a few sites or later Dvaravati periods. The imported blue-glazed Basra wares were produced between the mid-eight and the mid-tenth centuries



Figure 5.51. Decorated sherds from the KSAP excavations. Clockwise from top left (Diag. ID No. in parentheses, see Appendix K): three impressed bands (129.094); “line and wave” smooth curve (126.011); “line and wave” angular curve (095.088); finger impressions (096.001); circular impressions (094.009); impressed or ‘hanging’ triangles (LF 450/SC3).



Figure 5.52. Linear patterned burnished bowl sherds from the KSAP excavations (interior view). Provenance (l-r): TP-04, F1, Diag. ID No.: 139.005-011; TP-04, Strat 6 Diag. ID No.: 129.044. (cf. Khunsong et al. 2009: Fig. 12.)

CE (Tampoe 1989), post-dating the primary occupation at Kamphaeng Saen. Those decorative motifs identified at Kamphaeng Saen included line-and-wave incising (both smooth and angular curves), finger impressions, triangular impressions, impressed horizontal bands and painted bands (Fig. 5.51). Among those vessels that were not highly eroded, some were slipped or self-slipped on their exterior and interior surfaces. Many of the vessels with slip or self-slip, were also lightly burnished or polished. In some cases the interior surfaces of bowls contained patterned linear burnishing (Fig. 5.52). Phimai Black ware, from Late Prehistoric northeastern Thailand, is characterized by similar types of patterned burnishing on bowls (Welch and McNeill 2004). In central Thailand, bowls with similar patterned linear burnishing on their interior have been identified by Bronson (1976:134-135) in the Iron Age (c. 600 BCE-250 CE) and Late Funan (c. 500-600 CE) Phases at Chansen, and by Khunsong et al. (2011:162) in Phase I at the Hor Ek site in Nakhon Pathom (see Chapter 4). However, it is unclear if these types of vessels were obtained through trade with the northeast, or were produced in central Thailand incorporating influences from the ceramic traditions of the northeast.

Even though there were few chronological differences identified within the assemblage, there were some significant differences between the assemblages from the different excavation units. Since the excavation unit sizes were not all the same size, the density of ceramics (grams or sherds per m³ of excavated matrix) provides a better comparative measure than absolute weights or counts for assessing the distribution of sherds between the excavation areas. Density calculated as either weight (g/m³) or count (sherds/m³) of ceramics follows the same pattern (Fig. 5.53). TP-01 clearly had the highest density of sherds followed by TP-03, which is consistent with the interpretation of both of these areas as containing domestic refuse. TP-04 and Salvage Unit-01 had similar densities. TP-02 had by far the lowest density of ceramics, a pattern consistent with other types of artifacts from this unit, and the possibility that this area was intentionally kept clean.

When these totals are broken down by strata in each unit, the strata with informal surfaces and artifact-rich fill in TP-1, TP-03 and TP-04, stand out as containing a relatively high density of sherds with significant decreases above and below them (Fig. 5.54). The pit feature in TP-04 (F1), also has a high density of sherds, and was cut into and joins with Stratum 6. These artifact-rich strata represent the primary occupational deposits. The lack of other artifact-rich strata separated from these strata by low density strata indicates that at this stratigraphic resolution the site appears to have been continuously occupied without a significant period of abandonment and reoccupation. It is possible that there were significant population fluctuations within the span of time the artifact-rich strata were deposited, but if these changes took place they were at a chronological scale undetectable in our excavations.

By breaking down the density of sherds by strata it also becomes clear that although TP-01 appears to have the highest density of sherds when considered as a whole, its primary occupational stratum does not have the highest density at the site. One possible explanation for this difference is that the area of TP-01 may have been more heavily disturbed, by both natural and cultural activity, causing greater mixing of the material from Stratum 3 both upward and downward. In TP-04 the cultural deposits

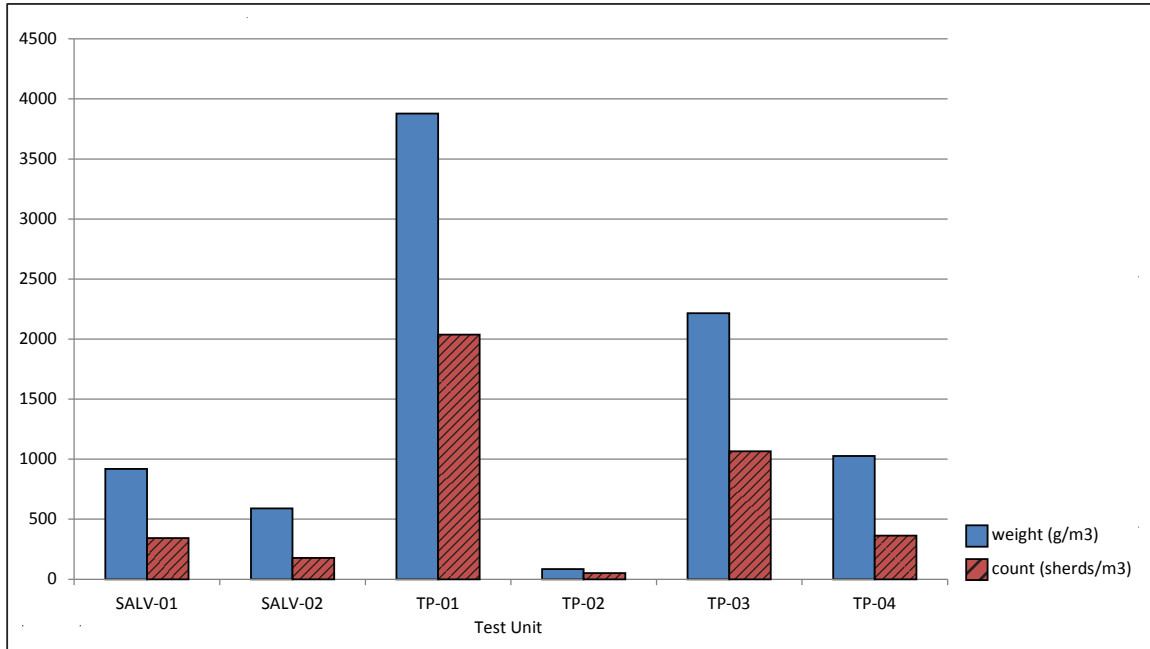


Figure 5.53. Densities of non-diagnostic ceramic sherds by excavation unit

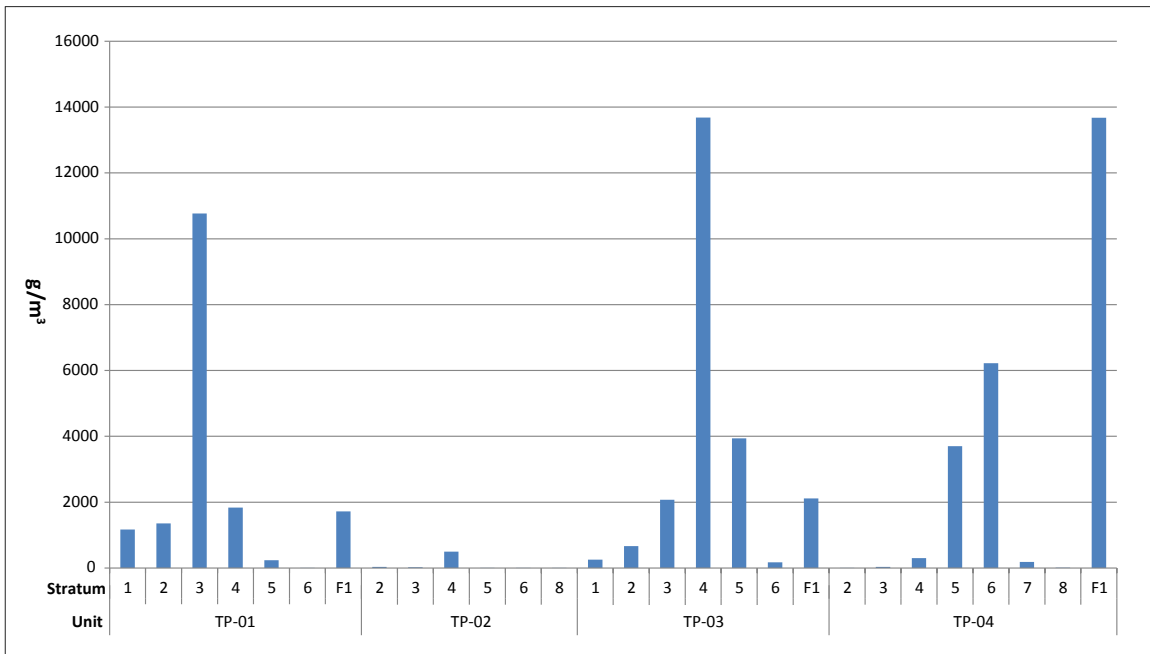


Figure 5.54. Densities (g/m³) of non-diagnostic ceramic sherds by stratum in each excavation unit

were more tightly concentrated in a relatively thin and well-preserved occupational deposit and the feature extending below it. The inclusion of the nearly sterile matrix from below the surface and around the pit in the total volume calculations for TP-04 skewed the overall ceramic density measurement for this unit when compared to TP-01 and TP-03 where occupational deposits extend across a greater range of depths.

In addition to the variations in the amount of total ceramics recovered from each of the test excavation units, there were also some significant differences in the activities that produced these assemblages. These differences can be detected through the identification of different vessel-use classes, and their relative frequencies in each of the excavation areas (see Sinopoli 1986, 1991, 1993). I divided the diagnostic ceramics with rim fragments in to nine different classes based on vessel forms and size (Fig. 5.55). Few ceramic showed signs of use-wear (e.g., burning from cooking fires), making the identification of different vessel functions difficult. Difference between restricted and unrestricted vessels provided one useful indicator of differences in function, since restricted vessels are often preferred for activities where the contents of the vessel must be contained (e.g. storage or cooking) and unrestricted vessels are often used to facilitate access or presentation of the vessel's contents (e.g. eating or serving). These distinctions are generalizations, but in the absence of other indicators of function, vessel restriction provided a good starting point for understanding how the different classes of vessels may have been used.

Another significant difference within the ceramic assemblage at Kamphaeng Saen is between vessels with a dense fine to semi-fine paste that are often high-fired, and vessels with coarse textured paste, often with abundant inclusions and pores. The difference between these two groups of fabrics suggests differences in production, intended use and possibly value. The semi-fine vessels are most often tempered with finely ground hematite or grog coated with iron oxide. Among the vessels with coarse fabric natural inclusions and added tempers included sand, quartz, hematite and organic fibers. Vessels with coarse textured paste (90.2% of all diagnostic sherds) were much more abundant than those with a fine textured paste (9.8% of all diagnostic sherds) in all

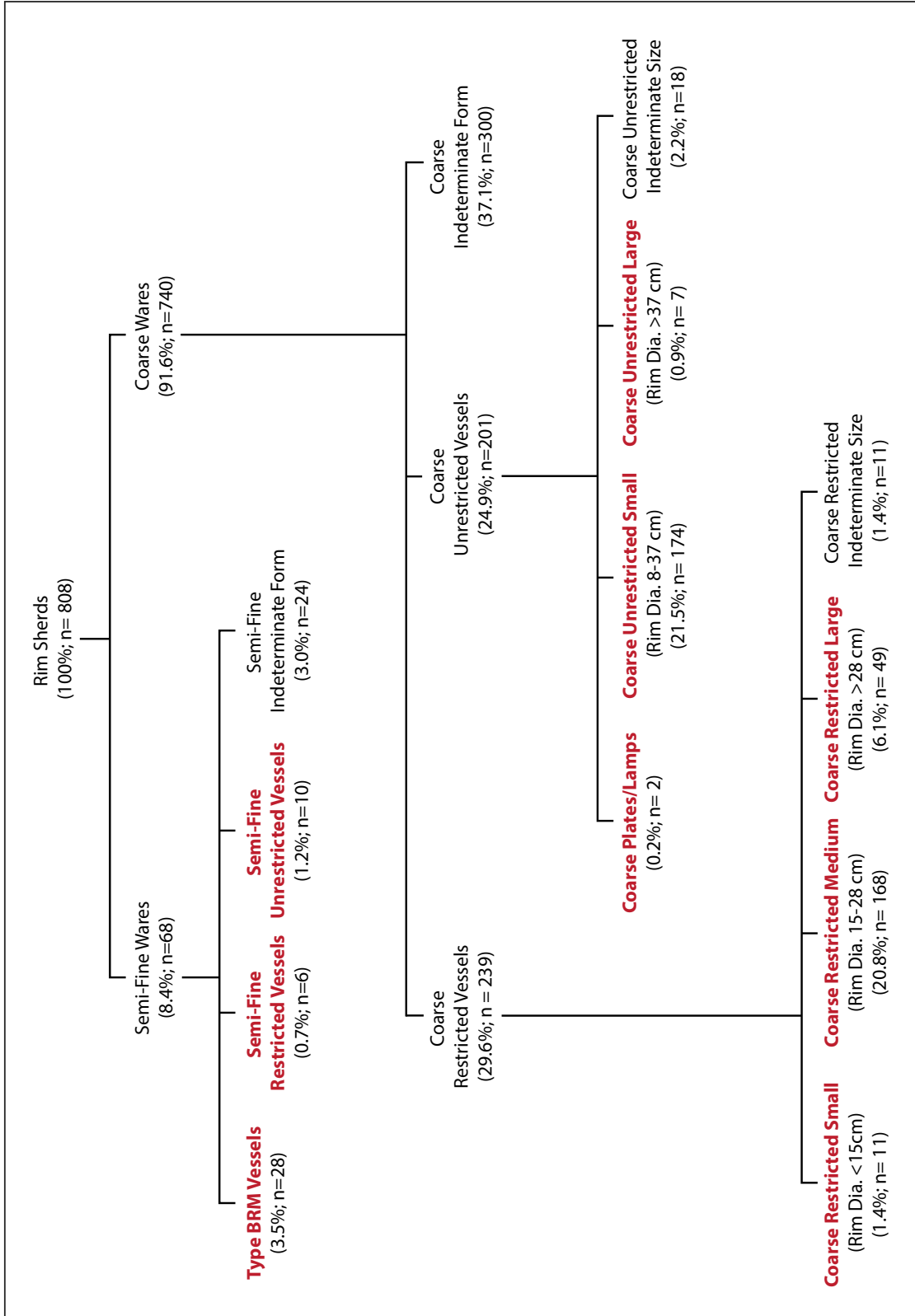


Figure 5.55 Vessel classes based on rim fragments. The nine individual classes are shown in bold red font.

units. This is to be expected because coarse textured wares include some vessels that are much larger than fine textured wares (producing both a larger number and weight of sherds). Coarse textured wares were also probably used for a greater range of tasks from cooking to storage, and therefore more common. Additionally, the production of high-fired vessels with fine and semi-fine paste required additional resources, time and skill that likely increased the cost and value of these vessels, leading to more care taken when handling them and more infrequent breakage.

Within the semi-fine textured vessels, there was a distinct group of relatively shallow vessels with fine hematite or grog tempered paste, a pink to orange matte

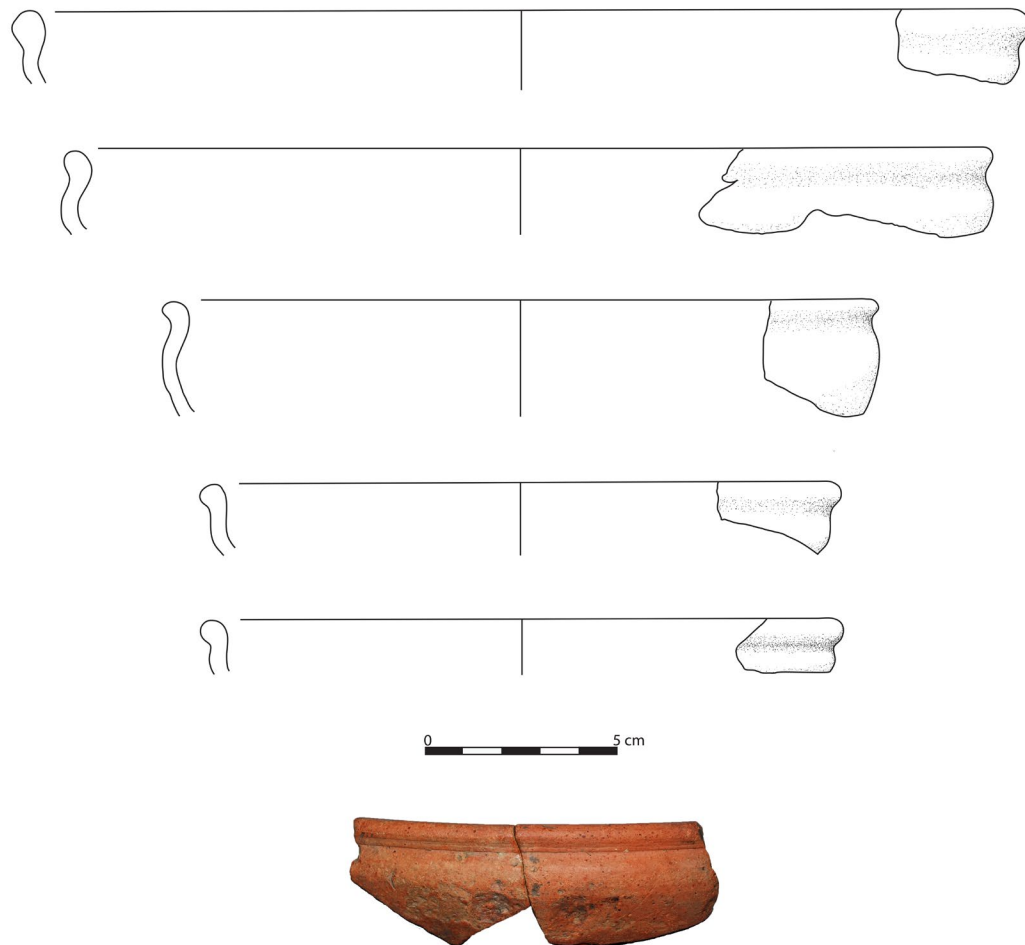


Figure 5.56. Type BRM semi-fine bowls from the KSAP excavations. Diag. ID No. (top-bottom): 062.018; 067.001; 066.022; 064.022; 066.020; 095.022-023.

surface, a distinct built-up round rim and a slightly restricted mouth (Fig. 5.56). This type of vessel made up 63.6% (n=28) of the semi-fine ware vessels found at Kamphaeng Saen. This type is the same as Bronson's (1976:432-434) Type BRM from Chansen, where he identified it as diagnostic of Phase V (Dvaravati period, c. 600-900 CE). He also noted that it was widely distributed at Dvaravati sites in Central Thailand. This widespread distribution and relative standardization of paste and form suggests that these Type BRM vessels were the product of large-scale production in workshops with regional distribution. The function of these vessels is unclear, but the consistent lack of sand or quartz inclusions in their paste, their high density, and slightly restricted mouth may have made them well-suited as serving vessels. I divided the remainder of the semi-fine textured vessels into those with restricted openings (13.6% of diagnostic semi-fine vessels; n= 6) that may have served as storage or food preparation vessels, and those with unrestricted openings (22.7% of semi-fine vessels; n = 10) that that may have been used as serving or eating vessels. The rim diameters of the vessels within these groups were fairly close, and the relatively small number of vessels in both of these groups limited my ability to further subdivide them.

I also divided the coarse fabric vessels into restricted and unrestricted vessels. Within each of these groups I identified subgroups based on significant differences in rim diameters as identified in histogram plots. The unrestricted vessels divided into those with small (8 – 37 cm dia.) and large (>37 cm dia.) rim diameters, as well as flat to shallow plates or lamps. The small unrestricted vessels were probably used as eating and serving bowls. The large unrestricted vessels may have also been used as serving vessels or for food preparation. The restricted vessels include groups with small (<15 cm), medium (15-28 cm) and large (>28 cm) rim diameters. Each of these classes of restricted vessels likely includes jars used for storage or transport. These classes may also include vessels used for cooking; however, few restricted vessels had profiles that were complete enough to be able to be measured for vessel height or maximum diameter, making it difficult to calculate the ratio between the opening of the vessels mouth and its height or relative restriction, both of which are useful measures for

potentially differentiating cooking between storage jars. Without these ratios or other indicators of cooking, such as use-wear, it has been difficult to divide the coarse ware restricted vessels classes into more precise functional categories.

Even though the nine vessel-classes outlined above area relatively broad, an examination of the frequency of each class in the excavation units reveals some interesting differences across the settlement (Table 5.1, 5.2, 5.3). TP-02 included only four potentially diagnostic sherds: three rims and one base. All four of these sherds were coarse ware, but the rims were too fragmented to identify if they came from restricted or unrestricted vessels and therefore could not be placed into any of the vessel classes. It is notable that even among the non-diagnostic body sherds from TP-02 there were no sherds with semi-fine paste.

Among the remaining three units, with significantly larger samples of diagnostic sherds, TP-01 and TP-03 had relatively similar frequencies of vessel classes that stood in marked contrast to those in TP-04. Most notably, all of the diagnostic semi-fine ware sherds came from either TP-01 or TP-03. While some semi-fine ware fabrics were identified among the non-diagnostic sherds from TP-04, it had the lowest density of non-diagnostic semi-fine ware sheds of all the units after TP-02, and included no semi-fine ware diagnostic sherds. The BRM Type semi-fine ware bowls made up similar proportions of the diagnostic sherds from TP-01 and TP-03 (4.8% and 5.3% respectively).

Table 5.1. Absolute Frequencies of vessel-classes by excavation area

	Coarse Restricted				Coarse Unrestricted				Coarse Indeterminate	Semi-Fine			Semi-Fine Indeterminate	Total
	Indeterminate Size	Large Rim Dia.	Medium Rim Dia.	Small Rim Dia.	Indeterminate Size	Large Rim Dia.	Plate/Lamp	Small Rim Dia.		BRM	Restricted	Unrestricted		
TP-01	3	13	51	5	9	5		31	88	11	1	6	7	230
TP-02									3					3
TP-03	7	22	66	5	5	1		48	127	17	5	4	16	323
TP-04	1	14	51	1	4	1	2	95	82				1	252
Total	11	49	168	11	18	7	2	174	300	28	6	10	24	808

Table 5.2. Relative Frequencies of Vessel-classes across excavation areas

	Coarse Restricted				Coarse Unrestricted				Coarse Indeterminate			Semi-Fine			Semi-Fine Indeterminate	Total
	Indeterminate Size	Large Rim Dia.	Medium Rim Dia.	Small Rim Dia.	Indeterminate Size	Large Rim Dia.	Plate/Lamp	Small Rim Dia.	Indeterminate Size	Large Rim Dia.	Plate/Lamp	Small Rim Dia.	BRM	Restricted		
TP-01	27.3%	26.5%	30.4%	45.5%	50.0%	71.4%	0.0%	17.8%	29.1%	39.3%	16.7%	60.0%	29.2%	28.5%		
TP-02	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.4%		
TP-03	63.6%	44.9%	39.3%	45.5%	27.8%	14.3%	0.0%	27.6%	42.1%	60.7%	83.3%	40.0%	66.7%	40.0%		
TP-04	9.1%	28.6%	20.4%	9.1%	22.2%	14.3%	100.0%	54.6%	27.8%	0.0%	0.0%	0.0%	4.2%	31.2%		
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		

Table 5.3. Relative Frequencies of Vessel-classes by excavation areas

	Coarse Restricted				Coarse Unrestricted				Coarse Indeterminate			Semi-Fine			Semi-Fine Indeterminate	Total
	Indeterminate Size	Large Rim Dia.	Medium Rim Dia.	Small Rim Dia.	Indeterminate Size	Large Rim Dia.	Plate/Lamp	Small Rim Dia.	Indeterminate Size	Large Rim Dia.	Plate/Lamp	Small Rim Dia.	BRM	Restricted		
TP-01	1.3%	5.7%	22.2%	2.2%	3.9%	2.2%	0.0%	13.5%	38.3%	4.8%	0.4%	2.6%	3.0%	100.0%		
TP-02	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%		
TP-03	2.2%	6.8%	20.4%	1.5%	1.5%	0.3%	0.0%	14.9%	39.3%	5.3%	1.5%	1.2%	5.0%	100.0%		
TP-04	0.4%	5.6%	20.2%	0.4%	1.6%	0.4%	0.8%	37.7%	32.5%	0.0%	0.0%	0.0%	0.4%	100.0%		
Total	1.4%	6.1%	20.5%	1.4%	2.2%	0.9%	0.2%	21.5%	37.4%	3.5%	0.7%	1.2%	3.0%	100.0%		

Among the other semi-fine ware diagnostic sherds, the unrestricted semi-fine ware vessels made up a higher proportion of the vessels in TP-01, while TP-03 had equal proportions of restricted and unrestricted semi-fine ware vessels. Coarse ware restricted vessels with small openings also made up a much smaller proportion of the assemblage from TP-04 compared to either of the other two units. All three of the units had similar frequencies of medium sized restricted coarse ware vessels, suggesting similar levels of discard of storage or cooking vessels.

Conversely, compared to TP-01 and TP-03, the assemblage in TP-04 contained a much higher proportion of unrestricted coarseware bowls with small diameters. The higher frequency of these vessels in this area may indicate that they served as substitutes for the semi-fine vessels in the other two areas. Interestingly, the differences in the frequencies of vessel classes in TP-04 compared to TP-01 and TP-03 corresponds to the different proportions of wild and domesticated faunal remains in these areas (see below).

To summarize these differences in consumption, the material discarded in TP-04 included a disproportionate amount of small unrestricted coarse ware bowls, abundant faunal remains of wild animals, and almost no domesticated animals; while the material deposited in the other two areas of the site included semi-fine ware vessels and a mixture of domesticated and wild animals. Determining whether or not these different consumption patterns resulted from differences in wealth, culinary preferences between residential areas, or from differences in activities in which all members of the community participated (e.g., feasts vs. the daily consumption of food) will require additional investigation of these areas and the identification of domestic architecture.

Archaeobotanical analysis

Methodology

Sediment from a total of 60 different contexts from the four test pits was collected for flotation. The amount of matrix collected ranged from 33 L to 1.5 L, depending on the amount available in individual contexts. Dr. Dorian Fuller of University

College, London advised me on how to process the samples and provided mesh screens for processing the flotation samples. The collected matrix from each context was placed in buckets with water and agitated by hand. Organic material that floated (light fraction) was poured off into 500 micron mesh screens sewn into cloth bags (Fig. 5.57). The bucket was then topped up with additional water and reagitated. This process was repeated until organic material ceased floating to the top of the bucket. The light fraction collected in the 500 micron screens was then dried and packaged in aluminum foil. Ms. Nattha Chuenwattana (2010; M.Sc. University College, London) analyzed the material in the light fraction under a microscope to identify carbonized seeds. The heavy fraction remaining in each bucket was screened through a 1.5 mm mesh screen.



Figure 5.57. KSAP team member Khun Mai pouring off the light fraction during flotation sample processing.

Results

Unfortunately, there were few identifiable seeds in the light fraction, probably as a result of the poor conditions for preservation. Nevertheless, in samples collected from the ashy matrix in the pit feature in Test Pit 4, Chuenwattana was able to identify a few grains of rice and some seeds from common weeds (Fig. 5.58). She was unable to determine the variety of the rice grains due to the small sample size (Chuenwattana 2010).



Figure 5.58. A burned grain of rice recovered from a light fraction floatation sample from TP-04, Feature 1, Level 5 (PD 144). Identified and photographed by Nattha Chuenwattana.

Faunal analysis

Methodology

Faunal remains recovered from the excavation were relatively rare, and extremely fragmented due to the poor preservation at the site. Mr. Anusorn Amphonsri (M.A., Silpakorn University, Bangkok) analyzed the faunal collections. He counted, weighed, and, where possible, identified to species the faunal remains. A table of the fauna recovered from each excavated provenance is provided in Appendix M.

Results

There were some significant differences in the types and amounts of fauna found in the test units. Despite the poor preservation of the faunal assemblages in all of the units, Amphonsri was able to identify several different species of animals used by the inhabitants of Kamphaeng Saen. The species represented in the faunal assemblage show that the residents of Kamphaeng Saen exploited a mixture of domesticated and wild animal resources (Fig. 5.59). TP-0 1 and TP-03 contained the remains of water

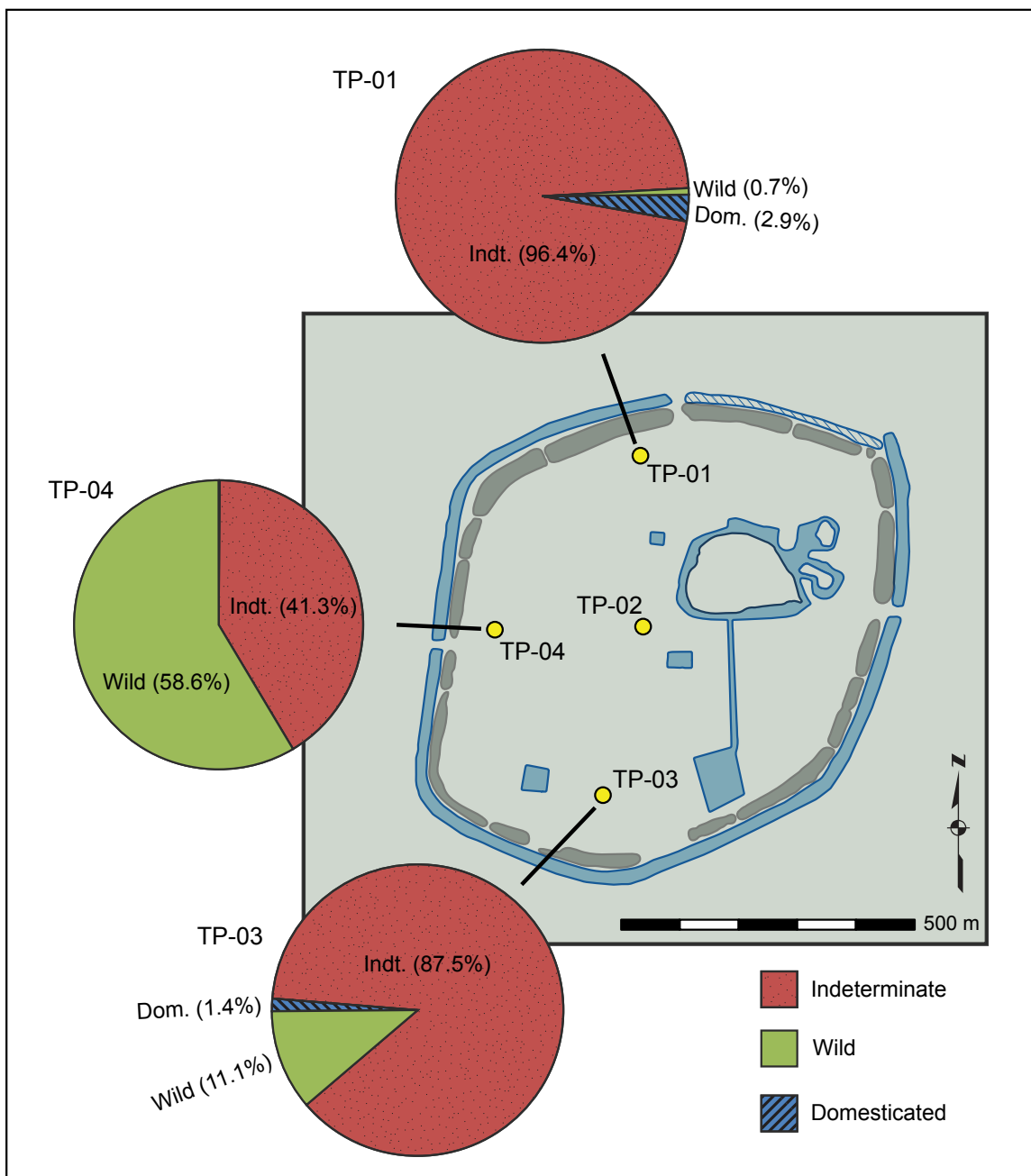


Figure 5.59. Relative Frequencies of wild and domesticated faunal fragments (count) by KSAP excavation unit. Note: TP-02 contained no faunal remains.



Figure 5.60. Examples of the types of mollusk shells found in TP-04.

buffalo and cattle, as well as of two types of deer: the sambar (*Rusa unicolor*) and the muntjak (*Muntiacus*). TP-02 did not contain any faunal remains. The fauna in TP-04 varied significantly from TP-01 and TP-03. Apart from the remains of a domesticated dog, TP-04 lacked the domesticated animals present in TP-01 and TP-03. Instead it contained wild animals such as, sun bear, turtle (with a drilled carapace), catfish, cyprinid fish, and large amounts of shell from several varieties of bivalve and gastropod mollusks (Fig. 5.60).

TP-04 had the highest total amount of fauna (3499 fragments with a total weight of 3134.5 g) and the highest density of fauna by volume of excavated matrix (190.8 fragments/m³; Table 5.4); however, the higher amount of fauna in TP-04 is largely due to the large amounts of mollusk shell. It is unclear how many of these shells were actually consumed by residents and how many occurred naturally. The area around TP-04 is one of the only parts of the site that floods during heavy rains, providing an ideal home for freshwater mollusks today and in the past. The presence of marine bivalves among the shells in TP-04 is particularly interesting, and may result from the residents' direct

Table 5.4. Frequency and Density of Faunal Remains by Excavation Unit

Excavation Area	Count of Faunal Fragments	Weight of Faunal Fragments (g)	Density of Fauna (Count/m ³)
TP-01	715	563.0	63.4
TP-02	0	0	0
TP-03	72	32.5	10.9
TP-04	3499	3134.5	190.8



Figure 5.61. Drilled turtle carapace from TP-04, Feature 1, Level 4B (PD 143). Photograph by Anusorn Amphonsri.

exploitation, or access through trade, of resources from mangroves nearly 7 km away. Alternatively, these shells may have reached cultural levels after residents disturbed sediments deposited during a past marine transgression at Kamphaeng Saen. Khunsong et al. (2011) encountered a similar concentration of shell during excavation of the lower levels of the Hor Ek at Nakhon Pathom. When shell is not included, the amount of faunal remains in TP-04 is much closer to that of TP-01. Both of these areas may have functioned as domestic middens. The complete lack of faunal remains from TP-02 is consistent with the relatively low amounts of artifacts from this unit, and the possibility that this area was maintained free of refuse. The relatively low amount of fauna from TP-03, and the presence of several informal surfaces in this unit, suggests this space may have been affiliated with domestic activities, but not used as a midden. Unfortunately the small sample size and poor preservation of the fauna from across the site makes it difficult to identify more refined patterns in how domesticated animals were used (e.g. traction vs. food). No animals' bones were altered for use as tools, although several bore cut marks and the pit feature in TP-04 a turtle carapace that had been drilled (Fig. 5.61).

Radiocarbon analysis

Methodology

Samples of charcoal were collected with a clean trowel from relevant contexts and placed in aluminum foil without any additional treatment. Eight samples were sent to Beta Analytic Inc. (Miami FL, USA) for AMS radiocarbon dating.

Results

See results of excavated contexts above and individual samples in Table 5.5.

Table 5.5. AMS radiocarbon dates from KSAP excavation units

Sample ID	Sample	Location	Prov. Desig. (PD)*	Context	¹³ C/ ¹² C Ratio	Measured Radiocarbon Age	2σ (95.4%) Calibration BCE/CE
Beta-293467	charcoal	Enclosure Wall	12	Strat 8: sterile fill	-27.0 o/oo	8680 +/- 50 BP	7939 - 7587 BCE
Beta-293468	charcoal	Test Pit 1	49	Strat 3: cultural fill	-25.4 o/oo	1460 +/- 30 BP	553 - 648 CE
Beta-293469	charcoal	Test Pit 1	65	Feat 1/ level 2: midden pit	-24.5 o/oo	1570 +/- 30 BP	420 - 557 CE
Beta-293470	charcoal	Test Pit 2	79	Strat 4: low density cultural fill	-22.8 o/oo	1210 +/- 30 BP	694 - 892 CE
Beta-293471	charcoal	Test Pit 3	94	Strat 4: high density cultural fill over ephemeral surface	-24.5 o/oo	1550 +/- 30 BP	426 - 578 CE
Beta-293472	charcoal	Test Pit 4	124	Strat 5: base of cultural fill above Feature 1	-23.4 o/oo	1400 +/- 30 BP	597 - 670 CE
Beta-293473	charcoal	Test Pit 4	133	Feat 1/ level 1: ashy pit	-26.1 o/oo	1590 +/- 30 BP	411 - 543 CE
Beta-293474	charcoal	Test Pit 4	139	Feat 1/ level 3: ashy pit	-27.0 o/oo	1490 +/- 30 BP	467 - 645 CE

*See Appendix H for Provenance Designation (PD) details.

Analysis of other materials

Methodology

Other materials recovered from the excavations included ground stone, glass beads, metal (lead and iron), and a few brick fragments. These objects were measured, drawn, photographed and described. I provide measurements and descriptions of these objects in Appendix N.

Results

A total of ten beads were recovered found in excavated contexts and three beads came from the wet screening of auger core sediment samples (Fig. 5. 62). Of the beads from excavated contexts, six came from TP-01, three from TP-03 and one from TP-04. All of the beads were made from glass except one round drilled quartz bead. There was



Figure 5.62. Stone and glass beads from KSAP excavations. Top row (l-r): drilled quartz bead (TP-03, Stratum 5); blue glass bead (TP-03, Stratum 5); red tubular glass bead (TP-01, Feat. 1). Bottom row (l-r): small blue glass beads (TP-03, Stratum 5; TP-01, Feat. 1; TP-01, Feat. 1; TP-01, Feat. 1.)

one example of a red tubular glass bead, a common type of Indo-Pacific bead with wide distribution throughout Southeast Asia and Indian Ocean trade networks (Dussubieux and Gratuze 2000; Francis 2002). More commonly the beads had a sub-oblate to oblate form and were made of translucent light to dark blue glass (Francis 2002). These types of beads also have a wide distribution in Southeast Asia. The one bead made of quartz had a round form and was drilled through its center. This production technique is common in South India, and the bead may have been produced there. The form and composition of all of the beads are consistent with those found at other Dvaravati sites and proto-historic sites in other parts of Southeast Asia (Dussubieux and Gratuze 2000; Francis 2002).⁹

The form of the ground stone saddle quern (Fig. 5.63) resembles those from other Dvaravati sites, and is made of the grey-green stone typically used for these

⁹Special thanks to Alison Carter for examining pictures of the beads from Kamphaeng Saen and directing me to resources for their identification.



Figure 5.63. Side view of a fragmented saddle quern from TP-01, Feature 1. (Note: the quern was not washed and there is dirt adhering to the top surface)

objects (Indrawooth 1999). This type of stone does not occur in the immediate vicinity of Kamphaeng Saen, and the finished or unfinished saddle quern was likely imported from another part of central Thailand, such as Petchaburi where Dvaravati-period quarry sites have been identified (Indrawooth 2008; Silapanth 2006). Judging by the heavy use wear evident on the center of the top of the quern, it likely broke as a result of extended use; however, it is unclear what the stone was used to grind. A small piece of ground stone that appears to be an additional fragment of the quern was found in the same level as the more complete fragment. The remainder of the quern may be in unexcavated contexts to the east or north of TP-01, but the quern clearly broke prior to deposition, lending further support to the interpretation of TP-01 as a midden.

A small ground stone adze (Fig. 5.64) was recovered in the backdirt from Salvage Unit 01. Bronson (1976:32, 33) noted that small stone adzes that were used for wood-working are common at Metal Age and later sites in Southeast Asia, and are typically smaller than those produced in the Neolithic period. At Chansen he found several examples of small ground stone adzes in “post-prehistoric contexts” including



Figure 5.64. Ground stone axe from Salvage Unit 2 backdirt (dorsal and lateral views of the same object)

the Dvaravati period occupation (Phase V; Bronson 1976:33, figs. 1s-t). The form, size and raw material (grey fine-grained igneous stone) of the adze from Salvage Unit 01 at Kamphaeng Saen resembles those found by Bronson at Chansen.

Several fragments of iron objects (n= 12) were found, but they are too heavily decayed or rusted to be identified. With the exception of a small fragment of an unidentifiable iron tool recovered in TP-04, all of the iron fragments were found in TP-01. TP-03 did not contain any iron objects, but did have the only two lead objects recovered in the excavations (Fig. 5.65). The first lead object was a small disc of indeterminate use (diameter = 1.6 cm). Some indentations on both surfaces of the disc that may have been images or writing, now unidentifiable, suggest it may have been a coin or seal. The second object is a flattened lead ring a little over 3 cm in diameter. It resembles a similar example from U-thong¹⁰, but their function is not clear. Finally, a fragment of a small rod (length = 2.8 cm), probably made of bronze, was found in the pit feature of TP-04. The

¹⁰Seen by the author on display in the U-Thong Museum in 2009.



Figure 5.65. Metal objects from the KSAP excavations (l-r): lead ring (TP-3, Stratum 4, PD 93); lead disc (TP-03, Stratum 5; PD 95); bronze rod (TP-04, Feat. 1, PD 147)



Figure 5.66. A selection of clay balls from the KSAP excavations showing their variability in size

remains of fish in this same context suggest, it may have been a fish hook, although this identification is speculative.

Small round balls made of clay were recovered from all of the test pits except TP-02 (Fig. 5.66). A total of fifteen balls were found, with diameter's ranging from 12.5 mm to 30.2 mm, and a mean diameter of 16.9 mm. Their weights ranged from 2 to 10.8 g, with a mean of 4.3 g. The function of these balls is unknown, but they may have served as sling pellets for hunting small-game. Similar objects have also been found at U-Thong.¹¹

Conclusion

The primary goal of the KSAP was to collect baseline data about Kamphaeng Saen's chronology and internal organization. The radiocarbon dates and material culture we documented at the site indicated that it was founded around the fifth century CE, during the early or proto-Dvaravati period, and declined within a few centuries. Investigation of the earthen enclosure wall suggested that it was built at the time of the site's initial occupation. The date of the several Buddhist monuments and sculpture we documented are less secure, but based on stylistic evidence appear to date to the end of the site's occupation. In terms of the site's organization, we identified significant spatial differences both within the enclosed area, and between the interior and exterior areas of the site. Unlike some other Dvaravati period enclosed sites, apart from religious monuments, there was little evidence for occupation outside the settlement enclosure. Our surveys and auger cores inside the enclosure identified significant differences in the density of material, with open areas in the site's center and southeastern quadrant. Our subsequent excavations confirmed these patterns, but also identified differences in the types of foods and ceramics consumed in different parts of the site. In chapter 6, I explore the implications of these baseline data for understanding the history and organization of the community at Kamphaeng Saen and its relationship to other Dvaravati centers.

¹¹ Seen by the author on display in the U-Thong Museum in 2009.

Chapter 6

The Political, Economic and Sacred Landscapes of Kamphaeng Saen

The archaeological investigations at Kamphaeng Saen contribute to our understandings of the history and organization of this particular settlement, as well as the broader dynamics between and among the communities of west-central Thailand as they adapted to increasing urbanization and political centralization. In this chapter, I use the results of my field investigations at Kamphaeng Saen to address some of the questions outlined at the beginning of Chapter 5. I begin by examining the significance of chronological and spatial patterns within Kamphaeng Saen. On one hand, the settlement history of Kamphaeng Saen appears unique among Dvaravati centers; on the other hand, the configuration of monuments and the types of material culture at the settlement is similar to other Dvaravati centers, and suggests that the residents of Kamphaeng Saen shared identities and values with the members of these other communities. These similarities may have played an important role in facilitating some of the regional changes that the residents of Kamphaeng Saen participated in. In the second part of the chapter, I turn to the implications of Kamphaeng Saen's settlement history for understanding the regional dynamics in west-central Thailand. Viewed at this regional scale the seemingly premature decline of Kamphaeng Saen, for which there are few explanations within the settlement itself, can be explained as part of the urbanization and changes in political influence of its neighboring centers. The emergence of shared civic, religious, and cultural values among the residents of these centers provided common ground for individuals who lacked pre-existing social relationships based on kinship. As sites such as Nakhon Pathom grew into large urban centers, these new shared values and identities became increasingly important for uniting its diverse community. The same set of cultural and religious values would have

also provided emerging centralized political authorities with a widely understood set of cultural and ritual practices and symbols that could be used to win or maintain the allegiance of the leaders and populations of other politically autonomous Dvaravati centers.

Time and Space at Kamphaeng Saen

Settlement history

At many Dvaravati centers in central Thailand whose chronology has been documented through archaeological investigations (e.g., Chansen, Promtin Tai, U-Thong, Nakhon Pathom), there is evidence for an Iron Age occupation preceding the Dvaravati period occupation of the site. The sizes of these Iron Age communities are poorly documented, and it is unclear if they initiated earthwork enclosure construction. There are examples of Dvaravati centers that were founded *de novo* during the Dvaravati period (e.g., Dong Mae Nang Muang in the eighth century CE; Murphy and Pongkasetkan 2010), but these are less common (though this may change as more sites are systematically investigated). Many of the more prominent centers also continued to be occupied into the Khmer or Lopburi period (e.g., Nakhon Pathom, Sri Thep, and Lopburi).

At Kamphaeng Saen there is little evidence for occupation of the enclosed settlement before the proto-Dvaravati period or after the mid-Dvaravati period. The Iron Age burial excavated roughly 3 km northeast of the site provides evidence for the presence of populations in this area prior to the founding of the settlement (Nuamboonlue 1996). The absolute dates obtained in our test excavations of Dvaravati contexts indicated that the initial and most intensive occupation of the site was from the fifth or sixth centuries CE to the mid-seventh century CE. After this time, occupation at the site dramatically diminished until its abandonment in the ninth century CE. As I discussed in Chapters 3 and 4, there is significant disagreement among scholars over whether the traditional sixth or seventh century CE starting date for the Dvaravati period can be pushed back to the fifth century CE or even earlier (Barram and Glover 2008; Khunsong, et al. 2011). The initial occupation of Kamphaeng Saen occurred during this controversial phase, variously referred to as the Funan, pre-Dvaravati, proto-Dvaravati or

early Dvaravati period. It is therefore significant that the material culture from contexts with absolute dates falling in the fifth and sixth centuries CE at Kamphaeng Saen contain Dvaravati-style ceramics, saddle querns and beads, but also lack some notable types of vessels found in other Dvaravati ceramic assemblages such as earthenware vessels with carved stamp impressions or small punctuate designs, as well as blue-green glazed Persian wares (Indrawooth 1985). Based on these similarities, I prefer the labels “Early Dvaravati” or “Proto-Dvaravati” for this period, since they recognize the emergence of Dvaravati style material culture at that time, while acknowledging that there are some differences from later Dvaravati period material culture. The evidence from Kamphaeng Saen provides a valuable glimpse of some of the chronological differences, and cultural continuities in material culture within the Dvaravati period.

The evidence from the enclosure wall profile at Kamphaeng Saen suggests that the construction of the enclosure dated to the site’s initial period of occupation. This timing is significant for understanding both the chronology of Dvaravati earthwork plans and the settlement history of Kamphaeng Saen. The irregular plan of the enclosure at Kamphaeng Saen and its relatively early date of construction (c. fifth century CE) lends support to Wales’s (1969) developmental typology of irregular to regular enclosure plans in central Thailand. Perhaps more importantly, the fact that the enclosure was built at the time of the settlement’s initial occupation suggests that Kamphaeng Saen was founded as an intentional community, rather than emerging through the organic growth of a smaller village nucleus that built an enclosure when it had adequate resources, labor, or leadership. The processes and conditions that would have led to the founding of such an intentional settlement are not entirely clear from the evidence recovered so far at Kamphaeng Saen. The settlement’s initial residents may have come from dispersed hamlets and villages from the surrounding hinterland, possibly seeking defense or economic opportunities in a larger fortified settlement. The core group of Kamphaeng Saen’s residents may have come from a pre-existing village with emerging leadership that could direct the re-location of the village and the construction of the enclosure. Even if this was the case, the lack of documented Iron Age settlements of

equivalent size in the area suggests some degree of migration to the settlement from more than one village or hamlet.

The act of building the enclosure wall and moat would have been important for uniting various groups within newly formed or growing communities that sought to develop stronger social bonds and group identities that transcended kinship. While we know little about which members of the community actually participated in monument construction, differences in gender and class may have dictated who was required or allowed to participate in monument construction, leading to different perceptions and experiences of this process among community members. Established or emerging community leaders also had an opportunity to demonstrate their organizational abilities and strengthen the community's allegiance to them by coordinating the construction efforts. As highly visible monumental architecture that physically defined the community by encircling it, the earthwork wall and moat provided an important symbol of community identity, almost constantly visible to the residents as they went about their daily activities. As I discussed in Chapter 4, the residents may have built the enclosure for a combination of military defense, flood control, or spiritual protection. In each of these cases the space within the enclosure would have been defined as a secure and protected place, either physically or spiritually. At Kamphaeng Saen and other enclosed Dvaravati settlements the desire for this protection may have led individuals from the surrounding hinterland to relocate to the settlement, encouraging additional population nucleation and urbanization. The fact that the construction of the enclosure dates to the initial occupation of Kamphaeng Saen suggests that it played an important role in facilitating the emergence of a community that was significantly larger than previously seen in the immediate area.

Following the establishment of Kamphaeng Saen in the fifth century CE, the settlement experienced its greatest occupational density for over a century. After the seventh century CE, however, there was a significant decrease in the population of the settlement. The only absolute date from after the seventh century CE comes from TP-02, which contained little evidence of occupation. Our excavations sampled only a

small part of the site, but we detected no apparent evidence from within Kamphaeng Saen itself that could explain this decline. Instead, as I argue below, to understand this period in Kamphaeng Saen's settlement history we need to look at the regional-level dynamics and its relationship with the neighboring center of Nakhon Pathom.

The evidence from Kamphaeng Saen actually suggests that the period after the seventh century CE witnessed significant investment in Buddhist art at the settlement. The stylistic dating of the *dharmachakra* (late seventh to eighth century CE), the socle inscription (eighth century CE) and the three laterite Buddhas (late Dvaravati), all correspond to the period when the site's population was decreasing or had already left. The dating of the four groups of brick Buddhist monuments is less secure. Based on the style of the bricks and associated ceramics found in the east Buddhist monument group, this group of structures clearly date to the Dvaravati period. The reported discovery of the stucco and laterite Buddhas in the ruins of these monuments suggests that they may be contemporaneous with the sculptures, or at least underwent significant renovation during the eighth century CE. The other three Buddhist monument groups also appear to date to the Dvaravati period, although it is not clear if they are from the early, middle or late period. If the stylistic dates for the sculpture and inscription are accurate, they indicate there was significant investment and activity at the site by the Buddhist community *after* the town's population had significantly decreased in size. Since Buddhist monastic communities primarily relied on donations from the laity for the resources required to support themselves and the construction of monuments, it is possible that the investment in the Buddhist sculpture at the site during Kamphaeng Saen's decline was actually funded by sources from outside the community, such as individuals located in the nearby center of Nakhon Pathom. It is also possible that the construction of the monuments around the settlement at a time when the community's population was decreasing was partly an effort to reestablish or reinforce protective cosmological boundaries established by the original moat and earthen enclosure. The use of Buddhist monuments to do so, may indicate increasing importance of identities based on Buddhist practice over, but not to the exclusion of, those connected to

traditional animist cosmological concepts associated with the earthworks. Even today in Thailand there is great syncretism between animist and Buddhist belief systems, with unusual earthen mounds often believed to have sacred power. Additionally, community leaders may have encouraged or required residents to participate in the construction of the brick Buddhist monuments as a way to strengthen allegiance to the settlement as emigration increased.

After the eighth and ninth century there is little evidence for occupation at Kamphaeng Saen. The recovery of a single sherd of Song Dynasty (twelfth century CE) imported Chinese stoneware from just below the surface inside the enclosure, and Nuamboonlue's report of the discovery of an Ayutthaya style Buddha, suggest that there was still occasional activity at the site after the ninth century CE; however, our test excavations found no evidence of full-time occupation of the site after this time. These isolated finds are probably the material traces of the occasional visitor to the abandoned site, or farmers who cultivated crops on the interior of the site. The presence of the



Figure 6.1. Old and broken spirit shrines and religious statues deposited at Kamphaeng Saen

Ayutthaya style Buddha seems to suggest religious activities also took place at the site after the Dvaravati period; however, abandoned settlements are often believed to be the abode of ghosts and other spirits, and Kamphaeng Saen is no exception judging by the number of ghost stories reported to Nuamboonlue (1996) and myself. Today, animist shrines (i.e., “spirit houses”) and Buddhist images that have broken or been replaced are frequently deposited in the interior of the settlement enclosure at Kamphaeng Saen, as a respectful way of discarding these objects and to ensure that they do not place their former owners in spiritual jeopardy (Fig. 6.1). In the absence of other evidence for occupation at the site during the Ayutthaya period, similar beliefs about suitable locations for discarding religious images may have led the owners of the Ayutthaya style Buddha statue to place it inside the settlement enclosure.

The monumental landscape at Kamphaeng Saen

When we conceive of Kamphaeng Saen’s landscape as comprising both the areas inside and outside the settlement enclosure, there is a striking division of space between the habitation areas located inside the enclosure and the Buddhist monuments and sculpture on its periphery. Inside the enclosure, the salvage units and all the test units except for TP-04 contained a few isolated fragments of brick. None of these fragments articulated to form structures, and the density of brick in each of these areas was far lower than that observed for the monuments outside the enclosure. It therefore seems more likely that these bricks were combined with other materials to form domestic, administrative, or religious structures, rather than stupas which were typically made of many bricks. There has been a tendency in the archaeology of the Dvaravati to identify all bricks as part of religious structures. It is true that the overwhelming number of large standing brick structures served a religious function but we must not overlook the possibility that bricks were also used, likely in much smaller amounts, in the construction of other types of structures. So, while I do not rule out the possibility that there were also brick religious monuments inside the enclosure at Kamphaeng Saen, the available evidence indicates that the majority and largest Buddhist monuments were built outside of the enclosure.

At Kamphaeng Saen the brick monuments appear to have been Buddhist stupas, although their advanced state of ruin makes it difficult to conclusively identify them. The recovery of Dvaravati-style earthenware sherds in the vicinity of the east stupa group suggests some individuals, possibly Buddhist monks, were probably consuming, cooking or storing food or beverages in this area. This is far from conclusive evidence for the presence of a monastic community that permanently resided at Kamphaeng Saen. As Murphy (forthcoming) observed, Dvaravati *sema* stones are useful indicators of consecrated spaces specifically used for monastic rituals (e.g. ordinations) and are therefore suggestive of where monasteries were likely located. Unfortunately, Dvaravati *sema* stones are primarily found in northeast Thailand, suggesting the monastic communities of central Thailand may have established consecrated spaces in other ways, such as with wooden *sema* which have not survived in the archaeological record.¹ This means that the identification of the actual spaces where Buddhist monks lived and practiced in central Thailand is difficult. Buddhist monks may have been present during the consecration of stupas, but the efficacy of these monuments did not require their constant presence. So while there is only limited evidence for a monastery east of the enclosure at Kamphaeng Saen, the location of most, if not all, of the Buddhist monuments at Kamphaeng Saen outside the enclosure suggests a clear preference for building Buddhist structures in these locations by the monks who likely directed their construction and the community who supported them. Two possible factors influencing this configuration include the establishment of a spiritually protective boundary or as a physical reminder of monastic independence and renouncement of domestic life. I consider these alternatives below.

As noted in Chapter 4, Murphy (forthcoming) observed that the enclosed settlement of Muang Fa Daed in northeast Thailand was surrounded by seven stupas, possibly in order to establish a sacred field around the settlement. The configuration of the Buddhist monuments, likely stupas, in the four cardinal directions around

¹One exception in central Thailand is Muang Bon, where outside the enclosure Wales (1969:79) identified eight crude stone *sema*, which he believed likely marked the boundary of a perishable religious hall (for a map of the site and monuments see figure B.14b in Appendix B of this thesis).

Kamphaeng Saen may have served a similar purpose. As I mention above, the earthwork enclosure around Kamphaeng Saen dated to the initial occupation of the site and the Buddhist sculpture appear to date to its decline, but it is unclear when during the Dvaravati period the Buddhist monuments were built. It is possible that along with the sculpture the Buddhist monuments were added toward the end of the site's occupation to either reinforce or replace the sacred protection provided by the initial earthwork enclosure. Other enclosed Dvaravati centers in west-central Thailand, such as Nakhon Pathom, U-Thong and Ku Bua, also have Buddhist monuments ringing the outside of their enclosures, although they are not always placed in the four cardinal directions like at Kamphaeng Saen. These patterns may represent a translation of cosmological concepts about the power of earthwork enclosures into the configuration of Buddhist monuments within the landscape. A better chronology for both the construction of Dvaravati earthworks and brick monuments in central Thailand is needed to more fully understand the relationships between these two types of monuments.

Regardless of their chronological relationship, the construction of the earthwork enclosure and the brick religious monuments at Kamphaeng Saen all provided publically visible investments of community labor, both during their construction, and as a lasting physical presence in the center's landscape. It is therefore notable that all of the documented Buddhist monuments were built outside of the enclosure. As I discussed in Chapter 4, Dvaravati Buddhist monuments are most commonly, but not exclusively, located outside enclosed settlements. The apparent preference for building Buddhist monuments outside of enclosed settlements may represent a desire by the monastic community to detach itself from domestic space, while still maintaining a close proximity to the donors who supported them. Additionally, the location of Buddhist monuments and possibly a monastery outside the enclosure defining the settlement, may have served as a reminder that the monastic community maintained some degree of independence and political power within a heterarchical system of authority. Even though our investigations failed to identify any evidence of this stupa reported by Nuamboonlue (1996) at the center of the settlement, if such a monument existed it was

likely quite small and would not have qualified as a *mahastupa*. If the construction and use of *mahastupas* was connected to Buddhist monarchs, as I believe they were (see Chapter 4), the absence of a *mahastupa* at Kamphaeng Saen is significant. Monument construction at Kamphaeng Saen focused on structures with a community focus, rather than those more closely tied to political elites. The lack of *mahastupa* at Kamphaeng Saen suggests that it was either not seen as a significant venue for such a monument by political elites, or there was insufficient authority or resources to build such a monument there.

Even without a *mahastupa*, the similarity between the configurations of the monumental landscape at Kamphaeng Saen and those of other Dvaravati centers indicates that its residents shared concepts with the residents of these other centers of how to define and empower a settlement's landscape through the placement of monuments. These similarities enabled an individual to potentially move between centers in central Thailand and not only recognize and understand the organization of different settlements, but feel protected once there. Both the earthwork enclosures and the Buddhist monuments surrounding Dvaravati centers served to define these settlements as physically and spiritually protected places. This security made these settlements desired places of residence, and encouraged, along with other factors, the population nucleation and urbanization that took place during the Dvaravati period.

Open spaces at Kamphaeng Saen

In addition to the differences between the use of space inside and outside of the settlement enclosure, there is also evidence for significant differences in the way space was used inside the enclosure at Kamphaeng Saen. Based on the patterns identified in the auger core and surface collection samples, there is a significant distinction between areas with dense domestic debris, likely representing middens or habitation areas, and areas with significantly less to no evidence of artifacts (Fig. 5.33). There were several small areas (e.g., in the southwestern part of the site) that appeared to have low densities, but these may be the result of single auger cores that by chance did not encounter any cultural material. Instead, the areas where artifact densities were

consistently low in several auger cores provide a better indicator of open areas. These areas are located in a roughly 300 x 200 m area in the southwestern part of the site and a smaller area 80 m diameter area at the center of the site. There is little direct evidence from Kamphaeng Saen to interpret how these areas might have been used. As I noted elsewhere in my discussion of TP-02, it is possible that the center of the site has been heavily disturbed by earthmoving related to road construction, which could account for the lack of archaeological material in this area. However, it is also possible that this area was intentionally kept clean and left as an open public space by the Dvaravati residents. The gravel lenses identified in the excavation of TP-02 may represent the preparation of such a surface. If the reports of a monument having once been located at the site's center are true, this area may have been used for religious or political activities. Unfortunately the excavation of TP-02 and the auger cores in this area provided little evidence to refine our interpretation of the types of activities that took place in the open area at the site's center.

Similarly, the area with low artifact and cities in the southeastern part of the site provided few clues about its function. In aerial photographs of the site from the mid-1970s and still today, this area was left open. It is therefore possible that it may have also been significantly disturbed at some time after the Dvaravati occupation of the site; however, the lack of artifacts in the southeast quadrant extends beyond the boundary of the area currently left open, and it would have been difficult to completely remove any traces of occupation over such a large area. Additionally, other areas that continue to be plowed today in the northwestern part of the site had artifact densities consistent with the other non-plowed areas in the northern half of the site. It seems more likely that the low density of artifacts in the southwestern part of the site is the result of the Dvaravati period residents using this area in a different way from areas with much higher artifact densities. One possible explanation comes from Chinese emissaries who visited roughly contemporaneous enclosed Pyu centers in Myanmar. They reported the presence of rice fields inside the settlements' enclosures, that provided food reserves in the event of a siege (Aung 1967:11; Moore 2007:134). It is conceivable that the

open area in the southwestern part of Kamphaeng Saen was used in a similar way. Alternatively, this area could have been used to corral livestock or left open for public assembly. Future excavation in this area is needed to clarify the nature of activities that took place here.

Even though we have been unable to conclusively identify the activities that took place in the open areas in the southwestern and central parts of the site, the presence of such areas indicates that the interior of the settlement enclosure was not completely used for habitation. This supports Mudar's (1999:5, 14) observation that enclosure size provides only an indirect measurement of Dvaravati settlement size. At Kamphaeng Saen, the area inside the moat is approximately 52.5 ha; however, this measurement includes the earthen enclosure wall and the southeastern reservoir, areas which could not have been used for habitation. When these areas are excluded the area inside the enclosure available for habitation is only 43.7 ha. Based on the surfaces interpolated in ArcGIS from the results of the auger core samples, the combined open area between the center and southwestern parts of the site is approximately 8 ha. This suggests that only 35.7 ha or 68% of the enclosed area was actually used for habitation (i.e., houses, middens, courtyards and other household workspaces).

As Mudar (1999:13) pointed out, estimates of population densities in prehistoric and protohistoric Thailand vary widely (Table 6.1). She used a density of 100 people per hectare based on ethnographic fieldwork conducted by Izikowitz (1951) in Lamet villages in Laos. Mudar (1999:14) felt these villages provided a reasonable estimate for pre-modern population densities since "the houses . . . were made without mechanized tools, and the pathways did not have to accommodate vehicular traffic." While it is problematic to use the population density of a twentieth century village in an upland region to estimate the population of a lowland center more than 1000 years earlier, we lack more precise data with which to estimate Dvaravati population densities. Using Mudar's population density of 100 people per hectare, the 35.7 hectares of habitable space at Kamphaeng Saen would have been home to a community of approximately 3,570 people. For the entire enclosed area of 52 ha (i.e., both occupied and open

Table 6.1 Estimates of population density of prehistoric and historic settlements in Southeast Asia

Author	People / ha	Estimate source
Welch (1985; 1989)	50-75	Population density of modern villages in NE Thailand
Stark (2006:419)	67 (i.e., a population of 20,000 for the 300 ha site of Angkor Borei)	Lowest pop. estimates of five early urban centers with similar sizes to Angkor Borei provided by Yoffee (2005: table 3.1)
MacDonald (1980:90)	100	Population density of the modern village of Ban Na Di in NE Thailand
Mudar (1999:13-14)	100-150	Izikowitz (1951) ethnographic study of Lamet villages
Miksic (2006: table 1)	200	Population estimates from historical sources of densely populated cities in Seventeenth century CE Island Southeast Asia collated by Reid (1993:73)

spaces) the population density would have been 69 people per hectare. This figure is close to Stark's (Stark 2006:419) estimate for the center of Angkor Borei in neighboring Cambodia (see Table 6.1).

Based on measures of scale and population size, Kamphaeng Saen is dwarfed by most urban centers of the modern and ancient worlds. However, according to a functional definition of urban centers, Kamphaeng Saen may qualify as a small urban center or town due to its relationship to the smaller settlements in its surrounding hinterland. Mudar (1999:14) estimated that any Dvaravati center over 10 hectares would not have been able to grow a sufficient amount of rice to support its population. Even with the recalculated size of Kamphaeng Saen, its residents still would have relied on surrounding villages and hamlets to supply them with a portion of their food. In return, the residents of Kamphaeng Saen may have provided protection, religious services or access to trade goods. So while the documentation of large open areas at Kamphaeng Saen suggests that the area inside the enclosure was not completely filled

with dense habitation areas, the settlement can still be usefully conceived of as a small urban or proto-urban center.

Production and consumption at Kamphaeng Saen

In addition to the clear distinctions between the open and occupied areas within the enclosure at Kamphaeng Saen, there were also some significant differences in the consumption, and to a lesser degree production, activities between the occupied areas. The limited evidence for craft production at Kamphaeng Saen showed some broad spatial differences. The bucket auger core samples recovered extremely small amounts of iron slag distributed throughout the northern half of the settlement enclosure and no evidence of slag in the southern half of the site. Our excavation of TP-01 in the northern part of the site failed to identify any more slag or other evidence of iron production (e.g. tap slag, flux, blooms or tuyeres). This low density of slag and its dispersal over roughly half the site, suggests that iron production at Kamphaeng Saen consisted of small-scale smithing, conducted either by several small household workshops or itinerant smiths. There is no evidence of large amounts of tap-slag, flux, ore and charcoal that would indicate iron smelting inside the enclosure. It is possible that such smelting activities, as well as more intensive smithing, were conducted outside the settlement enclosure. Alternatively, the residents of Kamphaeng Saen may have obtained iron blooms, blanks or finished objects through trade, and then locally reshaped them through minimal smithing as needed. The reasons the smithing activities were segregated to the northern half of the settlement are not clear; however this distribution of slag corresponds to the distribution of iron and lead objects as well. The metal objects in up TP-03, located in the southern part of the site were all made of lead, unlike those recovered in up TP-01 and TP-04, which were iron or bronze. The differential distribution of iron and lead objects and production debris between the northern and the southern parts of the site may be the result of variations in preservation conditions or differences between the residents' production and consumption activities in these areas.

In addition to the limited evidence for iron smithing, craft production activities at Kamphaeng Saen may have also included some ceramic production. Dvaravati

potters primarily used open-air firing rather than kilns², making ceramic production sites difficult to identify. However, other indicators of Dvaravati ceramic production include anvils, which have been found at other centers such as U-Thong and Ku Bua, and more rarely stamps, such as the ones found at Chansen. At Kamphaeng Saen we found none of these objects that would directly indicate the presence of potters at the site. The ceramic assemblage from Kamphaeng Saen contains several standardized vessel types that have been documented at other Dvaravati sites (e.g., the semi-fine ware BRM vessels) and were likely produced in large-scale workshops for regional markets. However, the Kamphaeng Saen ceramic assemblage also included more unique vessel forms that may have been produced more locally. It is unclear if these vessels were produced at Kamphaeng Saen or another local site with limited distribution that did not reach Chansen, and as a result did not appear in Bronson's (1976) typology. That these vessels are almost all low to medium fired coarse wares indicates that they would have required a lower level of technological skill to produce, making it possible that they were made by household potters as needed to supplement the vessels they obtained through regional trade networks.

With only limited evidence for iron smithing and even less direct evidence for ceramic production, it appears that the residents of Kamphaeng Saen did not specialize in the production of one type of craft at the community level. Additionally, there is little evidence of community-level specialization in trade, military, administrative or religious activities at Kamphaeng Saen. Rather, the community probably provided a range of these services to the residents of the villages and hamlets in its surrounding hinterland, while ensuring access to the agricultural surpluses that they produced. This lack of specialization, and the settlement's proximity to Nakhon Pathom, which provided many of the same functions, may have led to the dissolution of Kamphaeng Saen as Nakhon

²Although Clarke (2011:36) has recently drawn attention to the little known fact that Wales (1936:47) identified two kilns in Dvaravati contexts at Pong Tuk, one of which was adjacent to a Dvaravati period monuments.

Pathom grew in size. I examine the nature of this relationship in greater detail in the section on regional dynamics below.

In contrast to the relative lack of evidence for the production activities of Kamphaeng Saen's residents, we have a slightly better picture of how their consumption activities differed across the site. The relatively poor faunal and botanical preservation at the site has left few food remains to examine differences in diet. However, among the few faunal remains that were present, some interesting patterns emerged between the test excavation units. These differences are supported by the more robust sample of ceramics.

As I discussed above, TP-02 contains an extremely low density of cultural material and may be located in a part of the site that was intentionally kept clean of refuse. Alternatively, the other three test excavation units and the salvage units all contained abundant material apparently discarded from domestic contexts. Our failure to document any architecture, domestic or otherwise, inside the enclosure makes it difficult to determine if the contexts documented in the test excavation units were associated with individual households or communal activities. The pit feature in TP-04 could have been used for roasting in a communal feast or for food preparation by a single household, or as a midden from either of these activities. The relatively shallow surface that runs above the pit, and the large size and flat orientation of the ceramic sherds contained in it, suggest that this material was deposited in an informal surface, possibly in the areas around or below a house, rather than in a dense repeatedly-used communal midden. The similar characteristics of the informal surfaces and ceramics in TP-03 suggest that the material recovered from this area was discarded in a similar context. The salvage units had similar levels of ceramic breakage (as measured by sherds per gram) as TP-03 and TP-04. While the profiles of these units appeared to be similar to that of TP-03, without having excavated the units it is difficult to determine with certainty what types of contexts these vessels came from.

Alternatively, TP-01 had a higher rate of breakage and density of ceramics compared to the other units. The unit also lacked surfaces with flat-lying sherds that

could be as clearly identified as those in TP-03 and TP-04, but did contain an informal pit of accumulated trash that contained the fragmented saddle quern. This evidence suggests that the area of TP-01 was used as a midden, possibly with higher rates of traffic or subsequent plowing resulting in the decreased average sherd size.

Despite the minor differences in the nature of the contexts in TP-01, TP-03 and TP-04, all three units appear to have been areas where domestic refuse was discarded. This suggests that individual households within the community did not take their trash to a communal dump isolated in one part of the settlement interior or outside the town walls. These patterns of waste disposal suggest that the trash excavated in each of the test units is representative of the consumption activities, if not households, located in their vicinity. As I discussed in Chapter 5, there are significant differences in the quality and type of vessels recovered from TP-04 in the west, compared to TP-01 in the north and TP-03 in the south. There are no significant chronological differences between these areas, suggesting that their different consumption patterns were related to changes over time. The most significant difference between these areas is the overwhelming lack of semi-fine ware vessels in TP-04, and a significantly higher frequency of small unrestricted coarse ware vessels. The other two test units had similar frequencies with one another in all vessel-classes, with the exception of large unrestricted coarse-ware vessels being far more common in TP-01. The semi-fine ware vessels found in TP-01 and TP-03 include the standardized BRM form. These vessels have a regional distribution and were likely obtained by the residents of Kamphaeng Saen through regional trade networks. These vessels would indicate an owner's access to, and appreciation for, regional styles of material culture common at other Dvaravati urban centers. The assemblage from TP-04 also includes some vessel types with a regional distribution, but they are all coarse wares and may not have had the same value as the high-fired semi-fine ware vessels. That there are vessels in both categories with similar uses suggests that these differences are related more to wealth or stylistic preference than function.

The differences in the consumption of ceramics between these areas correspond to differing uses of animals as well. TP-01 and TP-03 both contained a mixture of

domesticated and wild fauna, while TP-04 contained abundant wild fauna with the exception of a domesticated dog. Combined with the differences in the ceramic assemblages from each of these units a pattern emerges, in which the consumption activities in the vicinity of TP-04 disproportionately included wild fauna that were hunted or gathered in the moat, river and countryside and ceramics with a more local distribution and possibly lower value. In contrast the remains of the consumption activities in the north and south parts of the site, near TP-01 and TP-03, suggest less of reliance on wild animal resources and a preference for material culture found at other urban centers. Interestingly, of all the units, TP-04 is the farthest removed from sources of fresh water other than the moat. TP-03 and both of the salvage units, all with relatively high frequencies of semi-fine wares, are located in close proximity to the southeast reservoir, the main source of freshwater inside the enclosure. The location of TP-01 just inside the northern gate would have provided individuals in this area with good access to river. The proximity of these areas to freshwater would have made them logical locations for initial settlement at Kamphaeng Saen. The more marginal access to freshwater at TP-04 may have made this a less desirable residential location, occupied by less privileged individuals or only after the other areas were full.

It is tempting to identify each of these areas with different residential groups, but without more substantive evidence of domestic structures we cannot rule out the possibility that these differences may be the result of the types of activities conducted in each area. If the spatial differences in the consumption practices within the settlement are a reflection of the individuals residing in each area, it appears that there were at least two groups with significant differences in identity within the community at Kamphaeng Saen. The residents in the north and south parts of the site appear to have embraced an identity based on urban life and connections with the residents of other Dvaravati centers. Alternatively, the residents in the west part of the site had more limited access to higher quality ceramic vessels obtained through regional markets and a preference for wild foods, suggesting that either by choice or necessity they continued to maintain values and practices associated with life in the countryside.

Regional Dynamics

Kamphaeng Saen and Nakhon Pathom

One of the most intriguing results of our field investigations at Kamphaeng Saen, was the confirmation of Wales's (1969) suspicion that the community prematurely declined prior to the end of the Dvaravati period. As I noted above, this pattern is anomalous among Dvaravati centers with well-documented settlement histories. We identified little evidence at Kamphaeng Saen to explain why the residents would have abandoned the settlement after significant resources had been invested in the construction of its earthwork enclosure and Buddhist monuments. To seek explanations for Kamphaeng Saen's decline, it is useful to examine it as part of a dynamic regional-level urban landscape, with strong interconnections between neighboring centers. In particular, the rise of Kamphaeng Saen's nearest neighboring center, Nakhon Pathom, into a primate urban center did not occur in a vacuum, and had significant impacts on the residents of other centers and its hinterland. One of the most obvious impacts would be the amount of surplus food that would have been needed to be produced in the hinterland, and possibly collected at smaller centers to support Nakhon Pathom's growing population. Additionally, the urbanization of Nakhon Pathom would have presented political, religious and economic opportunities, both real and imagined, that may have drawn immigrants from throughout the region.

Unfortunately, we know little about the timing of Nakhon Pathom's urbanization. Surveys and opportunistic finds of Dvaravati artifacts around Nakhon Pathom indicate that it was not a vacant ceremonial center (Fine Arts Department and Phra Pathom Chedi National Museum 2006; Khunsong, et al. 2011). Khunsong et al.'s (2011) excavation at the Hor-Ek location inside the enclosure at Nakhon Pathom showed that the site was first settled as early as the third century CE; however, it is unclear when the enclosure was constructed or the size of the community during this initial period. Additional excavations like those at Hor-Ek are needed throughout the city to document the density of domestic occupation at Nakhon Pathom and the phases of its growth. Stylistic analyses of the art and architecture at the site date the initial construction

of many of the monuments to the seventh century CE, often with substantial later renovations (Boisselier 1970; Dupont 1959; Nguanphienphak 2009). If the dates for these phases are accurate, they suggest that in the seventh century CE, political and religious elites at Nakhon Pathom commanded adequate resources to build some of the largest and most impressive religious monuments of the Dvaravati period. However, our lack of data on the timing of the urbanization and population growth at Nakhon Pathom makes it difficult to determine if these changes coincided with the construction of religious monuments at the site.

When we view the settlement histories of Nakhon Pathom and Kamphaeng Saen in conjunction with one another, as part of an interconnected regional-level urban landscape, we gain some insights into the changes at each of these centers. In particular, the premature decline of Kamphaeng Saen provides a possible indirect indicator of the growth of Nakhon Pathom. An analogy with astronomy may help to describe this relationship. Due to their gravitational pull, some planets produce fluctuations in the rotation of the stars they orbit. Astronomers are able to detect planets, for which they have no direct evidence, by using a technique called Doppler spectroscopy to identify shifts in the position and radial velocity of the rotation of the planets' parent stars (Struve 1952). Similarly, even though we do not yet have direct evidence of the timing of Nakhon Pathom's growth, the "gravitational pull" of this event may have depopulated Kamphaeng Saen around the mid to late seventh century CE. As the closest settlement to Nakhon Pathom, Kamphaeng Saen's residents may have, either voluntarily or forcibly, migrated to Nakhon Pathom and contributed to its growth. The timing of the emigration from Kamphaeng Saen would also have roughly coincided with the florescence of religious monument construction at Nakhon Pathom. Granted, there are other possible explanations for the population decline at Kamphaeng Saen (e.g., famine, disease, warfare) that could have either decimated the community or provided incentives for the residents to move to Nakhon Pathom. Without any evidence for these events at Kamphaeng Saen, the migration of at least a portion of the community

to a growing Nakhon Pathom provides one of the most convincing and parsimonious explanations for the depopulation of the settlement.

The resettlement of Kamphaeng Saen's residents at Nakhon Pathom would have been facilitated not only by the relatively close proximity of these two centers, but also by the common cultural and religious values that their residents already shared. It is unclear if the construction of the enclosure and religious monuments at Nakhon Pathom dated to before, after or during the migration of residents from Kamphaeng Saen. Regardless of whether Nakhon Pathom's monumental landscape was in place at the time of their arrival, or if they helped to build it, the immigrants from Kamphaeng Saen would have understood the use of an enclosure and the surrounding Buddhist monuments as a physical and sacred landscape that was comprehensible and meaningful to them. Subsequent participation in the worship and renovation of the monuments would have helped to solidify their bonds with existing residents of Nakhon Pathom, as well as its political rulers and monastic community. In addition to similar concepts of space, the use of similar types of standardized ceramics, and possibly the consumption of similar types of food that they contained, would have provided other sources of common identity.

The population growth of Nakhon Pathom was almost certainly not fueled by the relocation of residents from Kamphaeng Saen alone. Immigrants from other Dvaravati centers also probably moved to Nakhon Pathom in search of new opportunities, resulting in individuals from many different settlements and kinship groups living together as part of one community. Like the immigrants from Kamphaeng Saen, individuals from other Dvaravati centers would have found common ground with the residents of Nakhon Pathom based on the shared types of material culture, concepts of urban space, language and cultural practices. These commonalities would have provided them with the basis for a unifying identity despite their lack of kinship or prior community affiliations. Immigrants that arrived from the hinterland, with little prior experience of life in an enclosed Dvaravati center or the spatial logic underlying the configuration of its monumental landscape, likely felt less at home, and may have

formed their own sub-communities within the population of Nakhon Pathom. Overtime, however, their contributions to the renovation of monuments and their lived experience of the urban landscape and culture of Nakhon Pathom would have helped them to develop civic identities connecting them with other members of the community.

Kamphaeng Saen and its hinterland

The ceramic assemblages and faunal remains recovered in the northern and southern parts of Kamphaeng Saen indicated that the individuals discarding material in these areas shared consumption practices with the residents of other urban centers. Alternatively, the material we recovered in the western part of the site showed more of an emphasis on the consumption of resources from the countryside. While we cannot yet conclusively determine that these two patterns of consumption derive from distinct residential groups within the community at Kamphaeng Saen, there is a possibility that some individuals within the community, perhaps those living in the western part of the site, did not identify strongly with urban life. As Kamphaeng Saen was abandoned, it is possible that these individuals chose to return to the hinterland around Kamphaeng Saen rather than relocate to the even larger urban center of Nakhon Pathom. Their decision to do so, however, was likely influenced by significant changes in the urban and political landscape in Central Thailand.

In particular, increases in political control and centralization accompanying the rise of Nakhon Pathom may have created a more stable political environment in central Thailand. As a result, the actual or perceived threats of warfare, which may have originally led residents of dispersed hamlets and villages to congregate in the more easily defended enclosed centers like Kamphaeng Saen, would have either no longer been a concern, or at least decreased to the point of acceptable risk. The installation of Buddhist sculpture, and possible construction or at least renovation of Buddhist monuments, outside the enclosure at Kamphaeng Saen during the later phase of the settlement's occupation suggests that if the enclosure was originally built to in part provide military defense, there was a decreased threat of attack by the late seventh to eighth century CE. For residents of Kamphaeng Saen who had never fully embraced

life in a more densely populated settlement, or had few economic opportunities in an urban center, increased political stability would have provided an opportunity to relocate to the hinterland. Without survey data from the landscape around Kamphaeng Saen we cannot yet evaluate if the decline of Kamphaeng Saen coincided with a rise in the number of villages and hamlets in the surrounding hinterland, which would suggest that some of the center's residents relocated to the countryside.

The regional settlement history and the rise of Nakhon Pathom

The results of the investigations at Kamphaeng Saen provide evidence of demographic shifts in west-central Thailand during the seventh century CE, probably as a result of the growth and urbanization of Nakhon Pathom. In these investigations as well as the survey of other Dvaravati centers presented in Chapter 4, I identified cultural and spatial similarities between Dvaravati centers that would have facilitated immigration and population nucleation at Nakhon Pathom. However, neither of these aspects of Nakhon Pathom's urbanization provides an explanation of why it emerged as a primate urban center over other centers in central Thailand. The absolute dates from Kamphaeng Saen, U-Thong and Nakhon Pathom indicate that the latter two settlements were settled first, sometime in the early first millennium CE. The details of this early phase at both sites are poorly understood, but both centers were clearly integrated into long-distance trade networks. Additionally, U-Thong seems to have served as the center of a small-scale territorial polity (Kanjana-juntorn 2006), and future research at Nakhon Pathom may show that it held a similar position.

In the fifth century CE, Kamphaeng Saen joined these other centers in west-central Thailand. Whether the leaders at Kamphaeng Saen at that time were competitors with the elites at these other sites, or were subservient to the leadership at Nakhon Pathom is unclear. The residents of all three centers used similar types of material culture that they either produced themselves or acquired through local and long-distance exchange networks. Religious practices, writing systems and other cultural influences from South Asia also became increasingly important at these centers. Through a combination of emulation, warfare, and exchange between these

communities, a common system of cultural and religious practices emerged at the centers in west-central Thailand and beyond. The creation of a shared culture between what were probably autonomous polities fits both the peer polity interaction model as described by Renfrew (1986), and Wright's (2005) description of polycentric interaction during the formative phase of many early states. In both of these models, these types of interactions often lead to the centralization of political authority by the leaders of one of the competing centers. The same shared cultural values that would have facilitated the formation of bonds within growing urban populations would have also provided a common set of political and religious symbols to help unite autonomous leaders and their populations under a more centralized political authority. The prominence of Buddhist sculpture and monuments, and the lack of structures or objects explicitly commemorating individual leaders, suggest that the Buddhist monastic community played an important role in legitimizing individual leaders, and provided a common ritual and symbolic language that united the populations of Dvaravati centers.

Sometime during the seventh century CE, leaders at Nakhon Pathom appears to have gained significant influence compared to their competitors in neighboring centers, as population, trade, religious influence and political authority all dramatically increased at the center. The reasons for the shift are not entirely clear, but Nakhon Pathom's location at the interface between the Bay of Bangkok and the rivers leading inland suggests that its role as an important trading center may have provided it with significant advantages over the other centers located further up-river. In a system of poly-centric interaction between competing elites who shared cultural and symbolic values, increased access to foreign exotic goods or religious specialists could have provided an important source of political influence for the leaders at Nakhon Pathom. Access to exotic goods or symbols may have provided these leaders with the resources to curry favor with the leaders at neighboring centers, or support their usurpers, and in so doing expand their political influence in the region. The extent to which this influence translated to direct political control as well is unclear. At some time before the end of the Dvaravati period, Nakhon Pathom emerged at the top of a multi-tiered settlement

hierarchy (Mudar 1999; Chapter 4), which suggests it may have been the capital of a centralized state, or at least the dominant economic center in the region.

Conclusion

At the beginning of Chapter 5, I raised several questions about the organization and function of individual Dvaravati centers, as well as the changing relationships between these centers over time. The results of our research at Kamphaeng Saen suggest that in some ways it may not be representative of other Dvaravati centers. Nonetheless, until we have a better understanding of the range of variability between Dvaravati centers the results from Kamphaeng Saen provide preliminary evidence of what life was like in a mid-sized enclosed settlement in the early Dvaravati period. We found little evidence suggesting that Kamphaeng Saen was functionally specialized, either in the production of a particular craft or other activity, at the community level. Since functionally specialized communities are known from the preceding Late Iron Age (e.g., Khao Sam Kaeo, Noen U-Loke), and in the subsequent historical periods, Kamphaeng Saen likely falls at the minimal end of a spectrum of community specialization. The standardized high-fired vessels found at Kamphaeng Saen and other Dvaravati Centers were probably produced in large workshops and specialized communities. Similarly, the quarry sites in stone mason sites documented in Petchaburi (Indrawooth 2008), suggest the presence of specialized communities there; however, the fact that these specialized production activities were not taking place at the larger enclosed settlements raises the possibility that specialized craft production may have primarily occurred in smaller communities, with larger centers providing a range of trade and administrative services as part of their general function.

Our documentation of the monuments and settlement history at Kamphaeng Saen indicated that the construction of the earthwork enclosure coincided with the initial occupation of the settlement. The nature of preservation at the site and the scale of our excavations did not enable us to evaluate the presence or absence of strong central planning in the configuration of space within the settlement; however, the construction of the enclosure wall and moat at the start of the settlement's

occupation suggests the presence of some preconceptions of spatial order for the center. Additionally, the timing of the earthwork enclosure also suggests that its construction may have been important for building bonds between residents and community leaders who lacked preexisting relationships. The enclosure's construction at the time of the center's founding also suggests that the physical or spiritual protection that it provided may have been one of the primary *raison d'être* of the community. In the political landscape of west-central Thailand during the fifth century CE, warfare among competing polities (e.g., those centered at U-Thong and Nakhon Pathom) was probably common and may have provided the incentive for the formation of a defended community at Kamphaeng Saen.

Even though we were unable to identify evidence of architecture or the configuration of domestic space inside the enclosure at Kamphaeng Saen, we were able to identify significant distinctions between areas that were intentionally left open and those that were inhabited or used as domestic middens. The presence of these open areas within the enclosure confirms the need for caution in using the enclosure area as a measurement of site-size and population. If such open areas were used for the cultivation of crops in the event of a siege, as they were in the roughly contemporaneous enclosed centers in Myanmar, then they provide further evidence of the residents' perception of military threat and the need for defense. The installation of Buddhist sculpture and construction of Buddhist monuments outside the town walls relatively late in the settlement's history suggests that the perception of these threats may have decreased by that time. Such an atmosphere of political stability may have resulted from the emergence of a centralized political authority among the competing peer polities.

In addition to open areas inside the enclosure, we also identified different patterns of consumption in separate parts of the site. Even though we cannot conclusively determine if these different patterns represent separate residential groups, they raise the possibility of the presence of subgroups within the larger community in Kamphaeng Saen. Overall, Dvaravati period material culture is far more homogeneous

than that of the periods that preceded it. However, we cannot emphasize this homogeneity at the cost of overlooking the possibility that there were some differences in the identity of residents within a single community. Such differences would be expected especially if Kamphaeng Saen formed through the nucleation of residents from a diverse set of villages and hamlets. Building common identities and shared values among a diverse group of residents would have posed a challenge to community leaders, and would have made the organization of community-wide projects, such as enclosure construction, all the more important.

The settlement history of Kamphaeng Saen also provides valuable evidence for understanding the effects of urbanization and political centralization in west-central Thailand. In particular, the community's decline after the mid-seventh century CE, indicates that the growth and urbanization of Nakhon Pathom affected a large hinterland. The details of the relationship between these two centers are left to speculation at this time since it is unclear if the population from Kamphaeng Saen relocated to Nakhon Pathom, returned to the countryside or divided to pursue a combination of both strategies. Those residents who might have immigrated to Nakhon Pathom, would have encountered in their new home an urban landscape that incorporated many of the spatial concepts familiar from Kamphaeng Saen on a much larger scale. Together with these spatial similarities, the presence of familiar religious practices, material culture, language and urban-based identities among the existing residents of Nakhon Pathom would have provided the newcomers with common ground for gaining membership in non-kinship based groups such as neighborhood associations or guilds. While these commonalities may have helped them integrate into the community, their prior residence at Kamphaeng Saen may have continued to provide a potent source of identity and formed the basis for a sub-community or residential group within the larger population of the city of Nakhon Pathom.