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WAR BEFORE

ANGKOR

**The Evidential and Theoretical
Context of Warfare in Prehistoric Thailand**

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requirements of the Degree of Master of Arts,

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ABSTRACT

The role of warfare in prehistoric Thai lifeways has been a topic of debate, although no studies have specifically sought to investigate and explain prehistoric warfare in Thailand. Recent advocacy of the heterarchic paradigm has sought to de-emphasise the role of warfare in sociopolitical change. This thesis seeks to develop a regional understanding of structured violence in Thai prehistory by developing a specific preliminary model for military behaviour in a heterarchic milieu.

An overview of definitions and anthropological theory on war is offered, as these issues are crucial to the debate over warfare in prehistoric Thailand. A methodology of military archaeology is developed and utilised to assess the evidence for warfare in the Thai Bronze and Iron Ages. Direct evidence for warfare in the Bronze Age is lacking, while the transition to the Iron Age is concomitant with a variety of changes in military technology and behaviour. There is evidence that warfare was a factor in the social environment of prehistoric Thailand. Though comparative data show that it was not as intense or specialised as that practised by the Dian and Dong Son cultures of northern Southeast Asia.

A nonlinear model is proposed to account for the role of warfare in regionally specific historical hypotheses. The model is designed specifically to allow the construction of testable hypotheses in a heterarchic paradigm.

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James N. Chetwin

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ABBREVIATIONS

AMS	Accelerator Mass Spectrometry.
cm	Centimetre.
FAD	Fine Arts Department, Thailand.
m	Metre.
TL	Thermoluminescence.

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1.

INTRODUCTION

Thoughtful treatments of the other critical variables are long overdue...evidence to evaluate...violent conflict...should be able to be defined beyond minimal reference to warfare.

-White 1995:120, emphasis original.

The impetus for this study, an examination of the nature of warfare in prehistoric Southeast Asia, has flowed from a number of sources. Recent years have seen a number of changes in the study of warfare, but the topic has remained untouched in Southeast Asia since the 1950s. During the 1998 excavations at Noen U-Loke, in which I took part, a burial was unearthed bearing unmistakable signs of violent conflict. A quick and curious survey of the literature later in the year found nothing longer than a paragraph on the topic of warfare in prehistoric Southeast Asia. By contrast, archaeological work in the Americas, where warfare was once denied as a topic of relevance to prehistory (Webster 1998), has generated a vibrant body of literature on military archaeology (see, for example, Haas and Creamer 1993; Hassig 1992; LeBlanc 1999; Redmond 1994a).

Some dissatisfaction with eurocentric models of social development has also been a factor in the development of this study. It is my opinion that many Southeast Asian data fit poorly with traditional models of social evolution (Brumfiel 1995:129; White 1995), and by examining warfare, a variable crucial to many of these models, it is hoped that a clearer regional picture may be established. The heterarchic framework first proposed by Crumley (1995) will be used extensively, not because of any eclectic desire to experiment with a new theory, but because of a demonstrated affinity with archaeological data in Southeast Asia (O'Reilly 1999, nd; Rivett 1999; White 1995). The heterarchic perspective is broadly processualist in outlook, as culture is seen as systemic. As stressed in Rautman (1998) this perspective does not carry any explicit or

implicit evolutionary or empiricist overtones, and the ability of archaeological theory to construct objective fact is denied.

RESEARCH QUESTIONS

The Origins of the Civilisation of Angkor Project (OCAP) was conceived with the aim of shedding light on the development of complex state societies in the Thailand-Cambodia region, culminating in the Angkorian Empire of the late first millennium AD (Higham 2000). OCAP focused on the terminal prehistoric Iron Age of the area, conducting areal excavation at a number of sites. Contrary to the 'Indianisation' model of Coedès (1968) OCAP found strong evidence for the origins of local social stratification in indigenous dynamics, a perspective strongly supported by recent epigraphic research on the Khmer period (Vickery 1998).

Warfare is a commonly cited avenue for the development of social complexity (Carneiro 1970, 1978; Deflem 1999; Webb 1975; Webster 1975; Spencer 1896; cf. Haas 1982), yet the study of pre-Angkorian warfare in Southeast Asia remains untapped. No projects have sought to locate conflict in the socio-cultural landscape of prehistoric Southeast Asia, although a number have, without the benefits of developed definitions or methodologies, made passing comment on aspects of the topic.

This thesis aims to address the lack of military archaeology in ancient Southeast Asia, concentrating on the applicability of the data to models of social development. In the course of this analysis, it will be necessary to build a methodology for the analysis of warfare through archaeology. It is hoped this will be of some utility to future studies in the region, particularly through the detailed examination of warfare in a region with a growing focus on the heterarchy concept (O'Reilly 1999; Rivett 1999; White 1995).

GEOGRAPHICAL AND CHRONOLOGICAL FRAMEWORK

The study focuses on three main regions with a history of archaeological fieldwork. The first, the subject of the primary focus of this research, is modern Thailand, especially the Khorat

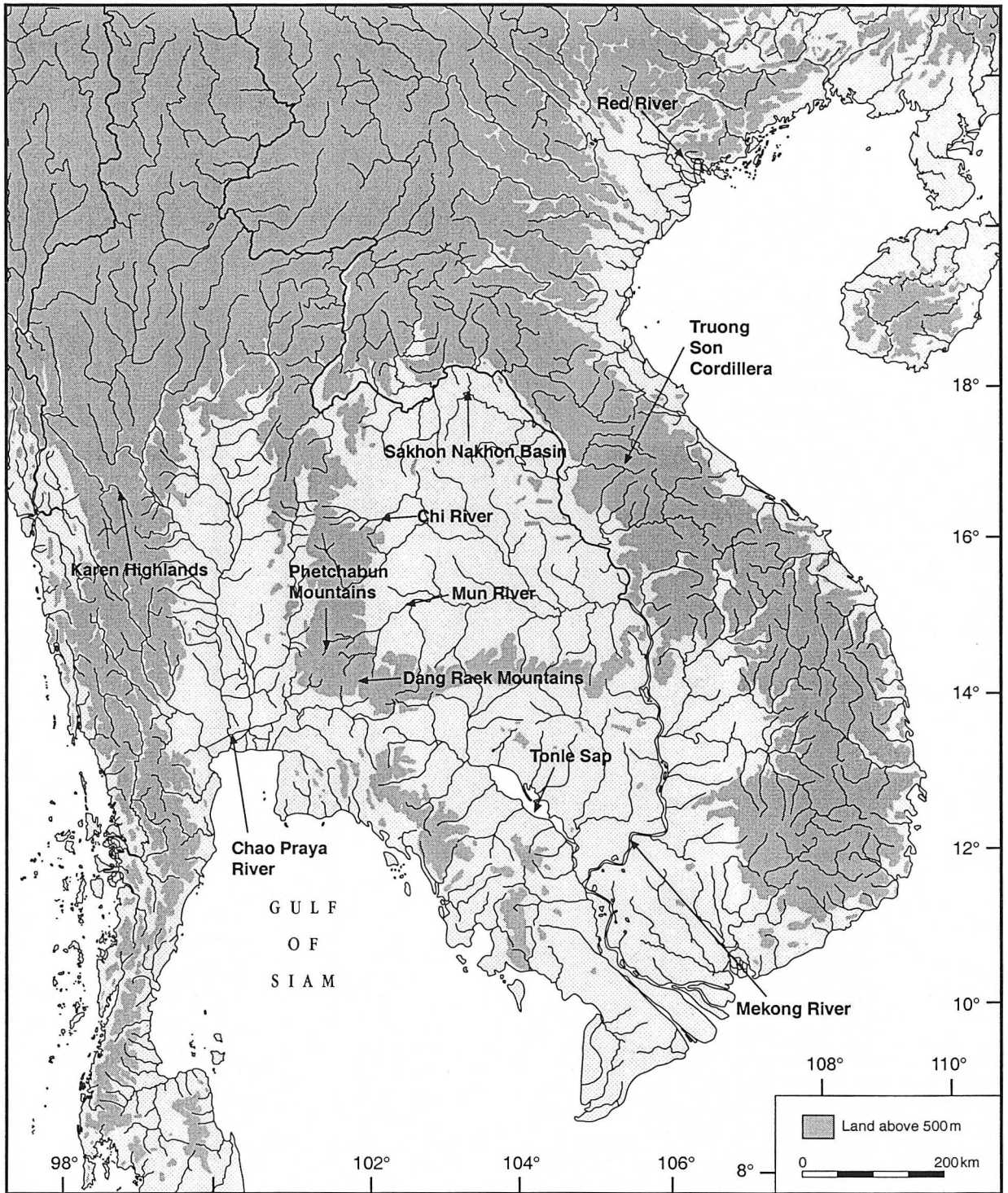
Plateau and the Chao Praya River Valley. Archaeological research in these areas has revealed a long history of occupation associated with mortuary and industrial behaviour. The other two regions, Bac Bo and Yunnan, are included to provide valuable comparative data and to provide a means of examining the nature of prehistoric warfare within the sphere of influence of the Chinese state. In the text the term 'Southeast Asia' is used to refer to the area now covered by the nations of Thailand, Myanmar, Cambodia, Viet Nam and Laos and the Yunnan Plateau of southern China (Higham 1996a)

The chronological focus of the Thai component of this research is based on the prehistoric metal-using period, beginning with the inception of copper-based metallurgy in the mid-second millennium BC and concluding with the inception of state societies in the early first millennium AD. Little relevant data exists outside of this period, and these are most easily dealt with in general discussions. A comparative study will focus on the Dian culture of the Yunnan Plateau and the Dong Son culture of Bac Bo.

THIS IS OUTLINE

This thesis is structured thematically. The first three chapters deal with general theoretical issues, while chapter 4 presents an examination of specific theoretical perspectives in Southeast Asia. Chapter 5 deals with methodology, chapters 6 to 8 are structured according to geographical and chronological boundaries and chapters 9 and 10 provide discussion and conclusions.

Specifically, chapter 2 examines definitions of warfare and a short history of western thought on the topic, while chapter 3 is a more detailed discussion of the nature of models linking warfare and social change. Chapter 4 outlines the methodology of this study, in terms of both pertinent archaeological evidence and analytical models. Chapter 5 comprises a review of the small body of geographically relevant theoretical literature. Chapters 6 and 7 comprise an evaluation of the nature of warfare in the Thai Bronze and Iron Ages, while chapter 8 presents comparative data from Bac Bo and Yunnan. Chapter 9 provides the body of analysis relating



1.1: Geographical map of Southeast Asia, showing principal rivers, bodies of water and mountain ranges.

the findings presented in chapters 6 and 7 with the theoretical models presented earlier. In chapter 10 I present conclusions and my impressions for the future study of warfare in prehistoric Southeast Asia.

2.

**WAR:
THE WORD AND ITS MEANINGS.**

War is a matter of vital importance to the state; a matter of life or death, the road either to survival or to ruin. Hence it is imperative that it be studied thoroughly.

-Sun Tzu, *The Art of War*. (trans Yuan Shibing).

In any part of the western world one may find access to images of warfare and conflict via the mass media. Turn on any news programme presenting the days events around the world and you are almost assured of hearing the word 'war'. The near ubiquity of war as a form of human behaviour is made obvious to us by these reports of its ongoing presence. We hear about civil wars and ethnic conflicts in the former Yugoslavia, guerilla wars in Asia and wars of independence in Africa. We even hear professional sport defined by military metaphor. 'War' and 'warfare' are used in an almost rhetorical sense, assuming that the consumer of the text is fully conversant with the uses and meanings of the words.

From an anthropological perspective, however, we must acknowledge the incredible variety in human behaviour and separate out those behaviours we wish to investigate from those we do not. We must, in other words, provide ourselves with a consistent and useful definition for this word 'war', which we hear bandied about so readily by our media. The terms 'war' and 'warfare' are, in terms of this study, in dire need of such exacting definition.

DEFINITIONS OF WARFARE

Definitions, by their very nature, rely entirely on the inquiry to which they are applied (Dunnell 1971). Therefore the task at hand is to develop a definition of “war” that is a practical aid to an examination of militarism in ancient Southeast Asia.

Warfare is here defined as being the *organised* conflict between *social groups* with the capacity for lethal *violence*.

This definition is a highly open one, in contrast to a number of others which have been used in the study of prehistoric warfare. Important definitions must be assigned to a number of critical terms used in this terminology, in particular the nature of organisation, conflict, social groups and violence.

Organisation is a social factor, derivative of human social interactions. This means that we must account for warfare as being an action (or set of actions) deliberately undertaken by a social group directed toward preconceived goals. The feuding of two individuals cannot be defined as warfare, nor can civil disorder or rioting. Neither of these is organised in terms of their objectives and means of accomplishing them. Premeditation is another organisational factor that must be considered. Spontaneous eruptions of social violence (such as rioting and mass hysteria) cannot be considered warfare. War must be planned and executed accordingly. This implies the existence of defined goals. Thus, terms such as ‘intelligence’ and ‘logistics’ have become inseparable from modern warfare and are instantly recognisable in any collection of military jargon. The existence of the ‘sciences’ of tactics and strategy bears further witness to this indispensable facet of militarism. Organised activity consists of premeditated group action with clearly defined objectives.

The term ‘*social group*’ must be rigorously controlled in this context, lest we fall into the trap of trying to use convenient absolute numbers as labels. We must appreciate that cultural groups are more often than not self-defined. Thus we must accept that this facet of our definition is

contingent largely upon circumstances. War must, to a certain extent, be defined by those who practice it.

The interpretation of the existence and delineation of social groups from archaeological evidence (primarily material culture with a bias towards preservation under the specific conditions of the archaeological record) is a well-known problem. Social groups in prehistory may be defined by many things, material culture being only one. The others may be forever lost to the archaeological record.

Violence is a key factor, as military behaviour is obviously violent. Violence is a product of human aggression, an integral part of the human psyche (Mansfield 1982). Aggression is best defined as “behaviour directed towards causing harm to others” (Hinde 1997:9). Aggression can be divided into two distinct forms: individual and group aggression. Hinde (*ibid.*) cites three causative factors of individual aggression: fear, acquisitiveness, and assertiveness. Group aggression involves additional principles to these alone. In group aggression assertiveness is stressed, as it can result in enhanced status within the group. Violence as a result of group aggression is often accentuated by the anonymity of the individual within the group and the individual’s lack of perceived responsibility for their actions. Group aggression is also affected by the strength of group bonds and the value of symbolic leadership.

What, then, is the role of aggression in war? Hinde states (*ibid.*:11) that “group aggression has some relations to war, [but] war has little to do with individual aggression”. McCauley (1990:18, citing Stouffer *et al.* 1949 and Marshall 1947) cites evidence compiled during interviews with American soldiers in World War II when arguing that aggression plays little part in state level warfare. He argues that the evidence supports the strong role of group bonding between soldiers of the same unit and the comparative weakness of the desire of the interviewees to kill the enemy. Carneiro (1990) presents a different view of ‘chiefdom’ level warfare in Fiji and Mesoamerica. He argues that intergroup hatred was a major factor fuelling individual aggression in these societies and that this intergroup hatred eventually gave rise to a

high rate of cannibalism. It may be that the intensity of intergroup rivalry in 'chiefdom' level societies is far greater than that of states, which would account for the disparity between the findings of Carneiro (1990) and McCauley (1990). It must be remembered that, while aggression may play a part in war, war is not a direct product of aggression. The violence displayed in warfare is not merely the product of a human psychological condition. War is a social behaviour, an institution (Hinde 1997). Aggression may be necessary for war (McCauley 1990:18-9), but is not the sole causative factor.

While warfare may be a social behaviour, it is agreed that aggression and violence are rooted in human neurobiology (Gottesman 1997; Murray 1997; Valzelli 1981). The role of genetic predetermination in human behaviour (the 'nature *versus* nurture' argument) has been a factor in debates over human aggression and violence since the early years of the twentieth century (Kevles 1997). Modern genetics has revolutionised these debates, removing the stigma of eugenics from the study of heredity. Nevertheless, the biological basis of human aggression and violence remains mysterious. As Murray (1997:87) states, "Genes do not directly cause behaviour. Their effect is manifest indirectly through their action on physiological systems". A study commissioned by the Human Genome Project entitled "Genetic Factors in Crime" found no genetic basis for criminal behaviour (Murray 1997), yet the connections between genetic factors and aggression and violence have been widely debated topics of inquiry (Grisolia *et al.* 1997; Hartup and Dewit 1978; Valzelli 1981).

The sociobiological basis for warfare was a dominant factor in anthropological theory in the 1960s (Dawson 1996). These views have fallen out of favour in more modern theoretical formulations as it has become apparent that, while genetic selection and psychological factors may be important, they are insufficient to explain varied (and occasionally exceptionally rapid) differential changes in violent behaviour.

It is also important to consider the level of violence implied by the term 'warfare'. In this definition it must be stressed that the capacity for lethal violence is integral to warfare. While

lethal violence may not always be dealt out (cf. Aztec raiding for the purpose of slaving and the procurement of sacrificial victims [Feidel 1987; Hassig 1992]), it is a general rule that warfare exists for this purpose. The procurement of slaves may be considered as an outcome of war and a reason for going to war, rather than as a mechanism of the phenomenon of warfare. The antagonists in this situation come fully prepared to kill each other, but are prepared to forego this in exchange for financial profit. Even if lethal violence is not used (as in Aztec slave and sacrifice raiding) the threat of such is necessary to ensure that compulsion (to either slavery, relocation or absorption into a new social system) will work.

Definitions of war, by dint of the history of this inquiry, tend toward two schools; the 'open' and 'closed'. The history of this development is presented below. Broadly speaking, 'open' definitions are less concerned with rigidly defining technological or motivational aspects of conflict and concentrate on the more basic features of *violence* and *organisation*. 'Closed' definitions are often explicitly or implicitly used to differentiate 'types' of violent behaviour, such as raiding, feuding, headhunting and warfare. These are less common in modern literature, as these 'types' are more often recognised as different *phases* of the same behaviour (Vayda 1976; Webster 1998).

The definition developed above is an open one, designed to be able to function without the use of an absolute technological or temporal rubicon, and follows a similar pattern to those elaborated by other analysts (Keeley 1996, 1997; LeBlanc 1997, 1999; Maschner and Reedy-Maschner 1998; Webster 1998). McCauley (1990) notes that definitions of war remained relatively constant between participants in the 1967 American Anthropological Association Symposium on Warfare and those of the 1986 School of American Research Advanced Seminar. The definitions proposed by participants in both colloquia follow the same basic form as that I have outlined above.

Modern definitions of warfare tend to rest on similar foundations. As shown above, certain common factors can be isolated between definitions, allowing some measure of comparability

between analysts. This is especially important from the point of view of the archaeologist, as analytical frameworks can be built up in order to relate archaeological data to the theoretical basis of the definition. Definitions of warfare in academia have not always been so consistent, however.

A HISTORY OF ANTHROPOLOGICAL THOUGHT ON WAR

A short history of thought into *pre-modern* warfare and its nature has been compiled below. The term *pre-modern* has been used here in order to define that warfare practiced by peoples using both pre-state social organisation and by those states that developed in a fashion independent of post-industrial European influence. Thus, the term *pre-industrial* could also be used in this sense. Many authors cited below have used the term *pre-state* in their discussions. In order not to cause confusion in later parts of this thesis, which will deal briefly with state level societies in Southeast Asia, I have declined to use this term. I also wish to avoid a falsely rigid demarcation between the state and pre-state period in Southeast Asia, as the transition between these periods is subject to analysis in this thesis. The use of the term *pre-modern* is necessary because there is neither the space nor intent here to devote large amounts of effort to an assessment of the copious quantities of writing on modern state level warfare (see Keeley 1996:4 for a comparison along these lines). The following review is unashamedly that of western anthropological thought and its antecedents. While the history of eastern thought on warfare, beginning with Sun Tzu, is long and distinguished, it has dealt in the main with practical and political aspects of warfare, with little time spent on an examination of the nature and underlying causes. It is also important to realise that a summary such as this can only touch in broad themes and must, of necessity, only refer to a selected few authors and their works. Most modern authors cited below have compiled extensive reference lists as part of their works.

The first western thinker to examine war in a critical sense was the English philosopher Thomas Hobbes. Hobbes, in his *Leviathan* (1651), concluded that the natural condition of humanity, its 'primitive state', was a state of continual violence and "continual fear and danger of violent death" (Hobbes 1958:107). He proposed that the route out of this horrific existence

was through the establishment of ‘covenants’ (essentially the investment of power in a hierarchy). This social stratification saw a mediation of the violent anarchy of the stateless society. Hobbes did not believe that the arrival of civilisation abolished war, but rather that it relegated war from its previous position as the dominant experience of the human condition. He argued that war was a social condition, and did not detract from the equality of all human beings (his reasoning used to arrive at the conclusion that all ‘men’ are equal was that no human existed that could not be overcome by the “confederacy of others” [Hobbes 1958:105]).

The reply to Hobbes’s theories came from the French philosopher Jean-Jacques Rousseau (Masters 1964; Rousseau 1982) who argued that the natural state of a human being was a state in which the intellect was subordinate to the compassionate nature of the human psyche. He saw this compassion falling victim, however, to the evils of modernity and industrialism, creating the humanity we know today. By contrast to our modern lives, Rousseau’s now famous ‘noble savage’ lived in a world of primitive equality, where all were equal and treated each other with gentility. Rousseau saw the primitive era of man as an age when all social constructions had yet to be implemented, and humanity lived in a culture free from sexual jealousy, imagination, even morals (Rousseau 1982:70). He concluded that primitive ‘man’ was “an equal stranger to war and all ties” (*ibid.*:72). The downfall of this utopia came when “The first man, having enclosed a piece of ground, bethought himself of saying ‘this is mine’” (*ibid.*:76). This nascent possessiveness laid the foundation for the rise of such arts as metallurgy and agriculture, and eventually led to the organisation of humans into social groups. As these societies grew in size, the compassion of the individual was subsumed and the pitiless, faceless state tore down Rousseau’s peaceful ‘golden age’.

It is hardly surprising that the Hobbesian model found acceptance in the minds of the European colonial powers of the early modern age. The self-legitimation provided by an ideology of Hobbesian primitive savagery proved an ideal intellectual background for Europe’s colonial expansion. Rousseau’s theories found some acceptance, but continually suffered from the

eyewitness reports brought back from explorers coming into contact with the indigenous inhabitants of America, Africa and Oceania for the first time (Keeley 1996).

In the early years of the twentieth century the concept of ethnography drew the social scientists of Europe into the societies they wished to study. The principles of participant observation and full sustained participation in the studied groups activities brought European academics out their “armchairs” (Keeley 1996:8). The emergence of a more rigorous field method in social science saw a recognition of the extremes at which Rousseau and Hobbes had placed themselves.

Malinowski (1941), writing during the period in which the second World War began to affect America, rigorously states his opposition to the extreme forms of both the Hobbesian and Rousseauian positions. Malinowski was one of the first theorists to point to the motivational differences between ‘primitive war’, as practised by pre-industrial peoples, and modern war. His definition of warfare reads: “war [is] an armed contest between two independent political units, by means of organised military force, in the pursuit of a tribal or national policy” (Malinowski 1941:523). His insistence on the use of the term ‘policy’ shadows Clausewitz to some extent, and here lies the root of a very difficult problem in warfare theory. Of most interest in Malinowski’s definition is his insistence that warfare must be politically significant to be truly warfare. This position lies at the root of a widespread anthropological theoretical concept: ‘primitive war’. This concept, most amply described by Turney-High (1971) and Wright (1965), I have taken issue with above and will further below.

Keeley (1996:8) notes that many early ethnographers, despite their best intentions, found themselves in contact with peoples who had been “pacified” by western colonial administration. Thus verification of their precolonial military practices was nearly impossible. Keeley, and Keegan (1993) both indicate that ethnohistoric accounts of warfare rarely give full descriptions of the horror and pain of war, concentrating on the noble, glorified aspects of combat. Keeley (1996) argues that the reports of these ethnographers (when they were in a position to provide first-hand reports of war amongst colonised peoples) concentrated on pitched battles, thus

ignoring other aspects of warfare in these societies, such as raids, massacres and ambushes. Keeley extends this observation to argue that it was these (inaccurate) reports that gave rise to the concept of 'primitive war', whereby precolonial (and hence, by induction, prehistoric) warfare had a different character to modern warfare. Primitive war is thus characterised by being extensively ritualised, psychologically motivated, tightly socially controlled (more realistically seen as a component of *all* warfare), and, above all, limited in its lethality. This concept, the victim of a sustained and well-compiled attack by Keeley (1996), is still a powerful theoretical concept in the study of prehistoric warfare (Dawson 1996; O'Connell 1995). 'Primitive war' became the standard theoretical framework for pre-modern warfare with the first publication, in the 1940's, of Wright's 'A Study of War' (1965) and Turney-High's 'Primitive War: Its Practice and Concepts' (1971).

Wright was a professor of law, and his work preserves some of the character of a legal document. He divided warfare into four types, 'animal', 'primitive', 'civilised', and 'modern'. His views on primitive war are archetypal: "war as a legitimate instrument for plunder and conquest was little known among primitive peoples" (Wright 1965:36). Wright's version of the primitive war concept suffers from an inability to differentiate finer grades of social organisation below that of a state. He gives no reference to the now-common terms of band, segmentary society (tribe), and chiefdom, and thus refers simply to 'primitives'. He asserts that specialist weaponry (and the specialists who use such) are only found in states: "the [primitive] warrior is merely a hunter, for the moment hunting other men" (*ibid.*:81). He also argues that pre-state societies "only rarely conduct formal hostilities with the object of achieving a tangible economic or political result" (*ibid.*:58). In other words, primitive war is psychologically motivated, with the concepts of revenge, hatred and difference being paramount. Primitive war, according to Wright, is not a pragmatic endeavour. Wright also describes the 'drives' of war, the motives that fuel violent conflict. These are food, sex, territory, activity, self preservation, dominance, society, and independence. Of these, he states that territory, dominance, and independence were unknown factors in primitive warfare. He states that (*ibid.*:76) "all primitive peoples live in defined territories", while dominance "hardly exists among primitives"

(*ibid.*:77) and thus wars of independence were “unknown because slavery, subjugation and class stratification are unknown” (*ibid.*:78). Wright’s view of pre-modern life is that of a fixed, ahierarchical, ritualistic, ahistorical social condition. While making much of the ritual aspects of primitive warfare, Wright (*ibid.*:85) also acknowledges the role of ambush and guerilla tactics, but states that these strategies were less common than the pitched battle. He also states (*ibid.*:85) that “primitive life...is guided by inflexible custom, and fighting techniques are no exception”, while at the same time acknowledging the rapid adoption of the horse and gun by native Americans. As a final comment on the ‘inflexibility’ of ‘primitives’ it is interesting to recount a story (cited in Keeley 1996:79) told by a German ethnographer who flew his biplane into a remote village in Irian Jaya. When the chief of the village asked for a ride, the ethnographer complied. During the flight the chief asked if he might fly again later, this time bringing a few large rocks with him to drop on an enemy village. Given the speed (or lack thereof) with which European governments adapted aircraft to bombing roles, we should be very sceptical of the ‘inflexibility’ of pre-state peoples.

Turney-High was a military thinker with practical experience in military matters. His thesis surrounding pre-state warfare is similar to that developed by Wright, even though the two authors never acknowledged each others work. Turney-High developed a series of fourteen ‘principles’ that he claimed were the absolute truth of warfare. These principles (such as ‘The Principle of the Offensive’, ‘The Principle of Fire and Movement’ *etcetera.*) Turney-High elevated these to the status of infallible science, claiming (1971:xv) “warfare is man’s oldest and most successful social science. War is the first social science to become totally scientific, for it is the practice of which has been reduced to a few simple principles that are true without regard to time or place”. Turney-High spends most of his time elaborating on these principles, with many examples drawn from the writings of those who had observed the ancient Celts of the classical period, the native Indians of North America, and the peoples of Oceania. Nevertheless, he clearly judges any reports of the military practices of non-western societies against the yardstick of post-World War II western forces. He never clearly develops a definition of war, and derides ‘primitive’ conflicts as not truly warlike because of their

preoccupation with ritual and their failure to observe *all* of his principles. He writes firmly from within a western tradition of military thinking that places the role of tightly formed troop formations at the bulwark of military success, a trend inherited from ancient Greece (Hanson 1989). In this regard Turney-High (1971:27-8) makes the following comment: "Reduced to the essence of simplicity, military organisation consists of the column and the line. Those people who do not avail themselves of these two simple sociologic devices are below the military threshold without doubt". One is forced to wonder what Turney-High would have made of Viet Cong guerrilla warfare had he been placed in the jungles of Viet Nam. He does, however, stress two important issues, the important place of warfare in the broader social context in which it belongs, and the importance of logistics (often a less developed phenomenon in pre-state societies).

Turney-High's book, judgemental, absolutist and eurocentric as it is, remains today one of the only comprehensive works on pre-modern warfare. Thus, although clearly in need of comprehensive revision, it remains a basic text.

In the 1960s and 1970s new theoretical frameworks came to the fore. Sociobiology, on the one hand, sought to relate recent advances in evolutionary theory to the social evolution of both animals and humans (Dawson 1996; Keeley 1996). Sociobiological theorists argued that aggressive behaviour and a capacity for organised violence were adaptively advantageous (Scott 1974), allowing groups or individuals so inclined more reproductive success, greater chances for success in hunting and better chances for the control of resources. This theory received much support from advances in primate research which indicated that many primate populations conducted intraspecific organised violence (*ibid.*). Many scholars decried sociobiology as a new form of determinist social Darwinism, and strove to formulate new theories that placed warfare in a purely social context. These theories posited that warfare was a functional social response to environmental conditions such as the redistribution of a burgeoning local population. This, of course, implies that absence of environmental constraints means an absence of warfare, thus defining a state of war as being an abnormal condition (Keeley 1996). This model also enabled

the concept of 'primitive war' expounded by Wright and Turney-High to become an important hypothesis (Dawson 1996). As warfare is a response to environmental conditions, then it is maladaptive to kill or incapacitate members of the population if there is any other alternative available. Thus it is consistent that warfare *could* be extensively ritualised and made less lethal in order to retain its functional aspects while minimising deaths and the destruction of property. While sociobiology has few adherents in modern academic discourse, due perhaps to the unpleasant political associations of its theoretical forebears, social Darwinism and eugenic theory, cultural materialist syntheses remain a fundamental part of conflict theory in modern anthropology (Ferguson 1990; Robarchek 1990).

Ferguson's (1990) synthesis "Explaining War", while unashamedly operating within a cultural materialist framework, highlights several more modern issues. He cites the causal nature of social infrastructure (in many ways echoing Turney-High) in relation to structural factors such as kinship patterns, systems of production, and environment. True to the cultural materialist perspective, he infers that war is the abnormal condition in the human experience, brought on by pressure on critical resources, and the failure of other social systems to deal with the problem. As soon as the pressure ceases, the war ends. Ferguson (1992) proposes that changes in the social and natural environment of ethnographically attested pre-state societies (the source of many ethnographic and ethnoarchaeological treatments of pre-state war) were brought about by contact with European ideas, goods and diseases. He posits that the war complexes recorded by early western scholars among pre-state peoples were the product of a set of circumstances altered by the proximity of European technologies and ideologies. He stops short of restating the Rousseauian ideal of the 'peaceful savage', but infers that the precontact behaviour of indigenous peoples was more peaceful than that ethnographically recorded.

The most extensive critique of the hypothesis of the 'peaceful native', either in its strong form in Rousseau's *Discourses* or in a markedly weaker form in Ferguson (1992), has come in the form of Keeley's (1996) *War before Civilisation*. Keeley thoroughly criticises the concept of 'primitive war', demonstrating that modern war is just as socially circumscribed as its pre-state

counterpart, and that 'primitive war' as espoused by Wright and Turney-High, could be just as dangerous, brutal, and socially demanding as modern warfare. As he labels Ferguson as a 'neo-Rousseauist', he could be considered the 'neo-Hobbesian' of modern scholars. Nevertheless, Keeley's point is well made and well researched. He shows that 'primitive war' (which, in the light of his study, deserves to be divorced from the label) lacks only modern logistics and tactical support, and that in many historical instances pre-state military techniques were shown to be superior to the armies and tactics of the colonial powers. Warfare, Keeley argues, has been a part of humanity's cultural inventory since at least the Neolithic (and most likely well before), but has been misrepresented by a tendency to 'pacify of the past' on the part of archaeologists, who have tended to opt for interpretations that "ignore the bellicosely obvious for the peacefully arcane" (Keeley 1996:20; see also LeBlanc 1999:x). He shows that violence can be shown to be as prevalent in pre-state societies as in modern states (cf. Eibl-Eibesfeldt 1974), and that war seems to have been just as serious and dangerous to pre-state peoples. He criticises Ferguson's ideas of contact-inspired warfare by noting the different ways in which native American peoples responded to the introduction of firearms and horses: the Ute and Comanche became gun-armed mounted warriors, while the "Digger" Indians became even more abjectly peaceful (see also Bamforth 1994).

Ferguson's ideas are important for this thesis because of the obvious Indian influence in prehistoric Southeast Asia (Coedès 1968; Higham 1989), but Keeley forces us (among others, cf. Higham 1989; Robarchek 1990) to recognize that such external influences are subject to negotiation and differential acceptance within the societies under such influence. Keeley's book raises important issues, demonstrating how archaeology is constructed, and how data are direct products of specific analytical frameworks.

Dawson (1996), in his commentary on pre-state warfare, occupies a middle ground between Ferguson and Keeley. He argues that warfare must be viewed as a historical phenomenon, and cannot be divorced from its essential context. This point is echoed by Keeley, especially in regard to archaeological evidence. Dawson describes the essential realisation of warfare as a part

of culture: a nearly infinitely malleable entity, a set of changing symbols subject to individual interpretation and negotiation (cf. Robarchek 1990). Dawson (1996:27) also concedes Ferguson's point about ethnographic reports of warfare, stating that "we should admit that we simply do not know what the 'normal' degree of warlikeness was among pre-state societies". His point is cogent, as the archaeological record is notoriously ephemeral and sometimes opaque whereas ethnographic reports are subject to a 'cultural Heisenberg principle', whereby the mere presence of the ethnographer is indicative of cultural contacts that may have altered that which the ethnographer wishes to investigate.

Both Dawson and Keeley are correct to point out, each in their own way, that pre-state war, much as modern war, is a continuum, with highly ritualised social statements such as ritual formal battles, prisoner of war exchanges and formal treaties at one end and raids, assassinations, and ambushes at the other (Vayda 1976). Different aspects of this continuum, taken out of their wider context, both social and historical, account for the many differing reports of pre-state warfare. Archaeology, by its very nature, has access to a different body of evidence to ethnography, yet must deal with this very same issue.

Robarchek (1990) uses a report of his own ethnographic experiences with the Semai in highland Malaysia to highlight the role of the individual in conflict genesis and resolution. He criticises both the schools of sociobiology and cultural materialism as rooting "the ultimate causes of human behaviour are in the material world ...or genes", fueling an anthropological focus that leaves little room for human decision making. Robarchek (*ibid.*:63) develops a model whereby "people are conceived as active participants in their own destinies, goal directed decision makers in pursuit of particular goals and objectives. They pick their way through fields of options and constraints, many of which are biologically and environmentally conditioned". He criticises archaeology as "banishing individuality from the realm of science" (1990:69) by a materialist discourse that presumes, by the very nature of its theoretical framework, that only materialist causes are relevant. Nevertheless, it is important to realise that this is in many ways

the nature of archaeology. Non-material phenomena do not survive in the archaeological record unless committed to material preservation as an alphabet may be carved on stone.

Chagnon (1990) has developed, over a long academic discourse with Ferguson, an alternative to the materialist view of warfare. Noting the lack of materialist motivations toward war in tribal and band societies, Chagnon draws on Darwinian theory and proposes that reproductive and somatic advantages may accrue to individuals participating in warlike behaviour. He illustrates this point by reference to his now famous study of the Yanomamö of the Brazilian/Venezuelan border (Chagnon 1968). In particular he notes that individuals shown to be aggressive in their dealings with others had a greater likelihood of having more wives and children. In a general sense Chagnon's appeal to Darwinian selection seems eminently logical. It seems obvious that a society with an enhanced warfare ability (for whatever reason) will stand a better chance of survival and growth. From there it is a simple step to the inclusion of the famously voiced sentiment: "The best defence is a good offense". Chagnon realises, however, that materialist causes cannot be entirely replaced by this appeal to evolutionary biology, rather they must be combined to form a coherent explanatory framework for the place of warfare in changing social dynamics.

To this point we have established a definition of warfare and looked briefly into the history of thought behind this definition. We have examined the way in which analysts have changed their outlook on war, and now we must ask "what does this mean?" We must examine how these theoretical formulations are placed in the broader framework of human culture, particularly as they are applicable to the study of ancient Southeast Asia. As Keeley (1996) has pointed out, some prehistorians have relegated the role of warfare in prehistory to that of a minimal 'last-option' behaviour. Nevertheless, the anthropological and archaeological literature contains many models for human social development in which warfare is a major feature (Carneiro 1970; Webb 1975; Webster 1975; see also Haas 1990b). The next task of this thesis will be to examine these models, in order to establish a working hypothesis for the place of warfare in its broader social context in ancient Southeast Asia.

3.

**TRIBES, EMPIRES AND ORIGINS:
THE SOCIAL CONTEXT OF WARFARE.**

War is not the continuation of policy by other means. The world would be a simpler place if this dictum of Clausewitz's were true.

-Keegan 1993:3.

Culture is the prime adaptive mechanism of the human species, a system of individually selected, conditioned and transmitted options and responses operating in a changing and evolving matrix of human interactions. The central concern of this chapter is the question: what place does warfare have in this system? The answer is crucial to our understanding of human interaction. This topic, addressed in this chapter, will form a higher level background for the next chapter, where the methodology of military archaeology is explicitly developed.

SOCIAL EVOLUTIONARY MODELS

This field concerns the issue of 'social evolution', a term with loaded meanings. Although 'social evolution' obviously owes much to the biological concept, it is clearly very different. Cohen (1978a:18) uses a delightfully simple definition for evolution in a cultural sense: "descent with modification". Although this may seem overly simple, it has the distinct advantage of being divorced from inappropriate biological terminology. The model of cultural evolution used here has become commonly used in modern anthropology, and can almost be regarded as being a 'standard' of the discipline. The first detailed outline of the model can be found in the writings of Service (1962) and has taken his name, while undergoing continual revision and denial in contemporary literature (Braun and Plog 1982; Haas 1982).

Service's model for human social organisation recognises four basic types of human society: bands, tribes, chiefdoms, and states.

Bands are small egalitarian groups, with no inherited status, often mobile and practising a hunting and gathering economy. Kin groups are the main unifying force of the band, to borrow Service's (1962:109) terminology, the structure of bands is "familistic".

The tribe, also referred to as the segmentary society, operates on a different order to that of the band. Service (1962:111) states "The ties that bind a tribe are different from those of bands". He proposes that the higher levels of consistent productivity associated with a neolithic economy (often, but not always the economic foundation of a tribe) provided an opportunity for much higher population densities. Status in tribal societies is not inherited, nor is there a chiefly authority. Rather, "the tribe is largely self-regulating" (*ibid.*:114). Tribal societies recognise sociocentric as well as egocentric status. Usually takes the form of a more complex system than kinship but is still based on kinship criteria. Tribes are egalitarian and sociocentric and status is horizontal, not vertical. Vertical status, especially that inherited from one's forebears, is a feature of the next societal 'type', the chiefdom. Haas (1990a:172) defines the tribe as a "bounded network of communities united by social and political ties and generally sharing the same language, ideology and material culture. [They] are economically autonomous and there is no centralised political hierarchy".

Chiefdoms are the first truly stratified society in the evolutionary spectrum. The chiefdom is an organised, hierarchical society with far greater productivity than a tribe. The economic systems associated with chiefdoms rely on *specialisation* and *redistribution* with a permanent central agency controlling and regulating the production of specialists attached to a central figure of authority, the chief. The position of chief is hereditary within one lineage and status is reckoned by sanguinal distance from the chief. Chiefdoms have a concept of aristocracy, and thus conceptual class, but no true economic class divisions. It is expected that religion will become more institutionalised in chiefdoms, and come to be associated with the ruling lineage.

The fourth node in the continuum of social evolution is the state, the polity that has come to dominate the modern world. States are large, complex societies with clear economic and status hierarchies. Religion and warfare are legitimated by élite control and bureaucratic government carries out the wishes of the ruler, whatever individual or institution that may be. Economic class systems are a hallmark of state societies, as are massive public works projects, writing, monumental architecture, and, of clear importance to this study, large, complex military operations.

These notes are not meant to be considered as definitions of these types of human social organisation. Rather, I have attempted to provide a basic list of traits associated with each stage.

Most models proposed to account for specific changes in social organisation within the Servician model of social evolution work within a broadly similar framework. They posit that certain agents are active in such a way as to engender movement within the Servician continuum. Agents may act in concert and may be related by complex social and environmental variables. These agents vary widely between the works of different authors. For example, Wittfogel's (1957) 'hydraulic hypothesis' focuses on the integrative potential of an élite whose power rests on control of irrigation systems, while Engels (1891) made famous the doctrine of class struggle.

Ethnohistoric accounts from Madagascar and Malawi (Alpers 1969; Bloch 1977) show that entrepreneurial individuals can take advantage of favourable situations and precipitate wide social changes. It is important to note that this is not an equilibrium model, presupposing that no changes will take place in the absence of a specific agent. Rather, most models appeal to a 'trigger' agent, set of agents, or set of interactions between agents.

Warfare may appear in this theoretical context either as an agent itself, or as the result of social changes engendered by other agents. Inquiry into the first instance has a long history. Most of

these theories are implicitly placed within the Servician framework. I have cited and assessed them without specific reference to the pitfalls of this framework, which are addressed below

Spencer (Spencer 1896; Haas 1982) is regarded as the first to propose the primacy of warfare as an explanatory framework for the rise of civilisation. He wrote within a Darwinian framework and viewed culture as an organic entity, a system of “specialised and interrelated parts” (Haas 1982:59). Spencer saw two ways in which warfare could spark the rise of complex societies: through internal modification or exploitation of captured slaves. In the first instance, he argued that conditions of endemic warfare in the past provided a selective advantage to those groups able to develop a hierarchic organisation capable of efficient military functions. By bringing together dispersed subgroups under the one leadership structure, initially composed of war leaders selected by merit, the group was able slowly to foster a hereditary élite, providing enhanced specialisation of labour as well as military advantages. Spencer saw this as an avenue of increasing specialisation bought about by the integrative advantages of strong leadership, especially in warfare. Spencer also argues that warfare can be an exploitative system. He proposes that the taking of slaves during the course of warfare could lead to the existence of a slave class, and that the taking of slaves could soon come to be the *raison d’être* of military behaviour. The taking of slaves would soon be altered into the taking of land, giving rise to true conquest.

Carneiro (1978) sets out a model that appeals to warfare in an effort to account for the emergence of chiefdoms (and, by similar processes, states) in prehistory. He acknowledges a basic trend in human societies: a “decrease in the number of autonomous political units and an increase in their size” (1978:206) since the Neolithic. This, he argues, runs counter to an ethnographically demonstrated pattern of village behaviour, whereby villages are known to split when demographic conditions are unfavourable. Thus Carneiro indicates that some specific mechanism must have existed to amalgamate villages when their natural tendency is to fission. According to Carneiro’s model, the circumscribed existence of good quality agricultural land was a major factor. Competition for this critical resource was such that violent confrontations

were inevitable (by an adaptation of the biological 'principle of competitive exclusion') and that a strategy of retreat from violent neighbours (the traditional recourse of mobile hunters and gatherers) was no longer possible. Neolithic economies and lifeways were tied to the land, and, due to the scarcity of that land, could not simply be relocated. The outcome of this situation, according to this model, was the subjugation of the defeated by the victors and the creation of a subordinate population. This in turn allowed the inception of an exploitative taxation system and thus surplus controlled by the victors, thereby encouraging a repeat of the loop and further investment of energy in warlike behaviour. Both Haas (1982) and Maschner and Reedy-Maschner (1998) cite evidence contrary to this model, however. Haas finds contrary evidence in surveys of Peruvian montane valleys, which seem to indicate that circumscribed areas were not unified in the fashion Carneiro would expect. Maschner and Reedy-Maschner (1998:24) simply argue that "warfare seldom results in any change in territory or access to critical food resources in village-based societies".

Webb (1975) has developed a model for state formation that, while based on Carneiro's model of social circumscription, adds a crucial variable to the consideration: trade and exchange. In an effort to explain why some circumscribed areas with limited resources did not develop beyond tribal societies, Webb proposes that trade is a crucial variable. Trade and exchange with extra-regional sources of either important resources or socially valuable prestige goods allows the individual accumulation of wealth outside of traditional systems. In the context of Carneiro's model, access to trade routes and sources of supply become circumscribed. In Webb's model social stratification is a product of the control exercised by war leaders responsible for the acquisition of circumscribed resources. Thus, the war leader becomes a king.

Webster (1975), like Webb, develops a model based upon that of Carneiro, although considerably more complex than its antecedent. Webster begins by noting that many areas of primary state formation do not comply precisely with Carneiro's idea of a circumscribed environment. He also questions the applicability of Carneiro's argument to areas such as Polynesia, where circumscribed island environments produced no more complex societies than

highly developed chiefdoms. Webster argues that chiefdom societies are limited in terms of social evolution. Their incipient wealth systems, ranking, and differential consumption are features that are developed more fully in states, but the kinship structure of chiefdoms limits the evolutionary significance of these factors. The redistributive system of chiefdoms has internal limits. To increase the output of the system the chief must place further demands on his own supporters, thus increasing the possibility of alienation. Moreover, chiefdoms usually have rival lineages willing to compete for the dominant position, rendering the possibility of alienated followers politically dangerous. Webster (1975:467) suggests that under certain conditions warfare may provide an avenue of opportunity for chiefs to increase their power without the disadvantages of redistributive input. Warfare allows circumscribed populations to increase their access to basic resources. In the context of competing chiefdoms, Webster argues that warfare cannot be considered to be a prime causal factor in social evolution. Rather, the constant condition of war provides an environment conducive to the emergence and strengthening of authority external to the traditional kin-based systems of the chiefdom. Endemic warfare selects for strong leadership and disempowers social restraints against the further emergence of central authority. Webster (1975:469) states that warfare “facilitated the emergence and survival of privileged managerial groups” and “provided the supportive climate which initially ensured the survival and /or intensification of fragile political and economic systems”.

ALTERNATIVES TO THE EVOLUTIONARY PARADIGM

The typological, functional basis of Servicean theory has found many authors critical of its “umbrella types” (Ensor 2000:15). More modern theorists have stressed the search for explanations of social change within specific historical contexts; “individual action and power negotiation in response to conflict now are seen as causes for social change” (Kantner 1996:15). These are clearly valid responses to the “railroading epistemology of social evolutionism” (*ibid*). McIntosh (1999) points out further inconsistencies within the evolutionist framework, including the political overtones surrounding the terms ‘tribe’ and ‘chief’, the roots of most classificatory schema for ‘chiefdoms’ in Polynesian examples, and the often-unadulterated echoes of Morgan, Spencer, Marx and Durkheim. She calls for new perspectives to “broaden

archaeology's focus beyond preoccupation with the development of vertical control hierarchies" (McIntosh 1999:1; see also Crumley 1995; McGuire and Saitta 1996).

Kantner (1996) proposes that more modern evolutionary theory, specifically game theory, may be a useful avenue to understanding the development of social complexity in the U.S.

Southwest. This 'methodological individualism' approach holds the structure and behaviour of groups a direct result of the actions of individual members. Thus game theory, rooted in microeconomics and the reproduction of an 'evolutionarily stable strategy', is an example of the reapplication of the minutiae of evolutionary theory to archaeology, albeit in a markedly different fashion to that of Service. Ensor (2000), in a more recent treatment of the U.S. Southwest, prefers a model rooted in an appreciation of *production*, an outlook developed from structural marxist explanations. McGuire and Saitta (1996; cf. Rautman 1998; Saitta and McGuire 1998) have developed a dialectic model for social organisation in the same region.

HETERARCHY

White (1995) and O'Reilly (1999) have advocated a 'heterarchical' outlook on Southeast Asian prehistory. The concept of heterarchy, developed by Crumley (1995) from models of neural organisation, recognises structural relationships in human social organisation that differ from the explicitly hierarchical. Heterarchy has been defined as (Crumley 1995:3) "the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways". Brumfiel (1995:125), reviewing contributions to Ehrenreich, Crumley and Levy (1995), proposes that

heterarchy includes a number of different structural forms: an array of independent, homogenous elements...; the membership of elements in many different unranked interaction systems with participation in each system determined by the needs of the element...; the membership of elements in many different systems of ranking where the same element occupies a different rank in the different systems...; the existence of two or

more functionally discrete but unranked systems that interact as equals...;
the existence of two or more discrete hierarchies that interact as equals.

The heterarchic perspective favours a systemic view of culture, and has been criticised as being explicitly processual (Saitta and McGuire 1998; cf. Rautman 1998). Heterarchy does involve a different view of culture than individualistic theory such as dialectics (McGuire and Saitta 1996) or game theory (Kantner 1996), but this is due to a different focus and does not significantly weaken the heterarchic paradigm. White (1995) has convincingly argued that both prehistoric and historic societies in Southeast Asia are strongly marked by heterarchic patterns. Both O'Reilly (1999, nd) and Rivett (1999) have affirmed this in studies of mortuary practices and community structure, respectively. As the heterarchic perspective has proved so useful to the study of Southeast Asian prehistory, I will utilise it in this study.

The tendency to move away from generalisation toward a dynamic theory focused on conflict between faction, gender and class in ancient societies (Brumfiel and Fox 1994; Ensor 2000; Kantner 1996) requires us to re-evaluate many warfare models. Those presented above are mostly rooted in the unilineal evolutionary framework provided by Service and others. Few explicit models for warfare have been evolved in the context of more modern theories of social development, a task which this thesis will endeavour in chapter 9.

The intention of the previous two chapters has been to shed some light on the specifics of warfare in human society. Warfare is a complex phenomenon that, while common to most human groups since the Neolithic, is structured by the intense variety of human experience and develops within its basic parameters into a system as fickle as human culture itself.

While the many explanations for the social context of warfare outlined above have been foundations of the study of prehistoric conflict, this thesis proposes to develop and test a model for warfare beginning with a theoretical perspective and then test it against explicitly Southeast Asian data. The need for this approach is best demonstrated by a review of the pertinent

literature followed by an explanation of the theoretical framework considered most useful in this milieu.

4.

**LOOKING INTO THE VIOLENT PAST:
THE METHODOLOGY OF MILITARY ARCHAEOLOGY.**

To try and trace the earliest beginnings of warfare is an unprofitable study...No authentic account can be compiled of how men came first to organise armies and fight in military formations.

-Birnie 1942:12.

Birnie's statement (quoted above) is a challenge, to this study and to others. Various authors have vigorously accepted this gage with varying degrees of success (Dawson 1996; Keeley 1996; LeBlanc 1999; O'Connell 1995; Vencl 1984; Watkins 1989). It is my contention that accounts *can* be compiled of human warfare at its "earliest beginnings". An archaeological methodology allows us to investigate warfare without recourse, if we so wish, to documentary records.

This chapter is concerned with archaeological avenues to an understanding of warfare, as historical sources are unavailable for the time and place under discussion. When historical data become available, they are primarily confined to epigraphy, although some (mainly Chinese) documentary sources are available.

An appreciation of warfare in the archaeological record relies upon qualitative analysis of certain basic lines of evidence. These are material culture, macro- and micro-level settlement patterns, palaeopathology and palaeodemography, and iconography (Haas 1990a; Maschner and Reedy-Maschner 1998; Vencl 1984).

MATERIAL CULTURE

The material culture of war is perhaps the most populist aspect of the study of warfare. Issues of interpretation are thus critical, as the particular use of any item of material culture is crucial to an appreciation of militaristic behaviour.

Weapons (or items that may have been used as weapons) can be divided into four subgroups.

1. Military weapons, those designed and used specifically for war.
2. Hunting weapons, those designed and used specifically for hunting animals for the purpose of subsistence.
3. Weapons that have no practical purpose but are symbolically important.
4. Weapons with multiple functions (referred to below as 'multi-purpose').

The different social and technical contexts of the first two subgroups should be reflected in the functional morphology of the artefacts. By this argument it is expected that devices specialised to a given task will be adapted morphologically to that task. Watkins (1989:23) states that Mesopotamian war axes differed from woodcutting axes by their rounded blades. An axe with a rounded blade would leave wider wounds and would be far easier to extract from the body of a dead opponent. This view, while theoretically sound, has never been tested by replicative experiment. Target species has been cited as a very useful indicator of point function (Maschner and Reedy-Maschner 1998:26), allowing interpretation of the intended role of possible weapons if they can be correlated with the zooarchaeological and/or osteological records.

Archery is a pastime of extreme antiquity (Keegan 1993). Recently Bahn (1997) reported the discovery of projectile injuries and the presence of projectile points embedded in human skeletons from the Upper Palaeolithic sites of San Teodoro cave (Spain) and Grotte des Enfants (France). As Lambert (1997) notes, projectiles do not become embedded in human skeletons through anything other than deliberate intent. The proposition that bows are used on wild animals, not domestic ones, seems only sensible, yet both Keeley (1997:304, 309) and Watkins

(1989:16) have noted a seeming dichotomy in the correlation of wild fauna excavated at both *Linearbandkeramik* (LBK) sites and at sites of the early Near Eastern Neolithic with the presence of projectile points. In both these contexts, while the importance of wild fauna was decreasing, the frequency and sophistication of projectile points was increasing. In the context of his other arguments for farmer-forager conflicts in Neolithic Europe, Keeley argues that LBK projectile points may have been used as weapons of war. Watkins (1989) correlates increasing sedentism, the use of domesticates in the Near Eastern Neolithic and changes in projectile point morphology with a new role for the humble stone arrowhead: the defence of home and hearth.

The third category of weaponry, possibly the largest, is that of multi-purpose items.

Ethnographic data allow us to infer that many items recovered from archaeological contexts may fall into this category. A pertinent example may be found in the work of Keeley (1996:50, 1997) who cites the example of the stone axes formerly carried by Papuan Mae Enga tribesmen, primarily used for woodworking, but carried against the ubiquitous possibility of enemy attack. They were also the only item allowed to be taken to peace negotiations, “an unlikely setting for woodworking but not...for violence” (Keeley 1997:311). Keeley (1996:50, 1997:306) has repeatedly argued that LBK culture finds may be an archaeological parallel to the ethnographically attested Mae Enga axes. At the LBK site of Talheim the entire burial sample of 34 adults and children had been killed by blows to the back of the head from LBK axes and adzes. Keeley (1997) also notes that some LBK axes and adzes are made from materials too friable to be used in woodworking. These friable materials are exotic to the area in which they were found, thus indicating their importation, possibly at some expense. Keeley’s reasoning, when placed in the context of an increasing appreciation of violence in the Mesolithic and early Neolithic of Europe (Frayer 1997; Keeley 1997:306-12), is a valid argument that LBK axes and adzes may very well be multi-use devices, used for both woodworking *and* armed violence.

Bows and other ranged weapons (such as slings [Korfmann 1974; Vutiropulos 1991]) were undoubtedly used for both hunting and war (see below), but melee (or shock) weapons are

more likely to be specialised items (Keeley 1996). Items such as swords, halberds, maces, and lances are, if correctly identified as such, easily recognised as weapons of war. Ranged weapons may also be specialised. Keeley (1996:52) cites ethnographic evidence for the differing construction of war arrows and hunting arrows in the Wintu tribe of Northern California. Tightly-bound side-notched points were used for hunting, while loosely bound stemmed points were used for warfare, in the expectation that the point would detach in the wound. Keeley (1996:54) claims that prehistoric parallels can be found in a particular type of Archaic flint point and in 'Danubian' LBK points. In a similar fashion to the easily-detached stemmed point, the barbing of arrowheads to increase difficulty of removal is a characteristic of war points among the Dani of New Guinea (*ibid.*:52).

Spears are especially difficult artefacts to interpret, as specific forms designed for hunting or war may be difficult to differentiate. Any given spear may be used for a multitude of different tasks, including the hunting of a wide variety of fauna (Marks 1976; Oswalt 1973), or for intergroup violence.

Clearly, multi-use implements may not be easily identified as such in the archaeological record. Unifunctional interpretations of many common artefacts may be prejudicial to the recognition of more complex prehistoric behaviour such as warfare.

The fourth category of weaponry contains those that have 'only' symbolic significance and ritual usage. Symbolic weapons may often be distinguished by the use of rare or fragile materials in their construction, materials that either would not survive violent impacts or were too valuable to risk in battle. It is also possible to find weapons morphologically unsuited to combat. However, to believe that symbolically valuable weapons are merely beautified versions of the functional counterparts is to oversimplify the situation. Weapons may represent any of a variety of cultural factors, or may be statements on the part of an individual. Above all, symbolic structures in society should not be divorced from their essential historical context.

Weapons (including multi-purpose devices), once identified, can be divided into two broad groups based on function: shock (or melee) weapons; and fire (or ranged) weapons. As the term 'melee' suggests, shock weapons are used in close quarters, held in the hands of a combatant while being used to strike an opponent. In modern warfare, the shock weapon has yielded its former place of honour. Before the arrival of firearms shock weapons were associated primarily with specific social groups, often élite or specialised (Carneiro 1990). In the hands of experts, ancient shock weapons could do great damage, even to armoured foes. Hassig (1992) refers to Spanish *conquistadores* who found their horses cut from under them by one stroke of the *macuítl*, or Aztec broadsword. Shock weapons are far more prone to specialisation than fire weapons (Keeley 1996; cf. Martin 1967; Oakeshott 1996), giving rise to an immense morphological variety of such weapons as swords and polearms.

The second category of military material culture comprises devices used for protection in combat, usually subsumed under the broad descriptive term 'armour'. Armour can be divided into two classes, body armour and shields. Shields are the most basic form of protective device (Oakeshott 1996), consisting simply of a portable solid object, held in the hand or strapped to the arm, used to deflect blows and missiles. Shields may be made from almost any available material, but metal, wood and leather predominate (Oakeshott 1996). Few shields recovered by archaeologists rival the famous shield of Telamonian Ajax (Αἴαξ) described in Homer (Lattimore 1951), but many are highly worked objects of great symbolic value (Oakeshott 1996). Body armour is designed to be worn in a similar fashion to clothing, fitting closely the contours of the body, but has the same function as a shield. The limbs, head and torso each demand quite different armour. Mobility must be conserved by limb armour, unless the wearer was not expected to use his or her own motive power. This may have been the case of the wearer of the armour found at Mycenaean Dendra (Greenhalgh 1980) and with some armour worn by medieval European knights (Martin 1967). Vision must be preserved by armour worn on the head, while armour worn on the torso must leave the arms free to use weapons. The use of armour can be conceived as a long struggle between the extremes of protection offered by

complete body armour (such as the amazing creations of 16th century Europe [Martin 1967]) and the undoubted utility of unarmoured, lightly armed warfare (Keeley 1996).

Also associated with warfare are certain types of domestic animal, especially the horse and the elephant. Cavalry and war elephants were crucial military arms throughout most of the old world for millennia (Dixon and Southern 1992; Scullard 1974; Spence 1993; cf. Levine 1999). The specialised material culture associated with these animals (such as stirrups, armour and leg irons) is a marker of complex military practices.

SETTLEMENT PATTERNS

The utility of settlement pattern archaeology to the study of prehistoric warfare has been conclusively demonstrated by a number of archaeologists in the Southwestern United States (Haas 1990a; Haas and Creamer 1993; LeBlanc 1999). Settlement pattern data are especially applicable to the study of warfare as a form of interaction (see below).

LeBlanc (1999) sets out a detailed argument for the possible influence of warlike activities on prehistoric settlement patterns. The configurations of individual sites under military threat are expected to be altered by the construction of fortifications, destruction layers, the destruction of smaller sites before larger sites, and the increased concentration of population in large sites through time. Defensible landforms are also expected to be used, especially by smaller sites, with secure water supplies being important. Haas (1990a:177-8) proposes that the “ ‘deliberate’ selection of such locations may be inferred when ready access to resources, water or arable land is sacrificed in exchange for elevation, difficult access, unrestricted or strategic vistas, or physical protection from attack”.

Site distributions are also expected to be influenced by patterns of warfare. The clustering of settlements and the development of ‘no mans lands’ between clusters has been proposed by Wilcox and Haas (1994) and Keeley (1997) to be correlated with shifts in warfare patterns. ‘No mans lands’ in the Southwestern United States have been interpreted as being political or

economic 'buffer zones'. It is also possible that they developed from a desire to keep hostile neighbours at arms length (LeBlanc 1997). Specific sequences of site destruction within clusters are also expected under conditions of endemic warfare. Taken in isolation, the destruction of individual sites, while possibly the result of warfare, does not constitute firm evidence, as accidental conflagration cannot be ruled out (Wilcox and Haas 1994). Wider temporal and spatial trends in site burning or destruction, however, may provide valuable markers for warfare in a given region. Burning is especially important as an archaeologically recoverable vector of site destruction. Logically, excavated evidence for burning may be evidence of accidental burning, deliberate non-warlike burning for delousing or ritual purposes, or deliberate burning as a consequence of warfare. We should expect the former to be random through time but associated spatially with certain structures, while we should expect the latter to be more general, and correlated with further evidence for warfare. We should also expect that site clusters would be structured so as to allow mutual communication, either visual or aural. Evidence for such "joint regional defence systems" (Haas and Creamer 1993:27) are powerful indicators of large-scale warfare.

Obviously, the development of regional patterns of settlement may not be solely attributed to warfare in any given case. Environmental and economic factors may also produce clustered settlement patterns in areas without endemic warfare. Careful interpretation is required, matching settlement patterns to reconstructed aspects of palaeoenvironment and the socio-economic structure of a given region.

Fortifications either adapt to or mimic the defensive features of natural landscapes. Raised or lowered ground (earth walls and ditches) are the most basic forms of fortifications, while more complex forms include stone or wooden walls and palisades, moats, living walls of thornbushes and many others. Fortifications (as pertinent manifestations of micro-level settlement patterns) are bedevilled by issues of interpretation. Features that appear to be fortifications may in fact be natural in origin or serve some other purpose entirely (Bar-Yosef 1986).

PALAEOPATHOLOGY

Skeletal evidence is probably the best marker for violence in prehistory. Not only does it preserve evidence for different kinds of violence in similar contexts, but it also allows the correlation of violence with certain social and biological factors such as age, gender and sometimes status (Robb 1997). Certain pathologies have been highly correlated with warfare (as opposed to non-military violence): depressed skull fractures; forearm 'parry' fractures; upper facial fractures; and the presence of projectiles lodged in the skeleton (Haas 1990a; Maschner and Reedy-Maschner 1998). Recently, however, doubt has been cast on the efficacy of 'parry' fractures and cranial trauma as indicators of warfare. Ostendorf Smith (1997:245) argues that "parry fractures in conjunction with cranio-facial data have...been associated with interpersonal (female directed) rather than intergroup violence". Martin's (1997) study of Anasazi burials at the La Plata and Black Mesa sites showed that females suffered higher rates of cranial trauma (including depression fractures and upper facial and nasal fractures) than males. Martin believes that this pattern was not the result of domestic violence, since rich female burials are also found at the sites in question. She rather cites the possibility of an emerging "underclass" (*ibid.*:69). The cranial injuries suffered by these women are extremely unlikely to have been the result of warfare. This does not mean that depression fractures and cranial trauma visible osteologically cannot be the result of warfare, rather that there are other explanations, which should be given equal credence.

Depression fractures are caused by a force applied to the side of a cranial bone. The outer cortex of the bone is depressed inward and the diploe space beneath is compressed (Lambert 1997). Due to bone necrosis, the shape of the skull depression remains (Martin 1997). Lambert (1997) notes that many modern injuries (industrial and vehicular) cause linear cranial fractures. Depression fractures are more often caused by the impact of relatively blunt objects to the cranial vault. The cross-section of the trauma may help identify the implement responsible, as axes, adzes and celts leave a more V-shaped indentation while clubs and similar objects leave a shallow U-shaped indentation.

Lambert (1997) notes that, in prehistoric hunter-gatherers in southern coastal California, depression fractures on males (the majority) cluster to the frontal left side of the head (as would be expected if the victim was struck from the front by a right handed aggressor) while on female skeletons depression fractures show no such spatial patterning. This suggests a sexual distinction between contexts of lethal violence. Wilkinson (1997), studying a sample of skeletons from the Riviere aux Vases site in Michigan, notes that cranial trauma was far more common among females and clustered toward the rear of the skull. Thus he characterises these wounds as the result of “interpersonal” violence (*ibid.*:33).

In the skeletal sample from the Italian Iron Age site of Pontecognano, rib and clavicle traumas are very common among males, who have far higher rates of overall trauma (Robb 1997). Diagrams (*ibid.*:125) show a greater frequency of trauma to the left arm region of males, while rib injuries cluster to the right side of the torso. The only consistent pattern evident in the female skeletal population is left-sided cranial trauma. Robb firmly states that most of the trauma present can be attributed to accidents, but the spatial distribution of trauma in the Pontecognano sample could be considered superficially consistent with warfare. The lesson, crudely put, is this: humans have found an incredible number of ways to hurt both themselves and others, and the physical markers of these may be very difficult to differentiate.

Projectile injuries are less ambiguous than many other forms of skeletal trauma. Projectile violence is commonly associated with warfare, as opposed to interpersonal violence (Lambert 1997). Projectiles are designed primarily to kill, thus lethal intent is nearly implicit in their use. Projectile injuries apparent on ancient skeletons form three basic groups: hard tissue scarring caused by projectile impact, projectiles in “wound-like associations” (*ibid.*:92), and the presence of projectile points or tips embedded in bone. Lambert estimates (*ibid.*:93) that, due to the soft tissue nature of most projectile injuries, archaeological finds may greatly under-represent the frequency of projectile injuries. In her study of the hunter-gatherers of southern coastal California she notes that, while the frequency of projectile injuries stays relatively constant

through time, they are far more common in males, especially those between the ages of 18 and 40.

In many respects the object of this chapter has been to try to delineate the social contexts of violence in prehistory. This is no easy task. Martin, commenting on archaeological evidence for the patterning of violence among the Anasazi (1997:49, emphasis original), states that, “The pattern regarding violent interaction seems to be that *there is no pattern*”. Robb, in his thoughtful appraisal of long-term Italian trends in osteological trauma, argues that (1997:136) “actual violence, as far as cranial trauma reflects it, and the perceived threat of violence, as reflected in defensive architecture, appear to have declined precisely as the cultural celebration of violence increased”. He argues further that increased violent display and capability may have actually ameliorated violent behaviour. This he cites as a relatively common aspect of social stratification: “Roles of violence are often high in loosely structured egalitarian societies and lower in societies with male status hierarchies” (*ibid.*:138, see also Keeley 1996). He (*ibid.*:140) notes, however, that another interpretation of his findings could support an argument for a shift in warfare patterns, to those less easily identified in cranial trauma and less reliant on fortification. Walker’s (1997) study of osteological remains uses a very wide variety of sample material, from Californian hunter-gatherers (c. 4000 BC) to skeletons from the modern United States. He notes that the absolute frequency of injuries is higher in males than females, and that left-sided cranial trauma is far more common than right. Age at death is also a major factor. His main finding mirrors Martin’s sentiment quoted above. Throughout the wide temporal and spatial range of this study, very diverse patterns of skeletal trauma are apparent.

Perimortem skeletal trauma has also been cited as correlated with warfare (Milner *et al.* 1991; Ostendorf Smith 1997), especially in North America. Perimortem modification of the bodies of defeated enemies (scalping, removal of trophies, mutilation) was relatively common among the late prehistoric and protohistoric plains Indians of North America, while headhunting is attested as being common in early Southeast Asia (Gibson 1990; Quaritch Wales 1952). The removal of body parts leaves distinct cut marks on the skeleton (Ostendorf Smith 1997:248, 251). These

cutmarks are easily distinguished from those associated with mortuary defleshing. Perimortem trauma such as these are consistently associated with warfare, as opposed to other forms of violence (Milner *et al.* 1991). Dismemberment may be identified in the presence of circumferential cut marks around an area proximal to an absent limb or skull. Bone splintering and snapping may also be found in these circumstances. Ostendorf Smith (1997) states that, for warfare interpretations to be consistent, there should be no sign of defleshing (short scraping marks or short straight cutmarks).

PALAEODEMOGRAPHY

The basic thesis of the use of palaeodemography is to assess the differences between the demographic structure of the cemetery population and the expected living population. Any such differences allow us to posit causal relationships between social dynamics and the structure of the cemetery population. The lesser likelihood of the survival of children's bones in the archaeological record is a constant bias (Robb 1997). Haas (1990a) states that the frequency of death of males aged 18-35 might be expected to be higher under conditions of warfare, while we might also expect that warriors falling in battle might never be included in cemetery populations, thus excluding males aged 18-35 from the palaeodemographic sample, as it seems reasonable to suggest that the male segment of the cemetery population will be most affected by warfare. It is worth noting, however, that the presence of female warriors has been recorded in early historic Southeast Asia (Roveda 1997:26). Haas's estimation of age is supported by Robb (1997) who notes that skeletal trauma at Pontecagnano clusters in males aged 20-40. While he hesitates to attribute this correlation to warfare, he does note that most physical activities of any sort are performed by males in this age group. The basic problem surrounding the use of palaeodemography in the study of ancient warfare may be stated as follows: a wide variety of mechanisms may be proposed to account for possible variations in the demographic structure of a given mortuary population. This problem is very difficult to surmount, but palaeodemography, in the context of other sources of information, is still a useful and intriguing source of circumstantial data.

While an extremely useful tool in the hands of an archaeological investigation into warfare, one must always remember that osteology identifies the victims of violence, not the social context of that violence. As Bamforth (1994:98) states, a cornerstone of archaeology is that “there is more than one interpretation for any given archaeological pattern”. As has been demonstrated above, palaeopathology, by reason of Bamforth’s *caveat*, is especially susceptible to this problem. If all this study had to rely upon was osteological data, there is reason to believe that no conclusions could be drawn without an overwhelming preponderance, or total lack, of prehistoric Southeast Asian projectile injuries.

ICONOGRAPHY

Despite the lack of written records in prehistoric contexts, ancient populations often found means of expression that may give immense aid to archaeological studies. Such iconographic remains as cave paintings, figurines, bas-relief and decorative motifs on ceramic vessels, murals and textiles, may be of immense use either individually or as corroborative evidence showing material culture in use. Possibly the best example of this in the world may be found in Southeast Asia in the magnificent vignettes of the Dian culture. The challenge when looking for evidence of warfare in such an iconographic record is to be sure to have separated warfare from interpersonal violence and hunting behaviour. Warfare, it has been argued, should be easy to recognise: “There is little interpretation necessary when two groups of men are painted shooting arrows at one another” (Maschner and Reedy-Maschner 1998:26). Literate societies leave much more detailed information regarding warfare. Khmer Emperors and Egyptian Pharaohs left inscriptions detailing their conquests and military prowess, while ancient Roman, Greek, Chinese and Indian authors detailed specifically how war was to be undertaken. Mycenaean Linear B records show the stockpiling of military equipment (Chadwick 1958) and Aztec codices offer detailed representations of military equipment (Anawalt and Berdan 1992).

THEORETICAL ISSUES

Keeley (1996, 1997) and LeBlanc (1999) have pointed out a distressing tendency in archaeology: the tendency to say ‘It might not have been warfare, therefore we must presume it

was not until it is irrefutably proven so'. This places diverging interpretations in a hierarchy, a hierarchy in which military explanations often take a lower rank (Keeley 1996:vii, 18-24). In a more reasoned fashion, we must dismiss humanity from its legalistic protection: 'innocent of war until proven guilty', and provide a more balanced view of the human condition in the past (see Keeley 1997; LeBlanc 1997; and Maschner 1997 for examples of the constructive effects of models appreciative of warfare in prehistory). This may be accomplished by the use of holistic interpretive strategies. While osteological evidence may be ambiguous, if corroborative evidence is supplied by the presence of weapons, fortifications, and ceramics painted with scenes of violent conflict, then it may be argued that warfare was a part of the cultural inventory of the society in question. If none of these forms of evidence is apparent, we may reasonably infer that warfare was not important in the culture under investigation.

Ferguson (1997:322) has compiled an extensive argument against the view that "absence of evidence is not evidence of absence". He argues, *contra* many of the contributors to Martin and Frayer (1997), that evidence for warfare is not as pervasive as many have argued. In particular he claims that (1997:326):

The maxim that absence of evidence is not evidence of absence remains valid for any particular dig, and for those areas with limited data. But where a cultural tradition is known from many sites and skeletons, absence of any sort of evidence suggesting war can indeed be taken as reasonable evidence of war's absence

The point is well made, but one should also consider that archaeological biases inherent in collection method and physical conditions of preservation and deposition can be prevalent across wide swathes of time and space.

The wide variety of evidence pertinent to the study of ancient warfare does not make the explanation of the topic any easier. All the possible avenues to the understanding of prehistoric warfare have their detractors. Much relevant information regarding material culture may be lost

to biodegradation or the vagaries of sampling. A simple iron blade may be part of any number of devices, from a specialised weapon of war to a gardeners tool, depending on the hafting.

There may be entire classes of weapons and armour that may not survive in the archaeological record (see LeBlanc 1997, 1999 for examples). Settlement pattern analyses are bedevilled by problems of survey techniques and the mobility of the depositional environment.

Palaeopathology, potentially of great utility, has its own difficulties, as discussed above. The primary difficulty with the study of warfare can be expressed very simply: warfare is a complex social behaviour, differing from other forms of violence only in subtle manners (Vencel 1984). These subtle differences make warfare important, deserving of separation from other forms of human behaviour within our explanatory systems. Yet these differences may not survive in the archaeological record, as they are thoroughly social in nature, and only ephemerally represented in material remains. Yet this should not be a death knell to the study of prehistoric warfare. As I have stated at the beginning of this chapter, I disagree with the opinion that “no authentic account can be compiled of how men came first to organise armies” (Birnie 1942:12). It is the firm belief of this author that the use of holistic investigative strategies, while consuming of both time and effort, is the best way to surmount the difficulties of each individual avenue.

THE ANALYSIS OF WARFARE IN A HETERARCHIC PERSPECTIVE

The discussion above is limited to the explanation of various factors that are inherent in the construction of data from archaeological evidence. Below, the specific demands of theoretical formulation and model construction are addressed.

White (1995) has compiled a model relating warfare and heterarchy in the specific context of prehistoric Southeast Asia. This model seeks to explain the apparent lack of militarism in Bronze Age Thailand (see chapter 6) by referring to aspects of social organisation brought to light by the heterarchic paradigm. White’s discussion is hampered by the use of an implicit ‘closed’ definition for war, and by a conflation of heterarchic dynamics with pacifism.

While the body of White's arguments will be examined in chapter 5, her model is introduced here to stress the point that a body of theory relating warfare to the heterarchic paradigm has yet to be developed. Rogers (1995), has found heterarchy to be of extreme utility to the study of prehistoric Woodland culture groups in the Southeastern U.S. Yet these groups "engaged in warfare with each other on a regular basis" (*ibid.*:11) White (1995) argues that heterarchic dynamics characterise early historic societies in Southeast Asia, yet these societies were engaged in constant military expansion and conquest (Higham 1989; Vickery 1996; see chapter 10). It is clear that a binary opposition between heterarchy and warfare (White 1995:118, fig.9-2) is too simplistic.

The basic thesis of a heterarchic focus, that elements in a social system may be unranked or ranked in multiple ways relative to other elements, creates a focus appreciative of horizontal differentiation. Complexity is reflected in multiple axes of status relevant to specific situations. This stresses internal dynamics of change. Warfare is an oft-cited factor in such dynamics (Carneiro 1970; Haas 1982; Webster 1975). It is expected that systems characterised by horizontal differentiation would tend to foster competition between elements (such as factionalism, cf. Brumfiel 1994; Rogers 1995). Warfare, as an inherently competitive behaviour, should therefore be theoretically relevant to systems characterised by heterarchic dynamics. Warfare, as a group behaviour, benefits from the study of horizontal differentiation in social systems, as competitive affiliative groups (Brumfiel and Fox 1994; Rogers 1995) or communities (Kolb and Snead 1997) could be involved in warfare. It is important to stress that warfare, as with other forms of competitive behaviour, is not solely predicated in terms of material benefit. Material motivation (such as territorial claims, or resources) is one of many possible causes of conflict.

Keeley (1996) and Robb (1997) have observed that societies marked by vertical hierarchy often show less evidence for warfare than less hierarchic ones. The competitive dynamics brought to light by an appreciation of horizontally differentiated elements in social systems provide an explanatory framework for understanding these observations.

Thus, heterarchic systems contain the potential for both war and peace. The observation that hierarchy is adaptive in war (Carneiro 1970; Turney-High 1971; Webster 1975) is also subject to re-evaluation in a heterarchic perspective. While not denying the efficacy of control hierarchies in military operations, the conflation of military hierarchy with social hierarchy is not always supported. Redmond (1994b:46) notes that “the leader of a tribal raid [in ethnohistoric northern South America] is not vested with any formal title or authority and his leadership is informal and temporary in nature”. Obedience to the war leader was not enforced, though Redmond emphasises the importance of these individuals to the expedition.

The heterarchic perspective also brings to light the complex relationship between group goals and individual cost-benefit analyses. At the most basic level, the decision to participate in war is made by individuals. As warfare is goal-directed (see chapter 2) individuals weigh costs and benefits based on the relevance of their involvement (Kantner 1996; Redmond 1994a, b). In social systems dominated by elites, such cost-benefit analysis may be very simple, as coercion is applied. Thus, the motivation (Webster 1998; see below) for conflict is derived from individual relations to the general goal of the group action.

WARFARE AS AN HETERARCHIC INTERACTION SYSTEM

Interaction is a contextual process of contact between entities, encompassing the direct or indirect transmission of ideological or material factors as well as direct physical contact. A heterarchic focus enables us to appreciate that the relationships of these entities with each other may be fluid, unranked or constantly renegotiated. In social systems marked by heterarchic dynamics, consideration of warfare as an form of interaction is useful, as it stresses:

1. The connections between warfare and other forms of interaction, such as trade and exchange. It has been ethnographically demonstrated that village communities (and higher order entities) trading and inter-marrying will also occasionally be in conflict (Keeley 1996), particularly in a system of shifting alliances (White 1995).

2. That warfare can act as a system of transmission of ideology and technology. It also may act as a selection factor for certain cultural responses in a competitive milieu.
3. The place of warfare in varied responses to socio-political and environmental conditions (especially shifts therein).
4. The fact that the oft-cited theory “endemic warfare/advanced military complex equals social change” is valid only circumstantially, and must not be assumed in cases with little available data.
5. A variety of interpretations for prehistoric militarism, as opposed especially to explanations based solely on functional materialism. This may prove especially relevant to Southeast Asian prehistory, as regional ethnographic analogues place great emphasis on the motivational aspects of ritual trophy taking.
6. More complex explanations of the workings of ancient warfare complexes than “primitive war” hypotheses and other frameworks based upon a single causal factor.

This perspective is hoped to enable a more broadly applicable framework to be applied to warfare in ancient Southeast Asia. The functional materialist approach toward modelling warfare is deemed inadequate to explain the role of warfare in terms of a multi-centred, horizontally differentiated, internally flexible system.

Webster (1998) has developed an analytical model that allows for the recognition of various factors, both emic and etic, that “serve to structure” (*ibid*:314) the study of warfare, allowing for the explanation of particular military systems in cultural and historical context. Webster’s model was constructed for the purpose of analysing warfare in archaic states, thus some of his factors may be de-emphasised when examining pre-state warfare. As the nine factors he proposes are identified at a higher level of abstraction than the evidential factors noted in the previous section, they vary widely in archaeological visibility, as well as in their applicability to differing socio-cultural environments.

The nine analytical factors of the model are:

1. *Scale*, the number of participants and the “energetic components of the defensive and offensive facilities at their disposal” (*ibid.*).
2. *Arena*, the physical and cultural environment in which the warfare is undertaken.
3. *Entities*, those antagonistic social groups in conflict, and the representatives of those groups involved in actual fighting.
4. *Intensity*, the “duration and frequency of operations” (*ibid.*:315).
5. *Organisation*, “the means by which those members of a political community ...co-operate in decision making, logistical and combat operations and share the consequences” (*ibid.*).
6. *Strategy/ Tactics*, strategy is the means by which resources are mobilised “to accomplish the goals of warfare” (*ibid.*). Tactics refers to the “deployment and manoeuvre of personnel essential to any *phase* of the warfare process” (*ibid.*).
7. *Phase*, the “level of conflict...and it’s systemic purposes and functions” (*ibid.*). This can also be seen as a continuum inhabited by various forms of conflict subsumed under the title ‘warfare’ (Dawson 1996; Keeley 1996; Vayda 1978).
8. *Purpose/ Motivation*, “emic goals...in pursuit of which combatants *organise* themselves and devise *strategy* and *tactics*” (*ibid.*).
9. *Function*, the “anticipated and unanticipated effects of the warfare process...on the sociocultural systems of which it is a part”, an etic factor that “may or may not correspond with *purpose* or *motivation*” (*ibid.*).

SPECIFIC METHODOLOGY

Below I will outline the method used to characterise warfare in the areas examined by this thesis. Firstly, site level evidence will be amassed, allowing for an appreciation of the possible evidence for warlike activities at any particular site. As Bamforth (1994) and LeBlanc (1997) point out, we should not expect site level analyses to provide us with detailed information on prehistoric warfare. It is more likely that the archaeological remnants of warfare will be ephemeral and fugitive (Milner 1999). By the use of multiple avenues of enquiry, however, it is expected that a cohesive picture will emerge, to be considered with other sites in regional

schema. Secondly, regional level analyses will allow us to collate this data, building a complete picture of warlike behaviour across the study region.

This allows for the exploration of evidence for warfare in a regional and chronological context, related to evidence at the level of individual sites. I will make no attempt to use the data thus garnered in any explanatory model for social or environmental change in this region at this early stage. This will enable any further interpretations to be placed on a firm footing. This will also enable us to test any explanations for warfare as a causal factor in diachronic changes in social organisation (Bayard 1992; Higham and Kijngam 1984). The value of this method is that it provides a system amenable to integration with studies of material culture, exchange and social change within a particular study area.

The procedure can be divided into three steps:

STEP ONE: LITERATURE REVIEW

Once geographical and chronological controls are set, the first task is to examine the literature pertaining to prehistoric warfare in the particular region. In most of Southeast Asia, little literature is available except for vague impressions and hypotheses yet to be tested. The review of previous impressions on the subject allows us to more rigorously define our investigative parameters. As LeBlanc (1999) has stated, warfare is merely one of a whole range of possible interactions in prehistory. It is therefore also important to gain an appreciation of wider issues of prehistoric interaction, exchange and diachronic change in the region.

STEP TWO: DATABASE FORMATION AND ANALYSIS

A database of evidence must be built, then examined according to the criteria delineated above. Data will be related to established geographical, cultural and chronological provenance and evidence will be built up according to the lines of evidence explained above. Analysis of evidence at both site and regional levels will be undertaken, with reference to general interaction systems. Cross-cultural comparison is an important tool in this analytical stage. While this

method has been the subject of justified criticism, it is used here due to its immense utility in allowing the exploration of the range of behaviour explicable by archaeological phenomena.

STEP THREE: MODEL FORMATION IN SPECIFIC CONTEXT

Once the formation of the dataset is complete and issues of interpretation have been assessed, the nature of the evidence will be related to broader theoretical issues both highlighted above and revealed in Step One. The distribution of certain site level phenomena (material culture, destruction events and fortifications) will also be examined. Iconographic evidence will be examined on a regional scale also, as artistic styles and representations can rarely be assigned to any given site.

The theoretical basis behind the study of warfare in prehistory has been examined in previous chapters. The next task of this thesis is to use the methodology delineated above to develop a comprehensive picture of warfare in prehistoric Southeast Asia.

5.

**WARFARE IN PREHISTORIC SOUTHEAST ASIA:
A REVIEW OF THEORETICAL CONTRIBUTIONS.**

It would be unfortunate not to consider a further variable which might have been quite critical:

warfare...evidence is fugitive...but not to the point of invisibility

-Higham and Kijngam 1984:722.

This chapter is a short review of theoretical perspectives on warfare in mainland Southeast Asia. Thus, the material examined below will form a general introduction to theoretical development in this region before archaeological data are examined in chapters 6-9.

In comparison to the situation in the Americas, China or Europe, long term changes in the patterns of warfare in Southeast Asia are poorly understood (see, for example, Haas 1990; Hassig 1992; Keeley 1997; LeBlanc 1997, 1999; Maschner 1997; Maschner and Reedy-Maschner 1998; O'Connell 1995; Yang Hong 1992; Wilcox and Haas 1990). The one major work on topic of Southeast Asian warfare in the precolonial period, Quaritch-Wales' *Ancient Southeast Asian Warfare* (1952), while still a valuable reference, has had its many shortcomings revealed by recent research. The basic tenet of Quaritch-Wales's work, that expansive Indian civilisation was the single major force behind the development of complex societies in the region (Coèdes 1968), has become somewhat dated.

Research in mainland Southeast Asia in the last three decades has shown conclusively that indigenous societies were achieving considerable levels of complexity before the selective adoption of Indian language and customs (Higham 1989; Higham and Thosarat 1998; Welch 1985).

Quaritch-Wales's review of warfare in Southeast Asia concentrates on the polities of Angkor, Svirijaya, Java, Champa (Chinese Lin Yi), Thailand, and Myanmar. The prehistoric period is referred to generally by ethnographic analogy, with particular reference to the warlike practices of the Toradja people of the Celebes, while a brief mention is made of what was then known of the Dong Son culture of Northern Viet Nam. Archaeological fieldwork since 1952 enables us to treat the topic of ancient Southeast Asian warfare with greater precision. While the beginning (an ethnohistoric description of Toradja warfare) and the latter parts (historic warfare in Angkor, its contemporaries, and later polities) of Quaritch-Wales' work are still of value, more recent fieldwork has highlighted the complexities of the late prehistoric and early historic periods.

Quaritch-Wales' description of the Toradjas is based on the recordings of Dutch missionaries, and highlights an interesting warfare complex. A multitude of taboos and rituals surrounded Toradja warfare, yet formation fighting was well understood, as were ambushes and sieges. A wide variety of weapons and armour was used, including spears (for both ranged and melee combat), caltrops, swords, and rattan or hide armour, war hats and shields. The bow was not used, but survivals from its past use could be found in language and ritual. Toradja warfare was "basically correlated with the need to obtain heads...[but] actual causes of war included disputes of claims over slaves, buffaloes or land, non payment of fines [,]...vendettas or feuds" (Quaritch-Wales 1952:3). Diplomacy was also a valued aspect of military preparations, as villages made alliances or declared themselves neutral. It is particularly interesting to note the degree to which Toradja military paraphernalia would be preserved in the archaeological record. Only sword blades and spearheads would be likely to be recovered, and then only if the items were included in mortuary ritual.

More recent investigations into the prehistoric period in Southeast Asia have highlighted the existence of weapons and possible fortifications. As a tool in theoretical frameworks, however, warfare has received little explicit attention, despite demonstrations of its utility to this area in other parts of the world (LeBlanc 1997; Keeley 1997). White (1982:48, 1995) characterised the Thai Bronze Age as comprising "peaceful agrarian village societies", a term disputed by

Higham and Kijngam (1984:722-3), who include warfare in their exploration of variables relevant to the rise of stratified societies in the late prehistoric period of Northeast Thailand. Higham and Kijngam specifically note the place of warfare in conscription arguments (Carneiro 1978) and offer a possible interpretation of prehistoric warfare based on the experiences of Chagnon (1968, 1990) among the Yanomamö. This basic model for warfare is then interpreted as being a possible causal factor in the proposed development of chiefdoms in the Chi valley area. It must be stressed that the existence of polities accurately described as chiefdoms in this region is open to debate, while evidence for warfare in the region has yet to receive comprehensive attention.

Bayard (1992), commenting on this model, considers that warfare may have been an important feature in prehistoric interaction, a position echoed by Welch and McNeill (1987), who stress that exchange has competitive aspects (Keeley 1996; for a specific example see Junker 1994). Bayard (1992:26) argues that warfare may be a “general factor in the rise of complex regional entities...possibly...arising from conflicts over the relatively large amounts of land needed for swamp or dry swidden [rice production]”. The exact amounts of land required for various forms of rice agriculture have been debated rigorously with regard to intensification and environmental circumscription (Higham and Kijngam 1984; Welch 1985; for a recent summary and critique see Rivett 1999). Carneiro’s model of circumscriptive warfare has been applied in this context, but remains unproven (Higham and Kijngam 1984).

Welch (1985:378) makes passing reference to warfare, noting that “historically the capture of slaves was the traditional reward for success in warfare rather than the expansion of flexible and ill-defined territorial boundaries”. Welch thus prefigures the heterarchic focus, in that he emphasises personal authority and the lack of solid territorial boundaries in early historic Southeast Asia. The lack of association between territorial expansion and warfare should also be noted. The taking of slaves, while visible in the iconographic record of the Dian culture, would likely be invisible in the Thai archaeological record in the absence of distinctive graves.

The more extensive iconographic evidence for warfare in the Dian and Dong Son cultures of Yunnan and Bac Bo has drawn more archaeological attention, and it may be stated without doubt that warfare was an important factor in the social systems of these regions. The study of Dian has most often focused on the structure of this society, in particular the way it may be seen as a 'chiefdom' (Higham 1996a; Tong Enzheng 1991; Yun Kuen Lee 1994). Warfare has been noted to be an important aspect of Dian life, but only inasmuch as it facilitated "scrambling for natural resources, labour force and wealth" (Tong Enzheng 1991:5). Tong Enzheng (*ibid.*) further states that "this is distinguished from the feuding of a tribal society". This highlights a danger of the 'closed' definition, the conflation of 'feuding' or 'raiding' with 'bands' and 'tribes' while 'war' is the province of 'chiefdoms' and 'states'. Tong Enzheng clearly views warfare from a materialist perspective, arguing that (*ibid.*:20) "warfare in Dian society was probably carried out with the aim of appropriating land, manpower and domestic animals, all forms of wealth". While there is evidence that the accumulation of wealth was a function of Dian warfare, in chapter 8 I argue that Dian sculpture has left us with considerable evidence that headhunting was an important factor in Dian warfare.

Thailand, however, has no such iconographic evidence for warfare, and must rely entirely upon archaeology for an explanation of prehistoric militarism. However, few systematic projects have sought to focus attention on warfare in this region.

The Origins of Angkor Project, under which aegis this thesis is written, aims to provide a detailed insight into the origins and nature of complex societies in the region of Northeast Thailand, and by extension, the growth of the polity of Angkor. As such, the perspective of this thesis will be explicitly concerned with the adaptive significance of warfare in a milieu of changing social dynamics.

Higham and Thosarat (1998) have proposed that the Iron Age transition c. 500BC was associated with changes in interaction, whereby warfare became more common and intense.

They cite increases in weaponry, particularly iron weapons in Central Thailand, and the occurrence of a wounded burial at the site of Noen U-Loke (see chapter 7).

Recently, the use of heterarchic theory to attempt to explain the nature of social evolution in Southeast Asia has called into question traditional models of diachronic social change in the region (White 1995; O'Reilly 1999). This approach, functioning within established parameters, "gives these old paradigms fluidity, depth and flexibility" (O'Reilly 1999:41). O'Reilly (*ibid.*:286-294) and White (1995) have demonstrated the utility of this model in Southeast Asian prehistory, showing that the excavated evidence, particularly in the Thai Bronze Age, suggests the heterarchic perspective to be very valuable.

White's (1995) basic thesis may be summarised thus: an appreciation of heterarchical, non-linear, horizontally differentiated dynamics in prehistoric Southeast Asian societies leads to their characterisation as "peace-focused; cooperation or alliance oriented; [utilising] negotiated solutions" (White 1995:118, fig. 2). She further states that conflict resolution strategies in the context of "competitive, multi-centred" mechanisms for exchange control were based on "alliance formation [and] cooperative-competitive dynamics" while being "periodically renegotiated". In this system "warfare is...de-emphasised or secondary" (*ibid.*:104).

The crucial term "cooperative-competitive", is not explicitly defined, but presumably refers to aspects of political competition such as competitive emulation and wealth display. References to items "unequivocally classed as weapons" and "weapons used against humans" (White 1995:111) are undefined terms, and lack an appreciation of the possibility that many recovered artefacts could have been multi-purpose items, an arrangement specifically noted by Rawson (1968) to have existed in India. She concedes that "feuding and head-hunting...could certainly have characterised the[se] societies" (White 1995:111), but obviously considers this behaviour of little relevance to sociopolitical change. Her summation: "evaluation of the archaeological evidence *in toto* ...suggests that the prehistoric societies in the core area of Southeast Asia had very little interest in developing *military might*" (*ibid.*, emphasis original) raises some important

issues. Firstly, it is apparent that no lengthy evaluation has been made of warfare in prehistoric Southeast Asia at this time. Very few studies of weaponry have been made, while only one excavation has recovered pertinent aspects of micro-level settlement pattern, such as palisades (Nitta 1991, see chapter 7). Secondly, the term 'military might' is a particularly interesting , as it carries connotations of intensive military systems. We should not be surprised to find such a lack in prehistoric Southeast Asia, if, as White argues, these societies are non-stratified, but we should not mistake this for pacifism.

The closing idea of Whites model, that "long term inter-regional exchange without evidence of associated political centralisation or control implies a context with little warfare" (White 1995:111) also begs further investigation. I have argued (chapter 3) that such a situation is also consistent with a system where conflict was easily fomented by shifts in the extremely mobile nature of heterarchic interaction networks, but was unable to be prosecuted in a protracted or intensive fashion due to the shifting dynamics of prestige and resource control at both individual and group levels.

Theoretical debate aside, White is, in my opinion, correct in identifying a lack of evidence for warfare in the Thai Bronze Age (see chapter 6). Her implicit use of a 'closed' definition for warfare clouds the issue, however. Her arguments are convincing when applied to protracted, intensive, large scale warfare, but make no attempt to account for any possible "raiding or feuding" (*ibid.*). While it is possible that these latter phases of warfare contributed little to interaction in Bronze Age Thailand, White's use of a 'closed' definition for warfare has precluded their examination.

O'Reilly (1999) has explored the topic of social change in the Mun River valley of Northeast Thailand, and supports the hypothesis that heterarchic patterns of social organisation were prevalent in the Bronze Age of the region. His model differs from White's in that the Iron Age is held to herald a "drastically altered socio-political climate in the Mun River valley" (*ibid.*:287).

This correlates with an “increase in military paraphernalia found in interments” (*ibid.*:292) and, possibly, a change in the intensity and importance of warfare in this region.

O’Reilly’s position is related to White’s in that warfare is held to be an apposite variable in the study of diachronic social change only in application to the procurement and control of critical resources (O’Reilly 1999:68). As noted earlier in this thesis, warfare may be common in village-based societies without having any effects on access to critical resources or territory (Haas 1982; Maschner and Reedy-Maschner 1998). To obtain a balanced view of prehistoric warfare in a heterarchic milieu this author believes it is important to model warfare as part of a total interaction system.

The literature pertaining to the study of warfare in prehistoric Southeast Asia is not large, as few authors have explicitly tested hypotheses concerning warfare against a large sample according to a developed methodology. This undertaking remains the primary aim of this thesis.

6.

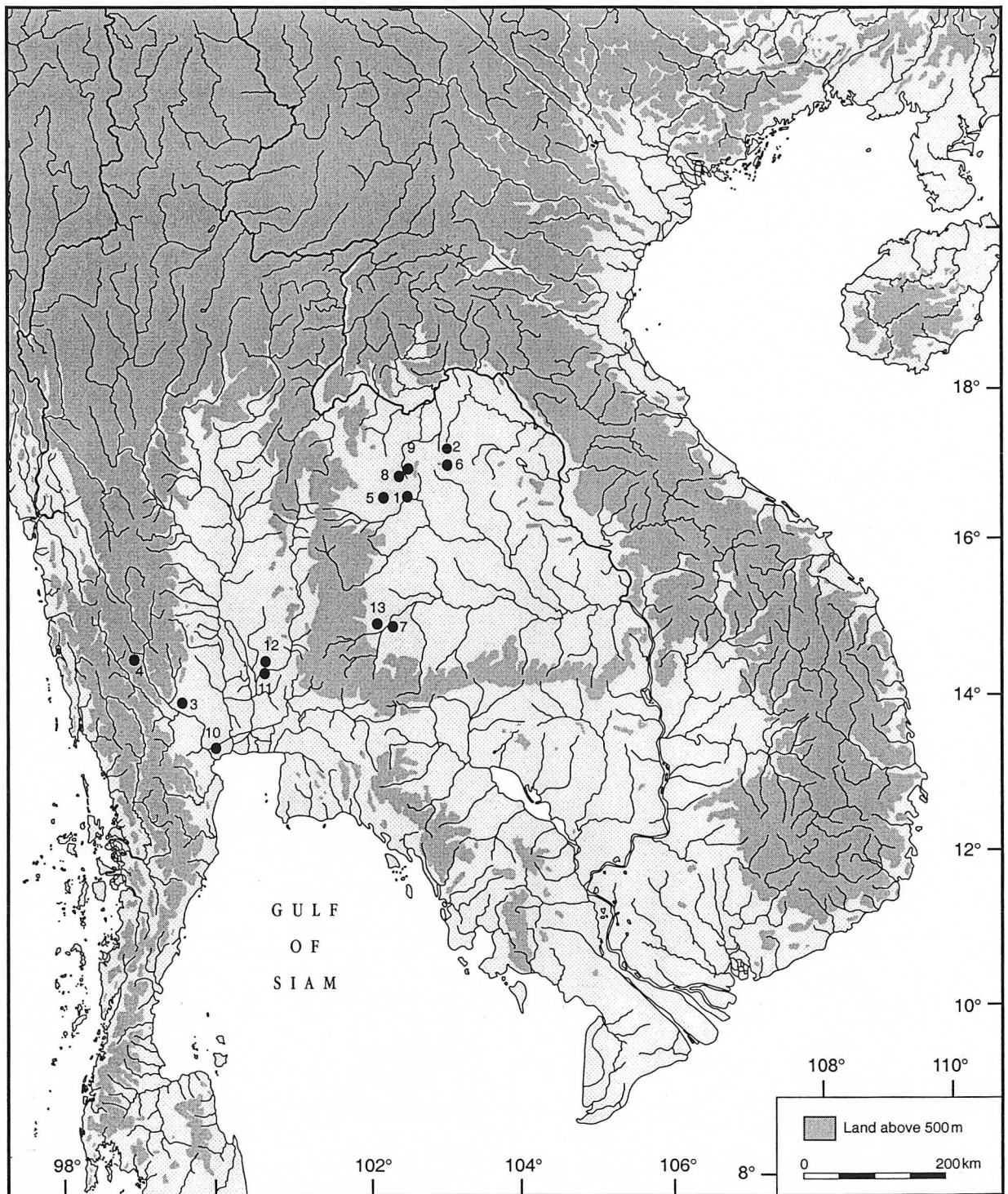
**WARFARE IN PREHISTORIC THAILAND 1500BC - 500BC:
THE BRONZE AGE**

In the Bronze Age¹, metallurgy became an important part of the cultural repertoire of the people living in the forested river valleys and floodplains of modern Thailand. Below, I will briefly examine the general cultural milieu of this period with special reference to the apparent basis of intercommunity interaction before moving to assess the possible role of warfare in this system.

The Bronze Age in Thailand has been described as a period of community-based production, small population and segmentary organisation (Higham and Thosarat 1998; White and Pigott 1996). Sites from this period are small and scattered, while mortuary wealth seems to have been less variable than in the later Iron Age. The context of metal production in this period is a subject of much debate, as the area has been bedevilled by dating controversy from the very earliest excavations (for summaries of the two contending positions see Bayard 1996; Higham 1996c). Recent AMS dates (Higham and Thosarat 1998; White 1997) have cleared these muddy waters somewhat, although a robust literature has been left in the wake of this argument (see, for example, Gorman and Charoenwongsa 1976; Higham 1984; Higham and Thosarat 1998; White 1982, 1997).

The main economic focus of bronze age life in Thailand was, as in modern rural areas, rice production. Hunting and fishing were also important activities, as well as the rearing of domestic animals. White (1995) and O'Reilly (1999) favour the use of heterarchical dynamics

¹ It is stressed that the terms "Bronze Age" and "Iron Age" are convenient labels only. No technological or social meanings are implicitly attached to them. Their entrenchment in the literature has, despite attempts to revise them (Bayard 1992; Higham 1989), resulted in their continual use.



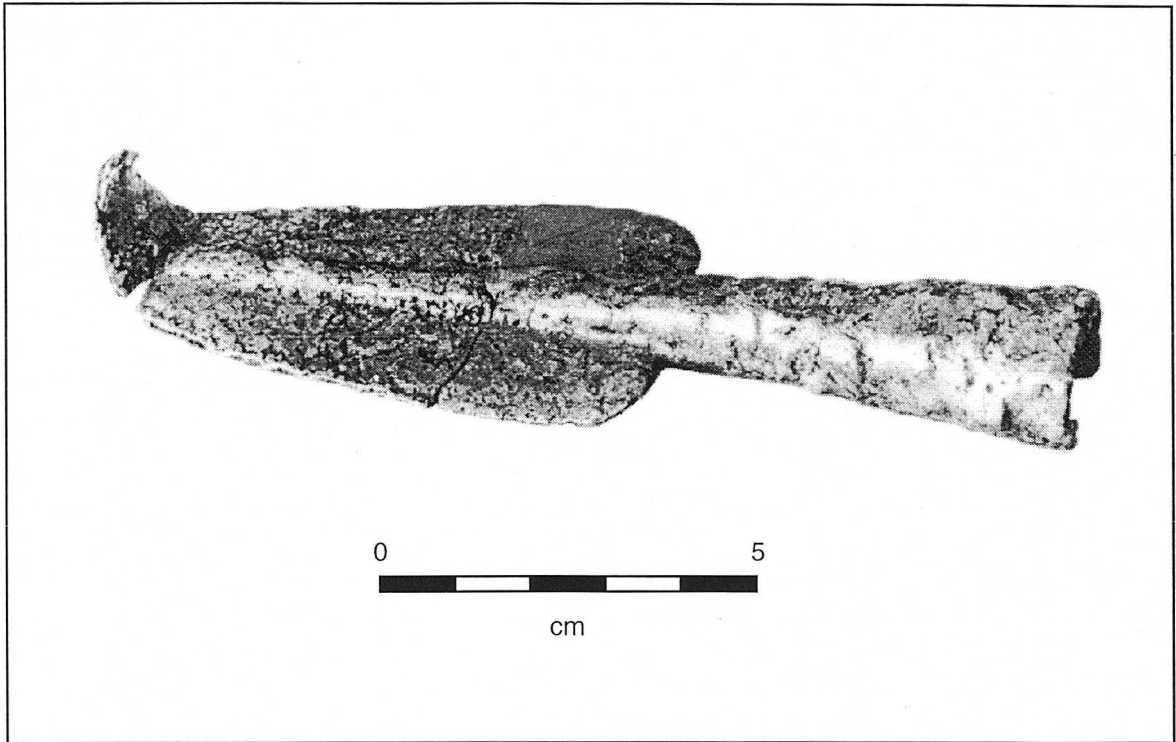
6.1: Map of Southeast Asia showing sites mentioned in this chapter. **1.** Non Nok Tha. **2.** Ban Chiang. **3.** Ban Don Ta Phet. **4.** Tham Ongbah. **5.** Non Pa Kluay. **6.** Ban Na Di. **7.** Ban Prasat. **8.** Non Praw. **9.** Don Klang. **10.** Khok Phlap. **11.** Nil Kham Haeng. **12.** Non Pa Wai. **13.** Ban Lum Khao.

in the study of social change in this period, seeing the Bronze Age landscape dominated by “individual, culturally localised, autonomous communities” (O’Reilly 1999:288).

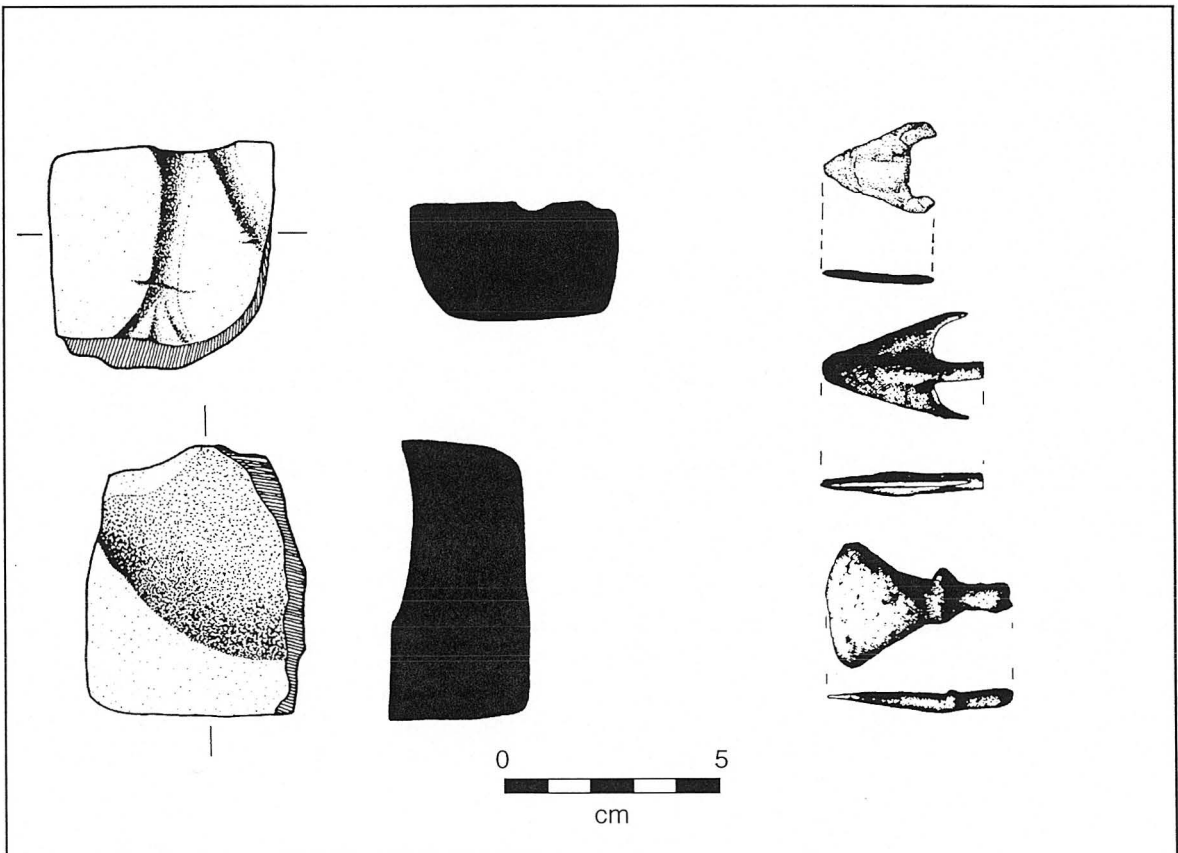
MATERIAL CULTURE

First excavated in 1965-1966, the site of Non Nok Tha represents the first modern archaeological excavation within the Khorat plateau (Bayard 1971; Bayard and Solheim forthcoming). The excavators returned in 1968 to complete the excavations and exposed a cemetery belonging to both bronze-and iron-using periods. The Bronze Age period contained socketed lunate bronze axes, and a winged axe from burial 1. This artefact measures 16cm by 5cm, with a 6cm socket. Analysis reveals that it was strengthened along the upper margin, and may have been the product of a mould also found at the site. In all, five lunate socketed axes were recovered from mortuary contexts, all belonging to males. Two bronze projectile points were found, both small and heavily corroded. Bronze was not common at Non Nok Tha, being restricted to axes, points and bracelets, of which the latter are by far the most common. Axes were only found in male burials and were certainly cast on site, if we are to judge by the presence of sandstone moulds, but spears were conspicuous by their absence.

By contrast, Bronze Age layers at the site of Ban Chiang have yielded several spears, including a bone example and its bronze counterpart. The latter is especially interesting, as it was found in the flexed burial of a young adult male, and had an intentionally bent tip. This behaviour, possibly an attempt to ritually ‘kill’ the weapon, is not unknown in the Southeast Asian archaeological record, being also recorded at Ban Don Ta Phet, Tham Ongbah and Non Pa Kluay (Glover 1990; Sørensen 1973; Wilen 1989). Further, White (1982:77) states that the weapon was constructed “far beyond rudimentary requirements to produce a sharp weapon”. It is socketed and strengthened by means of a central rib. A bronze axe was also recovered from an Early Period III grave (Higham 1989:110, fig. 3.14). This artefact is socketed and has a lunate blade.



6.2: Bronze spearhead, Ban Chiang (from White 1982:77).

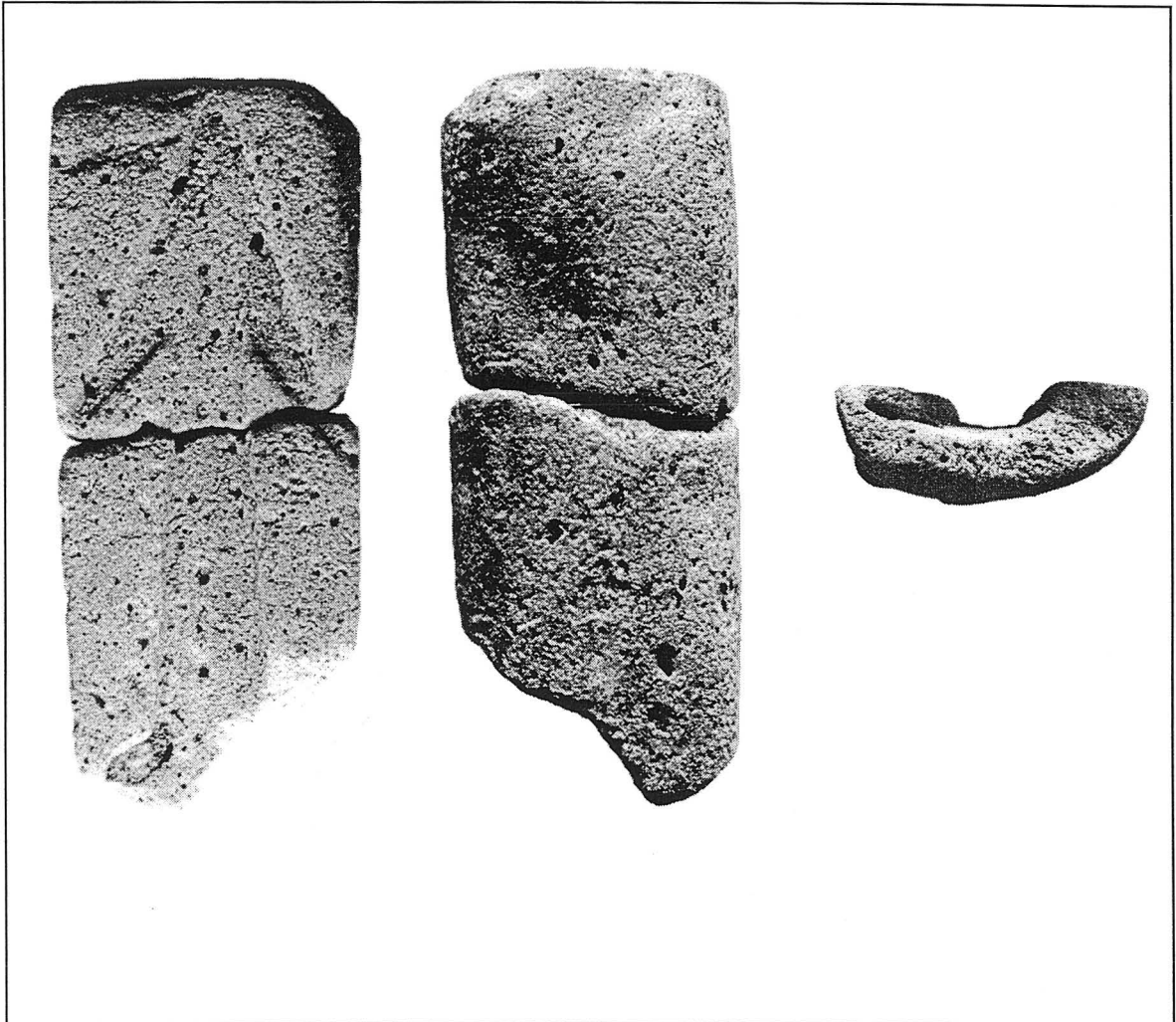


6.3: Projectile points and bronze casting moulds for points and an axe, Ban Na Di (from Higham and Kijngam 1984:129, 135).

Located near Ban Chiang, the site of Ban Na Di was excavated in the early 1980s in an attempt to expand knowledge of the Ban Chiang culture and to throw further light on the exciting claims for early metallurgy (Higham and Kijngam 1984). Unlike Ban Chiang, Ban Na Di proved to be stratigraphically lucid and well-provenanced dates were obtained. The material culture assemblage from Bronze Age layers at Ban Na Di contained arrowheads and moulds for casting both bronze axes and projectiles. Non-decorative bronze finds from level 7, during the first mortuary phase at the site, were restricted to arrowheads. Several different types were found, including barbed and non-barbed forms. Sandstone moulds indicate that arrowheads were cast at the site and analysis of recovered points indicates that the artefacts were annealed to enhance their strength. No bronze spears or axes were found, but the presence of sandstone moulds indicates that axes were cast on site. One level 6 burial, that of a male aged approximately 27 at death, contained a fragment of an iron spearhead (see chapter 7), although iron did not become abundant until level 5 (Higham 1989).

The looted site of Non Pa Kluay, excavated by Wilen (1989) in 1984-5, was located by intensive survey. In addition to stratigraphic excavation, interviews with local collectors were used in the interpretation of the site. Local villagers described inhumation burials, spearheads and axe-casting moulds. Two phases have been described. The first, phase 1, dates to the Bronze Age, from the mid-second millennium BC (Wilen 1989:130-3). The second phase dates to the Iron Age, post 500BC, and sees the introduction of iron, glass and agate beads, and water buffalo. Prehistoric occupation of the site ceased in the early first millennium AD. During the first phase, the ceramic tradition of Non Pa Kluay bore a strong resemblance to that of early and middle period Non Nok Tha. In the second phase a new ceramic tradition, with no parallels with Non Nok Tha, became extant.

In the first occupation phase no bronze artefacts were found in burial contexts, but villagers presented the excavators with a bronze spearhead, supposedly recovered near the base of the 2 metre stratigraphy in a mortuary context. This weapon is ribbed, socketed and has a blade nearly 40 cm in length (fig. 6.5). The tip of the blade was bent prior to interment. Sandstone

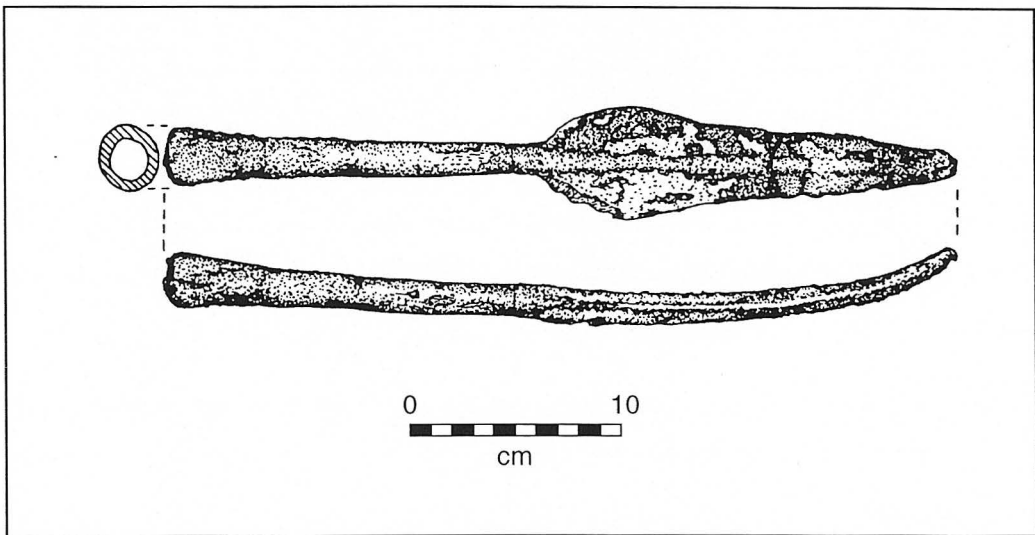


6.4: Projectile point mould, Ban Lum Khao. Maximum length: 9.8cm. Maximum width: 4.1cm. Maximum depth: 1.3cm (Photo: OCAP).

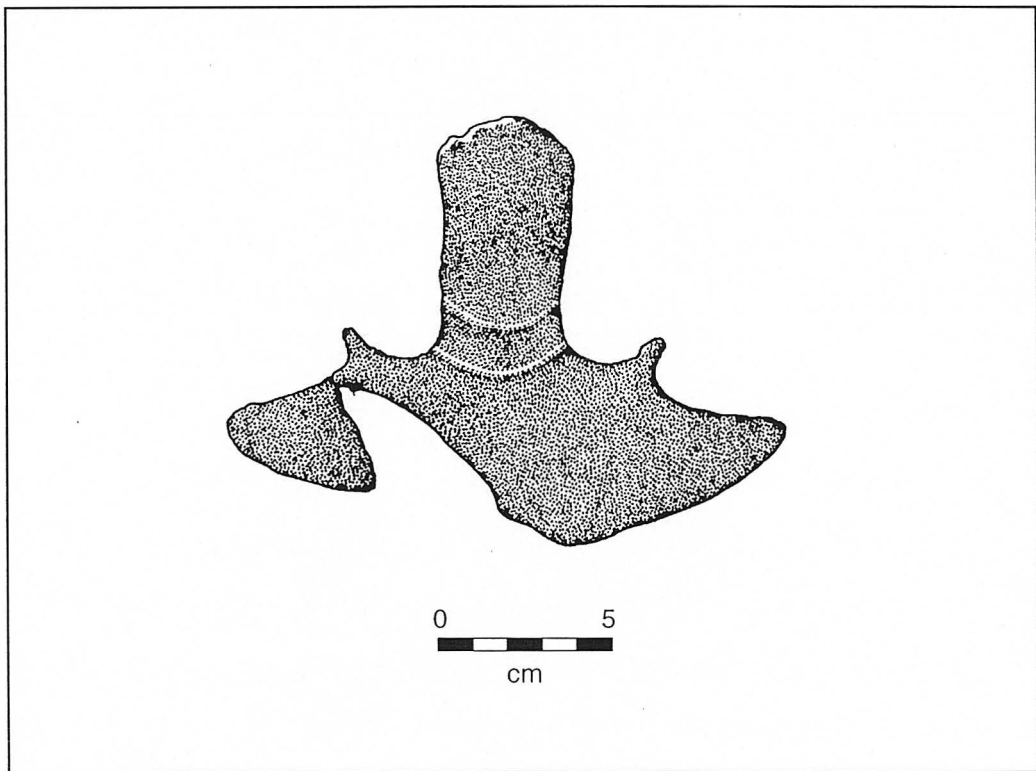
moulds for casting bronze axes were also recovered (Wilén 1989:51-2), although no axes were found.

The site of Ban Lum Khao was excavated by Higham and Thosarat in 1995-6 (Higham 2000; O'Reilly 1999). Archaeological material was exposed over a 14.5 x 10 m area to a depth of 1.7 m. The site comprises an occupation and burial sequence dated by material affinities and radiocarbon determinations to the Bronze Age. A large quantity of complete ceramics was recovered from the 110 burials (Dommett 1999; O'Reilly 1999). While no weapons were recovered during the OCAP excavations at the site of Ban Lum Khao, excavators recovered one mould for a bronze projectile point (Higham 2000:156-7). The mould would have cast a large, robust barbed projectile with an enlarged base (fig. 6.4). The morphology of the points thus produced differs markedly from bronze points found at Nil Kham Haeng and Ban Na Di, but is reminiscent of bronzes from the Iron Age site of Ban Kan Luang (fig. 7.8c). The robust nature of the barbs and the heavy base are especially unusual, and may be indicative of a specialised function.

Ban Prasat is a large, partially moated, site featuring a deep sequence of mortuary activity. The site was excavated by the Thai Fine Arts Department in 1991 (Monkonkamnuanket 1992), exposing both Bronze and Iron Age deposits. Phase 1 of the Ban Prasat cemetery is reckoned to span the period 800BC to 500BC while the second phase encompasses the period 500BC to AD500 (Higham 1996a). The burials in both phases, while differing in some aspects, were generally rich and especially well furnished with ceramics. The interpretation of this site, with respect to its potential utility to this study, differs markedly between the excavators and later commentators. Thus, both views are presented in this discussion. Two bronze axes were recovered, one from habitation contexts, and one in an ambiguous association with an early phase male burial. Monkonkamnuanket (1992:23) states "the axe was found in the chest area of [this] skeleton where the sternum, ribs and vertebrae were crushed...therefore it is [the] reason for the death of this man". It is more likely that this axe was a burial offering, and the damage to the skeleton was taphonomic (Higham 1996a:113). Higham (*ibid*:220) states that "the lack of



6.5: Bronze spearhead, Non Pa Kluay (from Wilen 1989:41).



6.6: Lunate bronze axe, Non Praw (from Higham 1996a:197).

any bronze or iron weapons in this cemetery contrasts with the contemporary situation in Bac Bo, Yunnan, and the Chao Praya valley”, although Monkonkamnuanket reports the presence of an iron projectile point in the upper layers.

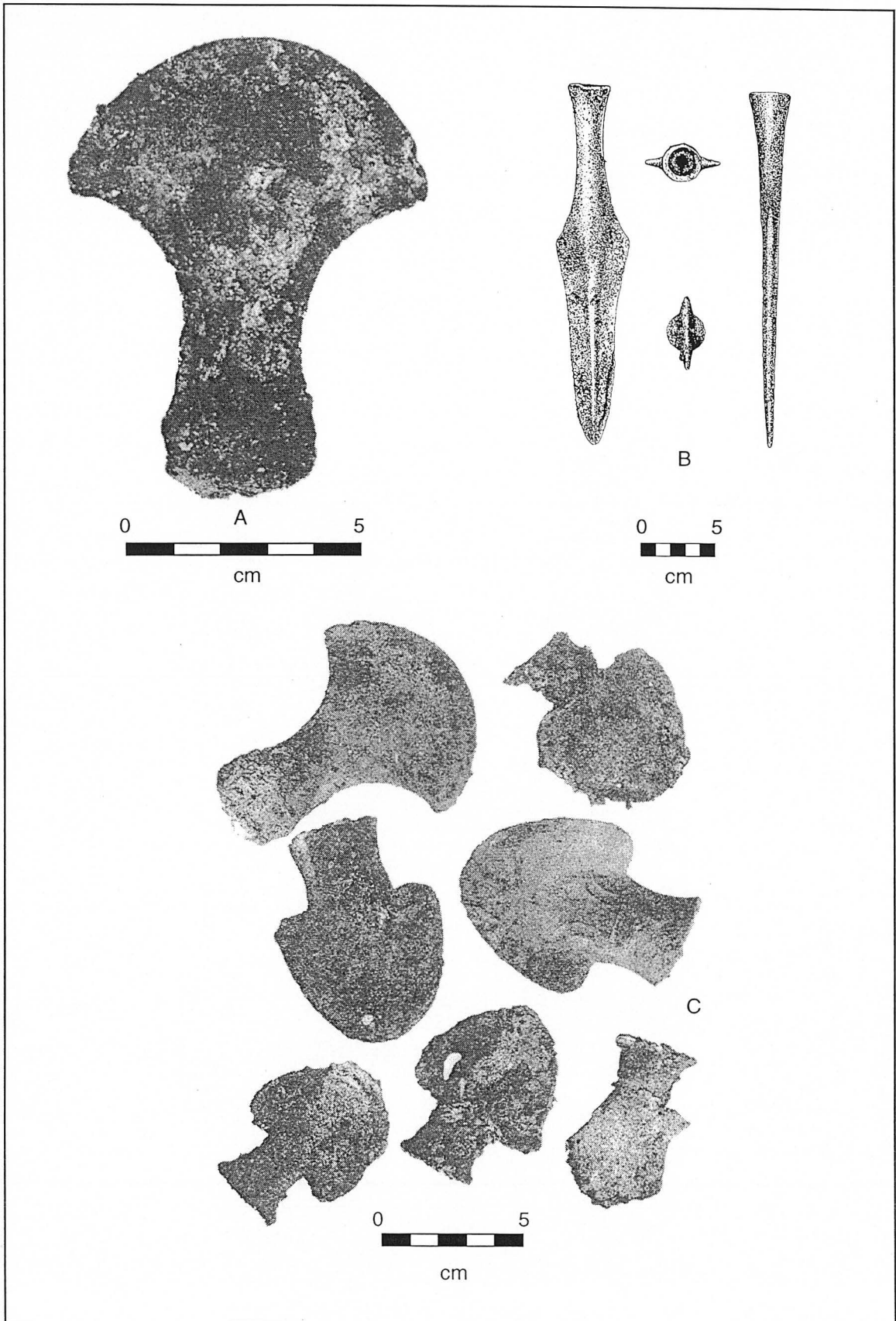
Non Praw, 30 km north of Non Nok Tha, is a small circular site containing Bronze Age burials. No radiocarbon dates are available, but relative dating places the mortuary assemblage in the 1000-500BC range (Higham 1996a:196). Excavations by the Thai Fine Arts department in 1993 revealed 25 inhumation burials accompanied by a range of grave goods including a range of socketed axes. Similar axes have been recovered from Don Klang, excavated by Schauflier (1976). One lunate form appearing at Non Praw bears a resemblance to a Non Nok Tha example (fig. 6.5, cf. Higham 1996a:196). This lunate form is also found in Yunnan, in graves from the necropolis of Shizhaishan (Von Dewall 1979:143, fig. 19). The association of this distinctive form with mortuary offerings of the highly militaristic Dian culture may be evidence that these artefacts were not merely woodworking tools.

Higham's (1989:147) statement that “the axe is a recurrent feature of bronze-using societies here” certainly holds true. Few Bronze Age sites in Northeast Thailand are without either these artefacts or the moulds used in producing them. These axes vary a great deal in form, but are in the main longitudinally socketed. Blade morphology varies widely, however, and may be associated with functional distinctions. A review of the axe-forms present in the undoubtedly warlike Dian and Dong Son polities reveals some similarities with those found in Bronze Age Thailand (fig. 6.5).

At Khok Phlap, a Bronze Age site near the Chao Praya Delta, excavations in the 1970s recovered several burials. No radiocarbon determinations are available, but the material culture suggests affinity with other Bronze Age Central Thai sites. A bronze spearhead and several bronze arrowheads were recovered (Higham and Thosarat 1998).

Nil Kham Haeng in the Khao Wong Prachan Valley is one of a series of sites in this area to take advantage of the abundance of local copper ore deposits. Excavations by Pigott and Natapintu (1988; Pigott, Weiss and Natapintu 1997) revealed a deep sequence of copper production, mortuary activity and occupation deposits. The clear stratigraphy of the site has been divided into two phases. The first dates from 1100BC - 700BC, while the second begins at 700BC and ceases *c.* 300BC. Evidence suggests that the site was a “household-based workshop” (Pigott, Weiss and Natapintu 1997:129) especially involved with the production of copper socketed projectile points, which are found in large numbers (fig. 6.7c). These “socketed, cordiform, blunt-ended” (*ibid.*) artefacts were produced entirely on site, but appear to have been cast without much care or attention. Alternatively, the misshapen nature of some of these artefacts may be due to the native difficulties of casting unalloyed copper (*ibid.*:131). Pigott, Weiss and Natapintu suggest three possible functional alternatives; ingots, projectile points or both. Whichever interpretation is accepted, the quality of the finished artefacts suggests that quantity was a more pressing issue to their manufacturers. The second phase was a period of intensive production, with these artefacts being found in mortuary contexts in far larger numbers than projectile points in other Thai sites.

The 14 burials unearthed at Nil Kham Haeng demonstrated a tendency for increased wealth over time, especially in the abundance of socketed points. Two tin-bronze weapons were also recovered, a 20 cm ribbed spearhead and an unsocketed (miscast?) bronze axe. The late abundance and seemingly cursory production of the socketed points suggests that, whatever their purpose, they were required in large quantities. They appear in burials at Nil Kham Haeng in large numbers, but very few have been discovered at other sites. If these items were ingots for trade, then they were produced in large numbers without appearing in quantity at other known Bronze Age sites. If they are interpreted as projectile points then alternative explanations for their abundance must be considered. Chronologically, the second phase of occupation at Nil Kham Haeng is immediately prior to early Iron Age deposits at Tham Ongbah and Ban Don Ta Phet (see chapter 7), where iron weaponry becomes common. If these artefacts are interpreted as points, then their proliferation may be linked to a common set of causal variables.



6.7: Axe (A), spearhead (B) and projectile points (C), Nil Kham Haeng (from Pigott, Weiss and Natapintu 1997:154, 157).

Another Khao Wong Prachan Valley site, Non Pa Wai, has also been investigated by Pigott and his colleagues. The Bronze Age sequence of occupation is dated to 1500BC - 700BC and is characterised by intensive copper production without mortuary activity. The stratigraphy is dominated by a fine, loose grey matrix, denoting a different system of copper production to Nil Kham Haeng (Pigott, Weiss and Natapintu 1997). Later deposits at this site have revealed moulds for axes and projectile points as well as ornaments, although no weapons have been recovered. Ingots were also produced, cast into conical shapes in ceramic moulds.

SETTLEMENT PATTERNS

No trace of Bronze Age fortifications have been found in Thailand. The size and dispersed nature of Bronze Age sites supports the low level of identified warfare in the region. However, sampling issues may be responsible for some ambiguity. Few systematic excavations have sought to identify pertinent aspects of micro-level settlement pattern, as cemeteries have been deemed more appropriate for excavation. As of the moment, however, no Bronze Age site has yielded any evidence for palisades, ramparts, moats or walls.

PALAEOPATHOLOGY

With many Thai sites, final comprehensive site reports are lacking. This is certainly the case at Non Nok Tha, where Bayard (1971:41) has remarked that:

we can state...that some contact took place between groups in the form of warfare. This appears to have been in the nature of headhunting raids rather than large campaigns; all levels in both excavations featured at least one burial which was either headless, contained a skull obviously disarticulated at the time of burial, or contained one or more additional skulls

Douglas (1996) has analysed this skeletal series as a part of her doctoral dissertation, noting 20 cases of non-vertebral trauma in 17 individuals; 10 males and seven females. All trauma from

this site was well-healed, with the exception of a depression fracture on the left parietal of burial 2-42. The same individual, a middle-aged male, has an unhealed metacarpal fracture. While the depression fracture may be the cause of death, it is probably too small (10 x 13mm) to be lethal, unless systemic infection was involved. This individual aside, no evidence in the Non Nok Tha sample is suggestive of the presence of intercommunity violence. The unusual distribution of cranial remains at Non Nok Tha is provocative, although the sheer amount of mortuary activity at Non Nok Tha may have generated considerable disturbance (Douglas 1996).

The Ban Chiang skeletal series has also been analysed by Douglas (1996, 1997), revealing a population with considerable evidence for trauma associated with a robust lifestyle (Douglas 1997). One depression fracture was found as well as one possible instance of perimortem cranial damage. Rib fractures (found on 5 individuals with often more than one broken rib per individual) are found solely on the left side. A number of injuries in the Ban Chiang series, while unable to be correlated with a specific social context, are potentially consistent with violence; a broken hyoid, lower arm fractures (which could also result from falls) and “boxer’s” metacarpal fractures.

The well-healed state of all reported injuries gives rise to the speculation that *if* lethally violent activities were taking place among the population of Ban Chiang, the victims may not have been included in the *in situ* mortuary ritual. Other sites also show very few unhealed injuries. If the rugged lifestyle suggested by Douglas (1997) to exist in the Bronze Age is accepted, then any casualties caused by this lifestyle, or by any other vector, do not appear to have been included in the excavated cemeteries.

Although no weapons were recovered from Ban Lum Khao, Dommett (1999) has noted the predominance of fractures to radii and ulnae. One particular individual, a male aged *c.* 30, presented transverse fractures of both the left ulna and radius, tentatively associated by Dommett (1999:213) with either violence or a hard fall from a considerable height.

Only two skeletons from the Ban Na Di series show any signs of trauma (Dommett 1999; Wiriyayomp 1984). One has a well healed fracture of a first metatarsal, while another has a lesion on the left tibia. While the excavated cemetery at Ban Na Di is not as large as some, the near total lack of bone trauma is curious. The Ban Chiang sample has a greater incidence of trauma (Douglas 1997), attributed mostly to accidental causes (see above). The interpretation of this pattern at Ban Na Di is difficult. Sampling may be responsible for this pattern, or the people of Ban Na Di may have lead very safe lives, *contra* the situation suggested by Douglas to exist at Ban Chiang. Alternatively, it is possible that individuals suffering fatal trauma were not interred at the site. Overall, Wiriyayomp (1984) characterises the people of Ban Na Di as healthy and robust. Nevertheless, they often died young, a trend especially prevalent in the male population.

Nineteen burials were uncovered during the excavations at Non Pa Kluay. Pietrusewsky (1988:7), in his examination of the skeletal sample, notes that “no cases of trauma, dislocation, healed fracture or amputation are observed in the remains”. While we should be aware that the mortuary sample for Non Pa Kluay is very small, the total lack of trauma is interesting, as it mirrors findings from the Ban Na Di sample.

There are no reported projectile injuries from Bronze Age contexts, and most skeletal series represent healthy populations, certainly with far less trauma than, as a comparative example, the Californian hunter-gatherer populations reported by Lambert (1997).

ICONOGRAPHY

Symbolic or realistic representation of human beings is rare in Thai prehistory. Most prehistoric pottery is undecorated and sculpture rare, although clay models of people and animals are known from Ban Na Di and a bronze figurine of a pregnant woman was found at Ban Prasat. Rock art provides us with hunting and possibly ritual scenes, but none pertaining to warfare.

DISCUSSION

The evidence for warfare in the Thai Bronze Age is, as noted by both Higham and Kijngam (1984) and White (1995), elusive at best. Few sites show any concrete evidence, although there are many more subtle clues. The distribution of spears and axes in Bronze Age contexts suggests that these artefacts were everyday items, manufactured with a high degree of skill, yet they are not found in any clear associations, nor in great numbers.

Arrowheads are known from several Bronze Age sites, and their use in hunting is attested by cave art (Higham and Thosarat 1998:131, figs. 200-201). Unlike the Iron Age, there is no direct evidence of projectiles being used in warfare, although the evidence for intensive production of these artefacts at Nil Kham Haeng (see above) begs interpretation.

Spearheads, while far from ubiquitous, are also a feature of the Thai Bronze Age. The ethnographic record would suggest that spears were prominent in pre-colonial warfare in Southeast Asia (Quaritch-Wales 1952; Rawson 1968) and this may have been the case in prehistory. Spears were certainly used in this context in the historic era (Quaritch-Wales 1952; Roveda 1997). A particularly interesting phenomenon is the deliberate 'killing' of the spearhead prior to its inclusion in an interment. This behaviour has been noted at the Bronze Age sites of Ban Chiang and Non Pa Kluay and is also seen at Iron Age Ban Don Ta Phet (Glover 1990) and Tham Ongbah (Sørensen 1973). In the case of iron weapons treated in this fashion Glover (1990) has argued that significant heating would be needed to achieve this damage. Bronze weapons such as those from Ban Chiang and Non Pa Kluay may have been bent without such treatment, but the continuation of this practice in the Iron Age shows that these weapons were not merely accidentally damaged. Rather they were deliberately altered, most likely for inclusion in mortuary ritual. Thus the symbolic association of death and weapon is perpetuated, possibly so that the artefact may accompany its possessor into the afterlife.

Osteoarchaeological analyses provide us with an insight into the people of this period. The low rate, or at some sites, total lack, of physical trauma visible in prehistoric skeletal series is

evidence that conflict was either at a low level or absent. As noted in a previous chapter, the incidence of trauma in a mortuary population can drastically underestimate the actual incidence of such insults. It is also possible that individuals suffering fatal injuries were accorded different mortuary treatment.

Fortification is unknown from Thai Bronze Age sites, and no destruction layers or non-formally buried bodies have been reported. The lack of interest in the construction of fortifications correlates well with a low population and little interest in materialistic warfare.

The patterns of material culture and osteological trauma in the Thai Bronze Age provide no demonstrable evidence for warfare in this period, yet certain elements are superficially consistent with the presence of structured violence. Projectile points and spears are regular components of Bronze Age assemblages, although they only rarely occur in significant numbers. Certain Bronze Age sites also show relatively high levels of osteological trauma, occasionally clustered to the left side of the skeleton, but no evidence exists for the social context of these injuries.

White (1995) and Bayard (1971) have suggested that raiding, feuding or headhunting could have characterised the Bronze Age of Thailand. While White's arguments have been discussed in an earlier chapter, little evidence can be found to either refute or expand upon this statement. The data amassed here suggest that the evidence from Bronze Age contexts is not inconsistent with a warfare complex based on non-intensive occasional conflict likely motivated by non-material factors. It is stressed that this behaviour is viewed here as 'war', differing in intensity and motivation rather than essence from conflict visible in late prehistoric and early historic Southeast Asia.

We can suggest that intergroup conflict, possibly "feuding and head-hunting" as envisaged by Bayard (1971) and White (1995:111), was not intensive enough either to leave distinctive marks in the osteological record, or to encourage the construction of fortifications or the

adoption or development of specialised military weapons. As we shall see, in certain areas of Thailand, the Iron Age saw the introduction of some of these factors.

The inception of the widespread use of iron has been correlated with the beginning of use of the domestic water buffalo (Higham and Kijngam 1984), climatic changes (Anderson 1987; Nutalaya and Sophonsakularat 1988), population growth, the expansion of settlement, growth in size of sites and, in some areas, radical demographic changes (Higham and Thosarat 1998; Rivett 1999; O'Reilly 1999).

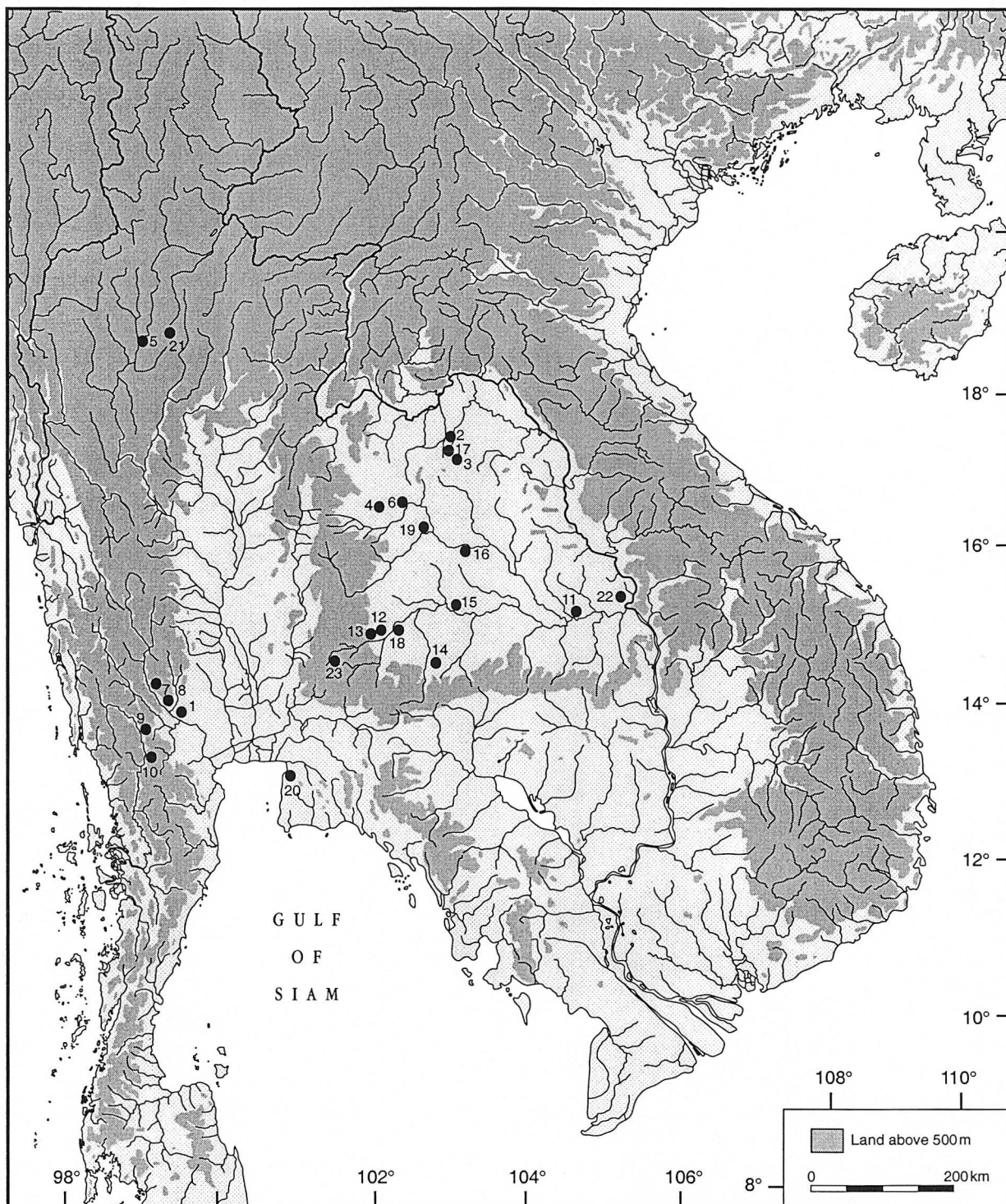
7.

**WARFARE IN PREHISTORIC THAILAND 500BC - AD500:
THE IRON AGE**

During the mid-first millennium BC iron became an element in the material culture of prehistoric Thailand. The origins of this innovation are unknown, but have been linked to the expansion of iron technology through southern China. It has also been suggested that indigenous Thai metalworkers, who routinely used haematite as a flux in bronze working in the Khao Wong Prachan Valley, realised the properties of iron (Pigott and Marder 1984). The iron produced in this way was likely of very low quality, with a low degree of carburisation (Connolly forthcoming).

The period 500 BC to AD500 in Thailand, commonly known as the Iron Age (Higham and Thosarat 1998), has been heralded as contemporary with changes in industrial, demographic, and social patterns. In addition to new regional ceramic styles (O'Reilly 1999:287), Iron Age artefact assemblages contain many new items such as gold, glass, carnelian, agate and new and intricate bronzes (Higham and Thosarat 2000). Expansion in trade and exchange systems incorporating India, as well as the enhanced efficiency of iron tools are seen as factors in "a drastically altered socio-political climate" (O'Reilly 1999:289; cf. Higham and Thosarat 1998; Welch and McNeill 1991). Thai contact with India reached new levels during the Iron Age. A carnelian lion figurine representing the Buddha was found at Ban Don Ta Phet, while agate, carnelian¹ and glass jewellery, most commonly seen as of Indian origin or inspiration, appear at a wide range of Thai sites. Several other artefacts from this cemetery indicate contact with Vietnam (Glover 1990; Higham 1998). In the Mun River Valley certain sites appear to be

¹ Carnelian appears at two Bronze Age sites in Central Thailand, Nong Nor and Ob Luang. However, it becomes much more common in the Iron Age and appears in Northeast Thailand for the first time during this period.



7.1: Map of Southeast Asia, showing sites mentioned in this chapter. **1.** Ban Don Ta Phet. **2.** Ban Chiang. **3.** Ban That. **4.** Non Pa Kluay. **5.** Ban Wang Hi. **6.** Non Nok Tha. **7.** Tham Ongbah. **8.** Ban Kao. **9.** Khao Jamook. **10.** Huai Muang. **11.** Ban Kan Luang. **12.** Noen U-Loke. **13.** Ban Non Wat. **14.** Muang Phet. **15.** Non Yang. **16.** Ban Chiang Hian. **17.** Ban Na Di. **18.** Ban Prasat. **19.** Non Chai. **20.** Nong Nor. **21.** Ob Luang. **22.** Pha Taem. **23.** Khao Chan Ngam.

ringed by ditches, while others in Central Thailand appear strategically located to control exchange routes. This evidence has led O'Reilly (1999) to suggest that the transition to the Iron Age represents a change to more hierarchic organisational patterns. This transition has also been associated with military intensification (Higham 1996a; Higham and Thosarat 1998, 2000; O'Reilly 1999), a proposal that forms the principal investigative line of this chapter.

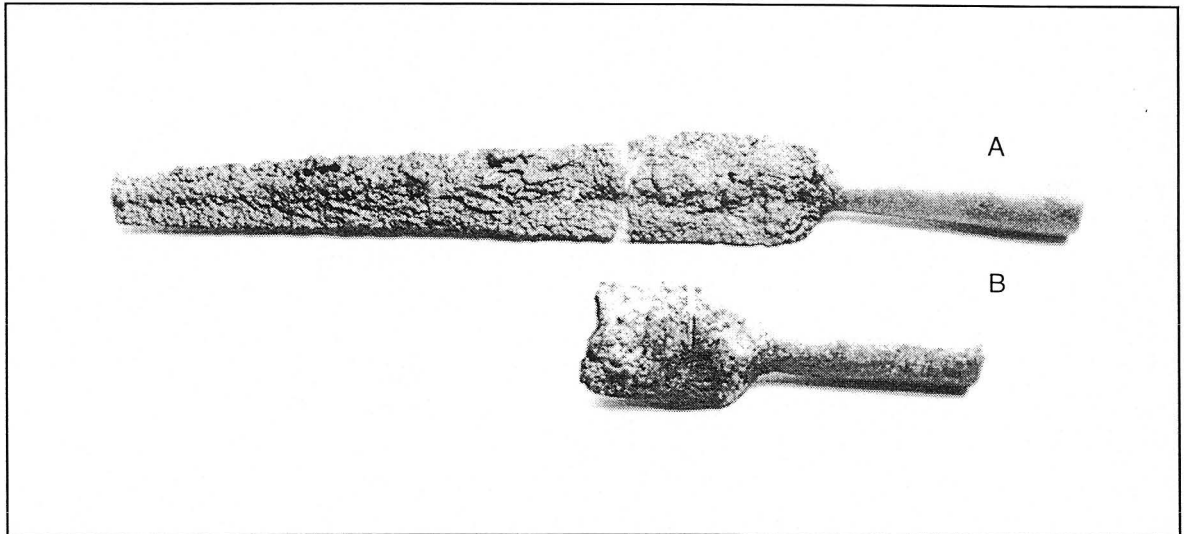
Intensification in military activity has been noted above (chapters 2 and 3) to be an important facet of many arguments related to broader social change. Changes in the nature and frequency of warfare-related evidence should enable us to evaluate changes in the spatial and temporal patterning of warfare. The particular questions asked of the Thai Iron Age are focused on intensification, and the place of these arguments in broader models (Higham and Kijngam 1984; O'Reilly 1999). Specifically, this chapter seeks to assess diachronic change in evidence for warfare, especially in the context of the differences cited between the Thai Bronze and Iron Ages (O'Reilly 1999; White and Pigott 1996), and the transition to the historic period at the end of the Iron Age.

MATERIAL CULTURE

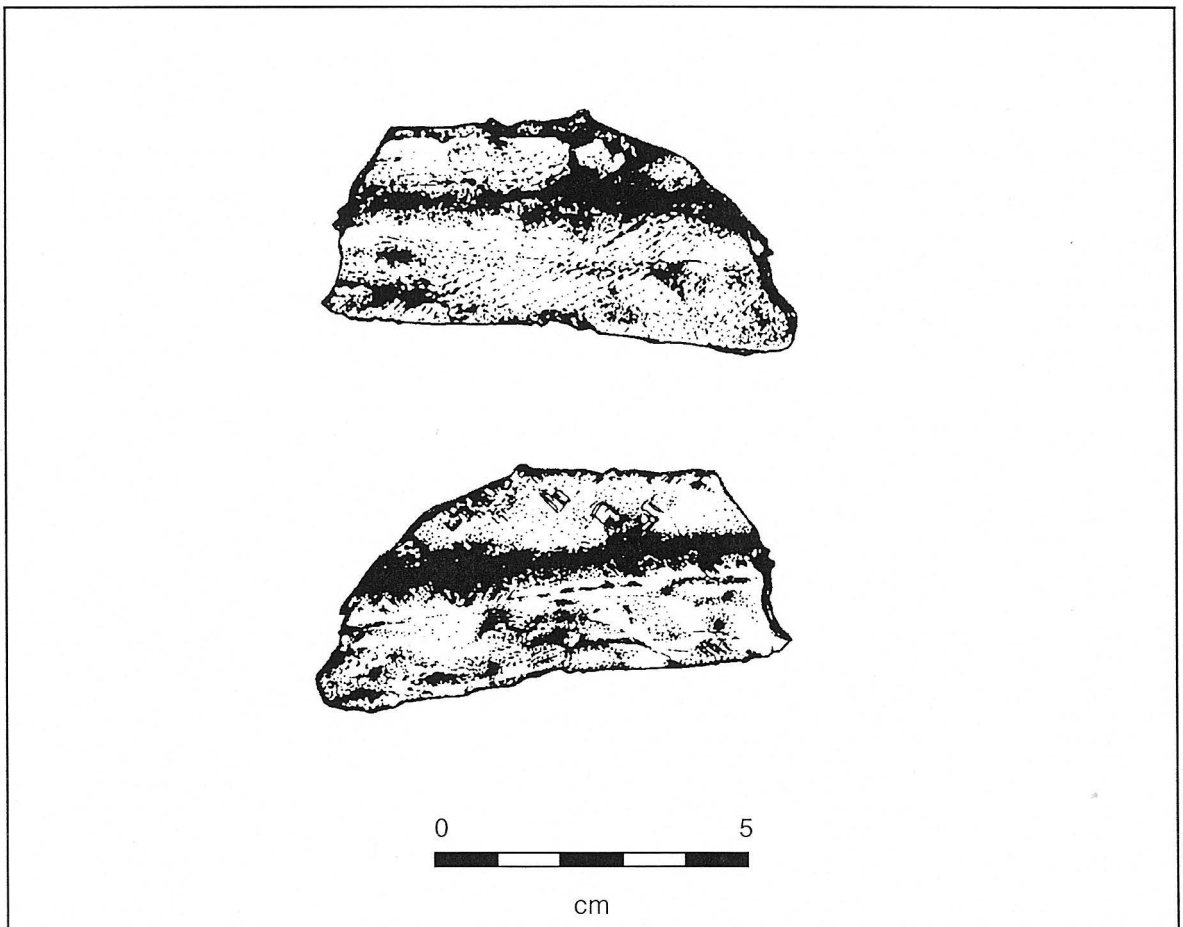
The introduction of iron to the material repertoire of prehistoric Thailand is reflected in ornaments, tools and weapons. Bronze continues in use throughout the Iron Age, though several sites experience a trend for bronze to be used solely for ornaments while iron becomes the favoured material for tools and weapons.

The middle period at Ban Chiang sees the introduction of iron technology, featuring two bimetallic (bronze and iron) spearheads. These artefacts are leaf-shaped, long and slender with a central rib. Both weapons are incomplete, but would have measured nearly 30cm when whole. These are the only iron artefacts other than bangles dated to the Middle Period (Stech and Maddin 1988:166).

Major changes in material culture and burial tradition have been noted in the discontinuous transition from Middle period to Late period at Ban Chiang (Higham 1983; White 1982:28).



7.2: Bimetalllic spearheads, Ban Chiang. Length of A: 28.7cm, length of B: 10.7cm (from White 1982:80).



7.3: Iron spearhead fragment, Ban Na Di (from Higham and Kijngam 1984:146).

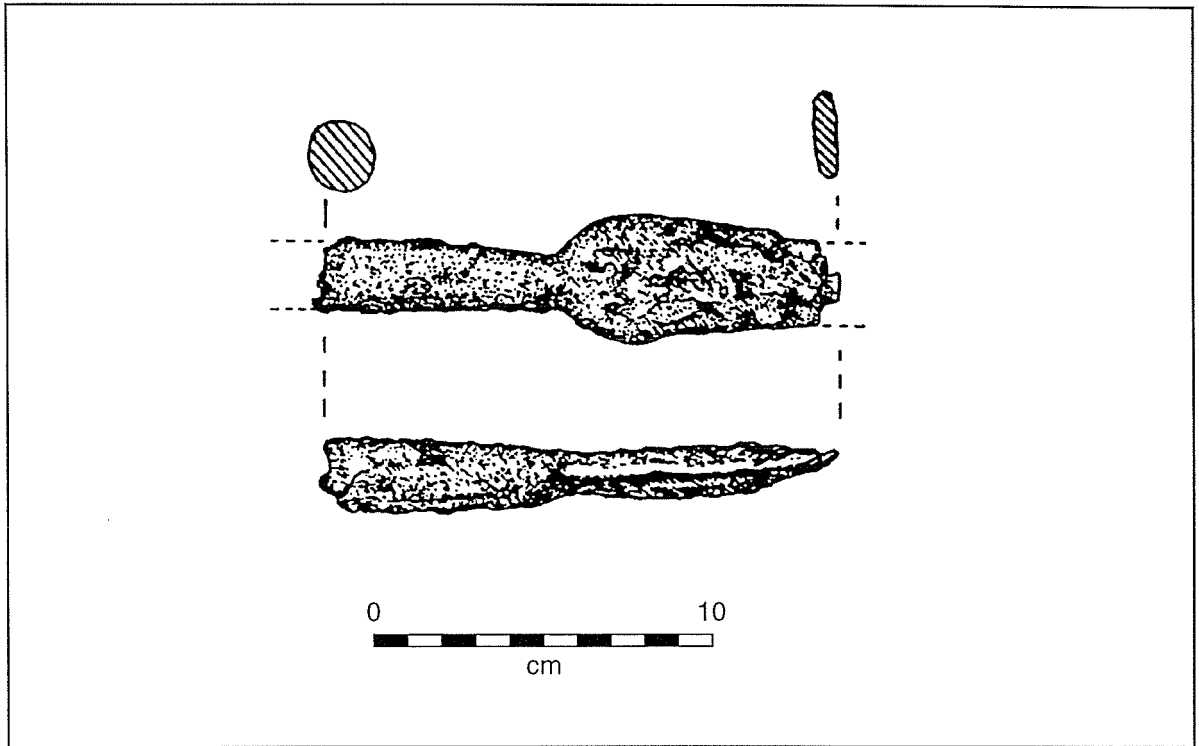
White (1982:45) notes that, while no iron occurs in excavated burials from the Late Period, iron is used solely for tools and weapons. Stech and Maddin (1988) have analysed two unidentified tools, but provide no further morphological details.

The largely Bronze Age cemetery at Ban Na Di contained “two late male graves containing iron” (Higham 1996a:231). One of these burials, from mortuary phase 1c, contained a fragmentary ribbed spearhead (fig.7.3).

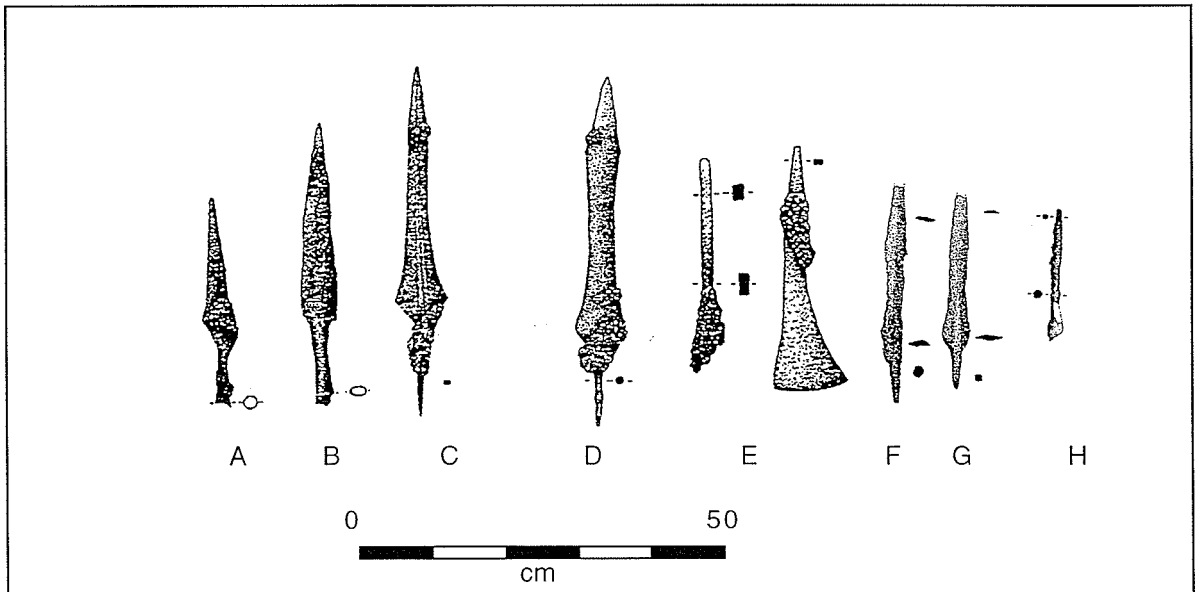
The site of Ban That, although heavily looted, has provided two bronze halberds of highly probable Dong Son origin (Higham 1989:219). The presence of these specialised weapons is telling, even if precise stratigraphic data are unavailable. It is clear that some exchange was taking place between Bac Bo and Northeast Thailand. The bimetallic spearheads of Ban Chiang may also be of direct or indirect Dong Son origin, although this is pure speculation. It may be significant that the only artefacts marshalled as potential evidence of this contact are associated with warfare.

The second phase of Non Pa Kluay dates to the Iron Age, post 500BC, and sees the introduction of iron, glass and agate beads, and water buffalo. Prehistoric occupation of the site ceased in the early first millennium AD. In this phase a new ceramic tradition, with no parallels with Non Nok Tha, developed. Iron was used nearly exclusively for tools and weapons and was associated with new forms of artefacts. Four iron spearheads have been recovered, three from excavation and one from a local collector (fig. 7.5). These are similar in form to Ban Chiang artefacts (White 1982) and, where complete, have blades over 20cm long (Wilén 1989:46). A range of iron axes was also recovered, including lunate and straight bladed varieties (*ibid.*).

Situated at the very headwaters of the Chao Praya river, the cemetery at Ban Wang Hi provided an intriguing mortuary assemblage. The site was discovered while digging a water tank in



7.4: Iron spearhead, Non Pa Kluay (from Wilen 1989:46).



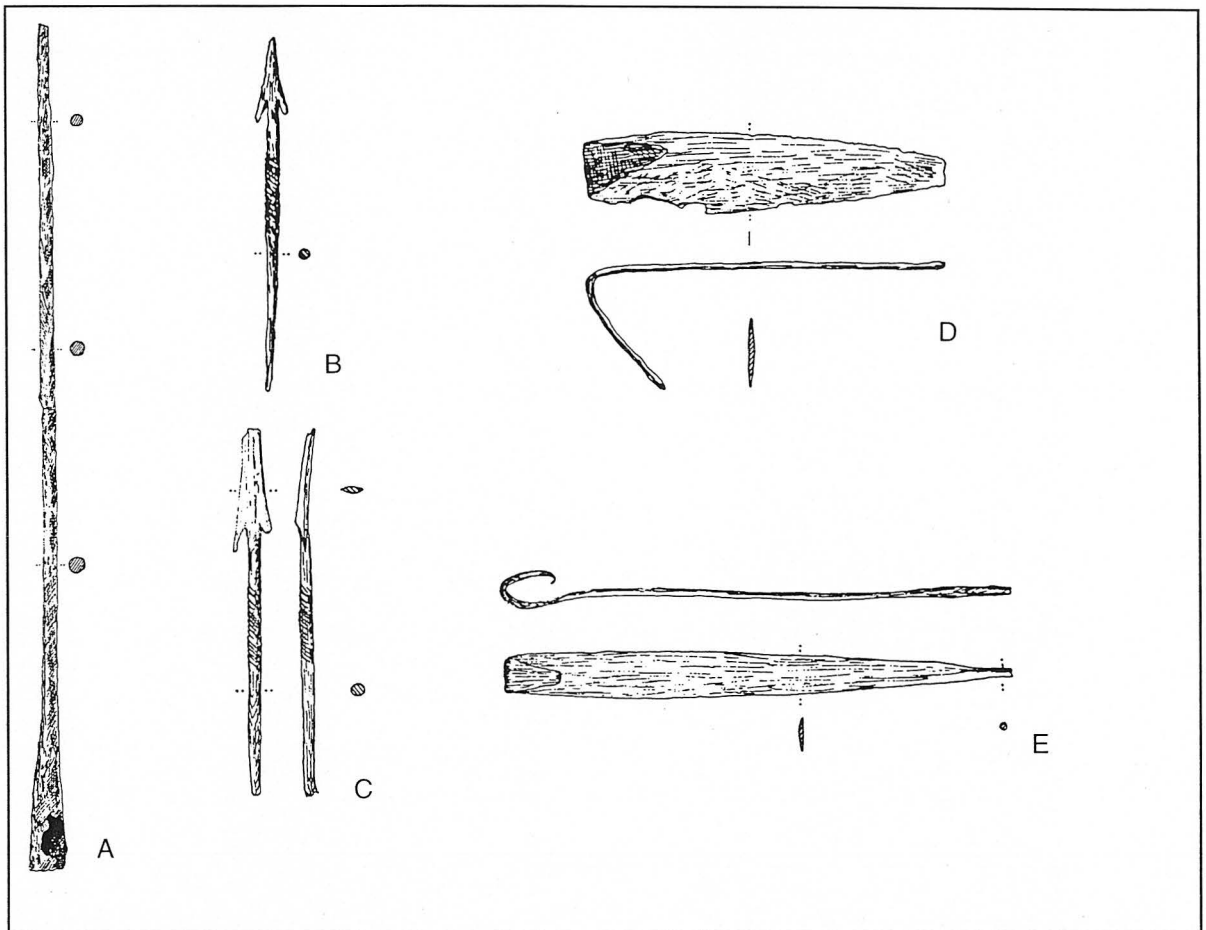
7.5: Swords (C, D, F, G), spearheads (A, B), a lance (H) and an axe (E), Ban Wang Hi (from Pautreau and Mornais 1998:15-16).

1987. Subsequently, Thai authorities conducted test excavations, revealing a prehistoric cemetery. More recently, excavations by French archaeologists have uncovered eleven burials (Pautreau *et al.* 1997; Pautreau and Mornais 1998), all oriented Southeast-Northwest. While no determinations are available, the presence of iron tools and glass beads at the earliest levels places the initial occupation of the site in the Iron Age.

The material assemblage recovered from Ban Wang Hi is unique in Thailand, as it includes a number of iron swords, as well as spearheads, an axe and a lancehead. This lance, recovered from burial 98-9, has a cylindrical socket and tapers to a point. It was probably constructed by rolling a piece of flat iron into a cone before shaping. As with a similar example from Tham Ongbah, no convenient functional designation has been proposed. Sørensen (1973) has argued that the incomplete example from Tham Ongbah, which is much longer than the *c.* 30 cm Ban Wang Hi example, may have been barbed, although the state of completeness of the Ban Wang Hi example cannot be assessed. These artefacts may have been specialised projectile or spear points, possibly used for hunting, fishing or combat.

The two triangular spearheads recovered by the Franco-Thai excavation differ from most Thai examples, such as those from Ban Chiang, which are leaf-shaped. These artefacts measure 25-30 cm in length, including the socket. The tanged axe illustrated (fig. 7.5e) is also very large and robust. It has a slightly curved edge and seems suited for longitudinal hafting at its narrow, tanged end.

The four swords recovered from Ban Wang Hi burials display similar morphology; a wide splayed root, a pronounced waist and a wide tip terminating in a point. The weapons are tanged, three tangs being circular and one square. The blades are ribbed in two instances. These are short cut-and-thrust weapons, measuring between 26 and 47 cm. Several of the blades are short enough to possibly be considered daggers (fig. 7.5f, g).



7.6: Lance (A), arrowheads (B, C) and 'killed' spearheads (D, E), Tham Ongbah. Length of A: 58.5cm, length of B:14cm, length of C: 13.5cm, length of D:14cm, length of E:19.6cm. (from Sørensen 1973:138, 143, 147).



7.7: *In situ* 'killed' spearheads, Ban Don Ta Phet (from Glover 1990:146).

Pautreau and Mornais (1998) have argued that the restricted distribution of these weapons reflects the presence of an elevated social group, showing wealth in both exotic jewellery and specialised iron weaponry. The Ban Wang Hi swords show no similarity to the Chinese swords found regularly in Vietnam and Yunnan during this period but may be related to Indian weapons. Indian swords dating to the Sanchi and Gupta periods of the early first millennium AD show superficial similarities in their wide roots, waists and splayed tips (Rawson 1968:2).

The cave (*Tham*) of Ongbah, situated near the banks of the Khwae Yae River, is a heavily looted burial site dating from the Iron Age. Sørensen (1973) describes two distinct groups of graves, one interred within large wooden coffins. The extensive looting at this site precluded detailed stratigraphic excavation, but Sørensen was able to obtain a radiocarbon date from one of the wooden coffins. This date, 403BC - AD25, places the site in the Iron Age, and suggests a contemporary use of the cave to occupation at Ban Don Ta Phet and Ban Wang Hi (Higham and Thosarat 1998).

While there are no apparent wealth differences between those burials with coffins and those simple burials without, the extensive looting that has taken place in the coffin burials renders many conclusions on the basis of relative wealth invalid. However, both groups preserved a rich assemblage of iron artefacts (Sørensen 1973). The ten simple burials contained a limited range of iron weaponry, comprising two spearheads and two arrowheads. Both spearheads are long leaf-shaped artefacts, measuring 14-20 cm incomplete, and were intentionally 'killed' by bending the tip of the weapon. Similar behaviour has been observed at a number of sites in prehistoric Thailand (Glover 1990; White 1983; Wilen 1989). The two arrowheads found in the simple burials, while differing slightly in tang morphology, are similar in important ways. They are both barbed and tanged, and both tangs are wound with wire. These characteristics denote heavy reinforcement of the tang, indicative of the makers' desire for an extremely robust projectile.

A pair of rectangular sectioned axes were recovered from the disturbed deposit, presumably once part of the burial furniture of the coffin burials or stray finds deposited during the construction of the coffins.

While one axe is incomplete, the other is transversely socketed, 12 cm long, with a slightly curved edge. Sørensen (1973:156), discussing the nature of these artefacts, states that traditional woodworking tools in Thailand are usually not socketed, and furthermore, are usually single bevelled adzes. He suggests that the association of socketing with weapons “seems to be applicable to the major collections of weapons from South and East Asia” (*ibid.*:159). He also argues that the narrow sockets of these artefacts would also seem to imply that woodcutting was not their primary intended purpose, rather either ritual, display or warfare (*ibid.*:159). He also indicates (*ibid.*) that their poor state of preservation “may be due to ‘killing’ of the tools before they were buried”. Although this behaviour has been consistently reported with respect to spearheads, these are the only axes that may have been treated in this manner.

A long, cylindrically-sectioned iron artefact found in the disturbed deposit has been interpreted by Sørensen (1973:155) as a lance (fig. 7.6). The artefact was originally 80-85cm long, and may have been barbed. One end of the cylindrical weapon was hammered flat and twisted to form a 2.5cm wide socket. A similar artefact was uncovered at Ban Wang Hi (fig. 7.5).

The most interesting weapon in the disturbed deposit is a possible socketed *ko* or Chinese halberd. Sørensen (1973:156), while stating the possibility that the artefact could be a fragmentary pick, favours the *ko* identification on the basis of the blade morphology, although the state of preservation of the artefact precludes any definite conclusions.

A set of bronze drums was also found in the cave. These artefacts probably originated in Bac Bo and details of their construction and decoration are dealt with in chapter 7, as they are of immense utility to the study of warfare. Chinese histories speak of these drums being used to summon warriors (Higham and Thosarat 1998:142, quoting Chinese histories) and, while it

would be futile to speculate on their use at Ongbah, it is certain that the drums were items of considerable prestige.

Sørensen's Thai-Danish team also excavated the site of Ban Kao, Katchanaburi Province, situated on the Khwae Noi River (Sørensen 1967, 1973). The site has attracted its share of dating controversy, due in the main to two iron-bearing burials which appear to have been sunk into a Neolithic cemetery and habitation site (Sørensen 1967). While the exact chronological context of the site has been debated (see Higham 1996a for a review), the safest option seems to be the one noted above, that the iron-bearing burials postdate the rest of the site, which is Neolithic. Radiocarbon determinations refer solely to the Neolithic period (Sørensen 1967; Higham 1996a:260).

The iron-bearing burials contain two weapons, a 4.3 cm long barbed hollow-base arrowhead and a multi-barbed spearhead, 17.5 cm long. This second artefact is most likely a fishing spear, although Sørensen (1973:156) notes its similarity to "an arrowhead from the same locality, made of bone and definitely used to kill human beings...this may indicate a dual purpose". The arrowhead in question was found in burial 8, of Neolithic provenance. Sørensen (1967:28) states that "this individual was apparently killed; in the thoracic area was found the fore part of a broken barbed arrowhead, and later on the hind part of the same arrowhead was found still hanging by one barb between the ribs". The occurrence of a projectile injury in the Neolithic record is unique in Thailand, and such injuries are extremely rare in later periods. The arrowhead is described by Sørensen as "made of bone, barbed, three barbs on one side and two on the other; two side knobs at the hindmost part of the stem, which is ovaloid in cross-section". This morphology closely parallels the iron spear found in one of the iron-bearing burials.

The Iron Age cemetery at Ban Don Ta Phet was discovered in 1975, during construction of a local school. The site was excavated in the subsequent season by Thai archaeologists and since has been subject to two seasons of excavation by a British team. The site dates to the fourth

century BC, with an average pooled radiocarbon determination of 390-360 BC (Higham 1996a:282). Glover's (1984, 1990) two seasons at the site exposed 49 burials and a wide array of grave goods. No occupation appears to have taken place at Ban Don Ta Phet, and many interments may be secondary (Glover 1990).

Bronzes from Ban Don Ta Phet are wholly decorative, and include the decorated bronze bowls for which the site has become famous. Iron artefacts, by contrast, are associated with "agriculture, industry and conflict" (Higham 1996a:287). The sheer quantity of iron weaponry uncovered at Ban Don Ta Phet by the British team's two seasons stands in sharp contrast to Bronze Age deposits (and to many Khorat plateau sites). The sample includes 20 tanged spearheads, with long, unbarbed slender blades. Seven socketed spearheads were also uncovered, similar in morphology to the tanged examples. 24 arrowheads were found, with varying methods of shaft attachment; sockets, tangs and hollow bases. Those illustrated in Glover (1990:162, fig.12) are all barbed. Four shaft-hole axes were also uncovered, as well as 33 artefacts of unassigned function, labelled by Glover (1990:161, table 4) as "tanged blades". The variety in attachments visible in the Ban Don Ta Phet spearhead assemblage brings to mind the comments of Sørensen (1973; see above). While it is possible that these different attachments are adaptations to different functions, as Sørensen suggests and as has been argued in other parts of the world (Keeley 1996), no conclusions can be adequately drawn.

All the large socketed spearheads uncovered at the site had been "deliberately mutilated" (Glover 1990:161) by being bent back on themselves (fig 7.7). As noted above, iron spearheads treated in this fashion must have been bent while hot, possibly indicating that these artefacts were produced specifically for mortuary inclusion. This behaviour is mirrored at other prehistoric Thai sites.

Connolly (forthcoming) has indicated that the quality of the metal used to construct these weapons is very poor, due to very low carburisation. Iron carburised to this degree is unlikely to have been superior to bronze. Connolly has argued that the lack of energy expenditure in the

practical aspects of these spears may be further evidence that they were produced solely for mortuary purposes.

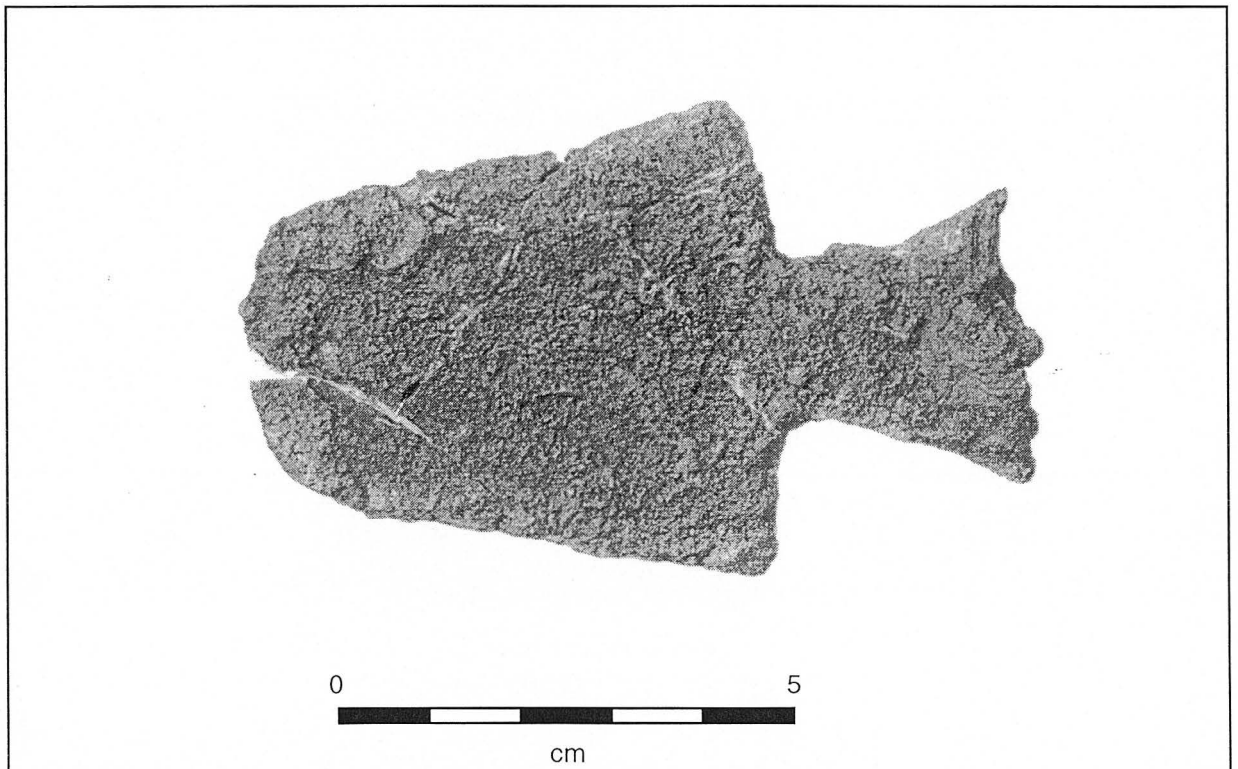
Khao Jamook, a disturbed prehistoric and modern tin mining site in site in Central Thailand, has yielded a bronze spear and bronze axes as well as an iron billhook (*keoi*) very similar to those found at Ban Don Ta Phet (Bennett and Glover 1992). Bronze axes and an iron spearhead were also found at nearby Huai Muang (*ibid.*).

The disturbed site of Ban Kan Luang, near the confluence of the Mun and Chi rivers, has provided an Iron Age assemblage containing bronze spearheads, iron arrowheads, lunate socketed axes and a sword blade (FAD 1992; Higham 1996a:228-229; Woods and Parry 1995). Woods and Parry (*ibid.*) conducted a surface examination and assessment of disturbed artefacts, while systematic excavations were conducted by the Thai Fine Arts Department (FAD 1992). Spearheads were found during Woods and Parry's surface examination and were uncovered in later excavations. These differ markedly from those uncovered at other Thai sites (fig 7.8). These artefacts have a robust double hooked tang, rear-pointed spurs on each side of the blade and a broad squared termination. These weapons have no equivalent in other Thai Iron Age sites, nor do they appear to have equivalents in the Bac Bo or Yunnan regions.

The site of Noen U-Loke has been the subject of three seasons of excavations. The first, under Wichakana in 1986, was responsible for two squares, revealing an occupation and mortuary sequence beginning with the Bronze Age and moving into the Iron Age. Iron knives and axes were found in mortuary contexts. The deep deposits at this site encouraged further excavation and in 1997 and 1998 The Origins of Angkor Project exposed a five metre stratigraphy over an area of 210 m² (Higham 2000; Higham and Thosarat 2000). The excavations, located close to Wichakana's square near the centre of the mound, revealed 126 interments, mostly buried supine, although both infant jar burials and prone adults were encountered. Preservation at Noen U-Loke is generally excellent, though some burials were disturbed.



7.8: Spears (A, B), point (C), and sword (D), Ban Kan Luang (from FAD 1992:42-45). Scale of sword unavailable.



7.9: Bronze spear or point, Noen U-Loke (photo: OCAP).

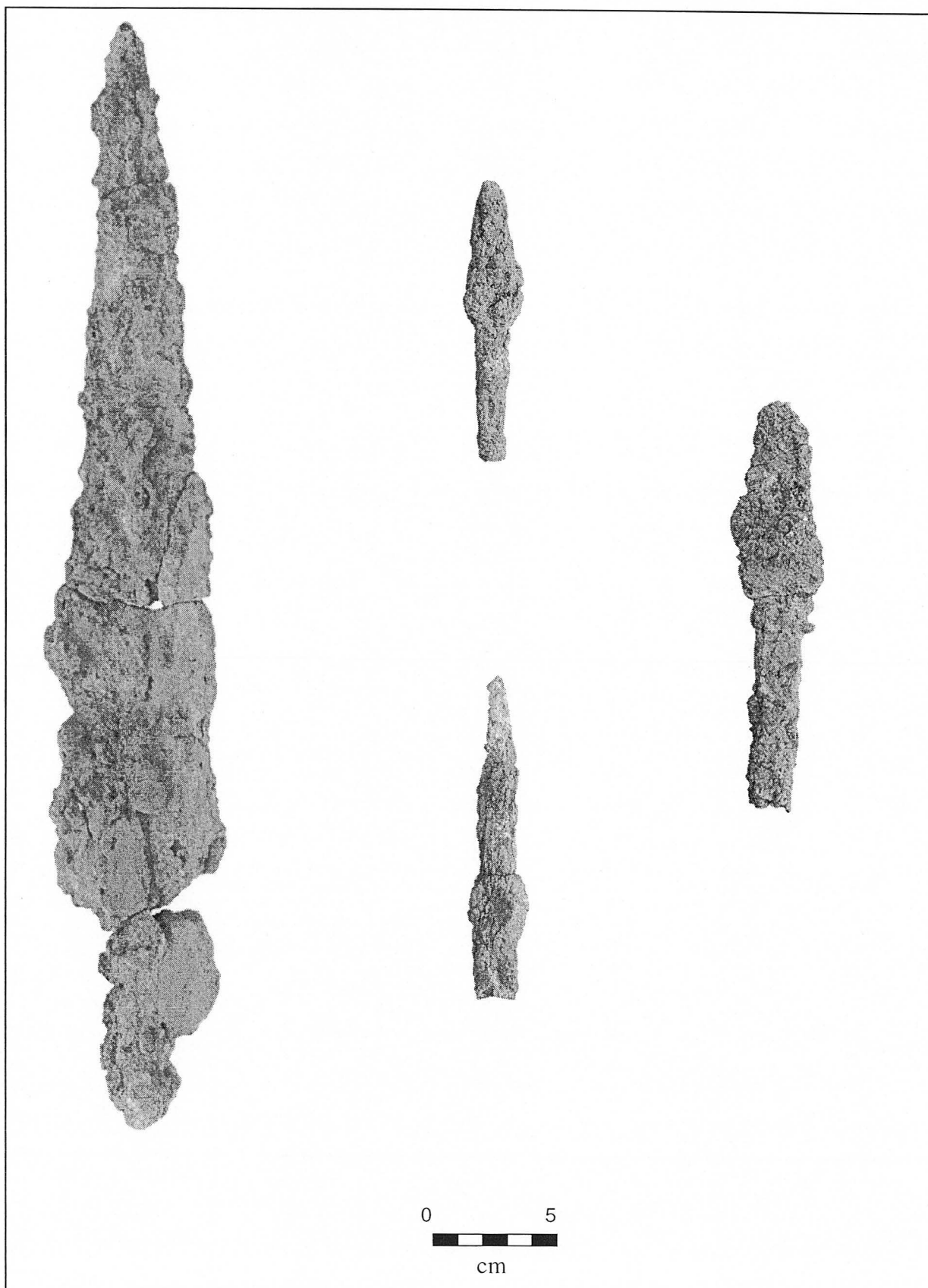
The burials have been divided on a chronological basis into five mortuary phases (Higham 2000). The first mortuary phase (MP) is represented by a single burial, tentatively dated to the late Bronze Age. MP 2 is dated to the last several centuries BC, while MP 3 is dated to the first two centuries AD. MP 4 belongs to the 2nd or 3rd centuries AD (Higham 2000), while the fifth and final mortuary phase postdates this.

The earliest weapons at the site are found in the second mortuary phase in association with burial 27, a rich interment of a male aged 35-40 at death. The burial is stratigraphically antedated by radiocarbon sample Wk-5364, determined at 2280±130 BP. Burial 27 was found with two socketed bronze spearheads and one socketed iron example. The iron spearhead is a socketed and ribbed triangular weapon measuring 44.91 cm in length and has a maximum blade width of 7.35 cm (fig. 7.10). It is a very heavy thrusting weapon with raised ridges along the edges to enhance impact strength (Connolly forthcoming).

The third mortuary phase contains no weapons, while MP 4 contains only three iron projectile points and one possible iron spearhead tip. The latter was found in the burial of an infant, while the three points were found in three different burials, two male and one female.

Mortuary phase five contains two weapons. The first is an iron spearhead found with burial five, a male aged 20-25. This weapon is described by Connolly (forthcoming) as a tanged ovoid spear. The blade is double-edged, but has no sharp point. It is 14.6 cm long and 4.98 cm wide. The second weapon is an iron projectile point in its final context of use, wedged into the spinal column of burial 61, a male aged under 20 at death.

Iron knives are relatively common at this site, with some examples preserving pseudomorphs of wooden hafts and fabric wrappings. In MP 5 they are strongly associated with iron sickles, and are most likely general purpose agricultural tools.



7.10: Iron spearheads, Noen U-Loke (Photo: OCAP).

Non-mortuary contexts have also provided iron weaponry, indicating that the weapons found at Noen U-Loke are not purely mortuary offerings. 86 iron projectile points were uncovered in occupation contexts as shown in fig. 7.12.

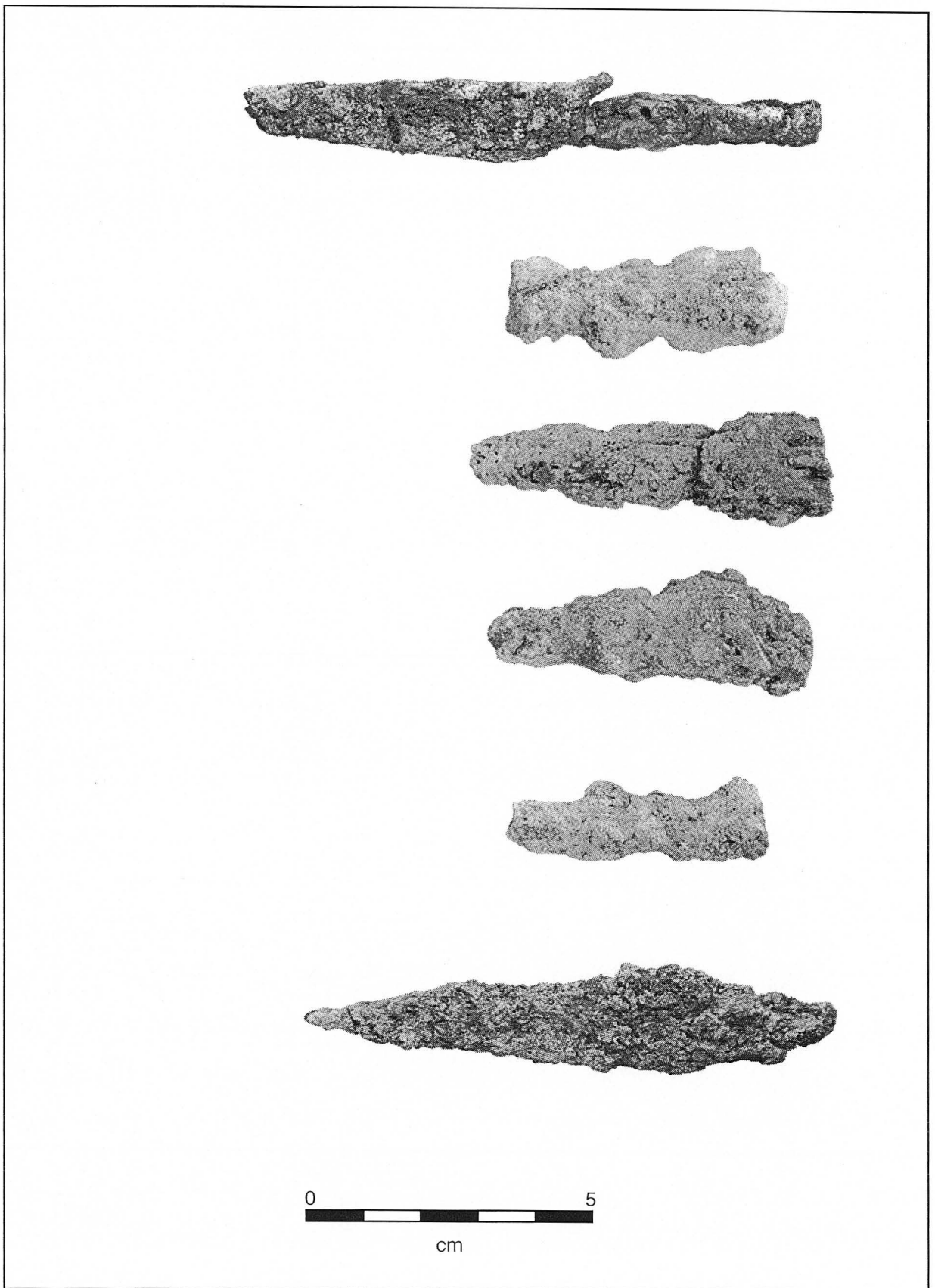
One spear was also found in a non-mortuary context, in a feature belonging to layer 4. This artefact is 15.56 cm long, with a 7.53 cm socket. Connolly (forthcoming) reports that it appears to have been manufactured by rolling a piece of iron into a cylindrical socket before hammering the termination into a flat, non-ribbed blade.

A preliminary assessment of the correlation between iron projectile points and warfare has been presented in Connolly (forthcoming). Here, a more detailed examination is undertaken.

Connolly's typology is used here, in order to lend continuity to the examination of these data. An examination of the frequency of iron projectile points from nonmortuary contexts (points from mortuary contexts are rare, $n=5$) reveals that these artefacts enter the archaeological record in layer 5, before becoming more common in layer 3 (fig. 7.13).

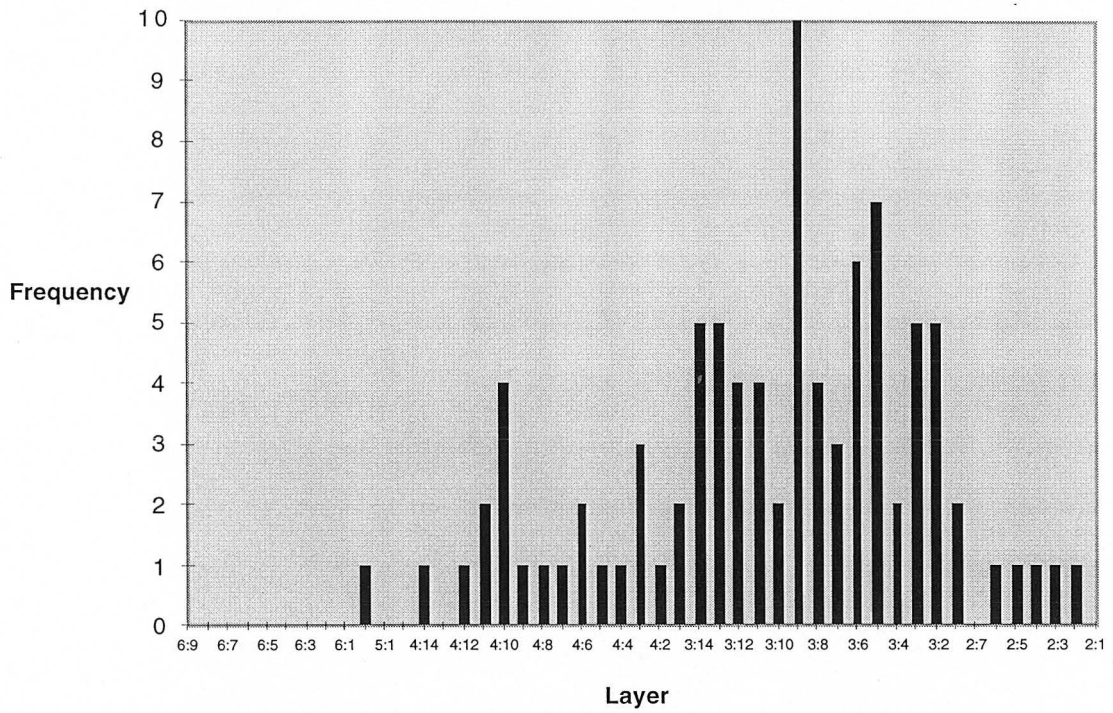
The analysis of trends in individual point types at Noen U-Loke shows that most follow this trend, with the exception of type 4f points (socketed cone-shaped points), which are most common at the bottom of layer 4.

Connolly tested these data against the frequency of wild animal fauna in occupation layers, creating a comparison recreated from the original data in fig. 7.13. These faunal data are taken from McCaw's (2000) examination of the faunal spectrum at the site and are quantified in MNI. The wild faunal spectrum at Noen U-Loke is dominated by deer, specifically *Cervus unicolor*, *Cervus eldi* and *Muntiacus muntjak*. These are the species that have been used in this analysis. A slight problem exists in that McCaw separates faunal remains from features and occupation fill, while Connolly's quantification of the iron recognises no such distinction, labelling both as 'nonmortuary'. Connolly (forthcoming) interpreted these data as showing an

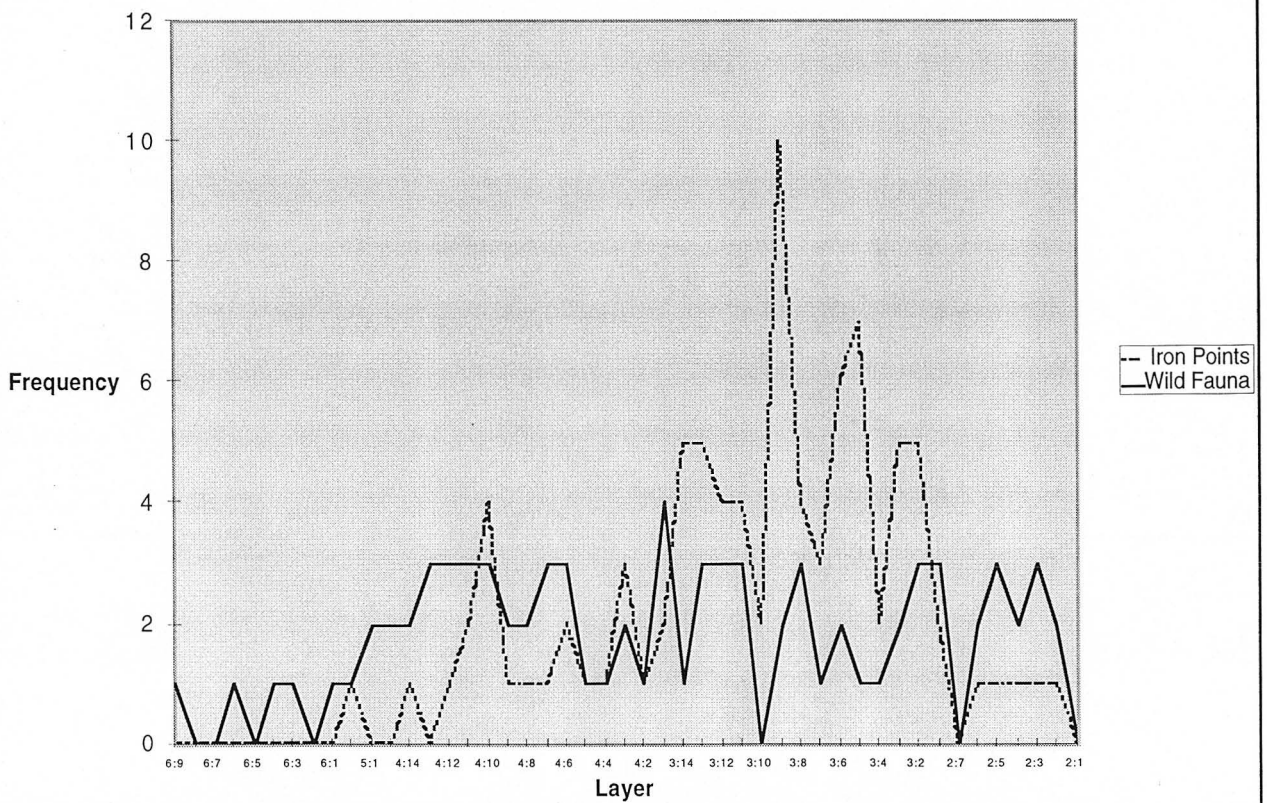


7.11: Iron points, Noen U-Loke (Photo: OCAP).

7.12: Iron Points from Non Mortuary Contexts per Layer at Noen U-Loke



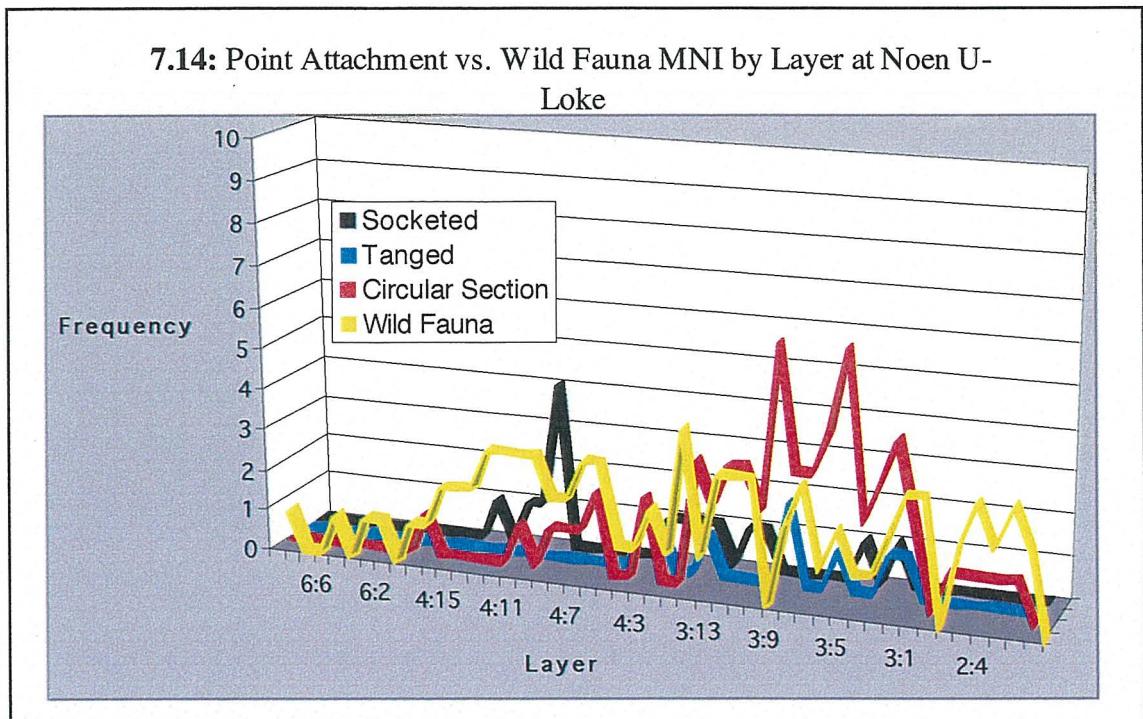
7.13: MNI Wild Fauna vs. Point Frequency from Occupation Contexts at Noen U-Loke



“increase in hunting of wild animals at the site”. The data however, would appear to support a differing interpretation. I would argue that the trend in wild animal frequency at Noen U-Loke is best described as comprising two chronologically separated behaviours. The first would appear to be an increase in hunting at approximately the bottom of layer 4, shadowed by an increase in the frequency of iron projectile points, principally type 4f points. The frequency of wild fauna appear to be fluctuating within stable limits after this period, and may even be in decline during later periods (McCaw 2000a, b). Iron projectile points also appear to have two distinct periods of proliferation. The spike at the bottom of layer 4 may be associated with a “flurry of hunting at the beginning of the site’s occupation” (McCaw 2000b:207), but the later proliferation of these artefacts appear to be unrelated to the frequency of hunted species at Noen U-Loke. The presence of a projectile point in the spinal column of burial 61 provides an alternative social context for this shift in projectile point frequency.

Burial 61 (fig. 7.17) is located at a depth of 1.27m below datum, sunk into mid-layer 3 from above. This places the life and death of this individual in the period of projectile abundance at the site (see figure 7.13). The grave of burial 27, equipped with two bronze and one iron spearheads, was cut from the top of layer 5, 3.66m below datum. This places the burial of this individual in the period immediately prior to the first increase in hunted fauna at the bottom of layer 4 (see fig. 7.13). Burial 5, the other spear-equipped burial, was buried after the deposition of layer 3, placing it after the main period of projectile use at the site. The only spear recovered from occupation contexts was recovered from the top of layer 4, as projectile point frequencies are on the rise and wild fauna are stable. While only five spearheads have been recovered from Noen U-Loke, there does not appear to be any chronological trend in their occurrence, and they do not appear to correlate with observed trends in overall points. The occurrence of a projectile in a man’s spine during the period of highest projectile use at the site may be indicative of a rise in conflict. The frequency of wild fauna appear to be fluctuating within a certain range during this part of the sequence, and burial 61 provides us with a certain context of use for these artefacts.

Analysis of diachronic frequency variation in point attachment types shows interesting trends. Point attachments are either tanged, socketed or circular section; as per Connolly (forthcoming). When these are graphed against the MNI of wild fauna (*Cervus* sp.) intriguing trends are visible (fig. 7.14). Socketed points (types 4f, 4g and 4n) are more common at the beginning of the sequence, and may be associated with early hunting at the site. Circular section points (types 4l, 4m and 4k) are less common early in the sequence but predominate later, as hunted fauna are becoming less common. Tanged points (types 4a and 4b) are only found in small numbers but are restricted to upper layer 4 and above. As noted above, a tanged point is found in the spinal column of burial 61, providing a secure association for the use of tanged points in warfare. The relative distribution of circular section points may be evidence that these too were primarily used in warfare.



Taken as an isolated site, the Noen U-Loke data are suggestive, but no more. In the context of changes in other sites, both in the Khorat region and in the Chao Praya Valley, these data provide evidence that the patterns of conflict in these areas may have been changing.

Recent excavations by the FAD at the site of Ban Khruat have exposed an Iron Age cemetery with a remarkable assemblage of weaponry. While details are unavailable, it would appear that spearheads and swords were recovered (Higham pers. comm.).

SETTLEMENT PATTERNS

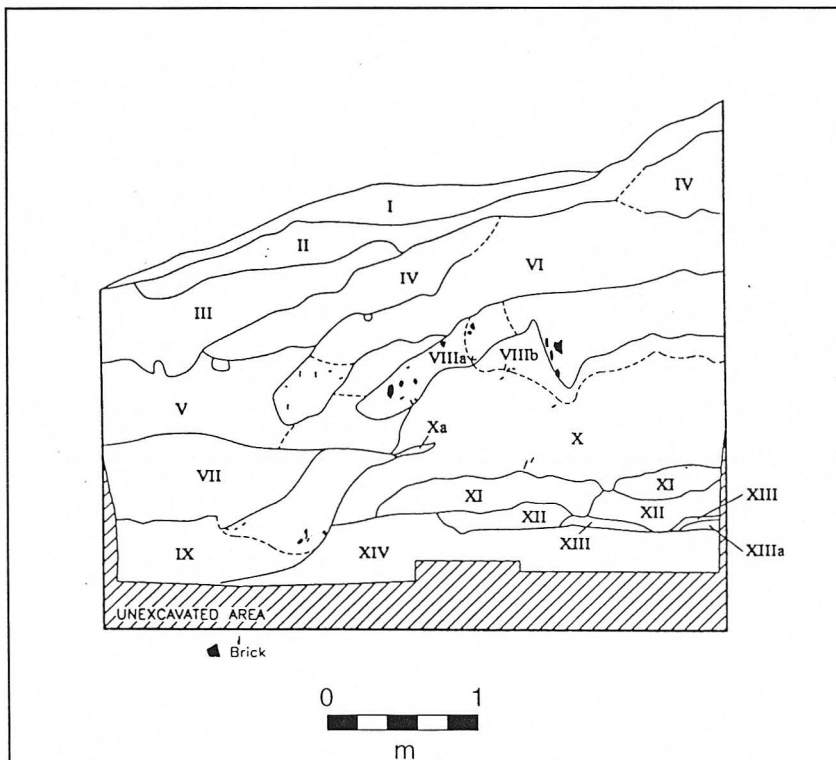
In the late 1940s Williams-Hunt, a British aviator overflying Northeast Thailand, noticed a large number of irregularly shaped mounds surrounded by what appeared to be circular earthworks (Williams-Hunt 1950). These have entered the literature as the ‘moated sites of the Khorat Plateau’, and have been subject to intensive analysis by Moore (1988) as well as recent re-evaluations by Boyd (1997; *et al* 1999a, b; McGrath and Boyd 2000) and O’Reilly (1999). There is not the space here to describe the history of investigation into the ‘moats’ wholly, rather I wish to examine the nature of the earthworks with reference to their possible use in prehistoric warfare.

Williams-Hunt (1950:32), when classifying the sites, refers specifically to “fortified towns”. He clearly envisaged the ‘moats’ as artificial constructions designed at least in part for defence. He suggested that modified natural rock outcrops in the Chi Valley would have provided models for later fortified sites: “rock outcrops of this type would naturally be occupied at an early date and might well form the prototype for the earthworks further south” (*ibid.*:34).

Moore, in her corpus of the ‘moated’ sites, suggests that moats and ramparts would cause attackers to be “considerably impeded” (Moore 1988:145). She notes that fortifications of this type are well known from Khmer period sites, and points to ethnographic examples of similar fortifications in island Southeast Asia. She views the ‘moats’ as filling a variety of roles; water reticulation, agricultural intensification and defence being prominent. Moore’s interpretation is that the ‘moats’ are cultural manifestations of powerful labour control forces, structures carefully placed to provide a wide variety of benefits to the community that controlled them. This interpretation has gained widespread acceptance (Higham 1996a:328; Vallibhotama 1984).



7.15: Aerial photograph of Ban Non Wat, *Amphoe Non Sung Changwat Nakhon Ratchasima*, note encircling ‘moats’ (from Higham and Thosarat 1998:146).



7.16: ‘Moat’ section NR-H-01 TP-2, south profile, Muang Phet (from McNeill 1997:170).

As a result of fieldwork undertaken at a number of sites in Northeast Thailand, Boyd (1997; Boyd *et al.* 1999a, b) argues that the surficial appearance of the 'moats' often has no relation to the expression of subsurface features beneath them. He further criticises the association of archaeological sites with the modern drainage, and argues that palaeo-river systems were markedly different from those today.

O'Reilly (1999) argues that, *contra* Boyd *et al.* (1999a, b), while palaeo-river channels may have surrounded many sites, the earthen ramparts are cultural and prehistoric. He cites a single Phimai black pottery vessel found in primary depositional context in a 'moat' as evidence. O'Reilly proposes that, while the 'moats' may have been influenced by the movements of palaeo-river systems, the ramparts are Iron Age constructions. He argues that the model of a totally non-anthropogenic origin for these features is insupportable, given the limited geographic range of the 'moats' and the fact that they are only ever found in the context of Iron Age sites. He argues that such an inference of a perfect, yet supposedly random, correlation between Iron Age sites and 'moats' stretches the bounds of coincidence.

McNeill (1997) excavated a rampart at the site of Muang Phet during an exploratory re-evaluation of early excavations there. She reported stratigraphic evidence that the ramparts were anthropogenic and dated to the first centuries AD (fig. 7.16).

Recently, McGrath and Boyd (2000) completed the first chronometric study of the 'moats', using AMS and TL dates taken from material excavated in the first two OCAP field seasons. They argue (2000:16) that "the dating of the moat banks has...revealed that some of the banks, and by implication, some of the infilled channels were most likely constructed". The moat banks date to the late Iron Age. They further note (*ibid.*) that "the moats appear to have infilled rapidly....with channels closest to the sites being overtopped by rapidly expanding occupation".

It seems highly likely that the 'moats' at these sites are the result of complex interaction between Iron Age and post-Iron Age human activity and two millennia of changes in local

drainage systems. The state of our current knowledge, while promising, leaves many questions and it is apparent that, as Williams-Hunt (1950:35) prophesied 50 years ago, “the excavators spade alone will provide the final answer”.

The most interesting and potentially informative aspects of the site of Non Yang are to be found in the structural remains. From periods 2 to 5, the excavated area was used for both intermittent occupation and jar burial. Radiocarbon determinations from the basal layers of Non Yang gave dates from 2300±85 BP (N-5842) to 1650±340 BP (N-5840). In period 6 four wattle and daub structures were constructed. These were interpreted by Nitta (1991) to be habitation structures as opposed to industrial on the basis of a lack of ash, charcoal or pyrotechnic features in association. They were destroyed by burning in the subsequent period. Also in period 7 a fence was constructed around the edge of the structures. This feature is delineated by a series of postholes, 25-40cm in diameter, 60cm apart in a “gently curved line” (*ibid.*:7). This fence was built in a ditch, which was then infilled in one homogenous event. An “iron axe-like tool” (*ibid.*:8) was found in the context of this feature. Parallel to the fence, c. 80cm outside, a second ditch was found 70cm deep and 60-90cm wide.

The configuration of the fence may be favourably compared with Mississippian period fortifications in North America (Milner 1999:118-120). Posts were commonly set apart from one another in this area, and the size of the posts used overlaps with the range noted by Milner (1991:118) to exist in Mississippian walls. Palisades used in prehistoric Maori fortifications in New Zealand also show similar features (Fox 1976), where the gaps between uprights allowed defenders to engage attackers with spears while remaining relatively safe themselves.

Nitta (1991:16) interprets the fence and ditch as defensive, related to an “unstable period in the politics of the surrounding area...[and a] tense social environment”. The chronological association between the construction of the fence and ditch and the destruction of the daub buildings is also intriguing. Preliminary radiocarbon dating of this event places it in the late first

millennium BC, roughly contemporary with major changes at more northern sites such as Ban Na Di, Ban Chiang, Non Pa Kluay and Ban Chiang Hian (*ibid.*:15; see below).

Later in the sequence, in period 10, “the top of the Non Yang mound was surrounded by a moat-like ditch”(Nitta 1991:3). Nitta goes on to state that this feature included stratified pottery sherds, and was “repeatedly repaired” (*ibid.*:6) over the course of its existence. This feature varies between 3.0 and 4.4m in width, and between 2.05 and 1.7m in depth. It had a flat bottom, 30 to 40cm wide and a “Y-shaped cross section” (*ibid.*:6). This ditch is obviously a sizeable barrier, the height of an adult male (considerably greater in some parts) and, importantly, it bears no trace of water-borne sediments. Nitta concludes, on the basis of these data, that this feature also filled a defensive role. The ditch was infilled in Phase 11. This event is antedated by the radiocarbon sample N-5831, determined at 2090±85 BP.

Nitta’s interpretation of the Non Yang structural remains is provocative. If his interpretation of these features is accepted, then we have unequivocal evidence for fortification in the early Iron Age, as well as extensive earthworks later in the sequence. Unfortunately, Nitta has published no diagrams of the stratigraphy of these features, so little counter-interpretation can be made.

It must be noted that Non Yang remains the only site to provide such evidence. It is possible that sampling issues are to blame for this, as the most common method of conducting substantial excavations at sites in this region is to sink an excavation square as close to the centre of the mound as possible (see, for example Bayard 1971; Bayard, Charoenwongsa and Rutnin 1986; Higham and Thosarat 1997; O’Reilly 1999). It is possible that this approach, associated with a mortuary focus in the analysis of these societies, has biased the recovery of structural features. The existence of cemetery and occupation areas in the centre of these sites has been established, but little evidence has been compiled for the spatial patterning of activities away from the centre.

These sampling issues aside, the record of Non Yang is unique in the archaeology of Thailand, and must thus be assessed on its own merits. The construction of the fence in the same period as the destruction of the wattle and daub buildings is interesting but we must be aware that this destruction may not be evidence for an attack on the site, as both accidental and deliberate non-warlike burning cannot be ruled out.

The transition between the first and second phases at Non Pa Kluay is accompanied by a clear and sudden change in the use of space at the site. In the first phase the excavated area was reserved for cemetery use, but in the second phase the area was also used for domestic and industrial purposes. In conjunction with sudden changes in material culture, this change has been suggested (Wilén 1989:133) to be an “indication of different cultural traditions” using the site at different times. He further adds that the “two phases correspond to the use of the site by peoples of distinct material traditions” (*ibid.*).

As with Non Pa Kluay, possibly the most interesting feature of the Ban Na Di record is the marked dislocation between the Bronze and Iron Age deposits. Higham (1996a:232-3) states that

the marked changes [at Ban Na Di] can best be explained as a result of a movement of people who originated in the Chi valley, with the Non Chai area as the most likely point of departure... This, it is stressed, was unlikely to have been a major and pervasive expansion, rather the infiltration of a leader or two and their followers.

Points of similarity with the Chi valley archaeological record and that of the post-transition Songkhram basin sites are easily identified in the ceramics, glass beads and iron (Higham 1996b).

Chantarayirakarn (1983) has noted that pottery styles are discontinuous between phases 2 and 3 at Ban Chiang Hian. As with Wilen (1989) and Higham (1989), this is associated with a hiatus in occupation.

It has been suggested (Bayard 1992; Higham 1989:227) that the lacunae apparent in the Ban Chiang Middle to Late period transition and that of Ban Na Di levels 6/5 are contemporary and associated. If this is the case, the transition to the Iron Age in the Songkhram basin represents a major change in the region. Three important points must be isolated. First, the transition is sudden and well defined. Secondly, there is no hiatus in the record, and finally, there are no obvious signs of military intensification in the period preceding the transition. It is stressed, however, that the small area excavated and the lack of attention to micro-level settlement patterns may render this last point invalid.

Accordingly, we may propose three general scenarios to account for this change:

- 1) Population movement and transition, most likely associated with competitive territorial demands.
- 2) The diffusion of technological and ideological factors, with no attendant changes in population structure.
- 3) The migration of small groups of influential specialists or leaders, who established their hegemony over the sites in the Songkhram region.

The small number of sites excavated places an obvious limit on our ability to argue for any detailed reconstruction, but the hypotheses considered above are of sufficiently general nature to form a basic assessment. The clear and sudden nature of the transition places the second hypothesis in jeopardy. The other two, however, remain highly possible. Higham (1996a) has cited his preference for the third hypothesis, based on the recognition of late period pottery styles at the basal layers of the site of Ban Muang Phruk, near Ban Na Di. The spatial extent of

these changes, still very much unknown, are crucial to an appreciation of the possible role of warfare in community interaction in this region.

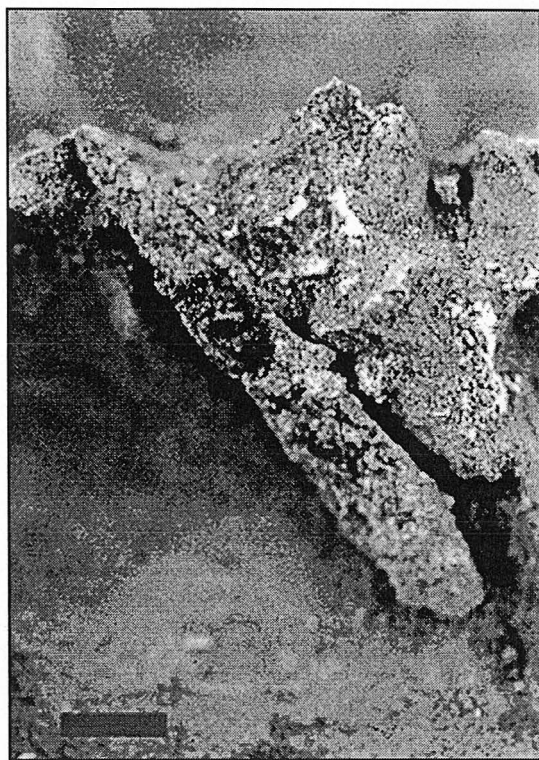
Bayard (1992:26) suggests that warfare may be a useful “specific explanation for the break in the Upper Songkhram sequence... [as] direct conquest from the region of Non Chai may very well explain this break”. Conclusive data, however, are still lacking.

PALAEOPATHOLOGY

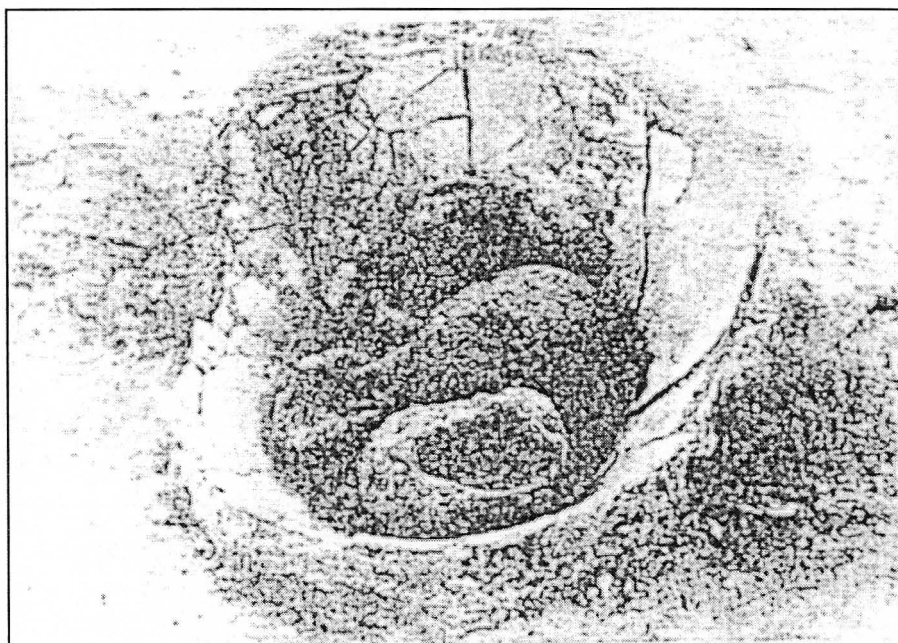
At Ban Prasat, Monkonkamnuanket (1992) notes the presence of a late phase adolescent female bearing an arrow wound to her forehead (burial 3 SE 105). It is ambiguous whether the arrow itself was actually found in this context. The statement “she was shot dead presumably by an arrow which was shot at her forehead through the back of her skull” (*ibid.*:41) implies also that the lethal projectile was shot with enough force, or at close enough range, to penetrate the entire skull.

Burial 61 at Noen U-Loke carries the second Iron Age example of a fatal projectile wound (fig. 7.17). This young male wore a few pieces of bronze jewellery, and was killed by a tanged iron point that entered his body from the front and below, piercing the abdomen before lodging in his lower spinal column. The death of this young man, as noted above, took place at a time when the frequency of projectiles was rising sharply in the archaeological record at Noen U-Loke.

The site of Non Chai in the Chi Valley was excavated by Charoenwongsa (Charoenwongsa and Bayard 1983; Bayard, Charoenwongsa and Rutnin 1986) to a depth of 4.7 m. over an area of 76m². Four “concentrations of human bone” (Bayard, Charoenwongsa and Rutnin 1986:23) were found at the base of the site, dated to *c.* 500 BC. Much pottery was excavated, as well as fragments of iron, but no identifiable tools. Bivalve moulds for bronze axes were recovered, and evidence for the use of both bronze and iron is present throughout the history of the site. The presence of non-formally buried bodies has been noted to be “a good signature of warfare”



7.17: Tanged point lodged in spinal column of burial 61, Noen U-Loke (Photo: OCAP).



7.18: Skull burials, Non Yang (from Nitta 1991:35).

in the Americas (LeBlanc 1999:85), where examples are common enough to carry statistical meaning. The bodies' placement at the base of the cultural deposits is also intriguing. No other examples of unburied human remains have been reported from Thai contexts, thus forcing interpretation of this particular occurrence into the realms of supposition. Non Chai, translated to English, means 'Victory Mound'. The place of the site in the arguments for demographic change in the Iron Age of the Songkhram basin is suggestive of the possibility that sampling at this site may have had an important impact on the conclusions drawn.

Nitta's (1991) excavation at Non Yang exposed seven inhumation burials and several jar burials. Cranial remains predominate in the jar interments, and one particular vessel contained only three skulls (fig. 7.18). This concentration of cranial remains brings to mind Bayard's reported proliferation of skulls at Non Nok Tha. While cut-mark and trauma data on these crania are unavailable, the concentration of these remains is provocative. Headhunting practices in prehistoric Yunnan are well known, while the behaviour is attested in ethnographic reports from island Southeast Asia. Remains from Non Yang, particularly in the context of the defensive features of the site, suggest the practice is of considerable antiquity in Southeast Asia.

Unfortunately, many Iron Age sites suffer from poor preservation of skeletal material, such as Ban Wang Hi and Ban Don Ta Phet, or have been looted, such as Tham Ongbah.

ICONOGRAPHY

In stark contrast to the Iron Age societies of Bac Bo and Yunnan, Thai cultures of this period have left little in the way of artistic representations of human beings. The bronze bowls found in Central Thailand, if not Indian in origin, were strongly influenced by Indian artistic styles. These depict animals, plants and people, with no hint of conflict or ritual.

DISCUSSION

The examination of the evidence for warfare in Iron Age Thailand gives a differing impression to the preceding Bronze Age. Material culture and settlement pattern have been argued as major

components of this change, with warfare as a vector of their expression. The evidence and interpretation of this is assessed below.

While some major changes are apparent when comparing Bronze Age and Iron Age material culture, existing weapons appear to have remained fairly constant. Axes and spearheads are still present, in similar forms (with the exception of the spearheads from Ban Kan Luang). The main change in Iron Age weaponry is the introduction of specialised military weapons, in the form of the swords found at Ban Kan Luang and Ban Wang Hi.

Projectiles seem to have been a feature of Iron Age warfare. Burials 3 SE 105 at Ban Prasat and 61 at Noen U-Loke, in the context of the late proliferation of such artefacts at the latter site, provide a strong argument that these were important weapons. Cave art representations of bows from Pha Taem and Khao Chan Ngam (Higham and Thosarat 1998:132-133) suggest the self bow as a delivery mechanism. Projectile injuries are commonly associated with intergroup violence, as they are “designed to kill...and generally require careful aim to hit their mark” (Lambert 1997:90). The occurrence of these specific injuries, one each at Noen U-Loke and Ban Prasat, may be an indicator of changes in the intensity or technology of conflict.

Spears, while being more common than in Bronze Age contexts, are still found only in small numbers at most sites. Certain spears, such as the iron example found in burial 27 at Noen U-Loke are large, heavy weapons, and would have been of doubtful use when hunting the deer that comprise most of the wild fauna at that site.

The presence of headhunting in prehistoric Thailand is an intriguing possibility. We should take care here not to falsely label headhunting behaviour as distinct from warfare, as evidence from the Dian culture of Yunnan clearly shows headhunting as a major factor in the social life of a complex and advanced society (see chapter 8). Ethnographic studies indicate that headhunting was a prominent factor in precolonial warfare in Island Southeast Asia, intricately associated with the ideological systems of these cultures (Gibson 1990; Vayda 1976). The Non Yang data

are convincing, since these crania have been carefully placed within a pottery vessel, and no postcranial remains were found in association.

The presupposed existence of fortifications in the Iron Age of the Khorat region has been a staple of the archaeology of the region since the pioneering aerial survey of Williams-Hunt (1950). While recent research at a number of 'moated' sites has begun to expose the complexities of Iron Age landscape modification (Boyd *et al.* 1999a, b; Habberfield-Short 1999; McGrath and Boyd 2000; McNeill 1997), Nitta (1990) has exposed evidence of defensive fortification at Non Yang, comprising a log palisade ringed by a 70 cm deep ditch. The fence and ditch system at Non Yang, while unique and therefore unable to be compared to similar local finds, is suggestive of a defensive palisade system capable of keeping enemy infantry at bay while providing cover from projectiles.

The existence of rampart and moat fortification on the Iron Age Khorat plateau remains intriguing. The geomorphological data amassed by McGrath and Boyd (2000) suggest that the earthworks identified by Williams-Hunt are anthropogenic features. Further investigation is required to gain an understanding of the purpose and meanings of these constructions.

The geographic variation in evidence for warfare also bears assessment. Higham and Thosarat (1998:136) have argued that the Iron Age Chao Praya Valley sites show greater evidence for warfare, principally in the form of iron weaponry, than their Khorat contemporaries. A comparison of numbers of certain forms of weaponry common to both regions shows that Ban Don Ta Phet is the most well equipped with weaponry from either region. The swords recovered from Ban Wang Hi are spectacular artefacts, and may obscure the fact that neither spears, axes nor arrowheads are any more common here than at Non Pa Kluay. At Noen U-Loke projectile points found in occupation fill provide us with the bulk of the iron weaponry, giving reason to speculate that mortuary evidence may be under-representing the frequency of weaponry in these sites.

The data from the Thai Bronze Age, while far from conclusive, do not appear to contradict the thesis that low levels of raiding, feuding and headhunting may have been aspects of group interaction during this period. While the literature on this topic is occasionally confused, due in the main to a lack of common definitions regarding warfare and conflict, the general proposition that changes took place in the Iron Age is commonly accepted.

The argument that the development of Iron Age culture in Thailand is congruent with intensification in warfare has been advanced by Higham in a number of publications (Higham 1996; Higham and Kijngam 1984; Higham and Thosarat 1998, 2000). The evidence from Iron Age sites suggests that warfare did become a more prominent factor in community interaction, and an increase in the social energy devoted to its prosecution seems to be apparent. The Iron Age of Thailand saw, for the first time, specialised military paraphernalia in the archaeological record, projectile injuries, fortifications, and the dramatic increase in the number of weapons at some sites. However, the nature of this intensification must be assessed. A number of large sites show no evidence for warfare, and Ban Wang Hi is the only site to show clear social distinctions with respect to the mortuary treatment of weapons.

No data appear to support the inception of specialised military systems in Iron Age Thailand. The data from the various sites examined here are congruent with an increasing frequency of conflict along pre-established patterns incorporating infrequent technical changes, such as swords and fortifications. These changes are obviously not drastic at this stage and provide no evidence for major changes in warfare patterns. The “drastic change” in sociopolitical patterns visible to O’Reilly (1999:289) is not reflected in warfare. Systems of conflict in Iron Age Thailand do appear to be changing, but seem likely, from the available evidence, to be still based on a raiding, feuding and headhunting warfare complex rather than territorially motivated, highly organised and specialised conquest warfare.

There is no sign of equivalent behaviour in Iron Age Thailand to that extant in contemporary Yunnan or the Red River Valley. While the size of the samples taken from the sites noted

above, and the representative degree of those samples, must be considered, there are clear differences in the warfare complexes of Iron Age Thailand and the more northern regions of Southeast Asia considered in chapter 8. Thus, it seems that the stimuli responsible for the possible changes of warfare in the Thai Iron Age were not sufficient to create elite warriors such as those of Dong Son and Dian. The differences in these two regions may be associated with a northern response to Imperial Chinese expansion, as the cultures of the Mekong and Chao Praya valleys remained distant from this threat.

If warfare as a form of interaction did become more prominent in the Thai Iron Age, and there is evidence that this is so, then we must account for how and why. It would be overly simplistic to accept these changes as inherent in an evolutionary changes in social organisation. Heterarchic theory and our emphasis on interaction leads us to examine factors influencing these changes, such as other potential forms of interaction, and changes in the interaction system at a local or regional level.

If O'Reilly is correct in identifying a "drastic change in...sociopolitical climate" then it appears warfare may have only played a tangential role. The changes occurring in Iron Age society appear not to have triggered a massive changes in military behaviour, but rather an intensification of pre-existing avenues of conflict. This evidence is supportive of theories similar to those advanced by Ferguson (1990, 1997) with respect to changes in warfare patterns among populations confronted with incorporation into new economic systems.

8.

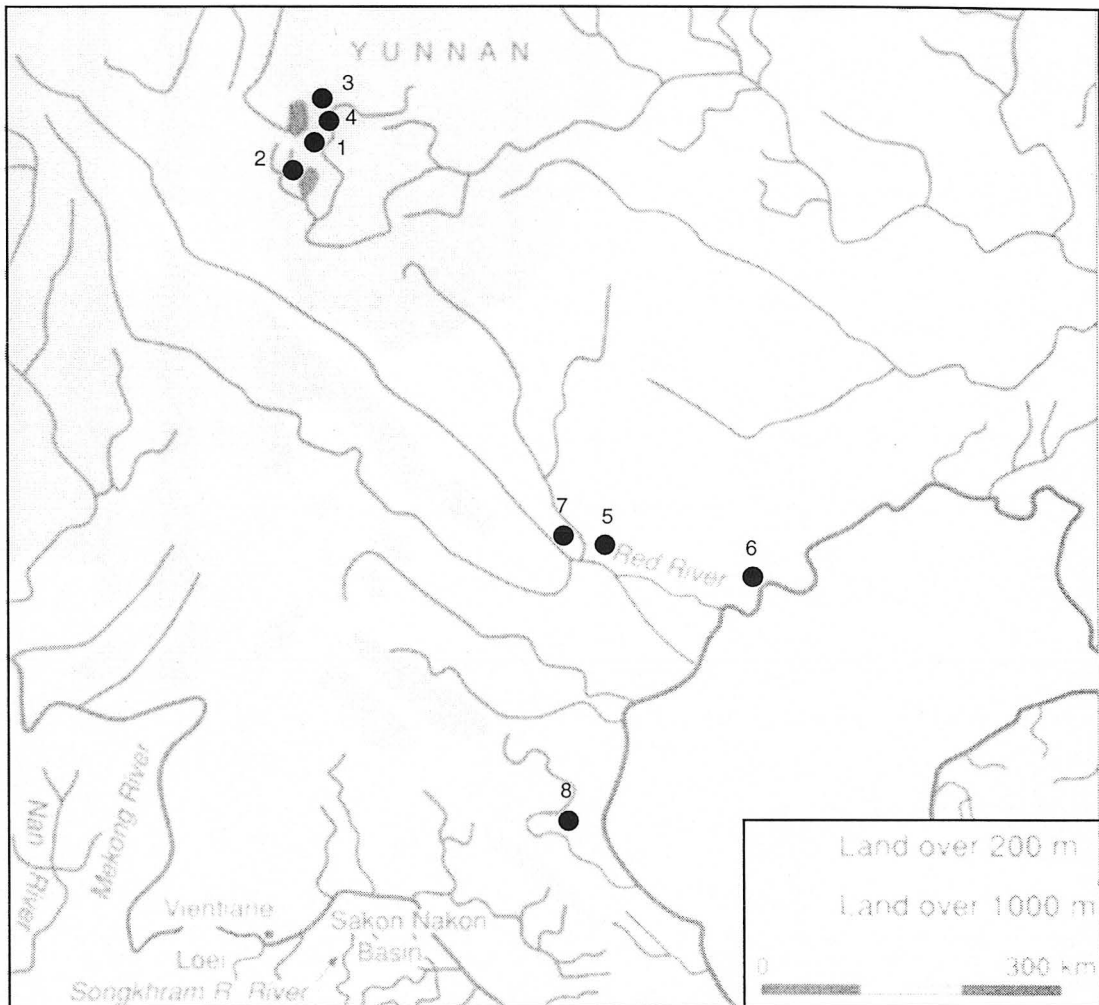
ON THE BORDERS OF THE HAN: WARFARE IN THE DIAN AND DONG SON CULTURES.

On the northern edge of Southeast Asia, Chinese expansion during the later first millennium BC overwhelmed a series of complex chiefdoms that have left extensive evidence for complex military practices. Two examples, the Dian culture of the Yunnan plateau, and the Dong Son culture of the Red River Valley, are examined in order to provide comparison with the Thai archaeological record. Higham (1996a) has associated the overwhelming evidence for warfare in these cultures with the proximity of the expansive Han dynasty. This reasoning finds support in the ideas of Ferguson (1990, 1992) who has argued that cultures on the edge of expansive states are often encouraged, directly or indirectly, to engage in endemic warfare. Below I will briefly examine the evidence for warfare in these two cultures, before returning to compare the evidence with that of Thailand.

WARFARE IN DIAN

During the Iron Age the Yunnan plateau was home to a series of polities engaging in complex interaction, including a fascinating warfare complex. Chinese historical records provide a unique insight into this region, noting the presence of kings, complex agricultural rituals, headhunting and guerilla warfare. Archaeological research, beginning in the 1950s and continuing to the present day, has uncovered a series of cemeteries belonging to the Yelang, Kunming and Dian cultures. In the *Shi Ji*, the 'Records of the Grand Historian', Sima Qian (145-c. 90 BC) chronicles the subjugation of the latter by the Han in 109 BC (Sima Qian 1993).

The Dian polity is well known, as archaeological excavations have uncovered a number of Dian sites. Only cemetery sites have been discovered, but our knowledge of Dian settlement is considerable, due in the main to the Dian practice of casting bronze vignettes onto the tympana of bronze drums. Frequently these drums were placed in burials filled with cowries,



8.1: Map of northern Southeast Asia, showing sites mentioned in this chapter.
1. Shizhaishan. 2. Lijiashan. 3. Tianzimao. 4. Shibeicun. 5. Co Loa. 6. Viet Khe.
7. Lang Ca. 8. Lang Vac.

either as currency or as prestige offerings. The Dian vignettes show battle scenes and rituals as well as domestic and political activities, providing an unrivalled source of information about this society.

MATERIAL CULTURE

Excavations in Dian cemeteries at Shizhaishan, Lijiashan, Shibeicun and Tianzimaohave yielded many weapons, including swords, axes, *zhuo* (military picks), crossbows, spearheads and maces. Chinese influences can be seen in the morphology of some weapons, and in the presence of crossbows, but many forms are indigenous to the Yunnan plateau.

Swords and spears appear to have been the main weapons of the Dian infantry, although distinctive axes and *zhuo* are also common. The frequency of *ge* dagger-axes increases markedly through time (Yang Hong 1992:148), reflecting increasing Chinese contact with the Yunnan plateau, and the gradual adoption of many Chinese military practices. Some recovered *ge* are highly decorated, but lack the ornate modelling of some *zhuo* and *qi*, and are probably still functional combat weapons (Rawson 1983:pl.126-128). Metal arrowheads are found only in large tombs in Dian contexts (Yang Hong 1992:147), and it seems likely that lower status individuals were using bamboo arrows. Early examples of bronze arrowheads are similar in morphology to Dian spearheads, while later examples are more often the winged Chinese form (*ibid.*:fig.218).

Crossbow triggers appear slightly later in the Dian sequence, contemporary with Chinese arrow forms. The crossbow is a Chinese weapon, developed during the Warring States period, and its presence in Yunnan is a good marker for the adoption of Chinese military practices on the eve of Han domination.

Bronze armour is also a feature of Dian cemeteries. Burial 24 from Lijiashan contained a bronze gorget, a bronze back-plate decorated with a human head design, and “over 1000...rectangular armour plates” (Yang Hong 1992:155). Other graves from Lijiashan and Shizhaishan have



8.2: Examples of Dian weapons, scale unavailable (from Rawson 1983:133, 138).



8.3: Decorated Dian arm-guard, scale unavailable (from Rawson 1983:142).

yielded arm-guards of bronze and gold (fig. 8.3). Evidence from the Dian vignettes suggests that body armour was largely high status equipment, associated with cavalry, while shields were used by the lower status infantry. This is supported by the ornate decoration on some Dian armour pieces (fig. 8.3, cf. Higham 1996a:fig.5.30).

ICONOGRAPHY

The iconographic record left by the Dian culture is perhaps among the most spectacular of any nonliterate society. In addition to the three-dimensional models atop cowrie containers, the archaeological record also provides us with two-dimensional representations of headhunting, weaponry, and war captives.

Murowchick (1989) has identified a common decorative motif as a stylistic representation of headhunting. The motif is often found on halberds, and occurs at Lijiashan, Tianzima and Shibeicun (Higham 1996a:146). The motif consists of a connected series of anthropoid figures, with the spaces between them filled by loose heads.

Dian vignettes comprise cast realistic bronze figurines depicted about various activities. Industrial and ritual activities are shown, as well as feasting and warfare. Two scenes from Shizhaishan burials are especially informative on Dian warfare, as they show Dian warriors engaged in battle.

The cowrie container included in burial 6 shows a skirmish featuring both cavalry and infantry (Rawson 1983:pl.27-35). The figures in this vignette are 5-6 cm in height, while the horses measure up to 10 cm in length (Huang Ti and Wang Dadao 1983). The scene depicts a Dian victory over what appear to be Kunming, readily identified by their plaited hair. The Dian infantry are armed with crossbows and swords and carry large rectangular shields, while their armoured cavalry attack with spears raised above their heads. The Kunming do not fare well; one lies decapitated on the ground, while another is at the mercy of a charging cavalryman. A



8.4: Dian halberd, note headhunting motif on hilt (from Rawson 1983:123).



8.5: Battle scene atop a cowrie container, burial 6, Shizhaishan (from Rawson 1983:47).

further group stand passively to the side, already taken prisoner and guarded by a sword-armed Dian warrior (Huang Ti and Wang Dadao 1983).

The cowrie container from burial 13 bears another battle scene, centred around a gilded figure riding a horse. This warrior holds a spear high, while a human head is attached to the bridle of his horse. All around, Dian and Kunming infantry struggle with swords and shields. Again, the Kunming appear to be getting the worst of the battle. One flees the Dian attack, while another has fallen, only to be decapitated by his adversary. Further Kunming warriors are still in the fight, and the fierce action depicted by the Dian artisans is far from over.

Belt buckles found in Dian graves also bear scenes, cast in low relief in bronze. Many show animals, either hunting each other or being hunted by men. Others show scenes of warriors. A gilded buckle from Shizhaishan shows two warriors on foot, heavily armoured in layered encircling rings forming a complete suit from chest to knee. The armour is completed by arm-plates, helmets and a large gorget. The two warriors are each carrying a human head, while one also carries a weapon, either a *ge* or a *zhuo*. They accompany a procession of captives: a bull, a goat and a plaited figure carrying a child on its back.

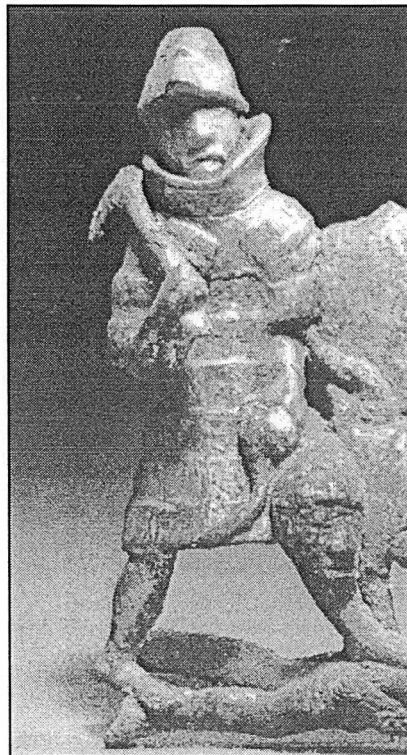
HISTORICAL ACCOUNTS

The *Shi Ji* records that the ‘Southwestern Barbarians’ were ruled by “dozens of chiefs”, though the ruler of Dian was pre-eminent (Sima Qian 1993:253). These peoples were distinguished on account of their settled lifestyle and “mallet-shaped” (*ibid.*) hairstyles from the pastoralist Sui and Kunming, who wore their hair in long braids.

According to Sima Qian, the king of Dian could muster a force of 20,000 to 30,000 men and could draw further support from his allies to the Northeast. With these forces he was understandably “not inclined to listen to the threats of the Han envoy” (Sima Qian 1993:258). Even so, a demonstration of Han strength eventually persuaded the king of Dian to capitulate, travel to the Emperor, and cede his lands to the province of Lizhou.



8.6: Battle scene on cowrie container, burial 13, Shizhaishan (from Rawson 1983:55).



8.7: Figure from Dian belt buckle (from Higham 1996a:160).

Later records describe Chinese problems in controlling the Yunnan region, as the inhabitants were evidently still bellicose and involved in headhunting (Higham 1996a). The *Yan Tie Lun* ('The Debate on Salt and Iron'), written in the first century BC, records the Chinese problem with incessant guerilla warfare in the region, a sentiment repeated several centuries later by Fan Ye, in the *Hou Han Shu* ('History of the Later Han').

DISCUSSION

Dian warfare clearly displays features distinct from both imperial China and Southeast Asia south of the Truong Son. Prior to the Han annexation of the area, the indigenous peoples of the Yunnan plateau had evolved a unique warfare complex, with points of similarity to both northerly and southerly neighbours.

While cavalry were important to Dian warfare, the majority of combatants were infantry. The battle scenes from Shizhaishan show both infantry and cavalry engaged, with no semblance of an organised battle line. Chinese records indicate that the 'Southern Barbarians' "do not know how to fight as infantry" (O'Harrow 1979:144). Iconographic evidence of Dian warfare would seem to suggest such behaviour. This lack of rank-and-file formation fighting differed markedly from the extremely disciplined Chinese infantry (Peers 1995), and the whole style of warfare exemplified in the writings of Sun Tzu.

The only ranged weapon shown in the Dian vignettes is the crossbow, a Chinese weapon developed during the Warring States period. Yang Hong (1992) has suggested that crossbow bolts may be tipped either with metal arrowheads, or merely left as sharpened bamboo points, depending on the wealth of the individual. Metal points obviously provide greater penetrative power against armour, and are found in great numbers in some tombs. The rarity of points in some contexts, however, lend some support to Yang Hong's assertion. It is thus possible that wholly perishable arrows were present in large numbers in some Dian tombs.

Ritualised violence appears to have played a prominent role in Dian society. Warriors in the act of taking the heads of defeated enemies are depicted in the Dian vignettes, while other scenes show human sacrifice (Rawson 1983:pl.48-76). Models of Dian houses recovered from Shizhaishan feature human heads stored in wall niches (Huang Ti and Wang Dadao 1983, Higham 1996a), further evidence of the pervasive importance of trophy-taking in Dian society. The preoccupation of this complex society with headhunting may go some way into demonstrating the nature of prehistoric Southeast Asian warfare. The Dian evidence shows the futility in divorcing “feuding and headhunting” (White 1995:111) from ‘warfare’. In Southeast Asia, the association of ritual trophy taking and display with warfare is unavoidable. Evidence from the Dian culture shows that warfare in this context may be complex and technically advanced without surrendering its association with headhunting.

WARFARE IN DONG SON

The Dong Son phase, the definitive period of Vietnamese prehistory, generally corresponds with the Iron Age in Thailand. The exact date when iron reached the Bac Bo area is unknown, but the metal is found in Dong Son contexts from the second half of the first millennium BC (Higham 1996a). While many Dong Son cemetery sites have been located and excavated, only one habitation site has been found: Co Loa, a massive fortified site of extreme importance in Vietnamese legend. Vietnamese oral tradition, in conjunction with Chinese histories, allows a hazy view of events prior to the annexation of the area by the Chinese in 207 BC. The most spectacular incarnations of Dong Son material culture are the huge bronze drums found at many sites (Bernet Kempers 1988). While these are impressive artefacts in their mere construction, their extensive value to this study lies in the decoration cast into each vessel.

According to Vietnamese tradition, the Red River area had been home to the kingdom of Van-Lang from the third millennium BC until 258 BC, when Thuc Phan of the kingdom of Thuc, ancestral enemies of the kings of Van-Lang, defeated this polity and founded the kingdom of Au-Lac (Higham 1996a; Schultz 1965). Thuc Phan built a capital, a city whose walls formed the shape of a conch shell, called Co Loa Thanh (“The city of the Conch” [Schultz 1965:21]).

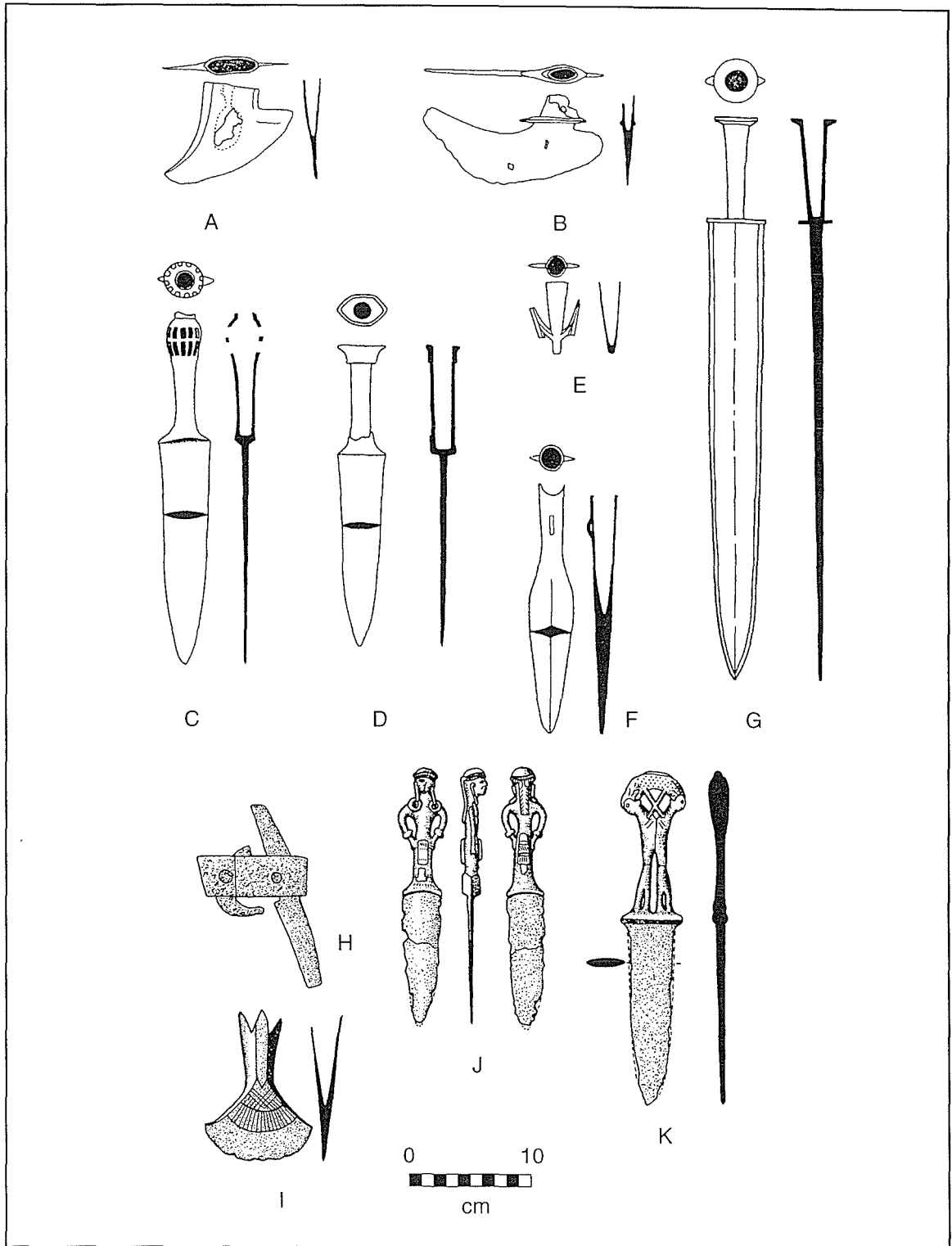
Thuc Phan's magic weapon, by which power he defeated a Chinese army sent against him, was a crossbow. The crossbow is a Chinese weapon, of exotic origin to the peoples of the Red River valley. The crossbow of Thuc Phan gives us an insight into the importance of Chinese military technology, even if the inhabitants of these 'Southern Barbarians' (as they are called in Chinese chronicles) "do not know how to fight as infantry [and] are ignorant of horse[-drawn] vehicles" (*Dai Viet Su Ky Toan Thu*, cited in O'Harrow 1979:144). This undoubtedly refers to a lack of chariotry, cavalry and formation-based infantry warfare, as was practiced in China at this time.

MATERIAL CULTURE

A range of axes is found in Dong Son contexts, socketed for the most part and bearing pediform, straight or curved blades. As noted in chapter 2, it is often impossible to divide axes into 'military' or 'craft' categories. However, it does seem sensible to propose that artefacts as morphologically different as the straight edged axe from Viet Khe (Higham 1996a:115, fig. 4.24c) and the pediform axes from the same site (Higham 1996a:115, fig. 4.24a-b) might be designed for different purposes. Iconographic evidence suggests that Dong Son axes of particular kinds were used in warfare (see below).

Daggers were also part of the Dong Son weapon assemblage. Three examples from Viet Khe (illustrated in Higham 1996a:115, fig. 4.24j-l) measure nearly 20cm in blade length. Over 50 daggers were unearthed at Lang Vac, several bearing detailed anthropomorphic hilts. Pictorial representations of the use of daggers are found on the Song Da drum (Higham 1996a:26, fig. 2.5).

Spearheads are a common weapon in Dong Son contexts, 62 examples alone being recovered from the site of Lang Ca. This site also contained 36 axes and six daggers. While these numbers are impressive, Lang Ca is reported as containing 309 burials, although, as Higham (1996a) notes, the site has been poorly published.



8.8: Pediform axes (A, B), lunate axe (I), daggers (C, D, J, K), spear (F), arrowhead (E) and crossbow trigger (H), Dong Son and Lang Vac (from Higham 1996a:115, 121).

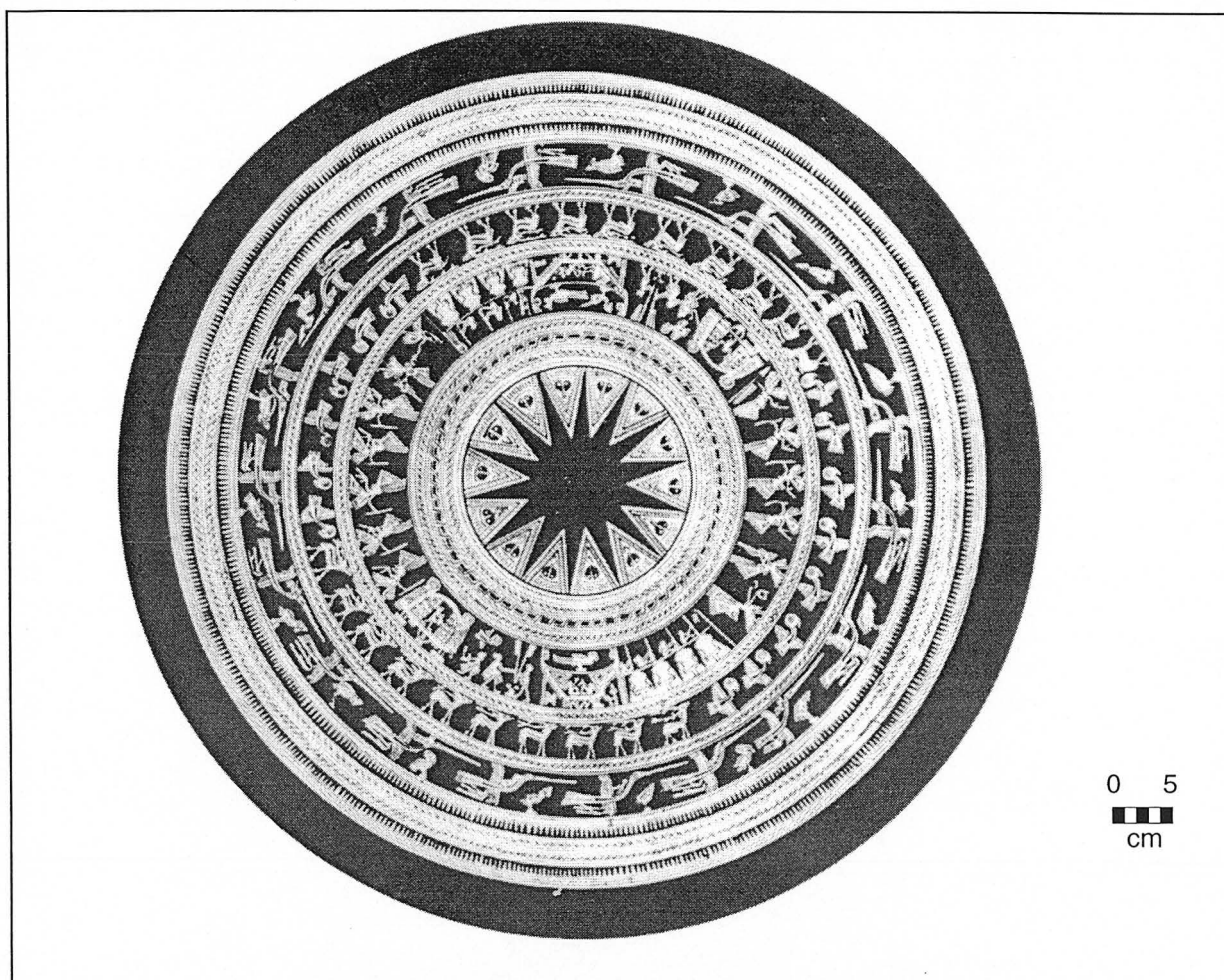
Swords are not as common in Dong Son contexts as spearheads or axes. Nevertheless, two bronze swords were found at Lang Vac in addition to the example noted above from Viet Khe. Given the obvious affinity between the Chinese examples and the Viet Khe sword, it is reasonable to suggest that the sword was a weapon of Chinese origin, exotic to the Dong Son military tradition.

The use of archery in warfare in prehistoric Bac Bo is hinted at by both material remains and artistic representations. Some Dong Son arrowheads, as noted above, bear some resemblance to Chinese models, but are not found in large numbers. A crossbow trigger found at Lang Vac indicates local knowledge of that particular weapon (as well as bringing to mind the legend of Thuc Phan), although only self-bows are represented in Dong Son art.

ICONOGRAPHY

Large bronze drums are most enduring art left by the people of the Dong Son culture. These drums, cast using the lost wax method, bear detailed scenes of Dong Son life and ritual. The exact role of warfare in the scenes delineated on the great drums is a topic of some debate. Pham Huy Thong *et al.* (1990), in their corpus of Dong Son bronze drums, describe all figures represented thereupon as 'dancers'. As I will demonstrate below, I believe that there is ample evidence that many of these figures were warriors, possibly involved in ritual trophy taking from defeated enemies. It is also possible, following Goloubew (1929), to relate archaeological materials to those weapons depicted on the drums.

Our most useful evidence as regards the topic of warfare comes in the form of depictions of figures on the drums. These figures are found in three contexts; either in boats on the upper side of the drum, in 'processions' on the tympanum of the drum, or depictions of individuals (or a more spaced 'procession' on the lower side). Figures are arbitrarily referred to as male, unless there is anatomical evidence otherwise.



8.9: Tympanum of the Ngoc Lu drum, note spear-armed figure leading the 'procession' on the right (from Pham Huy Thong *et al.* 1990:5).



8.10: 'Vienna' drum, note armed figure on side panel (from Bernet Kempers 1988:551).

NGOC LU DRUM (Higham 1996a:125, fig.4.29; Bernet Kempers 1988:543, pl.11.30a-e; Pham Huy Thong *et al.* 1990:4-5).

The tympanum of this drum features two processions, one comprising seven figures, the other six. The sextet (figure 8.9) is headed by a figure carrying a spear in his right hand. Behind him come three identically-equipped figures bearing a close resemblance to those on the Song Da drum (Higham 1996a:26, fig.2.5). Their right hands bear straight devices while their left 'hands' form two sides of a large triangle. Behind this group marches a figure bearing a round feathered object aloft and another who carries a small object in each hand. The first five of the septet are identical to the group of three identically equipped figures in the sextet. They bear the same objects in each hand and have an identical gait. Behind these come two figures, firstly one bearing a rounded object in both hands, then a strange figure with elongated arms.

The boats on the upper side of this drum bear remarkable scenes. Archers stand atop drum-equipped cabins, while spear- and axe-armed figures stand on deck. At the prow of each boat sits a figure, unique in its sitting posture, but nevertheless carrying what appears to be a pediform axe.

The lower side of the drum shows figures bearing tall feathered objects, perhaps spears, although these are less clear than other representations. The left hand of one of the visible figures bears an axe, while the other figure carries another tall feathered staff.

'VIENNA' DRUM (Bernet Kempers 1988:548-51, pl.11.47a-d).

The Vienna drum bears four processions, each with four figures, spaced among scenes containing houses and drums. Each figure is portrayed in a remarkably similar fashion, with either hand in the triangular form we have seen on the Ngoc Lu drum, or bearing a long curved object, again similar to those on the Ngoc Lu drum (figure 8.9). On the lower side of 'Vienna' we find clear pictures of warriors. These figures are armed with axes and carry shields. The form of one of the axes (fig. 8.10) brings to mind the axe illustrated in fig. 8.8b.

DISCUSSION

The most interesting evidence for the structure of Dong Son life can be found on the bronze drums. As discussed above, there is a great deal of evidence for the importance of warfare in Dong Son society. It is difficult to interpret figures carrying spears, axes, swords or daggers as anything other than warriors. However, all the evidence is not so unequivocal. The 'processions' marching across the tympana of many drums contain figures not obviously warlike, yet clearly associated with armed warriors.

Quaritch-Wales (1952) tentatively advanced a hypothesis for Dong Son warfare which would explain a number of features of Dong Son art. Taking note of the tall headdresses and obvious warlike nature of many of the figures on the drums, Quaritch-Wales proposed that Dong Son society was involved with headhunting. He found ethnographic parallels for the feather headdresses and armament in the more recent peoples of island Southeast Asia (Hose and McDougall 1912; Metcalf 1996).

This model also allows for the close association of dance, ritual and warfare in the Dong Son scenes. Ethnographic explorations of Southeast Asian headhunters show that ritual and ceremony play a large part in headhunting practices, with dance often being playing an important role (De Raedt 1996; Hoskins 1996). Davidson has proposed (1976, citing Lan 1963:284) that *thaps* were used as receptacles for human heads.

Dong Son warfare seems best described as infantry based, yet one is also forced to account for the extreme frequency of maritime and riverine vessels depicted on the bronze drums. While many authors have proposed a variety of supernatural explanations for the craft (Bernet Kempers 1988), I see no reason to believe that these are anything other than the boats used by the people of Dong Son in their everyday lives. Early European explorers noted the critical nature of riverine transportation in Southeast Asia (Higham 1989; Higham and Thosarat 1998). It seems logical that maritime transportation would also have been very important in Dong Son warfare, as it was in island Southeast Asia until relatively recently (Gibson 1990).

No evidence for the domestic horse or elephant has been uncovered in Dong Son contexts. Depictions of warriors on the drums are non-standardised, and rank is impossible to differentiate (unlike the Dian vignettes). The non-standardisation of weaponry and equipment would suggest that military endeavours were less formalised than in a state-level polity, lending credence to Higham's (1996a) description of the Dong Son area as being divided into complex chiefdoms. Body armour is also unknown, save possibly for some leather fragments of uncertain use. Weaponry, however, reaches high levels of craftsmanship in the Dong Son period. The existence of decorated and bimetallic weapons stand testament to the importance of weapons in this culture. Finds of Chinese weaponry, such as swords, a crossbow trigger and halberds, testify to exchange contacts with China and the selective adoption of Chinese military technology. Dong Son military technology did not develop in isolation, yet the warriors depicted on the drums bear little resemblance to their more northern counterparts of the Dian and Chinese cultures.

COMPARING DIAN AND DONG SON WITH THAILAND

Warfare in the Dian and Dong Son cultures bears considerable similarity to the 'chiefdom' warfare complex described by Carneiro (1990). This is in direct contrast to that of the Iron Age of Thailand, where evidence for warfare is considerably more fugitive, and where Brumfiel (1995) has disputed the existence of 'chiefdoms'. Specialised weapons are far more common in Dian, and horses and body armour correlate with a far more developed warfare complex. In Dong Son, specialised weapons are common, and the Co Loa fortifications demonstrate a far greater expenditure of energy than any contemporary site in Thailand.

Clearly, both Dian and Dong Son invested considerable energy in military technology and symbolism. Just as clearly, this represents a radically different behaviour to that of Iron Age Thailand.

Both Dian and Dong Son show continuous traditions in military technology and in exchange contact with the Chinese mainland (Ha Van Tan 1991; Higham 1996a). As these two cultures

matured in the shadow of the Chinese empire, it may be that the economic demands of their position fostered internecine warfare, such as that between the Dian and the Kunming (Higham 1996a; cf. Ferguson 1992). However, internal competitive factors should not be discounted, as both warfare complexes show considerable individuality. Chinese proximity to Dian and Dong Son may have exacerbated warfare in these societies, but should not be held responsible for its existence.

Between 500BC and AD500, Iron Age Thai societies came into contact with another expansive state: India. Understanding the impact of China on the Dian and Dong Son cultures may provide us further avenues to the understanding of Indian impact on prehistoric Thai culture.

9.

DISCUSSION: MODELLING WARFARE IN ANCIENT THAILAND

What is necessary is that we get our minds off those fascinating artefacts and isolated sites just long enough to give some thought to social theory and its implications

-Hutterer 1982:566.

The task of this chapter is the development a heuristic model for warfare in prehistoric Thailand. Firstly, it will be necessary to undertake a descriptive analysis of warfare in both the Bronze Age and the Iron Age. I will then attempt to account for the differences in warfare between these periods by reference to wider changes associated with the transition from Bronze Age to Iron Age, and the development of historic warfare in the region. Webster's (1998) analytical model forms the basis for the descriptive elements of this discussion.

MODELLING WARFARE IN BRONZE AGE THAILAND

Direct evidence for any form of violent conflict is ephemeral in the period 1500BC -500BC, although debate about the place of warfare in the Thai Bronze Age has not benefited from the full mobilisation of relevant evidence and theory. White (1982, 1995) is probably correct in proposing that these societies did not devote much social energy to warfare. Once the differences between her definition of 'war' and that used here are resolved, the conclusions are similar. Headhunting and small-scale raiding phases may have been prevalent in the warfare complex, but were not prosecuted with sufficient intensity or scale to affect the archaeological record significantly. White's (1995:118) theoretical position, that heterarchic, horizontally differentiated social organisation is congruent with "peace-focused" forms of competition, while relevant to the lack of large scale, intense warfare in the Bronze Age, does not allow a full exploration of raiding, feuding or headhunting. This is a problem with definitions, as White (1995:111) obviously does not consider "headhunting and feuding" to be 'war'. This

perspective biases against the examination of important *phases* of a warfare complex. Studies of similarly non-hierarchic societies in Mesolithic and Neolithic Europe (Frayser 1997; Keeley 1997), Coastal Southern California (Lambert 1997) and the Pacific Northwest (Maschner 1997) have highlighted the importance of warfare in these societies.

The purpose of constructing a diachronic model for warfare in prehistoric Thailand requires a consideration of the nature of warfare in the Bronze Age, before changes in the Iron Age may be assessed.

Bronze Age communities were based in small villages which were politically independent and highly localised (Higham and Thosarat 1998; White 1995; O'Reilly 1999; White and Pigott 1995). Settlement patterns are poorly understood, although groups are likely to have been seasonally mobile in order to take advantage of specialised resource collection loci during the dry season. This settlement pattern is consistent with a lack of conflict over resources or territory.

Based on the available evidence, it is highly likely that the *intensity* and *scale* of warfare in Bronze Age Thailand were both very low. No examples of warfare-related osteological trauma have been reported, while settlement patterns show no signs of adaptation to conditions of sociopolitical insecurity. Dispersed populations throughout Thailand may have made migration a more attractive alternative to direct competition in the face of external political stress.

Community organisation in Bronze Age Thailand was not marked by vertical hierarchy (Higham and Thosarat 1998; O'Reilly 1999; White 1995), and seems best understood by a focus appreciative of horizontal differentiation and temporally fluid specialisation. It is likely that individuals found themselves ranked according to their skills and achievements, but evidence for individuals who specialised in warfare is absent.

No specialised shock weapons have been recovered from Bronze Age Thai contexts. Nevertheless, axes, spears and arrowheads are commonly found in Bronze Age sites. These weapons, while morphologically unspecialised to combat, are the only evidence available for the study of Bronze Age warfare. Projectiles are rare (except at Nil Kham Haeng - see below) in comparison with the Iron Age, although the use of projectiles made from wholly biodegradable materials cannot be ruled out (Yang Hong 1992). Raiding *phases* in this heavily forested, monsoonal environment are likely to have emphasised ambushes and hit-and-run tactics. If this was the case, casualty levels would have been low, and mainly caused by projectiles. This would account for the lack of warfare-associated trauma in the Bronze Age osteological record.

While *phase* (as per Webster 1998) may be archaeologically invisible, the people of the Thai Bronze Age were almost certainly not practising phases involving the mobilisation of large amounts of energy, such as sieges or pitched battles.

Little evidence exists for materialistic *motivations* for conflict throughout most of the Thai Bronze Age. Non-material causes of warfare are often archaeologically invisible, though often of paramount emic importance. We can propose, however, that personal and factional disputes and revenge may have been the most important provocations for conflict.

As noted above (see chapters 2 and 3), dispersed populations, localised communities and a lack of vertical hierarchy do not necessarily correlate with a lack of warfare. The individuality of the Thai Bronze Age is emphasised by this lack, which bears further explanation. White (1995) has argued that the heterarchic nature of interaction during this period mitigated against violent conflict, although other societies marked by heterarchic tendencies have been noted to be engaged in endemic warfare (Rogers 1995). There are a number of other possible reasons for the apparent scarcity of warfare in Bronze Age Thailand.

It might be argued that the nature of archaeological evidence for warfare is such that sampling errors could account for the lack of this evidence in the Thai Bronze Age. This argument is not sustained, however. While Bronze Age sites in Thailand are far less common than their Iron Age counterparts, many sites have been located and excavated and evidence for a lack of interest in military intensification is common to all but terminal Nil Kham Haeng.

There may have been an ideological basis for the scarcity of warfare in the Thai Bronze Age. Ethnographic accounts from island Southeast Asia and America show how certain cultures construct violence and warfare in such a negative fashion as to discourage its prosecution (Gibson 1990; Gregor 1990). Gibson (1990) cites evidence from three tribal societies in island Southeast Asia, historically an area rife with slave raiding. The first, the Buid of Mindoro, construct violence negatively, promulgating an antiviolent belief system. The Buid live an egalitarian lifestyle, with almost no avenues open for the enhancement of personal status. The Ilongot of Luzon are a more status-conscious society than the Buid and construct violent and aggressive behaviour positively. Aggressive behaviour is used by young men to gain both a wife and the respect of their elders. The Ilongot are headhunters, and both through this behaviour and by marriage must a young man demonstrate the force of his personality to his elders. Courting behaviour is associated strongly with aggression. Formerly, the Ilongot practiced considerable raiding, but the amalgamation of the Philippines under democratic government has curtailed this activity. The third society studied by Gibson, the Iban, are river dwellers, and assign great prestige to those successful in voyaging and raiding. They are also headhunters, a behaviour tied symbolically to fertility. Courting in their society is aggressive behaviour, tied to a complex hierarchy of achieved status. These three peoples all live in what could be defined as egalitarian 'tribal' village systems, yet they define violent behaviour differently and thus prosecute war in very different ways.

Gregor (1990), in his study of the Xinguano peoples of the upper Xingu basin in Brazil, examined a tribal society that stigmatised violent behaviour and warfare as impure and 'wild'. They carefully controlled their external relations and at first glance would seem harmlessly

ethnocentric. However, Gregor argues that their peaceful system is maintained by fear. The Xinguanos greatly fear witches, whom they view as having magical powers to do harm. Village gossip networks rapidly assign blame for any untoward happenings, and professional witch hunters fabricate evidence against suspects. The suspect is then attacked by surprise, often in broad daylight, and hacked to pieces. Fear of showing violent emotion or anger and thus being labelled a witch if one of your neighbours happens to die unexpectedly keeps Xinguanos from violent behaviour. The Xingu example shows how a social system devoid of warfare can be violent, and how complexities in violent behaviour may be archaeologically invisible.

Environmental circumscription has enjoyed a prominent place in arguments seeking to account for changes in warfare patterns in the Americas (Lambert 1997; LeBlanc 1999). The environment of Thailand in this period, while still subject to periodic flood and drought, was not subject to long term changes in climatic conditions, as was North America. The Bronze Age population was low, which may have allowed dispersion in the face of drought or flood. The lack of stressful environmental conditions in the Thai Bronze Age may therefore help explain the scarcity of evidence for warfare.

The profusion of projectile-shaped artefacts in the last phase at Nil Kham Haeng poses some interesting questions. If these are accepted as projectile points then we may have evidence of military intensification in a Bronze Age context. What cause could people involved in seasonal copper production have for investing such energy in weapons? The large numbers of decorative bronzes found as sumptuary goods in Iron Age contexts provides an answer, as the far larger numbers of bronzes found in such contexts than in the Bronze Age must have placed further demands on production. This may have involved competition for the resources themselves. That the first evidence in Central Thailand for military intensification occurs in the context of production for exchange (especially of a material that became far more common and specialised in the Iron Age) strengthens the idea that exchange and warfare may be linked.

MODELLING WARFARE IN IRON AGE THAILAND

From the evidence available at this early stage, the *intensity* (Webster 1998) of warfare on Iron Age Thailand seems low, although comparatively far greater than that of the Bronze Age. This is supported by the low frequency of palaeopathological evidence for warfare, and the rarity of positively identified fortifications. While these are both rare in the Iron Age, they are totally absent in the Bronze Age. Warfare was probably becoming more intense and more politically important during the Iron Age.

No mortuary evidence exists for the development of specialist warriors, although weapons become more common in Iron Age mortuary and occupation contexts when compared to the Bronze Age. This “increase in military paraphernalia” identified by O’Reilly (1999:292) may be linked to changes in the *organisation* of conflict, although it is highly improbable that specialised warriors existed. Weapons from archaeological contexts comprise spears, swords, arrows, ‘lances’ and one possible halberd (*ko*). Only one sword has been positively identified in Northeast Thailand, from the site of Ban Kan Luang, although preliminary reports indicate that more have been found at Ban Khruat (Higham pers. comm.). Four were excavated at Ban Wang Hi. Again, while swords are rare in the Iron Age, their appearance without local antecedents raises further evidence that they represent changes from the Bronze Age. Spears and bows probably formed the basic armament of the warrior, while swords may have been associated with higher status individuals, especially at Ban Wang Hi. Renfrew (1972) has stressed the important changes in warfare and ideology concomitant with the autochthonous development of swords from daggers. However, daggers are not found in Thai contexts. At this early stage, the origins of the Ban Wang Hi swords remain unknown, although they may show Indian influence in their blade morphology.

No examples of prehistoric Thai armour have been recovered, although ethnographic analogy would suggest that likely materials for the construction of armour would have been biodegradable (Quaritch Wales 1952). Armour made of materials such as bamboo and hide has

been reported in ethnographic contexts as proof against weapons of the same technical level as those found in late prehistoric Thai contexts (Quaritch Wales 1952; Vayda 1976).

To judge by the weapons available to the Iron Age Thai warrior, warfare was probably becoming more associated with close range combat, as spears were becoming more common and specialist shock weapons were entering the repertoire. Evidence from Noen U-Loke suggests that ranged combat was still important, but an there was an expansion in the range of *phases*, a few of which emphasised close quarter combat. The archaeological evidence, therefore, still correlates with lightly armed and armoured warriors engaging in low intensity conflict. The presence of spears and arrows, the comparative rarity of swords and the absence of maces and specialised battle-axes, suggests that phases of conflict conducted at extreme close range were rare, although such clashes were more frequent than in the Bronze Age.

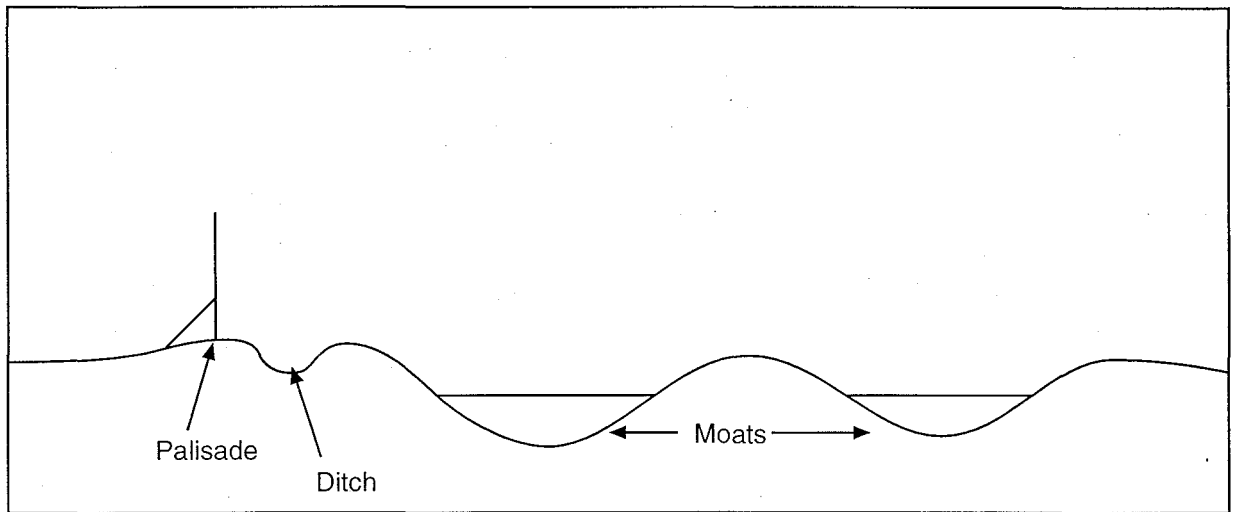
Dong Son Bronze drums have been found in Thailand, unfortunately often in looted sites (Higham and Thosarat 1998:162; Sørensen 1973). Similar drums are known to have had military functions in ethnographically recorded Thai hill tribes and probably served a similar purpose in late prehistoric Viet Nam. The function of these instruments in late prehistoric Thai contexts remains unknown, but they are liable to have had symbolic associations with both exchange and warfare.

The existence of fortifications at Non Yang suggests that at least one phase of Iron Age warfare involved direct attacks on settlements. It must be stressed however, that Non Yang's fortifications are, thus far, unique in the archaeological record of Northeast Thailand. I consider it likely that further excavation will show that palisade construction at Non Yang was not unique, as palisades provide efficient protection from both short- and long-range projectiles. The construction of fortified sites in late prehistoric Thailand would prove to be a sensitive indicator of changes in warfare patterns. Thus far, only Non Yang provides us with evidence for such changes.

The role of 'moats' in site defence has been subject to much debate (Boyd 1997; Boyd *et al.* 1999a, b; Moore 1988; O'Reilly 1999; Williams-Hunt 1950). In the most recent discussion on this topic, McGrath and Boyd (2000) note that "there was no evidence for defensive fortifications found within the moat banks during excavation". At this stage, any military role played by the 'moats' would seem to be secondary to their agricultural function. The palisades discovered at Non Yang suggest, however, that 'moats' could have been militarily significant. As noted above (see chapter 7), the excavation of Non Yang was unusual in that it conducted areal excavation toward the edge of the site mound. It may be a coincidence that this sampling strategy recovered the only known palisade in Northeast Thailand, but the similar testing of other sites is required to be sure. In the context of a 'moated' site equipped with a palisade and ditch system of fortification, the 'moats' themselves would provide additional protection, in the form of a ring of swampy ground difficult for attackers to traverse (fig. 9.1). The existence of intensive rice production close to the site also renders the economic basis of the community easily defended, should that be required. This, it is stressed, should be regarded as a hypothesis for testing rather than a model built from the available evidence.

The association of the 'moated' sites with palaeo-river systems (Boyd *et al.* 1999a, b) brings to mind the importance attached to riverine transportation by early European explorers (Higham and Thosarat 1998:17). It is likely that riverine warfare was known to these societies, and was possibly of some importance, as it was in the historic period (see below). The record in the Chao Praya Valley lacks a study of the 'moats', although some Iron Age sites in the Khao Wong Prachan Valley are described as "moated" (Ciarla 1992; Higham 1996a:270). Such a comparative study would be most useful in the context of evidence for military intensification in Central Thailand.

Headhunting is well attested in the Yunnan region of southern China, and has been suggested to have taken place in late prehistoric Viet Nam (Bernet Kempers 1988). This behaviour has been suggested to have taken place in prehistoric Thailand (Bayard 1971; White 1995). Non Yang



9.1: Hypothetical reconstruction of the advantages of moat, palisade and ditch fortification.

provides the most secure evidence, comprising a set of skulls buried in ceramic vessels (Nitta 1990:5-6, 35, pl.14). Headhunting has been associated with 'primitive war' concepts in past literature, related to 'feuding' and divorced from the apparently more sophisticated material motivations for 'real war'. Evidence from the Dian culture of Yunnan shows that this idea of headhunting is more reliant on eurocentric bias than on a reasoned assessment of the place of headhunting in its wider military context. The Iron Age evidence suggests that headhunting may be a practice of extreme antiquity in this region, and may be associated with military practices of considerable complexity.

GEOGRAPHIC VARIATION IN THE IRON AGE

Evidence for changes in warfare patterns occurs slightly earlier in the archaeological record of Central and Northern Thailand (see below). These changes have been argued to have been concomitant with changes in social systems, including the rise of 'chiefdom' societies. The evidence for changes in warfare in Central and Northern Thailand c. 400BC comprises a profusion of iron weaponry, particularly spears. Higham and Thosarat (1998:136) argue that these "heavy iron weapons" are more common here than in the Northeast. However, recent finds at Ban Khruat may indicate that such artefacts did experience a similar profusion on the Khorat Plateau, albeit centuries later.

The occurrence of specialised shock weapons appears biased toward Central and Northern Thai sites. This observation may be an artefact of sampling, as it relies on the Ban Wang Hi swords. Only four of these weapons have been recovered from Central and Northern Thai sites, all from Ban Wang Hi. While the exact number of swords from Ban Khruat is unknown, the total number from the Khorat Plateau may soon surpass that known from Central and Northern Thai contexts.

Burial populations in Central Thailand are restricted, due to looting and poor preservation (Glover 1990; Sørensen 1970). No late prehistoric skeletons suffering violent trauma are

known from this region. Iron weaponry is far more common in Central Thai contexts than in Khorat, however, and may be related to a greater intensity of conflict in this area.

Ban Wang Hi and Tham Ongbah appear more strongly equipped with a hierarchy than their Khorat equivalents. At these sites weaponry appears correlated with a small group of richer burials, providing evidence for the conflation of warfare with individuals of high status.

The effort expended on the construction of weaponry has been argued to have been greater in Central Thailand than on the Khorat Plateau (Higham and Thosarat 1998). It is possible, however, that the swords of Ban Wang Hi and the spears of Ban Don Ta Phet were specialist mortuary offerings and not functional weapons. If so, they still represent an energetic investment in military symbolism. The function of the 'lances' remains unknown, although their occurrence in the elite enclaves of Tham Ongbah and Ban Wang Hi may be significant.

ENVIRONMENTAL AND SOCIAL CHANGES IN THE IRON AGE

As stressed in chapter 3, changes in warfare do not happen independently of broader changes in the social and physical environment. The relevance of warfare to social and demographic changes in the Thai Iron Age must be assessed by reference to a wide variety of changes during this period.

Environmental circumscription has been argued in the Americas to have been a major causal factor in changing patterns of warfare (LeBlanc 1997; 1999). Anderson (1987) has proposed that climatic deterioration was taking place in Asia during the late third century BC, caused by the eruption of an Icelandic volcano. Han histories attest to higher than average rainfall, crop failures, and a colder climate. O'Reilly (1999:279) has noted that 5m flood deposits were found at Ban Non Chai dated to this juncture, while Thai archaeologists have noted that the Mun and Chi Rivers both far exceeded their normal discharge (Nutalaya and Sophonsakularat 1988), causing O'Reilly (1999:292) to suggest that such flooding may have been a motivation for the construction of 'moats'. It is also possible that the climatic stress placed upon the political

systems of Iron Age Thailand was a factor in increasing militarism. The evidence from Central and Northern Thailand is suggestive of intensification in weaponry production over a century before this eruption, but the dates proposed by Anderson (1987) are concomitant with these changes on the Khorat Plateau.

The most visible changes in Iron Age interaction from the Bronze Age involve the nature of goods acquired by exchange. The Iron Age period saw the introduction of a wide range of new luxury goods (agate, carnelian, glass, silver, gold and Dong Son drums) and the establishment of specialised production of bronzes and ceramics. Salt also became an important resource, necessary to preserve food for increasing populations. It is also likely that archaeologically invisible items such as wood and spices were being exchanged, ultimately to be included in Indian trade networks (Casson 1989). In this environment, where basic necessities (salt, ceramics) and luxuries (precious and semi-precious stone, bronzes) were being exchanged, competition for control of trade routes could have focused on warfare. Ban Don Ta Phet is strategically located on the Three Pagodas Pass, while Northeastern 'moated' sites are significantly correlated with Iron Age river systems (Boyd *et al.* 1999a). It has been stressed that riverine transport is far more efficient than land-based transport, especially in the heavily forested environment of pre-modern Southeast Asia (Higham and Thosarat 1998). Kipp and Schortman (1989) argue that control over access to luxury goods provides a powerful avenue to increased status for those in a position to exercise such control. These may be individuals, in which case game theory provides a useful theoretical perspective (Kantner 1996), or affiliative 'factional' groups (Brumfiel and Fox 1994).

Existing foci of bronze production, such as the Khao Wong Prachan Valley, became associated with large 'moated' sites such as Ban Tha Kae (Ciarla 1992). Ho (1992) has argued that these large sites are regional centres. Iron Age interaction seems to have become more complex, involving regionally specialised production and distribution.

No direct evidence exists in Northeast Thailand for the transmission of Indian ideology to late prehistoric societies. In Central Thailand, evidence for Indian contact is present from the mid to late first millennium BC, in the carnelian lion of Ban Don Ta Phet and ivory combs bearing Buddhist symbols (Higham and Thosarat 1998). Exchange links between Central and Northeast Thailand have been demonstrated by Theunissen *et al.* (2000), who have demonstrated that some of the carnelian beads originally thought to have come from India may be products of Central Thailand. It is likely that increases in population and the necessities of existing in a more complex exchange system fostered increasing competitive drives among local people (Ferguson 1990, 1992, 1997). Ferguson (1992:91) argues that all expansive state systems have on their edges a “tribal zone” inhabited by non-state peoples whose native social systems are destabilised by the presence of an avaricious state economy at their borders. This concept, developed specifically to understand the dynamics of conflict in the colonial Americas, has come under stern criticism (Bamforth 1994; Keeley 1996). While I do not intend to rely upon the “tribal zone” concept, it deserves to be examined as relevant variable in our understanding of both Iron Age Thai warfare and the impact of Indian ideas in mainland Southeast Asia. While the dramatic ecological changes accompanying European expansion into the New World have no equivalent in Indian contact with Thailand, the incorporation of Iron Age Thai communities into wider economic systems (Casson 1989; Higham 1989) may have caused drastic shifts in the balance of power between these communities. In addition, Indian political thought may have an impact, either in the selective adoption of Indian political concepts by emergent indigenous elites, or by the expectations of Indian traders with regards to how trade was conducted. As will be examined below, contemporary Indian political thought emphasised warfare as an important aspect of political expression (Rangarajan 1992).

The transition to the Iron Age in Thailand has been consistently associated with the inception of more hierarchic forms of sociopolitical organisation (Higham 1996b; Higham and Thosarat 1998; O’Reilly 1999; Welch 1985). While this argument is generally accepted, the exact social structure of Iron Age communities is as yet poorly understood. White (1995) and Brumfiel (1995) have both argued that classic ‘chiefdoms’ do not seem to have existed in prehistoric

Thailand. There is some evidence from Noen U-Loke that affiliative groups existed, differentiated by mortuary behaviour. This may indicate that competitive interaction took place on an affiliative-group level, in addition to the wider community level. The existence of regional pottery styles and community labour projects lends further support to the intensification of social inequality in the Iron Age. White (1995, cf. Wolters 1999) has argued that, despite the increased evidence for hierarchies in the Iron Age, the political structures of late prehistoric and early historic Southeast Asia maintained a heterarchic flavour, emphasising personal charisma over fixed charters of political power.

In the Iron Age of the Khorat Plateau, demographic changes may also be important facets of the transition from the Bronze Age. The Mun and Chi River Valleys, sparsely occupied in the Bronze Age, underwent rapid population expansion. 'Moated' habitation sites cover the Iron Age landscape, often in close proximity to one another. In the northerly Sakhon Nakhon Basin, Bronze Age sites are more common, but the transition to the Iron Age appears discontinuous. Changes in ceramic styles have caused a number of analysts to suggest that the population explosion in the Mun and Chi Valleys may have caused radical demographic changes in the Sakhon Nakhon Basin (Bayard 1992; Higham 1996a; Wilen 1989). The nature of these changes has yet to be fully explored, but seems to suggest that the population explosion on the Khorat Plateau in the Iron Age was a complex, dynamic process.

WARFARE AND THE INTENSIFICATION OF SOCIAL INEQUALITY IN LATE PREHISTORIC THAILAND: A HEURISTIC MODEL

Warfare in the Thai Bronze Age appears to have been very small scale, prosecuted with non-specialised material culture at a low intensity. Evidence for warfare prior to this period is restricted to Ban Kao, where Sørensen (1973) argues that one Neolithic burial appears to have been the victim of a projectile wound. It may be the case that such low levels of warfare were a feature of the Southeast Asian cultural landscape for some time. Simply stated, warfare does not appear to be very important until the Iron Age. We should beware of presupposing that it

did not exist, however. Recent research is forcing us to appreciate that war is a near ubiquitous, if unfortunate, aspect of the human condition (Bamforth 1994; Keeley 1996).

The model below seeks to relate warfare to a number of variables that appear to be similarly changing during the Iron Age. It is stressed that lines of explanation and inquiry in this model should not be regarded as ranked or lineal. Relations may exist without chains of lineal causation.

As noted above, the Iron Age in Thailand is associated with a number of changes in the social landscape. These are briefly stated below:

1. Exchange networks increase in range and content. Luxury goods become more common, such as decorative bronzes, semi-precious stone and precious metals.
2. Central Thailand appears to have come in direct contact with India.
3. Climatic deterioration in the third century BC caused higher rainfall, colder climate, flooding and possibly crop failure. This is associated with the eruption of an Icelandic volcano.
4. Evidence for the existence of craft specialists and community labour projects. These are linked to changes in social organisation.
5. Populations were expanding rapidly, especially in the Southern Khorat Plateau, where there is a dramatic increase in both the number and size of sites. This may have had an effect on the Sakhon Nakhon Basin, where demographic changes are associated with this period.
6. Patterns of warfare were shifting. The evidence is consistent with a greater intensity of conflict than previous periods, including the production of specialist shock weapons and the proliferation of non-specialist weapons. Possible fortifications also appear in the archaeological record.

Obviously, an attempt to wholly account for the social trajectory of prehistoric Thailand is beyond the scope of this study. Rather, the object of this analysis is to attempt to account for the place of warfare in such a model. The relationship of warfare to some of the other variables described above have been explored with reference to other parts of the world in the past (table

9.1). These have, for the most part, been monocausal explanations, seeking to relate changes in militarism to one specific variable. While this has worked well in some instances, the Thai situation does not appear to correlate with one specific variable. It is therefore proposed that a

TABLE 9.1: Examples of Previous Frameworks for the Explanation of Warfare in Cultural Context.

Causal Framework	Geographical Region	Reference
Population growth and 'circumscription'.	Various.	Carneiro 1970, 1978.
Environmental deterioration.	Southwest U.S.A.	LeBlanc 1997, 1999.
Competitive demands of trade and exchange.	Philippines; various.	Junker 1996; Webb 1975.
Indigenous incorporation into exotic economies.	North and South America.	Ferguson 1990, 1992, 1997.
Competitive aspects of differing forms of social organisation.	Fiji, Colombia, various.	Carneiro 1990; Spencer 1896; Webster 1975.

nonlinear approach to modelling the relationship of warfare with these other variables will be more productive. It seems fitting, when examining a region marked by heterarchic dynamics, to utilise such concepts in the construction of regional models. In such a system, the adaptive nature of warfare to group success may be affected by changes in any or all of the above variables. This concept owes much to the theory of nonlinear dynamics. This theory has been used by O'Reilly (1999) and White (1995) in relation to social organisation in prehistoric Thailand, and seems to fit the data well. This model is not designed to be a general predictive model for social organisation in prehistoric Thailand. Rather, it is designed to provide a basis by which warfare can be introduced to theoretical formulation in this region. The nonlinearity of the model stresses specific historical development, whereby specific regional or micro-regional

hypotheses should be generated and tested by excavation and survey. The other variables noted above have been explored with reference to prehistoric Thailand by a number of authors (table 9.2). Below, I will briefly explore one such hypothesis.

TABLE 9.2: Studies of relevant variables in Thailand.

Increasing trade and exchange.	Higham 2000; Welch and McNeill 1991.
Direct Indian contact.	Glover 1989, 1990; Theunissen <i>et al.</i> 2000.
Climatic deterioration.	Anderson 1987; Nutaralaya and Suphonsakularat 1988.
Increased craft specialisation and community labour projects.	Higham 2000; McGrath and Boyd 2000; O'Reilly 1999.
Expanding populations, especially on the Khorat Plateau.	Higham and Kijngam 1984.

Let us assume the competitive nature of trade and exchange (Keeley 1996; Kipp and Schortman 1989; Webb 1975; Welch and McNeill 1991) was manifested on the Iron Age Khorat Plateau in competition for exchange goods from Central Thailand and India. These may have included copper, carnelian, agate or precious metals. Once they were transferred across the Phetchabun Range, the most efficient mode of transportation would have been the Mun river or its tributaries. Climatic deterioration at this juncture may have exacerbated this competition by undermining the rizicultural basis of production or disrupting riverine transportation systems. Individuals seeking to promote their own status or that of their community may then have been cut off from the display goods used for this purpose and may have utilised warfare in an effort to further enhance their own status by controlling access to valuable goods. This specific hypothesis could be tested archaeologically by the examination of evidence for warfare (see chapter 4) and exchange in conjunction with palaeoenvironmental studies.

Alternatively, direct territorial competition over access to mountain passes and rivers for access to both trade goods and symbolic association with India may have caused an increase in warfare. Valuable geographic loci, such as the Three Pagodas pass, may have commanded such attention in prehistory.

These scenarios are, of course, historically specific, and would require structured and purposeful archaeological investigation in order to assess their accuracy. Given our present state of knowledge about prehistoric Thailand this model does not claim to provide any firm answers about the development of social inequality in the area. It does, however, provide a basis for the inclusion of warfare as a relevant variable in such an inquiry. The due place of warfare in this argument is attested by the importance of warfare in early historic societies in Cambodia and Thailand (see below).

A OVERVIEW OF HISTORICAL WARFARE IN SOUTHEAST ASIA TO AD1400

Warfare was endemic in historic period Southeast Asia. It was also an important facet of political expression in societies still distinguished by elements of heterarchy (White 1995). Higham (1989) and Wolters (1999) have described early Southeast Asian states as *mandalas*, a concept derived from Kautilya's *Arthashastra*, the most famous classical Sanskrit political text (Rangarajan 1992). Polities of this type are denoted by their reliance on the personal charisma and authority of the sovereign, expanding and contracting with the sphere of the sovereign's personal renown. White (1995) and Rivett (1999) have both found this concept of use in the explanation of heterarchic facets of historic social organisation in Southeast Asia. Historic and epigraphic evidence suggests that this concept was understood by the native kings of Southeast Asian polities such as Chenla and the later Ayutthaya kingdom of Thailand (Higham 1989:259; Wolters 1999:28). An examination of the military aspects of this concept may thus allow an insight into historic warfare in Southeast Asia.

The *mandala* concept owes much to the military nature of the Kautilyan state. The essence of the *mandala*, as espoused by Kautilya, is that the state forms a circle demarcated by the power

and energy of the king. States are expansive entities, concerned primarily with conquest. Thus, any state's neighbours are its enemies, while the neighbours of those states, being their enemies, are the allies of the first state: "the conqueror shall think of the circle of states as a wheel - himself at the hub and his allies, drawn to him by the spokes though separated by intervening territory, as its rim...the enemy, however strong he may be, becomes vulnerable to harassment and destruction when he is squeezed between the conqueror and his allies" (*The Arthshastra* 6.2.39-40, in Rangarajan 1992:541). Theoretically, if the aggressive first state did conquer an enemy state, then allies would become enemies because of their geographic propinquity. In practice, Wolters (1999:28) notes that "[al]though many wars have been recorded...victories rarely, if ever, led to the permanent obliteration of local centers".

Chinese histories, in addition to archaeological excavations in the Mekong Delta, offer insights into Funan, the earliest state in mainland Southeast Asia. The 3rd century AD Chinese envoy Kang Tai described a polity practising maritime warfare, extending its raiding and conquest as far west as Thailand under the king Fan Shiman (Coedès 1968). Kang Tai also recorded the arrival of horses from India in c. 240-245 AD and the Funanese gift of tamed elephants to the Chinese Emperor in AD 357 (Coedès 1968).

Warlords from the state of Chenla, located in northern Cambodia, routinely raided into Northeast Thailand in the mid-first millennium AD. Coedès (1968) argues that this state, or loose grouping of states, conquered Funan under the king Bhavavarman, who also left inscriptions commemorating his victories in Northeast Thailand. The expeditions of Bhavavarman and his successors, Mahendravarman and Isanavarman, were undertaken with elephant cavalry. These animals were to provide the most impressive and destructive battlefield force in Southeast Asia until the introduction of gunpowder. The origins of the use of Southeast Asian elephant cavalry are unknown, but may have been introduced from India, where the use of elephants for warfare and traction can be securely traced to the mid-first millennium BC (Kulke and Rothermund 1993). Alternatively, Ringis (1996) has argued that elephants may have been first used in the Bronze Age in China and the Indus Valley, while Tranet (1992) has

proposed that a small bronze model of a man riding an elephant recovered from a burial in Battambang Province, Cambodia, is prehistoric in origin. He states that (*ibid.*:26) “sur la base des dates au radiocarbone effectuées par le Département des Beaux-Arts de la Thaïlande, on peut affirmer que notre bronze doit se situer dans le fourchette chronologique entre le II^e-I^e s[iecle] avant J-C”. The burial in which this elephant figurine was found was uncovered in 1969, but according to Tranet (*ibid.*) remains unpublished. The 1st to 2nd century BC date proposed by Tranet places the figurine in the Iron Age, roughly contemporary with the occupation of the Khorat ‘moated’ sites. There is no evidence, however, from any Thai excavation for the presence of domestic elephants.

Fortifications were also used, especially moats, which may have provided some measure of protection from elephants. Higham (1989:259) reports an inscription dated to the reign of Jayavarman I, who campaigned in the autumn months of AD 658, “when his enemies’ moats were dry”. The relationships between these historic moats and the earthworks that surrounded Iron Age Thai sites are unknown.

The evidence from the early historic societies in Cambodia and Thailand shows that warfare was a prominent feature of these states. The *History of the Sui* records events in the 7th century AD, and describes Chenla thus: “the custom of the inhabitants is to go around always armoured and armed, so that minor quarrels lead to bloody battles” (Coèdes 1968:74-5). Higham (1989) describes the political situation of Chenla as comprising “small *mandalas* which oscillated between asserting their independence and accepting vassal status during periods when a particular overlord was powerful enough to mount wars of conquest”. The emphasis on the personal authority and achievements of the overlord in early Southeast Asian states (Higham 1989; Rivett 1999; White 1995) was an important factor in the military expansion of a particular polity.

The Angkorian state represented the apex of precolonial Southeast Asian state development. Situated on the northern shore of the Tonle Sap, the city of Angkor stood as the capital of an

expansive polity for 600 years. As with the Chenla period, the military power of the Angkorian state was directly related to the personal motives and authority of the reigning monarch (Higham 1989). More evidence is available on Angkorian military practices than preceding periods, due to the bas-reliefs that adorn many Angkorian temples. On these reliefs infantry armed with spears and shields march in formation behind cavalry officers and elephant cavalry. Horses appear to have been used as a mount for officers and individuals of high rank, rather than as a cavalry corps. The task of breaking enemy formations, in China and Europe the task of heavy cavalry, was in Angkor the task of the elephants. Elephants in the Bayon bas-reliefs carry ballistae on their backs, as well as riders armed with spears, thus enabling them to support infantry both at long and short range (Mus 1929; Roveda 1997). Elephant riders and cavalry officers often carried the *Ph'kak*, a distinctive Khmer weapon comprising an 'L'-shaped shaft with a metal blade attached at right angles to the shorter stem of the 'L'. The origins of the *Ph'kak* are unknown, although Roveda (1997) proposes that it may have come from Indonesia, while Quaritch-Wales (1952) states that it persisted among the Moi people of highland Southeast Asia into the 20th century.

Angkor was repeatedly in conflict with the Chams, a maritime state on the coast of southern Viet Nam. Angkorian bas-reliefs show massive river battles between Khmers and Chams, fought on flat bottomed vessels on the Tonle Sap.

In Northeast Thailand the early historic period is less well understood than its Cambodian equivalent. The military expeditions of Bhavavarman and Mahendravarman of Chenla began the political incorporation of the Khorat Plateau into the sphere of influence of the Cambodian states. These expeditions may have been little more than raids, but, equipped as they were with elephants, probably changed the local military dynamics markedly. Local polities in this region, such as Sri Canasa, are known to have existed, but are little known compared to the lower Mekong polities.

10.

CONCLUSIONS: DIRECTIONS AND OPPORTUNITIES.

It is also necessary to present a causal model...this is not a demonstrated explanation, but simply a proposed model. Whether it turns out ultimately to be correct or not is not important.

What is important is that there is at least one testable model for these events.

-LeBlanc 1997:235.

In the introductory chapter to this thesis the following aims were proposed: 1) to address the lack of prehistoric military archaeology in modern Thailand; 2) to apply the data thus derived to models of sociopolitical development; and 3) to build a methodology for the examination of warfare through archaeology. The fulfilment of these aims, while at this stage only preliminary, supports the application of military archaeology to Southeast Asia. Further excavations may refine or overturn some of the conclusions presented here and in the previous chapter, but the utility of warfare studies to the prehistory of Southeast Asia cannot be denied.

A focus on sociopolitical development has been, and will probably continue to be, an important aspect of Southeast Asian archaeology (Bayard and Solheim forthcoming; Higham 2000; O'Reilly 1999; Rivett 1999; White 1995; Welch 1985). Globally, many arguments regarding the nature and function of warfare have been raised in this context. Thus, it remains important not to divorce military and social archaeology in Southeast Asia. Recent champions of the heterarchic paradigm have lamented the lack of formal warfare studies in Southeast Asia (White 1995:120; cf. O'Reilly 1999). It is hoped that this study will go some way to addressing this lack, especially as it applies to the use of the heterarchy concept.

The methodology delineated in chapter 4 is, in its application to Southeast Asian data, innovative. It is hoped that it will provide a modern theoretical background for the study of

warfare in prehistoric Southeast Asia and that refinement through use will provide a more detailed regional perspective on warfare.

The model developed in chapter 9 is expressly heuristic. It is designed to allow the construction of inquisitive, testable hypotheses regarding the role of warfare in regional and micro-regional trajectories of sociopolitical development. The nonlinear approach is deemed to be the most useful in generating specific explanations for warfare in prehistoric Thailand, as no single variable appears to precisely correlate with changes in military behaviour. Such dynamics have been noted to be characteristic of Thai prehistory (Brumfiel 1995; O'Reilly 1999; White 1995; Wolters 1999).

The findings of this thesis are, above all, preliminary. Many avenues remain unexplored, primarily due to the youth of Southeast Asian archaeology. An understanding of the 'moated' sites of the Khorat plateau is slowly being reached, although the military significance of the 'moats' is poorly understood. The role of fortification in Thai prehistory is an open question. Further excavations are required in order to assess the existence and chronological and geographical extent of fortified sites. The swords of Ban Wang Hi are intriguing artefacts, and it is hoped that the excavations of Pautreau *et al.* (1997) will shed more light on these fascinating finds.

Above all, further investigation into the archaeology of ancient Thai warfare requires more excavation. Current sample sizes are too small to allow firm conclusions to be drawn. The trends visible at Noen U-Loke, Non Yang and Ban Wang Hi are suggestive, but can be no more in the absence of comparative data. It is especially hoped that cooperative research between Thai and foreign scholars will endure, as it is in this environment that research into prehistoric Thailand will continue to prosper.

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APPENDIX: WEAPONRY FROM THAI SITES USED IN THIS STUDY.

Site	Period	Point Moulds	Axe Moulds	Bone Points	Bone Spears	Bronze Spears	Bronze Axes	Bronze Points	Iron Spears	Iron Axes
Ban Chiang	B/I				1	1	1		2 ¹	
Non Nok Tha	B		3				6	2		
Ban Na Di	B/I	1	1					3	1	
Non Praw	B						X			
Don Klang	B						4			
Ban That	?									
Non Pa Kluay	I		2			1			4	X
Noen U- Loke	B?/I					2			5	
Ban Don Ta Phet	I								27	4
Ban Kan Luang	I					X	X			
Tham Ongbah	I								2	2
Ban Prasat	B/I					1	2			
Ban Kao	N/I			1					1	
Khao Jamook	I					1	X			
Huai Muang	I						X		1	
Ban Khruat	I								X	
Khok Phlap	B							X		
Nil Kham Haeng	B	X	X			1	1	X ³		
Ban Lum Khao	B	1								
Non Pa Wai	B	X ²	X ²							

	Iron Points	Swords	Lances	Bronze Halberds	Iron Halberds	Reference
Ban Chiang						White 1982.
Non Nok Tha						Bayard 1972; Bayard and Solheim forthcoming.
Ban Na Di						Higham and Kijngam 1984.
Non Praw						Higham 1996a.
Don Klang						Higham 1996a.
Ban That						Higham 1996a.
Non Pa Kluay				2		Wilen 1989.
Noen U- Loke						Higham 2000.
Ban Don Ta Phet	91					Glover 1990.
Ban Kan Luang	24					FAD 1992.
Tham Ongbah		1				Sørensen 1973.
Ban Prasat	2		1		1?	Monkonkamnuanket 1992.
Ban Kao	1					Sørensen 1967.
Khao Jamook	1					Bennett and Glover 1992.
Huai Muang						Bennett and Glover 1992.
Ban Khruat						Unpublished.
Khok Phlap		1?				Higham and Thosarat 1998.
Nil Kham Haeng						Pigott <i>et al.</i> 1997.
Ban Lum Khao						Higham 2000; O'Reilly 1999.
Non Pa Wai						Pigott <i>et al.</i> 1997.

Notes: N - Neolithic, B - Bronze Age, I - Iron Age, X - Quantity unknown or ambiguous, ? - Identification doubtful, ¹ - These spearheads are bimetallic, ² - Pigott *et al.* (1997) do not differentiate these, but there are *c.* 500 in total, ³ - The total number of these artefacts is unknown, but they occur in very large numbers.