METAL WEAPONS OF THE EARLY AND MIDDLE BRONZE AGES IN THE LEVANT

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DECLARATION

I declare that the material contained herein is entirely my own work

signed

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VOLUME I

TEXT

ABSTRACT

'METAL WEAPONS OF THE EARLY AND MIDDLE BRONZE AGES IN THE LEVANT'

The present study represents a major new survey of the artefactual evidence, last comprehensively treated by Maxwell-Hyslop (1946, 1949), and based as far as possible on first hand examination of museum collections in Europe and the Middle East. An extensive range of new drawings and photographs provides the basis for a complete new corpus of the material; a full catalogue of the basic data is provided in a series of Appendices. A review of existing studies is followed by discussion of the aims and methods of typology as practised in archaeology. The position taken here is outlined, and the methods employed, which include various statistical techniques, described.

A range of types are defined for various artefacts (daggers, axes etc), and their chronological and spatial patterning described. Formal typological study is combined with a consideration of the material in its archaeological (and hence cultural) context. A new body of metal analyses is presented and its implications discussed. It is shown that the weapons known from the archaeological record are connected to matters of prestige and status, and are not necessarily representative of current military hardware. The distribution of weapon forms can offer some indication of changing relationships between ruling groups. Hence, weapon typology provides valuable evidence which can be related to socio-political developments. The results of the above investigation are then considered in terms of the wider archaeological and historical perspective.

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The following illustrations are redrawn from published sources; fig. 8 lower, fig. 13 right - Braidwood and Braidwood 1960; fig. 21, 35, 44 left - Dunand 1954; fig. 25 right, 27 right - Yogev 1985; fig. 44 right - Smith 1962; fig 50 left, 58 - Thureau-Dangin and Dunand 1936; fig. 59 - Loud 1948.

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INTRODUCTION

General Aims of Research

There main aims of the project are as follows.

1. The collection, collation and presentation of a substantial body of data concerning the weapons of the Early and Middle Bronze Age in the Levant. This includes dimensions, stylistic data, the results of metallurgical analysis and in a number of cases the provision of good illustrations or photographs. Much of this material is either unavailable or dispersed through many publications. Only when this information is available will it be possible to study the development of weaponry in a systematic manner.

2. The analysis of this data, and the production insofar as possible, of a typology which can be used as a basis for future work. A purely classificatory scheme, to aid the assignment of new data to the correct category is not the aim. It is intended rather to order the data in such a way as to aid the investigation of a range of questions. The data as presented should permit future scholars to modify and reshape the present typology, to reflect changing needs and research interests, without the need to repeat the work on the original sources carried out by the present writer. In order to restrict the length of the main text, detailed descriptions of each type will be found in Appendix 1, raw data and a set of summary tables in Appendices 2–8. This material should enable the present work to function as a primary source.

Preliminary Assumptions and Orientation

A number of initial assumptions have been made in this study. These will be discussed in detail in the text, but should be briefly outlined here. It is taken that the aim of typology is to derive a set of categories that are in some way related to those created by the makers. These need not have been explicitly recognized by them, but were subject-generated. In this way, the

key area of investigation is the production process. This being so, the criteria defining our types, comprise traits which are the result of human actions and choices, during the process of making the objects; factors such as size, the adoption of a socket rather than a tang, the layout of rivets and so on.

Composition of Database

From the outset it was decided to exclude all unprovenanced material, barring several small groups of material, whose provenances were considered reliable by the archaeologists who purchased them, and who were working in the area at the time. These comprise the material from looted tombs, bought by Woolley in the area around Carchemish (Woolley 1913) and material bought by Dever in Jerusalem, after tomb looting in the occupied West Bank (Dever 1971, 1972, 1975). The main reasons for this are as follows.

The size of the corpus would have increased to such an extent as to render it difficult to manage. Furthermore, unless attention to detail had been substantially reduced, this stage of the investigation would have become impractical because of time and cost factors. The collection of high quality data is a keynotes of this project. It was felt that its 'raison d'etre' would have been undermined had a complete corpus been attempted.

In view of the aims of the project, the only real contribution which the addition of unprovenanced items could have made was to provide a larger database for typological refinement; their contribution to studies of chronology, distribution and context would have been minimal.

General Policy

It is the policy of this study, to compile a substantial body of information based on a corpus of well provenanced material. Extension of this to less reliable data, is left to others. The practice has been to deal with a limited range of items, metal weapons, thoroughly. It was felt that the best approach was to consider the development of these objects over a wide but fairly homogeneous geographical area, and over a long time-span. This ought to allow us to see the effects both of technical developments, and the influence

of different areas on one another, in a way that a study of a wider area over a short time-span would not. As 'time-depth' is one of the strengths of archaeology, it was deemed wise to exploit it. In the same way, a long term study of the industry of one particular area, without adequate consideration of neighbouring regions, might lead to an erroneous view of technical developments within that area, because of an inability to see its position within the wider whole. This is particularly so in the case of the metal industry, which might be expected in view of the long range basis of its supply lines, to be subject to the rapid spread of new ideas.

The study of such a body in some depth was felt preferable to the rather cursory analysis that would have been necessary had a larger range of metalwork been covered. Weaponry should comprise a fairly well defined unit with which to work. Because of its close association with the exercise of power and its association with prestige and militarism, it would seem likely to reflect fairly accurately the 'state of the art' in metalworking. Differences in weapon technology should therefore form a good basis upon which to compare the relative sophistication of the metal industries at various times and places.

Flat axes have not been considered. It is believed that many of these were intended to function primarily as tools, and that use as weapons was a secondary, optional aspect, unlikely to feature so strongly in their basic characteristics. The smaller flat axes are hard to separate from chisels, and others may have been multi-purpose items, being resharpened for use as adzes as necessary. This is reinforced by their rarity in grave contexts, in contrast to the rest of the material covered in this survey. Also omitted from the typological study are small projectile heads. Their reporting is very uneven; many are poorly preserved, and their simplicity makes the establishment of a valid typology very difficult. However, those identifiable projectile heads occurring in Early and Middle Bronze Age contexts are summarised, and their contextual distribution is compared to that of the other weapons.

A balanced range of illustrations has been provided, using new drawings wherever possible. Particular emphasis has been placed on examples which are not illustrated in the literature, or for which the existing drawings are

inadequate. In order to facilitate comparison among examples, a standard scale of 1:2 has been maintained throughout, except in those few cases where this proved impossible. Where the scale differs from the standard, this is clearly marked on the figure concerned.

Geographical Extent

The geographical area covered includes the Mediterranean coastal regions, extending from Cilicia in the north to the eastern parts of the Nile Delta. In essence it covers the long arc of fertile land running from Mari in the east, north west to Cilicia, and south into Palestine. For the period of the M.B.A., the area is extended west into the Nile delta to encompass recently discovered sites there showing a 'Levantine' material culture. In discussing parallels for our types found outwith this area, an exhaustive list has not been attempted. Rather the aim has been to indicate the main occurrences and outline their implications.

CHRONOLOGY AND TERMINOLOGY

The chronological range of the survey encompasses the Early and Middle Bronze Ages. The absolute chronology of western Asia is still is the subject of debate. Both overall sequences, involving changes of several decades (Huber et al 1982) and short term, readjustments affecting the reign-lengths of individual kings, such as Zimri-Lim of Mari (Birot 1978, Sasson 1980) are subject to frequent revision. As we are dealing with the Levant, we must also consider the impact of revisions in the Egyptian historical sequence. Work by several German scholars (summarised in Bietak 1984) which differs from the chronology adopted here, has important implications for the absolute chronology of the Palestinian M.B.A. However, the various regional chronologies cannot be easily reconciled (see for example the problems caused by the use of scarab evidence, summarised in Ward 1987), a difficulty which is largely overlooked by those scholars working exclusively in Mesopotamia or Egypt.

It seems unlikely that the competing chronologies will be unified in the near future, unless there are major new additions to our data. For the second millennium, the Middle Chronology of the Cambridge Ancient History (1973)

has been adopted, for its convenience and wide familiarity to archaeologists working in the Levant. In a survey such as this, it is felt that small differences between the various absolute chronologies are not of vital importance. Changes in metal types are not to be correlated with particular reigns or historical events. It is the sequence in which things occur, their relative chronological positions that are our primary concern. Our interest is in the process of change and the way in which these processes operate in different regions. Furthermore, most of our material derives from archaeological contexts such as tomb groups or domestic areas which can rarely be tied to absolute chronological schemes. Such contexts are generally dated on the grounds of ceramic typology, which changes gradually, at different paces in different regions, and is related to absolute chronology in a general way only. Our ceramic sequences themselves cannot be tightly defined, although their general outlines may be known. Problems are caused by the continued use of tombs over a period of time, the differences between tomb ceramics and that from stratified sequences, and our limited grasp of the pattern of ceramic regionalism. In brief, we are dealing with archaeological material, and our questions must be of a kind which archaeology can answer.

The Early Bronze Age

For third millennium Palestine we have a series of synchronisms with the Egyptian historical chronology, provided by both Egyptian finds in Palestine and Palestinian pottery from tombs in Egypt (Kantor 1965, de Vaux 1971). However, these are few, and we must turn to other methods to check our schemes and permit the relating of different regional sequences. Recent reviews of the evidence of radiometric dating in Palestine (Weinstein 1984) and in Egypt (Robinson and Hasan 1987) indicate that it is in broad agreement with the third millennium historical chronology, and the absolute dating for the Palestinian sequence which is employed here is essentially that of Weinstein (1984); see fig. 96.

For the Syrian material, absolute chronology is more difficult as we lack published, well stratified, sequences and an adequate corpus of radiocarbon dates, especially from the earlier part of the third millennium. However, the basic picture is emerging, helped by rescue work both in Syria and in the

upper Euphrates basin. We cannot rely on supposed Mesopotamian correlations to provide absolute dates for the Syrian material. In particular we must abandon the correlation of sites such as Til Barsip, Hammam and Carchemish with the Akkadian period, as pointed out by several writers (Prag 1970; Watkins 1983a contra Stronach 1957; Watson 1965).

An upper limit is provided by the presence of 'Uruk' material of mid-late fourth millennium date at a number of sites in Syria, which can be broadly equated with 'Amuq F. The lower limit is the well known incised pottery of Hama phase 'H', which marks the beginning of the M.B.A. This is conventionally placed around 2000B.C. (Matthiae 1980b; Gerstenblith 1983; Tubb 1983). Between these two points we must rely on the stratified evidence from the 'Amuq sites (Braidwood and Braidwood 1960), Hama (Fugmann 1958), Tell Mardikh (Matthiae 1980b) and recent excavations in the Syrian Euphrates Valley, (van Loon 1979; Dornemann 1979; Orthmann 1981a), aided by new material now appearing from sites in eastern Turkey (Palmieri 1973, 1981; Hauptmann 1982; Behm Blancke 1984; Marfoe et al 1986). It is felt that the metalwork itself has much to contribute concerning the third millennium chronology of Syria, and this topic will be explored more thoroughly in the main text. Suffice it to say here, that the general argument requires a rather higher dating for contexts such as the Hypogeum at Til Barsip (third quarter of the third millennium, contemporary with Palace G at Tell Mardikh and the the earlier levels of phase J at Hama), and the cist graves at Carchemish (earlier third millennium) than has traditionally been allowed.

The provisional overall framework is as follows. Material equivalent to 'Amuq J, Mardikh IIB2, Hama J5-1 and the settlement at Tell Hadidi are taken as representing the late third millennium. That of 'Amuq I, Mardikh IIB1, Hama J8- 6, Till Barsip (Hypogeum) is taken as middle third millennium, as is that from the Sajur Valley sites which Prag (pers. comm.) notes as having good parallels in E.D.II-III Mesopotamia. This is supported by the calibration of radiocarbon dates from Tell Selenkahiye (van Loon 1979, 111) and Hama (Fugmann 1958, 282). The earlier third millennium is more of a problem. However, the new material from Anatolia dating to the E.B.I and II periods, which succeed the phase of the Uruk settlements permits us to place certain deposits (Carchemish cist graves, 'Amuq G-H, some groups from Halawa and

Tawi) early in the third millennium. Clearly this scheme is provisional and will be subject to modification as material becomes available.

Nor is there an agreed terminology for the E.B.A. of Syria. In effect it is 'sandwiched' between a four phase scheme in Palestine which some would also use throughout Syria (e.g. Dever 1980, Matthiae 1980b), a three phase system in use in Anatolia, which has much in common with the material of north-western Syria and a Mesopotamia-derived terminology from in use at sites such as Tell Brak (Oates 1982). The sequence of stages defined in the 'Amuq (Braidwood and Braidwood 1960) which is rather peripheral to Syria at large, cannot cope adequately with the degree of regional differentiation which is becoming apparent (Kühne 1976, Mazzoni 1985a, 1985b). Although the second half of the third millennium is becoming clearer, the internal sequence of the earlier centuries is rather harder to define. In particular the lack of Black Burnished Ware, which defines Phase H in the 'Amuq, in many areas is a problem. Therefore, the system adopted (outlined above) assigns material to early, middle or late phases of the third millennium according to local sequences as currently understood.

Palestine

The preferred nomenclature for Palestine is as follows.

E.B. I	Kenyon's Proto-Urban A and B, Wright's (1937) E.B.IA and B
E.B.II	Includes Wright's E.B.IC and Kenyon's E.B.I (see Esse 1984) and conventional E.B.II
E.B. III	Undivided
E.B.-M.B.	Equivalent to E.B IV/M.B.I

Kenyon's preferred terminology of Intermediate Early Bronze-Middle Bronze is used for the reasons given by Prag (1984, 68). It is clear that Palestine in the late third millennium presents a very different picture from contemporary urban Syria, a point neatly brought out by this term.

Middle Bronze Age

The M.B.A. is divided into two phases, M.B.I and M.B. II, as generally accepted in Syria, and as applied to Palestine by Kenyon (1966, 1973). No attempt is made to divide the MB II period into strictly defined units, for, as Bienkowski (1984, 13) has pointed out, such distinctions have generally been made on the basis of stratigraphic breaks at particular sites, not on ceramic changes of wide validity. Even were it possible to establish a ceramic division at any one site, it is by no means certain, given the distinct regionalism shown by Palestinian pottery (Kempinski 1983, 191ff; Cole 1984, 95) that these would have more than local significance. Those tomb groups which seem likely to be early or late in the period, in terms of the ceramic sequence at that site are however distinguished. This is based on criteria, derived from an assessment of the excavation reports, supplemented by the re-analysis of the Megiddo sequence by Kenyon (1969) and Müller (1974) and more recent works by Kempinski (1983), Cole (1984) and Bienkowski (1984). However, many groups cannot be defined more precisely than to M.B.II in general. As regards the material from Tell ed- Dab'a, the relative sequence of tomb groups as indicated by the information available at the time of writing is employed. However, this must be seen as provisional as the material is not fully published, and there may be some revisions to the exact dating of individual tomb groups (Bietak pers. comm. Dec 1987). The second problem is that of the relationship between the sequence in the Delta and that of Palestine proper. This must also await full publication and digestion of the basic data, and will not be treated in detail here. The metalwork itself does however provide certain indications which will be discussed in the main text. The assessment of each context, as employed here, will be found in Appendix 8.

For Syria the same nomenclature of M.B.I and M.B.II has been adopted. The main problem in the M.B.I period is the dating of the various jar deposits from Byblos. Attempts to assign the material of the Montet Jar to the late third millennium (Tufnell and Ward 1966) have been criticised by other specialists who prefer a date in the early second millennium (Porada 1966, O' Connor 1983, 165) and Ward himself now assigns the Montet Jar to the later 20th century (1987, 509-512). Scholars working on the figurines from the deposits, have generally dated these to the early second millennium, although the exact

duration of the deposits varies between a long span as favoured by Seeden (1980), and a short phase within the 19th-18th centuries posited by Spycket (1981). It seems that the various writers have all overlooked the value of the important body of weapons from these deposits for dating, and it is this that forms the basis of our assessment of these deposits. This topic will be discussed at length elsewhere. Suffice it to say here that the weapons have their best parallels in contexts of the local M.B.I period, although types appearing late in the period such as narrow-bladed axes and ribbed daggers are generally absent. The beginning of M.B.I, is taken as c 2000 B.C. in Syria, and a little later in Palestine, probably even more so in the south. The transition between Palestinian M.B.I and II is placed around the middle of the 18th Century (Gerstenblith 1983, 106). This better accommodates the new M.B.I material from Ras el-'Ain/Aphek (Kochavi and Beck 1975, Beck 1985) and Tell ed-Dab'a (Bietak 1981, 1984, 1985) than the higher dating of Dever (1976).

We cannot assume that the Syrian M.B.II sequence, in particular that of inland areas, is directly comparable in ceramic terms to the better known Palestinian material. Therefore we must be cautious. However, this problem is largely circumvented by the fact that most of the present corpus of Syrian M.B.II metalwork comes from tombs at Ras Shamra which were used for multiple successive internments. As these graves were in use over some time, and were not always adequately recorded, all M.B.II material from the northern Levant has been treated as belonging to an undivided M.B.II period.

It is hard to separate late M.B.II groups from L.B.IA deposits, solely on the grounds of local ceramics. Therefore, the appearance of Bichrome (Bienkowski 1986, 128), Base Ring or White Slip Wares (Gittlen 1981, 49) is taken as indicative of a date in, or continued use into the L.B.I period. Material from such deposits has been excluded from the present study, unless there are good grounds for accepting the presence of a distinct M.B.A. group within the deposit.

A note on Byblos

It has only proved possible to include a part of the material recovered from Byblos, although this group does itself amount to over four hundred examples.

Many objects, in particular those from the 'Dépôts des Offrandes', published by Dunand (1939, 1954) lack illustrations or adequate descriptions. In many cases one item is shown, and several more described as 'the same' and an upper and lower limit for length given. Where verifiable, Dunand's assessment of 'the same' has been found to be rather loose, and that the fact that one or two pieces belong to one of our types, does not mean that the whole group can be so assigned. In keeping with our general policy then, only those pieces from Byblos for which the data is reliable have been included. However, it is felt that the range of material illustrated represents a good cross-section of that recovered from the 'Dépôts' as a whole, and that inclusion of the remainder would only increase the absolute numbers of our types, thus extending the 'artificial' numerical dominance of weapons from Byblos over those from other sites. In summary then, the exclusion of some of the material from the 'Dépôts' is unlikely to represent a major loss.

PART1 The Background

1.1 Approaches to weapons; the current literature

Introduction

The aim here is to address those areas of the literature which seem most relevant to the present discussion. Most large-scale considerations of metalwork approach it from a typological stance. There are implicit assumptions underlying many such works, in particular, the way in which types are defined and how these types are interpreted. It is intended to comment on several major studies and a number of other contributions illustrating the way in which scholars from varied backgrounds, writing at different times have approached the subject. Finally recent work carried out on material of a broadly comparable nature, found outwith the Near East, will be discussed, in order to provide a new perspective on our material.

Pre-war studies

Many difficulties faced early writers on the subject (Petrie 1917, Bonnet 1926). Important among these were that they were dealing with material with little or no archaeological context. Where some sort of provenance could be assigned, often on the basis of attributions provided by antiquities dealers and not necessarily reliable, the resulting corpus consisted of a relatively small quantity of material, spread thinly over a wide geographical area. This restricted their ability to study artefact distribution, leading to a concentration on the objects themselves, rather than on archaeological context. In turn, this hampered the construction of chronological series of objects which, following contemporary European archaeology, was one of the major interests of the period. The result was a heavy reliance on either very general, or very particular morphological similarities as an indication of the degree of

'closeness' between objects. Scholars would then move straight from these apparent 'typological relationships' to explanation in direct historical terms. The value of these studies today is twofold; as corpora and as an aid to understanding the paths taken by subsequent scholars. Many of the key assumptions of these early writers, and their basic approach to the material underlie more recent literature. Therefore these older works provide a historical perspective on the way in which ideas concerning types have developed.

Classification

Part of the reason for this, is that archaeologists have paid scant attention to the reasons for creating typologies, to what they hope to achieve with them. All too often classification has been seen as an end in itself. While this may be perfectly reasonable in some circumstances, a set of types derived for this purpose will not necessarily suffice for measuring chronological change, or conform to 'emic' types recognized by their makers, although it is along such lines that types are generally interpreted. (The whole notion of typology is discussed elsewhere see 1.2).

KEY PROBLEMS

We must now identify a number of deficiencies which apply to many studies of Near Eastern weapons, and to suggest ways in which these might be avoided in a planned survey.

Fragmentation of the material

Related to the view outlined above, that classification is a valid aim in itself, is the tendency to compartmentalise groups of material. This was the case with Maxwell-Hyslop's (1946, 1949) separate studies of Western Asiatic daggers and shaft-hole axes. By treating both groups as distinct entities, the importance of combinations of these items, their occurrence as sets, is overlooked. A related problem can be seen in de Maigret's (1976) separate treatment of tanged and socketted spears. While the typological distinction between these and tanged weapons is clear, so too is the functional overlap.

If we are to believe, as we surely must, that the socketted spearhead is to be considered later and as a technical advance, then we ought to view both forms as in some way connected. We should seek out socketted forms which are direct replacements for tanged spearheads, and which represent the introduction of completely new weapons. This clear connection is overlooked by de Maigret and stems in part from the fact that the two types are treated in separate parts of the book. We must not confuse typological differences with functional ones.

One of the strengths of Stronach's (1957) study of Anatolian E.B.A. metalwork, is that it covers a range of weapon forms, thereby providing a smaller but more complete picture than the works cited above. By artificially fragmenting a body of material as interrelated as are weapon forms, one risks losing much of the explanatory value of the data. The whole is clearly greater than the sum of its parts, and there is a limit to what can be said on the evidence of one group in isolation, without severely straining the evidence. In a brief study, Dever (1975, 28) draws attention to a distinct M.B.II weapon assemblage of axe and dagger which can be seen as a logical successor to that identified by Oren (1971) for the M.B. I period. In a more abstract sense we should consider the possibility that the occurrence of a Type A dagger rather Than a type B in a tomb, may be less important than the occurrence of any dagger, as opposed to a battleaxe, or in contrast to other tombs lacking metal goods. We cannot begin to consider evidence of this nature if the material is studied in isolated compartments.

The Problem of Provenance

There seems to have been little attempt made to assess the reliablity of the alleged provenances of material in museum collections. The older parts of museum collections are especially prone such difficulties, and the circumstances under which objects were acquired must be thoroughly investigated. Provenances that are patently wrong present less of a problem than do those that are credible, but are without supporting evidence. We should consider an entry in British Museum register of accessions referring to some hooked-tang weapons of Cypriot style, allegedly from Gezer. "Prof. Macalister of Dublin says these things were not from his diggings and doubts

if they are from any adjacent spot: dealers assign objects to any well known excavation" (quoted in Watkins 1981, 122). Misattributions, once in the literature can easily be taken at face value by subsequent scholars, resulting in erroneous reconstructions. Watkins (1976) illustrates the way in which this has happened in the case of the alleged 'Cypriot' weapons found on Europe. A similar situation has occurred in the case of two fenestrated axes, now in the Ashmolean museum which were described by Oren (1971, 128) as "from Cyprus (provenance unknown)". In view of the lack of similar axes from the island, despite the extensive excavation of cemeteries of the late third-early second millennia (summarised in Åström 1957; Stewart 1962), this seems highly suspicious. However, these same axes have been cited as of Cypriot provenance in a recent review of the M.B.I period in the Levant (Gerstenblith 1983, 90). If we are to assume that these axes had some meaning within their area of distribution, which might relate to other aspects of material culture, the acceptance of objects of debatable provenance effectively invalidates our line of enquiry.

Like early writers such as Petrie and Bonnet, Maxwell-Hyslop and Stronach both faced a severe shortage of reliable material and the resulting surveys comprise an uneasy mixture of credible and suspect items, which rather diminished their value, other than as exercises in classification. This is no longer a general problem; today's difficulty is that the material is of uneven distribution, requiring careful handling. However, quite recent surveys such as those of de Maigret (1976) and Erkanal (1977) still contain some material of doubtful context. Further, they provide no clear statement of the criteria employed in deciding which pieces to include.

The mixing together of material from good and poor contexts should be avoided. It is not that the latter material should be ignored, but that it should not be treated in the same way as reliable data, as it has less evidential value. There is no reason why items of differing reliablity should not be treated separately, yet this procedure has not been attempted in any general work on the material. Well provenanced items, although perhaps fewer, are those which are of concern in studies which seek to do more than describe and classify material. The basic space-time distribution and internal development of a type must be constructed on the basis of the reliable material. The role

of the rest is to reveal the range and variety of variation occurring, and is descriptive rather than explanatory. Where this is not done types can become a confusing muddle, with their true space-time patterning masked by a large number of members whose provenances are unreliable.

Although a large amount of material is brought together in Deshayes (1960) study, it should be observed that a fair proportion of it, in particular that said to be of Iranian origin, is of unknown provenance, rendering it valueless for the purposes of detecting regional and chronological patterns, which considerably reduces the value of Deshayes discussions of the 'historical significance' of the various types defined. This problem is important because his emphasis on the origins and historical development of types is one of the things that Deshayes (1960, 154) feels differentiates his analysis from the typological studies of Maxwell-Hyslop (1946, 1949). Surely the only valid course, in an analytical study, is to be ruthless with all doubtful material, accepting provenances only when we have good reason to believe them, rather than the reverse. This is the policy adopted in the present work.

Chronological precision

Lack of chronological precision is also a feature of much typological work. It seems that writers assume that their responsibility stops at the objects themselves, and that dating is the excavator's problem. The result of this is that information is lost, and the true temporal relationship between types is obscured. Yet this is the very information that would allow us to construct sequences of development on independent rather than on 'typological' grounds. As a result of this Maxwell-Hyslop (1949, 114-116) failed to appreciate that axes of her Type 24 predate those of her Type 23, which occur over roughly the same area, a point which is of some importance (see 3.2.3). In his turn, de Maigret (1976, 165) by an uncritical acceptance of Guy's (1938, 163) L.B.A. date for Megiddo Tomb 1100, despite the presence of M.B.I material (Dever 1975, 23 note 5), separates the socketted spearheads from that tomb (his Type B7iv) from a large number of similar weapons (Type B7i-iii) which are from M.B.I contexts. Thus the restricted lifespan of such small spearheads go undetected. These examples illustrate that the production of a typological study requires close attention to all aspects of the archaeological data. The

objects cannot be considered in isolation.

The Typological Process

Archaeologists have often talked in terms of typological change as if it were a process with an internal dynamic of its own, rather than a product of human selectivity, intimately bound up with the contexts within which an object is produced and used. This is partly a product of the original role of types as a means for constructing chronological sequences (see 1.2), and also owes to the tendency to jump from types to explanation, while failing to consider the intervening social matrix.

The chronological element has remained implicit in the way in which types are constructed and used. Unprovenanced objects can only be dated in comparison to better known material, not the reverse. In practice, archaeologists have tended to construct supposed sequences of typological development, based on differences in the morphology of a few reliable items, which are then fleshed out using a larger number of less well dated/provenanced objects. By so doing, contemporary variants may be fitted into an alleged temporal sequence, which is then treated as an archaeological fact, with new material being slotted into place on morphological grounds. This is largely the position taken by Hillen (1953) in his study of the connections between crescentic axes and the fenestrated form, where the so-called 'anchor-axe' has been assigned to an intermediate position between both forms on morphological grounds. As Tubb (1982, 2) points out this sequence cannot be demonstrated on the basis of securely dated examples.

In the same article Tubb (1982, 9) has used a similar line of reasoning, that morphological differences between two objects imply a chronological separation, to argue for an E.B.III date for a crescentic axe found without context at Kfar Monash, Palestine and dated several centuries earlier when first published (Gophna 1968). However the metal industry developed in a complex manner; consider the sophisticated products of the fourth millennium Palestinian industry (Bar Adon 1980). It is clear that a wide range of technological options were available by start of the E.B.A. including the possibility of producing socketted axes. Therefore production of crescentic

axes should not be seen as entirely determined by technical factors. Deliberate human choice, possibly governed by a culturally determined notion of 'correctness' was involved. If we accept this, then we can no longer make the assumption cited above, whereby an object which is made using a simple technology is necessarily earlier (or later if it is considered 'degenerate') than one which is made by a more sophisticated method. Nor can we relate degrees of morphological difference directly to the passage of time. There are no general unvarying rules governing something called 'typological behaviour'. The oft-assumed connection between particular techniques and chronology is less secure than was once believed and a preference for a particular solution, which might present itself to us in the form of a recognizable type, must be seen in its cultural perspective.

We again encounter the implicit connection, technology, typological change, chronology, in Curtis' reconsideration of the Nimrud axe. He suggests (1983, 73) that although two similar axes from Nimrud and Chagar Bazar are clearly from different moulds, they are likely to be the product of the same workshop, thus minimizing the chronological gap between the two objects. One obvious criticism is that this view underestimates the sheer scale and complexity of the metal industry in north Mesopotamia during the second millennium. There is also a methodological objection. The implicit logic would seem to be 'typologically similar - chronologically equivalent', a continuation of the old typology - chronology connection. This is not necessarily so. Types may survive in use over a long period, even quite elaborate types, if they are deemed particularly appropriate for some purpose. Surely the only effective approach to this problem is a consideration of archaeological context. Modern archaeology has a sufficient array of dating techniques available to imply that temporal sequence building should no longer be the main object of typological studies, and that we should have moved on to more interesting areas of research.

The Definition of Types

In most typological works, the types are defined on morphological grounds. Although this is also the approach followed here, a number of criticisms can be levelled at the detailed methodology of many previous discussions. The

term type is used without any attempt at proper definition, nor explanation of what constitutes a type or sub-type, nor where boundaries are taken to lie (Maxwell- Hyslop 1946, 1949; de Maigret 1976). The actual criteria used in classification are often loosely defined. An example is Maxwell-Hyslop's (1946, 6) definition of her dagger Type 2: "flat blade, slightly convex sides; tang with one, two or three rivets" which seems to cover a multitude of variations. Again, her axe Types 4 - 9 (excepting Variant 9B) seem rather to represent a complex of socketted axes with lobate blades, perhaps constituting what Clarke (1978, 207ff) terms an Artefact-type system. By splitting this large group up, there is a potential loss of information owing to the fragmentation of the large picture into smaller units, which may be considered in isolation, and the connections between which may go undetected. In other groups, for example her dagger Types 3 and 4, or Types 16 and 22 it is hard to see where the differences lie, and it seems unlikely that the actual objects could be sorted into those types given only the criteria provided in the text.

The members of Maxwell-Hyslop's dagger Type 4 cover an area from Iran to Cyprus (Maxwell-Hyslop 1946, 8), while those of Type 12 span a chronological interval of nearly two millennia (Maxwell-Hyslop 1946, 12). If true this deserves further consideration, if not the very basis of type-definition is called into question. However these problems have not been followed up in the subsequent literature. In some cases, widely different items may be assigned to a single class on the basis of one obvious but not necessarily important criterion. The reason that this happens is that typologists have not examined the dataset for associations between different values of different variables. In fact, types are formed on an essentially impressionistic basis.

An example would be de Maigret's (1976, 47ff) Type A3 tanged spearheads, which are defined a having a shank of circular section. The type includes a heterogeneous collection of items covering a wide geographical and chronological range, and include items assigned to several different types in the present study. Their sole common factor is the possession of a shank of circular section. As a result, de Maigret (1976, 50ff) assigns both the slender weapons of the 'poker-butt' form known from Ur, Kish and other sites in southern Mesopotamia (our Type 3, see 2.2), and the broader bladed northern form as found at Carchemish, Kara Hasan and Hamman, (our Type 1) to a

single type. The result is to obscure the differential distribution of the two forms. This confusion is further enhanced by acceptance of a date of c 1750B.C. for the Hamman material (1976, 52), and the lack of any date for that from Carchemish and Kara Hasan, which places the Syrian form in an erroneous 'late' position and therefore of Mesopotamian derivation (de Maigret 1976, 56). From this example it is easy to see how the construction of types, and the interpretations which are based upon them are often inextricably linked and that errors in the former can result in misleading historical reconstructions.

It is the larger, more homogeneous groups which provide the building blocks for interpretative studies. One of the weaknesses of Maxwell-Hyslop's and Deshayes studies are that there are rather many types; in the former example fifty-six for a fairly small corpus of daggers (compare the thirty-nine types defined for the corpus of around seven hundred daggers covered here). In part this results from a tendency to assign odd pieces to single member types, leading to a proliferation of small and rather meaningless groups. The result is an inability to synthesise the material, as it is hard to produce a coherent space- time framework, within which patterning can be investigated. Furthermore, if the types are arbritary to any significant extent, or include too many inappropriate members (see below), then patterns present in the data may be masked. Here we see the conflict between classification and the construction or derivation of problem-oriented types. The different ends cannot necessarily be met by a single scheme.

Procedures

Deshayes (1960) seems to have made the first attempt, as far as Near Eastern metalwork is concerned, to consider seriously the way in which types are defined. Items were classified according to a hierarchical scheme with an initial division into broad functional classes, such as axe, knife, chisel etc. The basis of level of most interest to us, that of type and below, is provided by the term "forme" (Deshayes 1960, 34). Deshayes admits that this constitutes the most arbritary area of his classification (1960, 35), in particular because of the differing standards of illustration provided in different publications. Although this problem is acknowledged, a practical solution is not attempted,

and all objects are treated as more or less the same, despite the difference in the reliability of the typological information available. It also seems that he considers decorative elements as secondary to the basic functionally determined elements of an artefact (1969, 35). This notion is called into question however, if one accepts Wobst's (1977) idea that the visual appearance of artefacts may be of considerable significance, as means of communication.

Deshayes (1960, 35) agrees that treating all stylistic elements of an artefact as of equal importance is impractical, and accepts that some selection is necessary of traits or variables to be included in a typological analysis. He does not however present a method for doing so, admitting rather that this will be a largely subjective affair. Deshayes adherence to a hierarchical scheme presents problems when dealing with a number of variables. In the material of most interest to us, his treatment of socketted axes, assignment to one of the main types - A, B, C - etc is on the basis of the form of the socket. Within these, for example Type A, assignment to a sub-type - A1, A2, A3 - etc is largely on the basis of the shape of the blade (Deshayes 1960, 155). The problem is that the distribution of one variable often cuts across that of others. Where an initial partition is made according to the value of one particular variable, this leads to the situation where members of one type or sub-type are often more closely related to members of another when a wider range of variables is considered. Socketted axe Type A5 represents a particularly good example of this (Deshayes 1960, 164ff). Deshayes does not really explain the relationship between the various types and their sub-types, except at a classificatory level. If these various groupings are to be assigned any interpretative value, it should be possible to consider their relationships in terms of technology, functional efficiency, and other aspects of design.

The problem is that Deshayes attempted to derive polythetic types (Clarke 1978, 493ff), but these cannot be formed by a divisive procedure, although it may be possible to arrange them hierarchically after definition. Nor did Deshayes inspect the patterning of individual variables, to seek possible associations between them, a necessary step in the derivation of polythetic types. For example his sub-types A4a and A4b are distinguished by members of the latter possessing a crest down the rear of the socket (1960, 162).

However, it should be observed that crests are found on axes from a number other types, although the significance of crests themselves, outside of type definition is not considered.

Data Treatment and Handling

The core problem is how to handle the amount of data generated through recording and preliminary analysis of several variables for each item undertaken. It should be remembered that today's statistical methods and computer power were unavailable when Deshayes was working. These practical difficulties should not be underestimated. In the sense that his ideas were too sophisticated for the contemporary data handling techniques, Deshayes work can be viewed as ahead of its time. In practice however, Deshayes is really framing classes on impressionistic grounds based on a few similar items, as previous writers had, and is assigning additional objects to them, rather than starting with the individual items and attempting to build classes based on their common properties.

Metric data, measurements and the ratios between them, has not been much considered. Dimensions are included in de Maigret's (1976) catalogue, but do not seem to have been actively employed in type definition, and are not discussed in the text. Although Deshayes (1960, 35) and Oren (1971,139) both comment on the value of metric data in typological procedures, neither exploits this much in practice. In Deshayes' case, this is illustrated by the great variation in size of between members of the same type, see socketted axe Type A1b (1960, 155), whose members vary from 51mm to 220mm in length. The most revealing example of the neglect of metric data is that most typological studies do not present illustrations at the same scale, making assessment of size variation within types difficult.

Use Wear

In several cases, writers have defined as distinct types groups of material which seem simply to comprise heavily worn examples of more common forms, the most common such criteria being the possession of a blade with concave edges, surely clear evidence for extensive resharpening. Examples

include De Maigret's (1976) socketted spearhead Type B4iii and B7ii. Such types have been conceived with insufficient attention to the basis of definition, probably from illustrations and without allowance for the effects of wear, damage or post-depositional processes on the material. Furthermore, by accepting the late dating given by Guiges (1938) for the tombs from Ruweise, since corrected by Oren (1971, 120), de Maigret (1976, 142) is able to view B4ii as a late, local variant of the B4 form. In a similar vein, Richard (1978, 230) has defined a 'type' of E.B.-M.B. dagger as 'broad-butted'. In fact examination has shown that the butt is of normal breadth but the blade is narrow, owing to heavy longitudinal sharpening. The dagger is simply a worn example of a common type. Here we see the risks inherent in defining types from archaeological drawings. One must always bear in mind the relationship between an illustration and the appearance of the object when new.

Metallurgy

Little attention has been paid to questions concerning metal composition or working practices. However, as interest in these fields is fairly recent, this was unavoidable when most of the main studies of our material were written. However, the lack of an attempt to relate typology and technical studies remains a major lacuna in the literature. We should however note that authors of technical reports have made little attempt to consider typology, in terms of their own research.

Context

A major weakness of all the general typological studies is the lack of consideration given to the archaeological context in which objects were found. This is partly the result of the data used, which included many poorly provenanced pieces but is symptomatic of a more general trend towards 'object- orientated' archaeology. Interest in the context of weapons is confined to those studies (Oren 1971; Dever 1975) covering a limited spatial or chronological range, wherein the contextual data is more apparent, and is often better known to the writer. It is perhaps unreasonable to expect a single scholar to be familiar with this kind of data if he is covering as topic as vast as that tackled by Deshayes (1960). However this fact might constitute a

powerful argument against work carried out on such a grand scale. Where detailed patterning is subsumed in favour of a grand view, inherent contradictions may go unnoticed. The 'big picture' must be built upwards, firmly grounded in detailed analysis. It cannot be imposed from above. Contextual analysis is a vital component of this structure, and its omission, is a serious flaw, leading to some of the problematic interpretations that are discussed below.

THE INTERPRETATION OF TYPES

Maxwell-Hyslop (1946, 1949) actually makes few interpretative statements; that was not the aim of her work, which she herself described as a preliminary step (1946, 2). The main purpose of her surveys was classification rather than the investigation of past societies. Deshayes (1960) sought to use his types as units of basic data, for making archaeological, or even historical inferences. This procedure runs a number of risks. If his types were arbritary to any great extent, as I have suggested that they are, as a result of his method of classification, then there will be problems if they are treated as culturally meaningful units. Interpretations put forward in typological studies, often use types in this manner, as units of data upon which to base subsequent arguments. To use Type A1ii (four large hooked-tang spearheads from a hoard at Kfar Monash, Palestine and four undated pieces from Anatolian museum collections) as de Maigret does (1976, 28) to argue for a strong connection between coastal Palestine and Anatolia during the E.B. III period is highly suspect, and represents a classic example such an approach. In fact the Kfar Monash pieces are much more similar to each other than they are to any of the Anatolian objects placed in the same type. The well known parallels between Palestinian Khirbet Kerak ware and Anatolian Black Burnished ware cited by de Maigret (1976, 28) as supporting evidence for contacts between Palestine and Anatolia do not really connect, as the ware is rare on coastal Palestinian sites and does not occur in association with the Kfar Monash hoard itself.

Stewart (1974), in a study on Tell el-'Ajjul written many years before, makes some useful observations, while dealing with M.B.A. metalwork. In particular he treats the material as a whole, considering it within a broader context, citing its marked homogeneity as evidence for dispersed production

at a number of sites, in contrast to the then popular notion of itinerant smiths as the basis of production (1974, 50). This he ascribes to increasing cultural interaction, during the M.B.A. He also observes the presence of a number of so- called 'warrior' burials dating to the period (1974, 52) which are of course defined by the occurrence of sets of weapons in tomb contexts. Thus Stewart (1974, 53), recognized the role of metalwork in designating social status and as an indicator of social change, a departure from the purely typological work of contemporary scholars.

The strong degree of continuity visible in the nature of the metalwork deposited in funerary contexts was emphasised by Oren (1971) in a study which traced the tradition of 'warrior' burials back into the M.B.I period, demonstrating its widespread occurrence throughout not only the coastal Levant, but also in inland Syria. Viewed in this way, the typological difference between E.B.-M.B. narrow daggers, and M.B.A. decorated daggers should not obscure the fact that they would seem to perform the same role in their function as grave goods. Such studies emphasise that the importance of typological breaks should not be overstated. They may mask long spells of underlying continuity. As before this can only be investigated by a consideration of context.

Mechanisms of Transmission

Archaeologists have ignored a number of important questions. The reasons for typological change and the mechanisms by which new ideas or styles are transmitted are rarely dealt with explicitly, although there is often an implicit assumption that the pursuit of greater technical efficiency was the dynamic behind such changes. In connection with this the term 'typologically advanced' is used in a sense indicating technical sophistication, although the word advanced also implies a chronological dimension, as explained previously. There are references in Maxwell-Hyslop (1946, 1949) to travelling smiths and prospectors, who we might understand as at least one of the agents of transmission although this is not made explicit; perhaps here we see the influence of Childe (1942). Other problems include that of the suitability of particular types, why one form should be preferred over others; why x not y. Obviously, this question is hard to approach without considering the

contextual data discussed above, but even so the lack of interest is hard to explain. Deshayes (1960) too is rather sketchy on the mechanisms by which material culture, in this case his types, is transmitted between different groups and areas. He prefers to talk in general terms about 'currents' and 'influence', which would seem to evade the crucial issue. There is little discussion of the social and economic factors which are involved in the adoption or rejection of new ideas and techniques and a traditional diffusionist explanation of ethnic movements, as a means of transmission is often implied.

Another thread running through many latter works is the idea that Mesopotamia should be seen as the centre of metallurgical developments, with new ideas spreading from there outwards. This view, which assigns the Levant a secondary role, can be challenged on the basis of more recent evidence (see 3.4). Such is its grip however that it has survived as the favoured explanation, even among archaeologists whose data is largely non-Mesopotamian in origin. The problem is that all too often such ideas simply go unquestioned, and determine not only our approach to the data but the framing of the problems which we wish to investigate. Although Stronach (1957, 99-100) is able to identify daggers of his Types 5 and 6 as Syrian forms and (1957, 113) stresses the importance of the material from Carchemish and Til Barsip in North Syria, with regard to developments in Anatolia, the full significance of this material is lost as he ascribes their appearance to a "break-up of the Sumerian metal industry" (1957, 113), a view which survives in more recent work (de Maigret 1976, 50ff).

This emphasis on southern Mesopotamia as the driving force in metallurgy is made clear by Stronach's (1957) frequent references to parallels in the Royal Cemetery at Ur and Cemetery 'A' at Kish. The possibility that these cemeteries are broadly contemporary with the aforementioned north Syrian sites is not mentioned, on this see Watkins (1983a), thus hindering clarification of the theme which the Anatolian material, and now that from Naḥal Mishmar in southern Palestine (Bar Adon 1980), most strongly suggest, the existence of a number of contemporary, regional metal industries in the fourth and third millennia. It should be understood that the acceptance of Mesopotamia as the source of new 'influences' not only provides an origin for new ideas, but also an implicitly understood mechanism for their transmission and acceptance,

Sumerian smiths, prospectors, military campaigns etc. As a result alternative explanations have received little consideration.

Deshayes (1960) tendency to move directly from material on the ground to historical explanations, is most clearly seen in his chapter entitled "Tools and History". However one cannot move directly from artefacts to explanation without full consideration of context, as this offers our best evidence for the relationship between material culture and human societies. Not all will use identical material objects in the same way, and this may well affect the nature of the record left to us by different human groups. In the opinion of the present writer this neglect of the social matrix which mediates between events and the evidence as we find it, is the major weakness in Deshayes study. Also vital are the effects that post-depositional factors have on the nature of the archaeological record, and the pattern fieldwork, and the kinds of sites investigated in different areas.

Variations on this line of reasoning underlie a recent discussion. Observing the rarity of spearheads from M.B.II contexts in Palestine Tubb (1985a, 193), attributes this to changes in the nature of warfare, concomitant with the development of glacis fortifications, which he argues would have rendered spearheads redundant in favour of the longer range bow. This neglects the nature of the archaeological record. By far the bulk of our M.B.I spearheads come from graves. Their paucity in the succeeding period may reflect changes in the range of items considered acceptable as grave goods, rather than changes in warfare. It should be observed that metal arrowheads do not appear in M.B.II graves despite their apparent value when attacking ramparted sites. Furthermore, in Syria, where even larger defended cities existed, spearheads form a large part of the funerary repertoire of M.B.II tombs, in particular at Ras Shamra (Schaeffer 1936, 1938). Tubb has overlooked the vital social transformations which intervene between material culture in action, and the archaeological record as available to us.

Yadin

No discussion of this nature could reasonably omit mention of Yadin, whose major work (1963) which follows a rather different tack from those

discussed above, forms the starting point for discussions of ancient warfare in the region. His interest in weaponry is essentially in its development in terms of functional efficiency, and changing response to military requirements, rather than typological developments themselves. The definition of types is not an aim of his book, nor is the provision of a full corpus of the material. In one sense, the organisation of the study around the single theme of warfare, cuts across the divisions beloved of typologists, and emphasises the inter-connectedness of the material, of different types of weapon, as part of a larger whole. It also provides one potentially useful explanation for why typological change takes place at all, with a feedback mechanism envisaged whereby change in one aspect of warfare or defence leads to new, compensatory developments in others (1963, 2). Thus the focus of interest is moved from classification to the relationship between metalwork and the social, political and economic spheres, to the connection between technological development, military power and political dominance. This is itself a major breakthrough in terms of the traditional, classificatory approaches to the subject. Another vital contribution is Yadin's utilisation of the evidence of both Egyptian and Mesopotamian representational art as an aid to understanding the original appearance of objects, their mode of use and the soldier's military equipment. The fact that the Egyptians too distinguished clearly between certain types when illustrating them is of interest to us.

His analysis of the way in which the apparently diverse developments of different weapon types can be shown to be related, such as the connection between the development of the composite bow, metal arrowheads, scale armour and the chariot, provides much for us to consider, when attempting to explain typological change or the appearance/disappearance of types in the archaeological record. His illustration of the way in which factors such as the chariot might change the whole nature of seige warfare (1963, 81ff), by facilitating reconnaissance and blockade, opens our eyes to the possibilities lying beyond simple typology. Alongside this should be considered the apparent suitability of composite bows for batch production on a large scale (1963, 80) which has clear implications for the development of larger military, or political units. The apparent decline in 'warrior' graves containing what seem to be the weapons of one individual, as the M.B.A. draws to a close should not be overlooked. Yadin himself does not raise this point, but it is his

discussion which leads the way to the recognition of its potential importance.

In the same way his elucidation of the apparent connection between the development of axe forms from broad to narrow forms (1963, 12) and the development of body armour, in particular metal helmets should make us return to the archaeological evidence anew. In fact, the lack of metal helmets in the archaeological record, their omission from the Tale of Sinuhe (Pritchard 1955, 18–22) and their absence from Egyptian reliefs of the earlier second millennium cast doubt on this idea. However, the major point, the need to reconsider our assumptions should be taken. Another point which Yadin raises is that the frequency of fortifications at E.B.A. sites in Palestine, suggests that warfare was a common occurrence (1963, 53). This must force us to ask why this is not reflected in terms of the burial evidence where weaponry is rare, in contrast to the M.B.A.; or even the E.B.–M.B. period, where fortified sites are seemingly absent. Yadin himself does not address this question, as it lies outwith his ambit, but his clear juxtaposition of various bodies of evidence forces its consideration. In the light of the apparent incompatibility between the different forms of evidence, we should perhaps consider more deeply the exact nature of the archaeological record.

Yet Yadin's study leaves many things unsaid. By taking a 'functional-efficiency' stance with regard to the processes behind typological change, he neglects the role of 'non-optimising' behaviour in determining the form of weaponry. His emphasis on the dagger midrib as a strengthening device (1963, 61) ignores both its frequent use as a decorative element, and its absence in a number of L.B.A. cast hilted daggers, which are robust, effective weapons. Statements such as "for close fighting the axe and mace were preferred" (1963, 11) fail to consider the nature of the relationship between the material forming the archaeological record, i.e. funerary deposits, and the actual implements of war. Neither should it be overlooked that only a small minority of graves contain weapons. This is confirmed by the reliefs from Beni Hasan (Newberry 1893, Pl. XXXI) and depictions of Asiatics as seen in the well known inscriptions from the turquoise mining sites in Sinai (Gardiner, Peet and Czerny 1955 Pl. LXXXV) where only a minority of the male figures bear fenestrated axes, while javelins and bows are more frequent. His main difficulty is his assumption that weapons in the archaeological record could be

related directly to the implements of war. When the contexts in which such material occurs is fully grasped, a rather different picture emerges. This alternative view will be further explored elsewhere (see 3.2.3).

Classifications in use

The value of Maxwell-Hyslop's contribution is made clear by the fact that her basic classification is still used today, albeit more as a convenient shorthand than as an explanatory framework (see Oren 1971; Dever 1975; Watkins 1981; Yogev 1985 among others). The tenacity of her typology is all the more remarkable considering the difficulties under which her work was prepared: the second world war, the relatively limited corpus to which she had access, and the lack of well stratified material (Maxwell-Hyslop 1949, 1). Its survival however, is largely because of her identification of a number of instantly recognizable forms, dagger Types 25 and 27 (1946, 26, 27), and several axe Types, 23, 24, B3 and B4, and are those most frequently cited in the literature. However, it is unlikely that many scholars would regard this system as a framework suited to the development of new ideas.

Comparative material

The major achievement of Stronach's (1957) study of Anatolian metalwork is in its provision of an extremely useful summary of the material permitting detailed comparisons to be undertaken with that from other regions. This work, covering only the material of the Early Bronze Age, has since been joined by Erkanal's (1977) useful collation of material, from the rest of the Bronze Age, making comparison with Anatolia relatively painless. The Cypriot corpus has also been summarized, by Catling (1964). In contrast the material from Mesopotamia, Iran and Egypt remains largely unsynthesised, considerably hindering the study of metallurgy on an interregional scale.

NEW PERSPECTIVES

In recent years substantial changes have taken place in archaeology in western Europe. However relatively little of this has filtered through to the Near Eastern literature. Given the prominence of metalwork, weapons in particular, in the archaeology of this area, we ought to consider the way in which metalwork studies are currently being carried out there, in order to assess their relevance to the Levantine material. As a result four key areas, offering considerable potential for a study such as ours, have been identified.

1. The use of statistical methods for analysing the characteristics of bodies of data, and as a means to identify data structure and hence define types (e.g. Green 1980; Needham 1983). This topic is explored in greater detail elsewhere (see 1.2)

2. The collection of large bodies of metallurgical analyses (e.g. Northover 1980; Needham 1983, 423), and the study of the composition of groups of material rather than individual items, with particular interest in the relationship between alloying patterns and chronology, typology and techniques of manufacture and the investigation of regional industries.

3. Greater consideration of the archaeological contexts of objects. This has focused on both the comparative distributions of different types (e.g. Rowlands 1976; Ellison 1980), and on the kinds of contexts from which they come. This issue was raised in Coombs' (1975) analysis of the weapon hoards of the British Bronze Age, where these are seen as the result of deliberate deposition, connected with the actions of the upper levels of a ranked society, with ritual, conspicuous consumption and display. In his study of E.B.A. axes, Needham (1983) pays attention to the different patterns of deposition seen for different types, in different parts of Britain, and contrasts the kind of metalwork found in hoards, graves and as single finds. This aspect of the material has been farther developed by Bradley (1985) who emphasises that the archaeological record is evidence for the pattern of consumption, not that of exchange, arguing that must consider the relationship between the material found in different kinds of deposits. Thus our focus must shift from the study of particular kinds of objects, to the analysis of their interrelationships.

4. A more extensive consideration of the part which these objects might have played in the socio-economic or symbolic worlds of their users. This has included consideration of possible connections between metalwork and social status, differential access to materials, the organisation and manipulation of exchange networks and detailed within-context arrangement of objects. Sets of items, patterns of equivalence and substitution (e.g. Pader 1982), also bear on social or symbolic meaning. The idea here is to return material to its central role in human societies, to remove it from abstract study and classification. Interest might also focus on the reasons for typological change (see 1.2). For example why one type is replaced by an alternative e.g. fenestrated axes by the narrow-bladed axe series (see 2.1).

Most discussion of Near Eastern weapons, are either old, or handle the material in a 'traditional' manner. I have outlined above ideas from the recent European literature relevant to our study. Similar points have recently been made by Muhly (1985) in a study dealing largely with Aegean metalwork, where he stresses the difference between typology and explanation, suggesting that the presentation of a set of types is no longer a valid end in itself. Such a view is also taken in the present discussion. However, it should be stressed that one of the main reasons why European work has been able to address the questions outlined above, has been the fact that basic corpora and typological studies are more readily available than is the case in the Near East.

Although Muhly's discussion raises a number of other themes which have scarcely been considered in Near Eastern research, there is one major obstruction to this line of enquiry; the lack of an informative, typological study of the basic data, in its contextual setting. Without this, as the foregoing discussion has shown, subsequent research can only function at an anecdotal level. No matter how fruitful new approaches might seem, they cannot operate if comparisons are still made on impressionistic grounds, or between individual pieces, rather than on the basis of groups of well documented, clearly presented stratified material.

1.2 Typology; a consideration

Introduction

A number of criticisms have been made of the way in which typologies existing for Near Eastern weapons have been constructed. It seems appropriate to carry out a review of attitudes towards typology, as seen in the wider archaeological literature. It is generally agreed that a good typology should offer some insight into the structure of the material concerned, though the actual means by which it is constructed can vary considerably. In practice one must begin with a body of data, elucidate its structure and attempt to relate features of that structure to other aspects of the archaeological record. There are many ways in which to do so, though not all are suitable in all circumstances. It should be clearly understood that the following discussion has been framed with the construction of a typology of a particular set of artifacts in mind, and may not apply equally well to other kinds of material such as potsherds, sites or human societies. This stands in contrast to views expressed by Hill and Evans (1972, 232) among others, who believe that approaches of a more general applicability are feasible. The writer feels that the problems encountered in this process are often specific to one kind of material, as are the measures required to overcome them. One must therefore have a clear idea of the problems which one wishes to investigate, though it seems reasonable to frame these in such a way as to permit the exploration of such new lines of enquiry as may be suggested as the analysis proceeds.

In answer to the question as to whether there is a way of distinguishing a good typology from a bad one, the key is not whether it is 'theoretically sound' but whether the typology is useful, whether it shows significant patterning in terms of other aspects of the archaeological record. In the case of a typology of metal weapons formed on the basis of object morphology, the latter would include spatial and chronological distribution, though one would wish to go beyond this and examine the nature of the archaeological contexts in which the material occurs and technological factors as well. Deshayes (1970, 23) has correctly emphasised the need to build and refine typologies on a question and answer basis, and to maintain flexibility, in order

to avoid an over-tight structure which may result in data being forced into uncomfortable slots. Shepard (1956, 315) considers types as "categories in the process of formulation", not as fixed entities. This seems a reasonable view, although if each type is so, then any typological scheme built upon the recognition of a number of types will be even more subject to change. No typology will last forever, and the accumulation of new data or the framing of new questions may require that a completely new approach be taken to the problem. Rowlands (1976, 21) suggests that the object is to analyse the material for patterns of similarity and difference, stressing that one must consider the reasons for this variation, and that chronology and distribution cannot be seen as causal explanations. On that basis the results of the analysis presented here can be viewed as a solution appropriate for the body of data available at the time of writing. It will hopefully be of considerable help in understanding the context within which the material was produced and employed, but cannot be regarded as correct or final, and will be subject to modification as required by new data or different research interests. In summary then, the value of a typology should be judged heuristically.

Cautionary remarks

Metalwork, like pottery and lithics, forms a more prominent part of the archaeological record than it did of the original 'sum' of a society's material culture, so its significance may be overrated; not an immediate problem as far as typology is concerned, but more important when attempts are made to interpret the material in social terms. Many of our basic premises, the assumptions which we make, the framing of problems, the kind of data collected and the method by which it is obtained are 'theory-laden'. This is an unavoidable fact, and is not necessarily harmful, as long as it is understood from the beginning, and the analyst attempts to make explicit his underlying ideas and assumptions. In the situation here, it is intended to seek morphological types, as this is believed the procedure best suited to the material in question and the information available. Many of the objects are complete, and as they were made in a highly controlable medium, the maker's intention should be revealed in many cases. Chronology and distribution will function as criteria against which to test types, not as factors in their definition. It is felt that sufficient independent chronological data exists for

the period in question, to obviate the need for our material to function as a primary chronological indicator. As it is a fundamental premise of this work that the explication of space-time patterning alone is insufficient, attention is directed to the reasons behind the discernible patterns.

When we to talk of subject-generated variability, we are really dealing with what have been called 'cultural types'. That being so, we ought perhaps to consider the difference between that which archaeologists consider as types, and the way that typology might be approached by an anthropologist looking at a living society. Clearly the latter will be working from a synchronic perspective. Even were he to devise a strictly morphological typology, ignoring the different divisions assigned in verbal terms, he would be unable to construct the kind of types which archaeologists have routinely considered, namely types as areas of similarity identified as part of long temporal trajectories. To the archaeologist the typological process, i.e. the pattern of change over time seems to consist of an inseparable mix of technical, morphological and temporal factors, underpinned by a general notion which suggests that increased technical sophistication equals a more 'advanced' and therefore later type. The whole concept seems to be intimately bound up with modern western notions of unidirectional change. It is this all pervading aspect of archaeological typology that will be largely impossible to investigate in anthropological fieldwork. This difference is important, as it is surely in an anthropological study that true 'cultural' types are most easily approached. However, it is archaeology with its unique ability to deal with material over a long time-depth, that is best able to investigate the way in which this aspect of material culture changes over time. Surely the best method is through a detailed consideration of material in its archaeological, and thus its cultural, context.

There are mundane but crucial points that should contribute to the framing of a good typological study. As Redman has judiciously remarked (1978, 169) "analysis must be based on material recovered with excavation controls at least as precise as the desired detail of final interpretation". One should not fall victim to the bewildering array of modern analytical techniques, and attempt to ask questions to which the data is clearly unable to provide credible answers. One cannot attempt to produce a fine chronological

sequence of artefact types with material from disturbed collective burials, or from excavations carried out with inadequate stratigraphic control. The above warning in part explains the nature of the project here. Careful scrutiny of the various excavation reports shows that the data is of highly variable quality. As a result a grading system is built into the data handling process, enabling selection of batches of material of comparable standards of reliability. This grading of data quality has been applied to a number of aspects of the material, quality of context, condition of object and the quality of the data source. The plan is to work from the best data outward, i.e. from areas of high confidence to those where the information is less secure.

Similarly Cross (1983, 7) has noted an implicit assumption underlying recent analytical work; namely that a rigorous, precise investigation of a small scale problem is believed to be in some way 'better' than a more loosely organised investigation of a larger issue. It seems that the former projects are more manageable, yet the writer feels that such ideas lead us irrevocably towards increasing fission of the discipline, and a tendency to lose sight of the overall picture through pursuit of increasingly detailed investigation of small-scale topics. This belief has been important in the framing of the present project. As a large body of material and a wide chronological range is covered, it is felt that one must accept some loss of fine-grained resolution and accept a certain number of rough edges, as part of an attempt to tackle a number of wider issues. It is believed that this is a realistic position to adopt considering the nature and variability of our data. In the context of the present project, it is felt that it would be methodologically unsound to treat all data as if it had been well excavated and recorded. On the other hand to write off a large part of the total corpus because it was collected according to the standards of the day, and not to those of the 1980's, would present us with a secure but much impoverished research base. Surely the best solution is that proposed above, to include as much of the material as possible, but to accept that not all of it can be given the same weight when making interpretations.

APPROACHES TO TYPOLOGY; SOME RELEVANT THEMES

European Prehistory

The concept of typology as developed in Europe by Montelius (see discussion in Klejn 1982, 1-5) had a clear evolutionary emphasis, intended as it was to produce chronological sequences based on series of morphologically similar artifacts, which were believed to develop out of each other. This doubtless reflects the nature of the European archaeological record as understood at the time, a major component of which consisted of metal objects from graves and hoards. This approach was carried over to the Near East by Petrie with the development of his Sequence Dating method, and its successful application to Egyptian Ceramics. Shades of this evolutionary perspective survive in later works, where one encounters notions of progression in terms of increased efficiency, of degeneration and so on, applied to type series (Clark 1957, 136; Piggott 1959, 49), and by implication to the societies producing these artifacts. This is a clear contrast to the U.S.A., where a rather different notion of typology developed, reflecting the nature of the local archaeological record.

In European prehistoric research the type concept became closely linked with that of the archaeological culture; the latter being defined by Childe (1956, 15) as "a recurrent assemblage of archaeological types". Childe (1956, 33) in fact defined two levels of type. The first, 'type-fossils', are broadly equivalent to space-time types as understood in the U.S.A. (see below), and which can be used as to define cultures and periods. There are also many types which "are useless in classifying cultures but of prime importance for describing them" (1956, 33). This would seem to suggest an interest in the role that objects play in society, and represents a step beyond the concept of types as ordering devices. The result of this focus on the type-culture link, was a lack of interest in variability *per se*, and a tendency to treat types as 'givens'. Though little explicit discussion of variability is encountered in the European literature, Clark (1957) does point out the lack of interest shown in the functional role of artefacts and in their likely role in social relations, and as status symbols. However these ideas are noted in passing but are not developed in any detail, which seems to have remained the position with

regard to European archaeology until the 1970's.

The basic European method consisted of building up local relative chronologies using typological sequences based on the co-occurrence of types in graves and hoards and their extension to other areas by the use of interregional comparisons, to generate overall chronological schemes (Clark 1957, 56). The existence of types as such generally went unquestioned, with type definition seemingly an intuitive process involving little explanation of the reasoning behind it. Beyond this the common appearance of particular distinctive types in regions whose material culture was otherwise quite distinct allowed the correlation in time of widely separated areas. The minus side of this equation was the tendency to compress distinctive widespread cultural changes, e.g. Beakers, into chronological horizons, which could be used as pan- European fixed points, connected to 'migrations' thus missing the real social changes of which these types represented a visible expression. Piggott (1959, 56) admits that at that stage no clear definition existed of what constituted a type or why its boundaries lay where they were assumed to be. Klejn (1982, 43) observes that the European notion of type is a normative concept par excellence, and that it is in fact closely integrated with the traditional normative notion of culture in vogue in European archaeology until recently. It is clear that within Europe the type concept was used with much less heart searching than was the case in the contemporary United States. The situation with regard to Middle Eastern research seems to have been similar to that in Europe. Types were used, but with few explicit statements as to how they had been defined. Typology in this area was restricted to objects, rather than extending to pottery in sherd form. All in all the situation has not been particularly inspiring. If in Europe social change was neglected in favour of the study of types and cultures, in the Near East typology was itself rarely considered.

North America

In contrast to the situation in European and Near Eastern Archaeology, American writers have devoted considerable energy to discussion of the basis and meaning of types. While their more critical attitude has much to recommend it, the bulk of recent literature has concerned itself with how

things ought to be done, outlining specific procedures which are very hard to put into practice in concrete situations. Few programmatic statements have been allied to a substantive application. In fact the situation is one where "the theoretical literature has diverged from practice to such an extent that the two are now unrelated" (Dunnel 1986, 15). The result seems to have been an excessive concentration on details of method (See Whallon and Brown 1982 for recent statements), rather than on the reasons for attempting to classify material in the first place.

One of the few attempts to put some of these ideas into practice has been made by Redman (1978, 161) who has admitted to a clear divergence between his theoretical ideals and his typological practice. Many American archaeologists have argued that there is no single typological system inherent in material; this is what Hill and Evans (1972, 252) have described as the 'positivist' view. Rather, emphasis has been placed on the confirmation or rejection of particular hypotheses. For example, if the researcher wishes to try and show that a certain group of objects were axes rather than chisels, he must construct a set of hypotheses concerning the traits identifiable in each case, and show whether these are valid or not for his data. If therefore he wishes to construct a set of types concerned with function, he should employ variables whose values are likely to be determined by 'functional' factors. On the surface this sounds very reasonable and Redman (1978, 161) believes that it should be possible for the analyst to determine deductively the variables relevant to any particular problem. However, Klejn (1982, 124) points out this is often done without adequate consideration of the way in which the necessary confirmatory evidence should be chosen, and as Whallon (1972, 252) has observed, 'traditional' typologies have often been more successful than formalised approaches. Hill and Evans (1972, 236) suggest that this is because 'traditional' approaches have been guided by research problems, although these have often been so vaguely stated as to be virtually unconscious, and so have not been acknowledged in the literature.

Another important criticism of the hypothesis testing approach is that it fails to allow for observations which do not support any hypothesis (Fletcher and Lock 1985, 170). By selecting variables in the way recommended by Hill and Evans, we force our research to proceed along a pre-set path. Such a

technique effectively prevents the detection of the unexpected. Clarke (1978, 151) has suggested that "fundamental entities and processes which pervade the material ... must be defined and explored before any of the higher aims could be approached legitimately". The key word here is explored. Surely no archaeologist is so omnipotent as to have considered all possible points of interest prior to embarking on data-collection ? It seems therefore that having a clear idea of antecedent research problems is important, but that prior hypotheses, which one intends to test against the data, are not vital. The adoption of the so-called 'positivist' method can place a theoretical straightjacket around an investigation. It is surely better to investigate the data structure before attempting to seek explanations.

A recent contribution by Dunnel (1986) has put the various views which can be found within the American literature into historical and philosophical perspective. He argues that the vital division is between Essentialist and Materialist views of the nature of classification, that confusion between these two aspects of the problem has led to much frustration with typological work. The first concerns itself with the study of difference. It attempts to produce a set of discrete entities with variation between these considered as 'background noise'. This is close to the view espoused in the present study, concerned as it is with 'created' variation and the study of patterns of similarity and difference. The second is concerned with the study of change. In this view 'kinds' are illusory; it is variation that matters. Types are thus seen as measurement tools, for the passage of time in particular. It seems that much typological work carried out in the U.S.A. has been concerned with types of the second form. Thus the various ceramic types which fall into the classic Type-Variety system of the American south-west were defined largely for their ability to order material in time and space. As new dating methods have appeared, the focus of interest as regards types, has shifted from temporal to social issues. The result is that many old space-time types have been assigned cultural meanings for which they were never designed. This discussion, although based on the situation in the U.S.A., has implications for research in other areas.

Style and Function

Much American work has seen a tendency to attempt to explain some artefact variability by reference to assumed functional attributes, a view which has been much criticised in recent years (e.g. Hodder 1982a, Miller 1982). Despite the fact that much of the literature seems to take this separation as a given, the reality is not that simple. Many American writers have recognised the existence of an alternative component of artefact variability generally referred to as style. 'Style' has been defined in a number of different ways by recent writers, (Sackett 1977; Dunnel 1978; [illegible] 1980; Brown 1982) who also differ on the distinction between the functional and stylistic components of artefact variation. Such inconsistency presents considerable problems for typologists, wishing to separate these areas of variability. Miller (1985, 65ff) has shown how poorly adapted most pottery vessels are to their day to day function, and outlines the massive 'redundancy' of forms in use compared to the actual number of roles fulfilled, concluding that notions of functional efficiency play little part in any detailed explanation of artefact variability. Shanks and Tilley (1987, 44) also argue that "material culture is primarily a world of style not function", casting doubt on the suggestion made by Hill and Evans (1972, 264) that archaeologists ought to aim to define standard sets of variables relevant to particular hypotheses, and arguing rather for an open-ended, more exploratory approach to material culture classification.

Sociotechnic Artefacts

Despite the difficulties outlined above, other approaches which have appeared in the American literature seem more valuable. Binford (1972a, 24) has attempted to distinguish between 'technomic' and 'sociotechnic' artifacts. The former are involved in coping with the physical environment, the latter provide a means whereby individuals and groups articulate effectively, i.e. having their primary role within the social rather than the physical world. It is unlikely that we can draw hard and fast boundaries between these categories, but as a general concept these distinctions focus attention on the important social role of artefacts, and emphasise that morphology is determined by a number of cross- cutting factors, many of which will be stylistic, rather than functional in a mechanical-efficiency sense. Binford himself argued (1972a, 28)

that many metal axes of the Old Copper period in north America were sociotechnic items. However, a major part in this argument was played by the contextual evidence, their regular occurrence in burials, as well as their apparent inefficiency as axes, highlighting the crucial role of context in any attempt to understand material culture.

Culture and Communication

Building upon Clarke's (1968) notion of material culture as coded information, Wobst (1977) argues that artefacts, (some more than others) signal social roles, status and group identity. Although certain details of Wobst's argument especially the connection between information exchange (i.e. style) and adaptive efficiency can be criticised (see Miller D.1985, 4), the underlying implication is that artefact styles are closely connected to the social world. We might therefore believe that there would be an element of standardisation among particular forms of an artefact, having a specific communicative function, which might in turn be related to the concept of types. One might expect artefacts employed in this role to be highly visible (Wobst 1977, 327) and weapons would seem to form obvious candidates for such a role, although Hodder (1982a, 55) observes that this is not always so in practice. Shanks and Tilley (1987, 142) argue that material culture may be not only reflect the social world, but may also function to disguise or misrepresent social practices. This is a difficult problem, but might be tackled through close consideration of find contexts.

In what way might we seek to identify those artifacts which are most extensively involved in this sphere ? The message transmitting elements of artifacts may be of perishable materials that are lost as part of the process of, or subsequent to, their deposition. The form of the message will surely depend on the makeup of the target group. This kind of messaging has been suggested to increase in value with increasing social distance; immediate family and members of one's own community know one's social statuses already. It would seem to be especially useful as a means of conveying information to the more distant members of one's own group, and to members of other communities with whom one comes into contact. Clearly beyond a certain social distance, the system begins to break down as different sets of

symbols are used. Peebles (1971, 69) has refined Binford's notion of sociotechnic types to allow for the differentiation of those which act as local and supralocal symbols. The former have a meaning comprehensible to people within a community, the latter can be understood by a wide constituency which may cut across political or ethnic boundaries. It might then be possible to consider the distribution of particular types of artefact, as related to areas within which particular communicative codes were understood.

This is a simple description of a phenomena which is quite complex in its operation and represents an extension of Binford's (1972a, 24) idea of 'sociotechnic' types. The important role of copper items in the social and prestige areas of activity in central African societies has been well documented in a recent study (Herbert 1984). The present writer's experience of collections of weapons from this area has indicated a substantial overlap with that of the ancient Near East, in terms of the basic building blocks used to create variability, and the way in which these are arranged. The classic techniques of elaborate shape, incised decoration and contrasting inlay encountered in the weapons from both areas are summarised by the term "The Ornate Implement" (Northern 1981, 3-4). It is the heavy emphasis on decoration and striking appearance that enables these objects to function as "part of a language of materials expressing values or beliefs integral to the culture within which the object was employed" (Herbert 1984, 210). This concept appears highly relevant to the Near Eastern material under consideration here. As is the case with the Levantine material, Herbert (1984, 227), too has observed the wide spatial distribution of many of the African items, cutting across those of other forms of material remains such as ceramics. The parallels are surprisingly strong.

Recent British Work

The themes discussed above have featured most in the American literature. It has been explained that approaches to typology must be varied to suit the particular material which is under investigation; the major problem here is that metal weaponry does not feature strongly in the archaeological record of North America. Such material has however been studied more extensively in

Britain. For the Bronze Age in particular the metalwork forms the most striking component of the artefactual record. As much British metalwork has been found without association, the chronological ordering of this material has been heavily dependent on typological studies, and the connection noted earlier (see 1.1) between technological sophistication and the passage of time is the implicit notion behind most British typological schemes. This can easily be seen in the case of the development from flat-axes, through palstave forms, to the appearance of socketted examples as documented by Schmidt and Burgess (1981). Here, the technical factor which is equated with chronological change is the use of increasingly more sophisticated, and presumably effective hafting techniques. In the Levant however, where much of our metalwork is dated by associated material, the progression is less neat, and later weapons are not necessarily more sophisticated technically, nor more functionally efficient than their predecessors. The pattern of change is more complex, a point which might have implications for the British material.

However, several discussions of British bronzework have made useful contributions to typological method. Rowlands (1976, 52) in his study of the M.B.A. metalworking in southern Britain, attempted to define groups of material on the basis of several categorical variables, rather than the single variable schemes proposed by writers such as Trump (1962) or Burgess (1968). In addition, he placed new emphasis on the consideration of metric variables, showing that these revealed contrasting distributions when they were plotted in terms of his types. The role of metric data in type definition has been stressed recently by Needham (1983) in a of study Early Bronze Age flat axes. In this case, a very thorough analysis of the raw metric data was made, and types were built up from the bottom, rather than imposed from above, as preconceived divisions.

This study and that of Green (1980) on flint arrowheads have taken a sophisticated approach to the data, using a wide range of statistical techniques to explore the structure of a range of metric variables. However Green (1980, 45) admits that he was unable, in the light of available techniques, to deal with mixed sets of numeric and categorical variables, although such would have presented the best solution in certain cases. These studies all emphasise the need for extensive data collection and exploration,

rather than the imposition of a simple divisive classification, and are more in tune with the aims and methods of the present investigation than are more 'traditional' typological studies.

TYPES IN THEORY

A useful definition of a type is "a group of highly standardised artifacts" (Doran and Hodson 1975, 63). Brown (1982) on the other hand simply defines typology as the search for structure within a body of data, while the goal according to Redman (1978, 162) should be to "maximize the available information". All of these suggestions are sensible, and form the basis of the practice adopted here. However, how do these ideas relate to types as they functioned within the living societies ? While Chang's suggestion (1967, 78) that "the 'right' categories should reflect the natives' thinking about the way in which their physical world should be classified", has been criticised (Binford 1972, 75), recent studies by Hodder (1982a) and Miller (1985) have shown the reality of types in some form in ethnographic situations. Considerable energy has been spent in attempting to differentiate between different kinds of types. The heart of the manner seems to depend on the relationship between types as defined by the archaeologist and the conceptions of the actors. A common belief among archaeologists is that a type in some way represents a set of abstractions, the 'mean' of a series of artifacts (Taylor 1948, 119), perhaps mental patterns in the minds of their makers (Krieger 1944, 272), or creations which were socially approved (Childe 1956, 9). Such types are believed to appear to us as non-random attribute clusters, groupings incorporated into the material by the makers, and representing a culturally defined order. Certain objects may have a well defined role, clearly expressing widely understood concepts such as social status or group affiliation, as suggested by Wobst (1977) and should therefore be detectable to us. These may at times be masked by 'background noise' due to the presence of variables which change in an irregular manner within the artefact population (Clarke 1978, 154), and which must be identified and eliminated in order to ascertain the more significant variables. Therefore extensive preliminary investigation of the patterning of variables will be required.

The mental template notion employed by Taylor (1948) assumes a verbal concept of the given type exists i.e. we are dealing with 'cognitive types'.

However, if we follow Spaulding (1953, 305) and Clarke (1978, 212) and aim to detect types by seeking non-random clusters of attributes i.e. patterned variation within the data, we will detect numerous such instances, some of which were probably unknown to the makers. Types defined in such a manner have been termed 'Empirical Types' (Taylor 1948, 123-129), and 'true' cultural i.e. cognitive types would seem to represent a subset of these. What do we do with these different forms of type ? Although cultural types are important in attempts to interpret material culture, the second form of patterned variation is surely the situation that we encounter when we study variation through time, change observable to us, but almost certainly undetected by the actors. Doran and Hodson (1975, 176-6), have argued on empirical grounds, that clusters detected in the data should not be excluded just because their significance is not immediately clear to the archaeologist. This seems a sensible practice, but requires to be placed on more secure theoretical basis.

A number clear cultural types, of the kind that Taylor (1948) describes can be identified among the Levantine material (fenestrated axes for example), but there also exist more subtle, complex patterns of variation. In order to deal with this we turn to recent anthropological research, which has concentrated on the role of material culture in living societies. In his study of a south Indian village, Miller (1985, 11) highlights several valuable points. Not all variability which is detectable by traditional archaeological means, is recognized by the actors. Types as we would define them do not necessarily coincide with the 'emic' i.e. verbalised cognitive categories. "Articulation at the level of language may be a poor reflection of the complex expression evidenced in the actual range of products" (Miller 1985, 10). i.e. some variability occurs at a non-discursive level,

However, Miller also stresses the role of the producers as the creators of the order which we can detect within the material, arguing that that order cannot be reduced simply to the hypotheses of the analyst, as some writers have sought to do (e.g. Brew 1946; Hill and Evans 1972). Miller argues that we must emphasise the role of objects in providing the material environment for social reproduction. Items of material culture may therefore function to constitute social relations at a level seen as mundane and natural by the actors, and hence not explicitly understood by them, implying that much of the

argument concerning the means by which we move between the two 'types of types' ('empirical' and 'cultural') may be redundant. If we can detect patterned variability, then it is clearly there, whether it was understood by the actors or not. However, given the complexity of living societies, and the deep level at which certain aspects of material culture operate, it seems unlikely that we will be able to explain all patterned variation which we can detect archaeologically.

Within a society classification is very dependent on who is classifying, and under what circumstances, (for example details of weapon classification may not be apparent to women) and we should not assume that all members of a society would classify their material culture in the same way (see Hodder 1986, 64-65). We cannot assume that there were 'real' unproblematic categories recognised by the living population (Miller 1985, 197), and it is unlikely that any single correct, original, classification exists for us to discover. What we detect will represent a mixture of things, some meaningful only to some people, some probably meaningful to none, although potentially valuable to us (chronological and regional variations for example). As a result of his research Miller concludes that classifications used by archaeologists ought to be judged heuristically (1985, 10), which is essentially the position adopted here.

TYPES IN PRACTICE

Having outlined a theoretical position, regarding the existence of types, and a general method for their detection (patterned variation detected by extensive data-exploration) we must now consider the means by which these notions can be put into practice. Typology as applied to metals will differ from the approaches suggested for other materials. For example, the Type-Variety system used in the American south-west, was designed to allow the classification of fragmentary ceramic remains over time and space. Such specific systems may not be adaptable to other kinds of material. Sophisticated techniques such as use wear analysis, believed to relate to object function in lithic research, are not applicable to metalwork, because of resharpening, corrosion and museum cleaning and conservation processes. The basic typological criteria for metalwork are therefore morphological. Chemical analysis is valuable, but most useful when combined with a shape

typology, and cannot really provide an alternative method in most instances. Miller (1985, 35) has recently raised an important point, arguing that we must not assume that technology determines the final product. Frequently it is social or cultural factors which decide the appearance of an object, not technological factors.

It is a basic tenet of this project that many types are polythetic in the sense defined by Clarke (1978, 36), although all types need not be so, as some features may be common to all members (Clarke 1978, 208). In the latter case it is likely that such features will be fairly few in number, and probably morphologically distinctive e.g. all fenestrated axes have holes in the blade; it is this very fact that makes them the striking phenomenon which they are. The detection of such a "highly correlated core of attributes" as the basis of a type (Clarke's 1979, 212) is the same in essence as the statistically detectable variable associations employed by Spaulding (1953, 305). However, the latter emphasised the use of statistical tests (the Chi-squared test in particular) as the means whereby such associations could be shown. Of course, the Chi-squared test is a means of testing hypotheses, an approach to which there are a number of serious objections when applied to archaeological data. (For further discussion of methodology see 1.3.)

There is also another aspect of this problem that has been frequently overlooked in the literature. Clarke (1978, 158) would recognize "clusters of repeatedly and closely intercorrelated attributes" as recurrent 'attribute complexes', forming an entity at a lower level than that of the artefact itself, a concept close to Rouse's (1960) idea of 'modes'. Beneath the plethora of terms employed in discussing such 'sub-artefactual' variable clusters, there exists a valuable point. Examples might include particular sets of decorative motifs which appear on a range of different items; pots, wall-paintings, textiles etc, or common styles of handle, occurring on several different forms of dagger-blade, i.e a coherent entity which can transfer as a unit, rather than as individual attributes. Such phenomena may well be of cultural significance, and if detected should be isolated, rather than subsumed within a general series of types.

MULTIPLE TYPOLOGIES, TYPES AND SUB-TYPES

In a recent article Brown (1982, 181) has argued for the construction by archaeologists of a range of specialised typologies. Examples cited by him include functional, stylistic, chronological and morphological types. While the use of a single morphological set of types for all purposes is clearly undesirable, the problem of the selection of suitable criteria for the definition of various classes of type is not tackled, other than to say that the attributes chosen must be relevant to the problem in hand. This overlooks the fact that the value of any variable, e.g. length, is likely to be the product of a number of factors, such as functional requirements, stylistic considerations and the manufacturing process. It would seem very hard to disentangle the effects of these different factors, in order that we could select the variables appropriate for the definition of each special type (see discussion of this above). This view also seems to overlook the fact that different approaches suit different data sets. It seems clear that in the case of the material of with which this study is concerned, a set of morphological types is what the data most readily offers, and it seems perverse to ignore this. Hill and Evans (1972, 235) have observed a tendency for archaeologists to treat a set of types, once defined as 'truth', as pigeon holes into which new data must be forced. Types cannot be treated as unchanging 'basic data'. They exist to serve a purpose, and must be allowed to respond flexibly to new data, or changing research interests. If we assess the value of types heuristically, we must continue to reassess them on that basis, re-evaluating the material where necessary.

Types, sub-types and variants

Too much energy has been spent attempting to define rigid terms for what should be considered a highly fluid situation. The whole notion of types and sub-types is inextricably bound up with classification carried out with hindsight. In practice, it matters little whether regional variants of a form of axe are classed as variants, sub-types or even as different types. It is the detection and interpretation of the variation that matters. The approach taken here is that we talk in terms of types; the term sub-type being restricted to groups of clearly related material the members of which differ on one consistently detectable morphological detail. Otherwise, the term sub-type

has been avoided as it seems both highly subjective and very much dependent on the nature of the the available data. For example, a type of 12 objects with two sub-types comprising of 2 and 10 members, may become two distinct types of 20 as the database expands. In the Levant, this risk is particularly strong as the Syrian material is so heavily under-represented in comparison with that of Palestine, that it would be all too easy to class the Syrian material as a sub- type of that from Palestine, an assessment which is likely to be misleading. As for variants, the term has been retained for items which have no good parallels in the rest of the corpus, and which are lumped together for ease of handling.

In summary then, several points highlighted in the foregoing discussion form the basis of the approach to typology taken here. Types are defined on a morphological basis, through patterning detected among the variables; where necessary on a multivariate basis. Emphasis will be placed on data-exploration, on seeking out patterns, rather than on the formulation of hypotheses and the selection of particular groups of variables in order to 'test' these. Spatial, temporal, chronological and compositional data are not employed in type- definition, but will form the basis of interpretation.

1.3 Method

In the light of the foregoing discussion, we must now consider the procedures adopted in the present study.

Redman has suggested (1978, 161) that a multivariate perspective is necessary when studying artefact variability, a situation which seems inevitable if we are dealing with polythetic types as defined by Clarke (1978, 493). Therefore a consideration of the applicability and the problems of multivariate analysis seems necessary. Before doing so however, some brief remarks on terminology are required.

TERMINOLOGY

Scales of measurement are discussed fully in standard statistical texts such as Blalock (1972), and will not be described in detail here. Suffice it to say that interval scales are essentially those concerned with numerical data, e.g. Length - 330mm or Percentage of Tin - 6.34. (A more precise definition is that they refer to something which is measured in fixed and equal intervals.) Nominal scales order items into discrete categories but say nothing about the differences between the categories e.g. Colour - red, green, blue or cross Section - ovoid, rectangular, circular. Presence / absence (dichotomous) scales are simply a variant of the latter.

The term 'attribute' has been used by in different senses by various writers (see Doran and Hodson 1975, 99; Redman 1978, 162; Watson et al 1984, 192) and the author would prefer to avoid its use. However its use is so well established in the literature that it is difficult to avoid, especially when referring to the writing of others. (The other difficulty is that archaeology still regards itself largely as a humanistic subject, and the adherence to a strictly defined terminology can result in excessively turgid and repetitive prose. I have therefore sought to vary the terminology a little, but only in cases where the meaning is quite clear from the context.) The definitions given below are those used here. A brief guide to alternative terms is also provided (in brackets).

'item', 'object', (case) - used interchangeably, refer to individual weapons.

'variable' (most American writers also use this term, 'attribute' is preferred by Clarke 1978, Doran and Hodson 1975): cross-section, length, percentage of tin.

'variable-value' (attribute in much American writing, 'attribute-state' Clarke and Doran and Hodson): the score on a particular variable attained by a particular item e.g. item 412: length = 125mm; item 678: cross-section = square.

For the purposes of this study a classification is defined as the process of putting objects into groups by virtue of properties which they possess in common (Hill and Evans 1972, 232). The word 'type' has a more specific meaning and represents a special form of class, that which is frequently defined on the basis of a consistent patterning of attributes, i.e. a non-random cluster of variable values. Clarke (1978 ,209) has defined what he calls a "specific artefact-type; an homogeneous population of artefacts which share a consistently recurrent range of attributes within a given polythetic set", which is essentially the same thing, barring the qualification polythetic, which is implicit in the first definition.

DATA ANALYSIS

Selection of variables

One might think that any body of material will have so many variables that to record all would be impractical, and of little utility. Some means of choosing which variables to record must be sought. Hill and Evans (1972, 253) have suggested that those selected should be those that the researcher considers relevant to his problem or his initial hypothesis. However, the difficulty of separating 'stylistic' variables from 'functional' and the fact that in many cases a variable such as length may reflect a mixture of both, casts some doubt on the validity of such procedures (see 1.2). Contrary to Hill and Evans (1972, 257), the writer is not convinced that by having hypotheses in mind the investigator will know ahead of time precisely which, or how, variables are relevant. Doran and Hodson (1975, 101) have observed that such

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prior selection of variables is likely to expose one to criticism on the grounds that one's hypothesis was tested using specially selected data, and that testing was not objective. Bearing in mind the importance of the production process in the creation of variability (as variation is taken to be subject-generated), the selected variables are connected with shape and other aspects of physical appearance. These represent the result of actions taken by the producer, though they may not have been explicitly considered. In such a study some variables will prove difficult to record consistently for practical reasons such as differential preservation of objects, first hand access to some items, compared with published photographs of others, and a host of other reasons. Some will be recorded and prove of little value; more annoying some will be missed whose importance only becomes clear at a later stage. Taking a realistic view requires that these problems be acknowledged, and that the programme of data recording is designed in such a way as to be a practical enterprise.

Numeric Variables

Sneath and Sokal (1973, 434) have emphasised the value of numeric variables in classification procedures. As well as the obvious importance of factors such as 'size', numeric data can act as a counterweight to those obvious characteristics which tend to dominate traditional classifications, the importance of which may be rather overrated. Support comes from recent anthropological work. Miller (1985, 41) having stressed the role of continuous variability as part of human categorisation processes, which he terms gradation. This argues strongly against Spaulding's (1982) move to reduce continuous (numeric) variability to a series of classes of a nominal variable, which has already been attacked on statistical grounds (see above). Needham (1983) has used metric data extensively in his morphological analysis of British Early Bronze Age flat axes. In our case, it is clear that absolute size may be an important factor in determining different functional classes of weapon, particularly when considering socketted spear forms. It is possible that two or three main size classes underlie a multitude of local stylistic variations, and may therefore provide a classification which cuts across groupings suggested on categorical variables (see 2.3). Unless one has access to large quantities of material at one time, or can assemble a body of illustrations at the same

scale, study of metric data provides the only means of comparing size variation between different objects. Such information is valuable, arguing that the inclusion of numeric data is important in a thorough typological study.

Categorical variables

The investigation of categorical variables is an obvious task, and has formed the core of typological work for many decades. The problem here is how one decides where the boundaries of a particular class lie. Do we define two values, red and blue, or recognise a third, purple ? How do we decide where blue ends and purple begins ? For some variables the categories used are fairly obvious, whilst in others it is likely that the classes represent convenient points within a continuous spectrum of variability (Needham 1983, 42). Most of the latter would be extremely difficult to express numerically, so they are best treated as categorical variables. An example of a nominal variable difficult to express in numeric terms is cross-section where square and circular forms could show equal values for thickness and breadth although the shapes are clearly different. The problem of boundaries is more difficult. The best approach is to try and define fairly strict categories, but note down the particular values of variables which seem to shade into each other. Areas of overlap and possible mis-classifications, or even the possibility of merging different values will become clear when one attempts variable by variable cross-classification. The approach suggested here is therefore a trial and error one, and is dependent on the analyst's ability to work interactively on the data. Naturally, when one is unsure of the correct value to assign one should simply leave that variable undefined on that particular object. Thus one can be sure that what patterning is observed is genuinely present. In cases where it proves impossible to define satisfactory categories, the variable might be treated as a continuous or simply dropped from the analysis as 'unsatisfactory'.

The key to a successful methodology is that it is adopted with a particular problem in mind. One must beware of what Moore and Keene (1983, 4-5) have termed "the Law of the Hammer", the tendency to adopt particular methods because they are available, or because the researcher has some personal attachment to them. This can lead to the application of techniques

ill-suited to the particular problem, generating much output but little meaning. In this context the selection of the appropriate scales of analyses becomes important, for the simple reason that the statistical techniques applicable in the case of interval and nominal scaled variables are quite different. In general the methods appropriate for interval scale data are more powerful and better understood, suggesting that interval scaled variables should not be converted into nominal scaled variables unless there is a particularly good reason for doing so. Besides the variables recorded, the raw data, numerous transformed variables can be constructed. These run from simple percentages to complex examples such as the calculation of principal components from a number of variables, all of which may prove useful in the analysis of the data. In this project a variety of methods will be adopted, some statistical, others more empirical. The essence of the approach taken here is to fit methods closely to the problem in hand. This must be so if we are to produce results which will aid our understanding of past societies. At the root of the methodology adopted here is the basic premise that research should move from the simple to the more complex, not the reverse. In cases where a simple analysis suffices, we stop. It is not intended to carry out elaborate statistical investigations unless there is a good reason for doing so.

Basic analytical methods

The first step then is data-exploration, to seek out its internal structure. Clarke's warning (1978, 206) as to the folly of using elaborate techniques when the low level entities have not been fully defined should be borne in mind. A number of recent contributions have emphasised the need for careful preliminary study of data by the use of simple visual techniques such as histograms and scatter-plots (Cowgill 1982; Brown 1982; Needham 1983). All these procedures are really concerned with pattern recognition, and it should not be forgotten that traditional study of material, in particular the experience of handling artefacts, is a highly effective way of observing patterns, and can often suggest underlying structures within data. These can then be then be investigated statistically so that they can be clearly spelt out. One of the major aims of preliminary data analysis is, according to Redman (1978,172) to help with the production of a list of the most relevant variables for more detailed examination. This would consist of the combined sets of essential

and key attributes as defined by Clarke (1978, 155). The two groups are differentiated on the grounds that the latter change in a tightly correlated and covarying pattern of relationships, and give the artefact-type its identity (1978, 201), whilst the former may change as part of the changing system.

One of the fundamental problems with most widely employed statistical methods is that they make unjustified assumptions about the distribution of the data (usually assuming normality). In addition, many measures, even simple terms such as mean and standard deviation can mask skewness or multimodality (Harting with Dearing 1979), the very things are of interest to us. These problems become greatly increased when multivariate methods are used. As a result heavy emphasis will be placed on visual displays such as scatter-plots to detect multiple peaks, clusters and other non-linear relationships and the detection of deviant cases before they can upset summary statistics. These can reasonably be expected given the nature of metal production and patterns of wear. Following this procedure will provide a good indication of exactly what is happening within the data. (When summary statistics are quoted it is generally as a shorthand measure, calculated after type-definition, to enable the absolute sizes of different types to be compared.)

More sophisticated techniques

Much recent debate has centred on the applicability of what are termed object clustering and variable association methods (see discussions in Whallon and Brown 1982). In some ways it seems that the British attachment to the former and the American interest in the latter are related to the kind of material with which workers in the two areas have been concerned. Illustrations given by American workers are mainly concerned with ceramics and lithics, while whole objects, often metal form the bulk of British examples. As Brown remarks (1982, 178) theory and practice exist on two separate planes, and no single method will be the most useful in all cases. A brief summary of the two fields is all that will be attempted here, for more detail the reader is directed to Doran and Hodson (1975) and Whallon and Brown (1982).

Variable-association methods

Association between variables has been defined as the situation "when knowledge of the value of the first variable improves one's chances of guessing the value of another, dependent, variable" (Spaulding 1982, 8). In essence we are seeking relationships between variables. Objects which share an unexpectedly frequent combination of variable values form the basis of a type. (It should be noted however that association between variables does not necessarily imply a direct causal relationship.) This is generally carried out by the cross-tabulation of different variables for a group of items and the calculation of statistical measures of the degree of association between them. This technique can only be applied to continuous variables by splitting their range into a set of intervals which are then treated like the values of a nominal variable, which involves the substitution of a high powered variable by one of lower power and has been widely criticised (Cowgill 1982, 54; Hodson 1982, 25). However this method is capable of providing much useful information where nominal variables are concerned. There are difficulties when dealing with complex interactions among nominal variables, which are rather harder to investigate. A method recommended by Spaulding (1977), for untangling such interrelationships is log-linear analysis. This method has not yet been fully tested in archaeological situations, and does not accord with the principles stated above concerning the need to explore data structure rather than attempting to fit statistical models, and is therefore not adopted here.

Object-based methods

These methods compare each item with every other item over all the variables and calculate an index of their similarity (or distance) according a chosen coefficient; many such exist (see Everitt 1974; Lorr 1983). The resulting table is known as a similarities or distance matrix. Clustering methods use this matrix to attempt to form groups of objects which are 'like each other'. Clustering algorithms will make clusters, if no good clusters are present, they will make bad ones. Linear ordering might be present and should not be sacrificed in the pursuit of clusters. If a linear solution is sought in preference to a clustered one, the result will be that a seriation will

be performed. Hodson (1982, 24) suggests that the object clustering approach emphasises discontinuities in the data, attempting to find groups of items showing "internal cohesion and external isolation", although deviant cases can cause the method some problems (Cowgill 1982, 33). It has been pointed out (Watson et al 1984, 218) that variables which measure random noise to any great extent will adversely affect the calculation of the similarity coefficients, hence the need to consider carefully exactly what data is entered into the analysis. Using an appropriate coefficient of similarity (Gower 1971) this technique can deal with combinations of both interval and nominal scale variables.

Multivariate statistical techniques are employed here but not as a blanket approach. Fletcher and Lock (1985, 169) have recently drawn attention to the dangers inherent in an uncritical use of such methods, such as the assumptions they make about the data structure. O' Shea has underlined (1985, 105) the inherent risks in cluster analysis, revealing that it proves most effective when the groupings within the data are characterised by strong redundancy among the variables i.e. they are highly intercorrelated. It is therefore proposed to rely extensively on simpler statistical methods, using cluster analysis as an exploratory technique only, to point out underlying features of the data. Considerable reliance has also been placed on the writer's first hand experience of the material, an aspect which is increasingly regaining its place as a sound basis upon which to make judgements, (Fletcher and Lock 1985, 170). It seems that there is a place for both approaches but one should be wary of going straight to complex statistical methods and should treat them as means to explore data structure, not as direct access to the truth.

CLASSIFICATION PROCEDURES

Doran and Hodson (1975, 102) suggest that an initial division of material into a few broad categories is a valid procedure. There is no reason to compare daggers with axes in direct morphological terms, as they provide different sets of variables. On this basis five classes have been defined. These are broadly comparable to Clarke's notion of the 'artefact-type-group' (1978, 215), a general family of function or material. The five classes are;

Axes; socketted weapons with a blade which is set roughly at right angles to the socket and with a cutting edge running parallel to the direction of the socket.

Tanged spearheads; throwing or thrusting weapons designed to mount a long handle, secured to a tang which lies in the direction of the applied force

Socketted spearheads; throwing or thrusting weapons designed to mount a long handle, with socket lying in the direction of the applied force.

Daggers; a two edged weapons designed to mount a short handle, attached by a tang or butt.

Knives similar to a dagger but with only a single cutting edge. Only one particular group of knives is included in this study for reasons outlined elsewhere (see 2.5).

Moving on from this, items are classified to a certain level within a series of types, though not necessarily the same level in each case. The first such level is termed 'series', such as 'fenestrated axes' or 'narrow daggers'. These are defined by obvious morphological features, ascertainable in all but the most badly damaged items. In the case of such objects, assignment to a series such as 'fenestrated axe' may be all that is possible. For these items the focus of interest now shifts from their typology to context. This is the major reason for including less well preserved material at all.

The next level is that of the 'type'. These are defined on the basis of the patterning of a polythetic variable set and will form the raw material for contextual analysis. The writer is not in favour of complex hierarchical

typologies so the final level, sub-type, which is employed when the members of a type can be subdivided on the basis of the value of a single variable, is used sparingly, where potentially meaningful patterns are observed. The essential aim is to maintain flexibility, to prevent the explanatory potential of the material from being lost through an over-tight structure.

Pieces which do not fit any of the defined types are collected together as a group of 'variants', an administrative convenience for ease of database management, that does not imply any connection between the pieces so grouped. It is felt that two things should be accomplished with such objects. They should be examined in order to illustrate exactly how they differ from the rest of the material, to help us to decide where their true relationships might lie, and so provide archaeological information. Secondly, they are separated from those items which genuinely belong to one of our defined types. This is important as some writers have shown a tendency to force patently unsuitable items into types, which has the effect, not only of disguising the meaning of these objects, but of confusing the interpretation of the type itself.

When appropriate, visual displays, such as statistical plots or tables summarising the data will be presented, as will distribution maps of the various types. Most of the detailed information is provided in the various appendices. The essential information supplied with each type consists of:

1. The isolation of those key variables which are diagnostic for that particular type, and assessment of the distribution of scores on those variables.
2. Summary of chronological and spatial distribution.
3. Discussion of foreign (non-Levantine) parallels.
4. Brief discussion of its relationship to other types.

The Problem of Comparability

The heart of the project is an attempt to assess scores of the individual objects across a range of variables which can then be analysed for patterning (full listing of the raw data is provided in App. 7). Essential to this is a means

of grading the data quality, otherwise we will not be comparing like with like. Two different aspects of this have been considered, the condition of individual objects, how much data has simply been lost due to corrosion or damage (details below) and the reliability of the source through which the information was collected.

Preservation

Miller (1985, 34) has emphasised the "physical creation of material categories" as a key element in studies of material culture. This places heavy emphasis on the role of the production process in the creation of variability. Therefore the focus of our interest should be the objects in their' as produced' state, the material in its "most complete form" (Rowlands 1976, 185). This is not to say that changes undergone during use are not of interest, but that consideration of this aspect must logically come after the former. In order to bridge the gap between the original objects and their appearance an the archaeological record, physical change owing to a number of factors must be considered.

In reverse chronological order these can be grouped as follows

1. Post excavation corrosion and the results of cleaning/conservation treatments. The writer has become acutely aware of this as a result of comparing present day museum objects with the illustrations made of the same material at the time of excavation.

2. Post-depositional processes acting on the material

3. Change incurred on deposition (deliberate or otherwise) e.g. bending, removal of handles.

4. Change incurred during use, sharpening, repair or re-modelling.

Needham has recently emphasised (1983, 30) Bronze Age metalworkers were capable of attaining a very high degree of control over finished products, if they so wished, suggesting that 'random' variation will not be of great significance unless there was no real attempt at standardisation.

Corrosion is a major problem. Not only does it change the overall size and appearance of copper-alloy objects by attacking vulnerable areas such as blade edges, and by forming a thickened outer layer over the good metal, it can often distort or obliterate stylistic features, and may make the direct comparison of decoration impossible, when dealing with pieces preserved to different degrees. Cleaning methods used in the past by museums tended to remove corrosion entirely, resulting in a reduction of the overall size of objects and possible loss of detail. Particularly vulnerable in this case are such features as thin flanges around dagger handles, stops, nails and securing rings around spear and axehead sockets, and the sockets themselves, particularly when the metal is thin, as in the case of spearheads. As this cannot be avoided, it seems sensible to provide an estimate of the reliability of the data from each individual object.

Thus a hierarchy of reliablity was developed, built into the database (see below for description of the database) and used in the selection of comparable groups of material (see App. 7: variable 'Condn'). Within this framework it proved possible to include observations concerning repairs, use wear etc. A similar hierarchy of reliability was established for the sources of the data collected on each object, running from first hand study, through various kinds of published information, good, adequate, poor, to other sources such as material seen in museum cases but otherwise unpublished (full details in App. 7). Establishment of the type-defining criteria was carried out via statistical data derived from the best preserved material only. The procedure was to work from the most reliable data outward, rather than to treat all objects in the same way, regardless of condition. This has been especially important with regard to the practicability of assessing some variables in certain objects. A number of features simply could not be recorded consistently. All too often it was unclear whether they were originally absent or had simply been lost through damage or corrosion.

To be included within the body of data employed in the actual definition of types, an item had to be substantially complete, either seen at first hand or available in a reliable published drawing, and have some record of absolute dimensions (in essence score 3 or less on all three of the variables Source, Condition and Measurement, see description in App. 7). Dimensions are

something of a problem, as certain old reports do not always indicate the scale at which illustrations were reproduced. In some cases this has meant that a substantial minority of the corpus has been excluded from type definition. After having examined the patterning among variables and defined types, using only the reliable pieces, the rest of the corpus was assessed in the light of the framework thus provided, and assigned to types on the basis of those criteria which were clearly identifiable. There still remained a minority of pieces which could not be reliably assigned to a type, owing to reasons of preservation or poor publication as is only to be expected in a thorough study. Such items appear in the appendices as 'unclassified'.

PROCEDURES IN PRACTICE

It is clear that such a project requires an immense amount of selection, recoding and cross-classification of data, and it was quickly realised that the only practical means whereby this could be carried out was through a relational database. The SIR package (Scientific Information Retrieval) produced by Sir Inc. (The program is fully described in SIR Users Manual, Version 2, 1980, 1984) was chosen on account of its wide availability (it is something of an 'industry standard' in many academic institutions) and its suitability for the problem in hand. In particular SIR permitted the selection of sets of comparable data for analysis; by screening out those items which failed to meet certain criteria of reliability. It also facilitated the recognition of the underlying variable structure of groups discovered in cluster analysis, and the detection of spatial and chronological distribution of types, as well as patterns of co-occurrence and association. In addition it also held information on chemical composition, details of museum numbers, publication references, and drawing and photographic records.

Preliminary analysis of variables was carried out using the statistical package MINITAB (Ryan, Joiner, Ryan 1985), which is both simple to operate and can be used interactively. The latter point is of the first importance, and this is now receiving recognition in the literature (Lewis 1986, 305). Interactive data analysis allows the analyst to see the results of various tests and plots instantly, and is therefore ideal as a means by which to explore data structure, as it becomes possible to pursue promising lines of enquiry as they come to one's notice. The main techniques used have been histograms and

scatter-plots for metric variables and cross-tabulations for categorical variables. These allow one to detect outliers, multimodality and variable associations fairly easily. Situations of this sort can all too easily be masked by the use of summary statistics such as mean and standard deviation, yet would seem to be highly significant for the recognition of subject-generated differences. This approach forms an important preliminary for more sophisticated analytical techniques. As a result of such exploration it is possible to select a fairly small set of 'key' variables, which one would wish to analyse using multivariate procedures. MINITAB also provides a useful way of selecting, recoding and formatting different sets of variables to facilitate their input into other packages.

In some cases there may well be multi-way associations between several variables. This is hard to detect with the methods outlined above. The solution here has been to employ cluster analysis. This technique is widely used in a number of research areas, and is generally viewed as an exploratory technique which provides insight into the structure of the data set. In that sense then it is a logical extension of the data exploration methods described above. "Cluster analysis is used as a heuristic tool for creating one of several possible empirical classifications" (Lorr 1983, 114). It will not provide a single 'correct' answer. A number of different variable sets, selected from those variables identified as potentially significant by preliminary testing, were employed in order to investigate the possibility of there being different, cross-cutting patterns, within the data. The problems encountered when dealing with a mix of numeric and categorical variables have been surmounted by the use of a suitable coefficient of similarity, the Gower coefficient (Gower 1971) which can deal with a mixture of quantitative, multi- state categorical, and presence-absence data (Sneath and Sokal 1973, 135-136). Doran and Hodson (1975, 142) draw attention to the fact that this coefficient can deal with missing data, which would seem to make it especially useful for archaeological research. The way in which this is employed is described by Philip and Ottaway (1983) in their discussion of the FLEXI program. The latter calculates a coefficient of similarities which can then be entered into CLUSTAN, a standard package of clustering routines.

The actual clustering procedures used are those of CLUSTAN 2.1 (Wishart

1982). Interpretation of the significance of clusters is at present a difficult area. The best procedure (O'Shea 1984, 69) is to examine the referent variables for each cluster in an attempt to extract the logic underlying the divisions, easily achieved via the database. In practice, the writer feels that having done so on several different variable combinations, the analyst will gain a reasonably accurate impression of any underlying patterns which may be present. This will then form a useful guide to the development of a classification. In practice the process has tended to include an assessment of the heuristic value, in the sense "revealing new knowledge" (Sneath and Sokal 1973, 439), of each grouping prior to its being accepted as a valid type. As Sneath and Sokal observe (1973, 430) numerical taxonomy may simply confirm an existing typology. If so this is revealing in itself. However, quite frequently it will reveal new, hitherto undetected relationships within the data, as in several instances in the present analysis.

Apart from the choice of similarity coefficient, the analyst is also faced with an array of clustering methods. These will tend to produce rather different results, depending on the actual data structure. The writer has tested several of the best known methods including Single Linkage and Ward's Method but has found the Average Linkage method to give consistently better results both here and in previous trials (Philip (a) in press). This is in line with recent experimental trials (summarised in Lorr 1983, 117ff). There are several reasons for this, mostly related to the nature of the data used in this sample. Among the most important are its resistance to the effects of outliers (a weakness of the much used Ward's Method in particular), and its better facility for dealing with well separated, as opposed to overlapping clusters. As a result the dendrograms provided are produced by the Average Linkage method.

Although great emphasis was placed on the visual inspection of plots and histograms during data analysis, for reasons of space it proved impossible to reproduce all of this information here. The solution adopted has been to present the material in the form of summary statistics for the most part, although when particularly important points are being made a greater range of the basic information has been included. This will enable the reader to see exactly how each type has been defined, and is differentiated from others.

THE TYPES

A number of types can be clearly defined on the basis of their morphology. These types will of course be subject to scrutiny by various means, but their initial identification is made on the grounds of visual pattern recognition. Childe's remark (1956, 35) that "the significance of a type ... ... is proportionate to its improbability" is of relevance here. Following this one could argue that the fenestrated axe series is "improbable" and should therefore be treated as an independent type (Clarke 1978, 228), though it may well comprise a series of transform types (see below) within it. It might be argued that a number of these types do approximate to 'cognitive' types and are essentially normative, though they are not necessarily static fixed forms. The detailed argument will be presented on a case by case basis at a later time, and types' validities supported both internally (statistically) and from other evidence. Such types are based on a set of variable associations which are easily detectable today, and are likely to have been equally obvious to people in the past. These are types with clear unequivocal boundaries. Most of those types defined by Maxwell-Hyslop (1946, 1949) but still cited today, fall into this category. Examples include the two main forms of fenestrated axe, the 'broad' and 'narrow' or 'duckbill' versions, and the 'notched', narrow-bladed axe.

A second group of types are not so immediately apparent on visual inspection, although they can be detected by statistical means, through distinctive though sometimes complex variable patterning. These will often approximate to Clarke's (1978, 228) concept of 'Transform Types'. These are types which are descent related, and represent "successive or multilineage type- states from a single artefact-type system time trajectory, separated one from another merely by thresholds". Unlike the types defined above the boundaries between Transform Types are less rigid, and membership is based on a polythetic set of variable values. A good example of this is provided by the range of regional variants which can be seen to derive from the basic tanged spearhead with square-sectioned blade (see 2.2). These types show a wide range of forms all of which are related. However to attempt to classify these types as sub- types of one 'ancestral' type would be to place the entire series in a false evolutionary framework. It is in the detection of such relationships that cluster analysis excels. When objects from groups which the

analyst had considered quite different are classified together, he must ask himself why. What underlying relationship has been detected that the researcher himself has not observed ? It seems likely that certain combinations of variable values will arise as incidental by-products of particular fabrication techniques, or as the result of the coming together of disparate trajectories (individual cases will be described in more detail as they occur).

Within the metal industry being studied, certain factors such as a new shape of blade, developments in the securing of the handle and changes in favoured decorative motifs may coincide, providing identifiable clusters of variable values. These may not have all been explicitly recognised in prehistory, but they should be accepted as real none the less. This situation can be visualised as a number of variable trajectories with continuously changing degrees of correlation between their paths. Examples of this include the types within the narrow dagger series of the E.B.-M.B. period in Palestine (see 2.4.1). In this sense a type ceases to be when the degree of mutual intercorrelation between the 'key' variables declines below a certain level, resulting in a loss of the type's 'coherence' (Clarke 1978, 231), although a type may be replaced by something different before this happens. Naturally, the boundaries between these two kinds of types so far described will be blurred in places, and we should perhaps consider them as opposite halves of a continuous spectrum of more and less morphologically distinct types.

A third group of material will also exist. This will consist of material which cannot readily be assigned to any of the kinds of types described above. Having previously criticised the tendency to force material into pigeon holes, we are clearly going to be left with a body of material which is not broken or corroded, but which cannot be fitted into our classificatory scheme. That such a group exists is in itself of interest. The reasons for this may reflect the nature of their production, or the way in which these items were conceived by the producers. Not all weaponry will necessarily express particular social concepts, nor will it all have been manufactured by specialist craftsmen. Thus a third category of type is recognised. This consists of several groups of loosely related material, possibly not conforming to any particular design, but within which it is possible to identify a certain degree of structure, permitting the definition of groups on the basis of certain features which they have in

common, features which may well show regional or chronological coherence. That this is so raises a number of interesting points concerning the very existence of several different 'kinds' of types, a point discussed at more length elsewhere (see 2.4.2).

Part 2: The Material

This section deals with the basic archaeological material. Types are defined, and their chronology and distribution outlined. References given to illustrations are not exhaustive (a full list appears in App. 4). Those cited are intended to give the reader a guide to the appearance of the type under discussion. Detailed arguments concerning the basis upon which types were defined can be found in App. 1. Only a short summary, to complement the illustrations cited, is provided in the main text.

2.1 Axes

In order to facilitate study of the material, axes were divided into four groups on morphological grounds. These are narrow-bladed, fenestrated, crescentic and shaft-hole axes respectively. Most of the material is clearly assignable to one of these groups. Where a possibility of overlap exists this has been pointed out in the discussion.

NARROW-BLADED AXES

The essence of these axes is that they possess long slim blades with a narrow cutting edge. The long axis of the blade lies perpendicular to the handle, which is straight, and fits into an ovoid socket. These axes are clearly distinguishable from the fenestrated, crescentic and shaft-hole forms discussed below, and their recognition as a broad class is already well established in the literature. The form of axe described as narrow-bladed conforms essentially to those classed as Types 23 and 24 by Maxwell-Hyslop (1949) and Types E and F by Deshayes (1960).

Type 1

(29 examples) Axe with notch on underside of blade and undecorated socket (see fig. 1). The axes of this type show a wide range of absolute size, suggesting that it was more important for an axe to be of the 'correct' shape

than of a specific size or weight. The latter would seem especially important were the weapon designed to counter developments in body armour, metal helmets in particular, as Yadin (1963, 60) has suggested, implying that shape and appearance were as significant as mechanical efficiency, and that form of these axes was determined as much by social as by functional factors.

Chronology and Distribution (Map 1)

Type 1 axes are distributed widely throughout the coastal Levant, from Tell Sukas in Syria to Tell ed-Dab'a in the Nile Delta. Examples are known from all over Palestine and from Ruweise in coastal Lebanon. Those from the Lebanon and Tell Sukas suggests that the rarity of the type in coastal Syria reflects the lack of work in the area, rather than a genuine absence of the type there. Their apparent rarity in inland Syria, where only a single example has been reported, (from Hama) may be genuine. This would seem plausible if, as suggested below, fenestrated axes continued in use rather longer in inland regions. However we should be cautious about accepting this until more tombs of the appropriate period away from the coast have been excavated.

Three moulds for the manufacture of axes of Type 1 are published. These come from Megiddo Str. V (Lamon 1939, 148, Pl. 105) occurring in a secondary context, and Byblos where one occurs as a surface find (No. 6794 Dunand 1954, 11 Pl. 184) and another in Lev. V also lacking a proper context (No. 8978 Dunand 1954, 234, Pl. 184). Both sites lie well within the area defined by the distribution of the axes themselves, thus confirming that the area of production and that of distribution show a considerable degree of overlap. An additional point clarified by the moulds is that the cross stops encountered in a number of these axes were added subsequent to casting, and must have been fixed to the socket by braising or some similar process. This mounting would of course prevent the top of the handle jutting out beyond the upper end of the socket. It is also worth observing that the sockets of these axes imply that the handles were straight. By contrast the fenestrated axes shown in Egyptian reliefs (Newberry 1893, Pl. XXVIII, XXX-XXXI) and those excavated from Baghouz in central Syria (du Mesnil Du Buisson 1948, Pl. XLVII) have curved handles which project some way beyond the top of the socket.

The approach described below is the method which was used with all

types in the present study, and is therefore presented at rather more length than is the case in subsequent discussions. The relevant information could be accessed and tabulated using the Interactive Query Language (SQL) of the SIR database package. Thus full details of all contexts in which a type appears, as well as the nature of any associated weapons could be obtained. Full details of the contextual information employed will be found in App. 8.

Many of these axes come from reused or otherwise disturbed contexts. The best dating evidence is likely to come from closed groups, in particular from undisturbed single burials, or those with several burials showing minimal disturbance, as sometimes occur at Tell ed-Dab'a. When dealing with tombs used for multiple successive interments, the best source of reliable data is from small groups of associated material, including diagnostic pottery which can be clearly isolated, by stratigraphic, rather than typological means. Such occur in a number of the reused tombs at Jericho. The difficulty with this approach is that we must therefore evaluate each tomb-group individually, examining contents, stratigraphy, preservation, and standard of excavation and recording (All this information can then be entered into the database and used in future analysis.) This exercise leads to the conclusion that the number of reliable groups is limited. However, methodological rigour demands that it is these which form the basis of any discussion of the chronological place of this material.

Axes of Type 1 occur in several such groups; Tell ed-Dab'a A/II-I/12 Gr 5 and F/I-d/23 Gr 1 which belong to M.B.I or early M.B.II, Tomb 1015 at Tell el-'Ajjul of M.B.I date and Kfar Djarrah Tomb 33, dated to late M.B.I or early M.B.II (Gerstenblith 1983, 42). Other burials, mostly of the multiple successive type, where the material cannot always be assigned to any particular phase, provide general confirmation of this date. An example is published from Ginosar Tomb 1 (Epstein 1974) where the pottery is of later M.B I or a transitional M.B.I-II variety (called M.B.IIA-B by the excavator) which can be correlated with the post-palace phase at Ras el-'Ain/Aphek (Gerstenblith 1983, 35). Another example, from Tomb 31-31A at El-Gib was found in association with a dagger of our Type 13 (Pritchard 1963, 12). This group has been dated to the middle M.B.I by Gerstenblith (1983, 34), although the main dating criteria would seem to have been the weapons themselves, which argue for a late M.B.I date. In

such an exercise as ours, in which we are attempting to date the metalwork itself, arguments based on such evidence cannot be employed. In summary axes of Type 1 can be dated towards the end of M.B.I

Additional support for this position exists. If, as seems likely, these axes succeed the fenestrated axe as the preferred burial item, then they must appear relatively late in the M.B.I period, as examples of the former appear in contexts dating as late as the late 19th century at Kultepe Kanesh Ib or perhaps the 18th century at sites such as Tell Mardikh and possibly at Baghouz, although this may result from regional differences which are discussed elsewhere. narrow-bladed axes of this type are noticeably absent from the 'Dépôts des Offrandes' at Byblos (see below). It should also be observed that the pottery associated with those found in Palestine is of the red slipped and burnished types now known through recent excavations at Aphek (Beck 1975, 1987) and other sites in the coastal plain of Palestine (Kochavi et al 1978) to be diagnostic of only the later part of the M.B.I period.

Chronologically therefore, axes of Type 1 seem to be restricted to a relatively short duration, in the latter part of the M.B.I period after which they are replaced by axes of Types 2-4. This may account in part for the marked homogeneity shown by the objects. The absence of these weapons from the 'Dépôts des Offrandes' at Byblos despite the presence at the site of moulds Type 1 axes (see above), is striking. These weapons are common in graves and there is a large overlap between the material from the 'Dépôts' and the contemporary grave finds (Philip (b) in press), implying that the 'Dépôts' closed prior to the appearance of Type 1 axes i.e. before the end of M.B.I, a view supported by the similar rarity of Type 13 daggers in these deposits (see 2.4), a point which has important chronological implications for other material from the 'Dépôts'.

Foreign Parallels

Reliably provenanced parallels for these axes have not been reported from sites outwith the Levant, all the more revealing given the marked similarity of all objects of this type. The axes show some resemblance to the Mesopotamian form classed as Type C3a by Deshayes (1960). A number of additional examples of this form have come from tombs in the Hamrin,

north-east of Baghdad, dating to the Isin-Larsa or Old Babylonian periods (Najim 1984, fig. 28, Rumeidiyeh 1984, 54, fig.18.2). However, the morphological similarity is no more than approximate, and serves only to underline the distinct differences between Mesopotamian and Levantine metalwork of the earlier second millennium. The Mesopotamian weapons are not sufficiently well dated to allow us to assign clear chronological priority to either region.

Type 2

(21 examples) Axe with stops ahead of and behind socket and with simple beading on upper and lower margins of socket (see fig. 2). Two sub-types are defined on the basis of blade cross-section which can be either hexagonal or ovoid, and which is determined by the shape of the mould used. These show markedly different distributions (see below).

Chronology and Distribution (Map 2)

The distribution of these axes extends from northern Palestine, to the Nile Delta. The largest number of such weapons come from tombs at Jericho and Tell ed-Dab'a. As yet none have been reported from sites in Syria. The contrast with the distribution of Type 1 axes which covers both Palestine and Syria is clear. Eight of the nine examples with hexagonal sections come from Tell ed- Dab'a, the ninth (No. 424) from Megiddo, while eight of the nine with ovoid section blades come from Palestine, with the ninth (No. 437) coming from Tell ed-Dab'a. It seems likely that these represent the products of localised industries, a point reinforced by the different compositions of examples from Jericho and Tell ed-Dab'a (see 3.3 and App. 6) and that the exceptions are indicative of a degree of interregional exchange. Thus we can detect a degree of localised variation within a form which shows a high degree of general conformity over a large area. The most likely explanation for this is that the regional differences reflect local metalworking practices, the underlying unity a widely understood notion of the 'correct' form which the artefact should take. This is an intriguing dichotomy.

These axes clearly date to the M.B.II period. An example comes from Megiddo Tomb 4110, which Kenyon (1969, 31) would ascribe to her phase B, i.e. early in the M.B.II period. Another, from Khirbet Kufin, comes from Tomb 3

Chambers 6-7 Upper stratum, which includes material of both M.B.I and early M.B.II date (Gerstenblith 1983, 34). Those from single burials at Jericho come from tombs dating to the earlier part of the period (Tomb J3 and A 134) which belong to Kenyon's Groups I and III, although Dever (1976, 24; note 36) suggests that Tomb J3 should be reassigned to her Group III or IV. That from Tell el-Far'ah (N) comes from Tomb A which also belongs to the M.B.II period. Examples from Tell ed-Dab'a come from tombs the dates of which range from the beginning to the end of the M.B.II period (information provided by Dr Bietak). As yet no examples from Palestine are from contexts of an exclusively late M.B.II character, although a number come from tombs whose use spans the whole of the period. In summary these axes appear early in the M.B.II period and continue in use, in the Delta at least until the end of the period.

In contextual terms, these axes would seem to represent the M.B.II successor to the Type 1 axes of late M.B.I, although it is interesting to observe that no 'intermediate' form seems to exist. This whole question requires an approach different from the classic 'typology-technology-chronology' framework which has structured many earlier investigations and a more detailed consideration is provided elsewhere (see 3.2.3)

Foreign Parallels

No parallels are known.

Type 3

(6 examples) Axe with beading running along the upper and lower margins of blade, and with a hook ahead of the socket (see fig. 3).

Chronology and Distribution (Map 3)

This type unlike Types 2 and 4 shows a widespread distribution. Examples are known from Ras Shamra in Syria, from Palestine and the Nile Delta. However, given the large numbers of narrow-bladed axes of other types found at Tell ed- Dab'a and Ras Shamra, we might reasonably argue that the single examples of Type 3 found at each represent imports, and that they are an essentially Palestinian form. Additional examples recently recovered from

tombs in the vicinity of Tell Beit Mirsim, lend further support to this view. The example from Tel Aviv Harbour (No. 435) might well be of late M.B.II date, but there is insufficient evidence as yet, to permit us to assign this type to a specific phase within the M.B.II period.

Foreign Parallels

No parallels are known.

Type 4

(7 examples)

Axe with large cylindrical socket bearing two or three ribs. Larger and heavier than Types 1–3 (see fig. 4).

Chronology and Distribution (Map 4)

At present the distribution of Type 4 axes is restricted to the site of Ras Shamra in Syria. Whether these axes represent a product specific to that site, or a product at home in Syria generally must await future excavation. However, the latter situation seems the more likely, in the writer's opinion. It should be noted that there is a fragment of a two-piece stone mould from Ras Shamra, which on the evidence of its surviving dimensions may well be for an axe of this type (Musee du Louvre AO 84.289, unpublished). The matrix measures 28 mm across the flaring cutting edge, and suggests a relatively thin blade. Both traits are typical of axes of this type. The mould has no Ras Shamra number and its exact context cannot now be established.

All published examples are from tombs dating to the M.B.II period. It is hard to be more precise than this although the quantity of Cypriot pottery in these tombs, and their reuse with minimal disturbance in the L.B.A. might suggest that they were in use during a late phase of the period. However, this alone is insufficient evidence on which to assign these axes to such a date, as all the tombs were in use over a period of time. These weapons should therefore be considered a contemporary Syrian version of the better known Type 2 axe, common farther south.

Foreign Parallels

The most coherent body of comparative material is a group of narrow-bladed, socketted axes all of which are ascribed to a Cypriot provenance. These weapons have been classed as Type 5 by Astrom (1957, 139) and B4a by Deshayes (1960, 173). In a recent review of these axes Buchholz (1979) presents a corpus of fourteen examples, which he believes were manufactured locally. Unfortunately few of these axes are from well stratified contexts, which presents certain problems in their interpretation. The Cypriot axes are generally believed (Astrom 1957, Catling 1964) to be of a date contemporary with the M.B.II period in the Levant.

Bearing in mind the distinct regionalism shown by several of the types outlined above, the Cypriot type fits easily into the general M.B.II pattern, as another regional variant of a general Levantine tradition. Axes of Type 4 are concentrated at Ras Shamra, and it is interesting that this is the group providing the closest parallels for the Cypriot axes. This should be emphasised rather than the more generalised Palestinian parallels cited by Overbeck and Swiny (1972, 22). That Cypriot contacts were stronger with Syria than with Palestine should not come as a surprise. The frequent finds of Cypriot pottery in Palestinian M.B.A. contexts (Johnson 1982) may well reflect the greater archaeological activity there, rather than the real pattern of interaction.

Until recently the only provenanced parallel from Mesopotamia was an example from Kish (Langdon 1924, 78 Pl. XX.5). This axe is ascribed to the Old Babylonian period, coming from "the western city ruins" (Langdon 1924, 78), although as Maxwell-Hyslop observes (1949, 115) the stratigraphy is not clear. It is poorly illustrated, and its exact typology was uncertain. Deshayes (1960, 171) has assigned this axe to his group B2b, most of the members of which are from uncertain contexts. Recent excavations in the Hamrin Basin, have produced several axes of Deshayes Types B2a and B2b dated to the Isin-Larsa or Old Babylonian periods (Najim 1984, fig. 28; Rumeidiyeh 1984, 54 fig.18.2) which has clarified the fact that the Kish piece belongs to a Mesopotamian form similar to, but distinctly different from, our Type 4. Until this new material is fully published we cannot be sure whether the form was adopted first in one area, or whether they represent contemporary variants. However,

Deshayes (1960, 171) observes that axes of his type B2 have elliptical sectioned sockets. Such sockets had been the rule in the Levant since the development of fenestrated axes, at the beginning of the M.B.A., and may be descended from the ovoid handles employed on E.B.A. crescentic axes (see below). Those on the well-known third millennium Mesopotamian axes, had traditionally been circular, suggesting that borrowing was not a one way process.

Type 5

(Variants) See App. 1 for description.

Discussion

The narrow-bladed axe series would seem to represent a distinctive tradition developed in the coastal Levant. Even were it proved that the Mesopotamian axes of Deshayes Type B2 were earlier, it is still the case that the form underwent a lengthy series of modifications and adaptations in the west. The earliest form, Type 1 has no direct ancestor, locally or in Mesopotamia. It seems unlikely that these axes are derived from the fenestrated axe series, which they seem to succeed as the preferred funerary axe, although their shared preference for an ovoid socket should be noted. On the other hand none of the local forms of shaft-hole axe (see below) provide a credible precedent either. It is possible that this type represents the appearance of a completely new design, developed in the cities of Syria, whether to meet functional or sociological requirements is not clear. Some similarity exists with the axe from Alalakh assigned to Type 5 here, and to a group of four axes of shaft-hole axe Type 6 from the Palace at Mari (dating to some time prior to c 1760), but there is no hard evidence to connect these.

The axes of Types 2-4 are more clearly related to each other, to the distinctive Cypriot form discussed above, and possibly to shaft-hole axe Type 5, (see below) although the latter connection is by no means certain. These clearly represent regional variants of a single general tradition. There may also be a chronological dimension, but our ability to detect this is limited by the nature of the evidence, reused tombs, and our inadequate knowledge of

the fine detail of regional ceramic sequences. How these relate to the axes of Type 1 is uncertain. It is clear the type is the direct predecessor of Types 2–4 in terms of its place in the archaeological record. In typological terms the similarity is one of general shape, but no more and no 'transitional' forms are known. The break between the types is quite distinct. Therefore it is difficult to plot a direct line of descent from Type 1 to Types 2–4, in the traditional sense. We seem to be witnessing a design change, yet the threads of continuity are quite clear. From a mechanical point of view, the stops and hook of Types 2 and 3 replace the notch of Type 1 as a means of binding the handle securely to the axehead. However, the other changes are more obviously stylistic. We will return to this point elsewhere (see 3.2.3).

The single example of a Type 1 axe published from Hama represents the only example of a narrow-bladed axe from inland Syria. It is tempting to argue that these axes are essentially coastal products. However, although this may be true for Types 2 and 3, which seem to be of southern manufacture, we should remember that our knowledge of M.B.A. inland Syria is limited. It would be interesting to know whether the material of the inland sites relates to that of the coast or that of the Euphrates Valley and sites to the east. More work is clearly needed in these regions. Similarly we should note the contrast between the highly standardised Type 1 axes of the late M.B.I period, found throughout the Levant, and the more regionalised Types 2 and 4, which succeed them. Although probably a Palestinian form, the chronological position of axe Type 3 remains uncertain.

CRESCENTIC AXES

This is the preferred term for a group of axes, which possess a blade, often curved in form, which is attached to the haft by one or more tangs, rather than by means of a socket. The exact form of attachment is variable but all forms have a 'crescent-like' appearance when viewed in profile. Although a large number of the axes have been reported, few are from good contexts. A useful corpus of such axes, from both reliable and suspect contexts, has been assembled by Tubb (1982). The following discussion is restricted to patterns observable among those which are both from the Levant, and of known provenance. As this amounts to a total of only eight items, it was felt that discussion did not require detailed statistical analysis. In fact the basis of the classification is quite clear from inspection of the material and published drawings whereby associations can be seen between particular values of different variables. The basic division is as follows.

Type 1

(4 examples) Axe with curved blade, mounted by single tang wrapped round handle. The two ends of the blade curve back to rest against the handle (see fig. 5 left). All are substantially larger than fenestrated axes to which they are supposedly ancestral.

Chronology and Distribution (Map 5)

All four examples of this type are from sites in the southern Levant. An example from Jericho is from Tomb A 114, which can be dated to the early part of the E.B.III period (Tubb 1982, 8). One from Bab edh-Dhra is from Charnel House A 44 and can also be dated to the E.B.III period (Lapp 1966, 107). An axe from Tell el-Hesi (Bliss 1894, 35 Fig. 69) is of uncertain stratigraphic position, the lowest level reached by Bliss, and can be dated only on the grounds of its similarity to those from Jericho and Bab edh- Dhra, to E.B.III (see Kenyon 1955). The Kfar Monash example also lacks a good context. Gophna (1968, 49) would date it to E.B.I or early E.B.II on a possible connection with the hoard found nearby (but not actually in association) and because

there are E.B.I sites in the vicinity (Hestrin and Tadmor 1963, 286–287). While possible, this is by no means certain. There are no archaeological grounds for connecting this axe with the hoard. Even if there were, this would not necessarily imply that the axe should date to the E.B. I period, as it can be argued that the hoard should be assigned as late as the E.B.III period on typological grounds (Watkins 1975). The axe from Kfar Monash is without context, and is typologically different from the others. It is much smaller, and lacks the distinctive dome on the blade although it was probably made and hafted in the same way as the others. The only reliable conclusion is that it is probably of E.B.A. date on the grounds that there are no crescentic axes from the Levant which are known from the preceding or succeeding periods.

Evidence of Production

A fragment of mould which would seem to be for the production of axes of this kind was found at Byblos (No. 5034 Dunand 1939, Pl. CVIII). It comes from Levee XXV which would suggest an E.B.A. date, perhaps E.B.III by the pottery from that level (Tubb 1982, 9). Interestingly this is the only one of the weapon moulds from Byblos which was found in the level to which it is likely to have belonged. The others are all from secondary contexts. The mould, although damaged, clearly shows the depression wherein the central dome was formed and the central tang is visible. This find from Byblos is interesting in the light of the fact that a strong connection between that site and Palestine during the E.B.A. is suggested by the local ceramic repertoire (de Vaux 1971, 230, Sagieh 1983, 108–9).

Foreign Parallels

To the writer's knowledge, no close parallels for these axes have been found outside the Levant. A wide variety of crescentic axes are known, but their resemblance to those of Type 1 is general rather than specific a point easily verified from the illustrations in Tubb (1982).

Type 2

Axe with curved cutting edge, attached by three tangs which curl around the handle (see fig. 5 right).

Chronology and Distribution (Map 6)

The two known examples from known contexts originate from Amarna (No. 452) and Tawi (No. 454), both in northern Syria. The material collected by Woolley (1913) and assigned by him to Amarna, has been studied by Dr. Prag, who informs me (Prag pers. comm. 1987), that the ceramic links are, with the E.D.II and E.D.III periods in Mesopotamian terms. The example from Tawi comes from T 31. The associated pottery is hand made, and although difficult to date in absolute terms, clearly belongs to the earlier part of the Syrian E.B.A. (Kohlmeyer 1986b, 147). A date in the earlier third millennium would seem reasonable for these axes.

Manufacturing Evidence

Evidence for the local production of this type of axe has been provided by the discovery of a limestone mould from recent excavations at Halawa. In fact the mould seems to be for a slightly different variant. The ends of the blade actually project a little way beyond the outer tangs but it is clearly closely related. Tubb (1982, 1) has observed that the example from Amarna is made of very thin metal (c1mm), and has suggested that it was cut from sheet and subsequently hammered out. This is possible, although it would not be impossible to produce a thin casting in the mould cited above. The provenances of both axes and the mould suggests a basically north Syrian distribution for this type.

Foreign Parallels

A group of five crescentic axes was found in association with the E.D.II Shara Temple excavated at Tell Agrab in the Diyala region of Mesopotamia (unpublished see Tubb 1982, 4 for details) placing them around the 28th century, confirming the early date suggested for the Syrian examples. The context of these axes, the fact that they were found together and in association with the temple, is of interest to us and resembles a number of deliberate deposits of such metalwork in association with cult-structures, known from the Levant (Philip, (b) in press). The implication is that these axes were 'valuable' and had some sort of ritual or ceremonial significance (see 3.1.2).

A crescentic axe, probably of this form, is depicted in the hands of a soldier on a fragment of a stela found at Susa (Strommenger 1964, 404, Pl. 114). This stela is believed to be booty from Babylon, and is dated to a period around the reign of Sargon. As a chronological indicator this stela is of limited value; iconographic elements may well be archaising. Furthermore, it is dated not on contextual grounds but on the basis of art-historical stylistic analysis, in which the axe itself may play an important role. This stela suggests however that some such axes were real weapons, and were not simply specialised grave goods.

Type 3

Axe with straight cutting edge, secured to handle by three straight tangs, rivetted to the haft (see fig. 58 right).

Chronology and Distribution (Map 7)

The two examples are from Til Barsip (No. 451) and Byblos (No. 458), which might suggest a date in the second half of the third millennium. The Hypogeum at Til Barsip has been assigned a variety of dates over the years. The writer would follow Tubb (1982, 4) who draws ceramic parallels with Hama J8-J5, suggesting a date in the third quarter of the third millennium. The example from Byblos is from Deposit 'g' in the Temple of the Obelisks. This deposit includes a number of fenestrated axes and a range of material in precious metals, and should date to the early second millennium. The Byblos example is made of gold and is part of a ritual deposit, and may therefore be a special item, perhaps representing a late instance of an archaic form, of limited value for comparative purposes. Another factor of interest is the rarity of spearheads from these, the richest deposits at Byblos, although they are common in those of the Champs des Offrandes. A possible explanation may be that axes (and daggers which also occur in gold in the Temple of the Obelisks) were more highly valued than spears, for the purposes of such offerings (see 3.1.4).

Foreign Parallels

A number of crescentic axes hafted by means of rivets are known (Tubb

1982, fig. 2.6-2.17). However, the number of good parallels for our Type 3 axes is limited. The axes from the Soloi hoard, published by Bittel (1940) and other Anatolian examples (Ozguc and Akok 1958) are illustrative of this point, in that they bear only a general resemblance to our material.

A rather better parallel is reported from the the 'A' Cemetery at Kish (Langdon 1924, Pl. XIX.1), but no rivet holes can be seen in the illustration. This axe could be unfinished as Tubb has suggested (1982, 4). However, the bulk of axes from grave contexts which the writer has seen show traces of having been hafted, suggesting that this explanation is unlikely. It seems that the presence of an appropriate handle was a necessary component of axes in funerary contexts, implying that their significance was greater than that of their metal weight-value. This axe has a span of approximately 300mm and is dated by Moorey (1978, 74-75) to the late E.D.III - early Akkadian period c 2400-2300 B.C. Other crescentic axes are reported from the 'Y' Graves at Kish, from cart burial II (Moorey 1978, 108) and from grave 386, Y.408A (Moorey 1978, fiche 2.F11). The former dates to the E.D.II period; the latter is one of a group of burials in the 'Y' sounding which date between the late E.D.I period and the end of E.D.II (Moorey 1978, 105, 111). Another is reported as coming from Tomb 300 at Mari (Parrot 1938, 4). This tomb is dated by Moorey (1978, 105) to the E.D.II period, on the basis of the pottery. No details are available for these three items, other than that the two examples from the 'Y' Sounding Kish measure 140mm in length (presumably equivalent to our term 'breadth'). This suggests that some axes are considerably smaller than any of the Levantine examples discussed above and may not provide particularly good parallels. On the whole therefore, the Mesopotamian material supports a floruit for these axes, spanning roughly the 28th century to the 24th. This supports the dates suggested above for the Levantine material, and does not imply any chronological priority for the Mesopotamian versions. It is interesting to observe that the known Mesopotamian pieces are all from sites in the south (as far north as the Diyala). No examples have yet been reported from excavated sites in the north, such as Tepe Gawra, Tell Brak or Tell Leilan. It will be interesting to review this statement in the light of the new material emerging from rescue work in northern Iraq.

Discussion

The Mesopotamian examples show that crescentic axes of some kind were in regular production by the E.D.II period, c 2850-2700 B.C.. Others were in production many centuries later, such as the example from Susa (de Mecquenem 1924, Fig. 3). This piece is from a tomb dated by the excavators to the Ur III period, though Tubb (1982, 6) argues for a slightly later date in the Isin-Larsa period. In Syrian terms the earliest occurrences in Mesopotamia would correspond to E.B.II or early E.B.III, and would fit well with the dates suggested above for the axes of Types 1 and 2 in the Levant, making them contemporary variants rather being related to the Mesopotamian axes in a linear fashion. The wide geographical spread of the crescentic axe, in its various forms is clear from the examples cited by Tubb (1982), which occur in an area extending from Central Anatolia to Iran and the coastal Levant. Other variants are known from Egypt; the dates given range from the Archaic to the Second Intermediate Periods (Kühnert- Eggebrecht 1969, 100-101, Type C). These have three tangs, secured by rivets and probably represent a local Egyptian design. Few have good archaeological contexts, restricting our ability to assess their position vis-a-vis the Levantine material. This large geographical and chronological spread, and the existence of variants showing more restricted space-time distributions, should warn us against treating these axes as a single phenomenon. We should therefore avoid attempts to fit all crescentic axes into a single sequence of typological development, and accept that we are seeing a range of contemporary regional variants which may not be interpretable in terms of a traditional model of typological change.

FENESTRATED AXES

Fenestrated axes represent a single broad class on obvious morphological grounds. They are socketted axes, of semicircular or half-ovoid form, with two holes (fenestrations) in the blade. They are designed for a curved handle which tapers towards the top; the socket is thus shaped accordingly (see example from Baghouz du Mesnil du Buisson 1948, Pl. XLV). The combination of shape and fenestrations makes these axes instantly recognizable. They were sufficiently well known to be depicted accurately in Egyptian representations (of Asiatics) dating to the XIIth Dynasty (Newberry 1893, Pl. XXXI), despite their being foreign to Egypt itself.

Type 1

(55 examples) Axes of Type 1 are essentially 'narrow' fenestrated axes of Maxwell-Hyslop's Type B4 (1949, 120) sometimes referred to as 'duckbill' axes (fig. 6). These axes are generally plain and give an impression of being quite functional.

Chronology and Distribution (Map 8)

Examples occur throughout the Levant. Several points ought, however to be emphasised. These weapons are not restricted to the coastal zone, being common on inland Syrian sites too, and occurring as far east as the large cemetery at Baghouz, on the east bank of the Euphrates near Mari, and in fact at Mari itself. An example is also known from Karaköy in the Sajur Valley of north- western Syria, suggesting that further work in that area would produce many more such axes. They are also reported from southern Syria and Palestine.

An example has recently been reported as coming from a Middle Kingdom context at Tell ed-Dab'a (information courtesy of the excavator). In connection with this last piece it is interesting to observe that the southernmost such axe reported from Palestine comes from Ain es-Samiyeh, in the hill country north of Jerusalem. None are reported from sites in the Shepelah nor in the southern coastal areas, despite the quantity of M.B.I cemetery material known from sites such as Tell el-'Ajjul, Dhahrat el-Humraiya and Gezer (see

Gerstenblith 1983, 31-35 for summary of tomb groups in the area). This might suggest that the axe at Tell ed-Dab'a was the result of direct contacts with the cities of the Syrian coast, rather than with Palestine, a view which is in keeping with the limited evidence for direct Middle Kingdom-Palestinian contacts (Weinstein 1975).

Evidence for the production of these axes is available in the form of a number of fragments from different moulds. Examples are known from Byblos; No. 3069 (Dunand 1939, 198 Pl. CVIII), No. 7402 (Dunand 1954, 96 Pl.CLXXXIV) and Ras Shamra (Musée du Louvre A.O. 84.268, unpublished) which is made of a hard dark- grey stone.

An axe of this type appears, wielded by an 'Asiatic', on Egyptian tomb paintings which can be securely dated to the early 19th Century B.C. (Newberry 1893, Pl. XXXI). An example from a single grave at Tell Rehov, near Beth Shan is dated early in the M.B.I period by the associated material (Yogev 1985, 110). Others, come from reused tombs such as those the Tombeaux des Particuliers at Byblos, Tomb 4 at Amrit, at Tell et-Tin and Hama Tomb G I. Between them these deposits seem to span most of the M.B.I period, suggesting that these axes continued in use through most of M.B.I. If, as suggested above the narrow- bladed axes of Type 1 appear late in M.B.I, succeeding fenestrated axes, this makes sense. There are no Type 1 fenestrated axes from contexts which can be demonstrated as being exclusively E.B.A.. Nor have examples been recovered from secure M.B.II contexts in the coastal Levant, suggesting that the representation of a fenestrated axe seen in a relief from the Temple of Amun at Karnak, dated to the reign of the Pharaoh Tuthmosis IV (Lange and Hirmer 1978, fig. 139) is anachronistic.

Many of these axes were found in graves at Baghouz near Mari, dated by Tubb (1980) to c2000-1750B.C. (by reference to the material from phase 'H' at Hama, following the Palestinian chronology of Dever 1976). However, more recent work in the Euphrates Valley itself (Joannes et al 1983, Kohlmeyer 1986a, 55-57), suggests that some of the pottery types from the Baghouz cemetery may have continued in use after this date, implying that the axes may have remained in use rather longer in this region than on the coast. Some support for this view comes from the presence of a Type 1 axe in the

'Tomb of the Lord of the Goats' at Tell Mardikh, which also produced an object inscribed with the name of an Egyptian ruler of the later 18th century, and ceramic types which appear to be of M.B.II style (Matthiae 1980a). Additional support comes from the lack of examples from inland sites of narrow-bladed axes of Type 1, the immediate successor of the fenestrated form in the coastal zone. A final statement will not be possible until we have a better understanding of the M.B.A. sequence in inland areas.

Foreign Parallels

Parallels are few outwith the Levant proper. Hillen (1953, 213) cites two examples now in the Iraq Museum, which were found during road building work near Kirkuk in northern Mesopotamia. These have not been published. Another unpublished example, this time from Mari on the Middle Euphrates, is on display in the National Museum in Damascus. An example from Acemhöyük in Anatolia has recently been published by Erkanal (1977, 22, Taf. 6.70). This axe which is approximately 122 mm long and 58mm in breadth, has a length to breadth ratio of 2.1: 1 near the average for a Type 1 axe, and comes from the burnt Palace of Level III, dated to a period contemporary with Kültepe II-Ib (N. Özgüc 1966, 50). The axes of alleged Cypriot provenance which are cited even in the recent literature (Oren 1971, Gerstenblith 1983) have been dealt with elsewhere (see 1.1) and it is only necessary to repeat here that there are no grounds for believing that their attribution to Cyprus is reliable.

There is also one half of a bivalve mould from Kültepe , (Erkanal 1977, 22). Its context has not been fully published although Emre (1971, 143) states that it comes from context in Level II of the Karum. This example is in dark grey stone, possibly schist of some kind, and is clearly for an axe of Type 1. Several moulds for fenestrated axes were found among a group of fifty moulds recently recovered from a workshop in Level II of the Karum (Mellink 1983, 430). Clearly then fenestrated axes were made locally in considerable numbers, perhaps to meet a requirement for these items by foreigners resident in the merchant colony. (There is as yet no evidence to suggest that the type was made on the main tell, settled largely by local Anatolians.) Given the prominence of references to metal trading in the texts (Veenhof 1972) and the evidence for contacts with Syria as well as the better documented Assyrian links (Larsen 1976, 86ff), this explanation seems quite plausible.

Type 2

(42 examples) Axes of Type 2 comprise what has traditionally been known as 'broad' or 'D- Shaped' fenestrated axes, Maxwell-Hyslop's (1949, 120) Type B3 (see fig. 7 top). The shape is easily distinguishable from that of Type 1 fenestrated axes. The fenestrations themselves are often very large, continuing well back into the socket, which must have been considerably weakened as a result. This ought to make us question whether these axes were meant to be functional or whether stylistic considerations were of greater importance.

A number of these items occur in precious metals, all from the 'Dépôts des Offrandes' at Byblos. Axes of Type 1 have not yet been found in such materials. Some of those from Byblos have elaborately decorated internal sleeves, generally also of precious metals. Clearly not all of these axes were 'functional' in the utilitarian sense of the term. Axes and other weapons in, or decorated with, precious metals are regularly encountered in the contemporary texts from Mari (see Durand 1983a, No. 222, 290), and suggest that the Byblos deposits should be seen as part of a widespread phenomenon, rather than as a single, isolated case (see Philip, (b) in press). It is clear that in many cases Type 2 axes place more emphasis on visible decoration than do those of Type 1. It seems possible that a difference in meaning underlies the typological distinction, a point reinforced by the contexts within which the two types appear (see below).

Chronology and Distribution (Map 9)

The first point to notice is that although there are a large number of Type 2 axes in the corpus, forty-two examples as compared to fifty-five of Type 1, by far the bulk of the Type 2 weapons, twenty-five of them, are from the 'Dépôts des Offrandes' at Byblos. Had this group remained undiscovered, Type 2 axes would be seen as a rare variant of Type 1 (17 examples against 55).

Besides Byblos these axes occur on both coastal and inland sites. A number are also reported from Palestine, mostly from the north or centre of the country. Oren (1971) has argued that the broad form should predate the narrow variety of fenestrated axe. While this is possible, I suspect that the

situation is not quite so simple. Absolute dates are provided by the depiction of these axes in Egyptian tombs. That showing a Type 1 axe (cited above) is in a tomb dated to the 6th year of Sesostris II (c 1890 B.C.), that showing a Type 2 axe (Newberry 1893, Pl. XVI) dates to the 43rd Year of Sesostris I (c 1928 B.C.). Although I would accept that the paintings do show fenestrated axes of these two types (contra Ward 1987, 530), I am not convinced that one can use this to argue for a chronological distinction between the two types. There are only two such paintings. There is therefore a fifty percent chance that they would appear in this chronological order. Secondly the two tombs are separated by only a few decades. Finally, we cannot tell how familiar the Egyptian artists were with the typological detail of these axes. It may therefore be pure chance that one drawing shows an axe with a broader blade than does the other.

We must therefore consider the archaeological evidence. There are no examples of Type 2 axes from contexts dated unequivocally to the Syrian E.B.A.. Those Syrian examples found with associated material seem to date from the M.B.I period. However, the contexts in which they do appear, Hama Tomb G VI which produced goblets of late Hama J form (Wäfler 1979, 784), Hortfund 2 at Tell Mumbaqat which has links with material from the earlier stratified levels of phase H at Hama, (Heinrich et al 1974, 34) and those finds associated with the graves of the 'Porteurs des torcs' at Ras Shamra, which de Cont enson (1979, 862) would place at the beginning of M.B.I, suggest that these objects should be assigned to the earlier part of the period. Whether they appear prior to axes of Type 1 is open to debate. However they do not seem to continue in use over such a long period., As remarked above, if we discount those Type 2 axes from the 'Dépôts des Offrandes', they would be far fewer in number than examples of Type 1, a situation which would support a shorter floruit for the broad form of axe.

The Palestinian examples are traditionally assigned to the E.B.–M.B. period (Kenyon 1971, 585). It is the writer's belief that until an internally consistent, radiometric chronology is produced, or failing that a set of stratified sequences from different parts of the country which can be successfully interrelated, absolute dates for the Palestinian E.B.–M.B. period, must be derived from the Syrian sequence, and not the reverse. This line of reasoning

underpins all subsequent comment on the internal chronology of the period. There are four Type 2 axes from Palestine. That from Jericho forms part of a deposit, contained within a wavy-line incised jar, found on the Tell. Both these facts would suggest that the axe ought to be dated late in the E.B.-M.B. period (Kenyon 1971, 578, Dever 1980, 48). The incised decoration characteristic of the pottery which Dever ascribes to his 'Family S' cannot reasonably be divorced from the appearance of the technique, albeit different in detail, at northern sites such as Hama and Ras Shamra at the beginning of the M.B I period. This ceramic parallel suggests that some chronological overlap must exist between Dever's (1980) E.B.IV C and the early part of the M.B.I period in Syria.

The only other Type 2 axe from Palestine, from a reliable context, is from Tomb 6 at Ma'abarot, near modern Hadera. Dever (1980, 39) would assign the tombs at this site to his E.B.IV B, although the nearby settlement is classed as of E.B. IV C date. However, the tomb from which the axe came also produced a jar with incised-line decoration (Dar 1977, 65.7), suggesting that this example too might be late in the period. The remaining Palestinian examples are from unreliable contexts, although that from Megiddo Tomb 84C would seem to be associated with a socketted spearhead of our Type 5, a M.B.I, rather than E.B.A. type (see 2.3). In summary then, we see that in Palestine these axes come from contexts which must be placed late in the E.B.-M.B. period, and which through their Syrian parallels should be contemporary with the beginning of the M.B.I period in the north. Some chronological overlap must therefore be allowed between the later stages of the Palestinian E.B.-M.B. period, and the beginning of the 'true' M.B.A. in Syria.

Steatite moulds for casting Type 2 axes are known from Byblos; No. 6793 (Dunand 1954, 10 fig. 10) with a matrix for an axe of length 105 mm and breadth 164 mm, ratio 0.64 a classic Type 2 axe with fenestrations cut well back into the socket, No. 7419 (Dunand 1954, 98 Pl CLXXXV) and No. 7016 (Dunand 1954, 57 not illustrated) which is said to be for the production of the broad form of axe. These are all from poor contexts. Weiss (1985, 243, Pl. 186; No. 118) has recently published a mould for an axe of Type 2 from a male grave at Tell Mardikh and there is an unpublished example from Ras Shamra (Musée du Louvre AO 14836). The matrix is for an axe of length c 60mm and

estimated breath 85-90 mm. The ratio would then be around 0.66-0.70, a standard Type 2 axe. In this example, the matrix is cut so as to leave four vertical facets running down the back of the socket. These could have been removed by hammering the finished product although actual finds suggest that this was not always done. An example is also known from Hama (4B 231, unpublished now in the National Museum, Copenhagen). This example has risers, peg-holes and is cut in a white-grey stone which has a 'soapy' feel and may be a form of steatite. These axes were clearly widely produced, on a considerable scale. Despite this a high degree of internal homogeneity was maintained within the type, as seen in the strict conformity of length/breadth ratios, regardless of the absolute size of the axes (see App. 1). Variations existed but these were not regionalised, suggesting that a 'correct' form was widely acknowledged.

Foreign Parallels

Exact parallels for these axes are few outwith the Levant. Two examples from Tell Harmal in Iraq would actually seem to be of a distinct Mesopotamian/Iranian variety (see below) and another is "said to be from Khafajeh" (Hillen 1953, 213) but it is unpublished. Considering the frequency of these axes at sites in the Levant their rarity from excavated contexts elsewhere is striking.

Type 3

(8 examples) Length and breadth are almost equal, giving these axes a triangular shape (see fig. 7 lower left). They bear more resemblance to Type 2 axes than to those of Type 1.

Chronology and Distribution (Map 10)

Their distribution is largely the same as that of Type 2 axes. They probably appear early in the M.B.I period as they occur in the Byblos 'Dépôts'. However, two come from the 'Tomb of the Lord of the Goats' at Tell Mardikh dated to the 18th century (Matthiae 1980c), which suggests that the type continued in production well into the M.B.A. That from Megiddo Temple 4040 is also of interest, as this very axe formed the basis upon which Kenyon (1958)

dated this building to the E.B.–M.B. period. Dunayevsky and Kempinski (1974, 172) have redated the temple as a result of new excavations, and would associate the axe with the terminal use of the building, which they place some time in the late E.B.–M.B. period.

A comparison of the contexts in which axes of Types 1, and Types 2 and 3 (treated together) appear is revealing. By far the bulk of axes of Type 1 appear in graves. These were found in only one deposit at Byblos, Dépôt Sigma. Axes of Type 2 and 3 on the other hand occur in many of the 'Dépôts'. It is unlikely that this difference is entirely fortuitous. Type 2 axes occur in several other deliberate deposits of metalwork; at Tell Mumbaqat (Hortfund 2), Jericho (late E.B.–M.B. jar deposit on the tell) and in various contexts near the temples on the acropolis at Ras Shamra which may represent badly preserved 'offerings', while a Type 3 axe was built into the wall of Temple 4040 at Megiddo, surely some also sort of offering. Although axes of Types 2 and 3 also occur in graves, this is not surprising as there is a considerable overlap between the grave and 'hoard' material (see Philip (b) in press). Nearly all Type 1 axes however come from burials, where they may represent the personal weapons of the deceased. Given the fact that Type 2 axes have larger fenestrations, often so big as to affect the strength and security of the socket (see App. 1), one might reasonably ask whether these may not represent a variant of the fenestrated axe made purely for display purposes. This would also explain the very broad blade which is more visibly a fenestrated axe at a distance, than a narrow Type 1 axe would be. Those of Type 1 which are plainer and more robust may represent a more 'functional' form. This last point is only a suggestion but should alert us to the possibility of more subtle explanations for typological variation than simple chronological succession.

Foreign Parallels

There is an example of this type from a Level II cist grave at Kültepe (Özgüc 1959, 109, fig. 64). It is 91 mm long, 94 mm broad and the length to breath ratio is 0.97. Unusually it has a nail driven through the top of the socket in order to secure the haft. Level II at Kültepe should probably be dated in the later 20th or early 19th century, which is in agreement with a M.B.I date.

Type 4

(15 examples) Miniature fenestrated axes.

Chronology and Distribution

Examples are reported from Baghouz and Mari, and are especially common at Ras Shamra. Those from Ras Shamra come from the acropolis (upper-town) area and probably represent the disturbed remains of offerings (see Philip (b) in press). The example from Baghouz comes from Tomb Z 103bis and cannot be firmly dated until we have a better understanding of the new material which is currently being excavated in the Euphrates Valley (see above). The axe from Mari comes from Room 69 in the Palace of Zimri-Lim, which would seem to suggest that fenestrated axes were in circulation at least until the destruction of that building by Hammurabi of Babylon, (C 1760 B.C.).

Foreign Parallels

The writer knows of no reliably provenanced examples of minature fenestrated axes, from sites outwith the area covered in this study. Minature versions of weapons generally are known from Afghanistan and Iran (Haerink and Overlaet 1985, 407ff). It was important that these axes resemble closely the form of the full sized objects, although they do not seem to have been restricted to any particular version of the full sized form. We have already alluded to the appearance of fenestrated axes in deliberate deposits (see above), suggesting that they were somehow considered appropriate as offerings. Given the frequency of miniature ceramic vessels at cult sites, in particular at Nahariyah (Dothan 1956), the occurrence of miniature weapons in such contexts is not really surprising. However, this indicates that fenestrated axes had a significance far beyond their mere value as weapons of war (see 3.1.2).

Type 5

A fifth type of fenestrated axe can be isolated. These are the so-called 'anchor' axes, classified as Type B2 by Maxwell-Hyslop (1949, 119). These axes are distinctive but are related to the fenestrated axe series. This can easily be

shown by comparing a simple list of shared/differing criteria. Only one example has been reported from an excavated context in the Levant. This axe (No. 537) comes from Byblos.

Chronology and Distribution The Byblos example is from a context that is of little value from a chronological point of view, coming from the "Démolition des murs de la Levée I a la Levée X" (Dunand 1939, 197). Two others in the collection of the Archaeological Museum of the American University of Beruit (Baramki 1967, Pl. IX) are probably from the region but little else can be said concerning the distribution of the type within the Levant. A mould for the production of Type 5 axes is also known from Byblos (Dunand 1954, 20 fig. 17). This is particularly interesting in view of Byblos' well known connections with Egypt during both the Old and Middle Kingdoms as two of the three provenanced examples known come from Egypt.

Foreign Parallels

Besides the example from Byblos, three Type 5 axes of known context are published. Two examples are known from Egypt. The first is from a grave at Abydos from a tomb which Petrie assigned to the Middle Kingdom (1925, 6). (The exact Grave cannot be identified though the writer prefers Grave 51 for the reasons given by Tubb 1982, 2). This axe is reported to be a 12% tin Bronze (Sebelien 1924, 8). The second is from a tomb at Helwan (Saad 1947, 173 Pl. 88). It was dated to the First Intermediate Period on the basis of the finds in the tomb (letter from the excavator quoted in Ward 1971, 57 note 187). Whether the axe was itself the key factor in this dating is not clear. The fourth example is from Private Grave 691 in the Royal Cemetery at Ur (Woolley 1934, Pl. 224, U 9687). This grave has been dated to the Middle - Late Akkadian Period (Nissen 1966, 174).

The reason for covering this ground in detail is that Hillen (1953, 211) views the anchor axe as a transitional form, lying between the crescentic and true fenestrated axes, in particular Type 2 axes as defined above. Tubb has argued (1982, 4) that this cannot be demonstrated using the dated examples available, while accepting that the statement seems reasonable on typological grounds. In the opinion of the present writer both approaches are rooted in what I have termed 'traditional typology'.

A comparison of the typological details of the axes of Type 5, reveals that their closest similarities lie with axes of Types 2 and 3 in terms of general morphological features. Fenestrations are broad, midribs absent, the axes are flat in profile and may bear flanges around the fenestrations. Their length/ breadth ratios are as follows: Byblos 0.84, Abydos 0.92, Helwan 0.75, Ur 0.98. The axes from Helwan and Byblos are closer to those of Type 2, those from Abydos and Ur to the more triangular axes of Type 3. It is clear however that all of them lie well above the mean length/breadth ratio for axes of Type 2 which is around 0.6–0.7. If one was to assume a line of development from broad crescentic axes to the narrow fenestrated axes of Type 1, the length to breadth ratios of the axes of Type 5 would place them too far along the sequence of development to represent an early, transitional form. It may be argued that this is setting up an extreme version of Hillen's (1953) argument merely to knock it down. However, there are other weaknesses in this line of reasoning.

All Type 5 axes possess a distinct rear projection, and a partly open socket. This implies that their hafting involved the use of a binding around the shaft and projection, something not used on axes of Types 1–4. Nor is this feature found on crescentic axes. Type 5 axes must have been cast in two-piece moulds as were fenestrated axes. This is not necessarily the case for crescentic axes which could have been cast in 'open' moulds with a simple flat cover. Therefore the technology required to produce a Type 5 axe is the same as that needed for all other forms of fenestrated axe and is not 'intermediate'.

It is clear from examples found in Anatolia, that the technology for casting socketted axes was available as early as the E.B.I period (see below). The copper axes from Naḥal Mishmar in Palestine which date to the Chalcolithic period (Bar-Adon 1980), and the range of socketted axes of E.D. III date from the Royal Cemetery at Ur (Woolley 1934) reinforce this point. Therefore there is no reason to assume that the partly open socket of the anchor axe represents a transitional step on the road to the development of fully socketted fenestrated axes. Regarding the preparation of moulds, that necessary for casting a Type 5 axe would be no easier to make than would a mould for any other type of fenestrated axe. We have been mislead by the way in which we conceive of typological change. Our ideas are too often

based on simple visual comparisons, rather than systematic analysis of similarities-differences, and consideration of how these might affect the manufacturing process. The conclusion must be that the Type 5, 'anchor', axe represents a contemporary variant selected for production by choice. That this is so, is made supported by the existence of other "idiosyncratic" forms of fenestrated axe.

Variant Forms

An unusual axe was found in a cist-grave discovered below a tumulus, excavated near Dera'a in southern Syria (Nasrallah 1950, 325-326 Fig. 50). In this case the socket is tubular. The fenestration do not actually cut into the socket, which extends above beyond the blade at both ends. It has a rear projection, as do axes of Type 5, broad fenestrations with low flanges around them and has no midrib. In terms of its length to breadth ratio of 0.68, this axe fits into the middle of Type 2. Smiths did therefore produce variations on the general theme of the fenestrated axe. This seems perfectly reasonable viewed against the background of the prosperous Syrian city states of the period. Examples of the rarer variants have been viewed by some scholars as 'transitional' types, which must somehow be fitted into a linear scheme, often with confusing results. The alternative view, that of a number of broadly contemporary variants, seems more satisfactory.

Discussion

It is widely believed (Hillen 1953; Tubb 1982) that this type was developed from the crescentic axeheads discussed above. It has been argued elsewhere that the problem should not be approached from a standpoint which presupposes a linear development. Most crescentic axes date no later than the middle of the third millennium; fenestrated axes do not seem to appear until the beginning of the second, several centuries later. However, it does seem clear that the two forms of weapon are related in some way. Both share the distinguishing feature of two holes in the blade although the fenestrated form possesses a true socket. These holes can be shown to be an inevitable consequence of the mode of hafting a crescentic axe, but are not so in the case of the socketted, fenestrated variety. Therefore it seems likely that

the holes in the blade were deemed sufficiently desirable to be carried over into the production of the later form, where they had no mechanical function. We must therefore accept that stylistic considerations played a large part in determining the form of the fenestrated axe. Our task is surely to establish why these were felt to be so important (see 3.2.2).

In summarising the above material several points should be brought out. The commonest form of the fenestrated axe is Type 1, the narrow version. This type seems to continue in production over a longer period than do other variants. There is no convincing evidence that Type 2 axes, the broad type, preceded Type 1. It is likely however, that they went out of use at an earlier date, but there is no convincing evidence that they were the first group into production. This view stems largely from erroneous typological comparisons with Type 5 fenestrated and crescentic axes. However, there does seem to be a difference in the contexts in which the two main types appear, a difference which might be connected to the less robust nature of the broad form, possibly made specifically as gifts, offerings or status items. Clearly no hard and fast boundaries can be drawn, and exceptions will always appear, but the general distinction has some value.

Foreign Parallels - synthesis

Anatolia

Fenestrated axes were made at a number, perhaps all of the major settlement sites in Syria. They appear in Anatolia, and were produced on the Karum at Kültepe (see above). Metal figurines bearing what appear to be fenestrated axes have been reported as from Kültepe Kanesh Level Ib and Alishar V (Emre 1971, Pl. IX.2, X.6), and a mould for the casting such figurines is also known from Kültepe Kanesh Ib (Emre 1971, 142). It is interesting to note that all occurrences so far reported from Anatolia are from from central Anatolian sites, and from a restricted chronological horizon, corresponding to a phase of trading links with Assyria and the cities of Syria. However, N.Özgüc (1965, 52) has observed that shaft-hole axes appear far more frequently as the weapon of the war god on seals of the 'Anatolian' group, than do fenestrated axes, suggesting that the latter form did not feature strongly in the local

Anatolian scheme of things, and that the production of these axes may have been connected with the presence of foreign merchants at the site. These axes are unlikely to be a part of the Assyrian repertoire, suggesting then that they argue for the presence at Kültepe of Syrians, who go largely unnoticed in the texts. Whatever the case, those examples thus far known from Anatolia are in the Levantine tradition, rather than the Mesopotamian/Iranian style described below.

Fenestrated axes are also known from sites to the east of our area (Calmeyer 1969, 44-45, Abb. 46). Many are ascribed to an Iranian provenance, but few are from good contexts. However, finds from Tell Harmal in Iraq (Calmeyer 1969, 45) and a recently excavated grave at Tell es-Suleimeh in the Hamrin area (Rumeidiyeh 1984, 49, fig. 8.1), suggest that an independent style did exist in Mesopotamia/Iran. These are rather different from the Levantine form and may feature zoomorphic decoration in relief, a tradition popular in Iranian metalworking (Moorey 1982b). The eastern examples show 'eyebrow" decoration on the socket, and may bear elaborate radial ribs on the blade (Calmeyer 1969, 45). An example is depicted on a seal dated to the late Ur III period (Frankfort et al 1943, 215 Pl. 100.A, B) broadly contemporary with the appearance of fenestrated axes in the Levant. Matthiae (1980c) has suggested that one of the fenestrated axes from the 'Tomb of the Lord of the Goats' at Tell Mardikh is actually of Iranian manufacture, which is quite possible, as it has no close parallels elsewhere in the Levant and this rich tomb has produced an eclectic range of items (Matthiae 1980a).

SHAFT-HOLE AXES

The term shaft-hole axe is applied to examples of a large and rather heterogeneous group of material, consisting of socketted axes designed to mount straight handles, but which are different from our narrow-bladed class. It includes material which Maxwell-Hyslop (1949) would assign to her Types 1-22 and which is often considered to be of Mesopotamian inspiration. The preponderance of examples from there in both her work and that of Deshayes (1960) would seem to support this view. However, some reconsideration is required in the light of more recent evidence. The total corpus of shaft hole axes from within our area is small, thirty-one only, when compared to the numbers of narrow-bladed or fenestrated axes. It is significant that this is less than the number of such axes found from the Royal Cemetery at Ur, let alone other Mesopotamian sites, suggesting that such axes are quite rare in the Levant. This is all the more clear when it is remembered that this figure includes material from contexts extending from the E.B.A. through the M.B.A. to the beginning of the L.B.A.

Shaft-hole axes have a circular socket designed to take a straight handle. The socket can be quite long, although this is not always the case, is generally fairly substantial and need not be perpendicular to the blade. Within this body some types are absolutely distinct, such as Types 1 and 6, while others are rather more heterogeneous. Some types are far more distinctive than others. One feature which all shaft-hole axes have in common (as far as details are available), in contrast to the fenestrated and narrow-bladed series, is that the shaft holes are circular, not ovoid. It seems reasonable to assume that the ovoid socket was designed to prevent the handle from rotating. It would seem therefore, that this precaution was overlooked in the case of the shaft-hole axe series. Why this should be is an interesting question ? The answer may have more to do with cultural preference, and the strength of established tradition, than with strictly functional factors. A chronological explanation, based on the fact that shaft-hole axes were developed prior to the other forms cannot fully explain this either. The use of circular sockets continues into the L.B.A. on axes of Types 3 and 4, which clearly post-date a whole range of axes with ovoid sockets. The reappearance of circular sockets in the Levant has certain interesting implications (See 3.5). The classification

employed is the result of cluster analysis (dendrogram fig. 61). The procedure is described at greater length elsewhere (see App.1).

Type 1

(3 examples) Axe with long, square-sectioned blade tapering to a sharp point, mounted by distinctive socket (see fig. 58.380). This type was classed as Type 9B by Maxwell- Hyslop (1949,99) who refers to them as 'picks'. A very similar axe from Ur (U. 9680) is assigned by her to Type 16, seemingly on account of its bearing a different form of socket decoration, in this case three pointed projections. These axes form a component of Deshayes rather loosely defined Type A5c (1960, 165). All three objects show a very similar morphology, and are likely to represent a distinct 'emic' type.

Chronology and Distribution (Map 11)

Full contextual data exists for only one example, from the Hypogeum Til Barsip. The other two examples are from Mari but as they are unpublished, both date and context remain uncertain. The Hypogeum at Til Barsip has been variously dated; that favoured by the writer being c2500-2250. The concentration of this type in the Euphrates Valley is interesting.

Foreign Parallels

Parallels from reliable contexts are rare. There is an axe from Private Grave 689 in the Royal Cemetery at Ur (Woolley 1934, Pl. 223, U. 9680) of similar blade and socket form, but which has three spiked projections at the rear. This grave is dated to the Late Akkadian by Nissen (1966, 174) and Middle-Late Akkadian by Pollock (1985, 151). Another more distant parallel comes from an upper level at Tell Chuera (Moortgat 1960, 6 Abb 7), where it is said to be associated with pottery dating to the Akkadian period. This piece has a blade which is almost cross-shaped in section, and a long socket cut away at the bottom which lacks any decoration or rear crest. In size, length 180mm, height of socket 80 mm it corresponds roughly to that of our Type 1 and is similar in conception. The two spears associated with the axe from Tell Chuera provide good parallels for our Tanged Spearhead Type 3, dated contemporary with E.D.II-III - Akkadian period in Mesopotamia (see 2.2)

providing support for our date.

Several parallels from 'Luristan' are cited by Deshayes (1960, 166) and Calmeyer (1969, 34-35). These are poorly provenanced, although the sheer number of such examples suggests that the type is indeed Iranian in origin. The concentration of these axes at sites on the vital Euphrates Valley route is hardly surprising. The presence of tin at Ebla (Pettinato 1981, 173), of eastern style seal impressions at sites in the Tabqa dam area (Teissier 1987) and of Iranian-style zoomorphic decoration on a Type 2 shaft-hole axe at Til Barsip itself (see below) all underline the strength of trade contacts with lands to the east.

Type 2

(13 examples)

Type 2 axes possess parallel-sided or lobate blades, mounted to slope downwards when the handle is held vertically. The socket may be cut-down, but this is not always the case. Within certain broad parameters the type is quite heterogeneous (see fig. 8, except No. 380, fig. 58).

Chronology and Distribution (Map 12)

Such axes are concentrated at sites in north Syria, in particular along the Euphrates Valley. Exceptions are from Tell Tayinat in the 'Amuq (No. 362) and Byblos (No. 370). It is not clear whether this results from the recent concentration of fieldwork at sites in the Tabqa Dam area. However, the distinct northern concentration of these axes, and their absence from Palestine is striking. This is not really surprising given the nature of the local E.B.-M.B. period which apparently lacked large urban settlements (Kenyon 1973, Dever 1980) and was much less involved in international trade networks. It seems likely that north Syria in general, and the Euphrates sites in particular, had greater contact with the Mesopotamian and Anatolian worlds during the later third millennium, than had more southerly parts.

The dateable examples in the corpus all belong to the second half of the third millennium, contemporary with the production of lobate-bladed axes in

Mesopotamia (see below). However, there is no reason to believe that these axes were not in production prior to this date. The presence of a mould for an axe of similar form, with cut-away socket, in an E.B. I context at Norşuntepe in the Keban area (Hauptmann 1982, 57) suggests a background of some antiquity for these axes in south-east Anatolia at least. Production of these axes would therefore seem to have been in-part contemporary with that of crescentic axes. The two forms do not form a strict chronological succession.

Foreign Parallels

A problem in dealing with this material is that a large number of general parallels can be found over a wide area, from Mesopotamia and Iran to Anatolia. In fact one axe from Til Barsip, zoomorphic decoration in relief, a trait much used in Iranian metalworking (Moorey 1982b, 88). The Syrian material is only a small part of a broader picture. This being so it would be difficult to produce a detailed subdivision of this type based solely on the examples found in Syria. This is a different situation from that envisaged in the case of crescentic axes, where particular localised types can be detected. What is required is a reworking of the material in a global context. Of particular importance is the Mesopotamian component which provides by far the bulk of the comparative material from good contexts, in particular a large number of axes from Woolley's excavations at Ur. This latter group have been published only by reference to the excavator's type series, the rationale behind which remains unexplained (Woolley 1934, 303ff).

The Syrian material can only be thoroughly understood in terms of this wider picture. As no synthetic study of the material as a whole has yet been undertaken, it was felt best to leave a loosely defined Type 2, rather than to attempt to subdivide it. However, this does not mean that the patterning of particular variables should not be examined, to see what light can be shed on the material. Subdivisions made on this basis should be regarded as provisional.

The Anatolian Material

A fragmentary axe with a cut down socket is published from Arslantepe, near Malatya (Palmieri 1973, 89 fig. 47.1), where it belongs to Period VI, late E.B.III. Considerable evidence for the manufacture of axes similar to our Type 2 is available. A mould for such an axe, with a cut-down socket is reported as coming from old excavations at Arslantepe (Edgü 1983, 91, A.176). Another is reported from Kültepe (Özgüc, 1959, 110). At Norşuntepe a metal workshop was found in Stratum XIX which is dated to the E.B.I period (Hauptman 1982, 57). This produced both parts of a bivalve stone mould for what is termed a 'Karaz' type axe by Anatolian archaeologists (Hauptmann 1982, Taf 26.10). This refers to a form of axe which is essentially similar to Type 2 here. The Norşuntepe mould would have produced an axe with a downward sloping, parallel sided blade and a cut-away socket, a good Type 2 form. This date may seem early, but should not come as a surprise in the light of the sophisticated material recently reported as occurring in late fourth millennium contexts in the region (Palmieri 1981).

Other moulds for 'Karaz'-type axes have been found at Gavur Hoyuk in the Keban basin. Kosay reports two sandstone moulds, one of which is illustrated (Kosay 1976, Pl 110.11). One (Gavor Höyük No. 837) is a surface find but the other (Gavur Höyük No. 836) was from level III and is ascribed to the E.B.A. (Kosay 1976, 214). The published mould is clearly for casting axes with downward pointing, slightly flaring blades, with cut-away sockets with a raised rib at each end. These too would seem closely related to our Type 2. Thus we have a clear suggestion of the existence of a northern form of shaft-hole axe with a roughly parallel sided blade and a cut-away socket.

The Mesopotamian Material

As Martin (1985, 16) observes, the classic Mesopotamian socketted axe of the Early Dynastic period features a lobate blade with the cutting edge positioned on the underside. A review of the Mesopotamian axes published from Ur (Woolley 1934), which has produced by the greatest number of these weapons, suggests that lobate bladed forms also occur in the Akkadian period. A collation of the examples of the Type A3 axes, by far the most common of

Woolley's types, from the Royal Cemetery, revealed the following picture.

Using the chronology of Nissen (1966) seventy-two axes came from E.D. III contexts, as against twenty-six from contexts dated to the Akkadian period. Nine axes were from contexts which could be assigned to either period. A similar study using the dates suggested by Pollock (1985) revealed fifty from E.D.III contexts, nine from Akkadian period graves and thirteen from contexts which could be assigned to either period. This suggests a heavy concentration of these axes in the E.D. period. However, two are from tombs (P.G. 1847 and 1850) which are assigned by Nissen (1966, 191) to the Ur III period. Several other points must be borne in mind. The two periods are not of equal length, nor is the distinction between later E.D.III and the early Akkadian period easy to define on the basis of archaeological material (Gibson 1982). Equally, the number of E.D.III tombs excavated is greater than that of Akkadian tombs. Therefore it is possible that the frequency of these axes in the Akkadian period is somewhat under-represented. The conclusion must therefore be that these lobate-bladed axes were in production over a period lasting several centuries, and were still in use late in the third millennium.

The dominance of axes with "crude hammered sockets", in tombs of the Akkadian period at Ur has been noted by Maxwell-Hyslop (1971, 19) who suggests that this may be related to increasing difficulty in obtaining tin, although recent metallurgical evidence argues against this view (Moorey 1985, 20). In fact, what we see is a change in the grave record only. We cannot assume that the socketted forms, which seem likely to have been more effective as weapons, necessarily went out of use for practical purposes. The decline detectable in funerary deposits may been less apparent in the everyday world. Because of their longevity, lobate-bladed axes cannot be used as a means of tying Syrian axes into the Mesopotamian chronology. The Syrian forms must be dated in terms of the local ceramic sequence. In places where the latter is poorly known, we must simply accept the situation until more information is available.

In addition to the lobate blade, certain socket forms and types of decoration common amongst Mesopotamian axes, occur on some examples of our Type 2 axes. The most easily identifiable features are that the top of the socket is level with the upper edge of the blade; i.e. the socket is not cut

down at the top, and that ribbed decoration seems to be restricted to a fairly basic arrangement of a single rib around each of the margins of the socket. In fact, the former feature, under the description "manchon tubulaire et collet non decalé" formed the basic criteria for the assignment of axes to Deshayes Type A (1960, 155). A study of his catalogue reveals that the bulk of the provenanced items within this group do come from Mesopotamian sites.

In contrast, parallel sided or slightly flaring blades with cut down sockets are features observable on moulds and axes reported from Anatolian sites (see above) and also on a number axes of our Type 2. This form of socket provided the main criterion for assignment of axes to Deshayes Type C (1960, 155). Most of the members of this type can be seen from his catalogue to come from contexts in Syria and north Mesopotamia. These features would seem to represent a promising basis for a deeper investigation of the axes assigned to Type 2.

Type 2 axes; internal variation

If those axes with cut down sockets are examined, the following picture emerges. These occur at Til Barsip (two such), Hammam, Tell Tayinat, Byblos and Habuba- Kabira, clearly a northern distribution. Axes with such sockets have not been reported from southern Mesopotamia. The recent find of a similar axe with ribbed cut-away socket, and slightly flaring blade, in an Akkadian context at Tell Brak (Oates 1985, Pl. XXVII), offers further support for the northern distribution of this variant. Those with socket forms more typical of Mesopotamia occur at Selenkahiye, Til Barsip, Halawa, Mari and Terqa and also on the well known shell reliefs from the Temple of Ishtar at Mari which show figures equipped with such axes (Parrot 1956, fig. 77, 79, 80). Accepting the lobate blade as a Mesopotamian preference, as seems likely, then its appearance at Til Barsip (one axe out of five), Terqa, Hammam and Mari would reinforce the evidence of the socket forms.

The situation would seem to be that we are seeing a mix of southern Mesopotamian and local styles, at sites in the Euphrates valley. The dominance of different forms in Anatolia and their presence at Byblos and Tell Tayinat, as well as at the sites already mentioned, might suggest that the

adoption of Mesopotamian forms was a localised phenomenon concentrated in the valley, where regular contact with the south via the river borne traffic and diplomatic communication would have more frequent than was the case for sites farther west. On the other hand the use of a style more at home in the north, over a wider area of Syria supports the notion of an independent northern metal industry with its own range of products as suggested by Watkins (1983a). Not only have none been reported from Palestine, they are also absent from western Syria, barring one example from Byblos.

Summary

The adoption of particular features, which seem to be of Mesopotamian origin should therefore be seen as an addition to an existing local tradition of axe manufacture. Although there are neither chronological nor technological grounds for ascribing the local styles to 'Mesopotamian influence', there are good grounds for positing the existence of a strong north Syrian-Anatolian industry (see 2.2).

Type 3

(4 examples) (Types 3 and 4 are clearly related and will therefore be described separately and then discussed together.) Axes with horizontally-mounted, flaring-sided blades with ribbed socket with stop below (see fig. 8. 380).

Chronology and Distribution (Map 13)

Four examples of Type 3 axes are included in the corpus. No. 374 is from Alalakh, and is ascribed to Level V, which dates from the earlier part of the L.B.A. The other three are all from Ras Shamra. No. 377 is given a L.B.A. date, but the context is poor. No 379 is unpublished and of unknown context. No. 380 is from the excavations in the Tranchée Sud-acrôpole and may be from the M.B.A. tombs reported by Schaeffer (1963, 211) although this is uncertain. On balance this type would seem to data to the L.B.A., although an earlier development cannot be ruled out. There is little that can be said regarding distribution except for the fact that all four are from northern Syria, rather than

Palestine where many more sites of the period have been excavated. It should be observed that these show little morphological relationship to any of their local M.B.A. predecessors, namely narrow-bladed and fenestrated axes.

Type 4

(4 examples)

Axes with flaring-sided blades, tipping upwards towards the cutting edge, socket bears a set of heavy, flaring ribs and has a stop below (see Pl. 23 top left). Types 3 and 4 are related, but there are noticeable differences.

Chronology and Distribution (Map 14)

Four examples are included in the corpus. An example from recent excavations at Shiloh, is from a late M.B.II context (Finkelstein and Brandl 1985, 17). The other examples are from Ras Shamra. All are from uncertain contexts (Nos 376, 381) or as yet unpublished (No. 378) although some material apparently from the same context as this latter axe has been published (Courtois 1979, fig. 9a-c), and would seem to be of L.B. I-IIA date. It is general to ascribe these axes to the L.B.A. and they have often been taken as an essentially northern phenomenon. However they occur throughout the Levant, appearing as early as the 16th century. Little else can be said until more information is available on the contexts of the axes from Ras Shamra.

As one might expect, there is evidence for the manufacture of these axes at Ras Shamra. A broken mould for an axe of Type 3 or 4 was found (R.S. 7.059 unpublished, Musée du Louvre). The matrix reveals that the blade was c 98 mm long, had a cutting edge of c 50 mm across and a minimum breadth of 32mm. This places it comfortably within the range of values attained by the axes of these Types included in our study. The blade had no flanges on its upper of lower edges. The socket bore four decorative ribs and there was a projection below. As the back of the socket is lost, it is not possible to establish whether the ribs flared out or not. This shows that these axes were not produced only in north Mesopotamia but were equally at home in western Syria. As with axes of Type 3, the clear Syrian concentration is interesting, with only one Palestinian example reported. These axes occur in

limited numbers, 8 in total for Types 3 and 4, a striking contrast to the dozens of narrow-bladed and fenestrated axes found in earlier contexts.

Foreign Parallels

Most parallels for these axes come from sites to the north of our area. Part of a clay mould probably for an axe of Type 3 or 4, is known from Tarsus (Reg. No 37.701, Goldman 1956, fig. 436.6) where it is recorded as coming from Room 19 - a M.B.A. context (Goldman 1956, 305). It is fragmentary but is clearly a part of a bivalve mould for casting an axe of one of these types, or one very similar. Several axes which seem quite similar to our Type 3 are known from Boğhazköy in Anatolia; all three are slightly different (Boehmer 1972, Taf 2. 17-19). Only one of these is from a well dated context (Taf 2.17). This example is from Buyukale IIIb, which is dated to the L.B.A. by an associated seal of Suppililiumaš. In a recent republication of the 'Nimrud' axehead, Curtis (1983, 73) differentiates between a group of Anatolian socketted axeheads with a distinctive "bow-tie" shaped blade, usefully collected together by Erkanal (1977, 15, nos. 57, 59-61) and the more southerly forms of second millennium socketted axe. While this is a useful distinction, it still leaves a very heterogeneous group of axes from Levantine or Mesopotamian contexts to be dealt with (see Curtis 1983, fig. 3).

Curtis' suggestion that an axe from Nimrud related typologically to our Type 4, should be dated c 1550 or a little later is perfectly reasonable in the light of the the find from Shiloh. A similar axe from Chagar Bazar Grave 200 (Mallowan 1937, 187-8, Pl.XLI.1) is difficult to date. The only firm evidence is that it post-dates the reign of Shamshi-Adad (Curtis 1983, 76-78). Although the associated pottery has parallels at Tell el-Rimah, which have been dated there to c 1650-1550 by the excavator (Oates 1972, 85), the other items in the grave, a spearhead and a pin are of forms which could argue for an earlier date, as Curtis has observed (1983, 77).

Curtis (1983, 73) also suggests that although the Nimrud and Chagar Bazar axes are clearly from different moulds, they are so similar as to be the product of the same workshop. Bearing in mind the wide distribution of fenestrated axe moulds, and our lack of exposure of industrial areas of second millennium date in Syria and north Mesopotamia, this view seems to underestimate both

the scale of production and the degree of product standardisation throughout the region during the Middle and Late Bronze Ages. Surely metalsmiths in widely separated areas could produce virtually identical axes if this was required. The interesting point is why was this was deemed necessary.

Although most of the examples of these types date to the L.B.A., their origins are to be sought, possibly in north Syria or northern Mesopotamia in the preceding period. They cannot simply be viewed as a late phenomenon, succeeding the better-known M.B.A. forms. These axes are quite different from the narrow- bladed form which they succeed in the Levant. Their size and weight, and the possession of circular sockets, a trait not seen in Levantine axes since the third millennium, suggest connections with the earlier shaft-hole axe tradition, represented here by Type 2. Neither should it be forgotten that axes of Types 3 and 4 occur in far smaller numbers than do examples of the fenestrated and narrow-bladed classes. This seems unlikely to be a chance occurrence, suggesting that more attention should be paid to the contexts in which these different forms occur.

It seems that these axes represent a form that developed out of the the Type 2 axes of the E.B.A and that variants on this form continued in production in north Mesopotamia and Anatolia during the earlier second millennium (see above), while fenestrated and narrow-bladed examples were in favour in the Levant. If this hypothesis is correct, we must then ask why these forms return to favour in the Levant after an interval of several centuries (see 3.5).

Type 5

(3 examples) Type 5 is a convenient unit for a several items which fit no established class but which are related to each other. Nos 383 and 384, from Byblos and Ras Shamra respectively, are assigned by Deshayes (1960, 185) to his Type E2a (see Pl. 23 lower left). Both axes have an elaborate socket which is heavily built up towards the rear, and possesses a projecting rear 'stud'. The third member of Type 5 is No. 382, which is also from Byblos, and is the sole example of Deshayes Type E2c (1960, 187). This axe has an elaborate arrangement of stops in front of the socket and a large crest at the rear. The

illustration is poor, preventing detailed typological comment.

Chronology and Distribution (Map 15)

Nos 383 and 384 come from Byblos and Ras Shamra respectively, while number 382 is also from Byblos. Therefore examples of this type are reported from the two main coastal entrepots of the period. Detailed chronological and contextual data for these items is not available.

Foreign Parallels

An axe similar to Nos 383 and 384 is reported as coming from Cyprus by Gjerstad (1926, 231) but no exact provenance is given. Bearing in mind our comments earlier concerning provenance, we should perhaps be wary of this example; the writer knows of no other parallels for these items. As for No. 382 the writer knows of no Levantine parallels for this object. A general similarity exists with the Anatolian axes that have been classed as for 'Typ Firkatin' by Erkanal (1977, 12). Good dating evidence is rare for these and such dates as do exist, point to the Hittite Empire period (Erkanal 1977, 14), i.e. the L.B.A. in Levantine terms. The situation is rather unsatisfactory. It is perhaps best to suggest that No 382 might be an import from Anatolia, but that the lack of contextual data prevents us from saying much more on the matter.

In summary then the axes of Type 5 present a number of points. None has any real context. All three occur at major trading centres on the Levant coast. These are the very places where one might expect to find either the development of new forms, or the appearance of occasional items of foreign origin. We can add little more until our corpus of well stratified material from Mesopotamia and Anatolia has increased substantially. Had metric data for the axes in this group been available, or a first hand examination of even one example been made, it might have been possible to say something more about their relationships to other types of axe. It seems possible that despite their flaring blades these axes bear a closer relationship to the members of the narrow-bladed series, in particular to Type 4, than to the shaft-hole class, an indication of the internal shape of the socket would go a long way to establishing this. While an impressionistic assessment suggests that this may

be so, it is best to suspend judgement until better data is available.

Type 6

(4 examples) Axe with pointed, square-section blade which is attached centrally, to a short cylindrical socket bearing three broad ribs, one each at the top and bottom and one around its centre (see Pl. 22 left).

Chronology and Distribution (Map 16)

All were found together, at Mari, in Salle 8 of the Palace of Zimri-Lim, where they are described as door hinges (Parrot 1959, 87); not a very convincing interpretation, as Parrot observed (1959, 87 note 1). It is not possible to establish the exact findspot of these objects from the published information. Axes with pointed blades are known elsewhere (see Type 1 above and narrow-bladed axe Type 5). However, if we accept that these are axes rather than hinges, then their association with a doorway, which is implied by Parrot's interpretation, may possibly mean that they are actually from a deliberate deposit placed below the threshold, not clearly differentiated during the excavation of the destruction debris. This would be interesting, but more evidence is required before this can be other than surmise. In chronological terms all we can safely say is that the production of these axes predates the destruction of the Palace of Zimri-Lim, c 1760 B.C., suggesting that they were in produced contemporaneously with the better known fenestrated axes.

Discussion

The shaft-hole axe series is interesting for a number of reasons. It is a very long lived form, in comparison to the fenestrated and narrow-bladed series. Why this should be so is itself an intriguing question. It appears as several different types over a wide spatial and chronological span. Axes of this class were never common in the Levant, where a range of local axes was produced. This fact raises a number of interesting points which need consideration. We must attempt to elucidate why these axes were replaced in the Levant by other forms in the late third millennium, why they reappear again after a long absence, and how they relate in terms of their meaning and

contexts to other classes of axe (see 3.5).

The purpose of this discussion has been firstly to define a set of types derived from a detailed examination of morphological patterning, and to explain at some length the basis on which this has been done. Secondly, these types have been placed in a time-space framework, and their foreign parallels noted in order to provide a clear picture of the basic material. Particular points of interest have been raised in passing, but an attempt to consider the wider implications of this material must await a similar examination of other weapon types.

2.2 Tanged Spearheads

This group of material is divided into 16 types, showing varying degrees of interrelationship. Two other forms, barbed and rivetted spearheads, are also described in this section, as they are more closely related to tanged weapons, than to the later socketted forms. A more extensive discussion of procedure and full details of type definition is provided in App. 1. Not all types can be interpreted as of 'cultural' significance, some are heuristic units. Some are quite distinctive, defined by unambiguous criteria, others can be interpreted as Transform Types, i.e. areas of convergence between different sets of variable trajectories within an artefact- type system. Certain items are idiosyncratic and will not fit any of the major types. The main concern in the latter situation is that such items are detected and isolated from the main body of data. This has two functions. The typology and contexts of these items can be easily checked, permitting investigation of their possible significance, and removal of odd items from the main series of types, in order to prevent confusion.

LARGE TRIPARTITE FORMS

Type 1

(6 examples) Large, broad-bladed weapons having a tripartite structure, and a tapered butt (fig. 9), although the miscast from Kara Hasan discussed by Watkins (1974, 190) suggests that examples with hooked tangs also occurred. All have blades of length/breadth ratio of around 4:1, giving these weapons a distinctive appearance relative to examples of Type 3, which are similar in shape but lighter and slimmer.

Chronology and Distribution (Map 17)

Type 1 spears come from sites in north-western Syria. An example from Tell Judeideh is dated to the phase H in the local 'Amuq sequence, which places in in the first half of the third millennium. Those from Carchemish and Tell Kara Hasan are rather difficult to date. The material from Carchemish was generally associated with a type of pottery known as 'champagne cups' which

has no firmly dated parallels and may be a local product. However, Graves 1 and 2 produced pins of a very distinctive form with a conical fluted head, and ribbed decoration on the upper part of the shank (Woolley and Barnett 1952, 219, Pl. 60b left, 61b centre). These have good parallels from E.B.I contexts in Anatolia, from Arslantepe VIB (Palmieri 1985, fig. 26.2 and 3) and in bone from Norşuntepe (Hauptmann 1982, Taf. 26.6). Behm Blancke (1983, 69) describes similar pins as coming from the early E.B.A. cemetery at Hassek Höyük. Of the four spearheads from Carchemish, two are from Cist Grave 15, which is poorly recorded, the other two are from Cist Grave 1, which is a single burial (Woolley 1952 and Barnett 219) and produced one of these pins, suggesting an early date. The pottery from Kara Hasan has some parallels among that which Orthmann (1981) describes as "mid-third millennium" at Halawa (compare that from Tomb H 123 for example) and among Mesopotamian material assigned to the E.D.II and III periods (Prag 1970, 79ff). This type would appear to date in the first half of the third millennium.

Foreign Parallels

Twelve spearheads from Arslantepe (Palmieri 1981, 109, fig. 4.1-3) are similar. They are tripartite with broad blades, round or polygonal shafts and four-sided tapering tangs. However, the three illustrated examples are longer, varying between c 460mm and 540m, than are the examples from Syria. Further members of this group published more recently (Palmieri 1985, fig. 16, 18) range between 340mm and 495mm in length, in line with the dimensions of the Syrian examples. When the ratio between the length of blade and breadth of blade is calculated it falls between 3.7 and 4.8, with a mean of 4.2 (using the six examples published to date), very close to that found with the Syrian examples. It is clear that these weapons represent examples of the same type, rather than general parallels. The Arslantepe spearheads have proved to be arsenical-coppers (Caneva et al 1985, Tab. 1), with most having arsenic present at 2-3 %. These form part of what seems to be a deliberate deposit of metalwork found in a building belonging to Level VIA, dating to the late fourth millennium. Although this date may seem rather high, two similar weapons have recently been reported from a tomb at Hassek Höyük (Behm-Blancke 1983, 68), assigned to the latest phase of occupation at the site, late E.B.I- E.B.II. These finds would seem to confirm the high dates

suggested above for the material from Carchemish. This is also comparable to the date demanded by the spearhead from Tell el-Judeideh, which is assigned to Phase H of the 'Amuq sequence.

The weapons of this type occurring in Syria could therefore be interpreted as the southern part of a distribution concentrated in north Syria and Anatolia. This is similar to the pattern observed in our consideration of the shaft hole axes of Type 2, where a distinctive north Syrian-Anatolian form was observed. Like the axes, the northern spearheads are early and need not be derived from Mesopotamia, a point clarified by the dating of the Arslantepe material. In fact the Mesopotamian preference was for a rather slimmer weapon, as explained below (see under Type 3)

Type 2

(16 examples) Type 2 spearheads are distinctive, tripartite weapons with a rhomboidal blade with high midrib, stop-ridge between tang and shank and a bent tang often ending in a button (fig. 10). They often bear relief or incised decoration and their design seems intended to exploit fully the potential of two-piece moulds, a trait which can also be seen on contemporary dagger forms (see 3.2.3). The high midrib gives the weapon a cross-section similar to that of a socketted spearhead.

Chronology and Distribution (Map 18)

The extant examples of this type of weapon are concentrated in the northern Levant. A number come from Ras Shamra and Byblos, others from Tarsus, Carchemish, Tell Mumbaqat, Tell Mardikh and Sarraqeb (near Idlib), a clear association with north-west Syria and Cilicia. Few examples are from reliable contexts, with most of the corpus coming from the 'Dépôts' at Byblos or from unstratified contexts at Ras Shamra. That from Mumbaqat comes from a jar deposit, dated by the excavator to a period contemporary with Hama 'H' (Heinrich 1974, 45). One from Tell Mardikh comes from the tombs below Palace Q, dated to the M.B.I period by Matthiae (1980a) while that from nearby Sarraqeb is from a tomb which has produced material covering both the J and H phases at Hama (Suleiman 1983). The general impression one gets from these examples is that they date to the the M.B. I period. This is

confirmed by the associated material from the 'Depots des Offrandes', which is essentially M.B.I in character.

Weapons of this type represent the latest widespread use of the tang as a fixing for spearheads. As these are rather large and resemble socketted spears in appearance (see above) we might interpret these as 'substitute' for the latter. It seems possible that the development of large socketted spears lagged behind that of the smaller forms (for details, see 2.3). Therefore I suspect that these items are a late form of medium-large sized, tanged spearhead, designed to look like a socketted weapon. Their disappearance is no doubt linked to the successful production of large, socketted weapons as the M.B.I period progressed.

Foreign Parallels

No good foreign parallels are known. All the extant examples of this type are very similar in morphological terms. As they were clearly made from two-piece moulds, this suggests that spearheads of this type may represent a clearly conceptualised form, intentionally designed when moulds were formed. A rough parallel is known among the objects of the hoard from Soloi (Bittel 1940, Pl.IV; S3405). However the high degree of similarity amongst the members of this type suggests that vague general parallels should be treated with caution. Another approximate parallel comes from Cyprus (Karageorghis 1960, 245, fig. 3 left), where a stop ridge spearhead formed part of a group of material bought in Nicosia which Stewart believed to represent a closed group from Vasilia (Eriksson pers. comm. 1986). Neither of these parallels are exact, and both are from suspect contexts. However the Syrian material itself is markedly homogeneous.

Type 3

(10 examples) The weapons of this type are tripartite and have tapering tangs and leaf-shaped blades as with Type 1 spearheads. The major difference between these and Type 1 items is that the blades are much slimmer, with length/breadth ratios of between 5.5 and 9 (fig. 11,12). The distinction between these two types improves our understanding of the situation in comparison to the typologies of Stronach (1957) and de Maigret

(1976) where they are treated together.

Chronology and Distribution (Map 19)

These weapons, reported from Til Barsip, Amarna, Mari, Terqa, Hammam and Serrin, show a distinct concentration at sites along the Euphrates Valley. It is noteworthy that they occur as far south as Terqa and Mari providing a link between these and similar weapons from Mesopotamia. The only items with a firm context are those from Til Barsip, from the Hypogeum which should be dated c2500-2250 B.C. Several more come from tomb groups collected by Woolley. These cannot be considered as closed groups although Prag (pers. comm) has noted that the pottery from Amarna and Hammam finds its best parallels with material dated to the E.D.II-III period at Mari, while Buchanan (1966) has observed the early style of the seals from these groups. We should note that the ceramic material which includes ribbed footed goblets, three footed bowls, ring burnished vessels and jars with red painted bands (painted Euphrates Ware), is not close to that from the late third millennium at Tell Hadidi (Dornemann 1979, 118ff) but rather to that from the preceding period and resembles material from Halawa which Orthmann (1981, 55, 57) would assign to the middle of the third millennium. In summary then much of this material might reasonably be dated around the middle of the third millennium.

Foreign Parallels

As is the case with shaft-hole axes, there is no accessible summary of the Mesopotamian material. As a result, I have not attempted to make detailed parallels but rather to assemble a body of material of known context from Mesopotamian sites, which can be compared with that found in Syria. The major concentration of such weapons is at Ur. Unfortunately the metalwork is published in such a way as to make analysis very difficult. The material closest to Type 3 here, is that assigned by Woolley to his Spear Type 2. Most of the examples are published only by a reference to a type number in the tomb catalogue. These give the impression that weapons of this type were in general use in Mesopotamia during the E.D.III period, lending support to our dating of the Syrian material.

The Mesopotamian examples for which measurements are available are around 350-400mm in length with tangs c 90-100mm long. This is in line with the figures produced from the Syrian examples. Woolley (1934, 303) observed that spearheads were absent from graves of the 'Sargonid' period. An examination of his grave record, using the datings of Nissen (1966) and Pollock (1985) suggests that this is by and large correct, although a few examples come from tombs, 711, 715, 1267, 1525, which may be of early Akkadian date. However it is clear that spearheads of this tripartite form were in use as early as the E.D. IIIA period. Two similar weapons have been reported as coming from Tell Chuera (Moortgat 1960, 7, Abb. 8), where they are associated with pottery assigned to the Akkadian period. As these come from a surface level they cannot be considered as securely stratified. These pieces are over 300 mm in length and have ribbed shanks. Again the blades are narrow and the tangs tapered. These were found together with an axe (Moortgat 1960, 7 Abb 7) for which no exact parallels are known but which is closest to those here classed as shaft-hole axe Type 1. Another, this time with a 'waisted' blade is known from Tell Brak (Mallowan 1947, 170, Pl. XXXI.11). Mallowan has dated this piece to the Sargonid period, although it is from "churned soil" in area F.S. (Mallowan 1947, 76) suggesting that this dating is not certain.

Types 1-3 General Discussion

These weapons are part of a sophisticated tradition of metalworking, which had developed in north Syria by the E.B.A. They are clearly the product of bivalve moulds. Watkins (1974, 190) has observed a fragment of a similar weapon from Tell Kara Hasan (now in the Ashmolean Museum, Oxford), originally with a hooked tang that was clearly a miscast. This was the result of the use of the halves of two similar, but slightly different moulds, which did not quite match. This is a clear contrast to the tanged spearheads found in Palestine where a less sophisticated manufacturing process, based on hammering out a roughly shaped billet, was in use. All the known examples are sufficiently distinctive in form to have required different moulds, suggesting that production was on a large scale. In comparison to the Palestinian material these are very sophisticated products and point to an advanced E.B.A. Syrian metal industry.

Study of the such material as has been published from Mesopotamia suggests that the narrow bladed form of tripartite spear was the preferred type there. Thus the situation as seen in the Euphrates valley would seem to resemble that seen with the Type 2 shaft-hole axes, a mix of a local north Syrian-Anatolian type, Type 1, and southern styles represented by the slimmer bladed Type 3 weapons.

SQUARE-SECTIONED FORMS

Type 8

(6 examples) These weapons consist of a square-section blade, and a tapering bent tang which may expand towards the end (fig. 17). These are very similar to examples of Type 5. Type 8 represents a specialised development of a well established square-sectioned weapon (see below), to allow the use of a particular form of fastening, with tang turned at right angles to the blade.

Chronology and Distribution (Map 24)

The distribution of such pieces is so far restricted to Syria. Those from the Hypogeum at Til Barsip should date to the third quarter of the third millennium (see Tubb 1982), and that from Halawa to the later third millennium (Orthmann 1981) as should the example from Tell Selenkahiye (Van Loon 1979).

Foreign Parallels

There are several possible parallels among the material assigned to the Soloi hoard (Bittel 1940, 192, Abb 9 (S3047), Abb 10 (S3046)). One example S3047 ends in a button terminal as and is apparently composed of a low tin-bronze (1.8%). Another S 3046 has a hooked tang and a waisted blade with a clear polygonal shank between the tang and blade proper. This piece is likely to have been cast in a two piece mould. A third example S 3470 is slightly different in detail, having a flatter blade and rounded point (Bittel 1940, 192) and as the illustration is poor is best left out of the discussion. The lengths of these three items are 344mm, 256 mm and 230mm respectively. This is well within the range typical for weapons of Type 8. Another example was bought in Cyprus and is said to be from Vasilia (Karageorghis 1960, 245, fig. 3).

Type 9

(26 examples) These weapons consist of a square-section blade, and a simple tapering tang of the form known as 'poker-butt' (fig. 18, Pl. 32). There

is no hooked terminal.

Chronology and Distribution (Map 25)

These are reported from a number of sites in Syria and from 'Ain es-Samiyeh and Tell ed-Duweir in Palestine. An example from Qatna is probably an indication that the type was common in the as yet unexplored areas of western Syria. These weapons come from tombs covering a large part of the third millennium; quite early at Carchemish (the cist-graves, see above), around the middle of the third millennium at Til Barsip, and from late third millennium contexts at Tell Mumbaqat and Qatna Tomb IV.

Foreign Parallels

These show a mainly Mesopotamian distribution with the largest single group of square-section tapered tang weapons coming from Ur. These are classified as Spear Type 1 by Woolley (1934), who illustrates two examples U7925, length 463mm and U7930, length 348mm. These are large compared to the Syrian specimens but as Woolley did not publish the Ur pieces individually we have no way in which to judge whether these are typical of the rest of the material from Ur. These items have tangs of length 100mm and 90mm respectively. This is more in line with the values typical of spears of Type 1, suggesting that the Mesopotamian square-section weapons were hafted in a manner similar to Type 1 spearheads but rather different to that employed in Levantine Types 5, 8 and 9. It is possible that this relates to the kind of wood used for the shafts or the exact form of the fitting and binding. Unfortunately such details are hard to detect archaeologically.

A review of the contexts given for square-section weapons at Ur using the chronologies of Nissen (1966) and Pollock (1985) suggests that they are concentrated in tombs dating to the E.D.III period which fits well with the evidence from Syria. Despite the absence of such weapons from later contexts at Ur this form continued in use in the Levant until the end of the third millennium.

North Mesopotamian examples come from Assur Tomb 15 length 402mm, dated to the Akkadian - Ur III period (Haller 1954, 9 Taf.. 9d), another from the Temple of Ishtar (Andrae 1935, 1 fig. 1), from Tell Billah V (Speiser 1933, 12 fig.

a) of length 222mm and Tepe Gawra VI (Speiser 1935 Pl. LXXXII.21,). These can add little to the data from the graves at Ur as they are widely scattered and come from old excavations, although they do seem to imply a long phase of use as in Syria. It could reasonably be argued that the apparent absence of such spears from good contexts in Anatolia, in contrast to their presence in Mesopotamia argues for the Type as an essentially Mesopotamian form. This possibility is given some support by the close typological similarities (size, length of tang, a generally slender profile) between these and the Mesopotamian version of the tripartite weapons assigned to Type 3. Therefore we might be seeing a mix at sites in the Euphrates valley, such as Carchemish and Til Barsip, of both northern and southern forms, as suggested in the case of the shaft-hole axes of Type 2. However, the possibility that these represent a Syrian form, also occurring in Mesopotamia cannot be ignored, although the evidence at present points more towards a southern origin.

However, when talking in terms 'origins' it should be borne in mind that Mesopotamian interest in the middle Euphrates goes back at least as far as the Uruk period. Although sites such as Habuba-Kabira seem to be short lived, that does not in itself require a cessation of all contact. Perhaps all we see here is a change in the mechanism, and a decline in Mesopotamian 'colonies' as the main agents of this contact. This being so the earlier third millennium, which is very poorly known in both Mesopotamia and Syria, might in fact represent a period of continuing contact. Against such a background it may be that the notion of the origin of a particular type is inappropriate.

SQUARE-SECTIONED FORMS; THEIR PALESTINIAN DERIVATIVES

Type 5

(32 examples) Type 5 spearheads consist of a very basic square-sectioned blade, which is continued as a tapering tang ending in a simple hook (fig. 14 centre). Several examples have blades which seem slightly broader and flatter than the others. These seem to show a northern distribution occurring at Beth Shan and Barquai. This may be related to the preference for the broader-bladed Type 4 in northern Palestine (see below), but this is not certain. The basic form of these weapons is not so different from that of

domestic tools such as simple copper chisels or or any objects which can be made from a basic square-sectioned length of metal. These could be made by a simple hammering.

Chronology and Distribution (Map 21)

These weapons occur at sites throughout Palestine in contexts dating to the E.B.-M.B. period. A few examples occur in Syria. Most of the latter are Carchemish or Byblos and are from unreliable contexts. One is from Carchemish Cist Grave 14, which also produced spearheads of Type 1, suggesting a date in the earlier third millennium. Another example is known from Dépôt Xi at Byblos but the presence of one object among such a large quantity of metalwork is not terribly informative. This supports the argument connecting these types with the more typically Syrian weapons of Types 8 and 9. As the technique is a simple one, there should be no surprise concerning its occasional appearance beyond Palestine. A few members of this group have shanks which can be distinguished from the blade and tang. These show a clear concentration at sites in southern Palestine, and in the central hills area. For foreign parallels see discussion under Type 9.

There is a clear relationship between Type 9 weapons and Types 5 and 8. In essence these represent the simplest cast form of square-sectioned spearheads in use. The Palestinian version, Type 5 is presumably derived indirectly from this type via Type 8, which combines this form of blade with a bent tang. The latter might still be more suitable for forming in a bivalve mould than for hammering, the preferred Palestinian technique. It is interesting that we can detect distinct regional preferences for tapering and hooked tangs in Syria and Palestine respectively. This seems to represent an example of the adoption of an idea in a slightly different form in different areas, and may reflect differences in the technological capabilities of the local metal industries. However, the sharing of a common form suggests a degree of interregional contact.

Type 4

(13 examples) These weapons are bipartite with a long, leaf-shaped blade with a clear medial line, and a short tang ending in a hook turned at ninety

degrees to the plane of the blade (fig. 13 left, Pl. 28, 29). These weapons are likely to have been produced by hammering a rough blank. The tangs in particular often look as if they have been hammered out and twisted after the casting of the main blade section. With this process in mind, it seems reasonable to interpret these weapons as a broader version of the familiar square-sectioned spearheads defined as Type 5.

Chronology and Distribution (Map 20)

The distribution of these weapons is concentrated in northern Palestine, with an extension down the coastal plain as far south as Ma'abarot, near modern Hadera. The type is so far known only from graves dating to the E.B.-M.B. period, as with other types of hooked-tang weapons found in the area. It can therefore be considered as a distinct regional variant within the hooked-tang weapon series of the Palestinian E.B.-M.B. period.

Type 13

(13 examples) These weapons are tripartite but have a square-section blade like Type 5,8 and 9 spears. They also possess a distinct shank (fig. 14 right, left). This assigns them to a transitional place, in morphological terms, between Types 5 and 6 (see below). The reason for assigning these items to a separate type is that it is considered that both the hammering out of a circular shank, and the formation of a square, rather than a short, broad blade represent deliberate choices on the part of the smiths. That this particular combination of choices occurs frequently in combination is taken to represent 'patterned variation'.

Chronology and Distribution (Map 29)

These items occur in Palestine, in contexts dating to the E.B.-M.B. period, as their similarity to Types 5 and 6 suggests. Their spatial distribution resembles that of Type 6 weapons, in that one detects a marked concentration in the hill country and in southern Palestine. Like Type 6 these have not yet been published from sites in northern Palestine or the coastal plain north of Jaffa. It is tempting to place Types 5, 13 and 6 in a typological-chronological sequence, but this might be an over-simplification. We do not have the

stratigraphic data to support such a suggestion.

It should not be overlooked that Types 13 and 6 are restricted to the areas covered by Dever's (1980) ceramic families J, CH and S, a regional phenomenon. There may also be a chronological element in that weapons of Type 5 are found all over Palestine, while Types 4, 6 and 13, which on typological grounds can be viewed as developments from Type 5, are spatially restricted. This suggests that the bipartite, square-section form is the earliest and the others represent local developments. A similar picture can be seen in the case of the contemporary daggers (see 2.4). If the weapons of Type 5 (the Palestinian variant closest to the Syrian Types 8 and 9) are contemporary with the occurrence of Types 8 and 9 in Syria, a date for its appearance, right at the beginning of the E.B.-M.B. period, 2400B.C. say, (possibly even earlier but then we have few weapons from E.B.III burials) would be quite acceptable, and would allow ample time for the development within Palestine of distinct regional variants. Types 6 and 13 occur frequently with pottery of Dever's 'Family S', which he suggests (1980, 48) belongs to the latest phase of the period, thus supporting this reconstruction.

Type 6

(17 examples) Spearheads of Type 6 are tripartite in design with a a short blade, a circular shank and a roughly hammered tang ending in a hook (Fig. 15, 16 left). Although tripartite in design, they bear considerable resemblance to both Types 4 and 5 and are similar in overall size, and especially to spears of Type 13 which are essentially Type 6 weapons with square-sectioned rather than broad blades.

Chronology and Distribution (Map 22)

These weapons are all from tombs of the E.B.-M.B. period in Palestine and show a distinct concentration in central and southern Palestine. The most northerly examples occur at 'Ain es-Samiyeh in the hill country and Jericho in the Jordan Valley. Many occur in association with band-incised vessels of Dever's 'Family S', which represents a late phase of the period (Dever 1980, 48). As regards manufacturing, their connections are clearly with the roughly cast and hammered weapons rather than with the more elaborate bivalve

mould products represented by Types 1 and 3. The details of fabrication detectable on first-hand inspection reveal their close connection with the weapons of Types 4 and 5. One might assume that these represent a development from those square-sectioned examples which show a distinct shank (Type 13). Type 6 weapons have not been found in Syria nor in northern Palestine, representing a south Palestinian development.

OTHER SQUARE-SECTIONED ITEMS

Type 10

(3 examples) These weapons consist of a square-section blade, ending abruptly in a blunt butt. Their absolute dimensions are close too those of spearheads of Type 9 and they would seem to represent 'tangless' versions of Type 9. The lack of a tang would present problems in hafting these objects suggesting that they may not be weapons, despite their occasional appearance in tomb groups. It should also be observed that two of the three have broad 'chisel' type points, rather than sharp points. This would seem to support an identification of these objects as tools, which found their way into graves for some reason or other. A better explanation is that these are unfinished castings. Their shape suggests that they are blanks for Type 9 spearheads which have not been hammered out into their final form, accounting for the blunt butts and the 'chisel' points. It should be observed that two daggers were excavated from Carchemish which do not seem to have any rivet holes in the tangs (see dagger Type 29), suggesting that they too may have been put into graves in an unfinished condition.

Chronology and Distribution (Map 26)

These items are from grave groups from Tell Kara Hasan and Carchemish. The material from Kara Hasan was bought by the archaeologists from villagers who were engaged in tomb looting so little more can be said about it. The others come from Cist Graves at Carchemish which have produced numerous examples of Type 9 weapons. Both sets of graves have produced many genuine Type 9 spearheads.

Type 11

(4 examples) These items are bipartite, consisting of a square-section blade of greater length than is normal with similar Types (e.g. 5,8,9). Two have closed hooks, one seems to have some kind of tapering tang, but the illustration is poor. The great size of these objects casts doubt on their belonging to the same series as do most other square-section types; they may not be weapons at all. Although a number of Mesopotamian square-section weapons reach this size, these Byblos pieces are the only Levantine examples to do so. This seems rather unusual given that a substantial number of such weapons have been published from sites in the region. Analysis of context and distribution might cast some light on this problem.

Chronology and Distribution (Map 27)

All examples are from Byblos. Dunand (1939,220, 279) has described them as 'broches', spits or skewers, which may be correct. Certainly square-sectioned items of different sizes were in use for various purposes, domestic as well as military. The present writer has examined a number of objects, showing a clear square section, from late third millennium levels exposed during recent excavations at Tell Brak. These are clearly domestic tools such as chisels or punches but were made by the same process as were weapons of the same basic form, and hence look quite similar, especially in poor photographs.

All the Type 11 items are from ill-defined contexts at Byblos. However, they are certainly not from graves. This is unusual, as nearly all such material from other sites does come from tombs, and supports the view that these were implements of some kind, and have been wrongly identified as weapons (e.g. by de Maigret 1976, 73). As pointed out under Type 10, this is a very simple form, and could be the basis of a number of different objects.

OTHER TYPES

Type 7

(6 examples) These weapons are bipartite, consisting of tang ending in a tightly closed hook and a long tapering blade with a distinctive high, sharp, midrib, giving a cross-shaped section (fig. 16 centre, right).

Chronology and Distribution (Map 23)

These weapons have so far only been reported from Ras Shamra, and may be a locally manufactured form, or a product of coastal Syria generally. They look as if they were made in two-piece moulds, a practice well established in Syria by the middle of the third millennium. Dating evidence is poor, as all seem to come from unstratified contexts. On a purely typological basis, they might be dated to the later third millennium.

Foreign Parallels

An example from the Soloi hoard (Bittel 1940, Taf.. IV, No. 3412) might be considered as a parallel. This weapon has a broad blade but the tang which appears of square section is only slightly bent, suggesting accidental twisting rather than a genuine hooked terminal. Therefore, this example should be treated with caution. However a large number of weapons with broad blades, many with genuine hooked terminals are have been excavated from an E.B.III cemetery at Ikiztepe, in northern Anatolia. These provide better parallels, and suggest that our Types 7 and 4 with their broad blades may represent part of a much wider distribution throughout the Levant and Anatolia during the third millennium, of a series of broad-bladed spearheads with hooked tang terminals. This might argue for the existence of a shared tradition of metalworking in the northern Levant and Anatolia during the third millennium, (as also suggested by other common types) which developed independently of the Mesopotamian industry. Further comment however must await full publication of this material.

Type 12

(2 examples) This type comprises two tripartite items (74 and 84) which bear a resemblance to Type 6, but which are far longer (Pl. 35 lower). The two

are different in many respects, and have been grouped mainly on account of their length. Their closest parallels are with weapons of Type 6, in particular the possession of the combination of broad blade, shank and a hooked fastening which does not occur on any other type of spearhead. However in terms of sheer size, these relate to the much larger weapons here classed as Type 1, a Syrian form. It is possible that these two pieces represent attempts to copy the longer spearheads common in Syria, but executed in a distinctly Palestinian style. Again, the important point is that these pieces are distinguished from the main groups so that they can be seen and interpreted in their own terms.

Chronology and Distribution (Map 28)

These were reported from Yavne, south of Tell Aviv, and Motza near Jerusalem. The first is unpublished, the second is from an E.B.–M.B. tomb. Thus they fit both chronologically and in terms of distribution into the pattern seen for the weapons of Type 6.

Type 14

(5 examples) This type is represented by the four objects from the Kfar Monash hoard and a single weapon from Megiddo (fig. 59, Pl. 35). As outlined above, nearly all of the Palestinian material belonging to Types 4, 5, 6 or 13 falls within a fairly restricted size range and is relatively light in weight. The objects from Kfar Monash are different. Two of them are far larger than any other spears from Palestine, and all are much heavier. This suggests that they were not made to serve the same function as the other hooked tang weapons. The four weapons themselves, although morphologically very similar, are of different absolute size. This has important implications as this difference is too great for them all to have served the same functional role equally well. These are likely to have been made by hammering a roughly shaped blank. Evidence for this technique exists in the from of a blank and two finished pieces from Pinarbasi Gölü in Turkey which have been discussed by Watkins (1974, 188ff).

Therefore one must really ask what these objects were for, what is the nature of the deposit unearthed at Kfar Monash? Contrary to the suggestion

made by Richard (1978, 237), these weapons do not necessarily provide a local Palestinian prototype for the hooked tang pieces of the later E.B.-M.B. period. The latter are part of a series whose origin can be traced to north Syrian types of the E.B.A. The Kfar Monash objects do not fit into this pattern. They are too different morphologically, with far more solid hooks, and heavily incurved blade edges, as well as being much bigger. That from Megiddo is idiosyncratic, but is big and heavy like those from Kfar Monash. Although rather different from the others in terms of detail, it is both large, and seemingly non- functional, as suggested by the elaborate scrolled shoulders of the blade, the traces of a possible silver coating still detectable on parts of the surface and the fact that the blade is so heavy as to have been extremely difficult to mount effectively using the tang provided. Although the typological homogeneity of this group can be questioned, it seems to be of value in as a heuristic device. The grouping together of these pieces, separately from the types to which they have been assumed to relate, is instructive.

Chronology and Distribution (Map 30)

All five of these items come from Palestine. The Kfar Monash hoard has been variously dated between E.B.I and E.B.III (Hestrin and Tadmor 1963, Ben-Tor 1971, Watkins 1975). However, the beads from this deposit (Hestrin and Tadmor 1963, fig. 15) have good parallels in E.B.I tombs at Givat'ayim (Sussman and Ben Arieh 1966, 4*, Pl.VIII.5) and Azor (Ben-Tor 1975, 23-4, Pl.24.1), suggesting that an E.B.I or II date is probably correct (see also discussion of the accompanying Type 25 daggers; 2.4). The weapon from Megiddo is from a rather difficult context, NW=4034 assigned to Stratum XVIII by the excavators, but as this stratum is composed of scrappy remains with no real relation to each other (Esse 1982, 179) it should probably to be located within the temenos wall of the Stratum XIX temple as Epstein (1973, 23) suggests. The pottery from this area is of late Chalcolithic - E.B.I types (Esse 1982, 191-195). It is therefore likely that all these large spearheads should be dated quite early in the E.B.A. The contexts of these items are of particular interest as both fall into what are here termed 'deliberate deposits'. These are discussed elsewhere (see Philip (b) in press) but the combined typological and contextual evidence suggests that we may be looking at objects deposited under special circumstances, and not necessarily representative of everyday

weapons. Therefore the separation of these items from the main body of hooked-tang weapons during cluster analysis is instructive.

Foreign Parallels

Good parallels are few. Stronach (1957) lists several pieces which resemble these in very general terms. An example from "the Troad" (1957, 106 fig 4.3) shares a general morphology with the Kfar Monash objects, but its provenance is suspect. Two objects from Pinarbasi Gölü in south-west. Turkey (Omerod 1912, 80ff) are also similar. These have been discussed more recently by Watkins (1974, 188) who dates them to E.B II or III on typological grounds. Both are smaller (length c280mm and 239mm, Omerod 1912, 94), than the members of our Type 14. These parallels are not very close, provide no independent dating evidence, and are from sites a long way from Palestine.

Type 15

(7 examples) These weapons are bipartite, having no shank, and bear a pair of parallel slots on the blade (fig. 13 right, 19 left).

Chronology and Distribution (Map 31)

Examples are reported from several Syrian sites and from Megiddo. They are therefore concentrated in northern areas, although the example from Megiddo is interesting and is presumably a trade-object reflecting the importance and wide connections of Megiddo with cities to the north. They occur in contexts spanning many centuries, from the mid-third millennium (Til Barsip Hypogeum) to the M.B.I period (Megiddo Stratum XIII, Tarsus M.B.I), reflecting their wide chronological horizon in Anatolia (see below).

Foreign Parallels

Such weapons are generally considered to be of Anatolian origin and to represent imports when they occur in the Levant. Although a limited number of these objects are published from Anatolian contexts (see de Maigret 1976, 36ff), recent additions to the corpus (Özgüc 1980, Pl.XIV) and the large number listed in the Inventory Cards in the Archaeological Museum of Istanbul reinforce this view. Accepting this we should be sceptical of the value of

general statements made on the basis of the small sample in the present corpus. The slotted spearheads found in the Levant represent a fairly heterogeneous assemblage. If considered in terms of any of the typologies suggested for the Anatolian material (Stronach 1957, 107, de Maigret 1976, 36ff) they fall into a number of different types, or subtypes. As was the case with the shaft-hole axes, a detailed consideration of their typology cannot be properly carried out on the basis of the Levantine corpus alone. A much greater proportion of the material from Anatolia would need to be examined before this could be done. As a result, all slotted spearheads are together as one type.

The Anatolian parallels would seem to be long-lived. Examples of slotted spearheads occur in mid-third millennium contexts at Alaca Höyük (Arik 1937, 96 Pl. CCLXXIV) Other examples are known from contexts which date to the first quarter of the second millennium. These occur at Kültepe in a level on the city mound judged contemporary with Colony Period Ib (Özgüc 1956, 33ff Fig. 2.3) and at Boğazköy (Boehmer 1972, 75 Taf. 12 No. 199) where it is dated to the later colony period. This broad bracket is in good agreement with that provided by the Levantine examples.

Type 16

Group of 'variants' collected together for convenience (see App. 1 for details). It is likely that a number of these pieces represent a small sample of a complex range of Syrian or Syrian-influenced material that will only be understood when a larger corpus is available. The metal industry of Syria in the third millennium was capable of producing a wide range of sophisticated products, using two-piece moulds and was in contact with metal industries in both Mesopotamia and Anatolia. Therefore a variety of material is likely to have been produced. This range is bound to be difficult to classify and interpret unless we have a large body of material to work with. In Palestine, where the range of potential variation was more restricted, we now have a substantial corpus. As a result, types can be identified which show different chronological and spatial distributions. In Syria, where the corpus is smaller, the area larger and the pattern of excavation less even, the situation is less clear. It is hoped that the types defined here can be taken as the first step in

clarifying the situation.

Type 17 Barbed Spearheads

(4 examples) This type comprises a group of four rather enigmatic items which have a large heavy, pointed blade with two projecting barbs at the rear (fig. 19). They are hafted by means of a solid tang ending in either a hole for a peg or rivet or a tightly closed hook (which could itself be penetrated by a peg of some sort).

Chronology and Distribution (Map 32)

Three examples come from Tell el-Hesi where they form part of a deposit of metalwork generally dated to the E.B.III period (Kenyon 1955, Tubb 1982) on the basis of the presence of a crescentic axe of our Type 1. The fourth is from Tell el-Judeideh in the 'Amuq, and dates to phase 'H', probably early within that period, i.e. in the first half of the third millennium. These weapons are all very heavy and would have required substantial shafts to support them were they intended for any sort of vigorous use. Although barbed the size and weight of these items makes it unlikely that they were used as harpoons (nor are there many sources of large fish near Tell el-Hesi). It seems that these weapons are yet another element in the little known metal industry of the Levantine E.B.A., confirming that a rich repertoire of objects was in production by that date, little of which has entered the archaeological record.

Their contexts are of little help in identifying their function as all seem to have been deposited deliberately, which might suggest that their real role lay not in any utilitarian function but rather in the social or ritual sphere, or perhaps in that they were made of 'valuable' copper (see Philip (b) in press). To judge from most other tanged spearhead types discussed above, there was no need for spearheads to be as heavy as these examples in order to be effective. Support for a 'non-functional' interpretation comes from the deposition of over-large spearheads at Kfar Monash and Megiddo (see Type 14 above). Unfortunately little more can be said until our knowledge of the metalwork of the E.B.A. has improved substantially.

RIVETTED SPEARHEADS

This group consist of solid, heavy weapons with a straight rectangular tang secured to the shaft by rivets (fig. 26). It is likely that they represent a form of heavy spear rather than a dagger or sword, which has been the usual interpretation (Amiran 1961, 92; Dever 1971, 36). Examples published from a tomb at 'Enan in northern Palestine were positioned so as to permit room for long shafts, while four were found together in a bundle (Eisenberg 1985). Such an arrangement would seem more logical for spears than for daggers, which are generally found in such a position as to suggest that they were worn by the deceased on interment. It also should be observed that whilst those examples recovered from tombs at 'Enan (Eisenberg 1985, fig. 8, 9) and Ma'ayan Barukh (Amiran 1961, Pl. XII; 8.1, 8.5) still have rivets attached, those from the Byblos deposits were all found without rivets, implying that the handles were removed prior to deposition of the weapons. This was not generally the case with the daggers from the 'Dépôts', providing further support for the interpretation of these objects as spears.

Many of the objects from Byblos showed markedly concave blade edges and, a higher frequency of sharp as opposed to rounded points, than those from Palestinian contexts, suggesting that they had undergone fairly regular re- sharpening. This argues against the possibility that the weapons from the Byblos deposits were never used (i.e. hafted) in the first place. There may have been practical reasons for removing the handles prior to deposition, such as their unwieldiness or a need to re-use the wooden shafts. It should not be overlooked that although elaborate handles seem to have formed an important part of the overall appearance of dagger forms, the shafts of spearheads may have been simpler and therefore not deemed a necessary constituent of such deposits.

The examples from Palestine need not necessarily be direct imports from Byblos. It may be that those occurring in northern Palestine are either locally made, or come from an unidentified source in southern Syria or the Be'qa. This raises an important point concerning the way in which the data available tends to influence our thinking; namely that the sheer quantity of material from Byblos has made that site dominate discussions not only of the metalwork of the period but other aspect of the debate, to the extent that

some scholars would see it as the 'source' of the M.B.I culture of Palestine (e.g. Kenyon 1966). Although the evidence cited above is slight it should act as a reminder that many settlements are closer to Palestine than is Byblos itself, the role of which should not be overstressed in our explanations.

Chronology and Distribution (Map 33)

Many examples are published by Dunand (1954) as coming from the deposits in the 'Champs des Offrandes,' while his catalogue entries frequently refer to additional examples which are not illustrated but cited as "the same". We must therefore assume that these weapons were produced in large numbers. They were not a phenomenon restricted to Byblos alone. They appear in Palestine in E.B.–M.B. contexts at Ma'ayan Barukh and 'Enan. Other Palestinian examples exist, but only the site rather than the context is known. The bulk of this material comes from sites in northern Palestine, and from contexts which one might place relatively late in the period (e.g. 'Enan itself see Eisenberg 1985). Where there are associations it is with the more developed forms of dagger such as Types 1 and 3 rather than with the simpler daggers of Type 2 (see 2.4), confirming a date late in the E.B.–M.B. period. Support comes from the occurrence of these items in the 'Dépôts des Offrandes' at Byblos, which are generally agreed to date to the M.B.I period.

These objects were manufactured in some quantity, and were in use over an area covering northern Palestine and south Syria/Lebanon. However, their chronological duration would seem to have been quite short, and no obvious successors can be detected in the archaeological record. The most reasonable interpretation of this would be that these weapons represented a heavy spear form which was replaced by more sophisticated socketted weapons as the M.B.I period progressed. This would seem to support the argument (see also 2.3) that the development of heavy socketted spears lagged behind that of lighter weapons, already suggested on the evidence of the survival of the hooked-tang into the M.B.I period on the medium-sized spearheads of Type 2. Presumably the development of short sockets (as opposed to the very long sockets employed on the earliest forms of heavy socketted spears, such as Types 2 and 5), capable of anchoring a large, broad blade removed the need for such heavy, tanged and rivetted forms.

Tanged Spearheads; general discussion

Nearly all Palestinian weapons employ a distinctive twisted hook fastening, generally quite broad, say 11–14mm across its widest point, much greater than the breadth across the ends of weapons with tapered butts which is nearer 5–6mm. This suggests that the hook passed through the side of the shaft and was bent back along the outside. This would therefore act to counter the tendency for the blade to slip forwards, out of the hole in which it was located, likely to have been a problem with the tapered form of butt, which lacks such an anchor point. It would also help prevent lateral twisting of the blade in the socket and to some extent act as a stop to limit damage to the shaft caused by the head being forced into the wood of the handle on impact. A number of examples show traces of a thread binding around the metal at the tang–blade junction. This suggests that such material was wrapped around in order to make the fit of the tang into the shaft tighter and more secure.

The tip of the tang was presumably bent at right angles to the blade when first inserted and was poked through a hole bored in the side of the handle, which would then be twisted into a position anchoring it firmly against the outside of the handle. This would seems likely to account for the variety of different directions in which these hooks point when excavated. A series of bands of leather or other material would be bound around the outside of the blade–tang joint, and possibly coated with a natural varnish material such as mastic or some other gum. The style of the original binding can be guessed because of the survival of one or two examples with the remains of twisted copper coils in position (see Dever 1972, fig. 5.3, Bahat 1975, fig. 5.1). An organic binding would have sufficed in most cases.

To judge from the general appearance of the Palestinian weapons, the standard method of production was to cast a billet in a rough shape, and then finish the process by hammering. This would account for the rather irregular form of the blades of a number of pieces. A final finishing process would have left the objects with a generally smooth blade surface. The tangs however, seem to have been left in an 'as–hammered' condition, without a careful finishing. This was doubtless because they were unseen, within the

handle. Fortunately this enables us the see that they were clearly formed by hammering out the upper end of the original billet, into a thin tapering strip which could be easily bent into a hooked form. This is the standard method used on a number of Palestinian Types, 4, 5, 6, and 13, which otherwise appear rather different, and seems to represent a working 'tradition' in hafting techniques, cutting-across other typological divisions which show a regional basis.

This method of hafting agrees with the general notion of an industry based on billet-style fabrication, using hammer-working rather than the more elaborate castings used in Syria. The contemporary narrow dagger series would seem to reflect a similar manufacturing process (see 2.4). This presumably relates to the way in which the Palestinian metalworking industry was organised, and stands in contrast to the more diverse and complex products of contemporary Syria. There are at present no Palestinian equivalents of Syrian Types 1 and 3. These are sophisticated products, and alongside shaft-hole axes of Type 2 indicate the existence of a thriving and technically competent metallurgical industry there by the early third millennium at least. The presence of well made spearheads and crescentic axes in Palestine during the E.B.A. indicates a fair level of skill there too, although the rarity of grave material means that our sample is too small to enable us to compare it directly with that of E.B.A. Syria. By the E.B.-M.B. period, when we have a large sample from Palestine, there are quite marked differences between the products of the two areas, reflecting their different socio-economic structures at this time.

The Syrian equivalents of Type 5 with its distinctive square-section are Types 8 and 9. These are hafted according to a different tradition. Type 8 shares a hafting method with the elaborate weapons of Type 2, a right angle turn or button arrangement which was probably cast, not hammered into shape, a different working tradition from that of Palestine. Type 9 follows the simple practice of a tapered butt, as found on other Syrian weapons such as Types 1 and 3. The tapered butt, as suggested above would seem to provide an less effective fastening than would the hooked forms discussed above. The reason that the latter is less frequent in Syria, may be the earlier replacement of tanged spearheads by socketted varieties, there than in Palestine.

All the Syrian pieces are well made, with sharp straight edges. The well finished neat appearance suggests that these required less post-casting work than did the Palestinian examples, which presumably reflects the existence of a more sophisticated metal industry in Syria. It seems likely that the tangs were cast too, as they lack the hammering visible on many Palestinian pieces. Weapons of Types 5, 8, and 9 are 'equivalents', fulfilling similar roles. The typological differences simply result from the adoption of different solutions to the hafting problem. The latter might be governed in part by available technology, but might also reflect the different materials available for hafting in different regions and a degree of 'cultural' tradition, the transmission of local 'ways of doing things'.

We should note the lack of an equivalent to Types 4, 6 and 13 in Syria. These must be interpreted as Palestinian developments; a number of typologically different, regionalised weapon forms. All employ the same established local hafting method and all seem to have been manufactured by hammering out a roughly cast billet. These types are sufficiently similar to represent variations of a single 'tradition'. These types are therefore Transform Types in Clarke's (1978, 228) sense. The overall series is defined by a pattern detectable over a number of variables such as overall length, length of Tang, a shared conceptual simplicity and light weight. Why therefore are equivalents for Types 4, 6 and 13 missing in Syria ? An explanation of this problem requires a study of the way in which these three types relate to each other. The base must be taken as Type 5, this being the only Palestinian form with a very close Syrian equivalent (Types 8 and Type 9 in particular). Type 4, can be considered as a regional variant of Type 5, the key typological difference is that the blade is broader. This apart it is very close to weapons of Type 5. One might guess that the regional concentration of this type in northern and coastal Palestine reflects contacts with the Syrian littoral. Although Type 7 is restricted to Ras Shamra at present, it is likely to represent a more widespread coastal form. The Palestinian Type 4 would therefore represent an attempt to produce something similar (i.e. a broad-bladed spearhead with hooked- tang) but within the bounds of the available, local technology.

Weapons of Type 6 can be linked to those of Type 5 by means of Type 13.

The key elements here are the combination of a distinctive shank between the tang and the blade proper as in Type 6 items, with the square-sectioned blade of Type 5. Type 13 weapons show a marked southern distribution, as do examples of Type 6. The main difference is the greater hammering out of the blades on Type 6 spears, resulting in a broader shape. However, although the overall mean lengths of these two types are very similar, there is a marked difference in shank length, reflecting the fact that the blades of Type 6 weapons are generally shorter than those of spearheads of Type 13 or Type 5 (64mm compared to 119 and 148 respectively). We see then that the blades of Type 6 spears were meant to be short.

The writer would emphasise the following points. The square-sectioned weapons of Type 5 are simply local, Palestinian versions of the Syrian Types 8 and 9; the differences reflecting local metalworking practices. Types 4, 6 and 13 should be seen as essentially Palestinian developments, utilising the technology employed in the production of Type 5 weapons. Type 4 may represent an attempt to produce a broad blade weapon similar to the Syrian examples of Type 7. Type 6 on the other hand, represents the end of a sequence of development which can be traced from Type 5, through the transitional form Type 13. The latter may not truly represent an 'emic' type. Its value is essentially that it reveals the underlying connection between the various, apparently diverse Palestinian forms, which is rather obscured by more visible morphological differences. To that end its retention is justified on heuristic grounds. Type 6 does not seem to have an equivalent in the Syrian tanged spearhead repertoire. The reason would seem to be that its real parallels are with the small socketted spearheads which are likely to have been in production in Syria prior to the end of the E.B.-M.B. period in Palestine (see 2.3). It is interesting to note therefore, that tanged weapons of Types 6 and 13 are absent in northern Palestine too, suggesting that socketted spearheads may have been adopted there rather earlier than in the south.

Square-section weapons are lacking in the 'Dépôts des Offrandes' at Byblos. This seems to confirm their replacement by socketted forms (common in the 'Dépôts') by the beginning of the M.B.A. in Syria. As there is a good deal of overlap in terms of types between these deposits and the material found in tombs of the Palestinian E.B.-M.B. period, (e.g. rivetted spearheads)

we might assume that some of the Byblos material in these 'Dépôts' was contemporaneous with the later stages of the E.B.–M.B. period in Palestine. Therefore socketted spearheads were in use in Syria at a period when the tanged variety were still favoured in Palestine, at least on southern sites. As a result the spearheads of Type 6 can be interpreted as a south Palestinian equivalent of the small socketted javelin heads which begin to appear in Syria (and possibly north Palestine) at this time. That socketted spearheads appear more slowly in southern Palestine reflects the fact that they are made in a different way from the tanged variety. It seems likely that this rather different technology was not adopted in Palestine until the re-emergence of an urban society in the M.B.I period. What appears in its place during the E.B.–M.B., period is Type 6, a short bladed weapon of the correct size, but utilizing a local method of manufacture.

2.3 Socketted spearheads

The title socketted spearhead is self explanatory. Although these made a relatively late appearance, (around the end of the third millennium) compared to socketted axes or daggers, they soon became a key item of military equipment. The first point to note is that all spears in this study have sockets showing a clear longitudinal join, implying that the the socket was not a one piece casting as in later weapons. There is little evidence available concerning the manufacture of these items, but a mould from Tell ed-Dab'a (Bietak 1985a, fig. 10; No. 3110) provides some clue as to how they were formed. The blade and lower part of the socket were cast as one piece around a blank resulting in a hollow casting. The upper end of the socket was cast as a flat sheet, then rolled into position around the handle. First hand examination of the material suggests that this was indeed the method by which these spearheads were produced, although the proportion of the socket which was cast, as opposed to folded into shape varies between individual items. The handle was sometimes fixed by a nail or peg driven through the socket wall. In addition, in many cases the end of the socket was secured by a twine binding or a metal collar, which in addition to holding the shaft in position, also served to bind tightly the joint between the socket edges. In its crudest form (Type 10), the entire weapon was formed from a flat sheet, and the shoulders folded- up around the shaft.

Previous works on these weapons have already been discussed (see 1.1) and it is clear from these that socketted spearheads as a group are rather difficult to subdivide consistently. (Details of the method employed here, and type-defining criteria are provided in App. 1.) It must be borne in mind that with the exception of Type 10, which has a distinctive method of forming the socket (see below), types were defined on the basis of metric variables alone. However many show remarkably coherent patterning in terms of categorical variables too, supporting the notion that a classification based on absolute dimensions is a realistic way to deal with such weapons, and reinforcing the point made earlier concerning the need to fit method to the particular material (see 1.3). Mean values for key metric variables are presented by type in fig. 81.

MEDIUM-LARGE SPEARHEADS

Type 1

(3 examples) Large spearheads with broad blades but lacking very long sockets (fig. 20) The general impression is that these are heavy weapons meant for hand to hand combat. Although similar to weapons of Type 3, those of Type 1 are markedly larger.

Chronology and Distribution (Map 34)

Examples are reported from Tell Mardikh and Tell ed-Dab'a, dating to the M.B.II period. In the light of Egyptian finds at Mardikh, dated to the 18th Century (Matthiae 1980a), and the clear connections between Tell ed-Dab'a and the sites of the Levant (see Bietak 1981) this is not surprising. Little more can be said until more such weapons are recovered.

Foreign Parallels

No exact parallels for these large spearheads are known. This should not be over-stressed however as our knowledge of the weapons of the later M.B.A. in adjacent regions is limited.

Type 2

(21 examples) Spearheads with long narrow blades, and very long sockets (fig. 21) Many are decorated, bearing lightly incised lines running the length of the blade. These occur singly or in pairs at each side of the midrib and echoes the decoration seen on certain contemporary daggers, Type 12 in particular, an interesting detail. The decoration implies that the blades of these weapons were made in two piece moulds, although the sockets may have been cast as flat sheet, hammered out and subsequently rolled into shape (see also Type 5).

Chronology and Distribution (Map 35)

So far such spearheads have only been reported from Byblos, from deposits in both the 'Champs des Offrandes' and the 'Temple Syrien,' suggesting

a date in the M.B.I period. Their presence there and apparent rarity at other sites might suggest that their production was short lived. However, one could argue that the long sockets are vulnerable to corrosion and might not survive in less well protected contexts. The tall ovoid jars used for many of the deposits at Byblos seem particularly well suited in this respect. Obviously, the chances of survival of such sockets in regularly reused tombs would be considerably less.

These weapons represent an early stage in the development of socketted haftings and the long socket may represent a mechanical necessity rather than a deliberate choice. It may have been hard to make a short socket that was sufficiently strong to mount a long, heavy blade securely. This argument is given some support by the continuation, into the M.B.I period, of tanged and rivetted fixings for larger weapons (see 2.2). The fact that large bladed spearheads with short sockets are not common until the end of the M.B.I period, as Types 3 and 4, gives credence to this explanation.

Foreign Parallels

See under Type 5

Type 5

(4 examples) The distinguishing factor of members of this type is that the socket is longer than the blade. They are shorter than those assigned to Type 2, although similarly proportioned (fig. 22 right, Pl. 38 right). Type 5 weapons show a greater range of morphological variation than the former group. It seems that the weapons of Type 2 represent a particularly homogeneous component of a more widely distributed form. The latter are all from the site of Byblos and are likely to represent localised production. Therefore the relationship between Types 2 and 5 is that the former represents a well known, local version of a more widely distributed, less well documented, general form. Ordering the material in this way allows for the bias shown by our sample towards one or two sites. It will thus be possible to comprehend these sites in their wider perspective, thereby avoiding the temptation to see them (i.e. Byblos and Ras Shamra) as prime movers in technical development. On this line of argument the members of Type 5 represent a collection of

similar material from a number of different sites, hence their greater heterogeneity than the members of Type 2 which are all from Byblos. Hence the pattern of excavation can be taken into account, when typologies are being constructed.

Chronology and Distribution (Map 38)

These are reported from Syria and northern Palestine. Examples are known from 'Le poche aux bronzes' a context dated to the M.B.I period by associated material and from Tell Mardikh from Hypogeum B, of the later M.B.I (Matthiae 1980a). Two more are reported from Hama Tomb GVI (Fugmann 1958, Pl. X) which are contemporary with early period 'H' on the tell. All date therefore to the M.B.I period which emphasises their connection with the spearheads of Type 2. Two also come from Megiddo Tomb 84C, where they are associated with a fenestrated axe of Type 2 (see App. 3). As these spearheads are of M.B.I style this suggests that the whole group from that tomb should be considered as of M.B.I rather than E.B.-M.B. date, as is generally supposed (see for example (Kenyon 1955, 17).

Foreign Parallels

A broadly similar weapon is known from Chagar Bazar (Mallowan 1937, 99 Fig. 13.10), from Grave 154, dated by Mallowan (1937, 122) to the earlier second millennium. This suggests that local variations of such weapons, were in use over a wide area during the M.B.I period. There are references from Mari (Durand 1983a, No. 270, 275, 276) to the production of batches of spears in which each individual item weighs one and a half or two minas (c650-1000g). These are therefore very heavy spears (the heavy rivetted spears found at 'Enan had a mean weight of only 200g, see Eisenberg 1985), and may well be long weapons of this or a similar form.

Type 3

(17 examples) Spears with large blades and rather shorter sockets. The blades have incurved or straight-sloping shoulders and are straight-sided, tapering to a rounded point and have a V-shaped midrib. Many have a metal collar around the end of the socket (fig. 22 left, Pl. 36 right, centre). Overall

they show a striking degree of standardisation, suggesting that they represent production to a particular design.

Chronology and Distribution (Map 36)

These come from Ras Shamra only, from tombs dated to the M.B.II period by associated material. These spears show many morphological parallels with Type 1 spears from Tell Mardikh also dating to the M.B.II period (see above). Type 1 and 3 weapons, although sharing many typological features, seem to conform to two different size patterns. Perhaps this represents the production at two different places of an essentially similar weapon form. We seem to see, as with Types 2 and 5 a widely accepted general pattern produced with local differences at the various urban centres. This may provide us with a clue as to the way in which the production of weaponry was organised within Syria during the M.B.A.

Foreign Parallels

Little comparative material is available for weapons of this type.

Type 4

(6 examples) The spearheads assigned to Type 4 are medium-sized, with blades slightly shorter but similar in breadth to those of Type 3 weapons. In terms of morphology, the blades are generally straight sided, although concave-edged examples occur, with a mix of sharp and round points, and a variety of shoulder shapes. The members of this group are more heterogeneous than those of Type 3 (Pl. 38 left, 46 centre). This may be of significance. It seems likely that Type 3 really represents a locally produced, and thus fairly standardised version of Type 4, a medium-sized spearhead showing a wide distribution throughout Syria.

Chronology and Distribution (Map 37)

Examples of this type have not so far been reported from Palestine, but are known from Tell Mardikh, Tell et-Tin and the 'Dépôts des Offrandes' at Byblos dating to the MB I period. That from Mardikh is from a context which is assigned a date late in the period (Matthiae 1980a). In view of the degree of

similarity between this type and Type 3, it seems likely that the fact that the members are all from M.B.I contexts reflects the nature of our sample rather than a real chronological difference. The fact is that we have few M.B.II tomb groups from Syria, other than those from Ras Shamra, and it seems likely that the type was widespread throughout Syria at that time. This suggests that Type 3 weapons represent a localised, Ras Shamra, variant of a general form, produced over a wide area to satisfy a perceived need for a medium sized spearhead.

Foreign Parallels

The lack of comparative material for this type is probably a function of the limited archaeological evidence from later M.B.A. contexts in Mesopotamia and Anatolia. However, the lack of parallels from Palestine where extensive excavations have been carried out is likely to be more significant.

Summary of Medium-Large Spearheads

Most larger spearheads found in M.B.I contexts seem to have had long sockets. It seems likely that it was only late in the M.B.I period that a short socket, sufficiently strong to support a large bladed weapon became generally available. These weapons are probably all thrusting spears, as suggested by size, weight and socket diameter. Perhaps we see here the standard weapons of heavily armed infantry rather than the personal arms of individual warriors. However this matter will be given fuller consideration elsewhere (see 3.1.2). We seem to detect certain basic, widely accepted patterns or designs which were followed over a large area, albeit subject to a degree of variation both within and between different manufacturing centres. The implication of the finds from Byblos and Ras Shamra is that a large part of each centre's spearheads were produced locally, implying that spears were not extensively traded or exchanged. This would also seem to be the case with regard to the earlier tanged spearheads which show clear regionalism in the distribution of types. The situation regarding axes and daggers may be rather different (see 2.1 and 2.4). The final point to note is that not one of these larger spears has yet been reported from Palestine despite the amount of fieldwork carried out there. This seems likely to be significant and will be considered later.

INTERMEDIATE-SIZED SPEARHEADS

Type 6

(10 examples) In terms of absolute size they seem to stand between the small spearheads described below and the larger Types 1-5. There is a clear break in length of blade between Type 6 weapons and those of Types 1-5, suggesting that their functional links lie with the smaller spears. The blades have concave or straight-sloping shoulders, and can occur with either straight-tapering or curved sides (fig. 23 top left, from Baghouz now in Louvre A.O. 18202, actual tomb group cannot be established, Pl. 46 left). It should be observed that the five items from Baghouz conform very closely to a fixed pattern, sharp, V-shaped midrib, straight-sided tapering blade and straight-sloping shoulders. This supports an interpretation of these items as locally produced weapons showing a high degree of standardisation but forming part of a general pattern.

Although different from the Palestinian pieces in terms of detailed morphology, Type 6 spearheads seem to belong to the same general class, small weapons, on metric grounds. This is reinforced by the similar contexts in which they appear, namely as secondary weapons in single burials equipped with fenestrated axes, or as sole weapon in other cases. The frequent pairing with an axe would suggest that they were conceived of as javelins rather than as hand-to-hand weapons. Clearly a thrusting spear requiring two hands for effective use, would not be practical if the warrior was also wielding a battle-axe, while one or more javelins would be quite useful, and would be thrown from a distance prior to close combat, as described in the battle between Sinuhe and the warrior champion of Retenu (Pritchard 1955, 20).

Chronology and Distribution (Map 39)

Examples are reported from the cemetery at Baghouz, Depot Beta at Byblos, and from Ras Shamra (poor context). Others come from Tell et-Tin and a possible example from the temple at Nahariyah in northern Palestine. Those from Baghouz show a high degree of homogeneity, those from the other sites less so. This is only to be expected given a situation of localised production. All of those for which associations are reported would be

assigned to to the M.B.I. period, although it is possible that some of the tombs at Baghouz date to the earlier M.B.II period (see 2.1). The type in general is widely distributed throughout the Levant, occurring frequently in burials suggesting that javelins were considered appropriate as grave goods over a wide area at this time. As will be explained later, this situation does not continue long into the M.B.II period. (There are additional examples from Baghouz which cannot be included in the corpus as typological data is not available from the publication.)

Foreign Parallels

The material from neighbouring regions is hard to assess. It is of uneven distribution, coming frequently from old or largely unpublished excavations. However one thing is clear. Many of the spearheads from early second millennium contexts are of similar size to weapons of Type 6, lending further support to our view of this type as representing a widely accepted size norm underlying a a superficially varied group of material. Several weapons from Kültepe conform to the general pattern. These are collected by Erkanal (1977, 43, Taf. 14. 6-8 and Taf. 15. 13-14). All have blades of length 100- 120mm in length and breadth 25-31mm, providing general rather than detailed parallels. They come from tombs at the Karum site, ascribed levels III, II or Ib, contemporary with the Syrian M.B.I period. Several North Syrian parallels come from Chagar Bazar. Three examples are reported from Grave 154 (Mallowan 1937, 122 fig. 13.13) of early second millennium date. Another comes from Grave 200 where it is associated with a Shaft Hole axe similar to our Type 4. The date of this tomb is uncertain (see recent discussion by Curtis 1983) and could fall anywhere between the end of M.B.I and the beginning of the L.B.A. The presence of a spear of this type might be seen as supporting a date towards the beginning of this range, as would the associated disc-headed pin. This has implications for the development of shaft-hole axes (see 2.1).

Mesopotamian examples are known from Assur Gr. 20, assigned to the 'Old Assyrian' period (Haller 1954, 10 Taf. 10d), Tell Asmar 'top layer' which should be dated not much earlier than the destruction of the city, one illustrated several more cited, (Frankfort, Lloyd and Jacobsen 1940, 219, 235ff fig. 106J) and two from a pit grave in 'Chantier V' at Telloh (de Genouillac 1936, 92 Pl.

92.2 and 93.1e). The grave is dated to the "Ur III or Larsa" periods by the excavator. Both spears are very similar in size and shape and are probably from a local workshop. Type 6 spears then have a wide range of parallels outside the Levant.

SMALL SPEARHEADS

First-hand study of many such weapons in various collections has made it clear to the writer that they are all part of the same 'series'. These weapons are both markedly smaller and lighter in weight than examples of Types 1-5. It was clear from the results of cluster analysis (fig. 63), that these weapons formed a fairly continuous sequence from small to large but that distinct areas of concentration existed. We might consider these as Transform Types with absolute size, rather than time, providing the underlying dimension. Three such types were defined (see details of procedure in App. 1).

Type 7

(14 examples)

This type is composed of the smallest items (fig. 24 top right, left and lower left). Members are clearly distinguished from those of other types by their scores on all four metric variables and these weapons are light and slender, probably representing the heads of thrown weapons. They are unlikely to be arrowheads as it seems futile to go to the trouble of making socketted fastenings for an essentially disposable weapon, and the values for diameter of socket would require a shaft of larger diameter than that desirable for such weapons, a maximum of around 8mm (R. Miller pers. comm. 1987; see also 2.5).

Chronology and Distribution (Map 40)

Examples are reported from a number of Palestinian sites, from Tell ed-Dab'a in the Nile Delta and a single example from Hama in Syria. Most therefore come from sites in the southern Levant. Tell ed-Dab'a with its strongly Levantine aspect is an extension of this pattern, although the example from Hama suggests that this may be a result of the pattern of excavation and that such weapons may also have been in use in Syria. Regarding chronology, some of these come from M.B.I contexts, others from M.B.II or mixed M.B.I and II contexts.

Foreign Parallels No convincing parallels for these weapons are known to

the writer. However, given their small size and fragility it is possible that they may have been overlooked in both older excavations and publication. As the best preserved examples are all from grave contexts, the apparent distribution may simply be a function of the limited funerary evidence from second millennium sites in Mesopotamia and Anatolia. The present writer prefers however to view these as an essentially Levantine phenomenon for reasons which will be considered elsewhere (see 3.2.2).

Type 8

(21 examples) Types 8 and 9 also represent areas of concentration within a continuum. The separation is made on the basis of length of blade and breadth of blade both of which still showed clearly bimodal distributions after removal of those weapons belonging to Type 7 (see App. 1). The members of Type 8 are larger than other forms of small spearhead and have wide blades with very thin edges, a low V- shaped midrib, and deliberately angled points (fig. 23 top right, 25 right, Pl. 39 lower). A number show traces of a fibrous binding around the outer end of the socket.

Chronology and Distribution (Map 41)

These weapons show a strong concentration in north-central Palestine, although they also occur at sites in coastal Lebanon. They are particularly common at Megiddo, which may suggest local production. Most come from large, repeatedly used tombs and are therefore hard to date securely. However two are from a single grave from Tel Rehov near Beth Shan, dated early in the M.B.I period (Yogev 1985, 110) and were found in association with a fenestrated axe of Type 1 and a grooved dagger of Type 12, placing the appearance of such weapons near the beginning of the period. Another comes from Ras el-'Ain (No 314) and is well dated to the M.B.I period, while that from Ruweise Tomb 33 is from a single grave dated by Gerstenblith (1983, 42) to the end of M.B.I or the beginning of M.B.II. Although the type may have continued into the beginning of M.B.II, it did not last long into this period; note the complete absence of these weapons from the M.B.II tombs at sites such as Jericho, and Tell Fara (S) and Ras Shamra. The material from less well defined contexts such as that from Megiddo Tomb 1100D (Guy 1938, 89, Pl.149: 4-7)

and Ginosar (Epstein 1974) does not contradict these dates.

Foreign Parallels

Close parallels are few. Two spearheads from a level II/Ib cist grave at Kültepe Kanesh (Özgüc 1954, Abb. 29), more clearly illustrated by Erkanal (1977, Taf. 15.9–10), appear similar to Type 8 weapons. The blades measure 88mm by 30mm and 91mm by 29mm, well within the range for this type (see App. 1). It is difficult to say what these represent on present evidence. It is possible that this type is not localised at all, and that the apparent 'gap' between southern and Anatolian examples is due to the limited excavation of M.B.I deposits in Syria. The lack of good parallels for Type 8 weapons, among the large body of small spearheads found in M.B.I contexts at Ras Shamra and Byblos weighs against this view however. Furthermore, the wide occurrence and varied morphology of Type 6 spears, makes the production of highly standardised Type 8 weapons over such a wide area rather unlikely. That both occur in the same tomb, and at a site which has produced evidence for the manufacture of fenestrated axes might suggest a Levantine connection, whether through trade, exchange or even a trading settlement is not clear at present. The presence of an Anatolian style slotted spearhead of our Tanged Spearhead Type 15 at Megiddo, in a M.B.I context (see 2.2) could be seen as supporting evidence for a connection between these two regions.

Type 9

(19 examples) The weapons of Type 9 show very similar sockets to those of Type 8 but the blades are generally shorter and slimmer but show greater heterogeneity across the categorical variables than do those of Type 8, suggesting that Type 8 represents a particular variant, well represented in the known archaeological record, of a widely distributed general form, Type 9 (fig. 24 lower right, Pl. 39 top. 43–45). The latter would therefore comprise a collection of different variants, which cannot be clearly distinguished at present.

Chronology and Distribution (Map 42)

Examples of this type are widespread, in contrast to the apparent

concentration of Type 8. They occur at Tell ed-Dab'a in Egypt, Byblos and Ruweise in the Lebanon and at a number of Palestinian sites. One example is reported from a tomb in the Golan, hinting at a distribution extending to inland Syria. It must therefore be stressed that Type 9 is seen as a collection of several variants, which will be identified as our knowledge of the archaeology of different regions develops. It is unfortunate that the material from Byblos is not adequately documented, as it seems, looking at the illustrations of small spearheads from the 'Dépôts' that we can detect several different forms at that site alone.

Unfortunately Dunand has preferred to illustrate only a few pieces and to refer to many more as 'the same', without giving full details. The writer's experience with those objects illustrated which are described as 'the same', suggests that Dunand gives a rather subjective assessment of similarity. The other difficulty is the tendency to quote only a range of dimensions for a group of objects, preventing a reliable assessment of the distribution of size within that group. This limits what we can do with the very rich material from the site. Certain internal similarities among the examples from Tell ed-Dab'a (in particular the 'corkscrew' ribbing on the sockets), would seem to hint at a distinctive local style at that site too, although we cannot be certain on the basis of the limited sample currently available. Other such styles will doubtless be recognized as the corpus grows.

Another point relative to the differentiation of local forms is that local stylistic preferences should be expected to apply across the size boundaries suggested here, resulting in two cross-cutting dimensions of variation, one based on size, the other stylistic, relating to local manufacturing traditions and incorporating particular design elements. This would seem to be the case with the material from the M.B.I use of the Shaft Tombs at Megiddo and much of the material from the 'Dépôts des Offrandes' at Byblos, where individual morphological forms occur in a range of sizes. Were this material more fully available we might be able to say much more on this matter, unfortunately no other single site has produced a sufficiently large body of contemporary material to enable development of this line of enquiry.

Foreign Parallels

Only one parallel has been identified in the literature. This comes from Ur, Tomb 1850 in the Royal Cemetery, dated to the Ur III Period by Nissen (1966, 191) and represents the sole socketted weapon from the site (Woolley 1934, 304 , Type 7, Pl. 227, U.17914). It is small and slender (blade 75mm by 22mm) but little more can be established from the illustration. The appearance of such an item in Mesopotamia in a late third millennium context, does not constitute secure evidence for the earlier appearance of such weapons in southern Iraq than in Syria.

Type 10

(10 examples) The weapons assigned to Type 10 are differentiated from all the other types by virtue of the way in which the socket is formed. These feature a socket which is fashioned by rolling up the shoulders of the blade (fig. 23 lower, 25 left). The process involves the smith beginning with a flat metal sheet, and working up the two edges of one end, thus forming the socket, while leaving the other end to form the blade. The result is that the blade is positioned asymetrically, with respect to the socket. Such sockets require a different manufacturing process from other forms, which seem likely to have been partly mould made, and finished by rolling.

The technique itself occurs sporadically during the Late Bronze Age. Examples are published from Tell Fara (S), Tombs 914 and 960 which date to this period (Petrie 1930, 23 and 26 Pl XLVIII.1 and LV.293), and even occasionally in later contexts e.g. from Tell Beit Mirsim silo 3, (Albright 1941-43, 33 Pl. 62.10). It is unlikely, on chronological grounds alone, that these are part of the same 'tradition' as the earlier objects. This should stand as a warning of the dangers of equating technology directly with chronology, when attempting to construct sequences of typological development. Those from Tell Fara in particular are much larger than is the rule for examples of our Type 10. The rolled-up socket was a perfectly viable way of fixing a shaft to a head, and continued in use over a long period as a means of hafting various tools, especially iron objects requiring forged sockets, as casting was not possible until much later (Tylecote 1987, 325ff). On occasion this technique was applied to spearheads, although its floruit as a common method in the Levantine arms industry, seems to have been relatively short (M.B.I

period), and it was soon replaced by mould-made weapons, employing a different method of forming a socket. It should be observed that in the cluster analysis based on metric variables only, these objects were grouped with Type 9, suggesting that the spearheads of this group represent a similar weapon, produced to a different pattern. This method of forming the socket was apparently most suitable for making small spearheads as the sockets may not have been strong enough to mount a heavy point securely.

Chronology and Distribution (Map 43)

Examples of this type are known from the 'Dépôts des Offrandes' at Byblos, in particular from Dépôt Beta, from Tomb G. X at Hama dating to period 'H'. This would suggest a date in M.B.I, perhaps nearer the beginning than the end of the period. A spearhead from Tomb 1101 B Lower at Megiddo (No. 1428) , which is dated early in the the E.B.-M.B. period (Prag 1974, 93) is also of this type (Guy 1938, Pl.86.3), suggesting that such weapons appeared in the late third millennium, and should perhaps be considered the earliest form of socketted spearhead, as we might infer on technical grounds. It is interesting that the initial application of this technique seems to have been in the production of small, lightweight javelins which presumably reflect a requirement for such a weapon. No examples are known from Palestinian M.B.I tombs, where other types of small spearhead are common. If we are correct in our belief that Palestinian M.B.I began rather later than that of Syria, it may well be that these weapons had already been superseded by types with better sockets (Types 6-9) by the beginning of the M.B.I period in the southern Levant. More importantly this type appears at exactly the same time as square-sectioned forms of tanged spearhead disappear from the record. The obvious conclusion then, is that these lightweight socketted weapons were a direct replacement for the former.

An additional example with a rolled socket has been published by Dever (1975, 24, fig. 1.3) as coming from 'Ain es-Samiyeh. However, the details of the socket, as shown in the illustration suggest that it is rather different from the assymetric-bladed pieces discussed here. Further, it comes from a collection of material of various dates from looted tombs and cannot therefore be used to date other objects.

Foreign Parallels

A number of contemporary parallels are known from Anatolia. Several have been reported from tombs of Level II at Kültepe Kanesh Cist Grave 2 (Özgüc 1950, 220 Abb 369) and Cist Grave 3 (Özgüc 1950, 200 Abb 373). An earlier example comes from a tomb belonging to Level IV (Özgüc 1959, 110 Pl. L.4). Another is known from Chagar Bazar Grave 91 dated to the early second millennium (Mallowan 1937, 118, fig. 13.15). The chronological evidence therefore suggests that spearheads of Type 10 appear before the end of the third millennium, and continue in production for the earlier part of the the M.B.I period, reinforcing our suggestion (see above) that the north and west does not lag behind developments in Mesopotamia.

Type 12

(11 examples) This type consists of weapons which are clearly 'small' spearheads but for which the data is insufficiently good to permit their being assigned to one of the more tightly defined types (Pl. 46 right). Their main value is in providing additional data for analyses of distribution and context.

Chronology and Distribution (Map 45)

The examples assigned to this type are mostly from old excavations, and have been published in such a way that the exact sizes cannot be established, although their morphology suggests that they represent small spearheads of one form or another. Examples come from M.B.I contexts at Ras Shamra, Baghouz, and Tell et-Tin, among other sites. Those from Tomb 1 at Qatna, emphasise that the Baghouz material is by no means unusual and that such weapons were probably a regular feature of the burial repertoire of central Syria in the M.B.I period. These examples serve to amplify points regarding distribution made during discussion of Types 7-9. One example (No 350) comes from Megiddo Tomb 4052, which is a single burial and would seem to date to E.B.III. However, the problems with the stratigraphy of the site are well known to archaeologists (see Kenyon 1958, 1969) and as the object is poorly preserved, and precedes all other examples by several centuries, it seems best to follow Richard (1978, 236-7) and view its attribution to this period as suspect. However, were more examples to occur in early contexts, we would

be forced to reconsider our ideas regarding both the initial appearance and the developmental sequence of these weapons.

OTHER TYPES

Type 13

(11 examples) This type consists of a group of weapons which can be easily seen to be related, but which cannot be defined on the basis of well preserved pieces, as no examples exist for which the data is sufficiently reliable. Such data as can be established does however indicate that these objects are far more similar to each other than to any of the classes described above (see App. 1). In terms of absolute dimensions, these rank as 'medium-sized' spearheads.

Chronology and Distribution (Map 46)

Examples are known from Byblos, Ruweise, Ras Shamra and Tell et-Tin, i.e. a Syrian distribution. As the type is fairly loosely defined, it would be unwise to attempt to draw detailed conclusions from its distribution. However, its Syrian basis is emphasised by the lack of examples from Palestinian contexts and is in line with the distribution of the better defined types of medium-large weapons.

Type 11

A group of variants fitting none of the established types (see App. 1 for details and Map 44 for distribution).

Discussion

The discussion of large spearheads has indicated that such were still made with tanged or rivetted mountings early in M.B.I, being replaced by socketted versions as the period proceeded. The larger types show a distinct concentration in Syria, rather than Palestine. Small spearheads are widespread throughout the Levant, occurring frequently in Palestinian contexts. These can be identified in the hands of 'Asiatics' in Egyptian reliefs dating to the Twelfth Dynasty i.e. 20th-19th C (Newberry 1893, Pl. XVI, XXXI; Gardiner et al 1955, 206, fig. 17), where the short blades are quite distinctive. However these

disappear from the archaeological record early in the M.B.II period. In Syria they seem to be superseded by larger socketted spearheads such as Types 1 and 3, which may represent heavy infantry weapons, manufactured for use by bodies of troops, rather than personal weapons of individual members of an elite, which may be the case with many of the javelins found in grave contexts.

If this is so, it is interesting that no direct replacement for the javelin can be identified in Palestine during the M.B.II period. It should be observed that these tend to occur in graves where they are associated with other weapons such as socketted axes and elaborate daggers, suggesting that they represent part of a kit associated with warrior status, essentially that described in the Tale of Sinuhe (Pritchard 1955, 20), which is set in a M.B.I context. Therefore, their disappearance from the archaeological record may be related to changes in the way in which status was expressed at burial rather than to changes in warfare as Tubb (1985a, 193) suggests. This matter will be considered in detail elsewhere (see 3.2.2). Whatever the case, the divergence between the Syrian and the Palestinian repertoires during the M.B.II period, after their close similarity during M.B.I is interesting.

In the course of studying this material, the writer has been able to examine a number of ethnographic collections, including a large number of spearheads of various forms. Of particular relevance to this study is the fact that the diameter of the socket, would seem to be a good guide to the diameter of the shaft, not just at the socket but throughout its entire length, and hence to its strength and weight. This being so, we can perhaps gain some insight into the original appearance, and therefore intended function of some of these weapons. In particular we may be able to distinguish between lightweight throwing spears, and more substantially hafted, hand held, thrusting weapons. I would tentatively class most of those with socket diameters of less than 14mm as javelins, and most of those with sockets of diameter above 18mm as thrusting spears. This latter value is in line with the diameters of the stop-ridges on the larger tanged spearhead types, suggesting that the socketted forms represent direct replacements for these.

The development of socketted spearheads raises a number of questions. Although axes with sockets were in production by the Chalcolithic period (Bar-

Adon 1980, Nos. 148, 149, 163), socketted spearheads do not seem to have been developed until the late third millennium. There are several possible reasons for this. The most obvious is that the sockets of spearheads are much thinner and therefore technically more difficult to cast than those of axes. Certainly the initial form, the folded-up socket seen in Type 10 spears, is made from sheet metal, and is therefore quite different conceptually from the cast-in sockets of axes. The fact that we are dealing with two very different techniques, sheet-working and casting in bivalve moulds may be important. It is likely that the realisation that spear sockets could be cast (or partly cast) came later and involved their adaptation to a different technology. In addition a wide range of tanged spearheads was already available, and had presumably served reasonably well for many centuries, while we might infer from their design that the sockets of Type 10 spears, an early form, were rather inefficient. Their adoption therefore must have come about because the socketted hafting had some particular advantage to offer.

An obvious reason is that socketted weapons are lighter than their tanged equivalents, (the square-sectioned, tanged spearheads of Types 8 and 9 in Syria and 5, and 13 in Palestine) and thus more economical in metal as well as being easier to carry. We should bear in mind that the first weapons made with sockets seem to have been javelins, which are in essence 'thrown away' although many were doubtless retrieved, suggesting that the saving of valuable metal may have been of no little concern. It also seems likely that once fully developed, the socket proved a more effective way of fixing the head than did the tapered or hooked tang. The latter must always have presented problems regarding the security of the weapon head and the splintering of the shaft on impact or under pressure. As these socketted weapons with their relatively broad blades appear at the end of the third millennium as a replacement for the square-section types, might we not interpret the development of tanged spears of Type 6 (with a broad, short head and a long shank) in southern Palestine during the E.B.-M.B. period, as an attempt to produce a similar weapon using the basic local hammer- based technology ? These weapons occur in contexts which are generally believed to be late in the period (see 2.2), and are therefore likely to be contemporary with the appearance of socketted weapons in Syria, and perhaps northern Palestine too. This would provide a credible explanation for this morphological

development within what was an essentially conservative Palestinian industry.

It is also notable that the earlier forms of heavy-bladed spear (Types 2 and 5) have very long sockets. At the same time, we can see that both rivets and tangs (tanged spearhead Type 2, which had a pronounced midrib giving it a cross-section resembling that of a socketted weapon) continued in favour as a means of fastening heavier weapon-heads during the M.B.I period. In combination, these suggest that there were problems in developing a socket sufficiently strong to hold a long, heavy blade, without the socket itself being of great length. However, a solution was found towards the end of the M.B.I period, with the appearance of medium-large bladed weapons with sockets of a reasonable size (Types 1, 3 and 4). It is probably no coincidence that it is at this time that tanged, rivetted and long-socketted spearheads disappear from the archaeological record.

2.4 Daggers

The distinction between a dagger and a knife is generally expressed as one of function rather than form. Knives are taken as designed for cutting, generally as tools, daggers as thrusting weapons. However, the distinction is far from simple. Many knives can equally well function as stabbing weapons, while many daggers are likely to have been used as multi-purpose implements, equally valuable at table or as side arms. Therefore, a simple morphological division has been chosen. Daggers are taken to be two-edged items, knives those with a single edge. The result of this is to place a wide range of material within the general category 'daggers'. This seems a better procedure than an alternative which would assign items to one group or the other on the basis of what are really value judgements. The internal divisions within the dagger group emerge clearly as the typology of our daggers is described.

2.4.1 Well defined types and their variants

THE NARROW DAGGER SERIES

This term refers to a distinctive series of weapons showing a restricted chronological and geographical range, the E.B.A. and especially the E.B.–M.B. periods in Palestine and south Syria. They represent one of the most distinctive features of the material culture of the E.B.–M.B. period. It is clear from even a cursory examination that the different forms in which these weapons occur represent variations on a common theme and can be considered as genetically related. The main distinguishing feature of the series is the long narrow blade, which generally has a length/breadth ratio lying between 7.0 and 9.0, considerably higher than is the case for most other dagger forms, and the butt which usually comprises two or more pairs of rivets. The combination of these features makes examples of the form easily recognizable. Various attempts have been made to subdivide this form of dagger into separate types, although these have met with only limited success (Kenyon 1956, Stewart 1974, Richard 1978). It is felt that the reason is that typologists have failed to appreciate that the series as a whole represents what Clarke (1978, 228) terms an Independent Type, while the internal groupings conform closely to his notion of Transform Types. Briefly, the latter are areas of convergence between the different trajectories of a number of independently changing variables, confined within a single 'artefact-type system'. Thus the types are multivariate, defined on the basis of a polythetic set of variable values. Hard and fast divisions will not always be possible; the aim should be to define types whose underlying basis can be fairly easily explained, and which seem to show genuine patterning in terms of other aspects of the data. (For a discussion of the concept of Transform Types and its value in this situation see 1.3, and at greater length Philip (a) in press.)

Cluster analysis suggested a division into ten groups (Nos. 1–10 marked in small type on fig. 64). However, after consideration of the basis in which these were defined, it proved possible to combine some of these (see App. 1 for details). This procedure limits fragmentation of the material and produces three major and three smaller groups and a loose collection of 'odd' pieces (Nos. 1–7 in large type on fig. 64), which show clearly the chronological and

spatial trends implied by the original ten. The scheme is similar to that presented earlier (Philip (a), in press), but represents a more refined version, including a quantity of new or unpublished material, and is less reliant on that from the cemeteries at Tell el-'Ajjul and Jericho.

Type 1

(10 examples) Daggers with a long hilt-plate (fig. 27 left). This feature should not disguise their essential similarity to other types within the narrow dagger series. The large number of daggers excavated at Jericho which had 'extra' rivets lying beyond the butt end, suggests that a continuation of the handle beyond the butt was quite common, although this usually consisted of wooden plates alone rather than being composed of metal (see reconstruction in Tubb 1985b, fig 125).

Chronology and Distribution (Map 47)

This type is so far restricted to a single site, 'Enan in northern Palestine (Eisenberg 1985), where several occur alongside a group of rivetted spearheads (see 2.2). Although the internal chronology of the E.B.-M.B. period is not fixed, owing to the lack of published stratified material and the differing regional ceramic assemblages which cannot easily be located relative to one another, this group can be placed to some extent by the presence of rivetted spearheads with parallels at Byblos. In Syrian terms, most of the metal work from Byblos has its best parallels in the earlier part of the M.B.I period. Many scholars would accept a date of c2000 B.C. for the beginning of this period in Syria (Dever 1980, Tubb 1983, Gerstenblith 1983), although Holland (1981, 130-131) has argued that the distinctive comb-incised pottery, characteristic of the period, may appear before the end of the third millennium. The Byblos parallels for the rivetted spearheads would require the placing of the 'Enan tomb somewhere in the latter part of the E.B.- M.B. period..

Type 2

(62 examples) This type is essentially that which was classed as the 'simple' form in the earlier survey (Philip (a), in press). It consists of daggers

which are generally smaller than those belonging to other types, and which show a simple lentoid or flat lozenge-shaped cross-section, and a square or trapezoidal butt with four, or occasionally six rivets (fig. 28). Although a few examples of this type excavated at Jericho produced extra rivets above the butt, this represents but a small part of the total sample from that site. Interestingly while most daggers of this type came from tombs in Area A at Jericho, those examples which had extra rivets came from tombs in areas B, L and M (see Type 3 below)

Only two Type 2 daggers came from contexts where they were securely associated with a tanged spearhead; from Fureidis (Hess 1980) and Jericho Tomb M13 (Kenyon 1965, 151-3). This is a very small proportion of the total number. The example from Megiddo Tomb 1101B was however found with a socketted spearhead of Type 10 (see 2.3). This is the only example of a socketted spearhead from a clear E.B.-M.B. context, and might suggest continued contact with Syria during the E.B.-M.B. period at Megiddo and possibly at other northern sites (see Oren 1973a, Tubb 1983).

Chronology and Distribution (Map 48)

This type alone includes daggers from contexts which can be shown to predate the E.B.-M.B. period. Although many of these are from late E.B.III tombs, such as those from Jericho Tomb 351 (Garstang 1935, 163) and the final phase of use of the Bab edh-dhra Charnel Houses, closed at the beginning of the E.B.-M.B. period (Rast and Schaub 1975, 24), several others come from contexts which could be earlier. That from Azor is from a tomb containing pottery of E.B.I date (Ben Tor 1975, 25), dated to the late fourth millennium in the chronology followed here. Another comes from Cave Tomb 7 at Tell en-Nasbeh (McCown 1947, 264, Pl. 104.1). Although no clear associations are published for this dagger, similar tombs from the site produced good E.B.I material (see McCown 1947, 67ff, Pl.24-27). This would suggest that Type 2 represents not only the simplest but the earliest version of the narrow dagger series, which has implications for the internal chronology of the tomb groups of the E.B.-M.B. period. Additional support is given by the fact that the daggers from contexts deemed early in the E.B.-M.B. period, such as Megiddo Tomb 1101B Lower (Prag 1974, 79) and the tombs of Area A at Jericho (Kenyon 1960, 182) belong overwhelmingly to this type.

Daggers of this type show a wide distribution throughout Palestine, and into Transjordan. As this type is the only one with exact parallels in the local E.B.A., and seems likely to represent an early phase of the period, its wide distribution throughout Palestine would seem to argue for a greater geographical spread of occupation during the initial phase of the period than recent studies (Dever 1980, Richard 1980) have allowed.

Type 3

(29 examples) The key criteria for assigning objects to this particular type is the possession of a pair of incised lines running down the centre of the blade, although this is supported by the pattern of metric variables (fig. 29). It is argued elsewhere (Philip (a), in press) that these lines suggest a connection with a style of decoration found on daggers of the M.B.I period in Syria (some examples of Type 30 in particular). It is foreshadowed by its appearance on several Syrian examples of the narrow dagger series, such as those from Qatna tomb IV. First hand examination of a number of daggers of this type brings two points to light. The lines are generally incised, rather than cast-in (see Pl. 49). Furthermore, in many cases they can be seen to run unevenly, often diverging or converging and being of uneven depth. This seems to suggest that these daggers were made by a relatively simple technique, hammering out a roughly cast billet. There is little evidence here for the use of two-piece moulds of the sort required for casting the decorated daggers found in M.B.I contexts in Syria (see below)

An example from Ma'ayan Barukh (Pl. 50 centre) has traces of flanging along one side of each face of the butt. This would seem to represent a fairly advanced feature. The weapon came from a tomb producing pottery of Dever's 'family N', and two rivetted spearheads (see 2.2), as found at 'Enan where a Type 1 dagger with flanged butt also occurred. Six of the examples from Jericho had extra rivets lying above the butt, a significant fraction of the total corpus of such daggers from that site. If we infer that the presence of such rivets implies a different, probably more elaborate handle, then its greater frequency with daggers of this type as opposed to those of Type 2, is likely to be of some significance in terms of their original appearance. A number of tombs at Jericho produced traces of various studded straps and fittings; many

of these also contained daggers of Type 3.

Although one can consider the material from Jericho in detail, it is difficult to generalise. The detection of extra rivets is dependent on a number of factors including the degree of disturbance and preservation of the tomb itself and the circumstances under which the tomb was excavated and recorded. It might therefore be misleading to compare the frequency of occurrence of extra rivets at, say, Jericho, where excavation and recording were of a high standard, with their apparent absence from daggers recovered during old excavations such Tell el-'Ajjul, or even more recent salvage work, undertaken when tombs were already partly destroyed. The connection between methodology and comparability of data should not be ignored. Some evidence to suggest that elaborate handles were fairly common is provided by the discovery of additional rivets with daggers from a tomb in Amman (Zayadine 1978, 61) and from Tiwal esh-Sharqi on the Wadi Zarqa (Tubb 1985b, 125).

Chronology and Distribution (Map 49)

Examples of this form are frequent in northern and central Palestine and several are published from Tomb IV at Qatna in Syria. Another example, probably also from Syria is on display in the National Museum, Aleppo. Only one such is known from southern Palestine; a poorly preserved piece from Tell el-'Ajjul. All examples of this type are from E.B.-M.B. Palestinian contexts, except those from Qatna Tomb IV which belong to late E.B.A. of Syria, placing the floruit of this type in the last few centuries of the third millennium. It therefore seems reasonable to assume that Type 3 daggers are generally later than those assigned to Type 2 above. At Jericho it can be established that daggers of Type 3 tend to occur in the tombs of Areas L and M, whilst those of Type 2 are more frequent in Areas A and B (see Philip (a), in press). The former areas, unlike A and B, produced tombs of Kenyon's Composite Type, as well as the more numerous Dagger Type. Daggers of Type 3 are far more likely to occur in association with a spearhead of some form than are those of Type 2. These factors combine to suggest that there is an underlying difference between these two types, most apparent in morphological terms. On the basis of the evidence outlined above, it seems most likely to be chronological distinction, although arguments could be put forward to support its being an expression of contemporary social classes or different cultural

groups (The latter view is most strongly argued by Kenyon 1966).

A number of daggers of the Syrian M.B.I period show linear decoration on their blades (see Types 30 and 32). The particular motif employed, a pair of incised lines along the blade centreline, is also known on Mesopotamian daggers. Several examples are known from later E.D.III burials in 'Cemetery A' at Kish (Mackay 1925, 40 Pl. III.5; 1929, 162 Pl. XXXIX.8 left). Others are known from Uruk, (Finkbeiner 1983, 30 Taf. 3c, survey find,) and from the Royal Cemetery at Ur (Woolley 1934, Pl 152 left; Pl. 157b). It is worth observing that all Mesopotamian daggers with this motif are substantial weapons. In fact, Woolley remarks (1934, 308) that most of the daggers with gold blades are of this type (his Type 3). This motif is not known on any of the smaller, less well finished Mesopotamian dagger types (those which might be 'pocket-knives'). It is restricted to fine weapons, suggesting that the very decoration of these daggers contributed to their prestigious quality.

The Mesopotamian daggers date to c2550-2400 B.C., which is not much earlier than the likely appearance of this motif at Qatna Tomb IV. The discovery of a seal bearing a scene including a dagger with incised blade, in a late E.B.A. context at Tell Selenkahiye (Van Loon 1979, fig. 11), suggests that the idea of decorating dagger blades was of wide currency in the later third millennium, and was partly responsible for the development of the elaborately decorated daggers of Types 12-16 in the succeeding Levantine M.B.I period. In summary then, the adoption of this motif, and its adaptation to the preferred Narrow Dagger form must be seen as a local aspect of a widespread phenomenon, the decorated 'prestige' dagger. The implication is that notions of 'acceptable' prestige items were widespread, and that Palestine during the E.B.- M.B. period, despite its distinctive material culture (in fact this all too often means pottery), was by no means isolated from the wider social and political world, at least not at higher social levels (see discussion of tin-bronze in Palestine at this period, (see 3.4). We see the incorporation of this feature into the traditional Palestinian design to suit local manufacturing techniques, rather than wholesale importation of new weapon types, as we probably see with the appearance of fenestrated axes. This suggests, as the archaeological data implies, that these weapons were made mostly for consumption and exchange within Palestine-south Syria, but reflect styles

acceptable in the wider world.

Type 4

(27 examples) These daggers represent the largest of the various types, and were clearly identified in the earlier study (Philip (a), in press). They are long with trapezoidal or concave-sided butts and pronounced midribs (fig. 30, see also detail of hafting Pl. 54).

Chronology and Distribution (Map 50)

Daggers of this form are particularly common at sites in southern Palestine. Although examples occur from sites farther north such as Khirbet Ibrekhtias in the coastal plain and 'En Hanasiv near Beth Shan, these are sufficiently rare as to serve only to highlight the essentially southern distribution of the type. If daggers of Type 4 can be shown to represent a late form, as suggested by their morphology, then we would have evidence for increasing regionalism within the metallurgical industry as the E.B-M.B. period progressed. This has already been suggested on the basis of the appearance of local forms of tanged spearheads, in particular the south Palestinian Type 6.

All Type 4 daggers date to the E.B.-M.B. period. It is difficult however, to assign them to a specific temporal phase within this period. Most of the published examples come from contexts producing pottery of the kind which Dever (1980, 48) would assign to his 'Family S', apparently the latest of the various regional ceramic groups. Although we should accept a greater degree of chronological overlap between the ceramic families than Dever has allowed (see Cohen and Dever 1981, 63ff), it does seem that the settlement material at sites such as Jericho and Megiddo which Dever ascribes to 'Family S' represents a late stage in the overall E.B.-M.B. sequence (Dever 1980, 48, Kenyon 1973, 578). Gerstenblith (1983, 116-119) and Tubb (1983, 57-59) both argue that the re-urbanisation of Palestine in the M.B.I period was not uniform across the country, and that the process took place rather later in the south. On these grounds the daggers of Type 4 can reasonably be placed towards the end of the period, as unlike daggers of Type 2 which occur throughout Palestine, this Type is largely restricted to southern parts (see also tanged spearhead Type 6 with which these daggers are most closely associated).

Two unpublished weapons from Benaya show traces of flanging around the butt, which might also support a late date for this type. The similarity between Type 4 daggers and the 'swords' from the 'Dépôts des Offrandes' at Byblos (Type 9 here) should also be noted. There seems to be no particular reason why the southern Type 4 daggers should be so much longer, and possess such different midribs from other types of narrow dagger. However, it makes more sense if we are to assume that they are in some way influenced by a tradition of very long, high mid-ribbed weapons in production elsewhere (not necessarily at Byblos alone, evidence for early M.B.I metalwork from coastal Syria is limited) and we have already established (see Type 3) that the metal industry of the E.B.-M.B. period was quite capable of absorbing 'acceptable' design elements from other areas, and adapting them to suit local capabilities. As most of the material from the 'Dépôts' has its best parallels in good M.B.I contexts, a connection between the Byblos daggers and the south Palestinian Type 4 is all the more likely if the Palestinian forms are late within the E.B.-M.B. period.

Type 5

(5 examples) Although there are few examples of this type, it was felt that it was of sufficient value in revealing the connection between certain of the larger groups to justify its retention as a separate unit. They generally possess the concave sided butts common on examples of Type 4 but possess neither the high midribs of that type nor the incised lines of Type 3 and lie between Types 3 and 4 in absolute size (Pl. 52).

Chronology and Distribution (Map 51)

The membership of the type is too small to permit detailed discussion of this topic. Examples are known from Dhahr Mirzbaneh and Amman in Palestine and Transjordan respectively. There are also two possible examples from farther north, albeit rather poorly illustrated, from Dépôt Gamma at Byblos and from Yabrud in south Syria, the latter from tombs including material dating to the late third millennium as well as the better known M.B.I material (see Philip (a) in press). The general impression given by these contexts is also of a date late in the sequence, which is in agreement with the

morphological evidence. These should represent a stage on the way to the development of Type 4 daggers (see discussion of Type 7 below)

Type 6

Variant forms (see App. 1 for details and Map 52)

Type 7

(14 examples) The members of this type are generally distinguished by their possession of a trapezoidal or more rarely a shouldered butt with six rivets combined with a simple, flat, lozenge-shaped cross-section (fig. 31). They can, like Type 5, be interpreted as a step on the way to the development of the elaborate daggers of Type 4.

Chronology and Distribution (Map 53)

The single largest group of such daggers come from Tell el-'Ajjul and distribution is confined to central, and in particular southern, Palestine. To judge from size and morphology, these daggers would fit in between the simple daggers of Type 2 and the elaborate Type 4 weapons, implying (on morphological grounds, stratigraphic data being limited) a sequence running from Type 2 through Type 7 to Type 4. In general size terms (i.e laying aside the absence of the incised line decoration) one might infer that this type represents an alternative 'southern' equivalent of Type 3, suggesting that Type 4 does indeed represent the latest form of the narrow dagger, not only in the south, but in Palestine as a whole. We lack a northern equivalent to Type 4 for the simple reason that Narrow Daggers were being replaced by completely new forms in the north by the time that Type 4 came into general currency farther south.

Discussion

Several points emerge from the foregoing discussion. The narrow dagger is a long-lived form, remaining constant for many centuries prior to undergoing relatively rapid typological change in the late third millennium. It

is also clear that the form is not confined solely to Palestine, although the examples from south Syria are, as yet, few in number. We must also ask why these daggers (and the accompanying tanged spearheads) form such a striking feature of the grave repertoire of the E.B.–M.B. period, in contrast to their rarity in the preceding E.B.A. Finally, we see that these weapons are closely connected to the development of regional metal industries within Palestine during the late third millennium, and that they may provide a chronological link between areas whose ceramic repertiores are not directly comparable. All these points will be treated in more detail elsewhere (see Part 3).

OTHER DAGGER TYPES

Type 26

(7 examples) This type consists of a small group of weapons which although occurring in the same contexts as examples of the narrow dagger series, are different in terms of size and morphology. Type 26 daggers are defined as short, broad weapons, with a trapezoidal butt with three rivets laid out in a triangular pattern (fig. 32 top and right). It would be wrong to dismiss these simply as small examples of the narrow dagger series. Comparison of metric data shows that the Type 26 and narrow daggers represent different design concepts (see details in App. 1). The different circumstances under which the two forms occur seems to support this idea. When the context is clear, as at 'Enan (No. 1231) and Menahemiyah (No. 1229), Type 26 daggers occur in E.B.–M.B. graves as 'secondary' weapons, in addition to a narrow dagger. The example from the grave at 'Enan, was found at the opposite side of the waist of corpse H1 from two Type 1 narrow daggers (Eisenberg 1985, fig. 2), suggesting that a clear distinction was made between the two types. These seem to represent 'pocket- knives' as is the case with certain Syrian E.B.A. daggers (see in particular Types 27 and 36).

Chronology and Distribution (Map 54)

All clearly associated examples come from graves dating to the E.B.–M.B. period, from sites in the north of Palestine, such as ʿEnan, Menahemiyah and Barquai. Despite the large amount of E.B.–M.B. metalwork which has been excavated from sites in the central hills and southern regions, no Type 26 daggers have been reported from that area, emphasising their apparent connection with the three- rivetted daggers of Syria (see below). One example comes from Megiddo Tomb 911A (No. 1045), and cannot be clearly associated with any particular phase of tomb use. The tomb produced an amount of E.B.–M.B. pottery; the dagger may well have been associated with this material, although this cannot now be proved. In terms of both size and shape, daggers of this type are close to Syrian Types 27 and 36 (see below).

Type 28

(2 examples) This type consists of a long, slender weapon, perhaps a knife rather than a dagger. The form is quite distinctive, and on this basis it is defined as a separate type (fig. 32 left). The two examples come one from Jericho from a tomb dated to the E.B.–M.B. period and one from Tell ed–Duwier T. 1513 which produced a large quantity of E.B.III material. These weapons are clearly different from the narrow dagger series and from all other weapons in the present corpus. It is worth observing that the example from Jericho comes from a tomb which is in Area P, an area which did not produce examples of Kenyon's Dagger Type tombs, while the tomb itself is of a different form, reinforcing the typological evidence and suggesting that this object represents something 'different' from the narrow daggers. They were probably made by a simple hammering technique, probably to meet some particular local requirement.

TRIANGULAR–BLADED DAGGERS WITH SHARP MIDRIBS

Type 8

(2 examples) This type consists of two daggers with a three–rivet hafting system and a distinctive blade. The rivets are arranged with one in each shoulder and one in a short tang. The blades have straight, tapering sides with a sharp, V–shaped midrib (fig. 33 right).

Chronology and Distribution (Map 56)

Both examples are from Palestine. That from Azor was clearly associated with E.B.I pottery. The other, from Megiddo Tomb 912A, is probably associated with ceramics of the E.B.–M.B. period. These daggers hint at the existence of range of E.B.A. metalwork which existed alongside the better known narrow dagger series, but which is at present poorly known.

Discussion

The fine midribs on these weapons might suggest that they were mould–made. Whether this is the case or not, there is a marked contrast

between the skill employed in making daggers of this type, and that required for the manufacture of narrow daggers. The presence of sharp midribs on other E.B.A. daggers, in particular those of Type 25 (which includes those from Kfar Monash) should not be overlooked. There are apparently additional E.B.A. examples of such daggers with sharp midribs from Tell el-Far'ah (de Vaux and Stève 1948, 555) and Jerusalem (Vincent and Stève 1956, 618) but these remain unpublished. It seems likely that these weapons were designed to receive a handle mounted by a bracket (see discussion under Type 25 below). The fact that the rivets were missing from the dagger found at Azor (Ben Tor 1975, 22) in contrast to the situation with most narrow daggers, suggests that the handle may have been composed of precious materials and hence removed prior to deposition. E.B.A. graves, in contrast to those of later periods, contain remarkably few weapons. In the light of the quality of Late Chalcolithic metalwork (see Bar-Adon 1980), and the urbanised nature of E.B.A. Palestine, it seems reasonable to infer that a sophisticated metallurgical industry did exist in the region at this time, of which these daggers represent a small sample.

Type 25

(5 examples) This type consists of four very similar daggers from the Kfar Monash hoard and a similar piece from Jericho. Those from Kfar Monash are very similar in appearance, having straight, tapering blade with a pronounced, sharp midrib and a distinctive rivet layout consisting of either one or two rivets placed at the very end of the butt (fig. 34 right, Pl. 57). Perhaps these, like the daggers of Type 8, represent a rare glimpse of a form of weapon common in E.B.A. Palestine, but which is under-represented in the archaeological record, relative to M.B.A types, owing to the paucity of metalwork from graves of this period.

Chronology and Distribution (Map 57)

The chronology of the material from Kfar Monash has been the subject of much debate (Hestrin and Tadmor 1963; Ben-Tor 1971; Watkins 1975). As the material is not from a stratified context, and as our knowledge of E.B.A. metalworking is poor, we cannot at present provide a firm answer.

Watkins (1975) in particular has stressed the danger of attempting to draw parallels on the grounds of simple, and potentially long-lived (and under-studied) types. The material is clearly earlier than the E.B.-M.B. period, as the classic dagger and spearhead forms which seem to have comprised so much of the output of the metal industry of that period are absent. Since the discovery of the Type 8 dagger from Azor, discussed above, Ben-Tor has revised his dating for the Kfar Monash hoard, and would now be willing to accept an early date (1975, 27). This is reinforced by the presence of similar carnelian beads within the hoard and in the E.B.I tombs at Azor (see under discussion of dagger Type 2 above).

The item from Jericho, although unpublished, is from Tomb A100, according to the records of the Amman Museum. Consultation of the excavation records in Cambridge revealed this item to be the only find from a poorly preserved shaft tomb which had cut into a Proto-Urban A (E.B.IA) tomb A94. Given that simple shaft tombs occur as early as E.B.IA at Bab edh Dhra' (Rast and Schaub 1984, 36), the relative stratigraphy of the tombs is of little help in dating the dagger, beyond indicating a date no earlier than the late fourth millennium. Note should however be taken of the following comment from the site records: "cannot be E.B.-M.B. as it produced three skulls". As the tomb took the form of a 'Dagger-type tomb', most of which did indeed contain single interments, it might be that the tomb represents an E.B.A. shaft tomb of the kind known from Bab edh-Dhra'. The Jericho dagger emphasises that the objects from Kfar Monash do not stand in isolation. They must be seen as part of a poorly known E.B.A. tradition.

Foreign Parallels

There is a rather similar dagger to the above from Grave 836 at Naqada (Petrie and Quibbel 1896, 48 Pl. LXV.3; here Pl. 20 left). This tomb dates to the late predynastic period i.e. the late fourth millennium, which would seem to support an early date for our daggers, and hence for the Kfar Monash hoard.

Discussion

The rivet layout on these daggers is unusual and would seem of questionable effectiveness, unless the rivet did not fix the weapon directly to the handle, but rather to a bracket or frame into which the handle was inserted. This bracket would have gripped the tapering sides of the butt, and been secured by one or two rivets. The practice of placing rivets at the very edge of the butt can be seen some Type 12 daggers, a form which we know used a bracket fitting (see below). The lack of traces of such a fitting from the daggers from the Kfar Monash could be explained by the removal of the haft prior to deposition. As it would not have decayed in situ, no corrosion pattern would remain on the dagger itself, as is frequently the case when daggers are interred with handles in place. Another example would be the Type 8 dagger from Azor, whose rivets had been removed prior to deposition (see above). If the bracket was attached to a decorative handle, which was removed for use elsewhere, the daggers may be considered as 'prestige' items. In that case, the appearance of carnelian beads and silver fragments (Hestrin and Tadmor 1963, 285) in what has been taken as a 'scrap' hoard might be more comprehensible. The hoard would then be seen as a deliberate deposit of some kind (see 3.2.1).

Type 9

(4 examples) This type consists of a group of distinctive very long daggers (fig. 35), called 'swords' by Sandars (1961, 20). In size, shape of butt and the presence of a high midrib, they resemble weapons of Type 4. The connection may not be fortuitous and it is possible that the shape of Type 4 narrow Daggers was influenced by these Syrian weapons.

Chronology and Distribution (Map 58)

So far Levantine examples of this type have been reported only from Byblos, from the 'Dépôts des Offrandes' suggesting a date in the M.B.I period. As they occur in the 'Champs des Offrandes,' the 'Temple of the Obelisks' and in 'Batiment II' they cannot be dismissed as an aberrant form, produced for one particular deposit. Although there are no parallels from the Levant itself, there

is a possible example from Kültepe (Erkanal 1977, 36 Taf 12.8, otherwise unpublished). This dagger is 415mm long and 50mm in max. breadth and has a long tapering butt with four rivets, arranged as a pair at the foot of the tang and two in-line in the tang itself. The associations of this dagger remain unpublished although Erkanal describes it as from Kanesh Level II. If this dagger is 'the same' in conception as those from Byblos, we must regard these long daggers as having had wider currency than we might guess from the known archaeological record, and expect that additional examples will appear as work proceeds in the northern Levant.

Sandars (1961, 19) has observed the similarity between these weapons and certain weapons found at in E.B.-M.B. contexts at Tell el-'Ajjul. It seems quite likely, given the evidence for the incorporation of Syrian stylistic features on other types of narrow dagger, such as the incised lines of Type 3, that there is a connection between Types 4 and 9. If the 'Depots' do cover a period equivalent to the early M.B.I period, and daggers of Type 4 are late in the E.B.-M.B. sequence, there is a strong likelihood of a chronological overlap. Furthermore, if, as suggested above, long daggers were quite common in the north, the view that the Type 4 daggers of southern Palestine were produced as a local response to a new northern style seems all the more credible. Although Byblos and Tell el-'Ajjul are far apart, the latter is near the coast, and it seems possible that contact was via the Syrian seaborne trade with Egypt, which is known to have resumed by the beginning of 12th Dynasty (Posener 1971, 540ff), although there is slight evidence for contact during the First Intermediate Period (Posener 1971, 533-535, Ward 1971, 49ff).

LONG-TANGED DAGGERS

These are defined as a separate group on the basis of their distinctive hafting, a straight, slender tang, generally without rivets which must have been inserted directly into a channel cut in the handle. This technique requires different working practices for fabrication of both the dagger, and presumably the handle. Therefore they have been defined as a separate group of daggers. Initial cross tabulation of variables revealed a homogeneous main group, Type 10, and a small number of clear outliers, grouped together as Type 11 (see App.1).

Type 10

(58 examples) Most of these weapons have a square-shouldered blade (mean length 158mm) with either straight-tapering, or more commonly concave sides; probably the result of regular sharpening. Although a few examples with sharp points occur, most are rounded (fig. 36, Pl. 59). The fact that many of those blades with straight sides have rounded points implies that these were a deliberate design feature and cannot be explained away as the result of wear or repeated sharpening, suggesting that these were not primarily intended as stabbing weapons. In fact the attention paid to the sharpness of the blade edges suggests more frequent use as cutting tools than was so with daggers of types 12-19. Only two examples (nos 911 and 914 from Jericho) have produced rivets in the tang. These are also the only pieces found with a pommel, in both cases of the globular limestone type found with daggers of Types 13 and 17-19. Therefore it is possible that the Jericho examples are not typical of long-tanged daggers generally. In most cases the long tang must have been inserted direct into the handle, and was held not by rivets but by either adhesive or pressure, rather a crude method. Traces of the haft, where any survive are usually present as a horizontal line running across the blade a few millimetres below the shoulders, confirming the view that the entire tang was inserted into the handle, and would therefore have gone unseen. This point, the concealment of the haft, should alert us to the difference between types as we define them, based on the artefacts, as they survive, and types as conceived of by those who saw them when hafted.

Chronology and Distribution (Map 59)

All examples of this type come from Palestine, mostly from central and southern regions. Several examples have been published from northern sites such as Megiddo, Beth Shan and Ginosar, arguing against an attempt to view these as a purely southern style. No definite examples are yet reported from Syria (but note No. 918 Pl. 60 right, from Ras Shamra discussed under Type 11), although this may be due to the lack of excavated M.B.II material from that area. None have yet been reported from Tell ed-Dab'a, which bearing in mind the large number of M.B.II daggers found at that site, might suggest that these weapons are an essentially Palestinian phenomenon. Examples from good contexts suggest a date in the M.B.II period; it is not possible to be more precise. The type would seem to continue in use into the L.B.A. (see Tubb 1985a, 192-3) and seems to spawn a range of long-tanged dagger forms familiar from L.B.A. contexts, grouped together by Maxwell-Hyslop (1946, 29) under her Type 28. It is interesting to observe that it is this simple form which continues into the L.B.A., not the more aesthetically pleasing Types 13 and 17 (see below).

Despite adherence to a well defined basic shape, these daggers do not show the degree of attention to the appearance of the blade that is seen in Types 12- 19, suggesting that a rather different situation may be involved. Type 10 daggers are generally quite poorly finished and seem to lack the strength and rigidity of many other dagger forms, perhaps in an attempt to economize on metal. To the writer's knowledge, only one Type 10 weapon is clearly associated in a burial with a battleaxe (from Tel Aviv Harbour, Tomb 6, Kaplan 1955,). In other cases, although daggers of Type 10 and axes occur together, the tombs were used for multiple successive internments, such as Jericho Tomb 9 (Garstang 1932, 43ff) and Ginosar Tomb 2/3 (Epstein 1974, 4*). Several other dagger types (e.g. 13 and 17), despite being rarer in total than Type 10, can be seen to occur in clear association with narrow-bladed axes, as part of groups relating to one particular burial. Perhaps Type 10 daggers were not considered an appropriate accompaniment for an axe. There may be a connection between these two points. Rather than attempt to discuss these daggers and contemporary types in terms of regional and chronological factors, we ought perhaps to consider the circumstances under which they

were deposited, i.e. archaeological context and thus the possibility that different types had different 'meanings' in the value systems of those employing them (see 3.2.2).

Type 11

(11 examples) Variant forms

This type contains all those objects showing a long, straight tang, which clearly did not belong to Type 10. Their distribution is markedly different from that of Type 10 daggers (Map 60), see App. 1 for details.

DAGGERS WITH STYLED BLADES

These daggers occur in several variants of which two forms, Type 12 with a blade with two large ribs flanking a central groove, and Type 13 bearing multiple converging ribs are the most common (both Type 25 in the typology of Maxwell-Hyslop 1946). It seems to have been important that these weapons were both visually attractive and easy to recognise. They occur in a wide range of sizes, although it should be observed that the smaller examples are known only from the Byblos 'Dépôts' or from unknown contexts at Ras Shamra. The Byblos 'Dépôts' are clearly deliberate offerings of some sort, while it is argued elsewhere (Philip (b) in press) that many of the 'unstratified' metal weapons from Ras Shamra come from similar deposits, unrecognised by the excavator. These may represent a special form made for that purpose. The blades of these daggers are generally quite broad, most measuring between 40 and 55mm at the point of maximum breadth (see summary of metric variables, fig. 90). The ratio length of blade/max breadth of blade is generally between 3.7 and 4.3, showing that these weapons are broader in proportion to their length than most other dagger forms, a fact which is fully exploited in the layout of the decoration on the blades.

In contrast to most other dagger types, these weapons rarely show concave blade edges (fig. 91b), suggesting that they were not heavily sharpened i.e. that it was important to keep the original shape of the blade, or that they were not intended for day to day use, where cutting would have been their main employment. Both facts suggest that we are dealing with prestige objects rather than everyday military equipment, a point reinforced by the handles found with these daggers which were visually distinctive but not especially robust. The weapons may of course have combined both roles in a way which was deemed 'appropriate', for example they may have been employed only in prescribed styles of fighting. Individual combat between 'champions' is clearly described in the 'Tale of Sinuhe' (Pritchard 1955, 20), which should refer to the M.B.I period.

Type 12

(48 examples) These weapons occur in two main varieties. One has two

sharp ribs separated by a central groove, the other two more rounded ribs (fig. 27 right, 39, Pl. 61, 62). As the second form is known largely from the 'Dépôts' at Byblos it is not possible to expand on this difference at the present time, and the two forms will be treated as one in the following discussion. These weapons would require composite handles, probably attached by a collar or bracket (see fig 27 right), especially in the case of those daggers with rivets right at the edge of the metal. A number of these weapons show groups of lightly incised lines running longitudinally outside the main pair of ribs. When a pommel is found it is of crescentic shape (see Pl.61).

Chronology and Distribution (Map 61)

Many examples come from Byblos, because of the nature of the deposits uncovered there (large quantities of metalwork deliberately interred in jars), and cannot be taken as implying that these daggers are necessarily 'Byblite' in inspiration. Identical weapons occur in Syria at inland sites such as Hama and Tell et-Tin, on the coast, and in northern Palestine. None have yet been reported from southern Palestine.

Few are from securely dated contexts, but it is these that must be used in order to establish an absolute date for the rest. As explained earlier it is not intended to use the material from Byblos, nor that from Ras Shamra as primary dating evidence. Of the material from good contexts that from Hama Tomb G VI is clearly associated with pottery equivalent to phase 'H' on the tell (Fugmann 1958, Pl X). Another, from Lebea Tomb 1, chamber C is dated to the M.B.I period by associated material (Gerstenblith 1983, 43), while a third recently excavated at Tell Rehov near Beth Shan is associated with pottery assigned to an early phase in the local M.B.I sequence (Yogev 1985, 110). In summary then, these weapons are likely to be of M.B.I date, possibly going out of use prior to the end of the M.B.I period. Additional examples from Tell et-Tin, Sin el-Fil, Byblos and Ras Shamra confirm a dating in the M.B.I period, while the evidence from the last two sites would support a date within the earlier part of the period. There are at present no examples of these weapons from Syrian E.B.A. contexts.

Foreign Parallels

There is also an example from Kültepe, from a grave in Karum Ib (Özgüc 1959 Abb. 72,fig. 71), similar to our examples in terms of size and stylistic detail. There are fragmentary remains of another from that site (Özgüc 1959, Abb 71). Note should also be taken of a seal found in a late third millennium context, Tell Selenkahiye phase IV (Van Loon 1979, fig.11), showing a dagger with a triangular blade bearing two incised lines, suggesting that it might represent an example of our Type 12 daggers, with two grooves on the blade. The dagger has a crescentic pommel, confirming the identification. The practice of decorating dagger blades is found in Mesopotamia as early as the E.D.III period (see under Type 3 above), as is the use of a crescentic pommel which appears in seals dating to the Early Dynastic period (Crawford 1962, 67). A gold dagger from PG 1422 at Ur (Woolley 1934, Pl 228.1) shows a motif similar to that of our Type 12 weapons. Like ours it was worn at the waist of the deceased, and came from a rich tomb, which produced both socketted axes and sheep/goat remains. This tomb, dated to the time of Naram-Sin by Nissen (1966, 185)* is a classic Mesopotamian example of a 'Warrior Burial' and where details can be reconstructed, it is in similar, if poorer, burials that Levantine decorated daggers occur.

Type 13

(30 examples) These daggers have a straight-tapering or slightly convex-sided blade (sometimes described as triangular), with a broad rounded midrib decorated with a set of concentric ribs, cast in relief on the surface of the blade (fig. 37, Pl. 63, 64). One or two examples are different in that the ribs are not cast but demarcated by shallow lines cut-in on either side (see Pl. 47 left). The significance of this will be considered elsewhere (3.2.3). Like Type 12 daggers, many of these weapons must have been cast from two-piece moulds (an example of such a mould is known from Tell ed-Dab'a). The daggers sometimes end in a sharp, rhomboidal-section point (fig. 91a), like that of Type 17 daggers, although others have a more conventional point. Few show the concave blade edges familiar on many other dagger types (fig. 91b).

In addition to the form of decoration, there is a second main difference between the daggers of Types 12 and 13. The latter possess hammered-out

* Ur III, cf. Moorey Iraq (1984), 7-10.

tangs, as opposed to the butted arrangement more common with the former type. The tangs occur in several varieties but all are clearly tangs, separate from the blade. This presumably reflects a rather different hafting from that employed in the daggers of Type 12 and can be seen in the mould cited above which would produce only the dagger blade, leaving the smith to hammer-out the tang afterwards. Several examples of Type 13 are hafted by means of a metal bracket (see Pl. 63). A mould for casting brackets is known from Byblos (Dunand 1954, 11, Pl. CLXXXIV n. 6794). Finally, these occur with globular pommels, rather than the crescentic variety.

Chronology and Distribution (Map 62)

Daggers of this type are reported from many sites. In the north several are found at Byblos, all outwith the 'Dépôts des Offrandes', a fact which may have chronological implications, and also from a M.B.I tomb at Tell et-Tin, west of Homs. Others are reported from the Lebanon, all parts of Palestine and from Tell ed-Dab'a in the eastern Nile Delta. As most known examples of this type are from Palestinian sites, there has been a tendency to view these as a southern development (e.g. Gerstenblith 1983, 94). However, those from Byblos and Tell et-Tin warn that this is likely to reflect a bias in our data rather than a genuine pattern, and the connection with Type 12, in terms of design is quite clear. Note should be taken of several south Palestinian examples, in contrast to the absence there of Type 12 daggers.

Several come from tombs which were in use over a long period of time, and within which it is extremely difficult to separate the deposits. Furthermore, with such tombs, it is easy be selective and to claim an association between the daggers and the pottery of whichever phase best suits one's preferred chronological scheme. Therefore, we must base our dating on the few closed deposits, essentially undisturbed tombs, with a short life-span, and containing diagnostic material. Several such are known from Tell el-'Ajjul where three tombs produced daggers of this type. Tombs 1417 and 1015 are clearly M.B.I in date (Tu fnell 1962, Gerstenblith 1983) while Tomb 1015 belongs to the end of M.B.I or early in M.B.II. Dever (1975, 28) suggests that an example from Tomb 45 at el-Gib dates to the beginning of the M.B.II period, as does an unpublished example which he notes was found in a tomb near Beth Shemesh (1975, note 14). Additional examples are known from Tell

ed-Dab'a, from tombs dated to the end of the M.B.I or early in M.B.II, by their parallels with the Palestinian pottery sequence.

Other tombs, generally used for multiple burials from sites such as Lebea, Tell et-Tin and Khirbet Kūfin suggest dates broadly in line with the above. Two further points should also be considered. These daggers do not appear in the 'Dépôts des Offrandes' at Byblos, although examples are known from the site (all from poor contexts). As the 'Dépôts' contained so many daggers, it seems unlikely that they would omit examples of what seems to have been a very popular form, had they been available, suggesting that Type 13 daggers appeared only after the closure of the 'Dépôts', which I have suggested elsewhere should date a little before the end of M.B.I. (Exactly the same situation was noted in the case of narrow-bladed axes of Type 1, which often appear paired with these very daggers.) Secondly, the pottery found in association with these daggers in tomb groups is generally of the red slipped and burnished form that was seen as diagnostic for the M.B.I period by Albright (1948) and Kenyon (1973). However, recent excavations have shown (Beck 1975, 1985) that it belongs mainly phases 3 and 4 to of the M.B.I sequence at Tell Aphek/Ras el-'Ain (the Palace and Post- Palace phases), placing Type 13 daggers well into the M.B.I period.

OTHER DAGGERS WITH DECORATED BLADES

Type 14

(5 examples) The daggers assigned to this group are best considered as a variation on Types 12 and 13. They share the same broad blade, but feature a sharp, beaded midrib rather than the grooves or multiple ribs of the previous types (fig. 38 right, Pl. 40 lower left). These weapons show a strong similarity to those of Type 12, and are best considered as a related variant of the former.

Chronology and Distribution (Map 63)

Examples are known from Hama and Tell et-Tin in inland Syria, Byblos and Ras Shamra on the coast and Ras el-'Ain in Palestine, much the same area as daggers of Type 12. The examples from Hama Tomb GVI and Ras el-'Ain are

well dated to the M.B.I period by associated material. Those from Tell et-Tin and Ras Shamra (Necropole III) are probably of similar date.

Type 15

(6examples) Variants, see App.1 for listing)

This heterogeneous type includes several daggers which do not fit into the types described above, but which clearly belong to the same general class of broad- bladed weapons with ribbed decoration. None of these daggers have the central groove which distinguishes examples of Type 12, and as with Type 14, the most sensible interpretation of these items is to view them as either idiosyncratic pieces made by individual smiths, or as examples of forms which were produced in relatively small numbers and which are correspondingly rare in the archaeological record. It seems quite likely that a range of such more varied pieces were in circulation, as with the contemporary fenestrated axes. The very wide spatial spread of this group, from Amarna in north Syria to Tell el-'Ajjul, suggests that this is exactly what the members of Type 15 represent. Those from good contexts seem to belong to the M.B.A. Their value is to show the range of material in production, and to highlight the marked standardisation of the types discussed above. As a result we must consider why the previous types are so homogeneous (see 3.2.3).

Chronology and Distribution (Map 64)

The distribution of these weapons corresponds to that of the more common Types 12 and 13. Those examples from known contexts belong to the M.B.I period.

Type 16

(6 examples) Variants, see App. 1 for listing.

These daggers comprise a small group which seem to combine features of both Types 12 and 13. The type is best considered as a collection of 'variants' around the main types of decorated daggers. It is likely that they were conceived of as decorated weapons in the same way as the members of the

major types; variants should be expected within a corpus such as this. It was felt best to separate these items from the two major groups so that the different chronological spans of Types 12 and 13 could be better appreciated.

Chronology and distribution (Map 65)

Examples come mainly from Byblos, with one from Gezer. The concentration at Byblos seems likely to reflect the very large sample from the site, rather than any pre-eminence in metallurgy. They should date to the M.B.I period.

DAGGERS WITH BROAD, FLAT MIDRIBS

Although these daggers are rather different in detail from those of Types 12-16, they show marked continuity with the latter. This is particularly clear in their emphasis on an aesthetically pleasing form, which is both visually distinctive and attractive, and the continued use of the globular calcite pommels favoured on Type 13 daggers. Although the exact mode of styling the blade has changed, they seem to carry on the same basic tradition of standardised, attractive weapons.

Type 17

(19 examples) These daggers are identified by their unusual blades, with broad-flat midribs ending in a sharp, rhomboidal-section point, as in certain examples of Type 13 (fig. 40,. Pl. 65, 66 bottom). They share the distinctive globular pommel with daggers of Type 13 and as before, blades are never concave, suggesting that they did not require regular resharpening, perhaps because they were intended to be used as stabbing weapons, or more likely that they were rarely actually used.

Chronology and Distribution (Map 66)

A number of daggers of this type are published from Tell ed-Dab'a and Jericho, and single examples from several other central and south Palestinian sites. The most northerly example yet published comes from Tell el-Far'ah (N). Two additional examples have recently been recovered from rescue excavations undertaken at tombs in the vicinity of Tell Beit Mirsim also in

southern Palestine, further reinforcing the regional concentration. All examples date to the M.B.II period. Some, such as those from Jericho tombs J13 and D22, are from single burials, which can be assigned to a date early within the period. Others from Tell Far'ah (n) Tomb A and from Tell ed-Dab'a can also be given an early M.B.II date according to the associated pottery. However, several examples from Tell el- Dab'a are from a tomb (A/i-g/3 Gr.1) dated to a late stage in the M.B.II sequence at the site, suggesting that the type be dated to M.B.II generally. A number come from reused tombs covering all of the M.B.II period, and do not therefore provide close dates. (see Type 19 for weapons with similar blades and flanged hilts)

Foreign Parallels

Exact foreign parallels are unknown outside the southern Levant. However, daggers with blades with a broad, flat central zone are known from the Soli hoard (Bittel 1940, Taf III) and from Bayindirköy in Anatolia (Stronach 1957, fig. 3.5). One example from Soli (S 3400) was found with a crescentic handle consisting of sheet metal over a wooden core, again emphasising the importance of the visual appearance of many daggers. A dagger from Chagar Bazar Grave 143, dated to 'early intermediate level I', the early second millennium, also has a broad, flat midrib (Mallowan 1937, 135, fig.13.5) but there are many differences of detail between all of these daggers and our Type 17, which should be considered a south Levantine form. Several daggers from tombs in upper Egypt and the Sudan dating to the Second Intermediate Period show a similar form of blade (Petrie, 1901, Pl.XXXII.16, 17; Brunton 1937, 119, Pl.LXXVII.2; Dunham 1982, Pl.1a), although these are equipped with a composite handle, topped by a crescentic pommel reminiscent of those found on Type 12 daggers. These might be interpreted as an Egyptian response to 'Levantine' dagger styles prominent in the eastern Delta. Unfortunately, little work has been carried out on the Egyptian material itself, which makes its assessment by non-specialists rather difficult (see 3.4).

Type 18

(2 examples) These daggers resemble those assigned to Type 17 but differ in that the blades do not show the distinctive flat medial thickening, having a

more lentoid section. It seems clear from their general size and shape however, that they are sufficiently close to those of Type 17 to suggest that the similarity is deliberate (fig. 38 right). Both have rivetted rectangular tangs. One (No. 1341) has a rhomboidal-section point, emphasising the close relationship with Type 17. As with Type 16 above, these are best considered as infrequently occurring variations on a well known type, in this case Type 17.

Chronology and Distribution (Map 67)

Examples are known from Jericho and Gezer; i.e. the area within which daggers of Type 17 are found. That from Jericho is from Tomb B35 which dates to the earlier M.B.II, that from Gezer Tomb 1 can only be dated to the M.B.II period in general.

Type 19

(2 examples) Only two examples are known. The blade is has a rhomboidal-section point and broad flat midrib, as on daggers of Type 17. However the butt is flanged (fig. 41, Pl.68). The possession of a globular pommel, as found on Type 17 daggers, stresses their connections with the latter rather than with other forms of flange-hilted weapon.

Chronology and Distribution (Map 68)

The similarity in size and appearance of these two daggers, and the fact that they come from the nearby sites of el-Gib and Jericho, might suggest that they are the product of a single, local workshop. Both are from M.B.II contexts. That from Jericho comes from Tomb D22 which should be assigned to the earlier part of this period according to Kenyon (1965, 244), who placed this tomb at the beginning of her Group 2. The presence of a dagger with flanged tang is not in itself indicative of a late M.B.A. date for the deposit in which it occurs (see below). Also of interest is the fact that these examples show the adaptation of the new technique to suit a traditional weapon shape, that of the Type 17 dagger, rather than a wholly new form such as Type 20. Their distribution fits well with that outlined for Type 17 daggers.

Discussion

It has been argued above that daggers of Types 17–19 continue a tradition e Type 12 weapons occur widely in the Levant, and a few examples of Type 13 are known in Syria, despite our limited knowledge of the period, the weapons of Types 17–19 are restricted solely to Palestine and the Nile Delta. While it is true that we have little archaeological material from M.B.II tomb groups in inland Syria, we have a large body of metalwork from tombs of this period at Ras Shamra (summarised in Courtois 1979, 1204–1208), which have produced no examples of this type. Rather we see a completely different range of daggers, Type 33 (see below). Alongside this we should note the frequent appearance of large spearheads in these same tombs, in contrast to the dearth of similar weapons from M.B.II contexts in the southern Levant. It may be that what we are seeing is increasing regionalism, following the 'international' styles in metalwork which were prevalent during the M.B.I period. This problem will be investigated in greater depth elsewhere (see 3.2.2).

DAGGERS WITH FLANGED HILTS

Type 20

(7 examples) Type 20 consists of a group of six short, slender daggers. Their blades are flat in section , have no midrib, and are convex rather than straight sided. The hilts are flanged along their full length, show distinctive 'horns' at the blade end but are open at the upper end (fig. 42 left). In contrast, most L.B.A. flange-hilted weapons feature a hilt which is fully enclosed by a continuous flange. The flanges be cast, rather than hammered into shape, and a variety of rivet layouts may appear; as the rivets served merely to secure the hilt plate within the flanged grip the actual pattern is probably of little significance. The size of these objects suggests that they were multi-purpose personal items, perhaps functioning more as knives/dress daggers than as weapons of war.

Chronology and Distribution (Map 69)

Examples are so far known only from sites in southern Palestine. That from Tell Fara (S) Tomb 554 (No 834) is from a M.B.II context (Price-Williams 1977, 151). Two daggers (Nos 829, 839) seem to come from Tomb 1551 in the City Area at Tell el-'Ajjul, which produced a Cypriot White Painted vessel (Petrie's Type 89A), and one from Tomb 1231 (No 840). Both tombs are likely to date to the M.B.II period, (see Stewart 1974, 56)). It is difficult to reconstruct tomb groups from 'Tell el-'Ajjul from the published evidence (Petrie 1931-1934). The information on the human remains is particularly limited. However, it is of interest to note that Tomb 1551 seems to have been a child burial, suggesting that the presence of the dagger has a social rather than an occupation-related significance. All other examples are from contexts which are of little value for dating. It is likely that weapons of this or a similar form continued in use into the L.B.A. at these sites (Stewart 1974, 56). Kenyon (1973, 103) has observed that the occupation on the tell at Tell el-'Ajjul may belong to a late phase of the M.B.II period. Whether this also applies to the graves from the tell is not clear, but seems likely.

If we are correct in placing most of these burials in the later M.B.A., we must then allow for the possibility that we are seeing not regional or social

but a chronological difference between these daggers and those of Type 17, which as far as Jericho is concerned come from tombs producing pottery assigned to Kenyon's Groups 2 and 3, i.e. the earlier part of the M.B.II period. There are of course considerable problems involved in attempting to correlate groups of material from different regions of Palestine (Kempinski 1983, Cole 1984; see also Introduction), and there is no guarantee that a ceramic form which is believed to be late M.B.II at sites in the hill country, will necessarily occur at the same period elsewhere in Palestine. As study of Palestinian M.B.A. pottery has not yet reached a stage where we can confidently relate different regional sequences, the assignation of Type 20 daggers to a late M.B.II date at Tell el-'Ajjul must remain tentative. Type 20 daggers have not yet been encountered at sites in the Nile Delta, as in the case of Type 10 daggers, also common in Palestine. Whether this indicates regional production, chronological differences or varied local mortuary practices at the different sites is not yet clear.

Type 21

(6 examples) This comprises a group of medium sized daggers distinguished by their possession of a pair of short flanges at the lower end of the hilt, which is not 'horned' and can be either long or short (fig. 42 right, Pl. 69). Hilt-plates would have been secured by rivets, although the actual rivet layout seems unlikely to be of great importance. The blades are of flattish section, without midribs and have convex or straight-tapering sides. These weapons are quite large, and could have functioned as military equipment, although they may be more realistically envisaged as personal items.

Chronology and Distribution (Map 70)

Reported examples of this type are known only from sites in the northern Levant, Mersin and Ras Shamra. This is an interesting contrast to the distribution of Type 20 daggers. The examples from Mersin come from Str. XI (No 838) and Str X (No 837) and date to the M.B.I and M.B.II period respectively, if we accept the integrity of Garstang's stratigraphic divisions. Those examples from Ras Shamra, which can be reliably dated (Nos 841, 851) are from Tomb LVI, used throughout the M.B.II period.

Discussion

An item with a similar flanged butt, though with a rather curved blade suggesting use as a cutting implement has been published from a L.B.A. context from Boğhazköy (Boehmer 1979, 11, Pl.VIIII. 2644). This would seem to strengthen the northern affiliations of this kind of hafting. Earlier examples of daggers of a rather different shape, though having butts with short flanges, are known from Syria, in particular from Chagar Bazar Gr. 186, in a tomb dated to the early second millennium (Mallowan 1937, fig.13.6) and from Alalakh (here classed as Type 6 within the Narrow dagger series).

Several daggers with flanged hilts are known from Anatolian sites and represent Erkanal's Type 10 (1977, 36 Taf. 13. 29-33). These are mostly from poor contexts and are dated no earlier than the Karum period at Boğhazköy or the 'Middle Hittite Period' at Alaça Höyük. This would make them contemporary with the Levantine M.B.A. It is worth noting that the Anatolian examples illustrated by Erkanal are small, the longest is 177mm in length, and seem to be very worn. It is worth remarking that none of these daggers are from grave contexts. This might suggest then, that the Levantine funerary material, which is usually in better condition, was generally interred while it was still in a relatively early stage of its useful life. In other words, it was unacceptable, as a rule, to use badly worn, or damaged items as grave offerings.

Type 22

(2 examples) This group comprises two flange-hilted weapons which are rather larger than the rest. They have straight-tapering, flat-sectioned blades. One example has fully flanged tang (850), the other a horned tang, which is open at the upper end (847). The presence of large flanged daggers in tombs is generally taken as a L.B.A. feature. However, where datable imports are absent, or where material from both Middle and Late Bronze Ages are mixed, we should not automatically assume that a such weapons belong to the later phase of use. The well known 'Apophis' dagger from Saqqara in Egypt, (Dawson 1925, 216-217) which is presumably dated to the reign of the last Hyksos king, late in the Second Intermediate Period, has a fully-enclosed,

flanged handle of the kind that was to become common in the L.B.A. and provides us with a chronological anchor point for the appearance of daggers with this kind of handle.

Clearly, flange-hilted daggers were in use relatively early in the M.B.A. (see Type 21 above), allowing several centuries for their development prior to the L.B.A. Those examples with fully enclosed, cast, flanged handles (Maxwell-Hyslop 1946 Types 31-33) are certainly common in the L.B.A. (Boehmer 1983) (For the Levant in particular see examples from a 14th C tomb near Akko published by Ben-Arieh and Edelstein 1977 and further instances cited there.) However, the examples here assigned to Type 22 have hilts which are closer to those found on M.B.A. weapons, and may therefore represent a slightly earlier form.

Chronology and Distribution (Map 71)

Both examples come from Ras Shamra. One (No 850) is from Tomb LVI, which contained a number of M.B.II burials. Schaeffer (1938, 235) observes that this dagger lay separately from the rest of the material (all M.B.II) found in the chamber, and that tomb is connected to Tomb LVII which produced material dating to the beginning of the L.B.A. (1936, fig. 36) and suggests that objects may have been moved between the two tombs. Although possible, I would be more convinced were L.B.A. pottery also found in Tomb LVI, and therefore prefer to view this dagger as a genuine M.B.II piece. The other (No 847) is from an intact stone built chamber in 'Chantier A' (Schaeffer 1936, 142 figs. 16 and 17). The tomb is securely dated by good M.B.II material.

Type 23

(2 examples) These daggers comprise a group of small rather irregularly shaped daggers which may represent flanged variants of the more common Type 33 daggers (see below). Only one example provides reliable metric data. They have simple blades, flat in section with round points and straight tapering sides. Their size and form suggests that they were all-round 'pocket-knife' weapons. Of interest is the fact that the flanges on the tang are asymmetric as is the case with the flanged examples of the narrow dagger series.

Chronology and Distribution (Map 32)

Both examples come from Ras Shamra. Only one (No. 843) is from a dateable context. This piece is from the a series of graves excavated on the acropolis, in an area referred to as Necropole I. It is not possible to identify individual tomb groups among the material published from this area, however most of the published material clearly belongs to Schaeffer's U.M.1 or 2 periods, broadly equivalent to the M.B.I period as understood at other Syrian sites. The interesting feature is the use of the asymmetric arrangement of the flanges at the butt. This feature is found on a number of late narrow daggers. Therefore a connection may exist between these weapons from Ras Shamra and certain techniques adopted by smiths working in Palestine in what we know there as the E.B.–M.B. period; further evidence for contact between Palestine and the north at this time.

Type 24

(3 examples) Variants, see App. 1 for details

This type comprises several flange-hilted daggers which do not fit any of the groups described above. See Map 73 for distribution.

Discussion

The first point to establish is that flange-hilted daggers are known as early as the M.B.I period at Mersin, and at Chagar Bazar. At this point we ought to consider how this might bear on the appearance of flanged hilts on certain of the more elaborate narrow daggers of the E.B.–M.B. period (Types 3 and 4 in particular). This must surely suggest that the more developed forms of the narrow dagger reflect technical changes taking place in the northern Levant in the earlier second millennium, providing yet stronger evidence for the placing of the later part of the E.B.–M.B. period contemporary with Syrian M.B.I.

A flanged hilt, with several rivets to secure the haft plate would have provided an effective handle. This is presumably why the technique was continually developed through the M.B.A. until the appearance of daggers with one-piece cast-hilts such as the Apophis dagger mentioned above, at the very

end of the M.B.A. This being so, we must surely ask why daggers with conical butts or long elaborate tangs such as those utilised in Types 12, 13 and 17 continued in use at all ? The reason must lie less in terms of technical factors than in tradition, in particular the forms of handle which were attached to these items. It is clear that the association of certain weapons with either crescentic or globular pommels, white and highly visible, was common and well understood. Although these butt and tang forms were far from ideal, they could be improved by the fitting of a bracket-type mounting, which would allow the attachment of a handle of the appropriate type. Few of these survive, as most were probably made of organic materials, but a sufficiently large number of daggers with metal brackets have survived to provide a good impression of the appearance of the rest of the material (see fig. 27 right, Pl. 63).

In addition to the above, it is clear that the daggers with flanged butts required a rather different manufacturing procedure from that of other types. There was no need to use steatite moulds as these daggers do not have the elaborate surface decoration of Types 12 and 13. Nor could they have mounted handles topped with globular pommels without a specifically adapted hilt arrangement, as in the case with Type 19 daggers. They could be cast from covered limestone moulds and the flanges simply hammered into the correct shape. The general impression given is that these weapons in their classic form, spread only gradually into Palestine during the M.B.II period, where the flange hilted dagger seems to have only gradually replaced traditional types, at least as far as the grave repertoire was concerned. It is therefore doubly revealing to observe that the daggers of Type 19 involve the adaptation of a new technique to the manufacture of a dagger of traditional shape, even as far as adapting the weapons to carry a handle topped by the classic limestone pommel.

2.4.2 Less Tractable Material

Introduction

The types discussed so far have been relatively easy to define. Obviously there is some variation within each type, and in some cases several odd items have been grouped together as a type which consists of a collection of variants on a more clearly defined, numerically larger type, e.g. Types 18 and 19 are clearly variants on the Type 17 design. The intention here is to emphasise the nature and homogeneity of the main types, which I believe to represent culturally defined designs. The dagger types discussed so far are visually distinctive, a similarity which can only be the result of deliberate choice on the part of the makers. That forms such as those of Types 12 and 13 are so widely distributed suggests that smiths were producing daggers to widely understood, desirable, patterns. The reasons for this will be discussed at greater length elsewhere (see 3.1.4), but such daggers are a marked contrast to many of those discussed below, and should probably be considered as 'sociotechnic' items in Binford's terminology.

Besides these well defined types there exist a number of other daggers which can be shown to belong to Transform Types, such as the those defined within the narrow dagger series. Naturally some of our material is impossible to classify, on the grounds of either poor preservation or inadequate published data. Apart from these three groups of material, we still have a large number of items, in good condition, that are hard to deal with. It is this material which presented the greatest problems for Maxwell-Hyslop (1946). Although complex, the data is by no means unstructured. In order to extract as much information as possible from this material, a long process of sorting and cross- classification was carried out. This would be tedious to repeat in full, and so is not documented at length here. However, the types detailed below represent a distillation of the information so obtained. These types are best regarded as devices to aid our understanding of the data, and to maximise the insights which it can offer, and should not be considered as the 'final word' on the matter. They do reflect what we might term 'subject-generated patterning' but this is likely to be of a general nature, rather than the deliberate

adherence to particular overall designs which we see in many types. The likely reason for this is that these daggers display the coming together of different local or traditional 'ways of doing', resulting in detectable patterns.

The existence of such types suggests that there are at least two distinct spheres of production and exchange in operation. The first involves the manufacture of a limited range of 'special' weapons, which were quite widely distributed, the second a much more localised form of production to meet more immediate local needs. It will not always be possible to draw hard and fast boundaries between the two categories, in fact a deliberate blurring of the division may constitute an element in human social strategies, but the distinction is a valuable concept. Such types are generally based on a a sets of two or three criteria (or variable values) which show a more than a random association. For example we may find that within a particular period a preference is shown for one particular hafting method, over several others. This may in turn be associated with several different blade forms, which may themselves display a degree of regionalism. None of these need be hard and fast divisions but they do provide the basis of a means of distinguishing regional and chronological groupings, albeit necessarily loose.

It is encouraging to observe that a number of these types show an underlying geographical, chronological or contextual unity, implying that we can indeed detect distinctive local practices. Although rather more heterogeneous than other types, this should not prevent their definition and use as such (see 1.3 where these are defined as the third form of type), as this is a genuine feature of the data. It is hoped that this introduction will explain the shift in approach which will become apparent as the types below are discussed, and help to establish their place in the overall typology. After all, the point of the exercise is not classification for its own sake, but the elucidation and interpretation of the patterns present.

While some of these types occupy limited geographical or chronological horizons, others show a wide range through time and space. I would suggest that this owes much to the nature of our sample. We have relatively large numbers of objects from a restricted range of sites, often from particular chronological horizons at those places. The remainder of the data consists of small groups of material from a large number of sites, often covering a wide

time-span. Material distributed in this way cannot be expected to fall into neat classes unless it conforms to a range of widely accepted forms, as is the case with some of the types discussed above, but it seems that the remainder of our daggers are the products of industries organised on a different, more localised, basis. As a result, when we have sufficiently large samples from restricted spatial and chronological zones, we can spot underlying dimensions of similarity. Examples of this situation are represented by Type 33 most of which are from Ras Shamra, and Types 27 and 36 which are found at several North Syrian sites during the E.B.A.

The patterning of metric variables is quite important in establishing the coherence of these localised groups. When our material is more thinly spread this is much harder to do, and metric variables are of considerably less value. As a result, we have to focus on those aspects of the daggers which are easy to observe. In particular the form of the butt or tang, and the cross-section of the blade are important, as are general underlying factors such as the ratio between length and max. breadth. Types based on such data will tend to be rather loose, probably because they encompass material which shows a general similarity but may come from several different local traditions. In the same way, one site may present us with daggers which belong to several different types. There is no reason why a single site should not produce a range of material. These types will probably become clearer as our corpus grows. Where an internal division seems to exist within a type I have pointed this out but have not defined all such groups as separate types, as I do not believe the proliferation of types worthwhile if the information can be obtained without doing so.

Type 27

(18 examples) A short simple form with flat or flat lozenge-shaped blades, with tapering, or slightly concave sides, produced by hammering casting of approximate shape. The butt is essentially triangular, although it can appear in conical or concave sided forms (fig. 43). As a result of the method of manufacture, there is a degree of variation, most of which is not 'significant' as hammered weapons will show a higher degree of 'background noise' than will those cast from two-piece moulds. The handles, of which wood traces

frequently remain, were generally secured by three rivets, set in a triangular pattern. The morphological resemblance to Types 33 and 36 should be noted.

Chronology and Distribution (Map 74)

Most examples come from north Syria. Many of these are from grave groups from Amarna and Serrin, purchased by Woolley (Woolley 1913), the pottery from which is assigned to the middle of the third millennium (Prag 1970 and pers. comm.). Others can be more accurately dated. One comes from the Hypogeum at Til Barsip, dated c 2500-2250. Others are from Tomb 63 at Tawi and a tomb at Tell Bi'a (Arne et al 1984, 62), broadly contemporary with that from Til Barsip. The associated pottery from these graves predates the material from the Euphrates valley area which many authors term E.B.IV (e.g. Dornemann 1979; Van Loon 1979) and is therefore of mid-third millennium date, as is that from Woolley's groups. An example from Palestine is a survey find from the coastal Marzeva north of Tel Aviv. Although it has no real context, the excavator (Gophna 1978, 40) has dated it to the E.B.A, which seems reasonable in the light of its typological connections with the Syrian E.B.A. material.

Type 36

(10 examples) These daggers share the distinctive hafting method of one rivet in each shoulder and one in a short tang with daggers of Type 32. However, it is immediately clear that there are substantial differences between the two groups. Those of Type 36 are shorter (see App. 1), and narrower and are rather roughly made. The blades are either flat or of flat-lozenge shaped section (fig. 52 not bottom right). These daggers are quite similar to those of Type 27, and the two types might well be considered as versions of the same kind of weapon. In the case of Type 27, the butt is triangular, trapezoidal or slightly 'stepped', while in daggers of Type 36 the 'stepped' butt has given way to clearly differentiated shoulders and a short tang.

Chronology and Distribution (Map 75)

All examples of this type are from north Syrian contexts, at sites such as Halawa, Habuba-Kabira, Til Barsip and Amarna. Those which are from reliable

contexts such as Halawa Grave 70, Til Barsip Hypogeum and Habuba would suggest a date around the middle of the third millennium, as with Type 27. They are variants on a common theme, a small dagger/pocket-knife.

Discussion

The most important point about these weapons is the that they are too small to have functioned effectively as weapons of warfare. They may well have been useful as general purpose 'side arms' or even 'pocket-knives' but would have been of little use against the warriors depicted in E.D.III representations. This must surely raise the question of the relationship between grave goods and military equipment, and the social factors which determine what is or is not deemed suitable as mortuary equipment in particular contexts. As for more general parallels, there is a clear resemblance in terms of shape and general size, with the many of the daggers published from the tombs of the Énéolithique Récent at Byblos (Dunand 1973, Pl CLX). These are between 130 and 200mm in length, often have three rivets in a trapezoidal tang and a simple blade with a flat lozenge-shaped section. The Syrian daggers can be seen therefore as part of a long lived tradition of small simple weapons. They form a marked contrast to the contemporary Narrow Dagger series of Palestine, which are both larger and feature a rather differently arranged butt. This is an interesting point, and should be considered as part of a wider range of differences between Palestine and northern Syria in the E.B.A (see 3.2.2). They are however much closer in in typological terms to the small Type 26 daggers of Palestine, which may occur as 'secondary' items along with a narrow dagger (see above).

Type 29

(2 examples) Both examples are from the cist graves at Carchemish, and are very similar in size and shape. They are medium sized weapons with long, concave-sided tangs, and a broad blade of flat section (fig. 34 left, Pl. 74 right). Neither is rivetted, possibly these items were unfinished. They come graves in which unfinished objects are known to occur (see tanged spearhead Type 10 for possibly unfinished spearheads).

Chronology and Distribution (Map 76)

The two examples from Carchemish are from the cist graves (KCG) 9 and 15. KCG 9 is a single burial which produced several Type 9 tanged spearheads, which may have been in production over a large part of the third millennium. Grave 15 is less well documented but seems to have produced two tanged spearheads of Type 1, arguing for a date in the earlier third millennium. The daggers should be seen as a local product; they are much bigger than other north Syrian types, such as Types 27 and 36, suggesting that a distinction between large 'stylish' daggers and the ubiquitous 'pocket-knives' may have already existed by this time. In connection with this we should note the daggers from a late fourth millennium hoard at Arslantepe (Palmieri 1981, 109-110), which are very much in the former category.

BROAD-BLADED DAGGERS

The following types, which are largely confined to the M.B.A., have a feature in common, which they share with daggers of Types 12-16. The dagger blades are broad in relation to their length (length/max. breadth c 3.6-4.6). It was suggested above, that the widespread preference for a broad blade is connected the need for a surface which could be decorated, at least in the case of types with 'styled blades', although this may not be the reason for its initial appearance. However, few of the following are decorated, and when present it takes a simple form (see below). There are two important points behind this. The best explanation for these daggers having broad blades is that they emulate the more exclusive forms (Types 12 and 13 in particular). We should note that by the L.B.A., daggers return to relatively narrow-bladed forms, as was generally the case in the third millennium. Therefore the broad- bladed dagger can be seen as a M.B.A. phenomenon, related to stylistic concerns rather than mechanical requirements. Secondly, the fact that occasional examples of the following types, which I believe to be 'substitutes' (or 'poor man's versions') of the classic M.B.A. types, are decorated, is also attributable to emulation.

These daggers then may be seen as part of peoples' attempts to manipulate the system of values for their own benefit. If, as I suggest, weapons are deeply involved in marking and perception of the social world,

then it is likely that they will be manipulated within the strategies of different individuals and groups. As a result, there will be a degree of blurring of our categories, as suggested above. Returning to a point raised earlier (1.2) we cannot assume that simple unproblematic categories existed within the natives' scheme of things, any more than we can identify such classes. We must attempt rather to draw the main outlines and interpret the rest as best we can.

Type 30

(51 examples) These daggers occur with either a trapezoidal or rounded butt, or a triangular tang with concave sides (fig. 44). Examination of the material suggests that the the concave-sided tang, which occurs most often at Byblos is simply a stylistic variant on the trapezoidal butt; it is often difficult to decide at which point one merges into the other. All versions are fixed to the handle by three rivets in a triangular layout, which would seem to be the factor which would determine the mechanics of hafting. Although a number of small examples occur (those less than c150mm in length), most such are from the 'Dépôts' at Byblos.

Type 30 daggers are generally quite large, in particular they are broad in relation to their length. The blades can be flat or lozenge-shaped in section, measuring 3-5 mm in thickness, and occasionally bear very simple incised decoration, usually a pair of incised lines, a motif well known in the E.B.-M.B. repertoire, and on certain daggers of the E.D III period in Mesopotamia (see under Types 3 and 12 above). It is clear from both general shape and size that these daggers are similar to the decorated daggers of Type 12, a point emphasised by their relatively broad blades and the shape of the butt. It is reasonable to interpret daggers of this type as a group within a loose general category of 'broad-bladed' daggers, a form which appears in a number of guises during the M.B.A. The occasional use of incised decoration, albeit of a simple form, is reminiscent of those daggers with styled blades, which form the widespread, standard forms.

Chronology and Distribution (Map 77)

Examples are known from single burials or small grave groups at Halawa

Grave 70, ascribed to the "middle E.B.A." by Orthmann (1981, 55), while one from Tawi Tomb 64, is associated with hand-made pottery of a kind which should be dated quite early in the third millennium (Kampschulte and Orthmann 1984, 82ff). Those from Qatna Tomb IV and Tell Selenkahiye (unpublished) date to the later third millennium. These suggest a local Syrian background for the shapes which were to form the basis of the elaborate metalwork of the succeeding M.B.I period. As far as the third millennium is concerned these daggers form a clear contrast to the narrow dagger series, which seems to have been preferred in Palestine and perhaps in southern parts of Syria. The type is very common in the M.B.I period, and a large number of these weapons are come from the 'Dépôts' at Byblos, many more than were actually illustrated if Dunand's (1954) catalogue entries are correct. The only example from a closed M.B.A. context is from Tomb 62 at Ruweise which contained no more than three burials (Guiges 1938, 36). However, examples from multiple successive burial tombs at Ruweise, Khirbet Kūfin and from Megiddo confirm a dating to the M.B.I period or the beginning of M.B.II. It seems therefore that this type had a relatively short floruit in Palestine, essentially the M.B.I period, but a longer history in Syria, where the form would seem to have originated. I would suggests that the initial appearance of broad-bladed forms in Syria pre-dated their use as a medium for decoration, but that their widespread popularity came with the adoption of this shape as the basis of a set of 'prestigious' dagger types. Few daggers with this sort of butt are published from Mesopotamia (these approximate to Woolley's 1934, Type 4), where a straight rectangular, or small concave sided tang seems to have been preferred (Woolley's 1934, Types 3, 5 and 7).

Type 31

(10 examples) These daggers are distinguished by their possession of a broad blade of simple cross-section and short, broad tang (fig. 45). While longer straight tangs (see Type 35) could be inserted directly into a socket in the handle, (see example from Uruk, Finkbeiner 1983, Taf. 3c), short tangs with their horizontally arranged rivets clearly could not, implying a different mode of attaching the haft. The blades were cast, and the tang subsequently hammered out. They were not cast as one piece as is the case with the concave-sided, triangular tangs found on daggers of Type 30. As a result we

might reasonably expect a degree of variation in the actual shape of the tang, and both semi- circular and short, broad versions are known. The rivets of Type 31 daggers are usually laid out as a horizontal pair or in a closely packed triangular pattern.

Chronology and Distribution (Map 78)

Most examples come from sites in the southern Levant, in contexts of M.B.I, or more frequently M.B.II date. One comes from Tell ed-Dab'a tomb F/I i/1 Gr. 34, dating to the late M.B.I or early M.B.II period. It may be then that we are seeing here a regional preference for a particular hafting method, which was applied to certain broad-bladed daggers.

Type 32

(26 examples) These daggers are distinguished by their rivet layout; one in each shoulder of the blade and one in a short tang (fig. 46 left, 52 lower right). Although one or two small examples are known, these are either extensively sharpened or from the 'Dépôts' at Byblos, which has produced minature examples of many dagger types. The mean value for length/max. breadth, allowing for the short tang, is 4.0, placing most of these daggers in the 'broad' category. With Types 30-32, we see a demand for a broad bladed dagger, that is met in a number of different ways, using various hafting arrangements. There is a connection between Type 32 daggers and those examples of Type 30 with concave-sided butts and a triangular rivet arrangement. It may be that there is a continuum from triangular butts, through concave sided tangs, to the tang and shoulder arrangement. Perhaps all 'broad-bladed' daggers should be treated as a series like 'narrow- daggers', and the resulting sub-units recognised as Transform Types. However, this arrangement might mask the binary division between 'styled' and 'simple' forms, a point which I believe to be of considerable importance.

Chronology and Distribution

Although an example from Tell Selenkahiye dates to the late E.B.A, most of those from the northern Levant are from the 'Dépôts des Offrandes' at Byblos and of M.B.I date. Many of those from good Palestinian contexts come from

tombs such Jericho Tomb 9, Megiddo T 4005 or Ginosar Tomb 2/3 which date to the M.B.II period. An example is also known from a M.B.II tomb at Tell el-Yahudiyeh in Egypt. It seems therefore that these weapons are a continuation of the basic form which was popular in the M.B.I period in the coastal Levant. The rarity of such daggers from M.B.I contexts in Palestine may simply be a quirk of the archaeological record. They are common in Byblos at that time, and in Palestine in M.B.II contexts. In fact it is quite likely that some of the many Palestinian examples from mixed deposits do in fact date to this period. In fact, there is an example of this type (No. 1044) from an E.B.-M.B. structure in the central Negev, which seems to add further weight to an argument which would place at least some of the material of Dever's "Family S" (his southern-most regional ceramic group, and that which is associated with the Negev domestic sites) contemporary with the M.B.I period in Syria.

Foreign Parallels

Several daggers adopting the distinctive shoulder and tang rivet arrangement are known from the Karum at Kültepe. The earliest example is from a Level III grave (Özgüc 1959, fig. 65), and others are known from tombs of Level Ib (Özgüc 1959, figs. 70 and 74). Several such daggers are published as coming from the Soli hoard (Bittel 1940, Taf II). These occurrences emphasise the connection between the northern Levant and Anatolia around 20000 B.C, and should be borne in mind when considering the possibility of Syrian involvement in the trading networks of that period. Examples are rare in Mesopotamia, although note should be taken of a recently published piece from a grave at Tell es-Sib in the Hamrin Basin (Hannoun 1984, fig.21). Little metalwork of the Ur III through Old Babylonian periods has yet been published from Mesopotamia, so although it seems likely that these daggers are an essentially Levantine form, we cannot be certain.

Type 34

(19 examples) These daggers are distinguished by having concave or straight butts with handles secured either by a pair of horizontally-opposed rivets, or a small group arranged in a semi-circular pattern. Most examples fall into our 'broad- bladed' group (fig. 48). Although a few small examples

exist (less than 120mm in Length), the present writer has not examined any of them at first hand, and so it is not clear if they are genuinely related to the full-size daggers or represent a mix of damaged or heavily worn objects of various types (fig. 49 nos. 1184, 1201). These pieces are therefore of uncertain significance and are excluded from statistical calculations.

Some have concave blade edges, and most are either flat in section or of concave lozenge shape with a marked medial line. Some examples from Tell Fara (S) have a proper rounded midrib, while one from Jericho shows a definite central thickening. Several examples from Tell Fara (S) were found with the remains of a distinctive 'two-bar' handle (fig. 48). However there is at present no evidence to suggest that this was generally the case with daggers of this form. In many cases a simple wooden handle would probably have sufficed.

Chronology and Distribution (Map 81)

Most of these daggers are from Palestinian sites, from Tell Fara (S) in particular, although they occur at Jericho and at northern sites such as Megiddo and Safad. When these weapons occur with dateable material as at Jericho, el Gib, Tell ed-Dab'a or Tell Fara (S) they can be assigned to the M.B.II period. An example from Megiddo Tomb 911D may be of M.B.I date. The single example from Byblos is from Dépôt Omikron. It is rather small and may be badly worn or repaired i.e. originally of a different form. In summary the best examples come from Palestinian M.B.II contexts.

Foreign Parallels

The best such come from Anatolia and have been conveniently summarised by Erkanal (1977, 31ff) who lists a number of daggers fastened by a pair of rivets. Most such have convex butts however, and are not therefore identical to the southern form. An example with an incurved butt is known from from Alaça Höyük (Kosay 1966, Taf. 47.133) from a 'Hittite' level. However, as with Type 21 daggers, all the Anatolian examples are small (less than 130mm long by 35mm in breadth). In this situation it may be that the visible form of the butt is the result of damage and repair. As intermediate material from Syria is lacking, it would be unwise to assume any direct connection between the

Anatolian and Levantine forms.

Broad-bladed daggers, general discussion

Where this could be assessed, it was observed that these daggers tend to have concave blade edges suggesting fairly frequent sharpening, (in contrast to the 'styled' types) which might suggest that many been in use for some time. Although most examples are of simple section, one or two from the 'Depots' at Byblos show a simple pair of incised lines on the blade, a motif common on narrow daggers of Type 3. This occurrence suggests that the development of the more elaborately decorated blades which seem to first appear in the M.B.I period in Syria, is a process based on the elaboration of a basic local range of dagger shapes and motifs. Although the simple pair of incised lines would not require an elaborate mould, as this could be cut in as was the case with most Type 3 daggers, the emphasis on such visual decoration would seem to be a step in the direction of elaborately decorated, fairly broad, dagger blades. A similar process can also be seen in the development of the Type 3 narrow daggers in Palestine, where we seem to see the adoption of incised decoration as one element in the gradual elaboration of the basic Type 2 form as the E.B.-M.B. period progresses. However, the narrow dagger, by virtue of its slim blade does not offer the same surface area for embellishment as do these broader Syrian weapons. Furthermore, as the former are generally hammer-worked, there is a limit to the range and quality of the three-dimensional detail which can be incorporated. The more elaborate forms require the use of two-piece moulds.

OTHER TYPES OF DAGGER

Type 33

(33 examples) These daggers are of irregular appearance and would seem to have been made by hammering a cast billet, and are fairly roughly finished. The blades which can have straight-tapering or concave edges, are generally of flat or lentoid section, often without a recognizable midrib. Butt arrangements differ somewhat in detail, but can be summed up as of 'sinuous' or 'stepped' profile. Three rivets, in a triangular arrangement is the norm.

They are generally rather narrow on relation to their length which distinguishes them from most other contemporary dagger types (fig. 47).

Chronology and Distribution (Map 80)

An example from Jar 2132 at Byblos is likely to date to the M.B. I period, but most examples come from a series of M.B.II tombs at Ras Shamra. It is interesting to observe that these daggers seem to be restricted to sites on the northern littoral, all the more revealing then that the only good parallels for these daggers come from Cyprus, where they are known as 'knives' (Catling 1964, 59-61). These are known from tombs dated to the later Early Cypriot and especially the Middle Cypriot periods, where they seem to accompany the better known hooked-tang weapons, presumably as side arms or as all-round implements. Catling (1964, 59-61) has attempted to divide the Cypriot form into a set of types on the basis of morphology. The current writer feels the nature of these daggers is such that any internal typology is likely to be hard to establish with any real degree of consistency, and that the key point is that when taken together they form a distinctive group. (The Ras Shamra material contains examples which approximate to several of Catling's types, including c, d, e and f.) We cannot say, on the available evidence, whether these daggers are imports at Ras Shamra, or locally made. However, they do come from tombs which have produced much Middle Cypriot pottery (see Courtois 1979, 1204-1208) and might therefore form part of a set of imported 'novelties'. Also significant is the fact that it is these, rather undistinguished weapons that substitute in Ras Shamra for the rather grander Type 17-19 weapons found in the southern Levant (see 3.2.2)

Type 35

(24 examples) This group comprises medium-large sized daggers, hafted by means of a straight or tapering rectangular tang with rivets in a linear arrangement, unlike those of most other daggers (fig. 50, 51 right, 54 top right, top left). The essential difference between this and other forms of hafting would be that the tang would have sat in a hole cut lengthwise into in the wood of the handle. This channel could have been cut or drilled out of a single piece of wood, which, as long as the rivets held, would result in a

strong, solid handle. Those daggers with triangular shaped butts, fixed by three rivets would have required a haft that was probably composed of two separate pieces of wood, which were fixed to opposite sides of the haft by the rivets, and possibly bound in some organic wrapping. The alternative would have been to use a single piece of wood, with a slot cut transversally into which the butt would have been pushed prior to being rivetted in position. Both of these techniques would run the risk of the haft splitting or coming apart under frequent use. There is therefore likely to have been some difference in the actual construction of the haft necessary to mount daggers of different tang or butt forms, a fact which is unlikely to have escaped the smith.

Examples with concave sided blades are relatively rare. As such is also the case with tanged daggers of Type 31, this may warrant further consideration as it suggests that most were not employed as cutting implements, and that they may have been designed as 'real' daggers. The tangs are usually long (30- 45mm in length).

Chronology and Distribution (Map 82)

The first point to observe is that daggers with straight rectangular tangs are more common in Syria than in Palestine. In fact, the only daggers which do feature such tangs with any regularity in Palestine, are a number of Type 17 daggers. However, the tanged variety have a much greater antiquity in Syria (see below). There they are common in relative terms, at inland sites such as Baghouz and Tell Mumbaqat than at coastal sites such as Byblos, Ras Shamra. Daggers with straight tangs occur in late third millennium contexts in tombs from such as Tell Selenkahiye, and possibly rather earlier from Carchemish KCG14 and Tawi Tomb 24. Another example was found in a domestic context at Hama, in level J4. An example with a metal sleeve for securing the handle is known from a hoard at Tell Mumbaqat, dated to the later third millennium (unpublished, Machule pers. comm.). Those from the cemetery at Baghouz should be dated to the earlier M.B.A. Several examples from the 'Dépôts' at Byblos should also be assigned to this period. Those from the southern Levant are from M.B.II contexts; Megiddo Tomb 3123, Tell el-'Ajjul Tomb 1532 and Tell el-Yahudiyeh Grave 407. The relatively late appearance of these weapons in the south should be noted.

The straight rectangular tang was popular in Mesopotamia at least as early as the E.D.III period, where it occurs in the Royal Cemetery at Ur (Woolley 1934, Types 3, 5 and 7) and in graves of Cemetery 'A' at Kish (Mackay 1925, Pl. XVII.14). A number of M.B.I examples are known from sites in North Syria such as Chagar Bazar and Tell Arbit (Mallowan 1937, figs. 13.2-4), and from a Level Ib grave at Kültepe (Özgüc 1959, fig. 69). In his discussion of this dagger, Erkanal (1977, 34) observes that it is very much a Mesopotamian form, a point in agreement with the Levantine distribution, which is heavily biased towards sites in the Euphrates Valley or inland Syria.

Type 37

(13 examples) Examples of this type are small and narrow with concave sided, or slender rectangular tangs. The blades are generally flat in section, without a midrib and may be straight-tapering or concave sided (fig. 53 lower right and lower left). They represent a group of small, tanged implements which are likely to represent 'pocket knives' than daggers. One of their most marked features is their heterogeneity, and it seems likely that their morphology was prescribed only in as much as it was constrained by functional requirements. In other words they represent a rather varied group of items, whose common factor is their function as small pocket-knives, rather than any planned design. Their significance is that when taken together they form a contrast to both 'real' daggers and the more homogeneous curved knives (see 2.5) of the M.B.A. in the southern Levant.

Chronology and Distribution (Map 83)

Examples are known from third millennium contexts e.g. the Hypogeum at Til Barsip, and various M.B.A. groups such as the large built tombs at Ras Shamra. They occur over a wide geographical range, are common in Syria but less so in Palestine (one example from Tell el-'Ajjul, in a domestic context No. 1345). Two important points should be underlined. These items do not occur in the 'Dépôts' at Byblos (or if they do they are unpublished), nor in Palestinian M.B.A. tombs. It seems likely that we are seeing here a distinction based on notions of 'appropriateness', and that they are unsuitable for many roles, an idea reinforced by the heterogeneity of the group and their relatively low level

of visual appeal.

Type 38

(4 examples) Medium sized daggers with long, concave-sided tangs and flat-sectioned blades. In terms of size and shape these objects rank with the main classes of dagger, but they have a rather different tang arrangement (fig. 54 lower). The main reason for recognizing these daggers as a separate group, is that the form of tang is clearly different from the classic rectangular version, and it was felt that these pieces did not simply represent a 'variation' on the former. It is unlikely that these daggers actually represent deliberate adherence to any particular design or tradition. Rather, the type should be considered as an organisational unit with respect to the data.

Chronology and Distribution (Map 84)

These daggers occur at several northern sites. Late third millennium examples come from Tell Selenkahiye and Mumbaqat, while M.B.A. pieces come from Byblos and from Tomb LVI at Ras Shamra. None are reported from Palestine.

No Type 39 is defined

Type 40

(14 examples) Variants

This type comprises those items which are sufficiently well preserved for it to be established that they do not fit any of the types listed above. A brief individual description is therefore given, and any relevant comments made (see App. 1. for details).

Poorly preserved items

There are twelve items which are clearly identifiable as narrow daggers, but which cannot be further classified owing to their poor preservation, and two long-tanged daggers in a similar condition. Seventy-three additional

daggers are insufficiently well preserved to be assigned to any particular type. However, it is clear that they are neither narrow daggers nor long-tanged.

GENERAL DISCUSSION

There are several points concerning the typology outlined above, that require further discussion. The various types show different degrees of homogeneity. It seems to the writer, that those types which are most internally coherent are the more elaborate dagger forms. These show a greater consistency of attainment than other types. In essence these are Types 12, 13 and 17. The reason would seem to be that these were produced to specific designs, leading to the conclusion that their appearance was important. It is this, the makers' desire to meet certain specifications that make these types easy to recognize

The key factor in all these types is visual appearance, in particular in three dimensions; all these daggers have 'depth', whether attained by the means of grooves, raised ribs or whatever, as opposed to the generally flat, simple sections of the blades of most other dagger types. Although midribs are usually explained as aids to mechanical strength (see Yadin 1963, 61) this is not entirely convincing. The effective looking L.B.A. cast-hilted daggers are mostly made without midribs, as are most M.B.A. weapons apart from those under consideration here. Were midribs a purely functional attribute, we should expect them to be used far more frequently. It is more likely that their role was a decorative one. However, this should not be viewed as random stylistic variation, at the whim of the smith. Rather the forms employed were strictly defined, and give these daggers their distinctive visual appearance, making them recognizable over a wide area. Aesthetic appeal, combined with ease of recognition, forms a potent combination for a prestige weapon. When combined with white crescentic or globular handles, these weapons were recognizable even when sheathed.

There is also a technical aspect to this. Such weapons could only be conveniently produced in closed moulds. Clay moulds would suffice for single pieces, but for more regular production steatite would be better. It has clear advantages over clay as regards re-use, but is still easy to carve and thus suitable for cutting the necessary matrices for these elaborate designs. This

was not restricted to daggers. Other contemporary weapon forms also benefited from the extra 'dimension' which could be incorporated in well cut stone moulds (see 3.2.3).

A far greater heterogeneity is found among the simpler forms and these are less tightly defined. There is less evidence that they were produced to particular specifications. Obviously there are practical and mechanical constraints on the shapes which they could take, but within these general limits a wide range of variation could be accommodated, and still result in the production of a perfectly useable item. However, a number of general regional and chronological trends can be recognised. The narrow daggers are a long standing tradition of the southern Levant, one which seems to have remained conservative from the E.B.I to the late E.B.III period (Type 2), only to undergo a major diversification during the E.B.-M.B. period (Types 1, 3-5 and 7), an era which has recently been seen (Dever 1980, Richard 1980) as insular and conservative. Contemporary with narrow daggers in the south, we see a range of very different, small daggers from North Syrian sites (Types 27 and 36). These, it is argued, are but one manifestation of a long standing tradition of dagger manufacture dating well back into the fourth millennium, as exemplified by weapons from the tombs of the Énéolithique récent at Byblos and phase 'F' in the 'Amuq. This must lead us to suspect the existence of a substantial metal industry in the Levant during the Chalcolithic period, as indicated by finds from southern Palestine (Naḥal Mishmar and sites in the Beersheeba area).

Towards the end of the third millennium we see the appearance of decorated daggers, which may combine the use of incised decoration as seen in third millennium Mesopotamian daggers, with the broader-bladed forms appearing in the later Syrian E.B.A.. These seem to have formed an important element in a series of warrior burials found throughout the Levant during the M.B.I period. Elaborate, finely decorated weapons are known from Mesopotamian E.D. III contexts, and similar items may feature in lists of tribute recently published from Tell Mardikh (Archi 1982, 351; 1985, 283). Perhaps it is only a matter of time before examples occur in E.B.A. Levantine contexts. The final impetus leading to large scale production of daggers with stylised blades, may have been the widespread adoption of steatite moulds. These types

show a high degree of standardisation all the way from north Syria to the Nile Delta during this period, suggesting that they were in some way involved in the world of 'meaning'.

For the M.B.II period, our data from inland Syria is very poor. Comparison of the daggers from Ras Shamra on the coast with those from the southern Levant, suggests that the two regions were using different ranges of material. The classic Palestinian M.B.II types (10, and 17) are absent from the M.B.II tombs at Ras Shamra. Whether this was also the case in inland Syria is not clear at present, although I suspect that it was. At Ras Shamra we see a range of daggers (Type 33) resembling Cypriot types not found in the south. There is much more that can be said, but this is better treated in a general context, rather than restricting discussion to daggers alone (see 3.2.2).

2.5 Curved-Bladed Knives and Curved swords

2.5.1 Curved-Bladed Knives

(68 examples)

This group consists of a series of single edged knives with thin-section blades, showing a distinct curved cutting edge, which may be turned up at the point. The back of the blade is blunt, occasionally flanged, and the handle is affixed to either a rivetted trapezoidal butt, or a short rectangular tang. Wood traces are frequently found adhering to the rivets. The objects' morphology makes it clear that they were designed for cutting, rather than as stabbing weapons. Deshayes (1960, 307) classed them as Couteaux Type D, and although observing that they are an essentially Palestinian form, of M.B.A. date, he wishes to derive them from 'Egyptian influence'. However, it is now held that there was little direct Egyptian contact with Palestine, other than occasional raids, prior to the very end of the M.B.I period (Weinstein 1975), and it seems better to regard the form as an indigenous Levantine type. In fact, when these knives do occur in Egypt, it is generally at sites such as Tell ed-Dab'a, with a marked Levantine orientation. As regards internal typology he divides the group into knives with straight point, Type D1 and those with a point which turns up at the end, Type D2. The significance of this division is uncertain and no attempt at interpretation is made.

Although these knives are unlikely to be weapons, their frequent occurrence in tombs, where they form an important part of the metal repertoire, suggests that they ought to be included in this study. It has been suggested (see 2.4) that some of our daggers may in fact have functioned more as cutting implements or 'pocket knives'. As we wish to study the association of different types, to search for patterns suggesting 'equivalence' or 'substitution', completeness demands that curved-bladed knives be considered. In collecting this material it was decided to assign all curved-bladed knives to one initial group. Afterwards, it was planned to explore the association between variables in order to derive an internal typology for the form. Unfortunately these weapons are made of thin metal,

and are often poorly preserved when found. As a result it was necessary to exclude many items from the statistical analysis because of a high proportion of missing data. Using the remaining items, less than fifty-percent of the known corpus, little internal patterning was detected. It was found that there was no association between variables such as arrangement of rivets, shape of blade or butt or the various metricals recorded. The only feature which did clearly stand out was the separation between those knives with trapezoidal butts (fig. 57) and those with rectangular (fig. 56 top) attachments for the handles. They have been classed as Types 1 and 2 respectively. However, no difference in chronological spread or distribution could be detected between the two forms (compare Maps 85 and 86).

As a result of the above analysis it was felt that there was no point in attempting to divide these knives further. While it would have been possible to do so on the basis that some have blades which turn up at the end, as Deshayes did, there is no evidence that this variable correlates with any of the others. It seems that there are several possible dimensions of variation which show independent, random distributions. Subdivision on such a basis would be an essentially arbitrary exercise, and would result in the imposition of a classification by the investigator. An examination of these dimensions of variation individually, in terms of their chronological and spatial distributions, revealed no clear patterns. Therefore it was decided to treat the group as a whole.

Chronology and Distribution (Maps 85 and 86)

Curved-bladed knives are most common at sites in the southern Levant, and north-eastern Egypt. Examples from northern Palestine are known but are less frequent in proportion to the number of excavated tombs than in the south. Others come from coastal sites such as Byblos and Ruweise in the Lebanon. There is one possible example from Ras Shamra but it is rather different from the standard form and has no context. So far none are reported from inland Syria. However, our knowledge of the M.B.II materials of that region is limited and we cannot be certain that examples will not appear in future.

The earliest definite examples are from the Royal Tombs at Byblos (R.T.II)

dating to the late M.B.I period, and from a late M.B.I tomb at Tell ed-Dab'a. The type therefore first appears late in the M.B.I period. By far the bulk of the corpus comes from tombs of the M.B.II period, both early and late within it. Examples from Tomb 62 at Pella (unpublished) and Megiddo Tomb 2140 (cut into Str. X) are from contexts verging on the L.B.A. Although this particular form does not continue into the latter period, variants continue at least as late as the L.B.II period (see example from Tomb 911B at Megiddo, Guy and Engberg 1938,Pl. 122.3). The type is unrepresented among the large quantity of metalwork published from the M.B.II tombs at Ras Shamra, in contrast to the great number of small Type 33 daggers present, suggesting some substitution between these two types. This implies that although used in the northern part of the coastal zone during the M.B.I period, the type had ceased to be employed there by the later M.B.A., while continuing in popularity farther south, implying increased differentiation between northern and southern metal styles (and grave equipment) as the M.B.A. proceeded.

Given that these knives are insufficiently robust to have functioned as weapons, and that they occur largely in tombs, we should probably treat them as being involved in some way in mortuary practices. A clue as to the possible function of these knives is provided by the use of curved-bladed tools by workmen in butchery scenes from Middle Kingdom tombs at Beni Hasan, (Newberry 1893, Pl. XVII) although the real knives may have required to be rather more robust than those found in tombs. However, as will be seen later, an association with meat offerings can be detected. (see 3.2.2)

2.5.2 Curved Swords

(4 examples) This type comprises a group of weapons with curved blades (Maxwell-Hyslop 1946, Type 34), sometimes known as 'sickle-swords', an inappropriate title as Bonnet (1926, 85) has observed; the cutting edge is on the outer edge of the curve of the blade, rather than on the inside as in true sickles. There are three provenanced examples, all from the Royal Tombs at Byblos. They are around 560mm long, bear relief decoration, generally of a snake motif and have a short tang which was inserted into a wooden handle, anchored in some cases by a gold collar and bear decorative gold-covered nails. All are slightly different in detail, and must have come from different

moulds. They dated to the later M.B.I period (Gerstenblith 1983, 39). The fourth example comes from Shechem (Bohl 1926, XXX Pl. V) but has no real context, forming part of a group purchased by von Bissing in 1908. It is smaller than those from Byblos, length 452mm, but is similar in general form.

Maxwell-Hyslop (1946, 43) has emphasised the Asiatic origins of the type although allowing that those from Byblos and Shechem show a degree of Egyptian influence in the use of the 'Uraeus' and 'Lotus' motifs. There are no examples of this particular variant (Maxwell-Hyslop's Type 34) from well dated contexts in Egypt. An example from Tell Rotab in the Wadi Tumilat (Naville and Griffith 1890, 57 Pl. XIX.30) is undated and has a flange-hilt (a L.B.A. feature) which would suggest a date in the New Kingdom or possibly at the very end of the Second Intermediate Period. Given the range of metalwork found at Byblos and its general sophistication, it seems quite likely that these swords were local products. The contexts in which these occur (royal burials) suggest that they should be seen as prestige items, probably a part of the paraphernalia of royalty.

General parallels occur on reliefs from Mesopotamia; e.g. a relief from Telloh dated to the UrIII-Isin-Larsa period by the excavator (Genouillac 1936, Pl. 120) or a similar weapon in the hands of the King Eannatum in the famous Vulture Stela of Early Dynastic date (which might however represent rather a crescentic axe of some form). Both Bonnet (1926, 90) and Maxwell-Hyslop (1946, 42) comment on the frequent appearance of these weapons in the hands of kings and gods in reliefs and seals, and note that the type has a long association with deities and royalty in Western Asia, implying an important symbolic role (see 3.2.2). Flange-hilted examples from the Levant date to the Late Bronze Age as Bonnet (1926, 86-87) observed, and represent a later development reflecting the increasing use of flanged handles on daggers at the beginning of the L.B.A.; see examples from Gezer (MacAlister 1912 (III) Pl. 75.16) and Ras Shamra (Schaeffer 1936, 145 Pl. XVIII.2).

2.6 Projectiles

It is clear from a various sources (Yadin 1963, Miller at al 1986) that archery was an important component of warfare during our period.

Representational Art

There is good evidence of 'Asiatics' bearing bows from the Middle Kingdom tombs at Beni Hasan in Egypt (Newberry 1893, Pl. XIV), while in Mesopotamia, Naram-Sin is depicted as carrying a bow, probably a composite type, in the famous Victory Stela (Strommenger 1964, fig. 122). From Mari, there are scenes dated to the E.D. III period, showing men in military gear using composite bows (Parrot 1971, Pl. XIV).

Textual sources

Archery is mentioned in the Tale of Sinuhe (Pritchard 1955, 20), set in M.B.I Palestine. At the end of the third millennium we have a reference to the receipt at Drehem of 500 bows from Ebla (Michaelowski 1978, 36), indicating production in large numbers in western Syria, while references to the production of bows and arrowshafts are frequent in the Mari texts (Rouault 1977, No. 9, 21). In fact, and the term *tilpanum* is now translated as composite bow (Durand 1983, 336ff), rather than the old translation of 'throwing-stick'. The emphasis on the decoration of these items, (Durand 1983, 336ff) suggests that such bows were prestigious weapons at this point (early 18th C) and were unlikely to have been available to all. There are also references (Rouault 1977, No. 10) to the production of large number of lightweight bronze projectile heads (c 1/4 of a sheckel in weight, say 2g), which must be understood as arrowheads. On one occasion Shamshi-Adad is recorded as requesting 10000 bronze arrowheads from his son Yasmakh-Adad, clearly for military purposes.

The Archaeological Evidence

The evidence for the period prior to the Early Bronze Age has been summarised by Korfmann (1972). Subsequent developments have been

reviewed recently by Miller et al (1986), who illustrate the considerable value of the composite bow as a weapon. As archery was clearly important in warfare, the rarity of equipment from archaeological sources prior to the L.B.A. requires comment. The most likely evidence in archaeological situations would be arrowheads. Although some arrows may have had hardened wood points, bone, metal, or stone arrowheads should have a fairly high survival rate. However the evidence from tombs, which provides the bulk of our corpus of other ancient weapons, is extremely limited as far as archery is concerned.

Early Bronze Age

The earliest appearance of metal arrowheads in any quantity would seem to be a group from Grave 80 at Abu Salabikh (Martin 1985, 14), dating to the E.D. III period. These are classic tanged arrowheads with lanceolate blades, weighing a little over 8g, (c 1 Sheckel as understood at Mari) and their presence is in marked contrast to the infrequency of arrowheads in the Royal Cemetery at Ur (Moorey 1982a, 32). In fact, the occurrence of such arrowheads, which are very similar the so-called 'L.B.A.' tanged arrowheads, at such an early date, suggests that they are not L.B.A. at all, and have simply been called so because it is only then that they appear in sufficient numbers to be noted. Chipped stone arrowheads are known from a late E.B.A. tomb at Halawa (Orthmann 1981, 56), while others are reported from a late third millennium destruction at Hammam et-Turkman on the Balikh, north Syria (Van Loon 1985, 96). As for the southern Levant, it has been argued recently (Millar et al 1986, 182) that the defensive systems employing towers and bastions, known at Palestinian E.B.A. sites, were designed to be defended by archery. Therefore it is clear that such weapons were both widely produced, and used during the E.B.A..

The Middle Bronze Age

A number of arrowheads are known from M.B.A. contexts. However, they are few in comparison to other contemporary weapon types, suggesting a difference in the pattern of deposition. In Mesopotamia, the composite bow was in use at least as early as the third millennium (Moorey 1986, 209), and

there is good textual evidence (see above) for its adoption in Syria by the period of the Mari texts (if not well before). A recent study by Miller et al (1986) has identified the production of chipped stone arrowheads from the M.B.A. occupation of Tell Hadidi in north Syria, which highlights the paucity of finds elsewhere.

Although some are known from M.B.A. burials, many are from loosely defined contexts in occupation areas, arguing that arrowheads were common, everyday objects. However, they were rarely included in burial contexts or in deliberate deposits. The lack of arrowheads from the vast array of metalwork in the 'Dépôts' at Byblos is an instructive case in point. The rarity of arrowheads in both graves and deliberate deposits suggests that they were not seen as 'suitable' in such circumstances.

A list of bowmen (two of whom also possessed chariots) is known among the texts from Alalakh VII (Moorey 1986, 210), while arrowheads first appear in that level (Woolley 1955, 285). These include an example of the tanged, leaf-shaped variety (Woolley's Type 4), common in L.B.A. contexts, demonstrating that such items were in production in Syria by the later M.B.II period, suggesting that the arrowheads listed in the Mari texts may also be of this kind. Yadin (1963, 80) suggests that that composite bows (which presumably made the use of metal tips worthwhile) are best suited for batch-production, i.e. that they could be most easily manufactured by large economic units such as palaces, rather than by small-scale workshops. Presumably therefore, production and issue of these weapons would be most practicable for the larger centres. A similar situation is described in the L.B.A. texts from Nuzi (Kendall, 1975, 72) where arrows held by soldiers between campaigns, remained the property of the palace.

The very fact that such weapons were issued from a central source, and did not belong to individuals or corporate groups, may have severely restricted their use as grave goods, simply because they were not exclusive and hence low in prestige value. Support for this view comes from the striking lack of evidence for the use of the sling as a grave item. This highly effective weapon has a long history, in the area (Korfmann 1972). Slings appear in significant numbers in the Mari texts under the term *wapsum* (Dalley 1984, 148 and references there), indicating their continued use in the M.B.A. Of course,

neither the sling, nor bolts which would stand a good chance of surviving in tombs, are exclusive, controllable resources. As a result, their utility as grave goods may have been limited. Unlike certain other weapon forms which we might reasonably believe to have been confined to the upper echelons of M.B.A. society (unless issued by the authorities for a specific occasion), slings and bows may have been available to a many people, not only those of high rank.

This surely bears on the 'status' of arrows and archery as opposed to other weapons, and should make us consider exactly what our 'warrior' burials mean. If archery was an important part of waging war, then the weapons in burials are not directly, or simply, related to military practice. The items which tombs contain are socially determined. The nature of grave goods; daggers, javelins, and axes implies that it was close range weapons which were valued. Perhaps we see an echo of this, the great individual warrior, in the Tale of Sinuhe, which features single combat between Sinuhe and a the 'Champion of Retenu' (Pritchard 1955, 20). There is however, no mention of such fights in the Mari texts, nor in the records of Hittite campaigns in Syria (Houwink ten Cate 1984), where warfare seems to have been real, and the armies large and well organised. This is turn might suggest that 'warrior' goods have more to do with an individual's social position than with his real occupation, a point made by Watkins (1983b) in connection with the E.D. III 'warrior' burials in the 'Royal Cemetery' at Ur.

COMPARISON WITH THE LATE BRONZE AGE

A far greater number of tanged arrowheads are found in L.B.A grave contexts, occurring singly, in small groups, possible quiver-fulls. Ben-Arieh and Edelstein (1977, 35) report a number of bunches from the vicinity of a group of 14th C tombs near Akko. The L.B.A. burial deposits at Lachish produced many tanged metal arrowheads, in contrast to the paucity of such from earlier deposits (Tombs 216, 555 and 4004 produced 21, 4 and 17 examples respectively, see Tu fnell 1958, Pl. 25). At Megiddo, from the tell there are 26 examples from Strata IX-VIII against 4 from XIV-X as far as can be judged from the publication plates (Loud 1948), while a review of the tomb material (Guy and Engberg 1938) reveals that such arrowheads as do occur, are largely in L.B.A. groups. As we now know that such weapons were in

production in the M.B.A., we must ask why the L.B.A. examples enter the archaeological record with greater frequency.

The key to this, lies in the emergence of the chariot as an important component of military practice towards the end of the M.B.A. Chariots were certainly in use prior to this date and have a long history in the Near East (Moorey 1986, 203). The first textual evidence (Houwink ten Cate 1984, 59) for their military function, appears in connection with Hittite campaigns in north Syria in the later 17th century, where they appear to be used in combination with archers. It is in fact the new and potent combination of bow and chariot (Moorey 1986, 208) that is of particular interest to us, one which features regularly in the late 15th-early 14th C Nuzi texts (Kendall 1975, 67) and those from L.B.A. Ugarit (Heltzer 1982, 192). The second point to emerge from the Hittite texts is that chariots are not only the property of the major powers. Some belong to the smaller north-Syrian towns (Houwink ten Cate 1984, 59), implying that they had been widely adopted by this time.

In Palestine, with its less suitable topography and smaller economic units (see Sapin 1982, 177), perhaps looking more to the Delta than to the north during the M.B.II period (see 3.4), the chariot might be expected to have appeared rather later as a weapon, than in the north Syrian steppe. Chariot-teams were among the booty taken by Kamose during his first major attack on Avaris, the capital of the Hyksos, around the middle of the 16th C (Smith and Smith 1976, 60), providing a terminus ante quo for the appearance of the chariot in the Delta, and by implication in Palestine. The speed with which the chariot motif was adopted by the 18th Dynasty Pharaohs (Schulmann 1980, 127) in their celebratory reliefs, would suggest that they too were well acquainted with these vehicles prior to re-conquest of the eastern Delta.

The decline of 'personal' sets of hand-to-hand weapons in grave contexts (most of the M.B.A. axe and dagger types disappear by the L.B.A) may be connected to their replacement by the chariot as the preferred mark of warrior status. There is likely to have been a period of overlap, and they would be expected to occur in graves for some time after their replacement by the bow and chariot as the actual military equipment of the elite, so we should not expect a sudden change. However, given the pattern of regular stylistic change in the dagger-axe sets themselves, such a shift is by no means

unlikely. In fact, the continual process of emulation, which we have taken as the underlying dynamic behind these typological changes (see 3.2.3), can be seen to apply to chariots themselves, as a more members of lower social classes came to serve as charioteers as the L.B.A. progressed (Reviv 1972, 220).

The disappearance of these sets could be interpreted in practical terms as resulting from their unsuitability for use from a chariot (Schulmann 1980, 123-4). Alternatively, the increased usage of the chariot might imply that it had become the favoured mode of expression for personal prestige or standing, and the dagger-axe sets had declined for 'symbolic' rather than purely practical reasons. Obviously the chariots themselves were, like the horses, too valuable to be consumed as grave goods (and were often the property of the king anyway, see Kendall 1975, 71, Heltzer 1982, 115), but the bow, quiver and arrows may well have been an acceptable offering, indicating much the same thing, 'warrior' (high) status. Kendall (1975, 251) notes the possible symbolic importance of the quiver in certain L.B.A. texts from Nuzi. Certainly it is the bow which features as the preferred weapon of Egyptian New Kingdom pharaohs when they are depicted mounted in a chariot (Schulmann 1980, 121), partly replacing the long- established mace, as the tool for 'smiting the Asiatics'.

As Moorey (1986) has recently observed the potent combination of composite bow and chariot, and the increasing use of scale armour would have made substantial differences to the nature of warfare, in particular to the practices of elite troops. Therefore the rise of the chariot as a weapon has important consequences for social change. There is a strong association between 'chariotry' and special troops, men whose status was dependent on their military skills, not on land, office or family, although possibly expressed in a military idiom. Heltzer (1982, 11) observes the many Ugaritic Maryannu are classed as 'men of the King', i.e. royal dependents, not always of the nobility, and many do not seem to have possessed chariots of their own (Reviv 1972, 219). Not only do chariot warriors who are also proficient archers require a considerable degree of skill and training, they also require logistical support. Unlike daggers and axes (or other precious objects) which can be passed along exchange networks, but which require no 'servicing', acquisition of a

chariot demands that the recipient has regular access to a support network. It is not a personal weapon. Success as a charioteer is dependent on institutional backing, i.e. the support of the state. This is a marked change from the material which we see in M.B.A. burials, which would seem to have been the individual's to dispose of at death or as an offering, as he saw fit.

It is these changes which we are seeing reflected in the changing burial forms at the end of the M.B.A . Given that the chariot seems to have become established in the north prior to its general acceptance in the southern Levant (see above), this might bear on the lack of 'prestige' weapons from inland Syrian sites of the M.B.II period. Although no such cemeteries have yet been published, one might believe that were such material present in any quantity, unprovenanced examples would have appeared in museums or on the antiquities market. The fact that this has not happened, in contrast to the large amount of late E.B.A. and M.B.I metalwork known, suggests that it simply may not have been deposited in any quantity (unless of course it is typologically very similar to M.B.I material).

A suggestion therefore is that prestige daggers and axes went out of use in inland Syria early in the M.B.II period, contemporary with the spread of the chariot/composite bow combination. In Palestine however, the dagger/axe combination continued in favour rather longer, and in fact was to form an important element in exchange and communication networks linking southern Palestine with the Delta sites (see 3.4). Coastal Syria, in particular Ras Shamra may represent a rather special case, in that it shows strong connections with Cyprus.

PART 3 DISCUSSION AND CONCLUSIONS

3.1.1NTRODUCTION

We have not considered metal weapons purely for their intrinsic interest, nor have we produced a long and detailed classification simply to aid the 'pigeon- holing' of individual items. Our stated aim is to use our material to contribute to the understanding of the human societies behind the archaeological record, and to attempt to set the material in a wider context. However, we cannot move straight from the data to the consideration of human society. We must allow for the nature of the material available, and deal with the problems inherent in the archaeological record, its formation and transformation.

Various ways to 'contextualise' the material can be suggested. One could focus on the acquisition of raw materials and the organisation of production, which would demand a detailed consideration of the documentary material, in particular administrative documents such as texts and seals, as well as the archaeological record. Some work has been carried out on Mesopotamian material. The textual evidence for the Ur III and Akkadian periods has been summarised by Limet (1961, 1972), and the archaeological data relating to technical matters synthesised by by Moorey (1985). For Syria some evidence is available from the Mari texts (Rouault 1977, Durand 1983b) but this has not yet been fully synthesised. New evidence for the third millennium is now available from Tell Mardikh (Pettinato 1981, Waetzold and Bachmann 1984) but study is at an early stage and such work lies outwith the scope of the present survey.

Alternatively one could study the technology of metal processing and manufacture. However, the present work is restricted to weapons alone, omitting a large part of metal production, much of which is poorly known (consider toggle-pins for example, last comprehensively studied by Henschel-Simon in 1938). Furthermore, the available analytical data is too uneven in quality and space-time coverage to permit more than preliminary comparison between groups of material, while little metallographic work has been carried out, (see 3.3). As Tosi (1984, 23-34) has emphasised, a proper

archaeological study of the metal industry and its organisation requires more than the evidence of artefacts alone. We need to consider tools, moulds, alloys, and of course processing installations. We must examine waste residues, activity areas, stocks of semi- finished goods, the re-use of scrap, and the contents of storerooms. Excavations on Near Eastern sites have rarely shown sufficient interest in industrial areas, concentrating rather on public buildings, defensive works or on deep stratigraphic soundings, making such research difficult.

A better prospect exits if we design our questions to extract maximum information from our particular data, the archaeological evidence of finished artefacts. However we must be wary. To simply plot points on a map and proceed to investigate distributions can be misleading. Taken at its most simple, this approach could be seen to argue for the centralization of M.B.I metallurgy on Byblos, which is highly improbable. Besides our poor knowledge of the loci of manufacture, a second problem, that of the contexts within which our material occurs must be considered (Hodder 1982b, 203). Investigation shows that the bulk of our material comes from graves, most of the rest from deliberate deposits (see below). We should also note that the material is not necessarily a literal indicator of patterns of trade and exchange. Although the boundaries of different distributions should bear some relation to such networks (Ellison 1980), the archaeological record presents us not with direct view of the pattern of exchange, but with a transformed version, a pattern of deposition, of consumption (Bradley 1985, 22).

It is the additional attribute of our material, context, which is likely to provide our best access to the underlying social processes. Material from contexts such as ours cannot be assumed to be representative of that which was in production and must be treated carefully, as its appearance in the archaeological record is the result of structured human action. Therefore the pattern of archaeological finds cannot be divorced from those social and cultural factors which influenced the deposition of those particular objects. For example, factors bearing on the deposition of weapons, are likely to differ from those which affect the distribution of domestic ceramics. Any attempt to interpret our material without due regard for these points will be inadequate.

3.1.2 WEAPONS, WARFARE AND THE ARCHAEOLOGICAL RECORD

Weapons and warfare

With regard to the Mesopotamian material, Watkins (1983b, 100) notes the difference between the equipment of troops depicted on the 'Vulture Stela' and that of the occupants of the graves from the contemporary Royal Cemetery at Ur. Moorey (1982a, 32) likewise observes the clear preponderance of daggers and axes over spears and arrowheads in both the Ur cemetery and Cemetery 'A' at Kish, suggesting that the former represent the personal weapons of an elite, while the latter were issued from the palace arsenal. The observation (Moorey 1982a, 33) that spearheads tend to occur with the bodies of attendants and guards, rather than with the main burials in the Royal Cemetery highlights the importance of context and association.

The long history of the bow as a weapon, has been discussed above (2.6), where attention was drawn its rarity in funerary contexts, presumably because archery lacked 'status'. Spears are common in graves of the M.B.I, period but are generally of lightweight types, rather than heavy infantry weapons, and tend to occur as components of a 'set' of weapons, not as a single offering, as one might expect in the grave of an infantryman. In this context, it is interesting that we see much the same 'grave-sets' appearing in the northern Levant, where regular armies existed (see below) as in the south, where the settlements were smaller and the economy less highly developed. The implication then is that there is a clear difference between burial equipment, which conforms to a 'pan- Levantine' pattern and that of the military establishment.

A consideration of the status and numbers of soldiers referred to in the Mari texts suggests that many, often from tribal groups, (Matthews 1982, 98-100) were reluctant, unreliable warriors, often conscripted and seemingly supplied with weapons by the central authorities (Sasson 1969, 11-15). Men so supplied were unlikely to have been able to take their weapons to the grave. Although lightweight projectiles feature in large numbers in the texts from Mari, up to 10000 occurring in one text dated to the time of Shamshi-Adad (Dossin 1950; №38), they are no more numerous than are

battleaxes in the actual grave inventory. In Mesopotamia the material from graves is rich, yet Watkins (1983b, 101) has observed that the status of soldiers was low, and that they could be used for agricultural or construction work if necessary. The evidence from Mari implies that a similar situation existed there (Sasson 1969, 5). Certain kinds of soldier, probably of rather higher status, such as *Ba 'irum* troops seem to have carried axes (Dossin 1950; 31) although there is no evidence that these were widely used. The GIR GIR.SIG.GA and *kisrum*, elite groups of personal guards or retainers of the King (Sasson 1969, 16) might also have been well equipped, and possess 'status' items. Armies could be large, numbered in thousands, and featured both light and heavy troops (Sasson 1969, 17). Complex operations such as sieges were undertaken (Dossin 1950, Nos. 131, 135; Rouault 1977, Nos. 17, 24), and considerable attention given to logistical problems (Dalley 1984, 145-50). Operations were generally carefully planned, controlled and executed. Such practices cannot easily be reconciled with the material from contemporary graves which seem to represent personal weapons, best suited for hand-to-hand combat.

Spears of any kind are rare in graves in the southern Levant in the M.B.II period where the most common weapons would seem to be daggers (see 3.2.2). A dagger on its own is a poor substitute for a long spear in battle, especially in a co-ordinated action. Like the axe it is a weapon for close combat, most useful in one-to-one encounters. These must be seen as personal weapons, the tools of the warrior, rather than those of the soldier. We must also acknowledge that the fenestrated axe, especially its Type 2 form with large holes in the blade, is quite an inefficient shape for a battleaxe (see 2.1). Many of the shaft-hole axes of Type 2 found in the Euphrates Valley in the E.B.A. would seem to be much more effective weapons, and figures bearing such items appear in several Early Dynastic period illustrations (e.g. Parrot 1956, fig. 77-78; 80). Thus we see that the styles of weapon in use were not determined solely by utilitarian considerations.

Axes and spears feature in the single-combat between Sinuhe and the 'Champion of Retenu' (Pritchard 1955, 20). The tale celebrates a ritualised, or at least individualised fight, a mark of what is termed 'heroic' society. There is no hard evidence that burial with weapons necessarily implied that one was a

professional soldier. To answer this question, we need more age-sex data on the occupants of these (and other) Levantine burials. We may be dealing with a situation where 'entitlement' to a warrior burial was determined by aspects of one's position in society, where the expression of status was through a warrior idiom, or even by simple possession of such items, perhaps obtained through exchange or as gifts (see below). This might suggest an ideological connection between 'warrior' qualities and 'greatness'.

Weapons and Social Status

Weaponry is at all times a minority grave item. It is exclusive. Even among the large cemeteries of the E.B.-M.B. period found in southern Palestine, burials with weapons represent only a small fraction of the total. Possession of such items was at all times the prerogative of a restricted group. That this group was essentially one of high social status is argued on the grounds of both the representational evidence (discussed below), and the clear association of weapons with deities, as seen archaeologically in groups of temple offerings such as the 'Dépôts des Offrandes' at Byblos (see Dunand 1939, 1954), in the Mari texts (see for example Limet 1985, 519) and in contemporary glyptic (Solyman 1968, 101ff for metal weapons in particular). The most obvious support for the role of weaponry, axes and daggers in particular, in a communicative function, is the widespread standardisation of types seen in the M.B.A., the M.B.I period in particular. Fenestrated and Type 1 narrow-bladed axes and Type 12 and 13 daggers display a remarkable degree of stylistic similarity throughout the region, cutting across known ceramic, geographical and political boundaries. This cannot be accidental and implies deliberate adherence to well understood designs. The best reason for this, given that the mould evidence indicates manufacture at a number of different sites (see 2.1), is that these weapons had a meaning for those who bore/saw them, a meaning that was embodied in their physical form. They presumably symbolized certain concepts connected with high status that were comprehensible throughout a large geographical area.

The reliefs from Serabit el-Khadim dated to the later 12th Dynasty (Gardiner et al 1955) depict groups of Asiatics employed in the local mines, and their leaders, in particular one "Khebed, Brother of the Price of Retenu"

(No. 405, Pl. LXXXV), who appears mounted on a donkey, with attendants on foot. The mounted figure in one relief (No. 112, Pl. XXXVII) bears what seems to be a Type 1 fenestrated axe, while his attendants carry short bladed spears, probably of our Types 8 or 9. It seems therefore that fenestrated axes were generally carried by high ranking individuals, in contrast to the more widely available spear. Wall paintings from Middle Kingdom tombs at Beni-Hasan also show more figures armed with spears or bows than there are carrying axes (Newberry 1893, Pl. XXX). Although we cannot be sure exactly what the term 'Prince of Retenu' meant, and how extensive was his sway, it does seem that the possession of a fenestrated axe i.e. the provision of a 'warrior' burial, implied a high rank. We should note that at Jericho and other similar sites, there is no sign of any class of graves conspicuously richer than 'warrior' burials, such as that of the individual in Tomb J3 (Kenyon 1960, 313), suggesting that people so honoured occupied high positions within the local social system.

Despite the frequent occurrence of 'Asiatic' figures armed with spears in Egyptian reliefs of Middle Kingdom date, graves containing spearheads alone are practically unknown in Palestine during the M.B.A. In fact, spearheads only appear in tombs where the occupant(s) were already equipped with other items, generally a dagger, an axe or both. Spearheads then appear to have been conceived of as supplementary arms, borne by those already distinguished by other items. We might surmise that individuals shown as bearing only spears, in these reliefs, were not allowed even those in their graves. Developing the point made above concerning the likelihood of spear manufacture and distribution being at a local level (see 2.3), we might reasonably infer that they had little role in the transmission of the kind of information carried by certain other weapon types. This analysis is best applied to the M.B.I period, where a substantial body of well distributed material is available. It may also apply to the later Syrian E.B.A., but our data is too heavily concentrated in the Euphrates Valley for us to apply this approach to Syria as a whole at this time.

WEAPONS IN PRECIOUS MATERIALS

Much of the evidence for such weapons is textual rather than archaeological, rendering study of this area rather difficult. As the present work is not primarily concerned with the linguistic evidence, we shall deal with this only briefly, insofar as it bears on that known from archaeology.

The Textual Evidence

The linguistic evidence for ancient weaponry in Mesopotamia has been surveyed by Salonen (1965). However, it is not clear exactly how far the Mesopotamian terminology can be applied to the Levant. We should also note the number of different terms in use for particular categories of artefact; consider the eighteen words which have been rendered as 'spear' (Salonen 1965, 84-92), although the author does reject several of these translations. It is clear from Salonen's work, that no simple equation between the texts and the archaeological material is possible. That there may be regional or chronological differences in the application of particular terms, is a point which Salonen does not fully acknowledge. Nor does he consider the relationship between 'types' as defined by archaeologists and either the categories recognized by the actors, or that between the latter and verbal designations.

Salonen points out that many terms can only be understood in the most general way, as some kind of spear (1965, 85), as generic words such as *hassinnu* - axe (1965, 14), or GIR-GIR - dagger (1965, 49ff). Although this particular line of enquiry is of limited value to us, his study of lexical data has brought to attention the number of references to items designated by terms which should refer to weapons, which are made of precious metals (see below). Several forms of axe occur in precious metals (Salonen 1965, 19), as are various kinds of dagger. This seems to confirm what the archaeological evidence from sites such as Byblos and the Royal Cemetery have implied, namely that the production of common weapon forms in precious metals was not infrequent.

A similar situation has been observed in the case of more recent West African metalwork, where elaborately decorated knives, axes and so on occur.

The phenomenon as a whole has been termed "the ornate implement" (Northern 1981, 3- 4), items which are structurally similar to utilitarian implements but which have undergone morphological variation allowing then to function in a different sphere. Actual grave finds are limited to certain rich burials in the Ur Cemetery, although the late third millennium grave inventory of Billala, Temple Administrator of Kish, (Foxvog 1980) suggests that they were appropriate for senior persons generally. The man concerned received a silver spear and knife and a copper axe, as well as a 'chariot' and harness donkey. Others occur as offerings in the 'Temple of Obelisks' at Byblos (see Dunand 1954, 694ff), and are frequently cited in connection with gods (Bottéro 1957, No. 9; Durand 1983a, Nos 222 and 289, and discussion pp 345-6). At Mari we encounter "the axe of Sin", alongside "the footstool of Shamash", and other precious objects such as tables, vessels and a chariot, pertaining to various deities (Durand 1983a, No. 249). There is a particularly interesting reference to the use of gold "for the plating of the horns of the dagger of Shamash" (Limet 1985, 519). One might infer that this referred to a metal covering over a crescentic handle of the form seen in the Ur cemetery (Woolley 1934,. Pl. 152, left). To judge from these descriptions and the actual examples from Byblos, these objects conform to classic weapon shapes, not forms peculiar to such items. The use of alabaster, or ivory, crescentic pommels on our Type 12 daggers should be seen as related to the shape of such prized items.

Weapons in precious metals appear in lists of tribute received at Ebla (Pettinato 1979, 189, Archi and Biga 1982, 382, 1985a, 283), showing that the tradition of such weapons in Syria is virtually contemporary with similar items in the Royal Cemetery. Many occur in texts dealing with various kinds of valuables at Mari where axes in gold or silver of a particular weight were allocated to high court officials (Bottéro 1957, No. 249), perhaps in connection with their offices or in reward for services. Other officials received similar weapons alongside valuables such as quantities of tin and silver rings (Birot 1960, No. 46). Examples are mentioned with handles of lapis lazuli, ivory and so on (Limet 1985, 519), comparing closely to those known from the 'Depots' at Byblos (see above), and one is depicted on a fresco from the Palace of Zimri-Lim (Parrot 1958, fig. 35; see also Maxwell-Hyslop 1970, 165). Such material, stored in temple or palace treasuries, is unlikely to have survived centuries of warfare, tribute-taking and looting. Mellink (1963, Pl. XXVII) notes

a stela found in southern Iraq, which she interprets as depicting the taking of booty, including valuable daggers, from a location in north Syria-Cilicia, during an Akkadian campaign. If not removed on the capture of the city, then material might be taken as regular tribute collected over a period of time. Another reason for the rarity of these items is frequent remelting of precious objects to enable their re-use in new products (Durand 1983b).

Archaeology

We should note that these items occur in much the same contexts i.e. graves and deliberate deposits as do their base-metal equivalents. The overlap between the material from the Byblos 'Dépôts' and that of contemporary graves (weapons, pins, vessels, jewellery, imported items etc) implies a close connection between status/valuable items and material suitable as offerings/gifts to deities. Furthermore, the material from the 'Dépôts' is similar to that featured in lists of gifts/payments made to high court officials at Mari (silver vessels, elaborate weapons, jewellery etc, see details in Munn-Rankin 1956, 97ff). That being so, it seems reasonable to infer that much of this material also featured within exchange networks existing between the living. It is suggested therefore that the difference between gold or silver and other weapons is merely one of degree. The former represent the upper end of a continuum of valuable items concerned with status and gifting. Perhaps the important point in many graves was the offering of a weapon of the correct form, the fact that it was made of gold can be seen as a bonus, a degree of 'added value'.

Summary

Yadin (1963) in his valuable study of Ancient Near Eastern warfare, assumed a functional-efficiency dynamic, driven by deliberate human choice aiming to maximize effectiveness in battle, as the main engine of typological change in weapons. Objects are viewed as technical refinements on earlier types, evolving in a Darwinian fashion to meet new military challenges with greater efficiency, and hence conferring greater chances of survival. Although I would agree in part with this view, it is likely to apply most strongly to military equipment. There is a problem in applying this line of argument to

our material, namely the uncertain degree of correspondence between the weapons present in the archaeological record and actual military hardware (see above). Certainly the textual evidence from Mari (Sasson 1969, Dalley 1984, 139-150) and the Hittite sources (Houwink ten Cate 1984, 68-69) argue for a strong interest in the effective pursuit of warfare, note the emphasis on logistics, siege techniques and equipment, patrols, blockades and so on. However, as far as the material from funerary contexts is concerned, it is felt that such deliberate planning applies only at a macroscopic level, such as the replacement of close-range weapons by the combination of chariot and the composite bow. Detailed typological change is subject to different forces (see 3.2.3).

The conclusion drawn from the above discussion is that much of our corpus of weaponry is not typical of everyday military equipment, and may be a poor guide to developments in that field. It should be considered rather in terms of communication and message transmission (Wobst 1977), in the marking of male status and as an element in inter-group exchange networks. Support for this view comes from the contexts in which these weapons occur, the standardised shapes of many items, and the use of non-utilitarian materials and decorated handles in many cases. As we come to understand the nature of our material, and the contexts within which it was used, we gain a clearer impression of those problems to which it can make the greatest contribution.

3.1.3. CULTURAL ATTITUDES TO WEAPONS; THEIR SIGNIFICANCE

Weapons, especially those recovered from the archaeological record function as marks of distinction. Ceramic vessels are found in many tombs, jewellery and items in precious metal in relatively few. Until the later M.B.A., weapons constitute the single most noticeable addition to the standard pottery repertoire in burial contexts, although at all times remaining a minority attribute. The possession of arms in funerary contexts seems to be connected to male high status. Weapons have not yet been found in clear association with female inter ments. They also feature regularly as offerings at sacred sites, (See 3.2.1 and Philip (b) in press). The contrast between the kind of weapons found in graves and the equipment of military forces implies that certain weapons were endowed with a degree of symbolic significance, that they are examples of what Binford (1972a, 24) has termed 'sociotechnic' artefacts.

In order to deal with this we must consider the uniqueness of the schemes which give meaning to material culture, the 'non-arbitrary' nature of symbols (Hodder 1986, 3). The reason why weapons should be considered an appropriate way in which to express social concepts and statuses, must involve factors deep within the value systems and world views of the societies concerned. It is presumably for these same reasons that weapons are considered suitable for offering to the gods.

In a recent study of the role of copper in African societies, Herbert raises a number of points of considerable relevance to the ancient Levant. In both areas we have elaborate knives, axes and so on, which play an important part in the communication of group and personal roles, statuses and identities. Herbert's (1984, 241) explanation for the choice of weapons to perform this role, rather than other materials, rests on fairly obvious grounds. They are associated with power, victory, the ability to take life, with risk taking and daring, violent action, in essence then with the pursuit of reputation, a notion equally applicable to the Bronze Age Levant (Zaccagnini 1983b, 213). We might also note the concept of the ruler as 'guardian and defender' of the community, widespread throughout the region at this time. Weapons are also practical, many people would require them anyway, and of course portable. This may be especially significant as status-messaging may be most relevant

when one in unfamiliar territory (Wobst 1977, 323). Naturally we are not dealing with a set of fully coincident boundaries for all weapon types; in one area weapon A may be stressed, and another in region B (see 3.2.2). However, the fact that what is here termed 'weapon-symbolism' cuts across a range of ceramic, political and even linguistic boundaries, indicates its widespread use and acceptance throughout the Levant.

Though simple, this does seem a reasonable hypothesis. Warrior qualities are frequently emphasised, and presented as desirable in ancient Near Eastern myths and legends, such as the Gilgamesh epic, the King of Battle story and the Tale of Sinuhe, and in historical records glorifying military campaigns and the taking of tribute. The connection between weaponry, power, wealth and prestige is clear. This attitude can be detected in the Mari correspondence of Shamshi- Adad where the 'soft' Yasmakh-Adad is continually castigated for idleness and sloth in contrast to his active, manly, militarily successful, elder brother (Kupper 1973, 3). It is argued that the emphasis on weaponry as an indicator of social status is no more than the tangible expression of widely held, culturally formed, notions concerning appropriate male behaviour. The fortune of the city god was believed closely bound up with success in warfare (Dossin and Finet 1978; 8), while offerings were generally made to deities on victory. Myths, legends and seals frequently illustrate gods involved in a similar set of activities to that of their earthly subjects, often bearing axes, daggers and curved swords of types familiar from the better equipped burials (see Solyman 1968, 47-59). We need only add that it is but short step from the expression of 'greatness' in man by weapons, to the celebration of similar qualities in the deity through the same range of items. The origin of these concepts must be sought prior to the third millennium, as examples of elaborate weaponry are known from Arslantepe in the later fourth millennium (Palmieri 1981, 109, fig. 3- 4), while daggers appear as a minority item in fourth millennium graves at Byblos (Prag 1978, 32, note 22), arguing that the existence of these concepts was an important factor in shaping the subsequent archaeological record.

The elaborate ritual items from Naḥal Mishmar, show that in southern Palestine metal was considered as suitable for religious/ritual items by the earlier fourth millennium. From this, and the hoard of elaborate weapons from

Arslantepe (cited above), we might infer that a similar situation existed elsewhere in the Near East at this time. Rosen (1984, 504) has observed that metal does not uniformly replace other materials. The change depends very much on the context of use of the particular objects, and copper appears relatively early as a medium for the production of ritual items. One might suggest that this arose partly from its rarity value, but also from its ability to form complex shapes, and its attractive colour and polish. Metal then, was considered a medium suitable for the carrying of symbolic messages by the fourth millennium, apparently prior to its widespread use in the production of weapons.

This point seems to run counter to the views of Renfrew (1972, 320), who has argued that metal becomes indispensable only after its adoption for weapons manufacture, and that arms production is the driving force behind the development of metal technology. Other criticisms can be levelled at this view. Lechtmann's (1984) work on Pre-Hispanic Andean society shows that the decision to produce (or disregard) metal weapons is determined by cultural, not technical factors. In this case the sling and club remained more important than edged- weapons, despite the widespread use of metal in the production of ritual items. The Near Eastern evidence outlined above seems to support this view, and indicates that metal had a special 'value' before its widespread use in military gear. The early development of sophisticated metalwork also argues against a sudden 'explosion' in metallurgical knowledge around the mid-third millennium (note the recent finds of metal weapons in E.D.I graves at Kheit Qasim in the Hamrin basin, Forest 1981, 187, Pl. 46. 10-11). We might conclude than that metal becomes indispensable when people feel this to be so. Notions concerning the 'appropriateness' of materials are culturally determined, ideological concepts.

3.1.4 THE PRODUCTION AND DISTRIBUTION OF WEAPONS

Accepting that weapons played an important role in the value systems of the Bronze Age Levant, as well as serving as implements of coercion, control of the means of production and distribution of such items represents a vital source of power. Zaccagnini (1983a, 257) observes that there is little textual evidence from Mesopotamia for free or itinerant craftsmen, nor for what we would recognize as a large-scale 'free-market' in manufactured goods. Many specialist workmen were tightly bound to institutional organisations (Zaccagnini 1983a, 245), their movements were controlled and they could be sent to work where required. The evidence from Mari indicates that circumstances were similar there (Sasson 1968) and (Zaccagnini 1983a, 247-248) observes that there was a shortage of such people in peripheral areas suggesting a concentration of specialists in the larger centres. We cannot be certain whether the position in the Levant was the same as that in Mesopotamia. However recent evidence from Tell Mardikh (Pinnock 1985) indicates that the mid-third millennium palace there played a key role in the acquisition, and storage of precious materials and in the production and distribution of manufactured items; suggesting that a similar system operated in other large centres such as Hama, Qatna and probably Byblos by the M.B.A at least.

This has clear implications for the production of copper and bronze items, weapons in particular. Although it is true that our evidence is derived largely from institutional archives, and the existence of small-scale village smiths dealing in agricultural tools and their repair, is likely, there is little reason to connect these with the production of the more highly standardised weapon types. The acquisition of the raw materials, including metals, was largely in the hands of the main organisations and their distribution within a kingdom was likely to be subject to the control of the palace bureaucracy (see Rouault 1977, on the role of the high official Mukannišum in the supervision of metalworking at Mari, also Heltzer 1982, 94-100 for the L.B.A.). It is worth noting that the only period which has produced good evidence of metal hoards likely to be associated directly with metalworking (see 3.4) is the Palestinian E.B.-M.B. period, where groups of ingots are found, sometimes in association with broken or worn implements. The conclusion to be drawn is

surely that it is only during this period, when the major urban centres are largely deserted, that significant evidence for independent, small-scale metalworking at dispersed locations occurs. At times when control is exercised from the main centres, such hoards do not occur, no doubt because metal stockpiles were confined to palace storerooms, or the largely unexplored industrial areas of tell sites (Philip (b) in press).

A close link between arms manufacture and the palaces is argued by a simple consideration of needs. Only the large organisations required the bulk production of metal weapons, and could support the large numbers of specialists required. There are references in texts from both Mari (Rouault 1977, Nos 5, 10) and now Ebla (Pettinato 1981, 173, Table VII.1; Waetzoldt and Bachmann 1984) to the production of substantial quantities of arms, generally in bronze. Among these feature orders for 30 axes from 47 minas of bronze (c 0.75kg each) and 19 axes from 45 minas of bronze in different sizes, implying in average weight of c 1kg (Durand 1983a, No. 258, 260), sufficiently heavy to have served as weapons. Large quantities of weaponry were therefore made in palace complexes. Secondly the high standardisation among many of the types and the use of two-piece steatite moulds, which were re-usable, as well as capable of elaborate decoration, suggests centralised production of objects conforming to 'international' styles. Such organisation best explains the way in which certain styles spread so easily throughout the Levant. The situation in the smaller Palestinian centres may be rather different from that of the large Syrian sites to which our texts refer. It is suggested that the frequent occurrence in M.B.A. Palestine of 'substitute' dagger types, showing a considerable degree of individual variation but a broad similarity to more clearly defined forms, results from small scale, less tightly organised production. It is unlikely that small centres such as Jericho and Tell Beit Mirsim had industrial organisations to match those of the large Syrian sites.

While the smaller Palestinian centres may have lacked the extensive palace workshops of Syria, it is likely that at least the larger among them undertook the manufacture of weapons. There is a mould for a Type 1 narrow-bladed axe from Megiddo (Lamon and Shipton 1939, Pl. 105.5) although found in a secondary context, and the concentration of Type 8 spearheads in northern

Palestine, in particular around Megiddo (see 2.3), may imply manufacture at, or in the vicinity of that site. Similarly the appearance of poor copies of well known types at M.B.I Tell el-'Ajjul and of a range of less well defined dagger forms (especially Types 30- 32) at many Palestinian M.B.A. sites (see below) suggests a diverse manufacturing base, rather different from that of Syria, or perhaps similar but on a much smaller scale.

Given that weapons were associated with 'desirable' qualities, and that their production was largely controlled by the palaces, these items would form an ideal material for gifting, the process of giving a valued item in order to place the recipient under an obligation to the giver, unless he returns a gift of greater value (Mauss 1954), or simply as reward or payment for services performed. Such a process is important in building up systems or networks of indebtedness, not of a financial kind, but debts of obligation. Therefore when institutions such as palaces are concerned, we may suppose that they were less concerned about return gifts, than with building up and maintaining a constituency of loyal, reliable supporters, especially among the rulers of the many minor communities which dotted Syria and Palestine, and whose political cooperation, military aid and kinship or marriage ties may have been of value.

The importance of 'gifts' in Mesopotamia and the Euphrates valley during the Old Babylonian period has been outlined in a study of the textual sources by Zaccagnini (1983b). He observes a clear connection between gift giving and prestige (p 199) and the importance of the perceived return or 'gain' (p. 210). The latter need not be a material gift as such, but could take the form of support or favour. Although we lack texts dealing specifically with metal weapons in this context, Zaccagnini stresses the widespread use of a gift metaphor in the language of inter-personal, and political relationships, a situation which argues for an important role for transactions of this sort (p251-2). Of course we lack such textual information for the Levant, but the situation described by Zaccagnini would seem equally applicable to the latter region.

Exchange systems are concerned with more than the acquisition of particular objects however (Larsson 1984, 66). The networks thus established play important roles in communication, in the formation and maintenance of alliances and may aid the smooth circulation of more mundane trade items.

We should note the close connections between trade, warfare and diplomacy seen in the Mari texts (Munn-Rankin 1956; Kupper 1973, 16-19). From such groups, leaders, especially in highly competitive situations, build up bands of supporters. The classic fenestrated and narrow axe forms, and the various kinds of decorated daggers comprise an ideal body of material to have participated in such networks. They are exclusive and physically attractive, easily recognisable, valuable but not too costly, and signify desirable male, warrior qualities.

Such an explanation would also account for the development of widespread 'standard' forms throughout the Levant. As Shennan (1986, 135) has observed, widespread stylistic similarity among particular items, cutting across several different ceramic, or even political regions, should be associated with the message-carrying properties of these objects. The messages expressed are likely to be concerned with status, group affinities and so on (Wobst 1977). Items communicating information concerning one's standing and reputation, especially during a period marked by long distance economic and political relationships, long clear for the M.B.A. and now seen to apply, in Syria at least, to the third millennium, (see 3.4) are likely to take forms that are distinctive and widely recognised. Such weapons not only place one in 'debt', otherwise there would be little point in receiving them. Possession and display of these items signifies one's own enviable, position in society, and the recognition of that position by others, hence the clear depiction of such items on reliefs, seals etc. These weapons show clearly that one is involved in networks which are closed to many individuals, marking one as a person of account. If accumulated they may in fact provide the opportunity to make similar gifts to others, thereby placing them in debt to yourself. However, in such a system there is a contradiction between the need to produce material for exchange, and requirement to maintain 'value' by restricting supply.

There are several ways of dealing with this problem, at a non-discusive level (they are only clear when the patterns of several centuries are viewed with the benefit of hindsight). One is removal from circulation, for example through interment with the dead or regular offerings to the gods, both common in the M.B.A. Levant. Another is to have fairly frequent changes in

the currently 'correct' form, i.e. stylistic transformation. This too is seen, especially during the M.B.A. and forms an interesting contrast to E.B.A. weapon types which seem to remain in circulation, unchanged, for longer periods (see 3.2.3). A third option is to change completely the nature of the material circulating through exchange-elite networks. We may see signs of this too with the greater emphasis on alternate prestige material such as faience, alabaster, cypriot pottery and so on that become more frequent in mortuary contexts as the M.B.A. progresses.

The problem of silver

There is however a problem with the view of weapons as prestige objects, namely the use of silver as a standard of value, in Mesopotamia at least, by the Akkadian period (Limet 1972). Unfortunately little work has been done on this problem so it is difficult to assess the effect that such a situation would have on a prestige goods system. Zaccagnini (1983b, 221) suggests that the existence of a 'silver-standard' allows the 'valuation' of a gift, hence perhaps the importance of using materials access to which can be restricted, such as imports, precious goods, or designs that are hard to copy. However, it seems reasonable to infer that individuals who could build up a surplus in one commodity would have an opportunity to 'convert' via silver into rarer and more exclusive materials, unless strict sumptuary rules concerning the kinds of material that people of different 'sorts' could possess existed. Thus it might prove difficult to maintain the 'value' of certain items. Although a similar 'silver standard' seems to have existed in Mari during the M.B.I period (Kupper 1982, 163-171), suggesting its widespread currency in northern Syria, its extension to the southern Levant is less likely. Therefore we may have the potential there for the continued existence of a more strictly controlled system of prestige goods. It is therefore interesting that it is in the sites of the coast and southern Levant, rather than in the northern cities, that the tradition of warrior burials seems to have been retained in its 'purest' form as the M.B.A. progressed. However, we should note that even in highly developed areas, most people outside of the larger settlements lived on a subsistence basis,

and were thereby unable to enter the system, while many others were employees of the central authorities, receiving land, supplies and sometimes valuables from that source, restricting the number of individuals who were in a position to enter the system at all.

3.2 Weapons in Context

3.2.1 TYPES OF CONTEXT

Grave Contexts

The largest single group of weapons are those from graves. However, there are restrictions on the kind of information which can be obtained as many tombs are disturbed, rendering it impossible to ascertain the precise spatial location of individual items or groups of objects. In many older reports plans showing the positions of individual objects are not given, a simple list of finds being judged sufficient. Others were used for multiple successive interments, during which earlier burials were moved aside, making the association of particular items with individual burials very difficult (see for example the M.B.A. tomb groups from Jericho published by Kenyon (1960, 1965). In many reports the age/sex of individuals is not given, while in some cases it seems likely that the judgements were made on the basis of the accompanying grave items, rather than on anatomical grounds.

Analysis of the grave record has often been considered as a way in which we may investigate the nature of particular societies. Early attempts to 'read off' social structure from burials (Binford 1972b and work reviewed in Chapman 1977) have been much criticised, and the connection between grave evidence and social structure is more difficult than was originally believed. Recent work (Parker Pearson 1982) has emphasised the way in which mortuary practices can be used both to legitimate or conceal relations of power and dominance (i.e. an egalitarian burial rite does not necessarily imply a non-stratified society). Therefore, we should avoid basing our interpretations of social structure on the evidence of graves alone. Other information must also be considered. Archaeologists working in the Bronze Ages of the Near East are fortunate in that other data is available, from archaeology, art and textual sources (see above) which can help us in this respect. On that basis therefore, I would argue that we are dealing with ranked societies in which conspicuous consumption played an important role, with metal providing a major 'consumable' (see Stech and Piggott 1986, 41). Bloch (1977) has shown

that the categorization of the dead is not necessarily the same as that applied to the living. We cannot then assume that all individuals buried with weapons necessarily held similar ranks or positions in life. We must be circumspect in our interpretation. All we can safely say, on the grounds of the burial evidence alone is that warrior burials are probably linked with male high status.

Deliberate Deposits

The material from deliberate deposits represents a special phenomenon. As the topic is dealt with more fully elsewhere (Philip (b) in press) only a summary will be provided here. Palestinian E.B.A. deposits consist of groups of metal items (from three or four to several dozen) buried in either on or off-site locations. They are composed mainly of tools and weapons, predominantly of copper. Examples include the hoard from Kfar Monash (Hestrin and Tadmor 1963), and a group weapons from Tell el-Hesi (Bliss 1894, 36). An example from Tell el-Judeidah in the 'Amuq (dated to phase 'H', early third millennium) is also of this type (Braidwood and Braidwood 1960, 376). M.B.A. groups contain a wider range of material. Weapons are still important, but objects in precious materials and various imported items also feature. The largest of these groups are the well known 'Dépôts des Offrandes' from Byblos (Dunand 1939, 1954; see also summary in Seeden 1980, 22ff), which comprised more than twenty large storage jars found in association with a series of temples, and containing a wide range of jewellery, figurines, vessels and trinkets as well as many hundreds of weapons (best summarised as 'valuables'). These deposits are best understood as representing religious or votive offerings, i.e. gifts to the gods. Similar, though smaller and less well preserved deposits, are found at a number of other sites; in the Temple Area at Megiddo, in two jars at Tell Mumbaqat and in a number of deep pits at Ras Shamra (see App. 10 for details).

The implication is that weapons, or certain kinds at least, featured prominently in people's concepts of 'value' and were therefore considered appropriate offerings to the gods. The lack of arrowheads from these deposits, prior to the end of the M.B.A. matches their rarity in contemporary grave contexts, supporting the idea advanced elsewhere (see 2.6) that they had

little prestige value. Spearheads, daggers and axes feature strongly in these deposits however. The only exception to this pattern is E.B.A. Palestine where weapons from graves are few, although they do occur in 'deposits'. This is however in keeping with the 'egalitarian' nature of burials of the period, and may represent a particular aspect of E.B.A. Palestinian society (see 3.4).

Weapons and Consumption

Parker Pearson (1984, 64) observes that in certain cases the occasion of burial can be used by social groups in order to gain prestige and reputation by conspicuous consumption, almost akin to 'sacrifice' of the material. Such a procedure has a greater impact if the material concerned is 'valuable' or in limited supply, perhaps only available through participation in certain networks. Burial with weapons might therefore represent competition between living groups, as much as the marking out of particular individuals. There are cases when the objects in a burial clearly represent more than one set of personal equipment. The young male occupant of Jericho Tomb J3 had three axe-dagger sets (Kenyon 1960, 313), suggesting conspicuous consumption or display as a motive. It is possible that these may represent the weapons of fallen enemies, as there is a reference to Sinuhe's despoiling his defeated opponent (Pritchard 1955, 20), but even so, their interment would still be a form of consumption. Similarly, all of the metalwork from Tomb D.22, was believed by Kenyon (1965, 284ff) to be associated with the final burial.

A number of tombs showing the popular axe-dagger combination (see 3.2.2) have also produced elaborate metal belts with a distinctive spring-clip fastening, probably originally consisting of a metal sheet sewn onto a leather backing. Warrior burials equipped with belts occur at Jericho (Kenyon 1960, 313), Tell Far'ah (N) (de Vaux 1947, 432) and in three tombs from Tell ed-Dab'a (A/II m/15 Gr.9, Bietak 1981, fig.4; F/I d/23 Gr.1, Bietak 1985a, Abb.12 and from A/II I/16 Gr.4 unpublished). All are of late M.B.I-early M.B.II date. The spatial distribution of such belts is quite wide. An example is also known from Cyprus, where it occurred in association with a narrow-bladed axe of the local Cypriot variety (Overbeck and Swiny 1972, 8, figs 5-8). Another, in silver, comes from Kültepe in a level Ib context (Emre 1971, Pl. XVIa-c). Metal fragments likely to be from similar belts come from a M.B.I grave at Tell et-Tin

(Gautier 1895, 459), fragments of sheet metal with concentric circle decoration which the excavator believed were from shield converings, and from the 'Dépôts' at Byblos (Dunand 1954, Nos. 8354-8358, 189-90, Pl. LVII), circular discs with similar decoration, pierced for attachment to a cloth or leather backing.

The presence of these belts in M.B.I contexts, where they are in association with fenestrated axes, further strengthens the argument for a structural unity beneath the obvious typological changes, and emphasises the derivation of the warrior equipment of the Delta-southern Palestine from earlier generally Levantine traditions. The distribution of similar belts over a wide area, emphasises the long range contacts between elites in otherwise quite different regions, and suggests that we see, in the 'warrior' burial a widely held concept, often expressed in terms of a local weapon set, to which the belts are an accessory.

3.2.2 WEAPON SETS; REGIONAL AND CHRONOLOGICAL DIFFERENCES

Although the tradition of placing weapons in the graves of the dead was widespread in the ancient Near East, there are marked regional and chronological differences in the material employed. Not only do the actual types within one form of weapon (daggers or axes say) change, completely different kinds of weapon can be employed in this role. If we accept that the items chosen in any society have a symbolic importance and are concerned with the marking of male status, then areas of common/different weapon sets should represent areas with shared/separate systems of representation, at least as regards male status. We must also consider changes in the system within any one area through time. This process should provide insights into the relative importance of local historical context, and external events/agencies on the shaping of systems of eliteness within that community.

THE EARLY BRONZE AGE

The initial emphasis on weapons as suitable burial goods dates at least to the later fourth millennium. Twenty-four daggers appear in graves of the Énéolithique Récent period at Byblos (Prag 1978, 37). In Palestine daggers occur occasionally in tombs throughout the E.B.A. The only real change in this pattern is the appearance of crescentic axes in two graves of the E.B.III period. These axes and daggers do not appear in the same tombs, suggesting that we do not yet see the development of distinctive weapon sets. We have no strong evidence for 'warrior' burials in E.B.A. Palestine. Rather we see a situation in which the occasional grave contains a weapon, but these are few in relation to the large number of burials in most E.B.A. tombs. The axe remains a minority item at this point. The most common E.B.A. item is a dagger, a pattern continued in the E.B.-M.B. period.

In Syria, the situation is rather different and weapons occur far more frequently than in contemporary Palestinian graves. Too few closed groups exist for us to establish definite sets of items, but it is clear that spears appear regularly in Syrian graves. All are of tanged varieties, and occur singly or in pairs, with or without daggers. Many of these spears are quite large weapons, as are M.B.A. Syrian forms such as tanged Type 2 and socketted Types 1-5. A wide range of different spear forms were acceptable as grave

offerings including 'foreign' types such as Anatolian slotted forms (Type 15 here), and spear and axe types with good Mesopotamian parallels (Types 3 and 2 respectively), none of which appear in any number in Palestine.

Syrian practices (at least those of urbanised northern and western areas) are quite close to those of contemporary Mesopotamia, a point which should be related to the socio-economic structures of the different regions. By the second half of the third millennium large bodies of weapons appear in tombs such as the Hypogeum at Til Barsip (Thureau-Dangin and Dunand 1936, 106-7, Pl. XXVIII-XXXI) suggesting that weapons were already conceived of as 'valuables' which could be 'gifted' or 'consumed' in a burial context, to gain prestige, a practice rare in contemporary Palestine, although evident in the rich E.D.III graves at Ur. The rapid urbanisation of Syria during the third millennium had a major effect on the social and economic structure of the region, the effects of which can be seen in the differences between Syrian and Palestinian burial practices at this time.

Large spearheads, of the types found at many Syrian sites, do not appear in Palestinian graves, despite their frequency in the north. One possible reason for this might be their association, in both a symbolic and a practical sense with disciplined infantry actions (see Yadin 1963, Watkins 1983b). The implication is the appearance of organised military forces using 'standardised' centrally issued weapons. It is clear that by the M.B.A. Syrian cities had such forces, and they were probably also employed by the major third millennium centres such as Ebla and Mari. Certainly any attack on a well fortified site would require careful planning and organisation. The situation in the less developed, smaller centres of the southern Levant was probably rather different.

Axes too appear, but in contrast to the pattern in Mesopotamia, and the local M.B.A., these do not form a large part of most grave groups, which are dominated by daggers and spearheads, as the evidence from Carchemish, (Woolley and Barnett 1952) the Sajur Valley sites (Woolley 1914) and more recent work at Halawa (Orthmann 1981) and Tawi (Kampschulte and Orthmann 1984) indicates. The 'Hypogeum' at Til Barsip, where axes are frequent, and where the weapons substantially outnumber the two occupants (see Thureau Dangin 1936) is likely to represent a rather special deposit, and may take the

form of an incident of conspicuous display, as seen in certain tombs of the Royal Cemetery at Ur. The other interesting point which we see here, apart from the increasing use of metal weapons as grave items, is the regular appearance of small, rather poorly finished daggers (Types 27 and 36) in tombs. These are likely to represent personal items, rather than the weapons of war, and have possible counterparts in Mesopotamia, for example small daggers from Abu Salabikh (Martin 1985, 13), and Ur Types 4, 5 and 7 (Woolley 1934, 304). More impressive daggers, probably resembling the higher quality pieces from the Royal Cemetery are known from the Ebla texts (Archi and Biga 1982, 382, Archi 1985a, 283), and a large, tanged weapon is reported from the Hypogeum at Til Barsip (Thureau-Dangin and Dunand 1936, 106, Pl. XXVIII.4). However, as in Mesopotamia, we get the impression that the best daggers, the most prestigious forms, appear in palace or temple treasuries or in the graves of very important persons. It is probably here that we should seek the origin of the 'styled' daggers which are such a feature of the M.B.I period.

WEAPONS IN THE E.B.-M.B. PERIOD

The basic element of the weapon repertoire is the narrow dagger. Although often ascribed to this period, the form has a long history in Palestine and its survival into the E.B.-M.B. period must be seen as an element of continuity with the true E.B.A., supporting the more abundant ceramic links described by Richard (1980, 12-20). The other major component of the metalwork record is the hooked-tang spearhead. These are generally quite small in comparison to many tanged spears from Syria and Mesopotamia and are likely to represent throwing weapons. These spearheads have been used, with the daggers, to argue for the appearance of new peoples at this time (Dever 1970, 138, Kenyon 1971, 568). However, the Syrian equivalent, (Type 9 in particular, see 2.2) appears there early in the third millennium. The clear local E.B.A. ancestry of the daggers (see 2.1) separates them from the hooked-tang spearheads, which are first detected in Palestine in the E.B.-M.B. period. The two weapon forms must be therefore be treated separately. Their appearance together in E.B.-M.B. graves, results from changes in burial practices rather than in metal styles.

The most common funerary weapon is the narrow dagger, sometimes accompanied by a single spearhead. However the latter weapon occasionally

occurs in tombs, without daggers; at Tiberias (Tzaferis 1968), Ma'abarot T.12 (Dar 1977, 66) and at Tell el-'Ajjul T. 275 (Kenyon 1956, Tomb Register). The significance of this is not clear. As in coastal Syria, the axe does not seem to feature strongly in the grave repertoire. The reason may simply be that the shaft hole axes in production in contemporary Syria which were made from complex moulds, were simply beyond the capacity of the local metal industry. Certainly the demand for Syrian-style fenestrated axes in the later E.B.-M.B. period, suggests that there was no objection to the use of axes as funerary items. In summary then we can say that the predominant grave weapon is the dagger, an element of continuity with the E.B.A.

Accepting that the daggers are of local ancestry, we are still left with the problem of the introduction of hooked-tang spearheads into the Palestinian repertoire. The weapons from Kfar Monash (Type 14) are too different typologically, and too far separated chronologically to be viewed as prototypes (see 2.1). Better parallels can be found in E.B.A. Syria, where several types of square-section spearhead are found, often in contexts predating the appearance of such weapons in the southern Levant. However, weapons rarely appear Palestinian graves of the E.B.A. (see above), and it is possible that such spears were in use there contemporary with their appearance in Syria, but only become archaeologically visible during the E.B.-M.B. period. This possibility should alert us to the dangers inherent in comparing periods when particular parts the artefactual record are rich, with those when it is much poorer.

The pattern of weapon finds

E.B.-M.B. metalwork falls into two main regional groups. This can be clearly demonstrated for both narrow daggers (see 2.4) and tanged spearheads (2.2). There is a distinct, possibly late, southern industry producing Type 6 spearheads and Type 4 daggers, while Type 3 daggers and Type 4 spearheads show a northern distribution. A similar pattern is shown by tanged projectiles which occur at a number of northern sites (Dever 1980, 46, Eisenberg 1985, 71, fig.9: 49-51), and extend into Syria at least as far as the Golan (Epstein 1985, 44). Only one example is known from central or southern Palestine, from a tomb at 'Ain es-Samiyeh (Shantur and Labadi 1971, fig. 4.21), which also contained an unusual silver cup, probably an import (Yeivin 1971). Type 26

daggers are also confined to northern Palestine. These resemble the small Type 27 daggers of E.B.A. Syria, and may like them be considered as 'pocket-knives', rather than true daggers in the sense of the larger narrow dagger series. However the fact that these types occur, alongside narrow daggers and hooked-tang weapons should not be ignored. A strong element of continuity is clearly present.

The north-south division seen in the local material is reinforced by the pattern of imported metalwork types. The heavy rivetted spearheads so common at Byblos are concentrated in northern Palestine, as are fenestrated axes (2.2; 2.1). Both are conspicuously absent from the large southern cemeteries at Tell el-'Ajjul, Lachish and Jebel Qa 'aqir. A fenestrated axe from Jericho came from a jar deposit on the tell (Sellin and Watzinger 1913, 116-119, Abb. 104-5), which should imply a date late in the period (Kenyon 1971, 578), as does the occurrence of an example built into the reconstructed walls of Temple 4040 at Megiddo (Dunayevsky and Kempinski 1974, 174). A date in the later E.B.-M.B. period agrees with the Syrian evidence, as none of the securely dated examples can be placed much before the beginning of Syrian M.B.I. Socketted spears have occasionally been reported from E.B.-M.B. contexts. One is published from the Golan in south Syria, (Epstein 1975 Pl.4.1) but is not from a secure context. A Type 10 spearhead (early type with rolled-up socket) comes from Megiddo T1101B (Guy 1938, Pl. 86.3). Richard (1978, 236) is rightly sceptical as to the context of a supposed E.B.A. example from Megiddo Tomb 4052 (Loud 1948 Pl.173.1), for which we have found no reliable parallels (see 2.3). Two long- socketted spearheads from Megiddo T 84C (Guy 1938, Pl. 163.8) are sometimes dated to the E.B.-M.B. period (Tubb 1985a, note 2). These come from a multi-chambered shaft tomb (Guy 1938, 136, Pl. 163. 8,9.), and were found in association with a Type 2 fenestrated axe. The spears are ascribed to M.B.II or L.B.I by Guy but belong to our Type 5. No pottery is recorded from the Megiddo tomb, and the association of the Type 5 (or 2) spears with the Type 2 fenestrated axe is reminiscent of groups from Hama (Fugmann 1958, Pl.X) and Ras Shamra (Schaeffer 1978, 475-6, fig. 9.1-2) which date to the Syrian M.B.I period. The fenestrated axe alone cannot be used to assign this group to the E.B.-M.B. period, as explained above. The Meggido tomb should be contemporary with the early M.B.I period in Syria. The importance of this

group is that with the types discussed above, it stresses the continuing contact between northern Palestine and Syria through the E.B.-M.B. period, into M.B.I

It is worth noting that all metal types which are found in Palestine at this time, which are likely to be locally made (mainly narrow daggers and tanged spearheads) were produced by hammering a simple casting (see Branigan et al 1975 and Khalil 1980 for details), which suggests that their popularity was in-part due to ease of manufacture, i.e. their suitability for the local industry. Such little manufacturing evidence as there is; the use of simple hammer forming techniques, the hand cutting of the grooves on the blades of Palestinian Type 3 narrow daggers, and the rather irregular finish of many items, are congruent with a fairly basic industry, whose smiths catered for a familiar, local market. The 'foreign' types require different working techniques; two-piece moulds for the axes, sheet metal working for socketted spearheads. These probably represent imports from Syria, although they might be the product of a poorly known north Palestinian industry. The most likely explanation for the presence of new metal types in northern Palestine is that geographical proximity resulted in more frequent contacts with the Syrian urban centres, and hence a greater demand for the kind of material in circulation there, than was the case for more southerly communities. This is supported by the marked north-south fall-off in the occurrence of tin bronze (see 3.3).

Although typological change and development can be observed within the period, it is built on the elaboration of a limited range of well established forms. Therefore, a dagger form (Type 2) that had remained essentially constant since the E.B.I period, underwent a range of revisions and adaptations in the last few centuries of its life, in the course of which a range of Transform Types (1.3) were created. This involved changes in overall size and proportion, the adoption of the incised-line motif, longer hilt plates with more rivtes, and greater elaboration of weapon shape. A similar pattern can be seen in the tanged spearheads. Only Type 5 has a close Syrian equivalent, Type 9. The typological variants 4, 6 and 13 are all essentially Palestinian. Besides the increasing use of weapons as grave items in the E.B.-M.B. period, as compared to the E.B.A., we see the elaboration of their forms. This seems odd, as the

period is not generally seen as one of innovation and development (Richard 1980, 11ff).

The adoption of northern traits such as tanged spearheads, the appearance of tin-bronze and of ceramic and tomb types imitating those of Syria (on the latter see Oren 1973a, 23-30), are all contemporary with the greater diversity of dagger forms. The whole question is intimately bound up with the nature of the E.B.-M.B. period in Palestine, its relationship with the preceding local E.B.A. and with contemporary developments in central Syria, in particular the expansion of urbanism seen at Tell Mardikh IIB and Hama period J, i.e. around the mid-third millennium (see 3.4). In order to answer this we must consider archaeological context.

Patterns at Jericho and Tell el-'Ajjul

A trend towards an increased number of grave offerings is seen at Jericho in the shift from the Dagger tombs of Area A, through those of Area L, to the Composite tombs and in the concomitant replacement of the simpler dagger types of Area A (Type 2) by more complex varieties in Area L. The latter (mainly of Type 3) are also more likely to be composed of tin-bronze (Philip (a), in press). As this alloy is fairly common in the M.B.I period but quite rare in the Palestinian E.B.A., (see App. 5), the pattern outlined above would argue that Type 3 daggers should be dated later than those of Type 2 suggesting a chronological distinction between the burials made in the two areas, a view also favoured by Kenyon (1960, 182). We wish also to establish whether there is any evidence support a parallel typological development in the south, from simple Type 2 daggers to the more elaborate Type 4. We must therefore examine the contexts within which different dagger types appear in the 1500 cemetery at Tell el-'Ajjul (where information permits).

This can be summarised as follows. Type 2 daggers occur in four tombs, all of shaft and chamber form, and represent the sole offering in all four cases. This fact alone suggests that Dever's assignment of the whole of this cemetery to his E.B. IVC (represented by his ceramic 'Family S') is unjustified, as his scheme is based largely on pottery, while these tombs and a number of others produced no ceramics. The situation here seems to resemble that at

Jericho, where daggers of Type 2 tend to occur as the sole offering in what are probably the earliest tombs, in particular those of Area A, stressing the weakness of reconstructions based on ceramic typology alone. Type 7 daggers occur in eight tombs, three of shaft and chamber form, twice as sole offering, and in five pit graves, four times as sole offering. Therefore several Type 7 daggers are associated with pottery of Dever's 'Family S'. Type 4 daggers occur in four shaft and chamber tombs, twice as the sole offering, and in five pit graves, mostly stone lined, only twice as sole offering. One might therefore conclude on the grounds of the metalwork, that there is evidence for the use of the 'Ajjul cemetery early in the period, perhaps prior to the development of the recognizably late southern ceramic forms.

London (1987, 72–73), in a recent study of the material from Jebel Qa'aqir suggests that differences in tomb types and grave goods there and at Jericho relate to social differentiation, rather than to chronological change. However, this would seem to be make the assumption, taken from Dever's (1973, 1980) work, that the regional ceramic groups can be fitted into a sequence of short chronological phases, and that each site belongs within one such phase. The present writer would reject this view, believing rather that a number of sites may cover a large part of the period, and represent several centuries of use. It seems possible that the appearance of lined pit graves at 'Ajjul (Kenyon 1956 Type L) represents the adoption in southern Palestine of a form of a structure, the cist grave, that is more usually associated with the succeeding M.B.I period in Palestine, although examples of E.B.–M.B. date are known (Prag 1974, 101). Perhaps an early phase of use of the 1500 cemetery has gone unrecognised because those graves produced no pottery.

THE MIDDLE BRONZE AGE

M.B.I

Oren (1971, 131) would see the axe-dagger-spear combination as the "standard arsenal of a warrior in the M.B.I period", and correctly observes the difference between this 'set' and that of the Palestinian E.B.–M.B. period. However a detailed consideration of the pattern of association reveals that the picture is in fact much more complex.

There are regional differences in the weapon sets occurring in graves of the M.B.I period. In the cemetery at Baghouz near Mari (du Mesnil du Buisson 1948) the spear is by far the most common metal item, occurring in 24 cases, often as the sole weapon. Fenestrated axes are less frequent, and are generally accompanied by a spear, while daggers are relatively rare. 'Styled' daggers of Levantine types do not occur. Clearly the axe-dagger-spear rule does not hold at Baghouz. A similar picture emerges at several inland Syrian sites. Burials at Hama (Fugmann 1958, Pl.X), Tell Mardikh and Tell et-Tin (material partly unpublished) have produced more fenestrated axes and spearheads than daggers. It seems therefore that the main components of Syrian warrior burials were spears and fenestrated axes.

Daggers, often in decorated forms, occur in various tombs on the Syrian coast. Fenestrated axes are also common here, at sites such as Amrit, Byblos and Ras Shamra although individual grave groups can rarely be isolated. Examples of the classic axe-dagger-small spear set are known from northern Palestine (Tell Rehov, Beth Shan T.92), from the Lebanon (Sin el-Fil), and from Tell ed-Dab'a in the Nile Delta (unpublished), while a group from Megiddo T 84C, with Type 2 fenestrated axe and long spearheads (Type 5) resembles those from Syria. South Levantine tombs have produced more daggers than any other sort of weapon, sufficient to suggest that a single dagger was considered an adequate offering in many cases. The rarity of fenestrated axes in Palestine should be noted, especially in the south. One might suggest that the preference for daggers in the south Levant as opposed to the north relates to the marked popularity of the dagger as a status weapon within the local E.B.-M.B. period. We see here a new mode of expression, adopted in such a way as to be compatible with established local traditions, a preference for daggers. In contrast, third millennium sites in Syria, such as Til Barsip and Hammam have produced a relatively larger number of axes and tanged spearheads in proportion to daggers, especially if we disregard the large number of small 'pocket knives' found in Syria (generally of Types 27 and 36). Towards the end of the M.B.I period we see the frequent pairing of the Type 1 (notched) narrow-bladed axe with the Type 13 (ribbed) dagger, replacing the fenestrated axe-Type 12 dagger set (see 3.2.3).

M.B.II

The M.B.II period sees the virtual disappearance of the small spearhead (i.e. throwing spear) from the tomb repertoire (see 2.3). Perhaps this reflects the wider availability of the composite bow, a more effective weapon for many purposes. However, the axe-dagger pair continues in use in the south, although the actual types change, and clearly identifiable warrior burials are reported from Jericho, Tell ed-Dab'a, Tell el-Far'ah (N) and Tell el-'Ajjul. Many more are probably contained within the mixed deposits of tombs used for multiple successive interments. As before there are few from any one site, emphasising that we are dealing with a very restricted segment of the population. However, it is important to note that a number of these tombs produce daggers lacking 'styled' blades. Daggers of other forms, in particular Types 30-32 are often used in place of the more clearly defined stylistic Types such as 13 and 17. The former are simpler forms, were probably easier to make (not requiring special moulds), and may be local substitutes for the ideal forms, which may not always have been available. The similarity is at times emphasised by the addition of a globular limestone pommel, a form particularly associated with classic Type 13 and 17 daggers, to these weapons. This process, substitution, may represent an expression of Miller's (1985, 202) notion of 'fuzzy' categories, classes with flexible boundaries, their membership in part defined by the context within which the object was used. In this case we see objects made to resemble the classic types, and used in exactly the same roles, perhaps considered 'the same' for practical purposes.

At Ras Shamra a different situation prevails. Not only are large spears common, but the tombs there contain a large number of small daggers in relation to a limited number of axes. None of these little daggers can be singled out as 'different', and therefore likely to be paired with an axe. The narrow-bladed axes conform to the local Type 4, the daggers to Type 33, similar to those of the Middle Cypriot period, and may be imports. It seems that after the relatively homogeneous coastal styles of the M.B.I period, we see a greater differentiation between the weapon sets of the northern and southern Levant during M.B.II. Unfortunately we have little information on the material of contemporary inland Syria.

In Palestine, axes rarely occur in contexts without a dagger that is either clearly or potentially associated. However, daggers often occur without axes. We might believe therefore that the latter represented the more exclusive items there. Perhaps this could be due to axes' need for more carefully cut moulds, rendering the production of acceptable 'substitutes' more difficult. Daggers are often of relatively simple shapes. In summary then, the axe-dagger combination certainly existed as part of the repertoire, but is by no means 'standard'. A wide range of different combinations were in use, and there are important regional differences, perhaps partly determined by local cultural factors. However, it seems fair to suggest that on the coast, and perhaps in western Syria, the axe was the classic 'prestige' weapon, followed perhaps by certain types of dagger, with the spear and bow occupying a less exalted position.

KNIVES AND SWORDS

In addition to the material described above, the grave repertoire of the M.B.A. also includes a range of knives and curved-swords. These should be considered another instance of the clear connection between status and rather stylised metal implements.

Curved-Swords

Recent work has underlined the importance of the symbolic value of certain artefacts, and the need to search for sets of artefacts, to seek patterns of equivalence and substitution, arguing that attempts to assess the status of the dead must consider the various grave goods in their social context (Pader 1982, 34-35; Hodder 1986, 124ff). An example of the former can be seen in the fact that the curved swords in the Byblos Royal Tombs are clearly marks of very high status, regardless of the fact that they are not made in precious metals.

Support for this view comes from the fact that these weapons are found at Byblos only in the Royal Tombs, where the ubiquitous fenestrated axe does not occur. These tombs probably represent the burials of the rulers of Byblos, rather than those of the elite generally, as is the case with graves containing weapons such as decorated daggers and fenestrated axes. Therefore we seem

to see a clear connection between kingship and these curved swords, at least in 18th century B.C. Byblos, in contrast to a more widespread holding of other 'prestige' weapon types. We should also note that these swords are absent from the 'Dépôts des Offrandes' despite the large number of other weapons reported from this context. This must surely be deliberate. Perhaps such a sword represented a symbol of kingship which should not be 'given away' but interred with the dead ruler. The association between curved swords and high status is clearly illustrated by a study of glyptic art. Old Syrian seals regularly show important figures, generally rulers or gods holding these weapons (Teissier 1984, 76), see for example the seals of Mukannishum (Amiet 1960, 230 fig.12), and Ana-Sin (Porada 1980, fig.1.14) both high officials under Zimri-Lim of Mari.

Curved-Bladed Knives

Only a minority of inter ments occur with these objects, suggesting that these knives formed part of the required funerary 'package' for certain people or in particular situations. The blades of these knives suggest that they were designed for cutting, probably butchery. Several examples, from Dhahrat el-Humraiya and Tell el-Yahudiyeh were associated with animal bones, while a knife of this form (Reg. No. 6144, not in catalogue) was recently discovered in a M.B.I tomb (F/I m/18 Grave 3) at Tell ed-Dab'a, lying beneath the head of a slaughtered sheep. This suggests that they were connected with the cutting of meat, perhaps in connection with the meat offerings, found in many M.B.A. tombs. Others were found in a position by the waist as to suggest that they were worn at a belt, as a personal item, at least on burial. The highly curved blades and elongated tips of certain examples, must be a deliberate exaggeration of the basic form. The implication is that visual appearance was important, and that it was acceptable embellish, but not to replace the basic shape. As with weapons, the essential form of these objects seems to have been accepted and understood as 'correct' over considerable area during the later M.B.A.

London's (1987, 72) tentative suggestion that sheep/goat offerings tend to be associated with graves containing older individuals in the E.B.-M.B. cemeteries at Jebel Qa'aqir and Jericho, might suggest a connection between

meat offerings and 'seniority' that can be seen to continue into the M.B.A. Support for this notion comes from the presence of elaborately decorated knives, bearing gold or silver wrappings on the handle, in the Royal Tombs at Byblos (see App. 3). There is a reference to "couteaux a egorger", apparently decorated with gold or silver, in a recently published text from Mari (Talon 1985, 221), which may well refer to knives of this or similar form. Such decoration would be unnecessary for butchery or cutting meat in everyday circumstances, arguing strongly for a ceremonial role for these items. We miight infer then that the shape of the Palestinian examples owed as much to social as to functional factors.

Surely here we are gaining some insight into the relationship between types as we see them and the meanings assigned to material objects. These knives were probably meant for use in particular situations, those where the killing or butchering of an animal formed part of a social or religious event. In this context then, the appearance of these items in graves should not be surprising. It seems unlikely that utilitarian cutting knives would exhibit so standardised a form over so wide an area. Nor would they take such elaborate shapes, or have handles decorated in precious metals as with the examples from Byblos, cited above, arguing that these objects should be viewed, in context, as part of a well understood system of values.

These knives appear in only a minority of tombs. This might suggest that a degree of exclusivity is involved. However it should be observed that they are not restricted to tombs containing warrior gear. In fact some examples of the latter do not contain curved knives (e.g. Jericho Tomb J3, el Gib Tomb 31-31A). The two types do show more overlap in the large multiple occupancy tombs at Jericho such as Garstang's Tomb 9 and Kenyon's D9 and D22, but this does not imply that they are associated with the same individuals. None come from tombs which have produced decorated daggers of Type 12, probably for chronological reasons. Few occur in burials containing narrow-bladed axes, at least in relation to the total number of such axes (only 10 of the total over 50 axes of Types 1-3 come from graves containing such knives).

A knife from Dhrahat el-Humraiya Gr. 44 is apparently from the grave of a woman (Ory 1947, 85), suggesting that these were not the preserve of men, as

was the case with daggers and battleaxes. Although the sex of the burials at the former site was established on the basis of grave goods, rather than on anthropological grounds, more recent work on the human remains from Tell ed- Dab'a (Winkler pers. comm.) indicates that curved knives occur there in both male and female graves, in contrast to daggers and axes which are clearly restricted to male burials. A number come from (unpublished) tombs at Tell el Dab' a which have produced no weapons, and a similar situation can be seen at Pella T.62 and Tombs 2140 and 3090 at Megiddo. The implication is that these knives are associated with high status (warranting a meat-offering say) but not necessarily with 'male/warrior' qualities. A recently excavated example from Tell ed-Dab'a (not in catalogue) has a blade which is curled right round at the end, in a manner that might be described as 'baroque'. The association of this item with a Type 13 ribbed dagger with elaborately curved ribs and traces of a gold handle, provides a link between 'warrior' burials, and those of the very powerful such as the Byblos Royal Tombs and the burials in Area Q at Tell Mardikh (Matthiae 1980a), and confirms that the bulk of our material represents the 'lower' end of a continuum of elaborate grave goods, and that the knives form one element of this complex. The persistence of a variant into the L.B.A. (see 2.5), in contrast to the cessation of warrior burials at the end of the M.B.A., reinforces the notion that these knives had a meaning which was independent of the former.

Daggers and Knives

We have stated earlier (2.4) that the long tanged daggers of Type 10 are the most common dagger type in Palestinian M.B.II contexts. However there are only 6 cases where these occur in contexts producing curved knives, (despite the existence of around sixty examples of each form), and these are either from mixed deposits or tombs with a number of inter ments. In particular Type 10 daggers do not occur at Tell ed-Dab'a, where curved knives are common. As both items are ubiquitous this seems rather unusual, unless there is a specific reason for the rarity of their co-occurence.

Type 10 daggers frequently have round points and show traces of marked longitudinal sharpening, suggesting frequent use as cutting implements, implying that these two types may have been considered as 'alternatives'. The

apparent absence of both types at Ras Shamra might be attributable to the fact that an equivalent function was performed by the small daggers of Type 33 which have been described earlier as 'pocket knives'. It is also worth noting that while many daggers, especially those found in association with battleaxes, bear limestone pommels, there are only two recorded instances of this in the case of daggers of Type 10. These are both from Jericho (911 and 914). The first comes from Garstang's Tomb 9, which contained daggers of Type 17, to which the pommels may really belong. The second, from Tomb M11, seems to represent a genuine association. This is however, sufficiently rare as to warrant comment, and may support a view which would exclude these from the main class of prestige daggers. Type 10 daggers rarely appear in axe-dagger sets, one instance only, Tomb 6 from Tel Aviv Harbour (Kaplan 1955), providing additional evidence for the recognition of Type 10 daggers as something different.

Maceheads and metal weapons

One of the most striking features of the repertoire of small finds from the Chalcolithic and E.B. periods in the Levant is the large number of maceheads reported. These occur in ground-stone, copper, and ivory (Hennessey 1967, 43, 82, Hanbury-Tenison 1986, 164), materials which are either rare or at least require the investment of time and energy in production. Stone examples are often made of non-local materials such as basalt or haematite, suggesting as does their appearance in the Naḥal Mishmar hoard (Bar-Adon 1980, 116-131) and the wealthy E.B.A. tomb from Kinneret (Mazar et al 1973, Pl. 24.6), that they were valued items. Three are reported from the late Chalcolithic cemetery at Byblos (Prag 1978, 37), one of which has a handle decorated with silver wrappings. Another, from a brick-built tomb at Koruçutepe (van Loon 1978, 60 Pl. 110.2), found in association with a dagger, also shows silver decoration. These items resemble weapons in several respects; the energy involved in manufacture, the contexts in which they occur and the use of precious metal decoration. Maces too represent valued items.

They are however rare in third millennium graves, and even more so in M.B.A. contexts. A metal example, probably dating to the earlier E.B.A. is reported from Carchemish Cist Grave 13 (Woolley and Barnett 1952, 222 Pl.

61a), and examples in gold, silver and other metals feature in the Mari texts (Rouault 1977, 165; Kupper 1983, No. 225; Durand 1983a, No. 231) although these do not appear in the archaeological record. Despite their replacement by edged-weapons in a practical role, they seem to have retained some sort of symbolic function.

The suggestion made here is that the crescentic and later fenestrated axe, superseded the macehead in the role of male 'status-object', hence the heavy emphasis on the decoration of axe handles. It is of note that both axe and mace are similar in size, and are wielded and carried in the same way, therefore having a clear visual resemblance. Here we may have an important factor relating to the apparent stress on the axe as a suitable prestige weapon (as opposed to the spear say). An element of long-standing cultural preference may be involved.

With axes too an element of continuity can be seen in shape. The common use of curved handles in both crescentic (Tubb 1982, 1) and fenestrated axes (Newberry 1893, Pl. XXXI; du Buisson 1948, Pl. XLV), has been explained as giving better reach. There is however no evidence for curved handles on either shaft-hole or narrow-bladed axes, which would also have benefited from such reach. In the case of crescentic axes, curved handles may have permitted a more secure fitting, especially in the case of Type 1 examples where the ends of the blades would have been set into the curve of the handle. However, there is no real advantage in doing so in the case of fenestrated axes, where the blade is cast and mounted via a socket. One might infer then, that as was the case with the fenestrations themselves, the use of a curved handle was a deliberate stylistic device, emphasising the relationship to the earlier crescentic axe. The development of the fenestrated axe, an inherently unlikely shape for a weapon, is best explained by the adaptation of an existing culturally-defined shape, to suit a new manufacturing method which enabled the casting-in of a hollow socket. Such a practice fits well with notions of these axes as having a particularly valued shape, and would go some way to explaining the lack of interest in Type 2 shaft-hole axes western Syria and Palestine.

3.2.3 MECHANISMS OF TYPOLOGICAL CHANGE

Introduction

There are many possible reasons why types might change. Technical factors, such as the replacement of tanged spearheads by the socketted variety are clearly important, but there are many changes which cannot be understood within such a 'functional' framework. The inadequacy of traditional explanations of typological change has been discussed elsewhere (see 1.1). It now remains to offer an alternative view.

Even when types have good external parallels, we must consider a whole range of factors pertinent to their transmission and adoption elsewhere. The uptake of new types or styles cannot be considered in isolation from the contexts in which they are both offered and accepted (Renfrew 1978, Davis 1983, 58). A survey of the material reveals that our corpus derives largely from the graves of a restricted section of society and we are dealing by and large with status goods, whose designs will reflect stylistic and symbolic factors as much as those concerned with mechanical efficiency.

Different aspects of material culture e.g. pottery, metalwork lithics, change at different rates, even when we are dealing with a period of apparent 'cultural homogeneity'. Binford's (1972c) arguments against attempts to identify 'normative' cultural groups still have considerable validity, in that he stresses the need to consider variation explicitly, rather than to define homogeneous archaeological cultures which may mask important factors. In our case we must contrast the steady development in ceramics throughout the Palestinian M.B.A., with the sharp changes in the morphology of metal weapons. Again, the spatial patterning of metal styles, differs from the contemporary ceramic areas. Clearly the processes responsible for developments in metalwork differ from those pertinent to ceramic change. This is in itself a worthwhile point, as it may indicate that more emphasis was placed on the importance of metalwork styles, than on ceramic forms.

Steatite moulds and relief decoration

We have already alluded (see 2.4.1) to a possible connection between the development of steatite moulds and the appearance of elaborate relief decoration on certain M.B.I dagger types. However, such decoration also occurs, at the same time on other weapon forms; Type 2 tanged spearheads, fenestrated and narrow-bladed axes. Steatite moulds, by permitting a new emphasis on relief decoration at the beginning of the M.B.I period, enabled the production of forms which were hard to copy, and so contributed to the maintenance of exclusivity. This form of decoration does not endure, except in the case of axes, which may represent the most prestigious form of weapon, beyond the end of the M.B.I period. It is interesting then that the range of narrow-bladed axes remains quite limited, throughout the M.B.A. and that it is restricted to forms requiring complex moulds. Unlike the contemporary dagger types, a range of simpler 'substitute' axes does not appear. The only mass produced weapon which largely avoids relief decoration is the socketted spearhead. This is presumably because it was made by a different method; casting, rolling and hammer shaping, and could not be produced straight from a steatite mould, at this time. The only such weapons which do show relief, albeit in a small way, are the very long spears of Types 2 the blades of which were probably mould made.

Alongside the increasing use of steatite moulds for weapons, we see their value in the production of jewellery and figurines as revealed by moulds found at Byblos (Dunand 1954, Pl. CLXXIII and Kültepe (Emre 1971). It is also from the M.B.I period, that we see the appearance at coastal sites, of metal figurines in large quantities (see Seeden 1980, 36-102). It seems likely then that the apparent explosion in fancy weaponry at the beginning of the second millennium, in the Levant, is a product of developments in mould techniques, which enabled the repeat production of quite elaborate items. We might also suggest that the well-known swollen headed toggle-pins which Schaeffer associates with the 'Porteurs de torcs' are probably also made from two-piece moulds, unlike the earlier globular and hemispherical-headed variety. It seems then, that we are seeing the same technology applied to a whole range of items. This being so, might it not be that the apparent boom in metalworking in coastal Syria at this time, often attributed to the arrival of new peoples

(Schaeffer 1949, 49ff; Kenyon 1973, 82–86) is better explained by these new techniques, permitting the production of repeated complex castings (see 3.4).

AN ALTERNATIVE VIEW

From a mechanical perspective there is little difference between a Type 12 dagger with a crescentic pommel and a grooved blade, and a Type 13 dagger with globular pommel and ribbed blade. One is no more effective as a weapon than the other. However, there is a marked difference in their appearance, a point emphasised by the shapes of their respective handles. At this point we must consider Wobst's (1977) stress on the communicative role of objects. In such situations messages are often transmitted by visual means. Therefore, a whole different perspective opens up on our material, especially when one remembers that the pommels would be visible even were the daggers sheathed.

Yadin may be correct when he suggests that the development of narrow-bladed axes relates to a need for a weapon capable of piercing metal helmets. However the only archaeological evidence for the use of such helmets in the Levant during the M.B.A. comes from their appearance on seals, (see for example Porada 1984, Pl. 65:1–2) and bronze figurines (Seeden 1980, Pl. 86–87, 94–95). As both of these media tend to offer rather stylised depictions of deities, rather than accurate representations of the living, we cannot assume that they are a good guide to the headgear of ordinary people. We should note that the Asiatics depicted in Egyptian Middle Kingdom reliefs are not shown wearing helmets; nor are examples known from graves. Of course, it is possible that these axes were meant to penetrate leather helmets, or that helmets were worn only in particular forms of combat, between high ranking individuals for example.

However, there may have been some functional reason, perhaps connected to the fact that fenestrated axes had a tendency to break at the junction of blade and hilt (as indicated by the large number of extant examples found so), for the change from fenestrated to narrow-bladed axes, as the change in shape is quite marked. Similarly, it seems likely that the conjunction of the chariot, the composite bow and the widespread adoption of scale armour had a major effect on military strategy (Yadin 1963, 84, Moorey 1986, 210–211) and

thus indirectly on the range of prestige goods interred with the dead. Although functional factors are important at a general level, they cannot explain why narrow-bladed axes of Types 1, 2 and 3 which are very similar in general shape, weight and breadth of cutting edge, in other words in terms of functional efficiency, show so many differences in stylistic detail, variations which emphasise the difference between, and similarity within types. At this level of detail Yadin's 'functional-efficiency' model of typological change has little explanatory power. An alternative view must be sought.

The starting-point is that particular weapon types are associated with prestige, and of restricted access. The first problem is the need to maintain exclusivity. Unlike gold, silver etc which had scarcity value, and could quite easily be controlled, copper was relatively plentiful and widely used in the production of utilitarian items. As a result access to copper would be hard to control. Although the palace may have been able to regulate the circulation and recycling of copper (see Heltzer 1982, 94-100, for L.B.A. Ugarit), it would be impossible to prevent an amount of 'shrinkage' (see 3.14), and copper would be able to leak out of the system. Therefore, as the material would be available to village smiths and to farmers (in the form of tools were they to melt these down), exclusivity may have been maintained by elaboration of design, resulting in products which could not easily be copied without access to special two-piece moulds (steatite, which can be easily carved is an ideal medium for such work, see above). Other possibilities include the addition of decorative handles in rare materials, like alabaster, ivory or lapis lazuli such as appear frequently in the textual sources (e.g. Limet 1985, 519) and occasionally in graves (Gautier 1895, 459-460, fig.9; Guy and Engberg 1938, Pl 149:3,6) and the 'Dépôts' at Byblos (Dunand 1954, n.8451-8455, 192, Pl. LVII).

Of course it is possible that certain items may have been subject to sumptuary rules under which possession or display of particular objects was restricted to certain individuals, by virtue of birth, status or office. The curved-swords found at Byblos may belong in this class, as items restricted to royalty (see 3.2.2). However, we cannot as yet ascertain to what extent possession of prestige arms was determined by such rules, or by other factors. My own view is that the situation was probably quite fluid, and that such sumptuary rules as existed were subject to frequent emendation as

circumstances changed.

As Miller (1982b, 97) has emphasised, emulation will tend to occur unless a high-status item is fixed to some scarce or controllable resource. This would clearly be a problem with copper-alloy weapons (see above). A solution might be that the items take shapes that are hard to copy without access to the correct moulds. It is interesting therefore that a range of simpler, substitute dagger forms emerges (Types 30-34) retaining the essential size characteristics, in particular the relatively broad blade, of the 'styled' dagger types. Accepting that the white globular pommel was an integral part of Type 13 and 17 daggers in Palestine, it is revealing that these also appear on many of the 'substitute' forms, in particular on examples of Types 30-32, stressing their 'identity' with the genuine article. These bear the distinct advantage over the classic types of easier fabrication, as they do not require the use of two-piece steatite moulds and should be seen as deliberate attempts to create roughly equivalent items. Hence their frequent appearance in similar contexts, often alongside socketted axes. The importance of an item's conformity to the classic types is clearly illustrated by attempts made to copy these. There are two Type 13 daggers from Tell el-'Ajjul (Nos. 578,and 580) on which the incised lines can be clearly seen to have been cut in, rather than cast-in, as was usually the case (see 2.4), while a Type 1 Narrow-bladed axe from Tomb 1015 has an unusual rectangular cross-section. We seem to see here attempts to copy the 'real thing'.

It is clear from analysis of grave groups that there are detectable associations between particular forms of axe and dagger. This can be summarised as follows. (The data on which these arguments are based is tabulated in figs 93-95, which present the information exactly as extracted from the database.)

Fenestrated axes are 'ideally' associated with Type 12 daggers, sometimes with Type 30 weapons and date to M.B.I. Comparing the list of all graves producing fenestrated axes, with that of graves where these are associated with daggers, reveals that this is so in nearly all cases. The best evidence ought to come from single graves. Baghouz apart (which is far inland and rather different in many respects), fenestrated axes are seen to be associated with Type 12 daggers in single graves from Beth Shan and Tel Rehov.

Although most other groups in represent tombs containing multiple inter ments, note should be taken of the occurrence of two fenestrated axes and two daggers (one Type 12 and one Type 14) in Hama Tomb GVI, and one axe and one Type 12 dagger at Sin el-Fil. The larger mixed groups from Amrit and Tell et-Tin also indicate a similar pattern.

Type 1 narrow-bladed axes, tend to co-occur with Type 13 daggers. Three such pairs occur in single graves (fig. 95), and one axe is associated with a Type 18 dagger. Although disturbed, Tomb 911 at Megiddo reveals a similar pattern, while axes from Ginosar and Khirbet Kūfin occur with 'substitute' forms of Type 30-32. This set, which overlaps the end of M.B.I and early M.B.II succeeds that described above.

Narrow-bladed axes of Types 2 and 3 occur in M.B.II contexts. In single burials these axes are paired most often with daggers of Types 17 and 19 (see fig. 95). A tomb from Tell ed-Dab'a with five interments (A/I-g/3 Gr.1) has produced three each of Type 2 axes and Type 17 daggers, reinforcing this pattern, as does their frequent co-occurrence in larger, multiple occupancy tombs such as Tomb 9 at Jericho. Again however, substitute dagger forms also occur with these axes, as in Jericho Tomb J3. We might also note the pairing of a Type 5 narrow-bladed axe with an unusual 'styled' dagger (assigned to our Type 40 - variants) in Tomb 1750 at Tell el-'Ajjul.

Type 4 narrow-bladed axes, which are found at Ras Shamra, in M.B.II tombs, generally co-occur with small Type 33 daggers, and medium-large sized spearheads, reflecting the different material employed in M.B.II Syria.

In summary, although the situation is complex, several 'ideal' pairings can be detected for dagger-axe sets. Although the north and south produce different material in the M.B.II period, the underlying dynamic of the changing weapon sets is chronological, with these replacing each other in succession. As there is no great mechanical difference between many of these types (see above), we must conclude that it is the changing styles which are important. As Miller (1982b, 91) suggests, much observable artefact variation is probably connected to the expressive aspects of society, and is therefore sensitive to such processes as emulation. It is likely that the regularly changing styles which we see in the M.B.A. weaponry of the Levant are evidence of just this

process. As copper was not itself an exclusive medium, the physical distinctiveness of these objects was an important part in the maintenance of their 'value'.

Particular forms (types) may have become too widely available to maintain their intended exclusive qualities, hence the need for frequent shifts in the 'appropriate' styles. The successive sharp changes observed in the morphology of certain weapons fits this explanation well. In fact the desire to emulate or copy the behaviour of the powerful could well lie at the root of the development of the range of 'substitute' types discussed above. Our explanation for detailed typological change then is the need to maintain exclusivity of these objects, a difficulty compounded by the need to produce and distribute them in order to gain prestige, and the fact that they are made of a widely available material. In fact, we could even regard such processes as burial and religious offerings which removed some of these items from circulation as functioning as a means of controlling quantity and hence maintaining 'value', a problem raised elsewhere (see 3.1.4). This last point underlines the importance of investigations using a long, regional perspective. Only thus can trends such as that outlined above be identified and interpreted.

Another coherent factor underlying typological change is that of the spatial position of items within tombs. Daggers tend to occur and the waist, as might be expected. However, axes are generally positioned so that the blade lies behind, or near the skull, suggesting that they were carried resting on the shoulder. The evidence from undisturbed tombs shows that all axe types common in the Levant were so positioned. The use of identical spatial positioning argues strongly for continuity in intention, underlying obvious typological differences.

Our discussion thus far has concentrated largely on M.B.A. weapons. The third millennium material seems to change rather more slowly. Type 1 tanged spearheads occur in a late fourth millennium context at Arslantepe (Palmieri 1981, 109, fig. 3-4) but are still in evidence in Phase 'H' of the Amuq (Braidwood and Braidwood 1960, 376), suggesting a floruit of around four or five centuries. The well known square-sectioned spearheads first occur in cist-graves from Carchemish dating to the earlier third millennium, but still appear in late third millennium contexts at Tell Selenkahiye in Syria and at

many sites in Palestine. Crescentic axes too seem to have remained in production for much of the third millennium, while in Palestine production of narrow daggers continued from E.B.I until the end of the E.B.-M.B, a period of around a millennium. The difference between the rate of typological change during the E.B.A. and the M.B.A. is quite clear, and should be related to the greater expressive role of weapons in the latter period. Most of the elaborate E.B.A. forms such as the developed E.B.-M.B. narrow dagger types occur late in the period, and should be seen as a transition to the better known M.B.A. pattern of frequent stylistic change. I would argue that it is only at this point, where the connection between weapons and high status males was clearly acknowledged, reinforced by increasing communication throughout the Levant, that emulation would become a major problem.

Another problem is the appearance of shaft-hole axes of Types 3 and 4 late in the M.B.A. These, which are related to the third millennium styles of Mesopotamia and north Syria are best viewed as a reintroduction from the north, where a local tradition of shaft-hole axes continued throughout the earlier second millennium, contemporary with the dominance of fenestrated and narrow-bladed forms in the Levant (see 2.1). The appearance of these weapons foreshadows the situation in the L.B.A., where axes derived from northern types become the dominant form (Deshayes 1960, 186-9; Types F1c and d). The best explanation would seem to be that the Levant underwent a degree of re-orientation towards the north as the M.B.A. progressed, foreshadowing the pattern of the L.B.A. (see 3,5).

The importance of weapon form is emphasised by representations of the war god on Anatolian seals, where he is occasionally depicted as wielding a fenestrated axe, but more often bears a local shaft-hole form (Özgüç, N. 1965, 52). On the other hand, a recently discovered Syrian style seal from Tell ed-Dab'a depicts Ba'al bearing what is quite clearly a fenestrated axe (Porada 1984, 485, fig. 1), the preferred type in the Levant at that time. The implication is that the detailed iconography of seals is closely related to local conceptions of 'appropriate' weapons. Thus axe forms are deeply bound up with cultural meanings and concepts. In this light, the replacement of Levantine by northern styles at the end of the M.B.A., just as northern powers such as the Hittites and Mittanni begin to play more active political role in the

region (Garelli 1969, 140–143, 146–149) is interesting. If the shape of the axes of the southern Levant relates to an old, local, cultural tradition, which sees its final development in the M.B.A. cultures of the Delta and southern Palestine, then the appearance of northern types just as the existing political system is collapsing, fits very neatly. Although a promising line of enquiry, a new study of L.B.A. axe types, in their archaeological contexts, is required before this can be thoroughly investigated.

3.3 Comments On the Analytical Data

There has been little reliable data available on the composition of metal objects from the Levant until recently. The corpus is still of restricted size, and over dependent on old, or inadequately documented analyses (summarised in Buchholz 1967) the value of which is questionable. Useful analyses carried out on groups of well contexted material have however appeared in recent years (Moorey and Schweizer 1972, Khalil 1980, 1984, Stech et al 1985). To these we can now add analytical work carried out the M.B.A. material from Tell ed-Dab'a, the relevant part of which is reproduced here, and additional work carried out on material from Tell el-'Ajjul and Hama, aimed at answering specific questions arising from the published data. Discussion here has been restricted to a consideration of the main alloying elements, tin, arsenic and lead, as trace element studies have been much criticised in recent years (Craddock 1976). New hope may come from the combination of such studies with Lead Isotope Analysis (see Gale et al 1986 and references there). However, this work is still at a preliminary stage, and has as yet has paid little attention to the material of the mainland Levant, where the mixing of coppers of different origin through the use of scrap may be more of a problem than in the Cyprus or the Aegean. Furthermore the discovery of true leaded bronzes at Hama in M.B.I tombs (See App.6.1) indicates that Lead Isotope work may not be applicable in second millennium contexts. Very little metallographic work dealing with Levantine weapons has appeared (Branigan et al 1975, Brewster 1977, Khalil 1980). No new work has been undertaken in connection with the present study, and it is not proposed to repeat this information here. All information cited below appears in Appendix 6.1.

THE EARLY BRONZE AGE

Nearly all analyses from E.B.A. contexts in Syria are either unalloyed or arsenical coppers. Given the rarity of tin-bronze in Mesopotamia prior to the E.D.III period, (Moorey 1985, 127) and the frequent references to bronze in the texts from Tell Mardikh (Pettinato 1981, 173, Table VII.1), we might reasonably argue that much of our material from such sites as Carchemish, Amarna and Serrin dates no later than the middle of the third millennium. Such a

conclusion is in agreement with both typology and the associated ceramics and the fact that the Syrian material comes mostly from sites on the central Euphrates, which have good riverine connections with Mesopotamia and eastern tin sources. This conclusion is reinforced by the presence of a tin-bronze dagger at Bab edh-Dhra' in the Jordan Valley, in a late E.B.III-early E.B.-M.B. context (Maddin et al 1980, 115), the presence of a number of tin-bronzes in graves of the E.B.-M.B. period in Palestine (see below), and of an axe of Type 2, made of tin-bronze belonging to phase 'J' at Tell Tayinat, in the 'Amuq.

In Palestine there is only one example of a tin bronze prior to the E.B.-M.B. period, that from Bab edh-Dhra' cited above (unpublished item, not in present catalogue). However there are close connections between typology and alloy patterns in the E.B.-M.B. period. All examples of Type 2 narrow daggers, the earliest form (see 2.4) are of unalloyed or arsenical-copper. However, examples of Type 3, with good parallels in a late E.B.A. tomb at Qatna appear at Jericho in both tin-bronze and arsenical-copper. The suggestion (see 3.4) that tin entered Palestine from the north is supported by the presence of a number of good tin-bronzes among the distinctive Type 1 daggers found at 'Enan, near Lake Huleh. These should represent a late phase of the E.B.-M.B. period in the region as they were found alongside material with good parallels in the 'Dépôts des Offrandes' at Byblos. However, new analyses of Type 4 daggers from Tell el- 'Ajjul, probably the latest type of narrow dagger, have shown all daggers tested to be composed of arsenical-copper. Support is provided by a Type 4 dagger of similar composition from Tell ed-Duweir. We conclude that tin was simply not reaching southern Palestine, although it did appear as far south as Jericho and Ma'abarot, lending support for the division of Palestine into two main cultural regions, north and south, at this time, as argued elsewhere on typological grounds (see 3.2.2).

It has been suggested (Stech et al 1985) that some selection of alloy according to type can be detected in the E.B.-M.B. period. Unlike the daggers, no examples of the hooked-tang weapon series have been shown to be made from tin-bronze. Support comes from the analysis of a rivetted spearhead from 'Enan, also an arsenical-copper. However most other spearheads

analysed so far have been of types familiar in south and central Palestine, where tin-bronze is rarer anyway. This idea cannot be proven until more examples of northern spearhead types are examined. If true that tin-bronze was reserved for daggers, we might see an association of imported tin with high status and it is argued above (3.2.2) that the dagger was the ideal weapon of status in Palestine at this time. Stech and Piggott (1986, 58) have suggested that tin-bronze, had greater status value in third millennium Mesopotamia than had arsencial-copper, as tin was a rare, imported commodity, a concept which might apply equally well to the Levant. Another explanation might be that scarce tin was specifically kept for use in edged weapons such as daggers, rather than spearheads, as tin-bronze does give a superior edge than arsencial copper, its only clear mechanical advantage over the latter. Such a phenomenon has recently been reported from the Early and Middle Cypriot metal repertoire (Balthazar 1987, 322). As before more work is required. The apparent selectivity exercised in this case, makes it all the more likely that the material from the more economically developed Sajur Valley and Central Euphrates regions discussed above, was produced at a time when tin was simply not available in quantity in that region, more support for an early date. E.B.-M.B. weapons are generally of forms made by hammering and which therefore suffer no great diminution in their properties by being made of arsenical alloy rather than bronze. However, a number of items from both Jericho and 'Ajjul show arsenic contents higher than necessary (up to 4.5 % in some cases), suggesting that the smiths had limited control over final composition, as might be expected in a small-scale, dispersed industry, in contrast to practices in the larger workshops of both E.B.A. and M.B.A urban centres.

MIDDLE BRONZE AGE

Discussion of the pattern of alloy use at this period is limited by the available analyses, which are by no means evenly spread across types and regions. The limited data available indicates that tin-bronze was widely used at this time. It seems especially prevalent in the more elaborate shapes such as Type 12 and 13 daggers, fenestrated and narrow-bladed axes (see App.6.1) supported by analyses of unprovenanced items (Oren 1971, 128, Branigan et al 1975, 17, Birmingham 1977, 118). This is hardly surprising in view of the

evidence from Mari (Dossin 1970) for the importation of large quantities of tin from the east. This may reflect the greater value of tin in complex castings, although this has been disputed in recent studies of the Mesopotamian material (see Moorey 1985, 16–19), suggesting the use of arsenical copper causes no major decline in properties. In fact, analysis of axeheads from Tell ed-Dab'a (see below) has shown that these could be cast equally well using unalloyed copper, suggesting that casting properties alone do not explain the preference seen for tin-bronze.

Recent evidence from Hama, M.B.I period, (unpublished results see App 6.) indicates the use of genuine leaded bronzes for the manufacture of fenestrated and Type 1 chisel axes, providing support for the high lead levels detected in several unprovenanced fenestrated axes (Oren 1971, 128) and examples from Tel Rehov and Kurduneh in northern Palestine (see App.6.1). Their advantages are described by (Northover 1982, 91). That most pertinent here would be the improvement in the filling of complex moulds. Although lead contents of up to 10% have little effect on tensile strength (Northover 1982, 91) they do alter yield stress and hardness, particularly on a worked edge (Tylecote 1986, 35). Craddock et al (1986, 56) observe that a lead content of 0–3% is the optimum for a cast and wrought object such as a dagger. In other words excessive lead content would impair the effectiveness of the cutting edge of a weapon. This might indicate that more attention was given to shape and finish i.e. appearance, than to mechanical efficiency, which would strengthen the argument that these items were as important as status objects, as they were as real weapons. Moorey (1985, 33) notes that such alloys are unknown from Mesopotamia or western Iran at this time. By contrast, leaded-bronze does not appear in Britain until the 'Acton Park' phase of the local M.B.A., dated to the third quarter of the second millennium (Tylecote 1986, 1). Analysis of M.B.II material from Palestine and the Delta (see below) do not indicate lead addition, suggesting that its occurrence at Hama may be a temporary phenomenon, although we lack analyses from M.B.II Syrian examples. The most obvious explanation would be that large amounts of lead were available from the processing of the Galena ores, from which came the Anatolian silver sought by merchants from the various Syrian cities among other places

The other major point to emerge, this time affecting the M.B.II period, is the difference in the alloys used at Palestinian sites and Tell ed-Dab'a. Material from Megiddo and Jericho of 'classic' dagger and axe types is generally composed of tin-bronze, although arsenical copper still remained in regular usage, in particular for the less easily classifiable types (see below). At Tell ed-Dab'a the equivalent metalwork occurs in a mix of bronze, arsenical copper and unalloyed copper. Objects composed of different alloys occur even in the same tomb. It is possible that the Delta lay at the very end of the tin routes, and that the material was not available in sufficient quantities. However, the strongest argument against this is the frequent use of tin-bronze for utilitarian objects at the site (unpublished analysis, Cowell pers. comm.). Although the use of arsenical copper for weapons is understandable, that of unalloyed copper, whose properties are considerably inferior, especially in the formation of hardened cutting edges, is not. Perhaps this provides additional support for our notion that much of this weaponry was more for show and exchange than for combat.

On the other hand, we should note that in Egypt proper tin-bronze did not become the dominant alloy until New Kingdom times (Garenne-Marot 1984, 108- 112). We should be wary therefore of attempting to read too much into the alloying pattern occurring at Tell ed-Dab'a. Although different from that seen at Jericho, it is more in line with that of Middle Kingdom Egypt, suggesting that we may have an essentially 'Egyptian' industry producing a range of objects to Levantine styles. Given the limited nature of our sample, we might do better to accept this more cautious explanation of the Dab'a metalwork for the time being.

The other Palestinian types show, as indicated above, a mixture of compositions. A provisional assessment suggests that this is in agreement with our argument that much of this material was the result of small scale production of 'substitute' items in local workshops, perhaps those of the small Palestinian centres. Unfortunately the total corpus is too small to enable us to draw firm conclusions. Possible trends do emerge however. Both analysed Type 10 (long- tanged) daggers from Jericho show low levels of both tin and arsenic, suggesting the use of scrap metal in their fabrication. Both analysed daggers from Tomb J3 at Jericho, the 'warrior burial' with three axe-dagger

sets and a metal belt, are good tin bronzes, indicating a connection between the use of tin and the more lavish burials, supporting the suggestion that this particular tomb represents an incident of conspicuous consumption of high status materials. The fact that the only good tin-bronze among those weapons examined from Tell Fara (S) has an elaborate ivory pommel lends further support to this notion. Naturally, no exact correspondence will be found, given the role of specific circumstances in determining alloying patterns, but it is argued that the evidence indicates that most examples of 'elite' weapon types, and the more elaborate 'substitute' forms, or those in the most prestigious burials, are composed of tin-bronze (Dab'a being a possible exception) and that the bulk of the less well defined material, which generally has a less of a 'quality' feel, tends to occur in arsenical-copper. However more data is needed in order to test this theory.

Spearheads

All examples of E.B.A. spearheads are copper or arsenical-copper, excepting the minature Type 15 weapon from Ras Shamra, which is apparently a low tin-bronze. The lack of tin suggests a deliberate adherence to arsenical-copper for such weapons. However, it is clear that with the advent of the socketted spear, there was a rapid adoption of tin-bronze. Although the actual percentage of tin is variable, its selection is quite clear. One might infer that the properties of tin-bronze were preferable for the fabrication of socketted spearheads which would require rather thinner castings, and a considerable amount of rolling and hammering of sheet metal, in the formation of the socket and the blade edges. This is in contrast to the method of forming a tanged spearhead which involved hammering a rough billet as in the case of E.B.-M.B. types or the fine finishing of forms cast in two piece moulds as with certain north Syrian forms (Watkins 1974, 190-192).

3.4 The Wider Perspective

The Background

The material of the E.B.A. did not appear in a vacuum. A brief consideration of the preceding periods, the essential background to our material is required. The 'Uruk' settlements of the mid-fourth millennium are generally seen as Sumerian 'colonies' connected with commercial activities, and are likely to have played a major role in the development of the infrastructure which permitted the development of a substantial, unified north Syrian-Anatolian metal industry. Marfoe (1987, 28) observes the highly directional nature of Mesopotamian trade with the north at at this time, noting the very limited connections with areas outwith the Euphrates Valley.

A background to this system is provided by exchange networks posited for the preceding Halaf and Ubaid phases (Mellaart 1982; Marfoe 1987, 28). Uncalibrated carbon-14 dates for Halaf/Ubaid sites in Anatolia lie in the fourth and fifth millennia b.c. (Esin 1982,13). We should note the metal workshops and rich collection of Ubaid period sealings recovered from Değirmentepe, on the Euphrates near Malatya, which have good parallels at Tepe Gawra in northern Iraq (Esin 1985, 188). Therefore interregional contact predates the fourth millennium, although it may then for the first time have involved large scale commercial-type trade (Marfoe 1987, 28-9). Given the existence of substantial settlements producing western Halaf and Ubaid-type pottery at north Syrian sites (Mellaart 1981, 143-151), we should probably envisage a considerable degree of social complexity at least as early as the fifth millennium.

The presence of a defensive wall at the settlement of Dakermann in the Lebanon (Saidah 1979), and the appearance of weapons, silver and imported items in contemporary graves at Byblos (Prag 1978, 1986, 66-71), indicate that the the fourth millennium saw the rise of an increasingly sophisticated society in the southern Levant as well as in north Syria, perhaps even involving a degree of contact with Egypt (Prag 1986,). This point is underlined by the sophisticated techniques employed in the production of the

Chalcolithic hoard from Naḥal Mishmar in southern Palestine (Bar Adon 1980). The Énéolithique graves at Byblos produced very few daggers in relation to the total number of burials, as is the case in E.B.A. Palestine, suggesting that the association between burial with weapons and high social status, was a structural feature of Levantine society by the fourth millennium. The evidence from Byblos provides an early example of this 'motif', supporting the evidence for social differentiation cited above. This predates the generally accepted appearance warfare, militarism and rule by elites in mid-third millennium Mesopotamia but does not imply that the Levant is in any way 'ahead' at this time, rather that our evidence for contemporary Mesopotamia is deficient. We should not overstress the suddeness of social change in the third millennium. Rather we should see the major changes clearly detectable from the archaeological record in the third millennium, as the culmination of a long period of social and economic development.

SYRIA EARLY BRONZE AGE

Introduction

It is not yet possible to establish a detailed internal chronological sequence for the E.B.A. in Syria. In the light of this, and the restricted corpus, it is difficult to elucidate the internal sequence of weapon development within the period. Moorey (1982a, 21) has drawn attention to the rich repertoire of metalwork from the Uruk period in Mesopotamia. Recent finds in Syria such as the use of a Sumerian-derived writing system at mid-third millennium Ebla, and the frequent references to the production of tin bronze in the texts from that site (Pettinato 1981, 173) suggest strong trading contacts with the east by this time.

Any investigation of Levantine weapons, must consider the material in a broader context. For many scholars (Stronach 1957, Deshayes 1960), the Royal Cemetery at Ur provides the key typological parallels for relating Syrian and Mesopotamian metalwork, although the conventional wisdom of placing the Syrian material later, implies a degree of dependency on Mesopotamia. It has been argued elsewhere (see 2.1, 2.2) that much of the Syrian material dated to the late third millennium by Watson (1965, 81) in fact belongs to the middle third millennium, which has important implications for the autonomy of the Syrian metal industry vis-a-vis that of Mesopotamia. It is therefore also the case, as Watkins (1983a) has emphasised, that the appearance of 'warrior' burials in Syria (e.g. Carchemish, Til Barsip) is a social phenomenon, contemporary with, and not necessarily derived from the Mesopotamian equivalent. If therefore, we dismiss Akkadian military campaigns, the preferred explanation of Stronach (1957) and Deshayes (1960), as the motive force in the development of Syrian weaponry, we must seek alternative explanations, preferably at a local level.

It has already been shown (2.1; 2.2) that the early third millennium metalwork found in Syria has good parallels in the late fourth millennium material from the 'Amuq, Byblos and Arslantepe. The poor quality of the lithics reported from the large Uruk-type site of Jebel Aruda (Hanbury-Tenison 1983) might be taken as indicative of a substantial use of metal, and there

now exists a widespread body of metalwork of late fourth millennium date, (see below) which puts in doubt the notion of a widespread 'explosion' in metallurgy around the middle of the third millennium, as advocated by certain writers e.g. Muhly (1985, 123), citing as evidence the rich material from sites such as Ur, Troy and Alaca Höyük. Yakar (1985b, 30) observes that the Alaça tombs are very special, and a similar case has been made by Watkins (1983b) for the Royal Cemetery. These sites should not be taken as a standard against which to compare metalwork from other contexts. The quality of the Syrian material of the mid-third millennium compares quite well with that of many less spectacular Mesopotamian cemeteries such as Kish, al-Ubaid and the Diyala sites (Moorey 1982a, 25-26) and the recently excavated material from Abu Salabikh (Martin 1985, 10-16).

We currently lack well stratified material from the first half of the third millennium, although to judge from the material recovered from contemporary Anatolian sites (Palmieri 1981, Hauptmann 1982, Behm-Blancke 1984), it seems reasonable to expect a fair degree of urbanism in the Euphrates basin and areas to the east. This process, succeeding the phase of widespread 'Uruk-type' material has been interpreted as marking the appearance of independent Syrian polities (Marfoe 1987, 29). The tomb evidence from Carchemish (Woolley 1952 and Barnett) and from the Sajur Valley sites (Woolley 1914) fits this interpretation. Western Syria should probably be seen as urbanised in a similar sense to northern Palestine in the earlier third millennium, but we have little detailed information, while Byblos was already a 'proto-urban' centre involved in external trade or exchange networks by the mid fourth millennium (Prag 1978, 1986), and was in regular contact with Egypt by the mid-third millennium (Sagieh 1983, 105-6).

Our knowledge of the socio-economic structure of third millennium Syria is sketchy. It is clear that by the middle of the third millennium, substantial urban sites existed throughout the country from Tell Brak (Mallowan 1947) and Tell Leilan (Weiss 1983) in the north east to Tell Mardikh (Matthiae 1980b), Hama (Fugmann 1958) and Byblos (Sagieh 1983) in the west. Texts are few, although new material from Ebla (Archi 1980, 2-3, Archi 1981, 3) indicates that we are dealing with one of several independent urban centres with tributary villages, existing in the region; others include Hama, Emar and Mari. There is

textual evidence to suggests that a Mari-Ebla axis may have formed the core of Syrian trade relationships at the time of Palace G (Archi 1985b, 67), which foreshadows the dominance of Mari and Yamkhad in the early second millennium. More westerly sites such as Byblos (Ward 1971, Sagieh 1983, 104-106) and Tell Mardikh itself (Scandone Matthiae 1982) show evidence for contacts with Egypt. There is also evidence for military campaigns by the rulers of Mari in north Syria at this time (Archi 1985b). We should therefore expect all the attributes of a complex urbanised society; social stratification, centralised production, long distance trade, and a complex pattern of political and economic relationships. The situation is not that different from the better known M.B.I period, which should be borne in mind when trying to interpret the archaeological record.

This implies that metal goods and weapons were in production at various urban centres. The texts from Ebla refer to the local production of bronze for the manufacture of various items (Pettinato 1981, 173, Table VII.1). Pinnock (1985,92) has recently proposed that Ebla be seen as the heart of the a local commercial 'net' extending from the Euphrates to the Hauran, although this may be rather too large an area. However, it seems that merchants from Mari and had a presence at Ebla, and vice versa (Archi 1985b, 67), and there was apparently some movement of craftsmen between the two centres. That being so, the degree of standardisation shown throughout Syria is rather less surprising than would otherwise have been the case. A common idea of what was appropriate was shared over quite a wide geographical area, despite some regional differences. This stands in marked contrast to the highly regionalised metalwork of the E.B.-M.B. period of Palestine (see below). One should also note that the classic Palestinian E.B.A. forms, are rather rare in Syria, suggesting that the former region was following a parallel but separate line of development.

The evidence of weapons

A number of types (Type 1 Tanged spearheads, Type 2 shaft-hole axes with cut down sockets) show clear connections with the contemporary material of the Upper Euphrates region, and distinct northern practices can be observed, which are rare among the Mesopotamian material. These include

cut-away sockets and parallel-sided blades on axes, the hooked tang, the triangular rivet-system as a dagger hafting, and the use of a broad-bladed spearhead. The appearance of Anatolian style spearheads with slotted blades in this area further reinforces the links between this area and north-western Syria. This local industry then, seems to have been substantially developed by the early third millennium, and cannot be attributed to direct Mesopotamian inspiration (Yakar 1985a, 348).

Metalwork parallels between northern Syria and Anatolia should not come as a surprise, bearing in mind the wide spread of so called 'Simple-Ware' and Syrian ceramic forms classed as 'Amuq G', into the latter region, the Euphrates valley in particular, during late fourth and early third millennia (Mellaart 1982, 9). This material succeeds the phase marked by the Uruk material found at Mesopotamian 'colonies' such as Norşuntepe, which must itself have been connected to the large Uruk type sites in north Syria - Habuba-Kabira (Strommenger 1979), Tell Qannas (Finet 1975, 1981) and Jebel Aruda (Van Driel 1981). Therefore, it seems likely that the earlier third millennium saw extensive contacts between Syria and Anatolia, perhaps continuing the pattern set by Mesopotamian traders, but under different, local control. The new Syrian control of the trans-shipment of raw materials to Mesopotamia, should be connected to the development of independent urban centres in north-western Syria, and the Euphrates Valley in particular (e.g. Carchemish, Til Barsip) and the development of a distinct, northern, ceramic style in the third millennium (Mazzoni 1985a, 562). This control seems to have continued with some level of stability. Silver, presumably coming from Anatolian sources which was sufficiently well established in Mesopotamian by the later third millennium to constitute a basic means of payment (Limet 1972), features regularly in the texts from Ebla (Pettinato 1979, 182). We are only gradually coming to realise the scope of these contacts, as our understanding of the archaeological record in these areas deepens.

Other types (Shaft hole axes with lobate blades and Type 3 tanged spearheads) show a closer relationship to the Mesopotamian material of the E.D.III period, while a number of parallels for axes of Type 1 come from Iran, although these are unprovenanced (Deshayes 1960, Type A5c, 165-168; Calmeyer 1969, Group 15, 34-35). At first glance this might suggest that a

phase of Mesopotamian 'influence' can be detected, coincident with the increased militarism which some (e.g. Charvat 1982) would infer from E.D.III cemeteries, and with the first documentary evidence for military campaigns in this direction (see below). However, this material is no more sophisticated than that of the earlier third millennium known from Carchemish and contemporary Anatolian sites. Furthermore, it should be stressed that our knowledge of Mesopotamian metalwork prior to the E.D.III period is limited, while the presence of Uruk material on the upper Euphrates suggests that Mesopotamian interest in that region had a long history prior to the documented military campaigns of Lugalzagissi, Sargon and Naram-sin. It seems more likely that a commercial rather than a military explanation should be sought for this concentration of 'foreign' influence in the metalwork of the Euphrates Valley. Given the importance of the river as a means of moving goods and people (Finet 1969), references to Mari and Dilmun 'weights' for metal assay, and the use of tin at Ebla (see above), it is reasonable to see this route as of considerable importance during the third millennium.

We cannot ignore the markedly different regional developments within Syria during the E.B.A. period, which might bear on the distribution of different metal types. The Red and Black Burnished Ware found in the 'Amuq and in western Syria (Watson 1965, 77), and the Brittle Orange Ware of the 'Amuq and Cilicia (Mellink 1962, 224) are different from the contemporary materials of the Euphrates Valley, and even more so from that of north-eastern Syria (Mazzoni 1985a, 568). At Tell Mardikh, Palace G which produced 'caliciform' pottery, succeeds levels producing Khirbet Kerak wares (Mazzoni 1985a, 564), and a similar sequence can be detected in the transition between levels K and J at Hama (Fugmann 1958). The appearance of substantial urban centres, producing mass- produced wheel-made wares of the widespread 'caliciform' styles dates to the middle of the third millennium in western Syria. The sequence of development in the west-central region of Syria is therefore different from that of the Euphrates valley, as the local Hama J pottery, which combines elements of local Levantine E.B.A. and urban Euphrates Valley traditions (Prag 1974, 87) might suggest. It is unfortunate that we have so little metalwork from the urban sites of the later third millennium in this area. However, the occasional appearance of examples of the narrow dagger series and of square-section spearheads suggest links with northern Palestine as

well as with sites to the north and east.

The third millennium material of Byblos and the coast is different again, rather closer to that of Palestine (Hennesey 1967, 62, de Vaux 1971, 230; Mazzoni 1985a, 566). Sagieh (1983, 108–109), has however indicated particular types from Byblos Phase K, which have better parallels in Syria, than in Palestine. The material of Phase J, dated to the late third millennium has strong links with inland Syria (Sagieh 1983, 114–116). This phase, which is surely still an urban one, (note Ur III period references to the presence of an 'Ensi' at Byblos Gadd (1973, 604) and the likely role of Byblos as the intermediary between Egypt and inland Syrian cities), is partly contemporary with the E.B.–M.B. period in Palestine. When this is understood, the appearance of a range of sophisticated new metal types in the early second millennium, often ascribed to the arrival of 'Amorite' newcomers (see below) becomes less surprising, and can be seen in the context of continuing contact with inland polities.

The exact pattern of contact between the coast and inland regions during the third millennium is not yet clear. De Contenson (1979), on the basis of the material from Ras Shamra (the pattern at Byblos might be rather different) argues for a period of relative isolation in the coastal zone, during the second half of the third millennium. Prag (1974, 87) observes that material akin to that of Hama 'J' is lacking in the Beq'a Valley of Lebanon, where the local E.B.A. ceramics are succeeded by material akin to that of Hama 'H'. Perhaps the interests of inland Syria at this period, as exemplified by sites such as Tell Mardikh, were turned towards the Euphrates and lands to the north and east, rather than the coast. As socio-economic developments proceeded, the littoral was brought increasingly into the Syrian cultural mainstream, centred on the Euphrates Valley and the steppe zone. Evidence to support such a view can be adduced from the metalwork, as there is an indication that distinctive coastal styles existed for much of the E.B.A.; crescentic axe Type 1, rarity of shaft- hole axes, tanged spearhead Type 7. That this material is replaced in the M.B.I period by types also found in inland regions (fenestrated axes, daggers with styled blades, socketted spearheads) supports the view that coastal isolation declined around the end of the third millennium.

The different regional forms are essentially variants on widespread basic

types such as crescentic axes and tanged spearheads, which illustrates the underlying unity in the range of material in production throughout the Levant. Among the simpler types this fundamental homogeneity is more striking. The abundance and wide distribution of Type 9 spearheads and the very basic daggers of Types 27 and 36 illustrates that Syria also produced a range of relatively simple weapons, requiring no great technical skill in their production. These are in fact rather similar to the small Type 26 daggers which occur in northern Palestine alongside the larger narrow daggers during the E.B.–M.B. period, stressing connections between the two areas at this time. It is perhaps these daggers that provide the inspiration for the development of the distinctive three-rivetted daggers, so common in the Early and Middle Cypriot periods, stressing, as do the hooked-tang weapons and pin types, the strong Levantine connections of the metalwork of Bronze Age Cyprus (Stewart 1962, 275– 276). The production of such basic simple copper weapons occurs as early as the fourth millennium as seen by finds from phase F in the 'Amuq (Braidwood and Braidwood 1960, 245, fig. 185.5) and in the graves of the Énéolithique Récent at Byblos (Dunand 1939, Pl. CLXXXIX, 1973, 313, fig. 186, Pl. CLX).

We have then, a sophisticated industry producing material cast in two piece moulds (see 2.1,2.2), of a more sophisticated, perhaps more 'international' character than that found in contemporary Palestine. However, the apparent coastal distribution of Type 7 tanged spearheads, the concentration of Shaft hole axes in the Euphrates Valley with its riverine connections with both Mesopotamia and Anatolia, and the moulds for different crescentic axe types found at Byblos (Type 1 as found in Palestine) and Halawa (Type 2, as found locally in the Euphrates valley) hints at possible regional variation within metalwork styles, as seen in the ceramics (Mazzoni 1985a, 1985b).

The presence of examples of the narrow dagger series at south Syrian sites, (see 2.4) combined with the local occurrence of square-sectioned spearheads (2.2) and the common crescentic axe types found at Byblos and Palestine (2.1), emphasises that this region may have had stronger connections with Palestine than did the rest of Syria. With the absorption of Syria into the Near Eastern cultural mainstream following a general north-south gradient,

south Syria and Palestine seem to have remained on the periphery until the end of the third millennium, perhaps even later in the far south. Such a mechanism will go a long way to explaining the different regional developments within the Levant during the third millennium (see below), and is in marked contrast to the more homogeneous styles which dominate during the earlier M.B.A. by which time the process was largely complete. However, given the very uneven nature of the sample, this must remain a suggestion at present. Additional material from southern and western Syria is badly needed to clarify Syro-Palestinian relationships at this time.

PALESTINE EARLY BRONZE AGE

As the total Palestinian corpus for this period is limited, we can only touch briefly on the possibility of changes in the weapons in production during the E.B.A. itself; nor can we discuss regional variation. It is clear from the nature of our sample from sites such as Tell el-Hesi, Jericho, Bab edh-Dhra' and Kfar Monash that a vigorous, thriving, metal industry existed during the E.B.A., producing a wide range of products including a number of weapons forms; hooked- tang spearheads, crescentic axes and various dagger types. Although similar in general terms, this material differs in detail from that of contemporary Syria. However, we are currently comparing the Palestinian corpus with material largely from the Euphrates Valley. We have little knowledge of that of south and west Syria, which might be closer to that of the southern Levant. More information is needed.

Considering the availability of copper ores in southern Palestine some of which are likely to have been exploited during the Chalcolithic period (Hauptmann et al 1985) the existence of a thriving E.B.A. metal industry is to be expected. It is however, difficult to assess the exact contribution of the local Chalcolithic industry to that of the E.B.A. The rich repertoire of sophisticated objects known from the preceding period (Hanbury-Tenison 1986, 151 and references there), provides the technical background for a sophisticated E.B.A. industry. However this consists of material which is largely of a ceremonial nature such as that of the hoard from Naḥal Mishmar (Bar-Adon 1980). Similar material, albeit in smaller quantities has been reported from other locations, suggesting that this hoard should be considered as part of a 'tradition', not as an isolated event. Connections with E.B.A. metalwork can be seen in more mundane types as copper maceheads, chisels and flat axes (Hanbury- Tenison 1986, 156) arguing for a degree of continuity between the Chalcolithic and E.B.A. (Hanbury-Tenison 1986, 151) rather than a cultural break as suggested by some writers (e.g. Kenyon 1979, 97). Therefore, it seems reasonable to infer that the E.B.A. industry grew out of its Chalcolithic predecessor

However, we should not be surprised to see substantial changes in the overall repertoire, in particular the disappearance of the more elaborate 'ritual' items, which may in the course of social changes, have lost their original role.

(It should be observed that maces and so on do at times appear in graves of the Chalcolithic period, so we are not simply comparing material from different contexts.) The late fourth millennium was a period of growing international contact, presumably connected to the appearance of Uruk-type sites both to the north-west and east of Mesopotamia, events in which the southern Levant played a small part. Similarities between designs on E.B.A. seals from storage jars founds in Palestine, Syria and regions to the east have been observed by Ben-Tor (1978, 101ff) and the wider connections of Palestine in the fourth millennium have been outlined recently by Helms (1987). We ought perhaps to consider the Palestinian E.B.A. metal industry within such a context, receiving a degree of spin-off contact from the large-scale trade carried out over the Euphrates route, thus accounting for the general parallels between the E.B.A. metalwork of Palestine and that of the Levant at large.

The E.B.II and III periods see the development of defended urban centres throughout Palestine (de Vaux 1971 ,215-218), some such as Arad (Amiran et al 1980) with a system of 'daughter' villages, probably acting as organisational centres for an increasingly complex economy (Richard 1987, 29-31). These sites were involved in some way in the collection and distribution of agricultural produce (Stager 1985), and in foreign trade, perhaps in commodities such as olive oil, wine and honey, some of which may have been shipped to Egypt (Ben-Tor 1986, 4ff). The evidence for site hierarchies (Broshi and Gophna 1984) suggests the existence of a degree of centralised political and economic control. We should also note the close links between south Palestinian sites such as Arad and sites in the Sinai peninsula during the E.B.II period (Beit Arieh 1981, 1982, 1984), which seem to have been connected with the extraction of copper, much of it no doubt going north to the urban centres of Palestine. There is therefore no reason to suggest that either technical factors nor the availability of raw materials, are responsible for the relatively limited evidence at our disposal for the metalwork of this period. It may be that as in Mesopotamia (Moorey 1982a, 32) tight administrative control was maintained over metal supplies and recycling by the main urban centres, thus restricting the quantities entering the archaeological record.

The existence of fortified urban centres (Broshi and Gophna 1984, 49), suggests that weapons would be of some importance, yet relatively little

artefactual evidence has survived. There is a small but significant body of evidence from the Old Kingdom relating to campaigns, probably directed against southern Palestine e.g. the Campaigns led by Weni (de Vaux 1971, 235-6) and a depiction of an assault on a walled town defended by 'Asiatics' found in the Tomb of Inti at Deshasheh (Petrie 1898, Pl. IV) showing that warfare was not unknown at that time. Several skull from E.B.IB tombs at Bab edh-Dhra show signs of axe wounds (Ortner 1982,94) indicating violent action, but little of the hardware has survived because weapons were rarely employed as grave offerings. This being so, the limited amount of weaponry found in graves in comparison to later periods must be considered a social, rather than a technical or economic phenomenon. The limited evidence for the expression of social status via weaponry in E.B.A. Palestine, as opposed to the later E.B.-M.B. period, or contemporary Syria, despite the clear evidence for site hierarchies, and central control over production and distribution (see above) is striking.

De Vaux (1971, 225) observes that although E.B. III graves are relatively few in number, they often contain many inter ments. Offerings other than ceramic vessels, or beads, are few, thus burials are essentially undifferentiated (as far as we can tell from the data available to us). When this is added to the limited evidence for 'palace' buildings (Wright 1985, 272), the whole nature of E.B.A. urbanism in Palestine comes into question. We have evidence for concentration of population and for defence, but little for social stratification. Thus we might suggest that the nature of Palestinian urbanism was different from that of contemporary Syria, or Mesopotamia, where palaces and clearly differentiated burials are well known. Perhaps that of Palestine was more 'community' centred, placing less emphasis on the a ruling elite than was the case in the north. Although the evidence of weapons implies that south and north Levantine urbanism may have represented rather different phenomena, a broader consideration of the nature of the E.B.A. in Palestine is required, in order to examine this problem fully. This lies outwith the scope of the present survey.

Foreign trade during the E.B.I and II periods seems to have been largely with Egypt (Weinstein 1984b, Ben-Tor 1986), goods being transported overland, the route marked by a string of sites found across the northern edge of the

Sinai Peninsula, showing both Palestinian and Egyptian pottery (Oren 1973c). It was suggested earlier (see 2.2; 2.4) that the Kfar Monash hoard dates to the E.B.I or II periods. Therefore it is against the background of trade with Egypt that its contents should be considered. Thus the similarity between the daggers from the hoard and an example from a late predynastic grave at Abydos (see 2.4) is all the more striking. However, as no similar pieces have been reported from other Egyptian tombs, while a fifth example is known from Jericho, we might conclude that these daggers represent a local product, part of a series of triangular daggers with high midribs, which should also include the Type 8 daggers from Azor and Megiddo. The present writer would agree with Ben Tor (1971) and Watkins (1975) (contra Yeivin 1967), that the objects of the hoard are local products, owing little to Egyptian metalwork (as far as we understand it), and thus give a genuine insight into the material in production within Palestine during the first half of the E.B.A.

Trade with Egypt seems to have ceased by the E.B.III period, which is marked by a greater orientation towards Syria (Ben Tor 1986, 23ff). The clearest indication of this is the presence of Khirbet Kerak ware at a number of Palestinian sites. This material, generally occurs in bowl forms which are unlikely to represent trade vessels, and has been shown (Esse 1982, 372) to be produced locally. Although parallels can be drawn between this material and Anatolian Black Burnished Wares (Amiran 1969, 74), the significance of the appearance of this ware in Palestine is still uncertain (compare views of Hennessey 1967, Lapp 1970 with Kenyon 1979, Esse 1982). More important for our purposes than its Anatolian connections, is its occurrence at west Syrian sites (Watson 1965, 78) and recently at Tell Mardikh in the levels preceding Palace G (unpublished). It is perhaps within this context that we ought to consider the appearance of new types such as the barbed spearhead (Type 17) and the crescentic axe (Type 1), whose links with Syria are clear.

The former, three of which occur at Tell el-Hesi, in what is likely to be an E.B.III context (see 2.2) have good a good parallel from the 'Amuq, assigned to Phase 'H', the phase in which Khirbet Kerak Ware appears. The latter would seem to form a local variant of a weapon occurring, in a number of forms, throughout western Asia, during the earlier third millennium. It is important to note here that all the Palestinian examples are of Type 1, which shows a clear

regional concentration. The mould from Byblos (see 2.1) opens the possibility of the Palestinian pieces being imports from the north, although there seems to be no reason why these axes could not have been made at the local urban centres. Axes known from the Euphrates Valley and the mould from Halawa are of Type 2, a rather different form, suggesting that the southern Levant was producing local variations on more widespread types, as with the heavy Type 17 tanged spearheads. It would be interesting to known whether those in production at sites such as Hama, where Khirbet Kerak ware is common in Phases 'K5-1' (Fugmann 1958, 37ff) were of the Palestinian form, but this must await new fieldwork. It seems that the Palestinian industry of the E.B.III period has its strongest connections with south and west Syria, as might be expected.

To judge from their archaeological contexts which are either graves or deliberate deposits, (see Philip (b) in press), crescentic axes, and perhaps the barbed spearheads too, may represent prestige objects, although used less extensively than in the north. It is therefore interesting to see that Palestine adopts a similar set of symbols to those in use in the northern Levant, at this period, suggesting, as does the evidence of both Khirbet Kerak and Pattern Combed vessels that Palestine was involved in external socio- economic networks (see Esse 1982, 272-285). How far these stretched is another question. Despite the number of E.B.III graves excavated at sites such as Bab edh-Dhra and Jericho, shaft-hole axes have not been found in Palestine, although several Type 1 crescentic examples are known, suggesting that these networks were mostly with southern Syria, Byblos and the Beq'a rather than with the larger north Syrian cities (see above).

One further type deserves mention, the narrow dagger. These are confined to Palestine and western Syria, reinforcing the Syrian connections suggested by the presence of crescentic axes and barbed spearheads. Daggers of this form occur in tombs of the E.B.I period, are still in use at the end of E.B.III and continue into the subsequent E.B.-M.B. period, where they become the major metal component of the archaeological record (see 3.2.2). The important point is that all published examples from contexts pre-dating the E.B.-M.B. period seem are of Type 2, which remains largely unchanged throughout the E.B.A. The origins of this type remain obscure. A rough similarity exists to certain

daggers from the tombs of the Énéolithique Récent at Byblos, a point emphasised by Richard (1978, 228-9), but these are very general (simple designs, with tapering or trapezoidal butts, and lentoid or lozenge-shaped cross-section; some are quite long in relation to their breadth), and may result from the basic simplicity of the material (see Philip (a) in press). Most early daggers from northern sites (see 2.4) show a different hafting, generally with a triangular as opposed to a paired rivet system and are rather broader in relation to their length.

PALESTINE E.B.-M.B. PERIOD

This period is generally characterised as one of economic dislocation, sometimes ascribed to invasion by nomadic peoples (Kenyon 1971, 594), and sees a shift from urban sites to a more dispersed settlement pattern (Prag 1974), perhaps with a pastoral nomadic economy in southern areas (Dever 1980, 57). However, Esse (1982, 373) has emphasised that a degree of pastoral nomadism was probably present in Palestine throughout the E.B.A., as part of a complex interconnected economy. A more recent view (Richard 1987), while stressing the role of non-urbanised elements of the population, would ascribe these changes to increasing nucleation of settlements during the E.B.III period, leading to a loss of control in the outer districts and greater autonomy for the more peripheral members of society, eventually leading to a complete breakdown of networks of social and political control. Although larger E.B.-M.B. settlement sites are now being discovered, especially in the Jordan Valley (Rast and Schaub 1978, 1981, Richard and Boraas 1984, Helms 1986, 1987,) these are still considerably smaller than nearby E.B.A. sites.

Metalwork, in particular the marked increase in burials equipped with weapons, has been important to various writers' interpretations of this period, and has often been seen as arguing for a marked break with the preceding E.B.A. (Lapp 1966, Dever 1970, Kenyon 1973). Although it has often been associated with 'newcomers' the evidence of metalwork would equally well support the last explanation, namely a breakdown in E.B.A. political structures. The increase in weapon deposits in tombs, might result simply from the cessation of administrative control over metals, especially over their procurement and recycling, associated with the disappearance of the E.B.A. urban centres. These were probably replaced by a more fluid, competitive, social system, placing emphasis on the attainment of power through prestige, gained perhaps via personal consumption or one's connections within exchange systems, rather than on one's position in a pre-existing centralised hierarchy. No population movements would then be required.

The expression of these notions through weapons is probably related to similar changes which took place in Syria in the early third millennium (see above), and are reflected in Palestine rather later. There are clear differences

between the make-up of E.B.A. graves with their 'collective' nature and the lack of any obvious differentiation between individuals, and those of the E.B.-M.B. period, where differences are more visibly expressed. Following the decline of the E.B.III centres, we may see a more fluid society, offering more opportunity for individuals and groups to promote their own interests. The style zones detectable in the metalwork suggest rather restricted regional networks, presumably corresponding to zones of human interaction; the north, and the south, with some overlap in central Palestine. Support for this view comes from the existence of ceramic style zones and possible regional differences in socio-economic structure (Dever 1980, 45-49, 55-58). The frequency of imported metal artefacts, and of use of tin-bronze both show a distinct decline from north to south (see 3.2.2, 3.3).

Fragments of mother of pearl and ostrich egg from domestic sites in Sinai (Clamer and Sass 1977, 247), and other rare materials from settlements in the Negev (Dever 1985b, 117) provide further evidence for the circulation of valuables. It is likely that the copper ingots found at several locations in southern Palestine (see below) should also be interpreted in this light (Philip (b) in press). Although they may be seen as 'commodities' it is unlikely that they passed from hand to hand without being involved in inter-group social relations. We may in fact have a prestige goods system, closely tied to imports/rare/prestige items, which operated on the fringes of more the highly developed societies to the north and south-west.

Although daggers are occasionally found in E.B.A. tombs, it is difficult because of the large number of interments in most such graves, to establish how the grave goods actually relate to the individual burials. Even when we have an example of a rich E.B.A. burial, such as that from Kinneret (Mazar et al 1973), the contents do not include weapons. It seems therefore that status was not necessarily expressed (as far as the burial record is concerned) in a military idiom during the E.B.A. The distinction of individuals by such means has however good parallels in the later M.B.I period (See Oren 1971, Dever 1975, 3.2.2 here), suggesting that the M.B.A. pattern may have been established during the E.B.-M.B. period. The crucial change in the pattern of deposition comes not in the M.B.A. but during the E.B.-M.B. period, although this continuity has been masked both by typological changes and even more so by

interpretations which insist on a clear break between these two phases (Dever 1980, Gerstenblith 1983). We must therefore consider the evidence for continuity between the periods.

Although the M.B.I period is sometimes represented as one where multiple successive burial was the norm, this is by no means the case at all sites, Jericho (Kenyon 1960, 1965) and similar sites such as el-Gib (Pritchard 1963) may in fact be atypical, and the local tradition of multiple successive burial may owe as much to the availability of large E.B.-M.B. tombs at those sites, as to any cultural preference. Many M.B.A. burials at sites such as Megiddo, Ras el-'Ain, Tell el-'Ajjul and 'warrior' burials at Tell Rehov and Beth Shan are single, a strong thread linking E.B.-M.B. burial practices with those of the M.B.A. The cist-graves of the M.B.I period, have good parallels in the local E.B.-M.B. and also in the Syrian E.B.A. (Prag 1974, 101). In addition to single burials and an increasing use of weapons as grave goods, the E.B.-M.B. period also sees the first appearance of meat offerings in graves (see for example the graves from Jericho published by Kenyon 1960, 1965), another element which finds strong expression in M.B.A. mortuary practices. Thus the emphasis on the individual on the occasion of their burial is a development first seen in Palestine during the E.B.-M.B. period, and which continues strongly into the M.B.A.

Given the frequent references to elaborate daggers in the third millennium texts from Ebla (see 3.1.2), we might infer that the emphasis on weapons as suitable grave items in E.B.-M.B. Palestine, echoes developments in contemporary Syria, where urban centres such as Ebla and Qatna were clearly developing strongly. We have also seen (above) that burials with weapons are known in some numbers from at least the early third millennium in the central Euphrates region where a range of tomb types, many with good E.B.-M.B. parallels (Prag 1974, 100- 101) including both single and multiple forms, cists and built chambers occurs (Orthmann 1981b). Given connections between northern Palestine and urban Syria (see Prag (1984) on possible transhumance patterns connecting northern Palestine and Syria/Lebanon), it is reasonable to expect that these developments would have repercussions in Palestine. The 'warrior' graves of the E.B.-M.B. period, are a local response to major changes taking place in the north.

The collapse of the existing political structure with the demise of the E.B.III urban centres, may have facilitated the adoption of these new practices and modes of expression during a subsequent period of fluidity. Changes take place in Palestine during the E.B.–M.B. period, in particular the appearance of competing local elites, without fortified towns and their attendant villages as a 'captive' power base. These would depend more on prestige gained through social relations, control of exchange networks and display, to attract followers, and in part determine the path taken during the M.B.A., in particular the close connections between Palestine and the north evident at that time (Tubb 1983). There is no reason to connect these changes with invasion. The end of E.B.III is an internal Palestinian phenomenon (Richard 1980, 1987). Although Prag (1974, 105–7), who observes the similarities between Palestinian E.B.–M.B. material and that of late third millennium Syria attributes these to limited population movements, the view taken here is that socio-economic changes occurring on the central Euphrates in the early third millennium, (see above) and in western Syria in the mid-third millennium (Hama J, Tell Mardikh IIB) have clear repercussions in the southern Levant in the E.B.–M.B. period. These social changes are crucial in that they lay the foundations for developments in the subsequent M.B.I.

It is the vital 'preparatory' aspect of the E.B.–M.B. period that has been overlooked by those writers (Dever 1976, Gerstenblith 1983) who see a sharp break between the E.B.A. and M.B.A. Tubb (1983, 56) has already pointed out that it is easy to be misled by the differences in ceramics, but that in contrasting the pottery of the two periods we are not really comparing like with like. The E.B.–M.B. period is not only a temporary recession, nor the 'last gasp' of the E.B.A. (Dever 1985b). It sees important social changes, expressed most clearly in terms of the burial record, but also in the disruption of E.B.A. settlement patterns, which are not simply resumed in the subsequent recovery. The E.B.–M.B. period contains the seeds of the new structures which mark the M.B.A.

Northern Palestine

The metalwork regions are not exactly co-terminus with those which Dever (1971, 1980) has defined in ceramic terms. The underlying structure seems to

be a simple north-south split, roughly equivalent to Oren's (1973a) E.B.IV A and B. The northern region (hooked-tang spearheads Types 4 and 5, dagger Types 2 and 3, and Syrian imports), extends as far south as the Esdraelon, encompassing Dever's ceramic groups N and NC, the southern region (hooked-tang spearhead Type 6, dagger Type 4) which may well continue later than the northern material, is roughly equivalent to ceramic family S. The intervening area, the Jordan Valley and northern parts of the Central Hills, as represented by sites such as Sinjil and Jericho would seem to combine elements of both regional styles, as is the case with the ceramics from the recently excavated settlement at Umm Hamad esh-Sharqia in the Jordan Valley, which exhibit connections with both northern and southern forms (Helms 1986, 42-47). The mingling of both traditions in the Jordan Valley stresses its importance both as a means of communication (Prag 1974, 73) and as an important focus of sedentary communities of this period (see above). Northern metalwork may in fact represent the southern part of a largely unknown south Syrian industry (see discussion of 'imports' below). This seems reasonable as the ceramics of families N and NC (Amiran's 1969 groups B and C) are those with the strongest connections to the Syrian E.B.A. (Dever 1971, 201), although family N may represent a localised south Lebanon/Upper Galillee tradition, rather than having contacts with the major settlements of Syria (Lapp 1966, 89; Dever 1980, 46).

The E.B.-M.B. 'recession' was less severe and of shorter duration in the north where a more sedentary agricultural economy prevailed (Prag 1974, 72ff),and where the local E.B.-M.B. pottery can be shown to develop into that of M.B.I, without undergoing the typological developments found on southern sites (Falconer and Magness-Gardiner 1984, 57-58). The evidence now suggests that there may even be a degree of continuity at some of the larger tells (Dever 1980, 44), where a more sophisticated metal industry might have survived. More work is needed on the poorly known E.B.-M.B. occupation at the major northern sites, and we should be wary of applying socio-economic reconstructions based on the southern evidence, which is rather different, to the north. The material culture of northern Palestine during the E.B.-M.B. period shows both the strongest links with the preceding local E.B.III period, and with burial customs and ceramics (Hama J) of west-central Syria (Oren 1973a, 24-25), suggesting a date in the later third millennium for the

E.B.–M.B. occupation in this region.

Southern Palestine

The south shows a different range of metal types, all developed versions of the traditional local forms (see above). The Syrian imports found in the north are absent. Dever (1973) has detailed the close ceramic connections between the Jordan Valley, the Central Hills and the South, the areas where our southern metal types occur. It is generally held (Oren 1973a; 31, Prag 1974, 81; Dever 1980, 43) that the band-combed ceramics of southern Palestine occur relatively late in the period. There is certainly a possibility of some chronological overlap with the ceramics of other regions (Helms 1986, 42–48) but the E.B.–M.B. period in the south, largely represented by this ceramic form may well continue longer than in other areas (see Falconer and Magness-Gardiner 1984, 57). This would suggest that part of Dever's family S (his E.B.IVC) runs contemporaneously with the true M.B.I period in Syria, and perhaps with M.B.I in the north-coastal and Esdraelon regions (Gerstenblith 1983, 105). White washed, incised pottery although in different shapes from that of 'Family S', is now known from the earliest M.B.I levels at Aphek/Ras el-'Ain (Beck 1985, 181–194) and coastal sites in the northern Plain of Sharon (Kochavi et al 1979, 151, 161). Although our types cannot in themselves offer firm proof that the southern material is late, time must surely be allowed for the very regional diversity of the E.B.– M.B. period to develop. As the available evidence suggests that most of the typological variation took place within this period (only the earliest forms, Type 2 daggers and Type 5 spearheads occur throughout Palestine), and the southern types seem to lie at the very end of this development, we might reasonably argue that they are the latest forms.

We could view the appearance of short-bladed (Type 6) hooked-tang weapons as a local response to that of genuine socketted spearheads in the north. In the same way the long, Type 4 narrow daggers, with their accentuated midribs might be a similar response to the early 'decorated' Type 12, or long Type 9 daggers which begin to appear in 'warrior' graves in M.B.I contexts at sites such as, Beth Shan and Tell Rehov. Therefore we see a southern industry which is producing an equivalent weapon, but within the traditional idiom, and of a form compatible with local metallurgical practices.

It is worth stressing that the virtual absence of southern forms from north Palestinian sites, like the lack of imports in the south, argues for only limited contacts between the two regions. This is also indicated by the highly regionalised ceramics, which are in marked contrast to the homogeneity seen in both the foregoing and succeeding periods. Within these areas however, we should note that both are divided into smaller units in ceramic terms. No equivalent for these can be reconstructed on the basis of the distribution of metal types, suggesting that the patterning of metalwork (or the spread of metallurgical knowledge) operated on a different scale from that of ceramics.

The distinctive 'Family S' ceramics are spread throughout southern Palestine, the Negev and Sinai (Dever 1980, 57) and may be associated with a more-mobile society, one of different socio-economic structure from that of the north. Given this distribution and the late date of this material, it might be inferred that this is the archaeological representation of the 'Asiatics' (Posener 1971, 532-537) mentioned by the Egyptians as inhabiting the fringes of the Nile Delta and the neighbouring desert regions during the First Intermediate Period and the earlier Middle Kingdom. Early 12th Dynasty rulers made considerable efforts to control these people, and the measures taken, such as the building of fortresses (Ward 1971, 65) and occasional large scale campaigns (Helck 1971, 39-40), suggess that they were dealing with just such mobile pastoral groups, seeking access to the rich lands of the Delta, rather than settled urban communities.

Alloying and Production

Until recently there has been very little archaeological evidence available concerning the metal industry of Palestine during the E.B.-M.B. period. Recent analytical work suggests that there is a clear fall-off in the occurrence of tin-bronze from north to south, and that there may be a degree selection by type (see 3.3). However, there is little data on the production and circulation of metal at this time, a fact which reflects the lack of excavation of settlements, rather than any shortage of metallurgical activity itself, as indicated by copper finds from recently examined settlements in the Negev (Cohen and Dever 1979, 48, Cohen 1985, 204). Most of this evidence comes from southern sites, where some settlement excavation has been undertaken. The situation in the

north may have been rather different, as this is the region wherein tin-bronze most often occurs. Copper ingots have been discovered at several locations in southern Palestine and the Negev, such as Har Yeruham, Hebron, Tell ed-Duweir and En-Ziq (see Dever and Tadmor (1976, 39) and references there, and more recent finds summarised in Philip (a), in press) essentially in an area congruent with the distribution of southern metal types. Whether this is connected with the movement of copper extracted from sources in the Wadi Arabah area and Sinai, both clearly within the area of Family S ceramics, as some have suggested (Cohen and Dever 1979, 48), is not clear.

Narrow Daggers outwith the Levant

Although foreign parallels for these daggers are rare, one instance is significant. This is the presence of several narrow daggers in a collection of material from tombs of the Umm en-Nar culture in the United Arab Emirates (Cleuziou 1977-78, 43 top right). The daggers are closest to our Types 2 and 3. One can be seen to bear a double incised line down the centre of the blade, a northern feature. The other metal weapons in this group are not of types familiar from the Levant, suggesting that they may represent a group collected from several sources, prior to their deposition in the tombs. The full associations of these weapons have not yet been published, although Cleuziou (1980, 348) would date the Umm en-Nar culture to the second half of the third millennium.*

The obvious question is what are these daggers, which have no historical context in the area, doing in the Persian Gulf ? No definite answer can be given until we have more contextual data. However, we should bear the following points in mind. It is unlikely, given the amount of weaponry recovered from third millennium contexts in Mesopotamia, that these were made there; there are no known Mesopotamian parallels. Neither are they likely to be local to the Gulf, as no good parallels are known from sites in that area. These daggers are not however restricted to Palestine alone. Several examples are known from south Syria. The use of the the term 'Dilmun' in connection with weights of precious metals at Tell Mardikh (Pettinato 1981,

* Link to "Cappadocian" features in Failaka Seals cf Kjaerum Faláika Dilmun I (1) The Stamp and Cylinder Seals (Aarhus 1983)

185) suggests that the larger Syrian sites were part of a wide ranging international trade network, which may well have involved dealings with the Gulf area, perhaps mediated through Mesopotamian sites, although direct contact must also be considered. Certainly, tin, which must have come from the east, probably up the Euphrates is frequently mentioned in the Ebla texts (see 3.3) and was reaching Palestine during the E.B.-M.B. period.

Nor was Ebla alone. We have no textual information about the role of more southerly sites such as Hama and Qatna in the later third millennium, although the archaeological evidence (Fugmann 1958, du Mesnil du Buisson 1935, 145ff) suggests that both were already significant urban centres by this time. Qatna in particular was well positioned to conduct direct overland trade with sites on the Euphrates such as Mari; the direct desert route is known to have been used in the early second millennium, and may have been in use earlier. Qatna has of course produced Type 3 narrow daggers from late third millennium Tomb IV (see 2.4). We seem to have here a glimpse of the wide ranging contacts of the major Syrian centres by the later third millennium. It is within this context that we must view the appearance of tin-bronze in northern Palestine.

As for the presence of daggers rather than other items (the full range of associated material is still unpublished), the most obvious explanation is the apparently widespread association of weapons with prestige. The frequent mention of daggers of some sort (GIR-MARTU) in texts concerned with the distribution of valuable items recovered from Palace G at Ebla (Archi and Biga 1982, 351, Archi 1985a, 283), emphasises that valuable weapons were in circulation within Syria at this time. The narrow daggers from the Gulf occur as a group, rather than as isolated items, thus it makes sense to see them within such a framework, as either trade-goods, novelties perhaps, or as part of an exchange network, perhaps a diplomatic gift of some kind.

MIDDLE BRONZE I

Although having general parallels in Mesopotamia the weaponry of the M.B.I period forms a distinctly 'Levantine' corpus. In contrast to the E.B.A, shaft- hole axes are not found in M.B.I contexts in the Levant, although they occur at northern sites such as Chagar Bazar (Mallowan 1947, fig. 15:12, 15) and in Anatolia (Erkanal 1977, 15). Instead we see a preference for the local fenestrated and narrow-bladed forms of axe. The former occur in some number as far east as Mari and Baghouz, in forms typical of the west rather than the distinctive 'eastern' variants known from Mesopotamia and the Hamrin (see 2.1). In the light of this, we might consider whether axes from Baghouz, provide evidence for east-west exchange networks. These could well have involved tribal groups such as the Suteans, who exploited the steppe between Homs and Deir ez-Zor, as part of their seasonal round and who had regular contact with the settled communities at each end of their territory (Kupper 1957, 83).

The dating of inland Syrian/Euphrates Valley fenestrated axe finds remains imprecise, owing to our poor knowledge of the ceramic chronology of those areas and the problems of relating this to the better documented western sequences (Lebeau 1983, 167). The lower dates for Baghouz proposed by some recent writers (see 2.1) might imply that fenestrated axes remained in production longer in inland areas than on the littoral. This would be supported by the presence of such axes in a mid-eighteenth century tomb at Tell Mardikh (Matthiae 1980c). We may therefore have a situation in which fenestrated axes were replaced on the coast by Type 1 narrow-bladed axes but while remaining in use at inland sites. This would also account for the absence of Type 1, the earliest form of narrow-bladed axe, from inland Syria (but for a broken example from Hama), despite the existence of various Mesopotamian axe types related the later Type 2-4 narrow-bladed axes (see 2.1). However, clarification of this issue must await the integration of the west Syrian M.B.A. ceramic sequence with that of the Middle Euphrates

Connections with Anatolia

Fenestrated axes from Anatolia (see 2.1) are contemporary with those of

the Levant, and would probably be considered as 'imports', were it not for the presence of moulds at Kültepe (Mellink 1983, 430). However, we know that more traditional northern styles of axe (see Erkanal 1977, 15) were also in use here, in contrast to the exclusive use of fenestrated weapons in the Levant. There are also examples of small Levantine spearheads from this site (see 2.3). The axes and small spearheads found at Kültepe are from burials, resembling the 'warrior' burials of the Levantine M.B.I. Unfortunately the Kültepe material has not been published by grave groups so we cannot go beyond typological parallels. Whether such graves represent the burial of Syrian merchants at Kültepe, or local adoption of a 'foreign' practice by certain social groups remains unclear. Given that the finds and mould are from the Karum, apparently from level II (Mellink 1983, 430), we might suspect that they were made for the use of foreign merchants resident there. This would seem to indicate the presence of Syrian smiths, resident at the Karum, producing their traditional products. Whether these were sold mainly to foreigners, or to resident Anatolians, remains to be established.

Although the texts from the Karum, concern Assyrian merchants, it is generally held, that it would have been impossible to identify the presence of these merchants on the grounds of their material remains alone. Therefore, we may well imagine other resident 'foreigners' would be equally invisible. There are however elements in the archaeological material which suggest strong connections with the Levant, such as the presence of seals of 'Old Syrian' style (Özgüc, N. 1968, 59), and Levantine pottery (Gerstenblith 1983, 65 and references there), as well as the weapons themselves. There is also textual evidence for Syrian trading activities; merchants from Ebla buying copper with 'Amorite silver' and a reference to a man of Tadmor (Lewy 1961). A sealing of Aplahanda of Carchemish was found at Açemhöyük, further into Anatolia, where a fenestrated axe was also found (see 2.1), and seals of 'Syrian' styles are second in frequency only to the local varieties (Özgüc, N. 1980, 62-67). The addition of lead to tin-bronzes at Hama in the M.B.I period (see 3.3) might result from the export to the Levant of surplus lead, produced as a result of Anatolian silver extraction. Perhaps the role of the Syrian towns in the Cappadocian trade is overshadowed by the written documents of the Assyrian network.

The 'Porteurs de torcs'

In the northern Levant much has made of the appearance of a new range of metalwork at the beginning of the M.B.A. This has even been associated with a new group of people, the 'Porteurs de torcs' whom Schaeffer (1949, 55) has identified as a group of new settlers, highly skilled in metalworking, arriving at Ras Shamra at the beginning of Ugarit Moyen I. It is important to note that it is mainly the distinctive metal types, found at several early M.B.I sites (Schaeffer 1948, 40ff) which provided the main evidence for the newcomers. Kenyon (1966, 36) observed that the metalwork of U.M. I was strongly related to that of the 'full M.B.A.'. In fact the dagger and axe types have good parallels in M.B.I tombs at Hama, in the 'Dépôts' at Byblos and at a number of other Syrian sites of this period; material of this kind is not restricted to the coast.

Kenyon (1966, 39) equates this material, most of which seems to come from tombs excavated in the region of the M.B.A. temples, with the E.B.–M.B. period in Palestine, and views it as representing a nomadic interlude as she had suggested for Palestine. However, we should note that the little pottery from these tombs that has been published, has its strongest connections that of southern Palestine (Dever's 1980, Family S), rather than with the northern regional variants of E.B.–M.B. styles. This seems unconvincing. Admittedly no settlement material contemporary with these graves has been published from the site, but neither has M.B.A. settlement material of any kind, although it must be present. In fact there are also good ceramic links with the incised material of the Syrian M.B.I period, as found at the main urban sites (de Contenson 1979, 862), making a 'nomadic interlude' rather unlikely. What therefore does this phenomenon represent ?

There is little pottery reported from these tombs, in contrast to a large amount of metalwork. Although a similar pattern occurs in E.B.–M.B. tombs, pottery is also rare in early M.B.I 'warrior' graves at sites such as Tell Rehov (Yogev 1985) and Beth Shan (Oren 1971) where the typological parallels of the weapons themselves are close (in contrast to the M.B.I tombs of inland Syria such as Qatna Tomb 1 or those at Hama, where much larger quantities of ceramics are interred). Much of the material of Ugarit Moyen I is the product

of two- piece moulds, an unlikely attribute of nomadic groups (see 3.2.3). In fact, the evidence for the 'Porteurs de torcs', can be better explained as resulting from the adoption of metal types new to the coastal zone (probably a development of the little known late third E.B.A. styles of inland Syria; note the unstratified Type 2 shaft-hole axe from Byblos), and a simultaneous increase in the deposition of such material in grave contexts. In this sense, then the changes at Ras Shamra are simply a local manifestation of those taking place throughout peripheral regions of the Levant at the beginning of the M.B.A., changes which had affected inland Syria several centuries before.

A comparison of the distributions of contemporary metal types reveals that it is hard to speak of one overall unified set of types, a standard 'warrior' set throughout Syria-Palestine. In particular the material from Baghouz, shows greater emphasis on spears as grave goods and on an axe-spear rather than an axe-dagger set. We may have several independent, spatially overlapping patterns. The distinctive ribbed and grooved Type 12 and 13 dagger forms are not reported from sites east of Tell Mardikh and Hama, thus they are confined to the Levant proper. The same applies to Type 1 narrow-bladed axes, suggesting that both forms have a Levantine origin. Although Type 12 daggers are known from Kültepe and the Nile Delta (see 2.4), both areas may have had Levantine residents. On the other hand, they are not yet known from the middle Euphrates area, where as in North Mesopotamia, straight tanged daggers with plain blades are preferred (Mallowan 1937,fig 13.2-5, du Mesnil du Buisson 1948, Pl.LX).

Many types show little evidence of regional patterning within the Levant itself, suggesting that their shapes had a widely understood 'meaning' (see 3.1.3). The patterning of socketted spearheads is different. A range of small spearheads Types 6-10, are found in early second millennium contexts in an area extending from Mesopotamia and the Persian Gulf (I owe this information to Mr Carl Phillips), to North Mesopotamia and Cappadocia, and throughout the Levant south into the Nile Delta. However these weapons seem to show localised stylistic traits (see 2.3). A similar pattern is seen in the long-socketted Type 2 and 5 spears. Type 2 represents a form found only at Byblos, presumably therefore made locally, while Type 5 is a disparate group of items of comparable dimensions, but probably made at several different

locations. This is supported by references in the Mari texts to the production on royal demand of spear or javelin heads of various weights (Rouault 1977, No.10, No. 21; Kupper 1983, No. 204). Such localised styles are only gradually becoming apparent and more work is needed before we can assess this fully. However, it is clear that the existence of regional styles within the Levant cannot be detected in the M.B.I axe repertoire, nor in the decorated daggers, suggesting that the mechanism for production and distribution of these latter artefacts was more complex than that of socketted spearheads,which were probably made for local use (see 2.3).

A part of the reason for this wide ranging similarity among axe and dagger types can be explained by the political situation. The M.B.I period is that of the so-called 'Amorite' kingdoms (Kupper 1973). By the period of the Mari texts, the political structure consisted of several major 'Great Kings', (Kupper 1973, 10) with a fluctuating set of smaller vassal rulers. Although fluid in detail, the basic structure of the system seems to have remained constant until the late 17th C, when the powerful Kingdom of Yamkhad was destroyed by the Hittite ruler Muršiliš. It is likely that this system extends back into the later third millennium, as texts dated to the Ur III period refer to dealings with Ebla (Michaelowksi 1978 38-39), and mention the presence of an Ensi at Byblos (Bottéro 1971, 560), implying an urban community. After the campaigns of the earlier Akkadian rulers, there is little evidence for direct Mesopotamian intervention in Syria (Gadd 1973, 597-8), and the form of the M.B.I states was probably largely determined by the structure of the pre-existing third millennium communities (Archi 1980, 3). There is good evidence for diplomatic contacts between major Syrian centres and Middle Kingdom Egypt (Weinstein 1975, 11; Ward 1979; Scandone-Matthiae 1979). Helck (1976) ascribes the presence of Middle Kingdom statuary in Syria to plundering during the period of Hyksos rule, but this is at variance with evidence indicating that the Hyksos were an essentially south Palestinian phenomenon, having only tenuous connections with Syria (see below). Major fortifications at a number of Syrian sites also date to this period and had considerable influence of the defensive systems of contemporary Palestine (Gregori 1986).

Virtually all of Syria, at least as far south as Qatna was included in this system and the period is characterised by large scale international trade

(Sasson 1966; Dalley 1984, 169), frequent diplomatic contact and gift giving (Munn-Rankin 1956, esp. 96-99), constantly shifting alliances and regular outbreaks of open warfare. In archaeological terms, this manifests itself in the form of palace complexes (Parrot 1958, Matthiae 1980b), rich royal burials (Montet 1928, 143ff, Matthiae 1980), massive ramparts (Parr 1968) and substantial gateways (Gregori 1986). As far as our material is concerned, one of the most important, although little known aspects (Bunnens 1982), must be the role of the rulers and elites of the smaller kingdoms, who rarely feature in the documentary evidence. Little is known of the relationship between the state and its various vassal rulers, and even less the higher social groups within these units, yet it is surely just such people that received 'warrior' burials.

Commerce, trade and manufacture was vital to many Syro-Palestinian urban centres (Sapin 1981, 23), so we must allow the major institutions of these centres, in particular palace workshops, a significant role in weapon production. These institutions must therefore have distributed both 'military' and 'prestige/personal' weaponry, which thereby became involved in matters of political policy, and may have been subject to certain constraints. The well made, standarised items of this period are likely to represent the work of specialist smiths, probably palace employees. Even if the objects were not made in the palace, it seems unlikely, given the variable supply and relatively high price of tin (Talon 1985, 217), that bronze was available to local smiths, without some degree of central control over its use. Note the for example, the role of the high official Mukannišum in the supervision of metalworking at Mari (Rouault 1977).

PALESTINE

Although there is much overlap between the types found in Syria and Palestine during the M.B.I period, the closest resemblances are those between northern Palestine and western, especially coastal, Syria. A similar uniformity is seen in the distribution of ceramics, in contrast to the substantially different repertoire found in inland and northern areas (Kenyon 1966, 53, Tubb 1983).

Although some writers have argued for a complete break between the E.B.-M.B. and M.B.I periods in Palestine (Dever 1973, 59, Gerstenblith 1983, 123), others have emphasised the degree of continuity (Kenyon 1973, 77, Prag 1974, Tubb 1983), and that is the view favoured here (see above and 3.2.2). The contrast between the pottery of the two periods is striking. However, as Tubb (1983, 56- 58) points out the wheel-made, red slipped and burnished material of 'classic' M.B.I form represents the fine table and funerary wares of the revived urban centres, and is not therefore directly comparable to that of the E.B.-M.B. period. A better comparison is that of the smaller M.B I settlements (Gophna 1979, Falconer and Magness Gardiner 1984). It is also becoming clear that this material in fact represents not the beginning, but an advanced stage of the M.B.I period (Kochavi 1975; Beck 1975, 1985), and it seems increasingly likely that we must see the re-urbanisation of Palestine proceeding at different rates throughout the country, with northern and coastal areas, which maintained their Syrian contacts throughout the E.B.-M.B. period (see Oren 1973a and above), recovering ahead of the south. The appearance of new weapon forms in the north and the final elaboration of E.B.-M.B. types in the south, make most sense within such a scheme.

We should consider Palestine and Syria as separate cases. Recent work has emphasised that Palestine had only limited political contacts with Egypt until a late stage of the M.B.I period (Weinstein 1975), while the known centres rarely feature in the Mari texts. The implication is that Palestine was a rather peripheral, though not isolated region. Besides the metalwork, there is additional evidence for wider Palestinian contacts at this time. Cypriot pottery is reported in M.B.I contexts at Akko (Johnson 1982, 50), Egyptian ceramics from Tell Ḥefer on the coastal plain (Paley et al 1985, 300), a Type 15 (Anatolian) spearhead from Megiddo Stratum XIII, and there are a number of Palestinian-Anatolian ceramic parallels (summarised by Gerstenblith 1983, 76-

85), while Kochavi et al (1979, 164) observe that northern sites such as Hazor, Tell Dan and Ginosar show definite ceramic links with inland Syria. The settlement landscape should be interpreted as one of small, defended urban centres, with networks of 'daughter' villages at least in the northern, coastal and Jordan Valley areas (Kochavi et al 1979, Gophna 1979).

Although the textual evidence for direct connections with Mari is limited, a similar archive from Qatna, much nearer to Palestine might be more revealing. The archaeological evidence, defended sites, palaces and warrior burials indicates a society similar to, and in contact with, that of contemporary Syria, presumably through exchange networks, trade, diplomacy, marriage and so on. Recent excavations at Ras el-'Ain/Aphek (Kochavi 1975, Beck 1975, Beck 1985) have revealed substantial public buildings of M.B.I date, identified as 'palaces'. It is within such a context that the use of 'elite' weaponry identical to that of Syria should be understood (although the concept itself became established during the E.B.-M.B. period, see above). It seems unlikely that Palestinian towns could have existed in isolation from contemporary events in the north, but their involvement was probably at a distance. The existence of 'great kingships' in Palestine is unlikely. A group of independent petty states, a scaled down version of contemporary Syria, minus the top stratum, seems a more realistic view.

The lists of Palestinian names in the execration texts should be treated with caution; firstly on the grounds of the difficulty of site identification in general (see Miller, J.M. 1985), secondly on the grounds that neither the date, the meaning, nor context of production of these texts is adequately understood (Weinstein 1975, 13; Bienkowski 1986, 130). They cannot be used as a means to reconstruct the history of the region during the M.B.I period. However, there is no recognisable hierarchy among the toponyms listed, lending support for the political reconstruction outlined above. The 'Tale of Sinuhe' (Pritchard 1955, 18ff) which should refer to an early stage of the M.B.I period, provides an account suggesting that the country was still in part tribally organised, with a considerable emphasis on warrior leaders or 'champions', seemingly reflected in the number of warrior burials of the period. Such individual combats are unknown in the Mari texts, a comparison that might be thought to encapsulate neatly the contrast between the petty

kingdoms of Palestine and the large centralised states of Syria. However, we must be aware that we are dealing with two different kinds of document. Those from Mari are the daily correspondence of the Royal Administration, and deal with current events. The Sinuhe story is intended to glorify the hero, is of uncertain date, and represents an Egyptian view of the Levantine world. We cannot compare such evidence directly with that of the Mari texts. Although the society described in the Sinuhe tale might be classed as 'tribal', the Mari texts reveal, that the political organisation and socio-economic structures of such groups (Matthews 1982) was complex and multi- facetted, and not incompatible with the existence of urban principalities. As far as the M.B.A. is concerned 'warrior' burials are largely found on, or near, permanent settlements, not in open country, illustrating that the 'warrior' concept was by no means restricted to mobile groups.

The range of Palestinian material is virtually identical with that of coastal Syria, suggesting a closer relationship between the two areas than in the E.B.A.. The homogeneity of the metal assemblage throughout Palestine contrasts with the ceramic regionalism which can be detected during this period (Kochavi et al 1979, 163-4; Beck 1985, 195-200). As before, the distribution of metalwork covers a wider area than that of ceramics, implying that different mechanisms are responsible. Kenyon (1973, 82ff) would derive the material culture of M.B.I Palestine directly from Byblos, while Dever (1976, 13) has correctly emphasised the role of Syria at large. Tubb (1983, 49-55) has clarified the different regional ceramic assemblages of Syrian M.B.I, and it is clear that although some types (narrow-bladed axes and decorated daggers) seem to be restricted to the coast/Orontes Valley zone, several key weapon types and the notion of warrior burials in general, cut-across the ceramic areas. Therefore we might reasonably believe that the two regions were connected by exchange networks and that the particular objects had an understood 'extralocal' significance. Palestine in the M.B.I period can be seen as forming part of Levant-wide network of political relationships, despite its absence from the written records pertaining to the 'Great Powers' of the period.

The other important point concerning Palestine is the rate at which southern parts became involved in the re-urbanisation process. There are

currently no examples of fenestrated axes or Type 12 daggers from points south of 'Ain es-Samiyeh and Tell Rehov respectively, although examples are now known from the eastern Delta (unpublished examples from Tell ed-Dab'a). Although M.B.I material is known from the Courtyard Cemetery and other tomb groups at Tell el-'Ajjul (Tufnell 1962, 1980), these groups are late in the period (Gerstenblith 1983, 32). Given the evidence for contact between southern Palestine and the Nile Delta in the E.B.-M.B. period (see above), we might infer that Egypt would have represented an important source of employment, and wealth for these regions during the M.B.I period. To judge from the Egyptian sources little interest was shown in Palestine as a military target by Middle Kingdom rulers, with only one recorded large scale campaign (Helck 1971, 42). However, Asiatics are depicted in Egyptian tombs (Newberry 1893), and in the Tale of Sinuhe (Pritchard 1955), and large numbers settled in the eastern Delta during the Middle Kingdom (Van Seters 1966, 87, Helck 1971, 77-81), providing a background for the later Hyksos principalities there. Others were employed by the Egyptians in the turquoise mines of Sinai, where they seem to have been led by a certain "Khebed, Brother of the Prince of Retenu" (Gardiner at al 1955). It is unlikely that these individuals were associated with the rapidly developing urban centres of northern Palestine such as 'Aphek and Megiddo but must be considered as belonging rather to the groups which had long been in direct contact with Egypt, through their use of the Delta lands. It may be then, that their very access to the Delta, and their orientation towards Egypt, was in part responsible for the rather slower absorption of southern Palestine into the wider Levantine sphere.

Archaeological evidence for Levantine settlement in the Delta begins towards the end of M.B.I (Bietak 1984, Tab. 1) and continue through the M.B.II period. In its turn, Egyptian pottery has recently been reported in a M.B.I deposit at Tell Ḥefer in the coastal plain, in a deposit contemporary with the 'Palace' phase at 'Aphek (Paley et al 1985, 301). Bietak (1984, 474) has suggested that the initial impetus for the major, urban settlement at Tell ed-Dab'a came from the northern Levant, in particular Byblos, rather than from the south. The test of this claim will come when the ceramics from the earlier levels of the site are fully published. However, the distribution of Tell el-Yahudiyeh ware forms (Bietak 1985b) and the clear Syrian nature of the Levantine pottery found in 12th Dynasty contexts (Merrillees 1973) supports

this view. The evidence of the metalwork gives additional weight to this argument. Many of the Type 12 daggers from Byblos are described by Dunand as bearing sets of lightly incised lines, running down the blade outside the main ribs. This rarely occurs on Type 13 daggers, but is known on an example from Tell et-Tin in Syria, and on two from Tell ed-Dab'a (Nos 584 and 586), perhaps suggesting that the latter site had, at least in its early phases direct links with Syria, rather than with Palestine. This does not of course imply that the 'Asiatics' cited in 12th Dynasty texts are Syrians. The urban settlement at Dab'a may represent a completely different entity from the mobile 'Amu. The archaeological evidence for connections between southern Palestine and the Delta (see below) suggests that these were strongest in the M.B.II period. Given that early M.B.I material (fenestrated axes, Type 12 daggers, see above) is scarce in southern Palestine, but occurs at Tell ed-Dab'a, it is not unreasonable to believe that the initial connections were with coastal Syria, or north Palestinian sites such as Akko and Megiddo. This would follow logically from the known diplomatic contacts between Middle Kingdom Egypt and the cities of Syria, in particular Byblos (Weinstein 1975; Ward 1979; Scandone Matthiae 1979).

SYRIA MIDDLE BRONZE II

The limited archaeological and textual evidence from M.B.II Syria is not indicative of major changes in political structure. Egyptian objects from Tell Mardikh (Matthiae 1980a) continue the pattern set by finds of the M.B.I period at Ras Shamra, Byblos and Qatna, namely high level diplomatic exchange (Weinstein 1975, 11-12). Although there may be a break in occupation at Hama around 1750B.C., the evidence from periods IIIA and B at Tell Mardikh (Matthiae 1980b), level VII at Alalakh (Woolley 1955) and Ras Shamra (Courtois 1979, 1204ff) argues against this being other than a localised event. Textual evidence from level VII at Alalakh, reveals the continuing hegemony of the Great Kingdom of Yamkhad, described as a 'Pax Yamhadica' by Sasson (1966, 161), prior to the attacks of the Hittites in the later 17th C. The eventual overthrow of Yamkhad by Muršiliš may be connected with the destruction of certain vassal towns such as Alalakh VII and Mardikh IIIB. Unfortunately as there are few excavated burials from this period, apart from those from Ras Shamra, there are few weapons to compare with those of M.B.I. However, a point likely to bear on the military affairs of the M.B.II period is the growing importance of the chariot and the composite bow which might effect not only warfare, but also the composition of the archaeological record (see 2.6).

Our only major body of material from Syria at this time, the chamber tombs of Ras Shamra, contain numerous burials, preventing the elucidation of specific associated groups of material. Although two Type 1 spearheads from a M.B.II context at Tell Mardikh, are rather similar to the Type 3 weapons from Ras Shamra, hinting at a possible widespread basic form, we are largely ignorant of the archaeology of northern and inland Syria during M.B.II. However, given that there seem to be some differences between this material and that of the coast in the M.B.I period, we might suppose the situation to have been similar in M.B.II. The large Type 3 spearheads, which seem to replace both small and the long- socketted M.B.I types are entirely absent from Palestinian burials. These large weapons, unlike the M.B.I burial goods seem more akin to standard infantry spears, and may represent a change in the appropriate form of prestige weapons. Alternatively we might be seeing new emphasis on disciplined infantry action and less on the individual warrior as exemplified by the dagger-axe sets so common in the M.B.I period, perhaps

reflecting the increased sophistication or growing institutional control of warfare in the coastal region at this time. The presence of spears in Syria, where sites are no less well fortified than in Palestine suggests that the decline of the spearhead in Palestine has little to do with the appearance of large glacis defences, as Tubb (1985a, 193) has implied. In Palestine they were either not adopted, or were not considered appropriate for use in graves. It is important to note however, that the lightweight spearheads of the M.B.I period go out of favour as grave goods in the M.B.II period in Palestine, as they do in Syria. Perhaps we are seeing a change in the perceived suitability of such spears as funerary offerings, perhaps related to the wider adoption of the composite bow (see 2.6).

Narrow-bladed axes still occur at Ras Shamra, but now appear as a distinct northern variant (Type 4), rather similar to examples found in Cyprus in the later Middle Cypriot period (Buchholz 1979). Most daggers from Ras Shamra are of Type 33, which are very close to a range of Cypriot types (see Astrom 1957, 246), although only there is no firm way of telling whether they are imports, locally made in the Cypriot style, or just reflect the close ties between the two areas at this time. Cypriot pottery is also common in those tombs (Courtois 1979, 1204-1208;). This is not surprising given the site's close links with Cyprus in the M.B.II period, and leads into the strong connections of the L.B.A. (Gittlen 1981, 49). Those daggers which do not fall into Type 33 show no close relationship to any well known southern types. They may in fact represent local products. There is no clear successor, at Ras Shamra at least, to the 'styled' daggers of the M.B.I period, which feature as part of the M.B.I 'warrior' set.

PALESTINE

It is in the south that the strongest continuity with the Levantine M.B.I tradition is found. In particular the continuation of 'warrior' burials featuring the classic axe-dagger combination, albeit employing new types. Thus structural continuity underlies typological change. It is in the Delta and southern Palestine that the M.B.I representation of eliteness survives, while in Syria it seems to be transformed (see above). Perhaps this reflects the different political forces operating in Syria, particularly with the growth of major power blocks to the north, the Hittites and Mittanni, disrupting the earlier political structure, or simply the earlier adoption of the chariot in the north. In the south however, the new power in the Delta, the Hyksos, retained a system of representation very close to that of the preceding period, a system perhaps tied in with its own ideology of warrior rulers.

Although a number of northern and coastal sites were fortified in the M.B.I period (Kochavi et al 1979), those of the uplands and the south were not so until M.B.II, perhaps well into the period (Parr 1968, 22-24, Dever 1985a, 71-72). Alongside the defensive evidence we see an increasing amount of luxury material entering the grave record as the M.B.II period progresses. This includes alabaster (Ben-Dor 1946), faience (Sagona 1980, 102) Cypriot pottery (Johnson 1982), and various forms of metalwork, including occasional items of imported gold and silver. Apart from weaponry, such material is rare in M.B.I Palestinian tombs. It seems that while the the M.B.I. saw a concentration of settlement along the major coastal route, in the M.B.II period, there was a rapid revival and expansion of settlement in the hill country, and on the littoral south of the Carmel (Gophna and Broshi 1986). This is presumably to be related to increasing trade, and perhaps to political changes taking place in the Nile Delta (see below). However, as Kenyon (1973, 115-6) points out, M.B.II material culture is essentially a regionalised, Palestinian phenomenon, in which local elements far outweigh the international.

Dever (1985a, 73) considers that the apparent prosperity and generally homogeneous material culture of the M.B.II period argues against local endemic warfare, as an explanation for the massive fortifications. Admittedly there is little evidence for major changes in material culture, but such consistency is not necessarily an indicator of peaceful times, as shown by the

city-states of Renaissance Italy, or those of Early Dynastic Sumer. Surely the material which we see could as easily represent a competitive society, one where the ruling groups of the various small towns were involved in a constant struggle, centring on the attainment of prestige through conspicuous consumption or largesse, most easily detectable through the grave record. Such a situation would be all too prone to break out into open warfare, hence the fortifications. Dever (1985a, 73) prefers sees these defences representing a precaution against Egypt. The strongest argument against this view is that many pre-date the consolidation of power in Luxor under the late 17th Dynasty. Prior to this, Egypt would represent no threat.

In metalwork, the period sees a mixture of continuity and change (see 3.2.2). The homogeneous coastal styles of the M.B.I seem to break up, and are replaced by increasingly distinct industries in the northern and southern Levant. The most striking point is the close parallels between the material of the Delta and that of southern Palestine. The weapons with the best parallels at Dab'a (narrow-bladed axes Types 2 and 3, dagger Type 17) show a mainly south Palestinian distribution. Examples from the Esdraelon and points north are rare. Perhaps we see again a north-south divide within Palestine itself, with the north perhaps looking more to Syria, an observation made by Kempinski (1983, 191ff) in a consideration of the ceramics, a partition resembling that of the E.B.-M.B. period (see above). Historically, the M.B.II period is that of the rule of the 'Hyksos' dynasties in the eastern Delta, rulers of Asiatic origin who established independent principalities there during the Second Intermediate Period, following the disintegration of Egyptian control during the 13th Dynasty (Hayes 1973, 52). However the presence of Asiatics in the Delta goes well back into the Middle Kingdom (Posener 1957, 145-163, Van Seters 1966, 87-93), and the first 'warrior' burials at Tell ed-Dab'a date to the M.B.I period (Stratum H, Bietak pers. comm.).

The material from this site emphasises the size and the distinct Levantine nature of this, and other settlements in the eastern Delta (Petrie 1906, Holladay 1982). Some of these sites are large. The original extent of the M.B.A. occupation at Tell ed-Dab'a has been estimated at c 200 Ha (Bietak 1985a, 317), while the area of Tell el-Yahudiyeh within the ramparts should be over 20 Ha., itself large by Palestinian standards. (Compare the areas of

Palestinian sites given by Broshi and Gophna 1986). Levantine material has been reported from many sites in the area, but little has been published as yet (see van den Brink 1982, 55ff). The richness of the Delta lands in comparison with the settlements of southern Palestine and the long history of contact (Van Seters 1966, 118), suggest that this area should be ascribed a major role in the political and economic development of Palestine in the M.B.II period. In particular the 'cultural explosion' of the later M.B.II (Dever 1976, 20), with its rich graves and massive rampart fortifications, may be related to economic prosperity set in motion by the developing Asiatic Delta kingdoms.

I would view the Palestinian metalwork (and other rich grave goods) as a symptom of competition between elites and the fortifications as indicating ever- shifting alliances and endemic warfare between the various little towns. From the presence of similar material at Tell ed-Dab'a, and other Delta sites we might infer political connections between the Delta and Palestinian centres. A similar situation may have endured within the Delta itself, accounting for the large number of poorly documented figures with Semitic names, who occur both in the Egyptian dynastic records and on 'Hyksos' scarabs (Hayes 1973, 58). The two areas were clearly controlled by people of similar background, using a standard set of symbols to define power and nobility, although the 15th Dynasty, 'Great' Hyksos, rulers appear to have adopted a mode of expression more akin to that of Middle Kingdom rulers (Hayes 1973, 56).

It is interesting to observe that the connections seen in weaponry, in warrior gear, seem to cut across the more regionalised distributions detectable in both standard and luxury ceramic types such as Cypriot (Johnson 1982) and Tell el-Yahudiyeh wares (Kaplan 1980, Bietak 1985b). One might infer from this that the information conveyed by prestige metalwork was at a level transcending that of most other luxury goods. In the light of the geographical position of Jericho, as reflected by the rarity of Cypriot pottery there compared with sites nearer the coast (see Johnson 1982, 50-60), the strength of the metalwork parallels between that site, and Dab'a must be attributed to patterned contact, and deliberate interaction, presumably through long range alliances, exchange systems or networks of communication. Sapin's suggestion (1981,31) that the limited agricultural base of many upland Palestinian towns, implies that their basis was more political than economic,

seems acute in this context.

Although the Delta towns were rich, they may, aware of their place as 'interlopers' in Egypt, have maintained regular relationships such as marriage alliances or defensive pacts with the towns of southern Palestine. Perhaps the anti-Hyksos polemic common in later times (Hayes 1973, 54-5), referred to a genuine situation in some places at least, where the rulers were unpopular, and clearly categorised as 'foreign', deliberately maintaining ties with Asiatic princes outside the Delta. Such connections might leave little archaeological evidence, other than certain shared upper class symbols. Such an explanation fits the material better than does the idea of a 'Hyksos empire', ruling Palestine from the Delta. Such relationships could well form the basis for the occurrence of 'Egyptianising', rather than genuine Egyptian goods in Palestine. It is probably no coincidence that the M.B.II period sees a high level of economic development in the region. One might even suggest that the large centres of the Delta might act as a 'locomotive' for economic developments throughout the southern Levant.

There are a number of types common in Palestine which are unknown at Tell ed- Dab'a (though not the reverse). Type 10 daggers (long tanged) have not yet been reported from the Delta, nor flange-hilted daggers, or daggers with incurved butt (Type 34). Many of these types are common at late M.B.A. sites in the south such as Tell el-'Ajjul, Tell ed-Duwier and Tell Fara (S), where battleaxes and Type 17 daggers are conspicuously rare. However the exact significance of these items is not yet clear and it we cannot make definite judgements until full details of the graves at Dab'a are published. It is possible that at certain sites we are dealing with graves of slightly different sections of society, or that the systems of social categorization as expressed in burial are different. The frequency of Type 17 daggers at Dab'a and the rarity there of the various 'substitute' forms might suggest that we can see in the latter, less prestigious kinds of weapons which may have functioned at a local level within Palestine, and which were not in use in the rich burials of Tell ed-Dab'a.

There are substantial differences between the chronology proposed by Bietak for the M.B.A. at Tell ed-Dab'a and that accepted by most Palestinian archaeologists (Dever 1985a, 74ff, Muhly 1985b, 22-23). Bietak (1984, 479)

equates strata E3–D3 from which all the M.B.II warrior burials come, with the Palestinian M.B.IIB, which most U.S. and Israeli workers understand as covering c 1800/1750–1650 B.C., i.e. the first part of the M.B.II period. This leaves only stratum D2, the material of which is more heavily Egyptianising than that of earlier phases, as the local equivalent of the Palestinian M.B.IIC period, generally assumed to span c 1650–1550 B.C. (Our interest here is not in absolute chronology but in the regional correlations, and relative durations of the two phases.) If Bietak is correct then M.B.IIB is represented by four strata at Dab'a, and M.B.IIC by only one, implying that the latter period is very short, and that there are serious flaws in the Palestinian sequence. However, the later M.B.A. levels at Dab'a are damaged, by Ramesside building operations and sebakh-digging. It is possible that the late M.B.A. deposits have been damaged or levelled locally, and they may be more extensive elsewhere on the site.

Bietak has equated strata E3–D3 with M.B.IIB on the basis of their ceramics. This approach raises the problem of the different regional pottery sequences within Palestine (see introduction), as well as possible local traits within the Delta. Mazar (1968, 91) notes that the definition of M.B.IIC is something of a problem, while Bienkowski (1984, 13–16) has stressed that it is purely a ceramic, not a stratigraphic distinction. Bietak makes comparisons with Kenyon's Jericho grave material. However, Kenyon's groups are themselves heavily based on the relative frequency of piriform and cylindrical juglets (Bienkowski 1986, 6), while the tombs can hardly be considered as closed groups. Owing to its geographical location, Jericho does not represent an ideal comparison. A consideration of nearer sites such as Tell ed-Duwier, Tell Fara (S) and Tell el-'Ajjul might be more appropriate. However, it will remain impossible to tackle this problem until full publication of the ceramics from Dab'a. For the purposes of our discussion we will accept that the equation between strata E3–D3 and M.B.IIB is broadly correct. Certain points arising in our discussion (see below) lend general support to this correlation.

I have suggested elsewhere (see 2.6) that the adoption of the chariot towards the end of the M.B.A. was a significant factor in the decreasing use of an axe-dagger status set. The evidence above tends to confirm this view. However the mode of death of the late 17th Dynasty pharaoh Sequenenre Ta'o

from an axe-wound (see below), and references to the capture of "copper axes without number" at Avaris by the Theban king Kamose (Smith and Smith 1976, 60) argue for a continued use of these weapons, at least in Egypt, until the end of the period. If Bietak is correct in assigning much of the Dab'a material to M.B.IIB, this would argue for a concentration of these weapons early in the M.B.A., which seems to be the position at sites excavated in the hill country (e.g. Tell Far'ah (N) and el-Gib) where most of the weaponry comes from tombs containing material equivalent to Jericho Group III or earlier. None of the deposits at Jericho which Kenyon assigns to her groups IV or V produced weapons, suggesting a decline in the deposition of classic weapon types at this time. This might be supported by the paucity of narrow-bladed axes and Type 17 daggers from deposits assigned to the later M.B.II period by Kenyon (1973, 102-104), in particular from graves excavated at Tell el-'Ajjul (Petrie 1931-34), Tell ed- Duwier (Tu fnell 1958) and Tell Fara (S) (MacDonald et al 1930, Price-Williams 1977). All these sites show the comparative rarity of Tell el-Yahudiyeh ware that Bietak observes as characteristic of stratum D/2 at Dab'a (Bietak 1984, 477), and which should indicate a late M.B.II date.

As the graves of Stratum D2 at Dab'a were substantially robbed (Bietak 1981, 268), we cannot tell whether these contained burials with axe-dagger sets, or whether their material was more akin to that of Tell el-'Ajjul and Tell Fara (S). Tell el-'Ajjul has produced one axe-dagger set, from Tomb 1750, but neither weapon belongs to any of the well defined types, and they may represent late, atypical examples. On the basis of the evidence from 'Ajjul, Duwier and Fara (S), it seems that axe-dagger sets were becoming less common as grave goods late in the M.B.II period, but it seems unlikely that they had been completely abandoned prior to the end of the period. However, a decline in the use of these items on Palestinian sites need not preclude their use in the Delta, let alone the existence of 'stockpiles' at Avaris. We might argue then that although this weapon set was already being replaced by material indicating 'charioteer' status as a burial set, these weapons maintained some symbolic importance in the Delta.

The Use of Metalwork, the example of the Hyksos

One of the most striking aspects of the Asiatic domination of the eastern Delta during the Second Intermediate Period, is the attitude of later New Kingdom rulers to these people. The name 'Hyksos' translates as 'foreign kings', and they are also known as kings who 'ruled without Re' (Säve Söderberg 1951, 65). The archaeological evidence from Tell ed-Dab'a shows clearly that the Asiatic settlement in the Delta had a long history, overlapping the later Middle Kingdom (Bietak 1985a, 320), and cannot be attributed to a sudden invasion as Redford (1970) has suggested. It is clear however that the episode was perceived by later Egyptian rulers as the imposition of something foreign to Egypt. It is suggested here that this concept owes less to the desire of 18th Dynasty pharaohs to justify adventurist campaigns in Asia, than to the way in which a distinctive 'Hyksos' material culture was developed, and above all deliberately maintained in the face of the local Egyptian world.

It may well be that in the warrior burials of Tell ed-Dab'a we see the archaeological expression of the warlike and 'predatory' nature of the Hyksos kingdoms as described in Manetho and other Egyptian sources (see Redford 1970). It may have been the expression of eliteness via military paraphernalia, the shock imposition of a new kind political control, as much as real violence that coloured the Egyptian view of this episode. On the other hand it is doubtless the case that the effort required to fortify Palestinian towns and the intermittent feuding was likely to have been magnified, both in scale and in cost, were such activities carried out in the Delta, where they could be financed from the products of local agriculture. Perhaps we see in the tales not so much memories of a single minded rape of the country, but endless, destructive, internecine warfare, and a system of feudal or perhaps even tribal loyalties, so different from the monolithic nature of traditional Egyptian kingship.

The obvious conclusion must be that Palestine and the Nile Delta were in closer contact with each other in M.B.II than was either area with Syria. This seems likely on the basis of the local ceramic repertiores, as well as geographical factors. We can detect several distinct culture areas in the Levant, one in the north, presently known from Ras Shamra alone, featuring

strong Cypriot contacts and related to inland Syria, and one in the south involving Palestine and the sites of the eastern Nile Delta, covering several of Kempinski's (1983, 191ff) ceramic regions. That in the south shows a greater unity in metal goods, than in ceramics, even special pottery (see above), which suggests that this unity was at a high socio-political level. The exact position of northern Palestine in relation to this entity is unclear. In ceramic terms it is rather different from the south (Kempinski 1983, 181-189) and there are few examples of the classic southern M.B.II metal types from the north. In addition it already possessed large political centres such as Hazor and Megiddo (Broshi and Gophna 1986), which may have remained more distant from the influence of the new power in the Delta, than southern sites such as Jericho and Tell el-'Ajjul, although this remains uncertain.

Strong contacts with southern Palestine argue against any connection between the Hyksos and the Hurrians (Helck 1971, 101-106), as the latter situation would surely manifest itself in detectable northern aspects of Hyksos culture. In fact, the material culture of Dab'a, in particular that of the burial record is very distinctly, almost aggressively Levantine, and could be interpreted as a deliberate excercise in ethnic identification, on the part of the community, or at least certain of its members. It is important that present evidence indicates that the warrior burials were still maintained late in the life of the settlement at Dab'a, well into the period when other aspects of material culture were showing an increasing degree of acculturation (Bietak 1984, 482). The implication is that burial was considered one of the main ways of expressing ethnic or community messages, as well as personal prestige. The high profile of these people, in terms of material culture, and the strong links which they maintained with the southern Levant, particlularly in prestige items, may have served to emphasise their foreignness, a theme which arises frequently both in contemporary, and later Egyptian documents (Hayes 1973, 54- 55; Smith and Smith 1976)

Levantine Weapons and Egyptian Material Culture

No Levantine weapons appear in Egypt proper at this time (to the writer's knowledge), despite their presence in large numbers found at Dab'a and the array of copper axes listed among the booty captured by Kamose at Avaris

(Smith and Smith 1976, 60). The implication is that they had no meaning outwith the context of Levantine-Delta society, and were therefore not adopted elsewhere; rather the captured material was re-melted. It may be that the association between members of the higher social groups and weaponry, the expression of status through arms, was a concept foreign to ingdigenous Egyptian value systems. The burial of Egyptian dignitaries with their tomb paintings and grave goods involve an entirely different set of values. As Herbert (1984) suggests, the choice of items to fulfill communicative roles is dictated by social and cultural factors, and the connection between weapons and personal status has a long history in the Levant, but is largely foreign to Old and Middle Kingdom Egypt. In fact, this mode of expression, the connection between eliteness and warfare, may itself have contributed to the new, 'warrior' representations adopted by subsequent New Kingdom rulers.

It is clear from the appearance of crescentic-handled daggers, and their pairing with Egyptian-style flat axes in certain 'Pan-Grave' tombs (see 2.4 Type 17) that Asiatic warrior equipment had some influence of the fighting techniques, and status equipment of the leaders of the armies of the Egyptian 17th Dynasty. The late 17th Dynasty pharaoh Sequenenre Ta'o may have been killed by blows from a narrow-bladed axe (Bietak annd Strouhal 1974) and perhaps died engaged in the hand-to-hand fighting between 'warriors', which would have represented the most appropriate mode of use for the dagger-axe sets. If true, this has important implications for the degree of influence exercised by the Hyksos on the Theban kingdom of the 17th Dynasty. However this problem needs to be considered within the context of a full-scale review of the material culture of Egypt proper during the Second Intermediate Period, and lies outwith the scope of the present work.

3.5 THE LATE BRONZE AGE

Although this study deals mainly with the preceding periods it is important to consider L.B.A. weapons in order to perceive the changes which took place at the end of the M.B.A., changes which may be related to contemporary social and political disruptions. In the first place, although burials with weapons occur in the L.B.A., they are fewer and the classic 'warrior' burials of the M.B.A. cease.

Daggers continue to appear in grave contexts, although more rarely than in the M.B.A. and no longer in axe-dagger sets. Examples of Type 10 and variants upon this form are still to be found (see 2.4). Long daggers with fully flanged hilts (Maxwell-Hyslop Types 31-32) become the standard form in L.B.A. tombs, replacing the various M.B.A. forms, in particular the decorated daggers with special pommels, which are no longer found. These flange-hilted daggers stand at the head of a widespread tradition examples of which occur in L.B.A. Mesopotamia at Nippur (McCown and Haines 1967, 22 Pl. 30. 4-5), Ur (Woolley and Mallowan 1976, 119, n1.184), Aqar Quf (Curtis 1983) and Subeidi (Boehmer 1983) and which continues, albeit with many variants, into the Iron Age. An impressionistic view suggests that stylistic change in these daggers happens more slowly than with the major M.B.A. forms, implying that they had a lesser communicative function. In view of the role of the chariot in the L.B.A, (see 2.6) this is hardly surprising.

Although axes decline sharply as a component of the grave record, occasional examples still occur (see Deshayes 1960, 186ff). However, these are no longer of the traditional Levantine narrow-bladed forms, but shaft-hole axes of Types 3 and 4, which first appear very late in the M.B.II period, and are typologically related to north Mesopotamian styles of the second millennium (see 2.1). As with the daggers, the axe styles of the L.B.A. are of a more 'international' character. The essentially Levantine character of the M.B.A. weapons is replaced in the L.B.A. by more widespread styles. This may simply reflect changes in their patterns of use and meaning, a decline in their communicative functions. However, that such widespread weapon forms should appear contemporary with a shift towards domination of the region by large, political units is suggestive.

The argument that a decline in the number of weapons in graves indicates a period of peace and prosperity, is contradicted in Palestine by the evidence for Egyptian military action during the earlier part of the period (Redford 1979, Weinstein 1981). The archaeological evidence indicates that the earlier phases of the L.B.A. were markedly poorer than the M.B.II period (Gonen 1984, Bienkowski 1986, 150ff). In addition to the physical and economic damage detectable on the sites themselves, we also see a decline in the quality of grave goods. The metalwork and the alabasters, found in L.B.A. contexts are of a different kind (see Ben-Dor 1946) from those which are found in M.B.A. tombs, and a greater role is allowed for imported Cypriot pottery as a luxury item (Gittlen 1981). Accepting that southern Palestine and the Nile Delta were linked by a network of social relationships, style zones and exchange networks, built around the 'Hyksos Kingdom' as suggested above, then the destruction of this entity by Ahmose and his predecessor, would very likely have inflicted severe damage on these networks, and hence affected the deposition of the valuables associated with it.

The Egyptian campaigns of the early 18th Dynasty seem to have been directed specifically at those southern Palestinian cities wherein most of the classic M.B.II metal weapons and the 'Hyksos' royal name scarabs (Weinstein 1981) occur. This implies two things. Firstly that the Egyptians were only too aware of the nature and scope of the Hyksos sphere of influence and directed their retribution at those areas, roughly Palestine south of the Esdraelon Valley, where many sites show evidence of destruction or occupational gaps at the at the end of the M.B.A. (see Gonen 1984, Table 1). Secondly the whole network of relationships and responsibilities was severely disrupted by these campaigns (and therefore may have formed a genuine 'entity' in Egyptian eyes), leading to the disappearance of the warrior gear, the mark of male status from the grave repertoire at the end of the M.B.A. Interesting though this possibility is, we need more precise data on the point at which the dagger-axes sets go out of use, before we can decide whether their disappearance is connected with the chariot alone, or was hastened by political events.

THE WAY AHEAD

Among the points to emerge from the foregoing discussion I would emphasise the following. Typology, although considered rather 'old-fashioned' has considerable value as an analytical approach. However its full potential is only recognised when it is considered in terms of archaeological context. If we are able to date types by independent means, rather than construct type-series in order to date material, then the types themselves offer much potential as a means of investigating past societies. Furthermore, the patterns identifiable from the metalwork, form an interesting and useful counterweight to the influence of ceramic studies.

We must consider the space-time patterning of types, not from a classificatory viewpoint, but in order to provide data for further analysis. Furthermore, we must constantly be aware of the contexts in which our material appears, otherwise our conclusions are likely to be misleading. We cannot, for example, assume that weaponry from graves is neccessarily a good guide to military equipment.

Chemical analyses offer considerable potential as seen above (3.3). However, in order to maximise this we must deal with large samples of material from good contexts. The evidence collected here suggests that we can begin to detect associations between type, region and alloy, which will provide us with a means of approaching manufacturing traditions, but much more work is needed. This needs be combined with new metallographic work, fuller considerations of technical practices, and archaeological investigation of industrial areas.

Weapons, burials and society

Several recent writers (Kochavi et al 1979; Gerstenblith 1983, 116; Broshi and Gophna 1986) have argued for site hierarchies in M.B.A. Palestine, on the basis of settlement area. If warrior burials do represent those of the higher social groups, we ought to be able to integrate the settlement evidence with that of the grave record, in an attempt to elucidate the changing social and political structures of the region. We quickly see that such burials are not restricted to the largest or richest sites, occurring at such places as el-Gib

and Jericho, as well as bigger sites such as Tell ed-Dab'a and Megiddo. However, a consideration of their frequency at different sites might be enlightening.

In the M.B.A., small sites such as Jericho, Khirbet Kūfin and el-Gib have produced only a few warrior graves each. Larger sites such as Tell et-Tin, Ras Shamra, Tell ed-Dab'a and Megiddo have produced more. Throughout our period, warrior burials generally comprise the best equipped male burials in the area. No consistently richer series of graves can be identified, at least in Palestine. In Syria, we have those taken to represent individuals of very high status (probably 'royal') such as Byblos Royal Graves I-III, the Hypogeum at Til Barsip and the Tombs of the 'Princess' and the 'Lord of the Goats' at Tell Mardikh. These individuals, though still a level below 'Great Kings' such as the M.B.A. rulers of Yamkhad, Mari or Qatna were clearly important personages within their respective communities. richest sector of the grave spectrum, and compare quite well to many Early Dynastic period graves from Mesopotamia such as those from 'Ubaid and the 'A' Cemetery at Kish (Moorey 1982a) and Abu Salabikh (Postgate et al 1985). (The Royal Cemetery at Ur is excepted on account of its atypical richness.) The burials therefore compare favourably in terms of their contents, with those of neighbouring regions. The implication is that at many smaller sites, the warrior burials represent the interments of individuals at, or very near, the top of the social structure, emphasising the close connections between these axe-dagger sets and high status, and strengthening the argument put forward earlier that possession of these items was exclusive and highly desired. It is also significant that nearly all such tomb groups are from the vicinity of tells which if not large, were likely to form local centres during the period in question, a point not always clear from reports of individual tomb discoveries. We do not find many such burials around the numerous small village settlements that are being discovered by new survey work (see Broshi and Gophna). Although this seems a promising line of inquiry, considerably more work would is required.

We must not however deal with warrior graves in isolation. In order to set such graves in perspective a major review of burials in general would be required, in order to assess the place of metal weapons vis-a-vis other metal goods, and non-metallic grave items. Allied to this we need an analysis of the

relevant settlement evidence, local land potential, trade routes and historical references in order to attempt to reconstruct the socio-political structure (no doubt highly fluid) of the Bronze Age Levant. The present study represents merely one step in this process.

LIST OF ABBREVIATIONS

A.A.A.S.	Annales archéologiques arabes syriennes
A.A.S.O.R.	Annual of the American Schools of Oriental Research
A.A.T.	Ägypten und Altes Testament
A.D.A.J.	Annual of the Department of Antiquities of Jordan
A.f.O.	Archiv für Orientforschung
A.J.A.	American Journal of Archaeology
A.J.B.A.	Australian Journal of Biblical Archaeology
Alt.Or.For.	Alt-Orientalische Forschungen
Am.Ant.	American Antiquity
A.R.M.	Archives royal de Mari
A.S.	Anatolian Studies
A.S.A.E.	Annales du Service des Antiquités de l'Égypt
Bag.Mitt.	Baghdader Mitteilungen
B.A.R.	British Archaeological Reports
B.A.S.O.R.	Bulletin of the American Schools of Oriental Research
Bi.Or.	Bibliotheca Orientalis
B.M.B.	Bulletin du Musée de Beyrouth
B.C.H.	Bulletin de correspondance hellenique
B.S.A.	Annual of the British School at Athens
B.S.A.E.	British School of Archaeology in Egypt
C.A.H.	Cambridge Ancient History
C.R.A.I.B.L.	Comptes rendues des séances de l'Academie des inscriptions et belles-lettres
Curr.Anth.	Current Anthropology

E.E.F.	Egypt Exploration Fund
I.E.J.	Israel Exploration Journal
Isr.Mus.Jnl.	Israel Museum Journal
Ist. Mitt.	Istanbuler Mitteilungen
J.A.O.S.	Journal of the American Oriental Society
J.A.S	Journal of Archaeological Science
J.E.A.	Journal of Egyptian Archaeology
J.E.S.H.O.	Journal of the Economic and Social History of the Orient
J.H.M.S.	Journal of the Historical Metallurgy Society
J.N.E.S.	Journal of Near Eastern Studies
L.A.A.A.	Liverpool Annals of Art and Archaeology
M.A.R.I.	Mari: annales de récherches interdisciplinaire
M.A.S.	Müncher Ägyptologische Studien
M.D.I.K.	Mitteilungen des Deutschen Archäologischen Institut Abteilung, Kairo
M.D.O.G.	Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin
M.E.T.U.	Middle East Technical University
O.I.P.	Oriental Institute Publications
O.M.R.O.	Oudheidkundige mededelingen uit het Rijksmuseum von oudheden te Leiden
Op. Ath	Opuscula athiensia
Or.Ant.	Oriens antiquus
P.A.C.T.	Journal of the European Study Group on Physical, Chemical and Mathematical Techniques Applied to Archaeology
Pal.Mus.Jer.Bull.	Palestine Museum Jerusalem, Bulletin
P.B.F.	Prähistorische Bronzefunde
P.E.Q.	Palestine Exploration Quarterly

P.P.S.	Proceedings of the Prehistoric Society
Proc. Brit. Acad.	Proceedings of the British Academy
Q.D.A.P.	Quarterly of the Department of Antiquities of Palestine
R.A.	Revue d'Assyriologie et d'archéologie orientale
R.B.	Revue Biblique
R.D.A.C.	Report of the Department of Antiquities, Cyprus
R.d.S.O.	Rivista degli studi orientali
St.Ebl.	Studi eblaiti
S.I.M.A.	Studies in Mediterranean Archaeology
T.A.	Tel Aviv
Tr.Ar.Soc.D.	Transactions of the Archaeological Society of Durham and Northumberland
T.T.K.	Türk Tarih Kurumu
U.A.V.A.	Untersuchungen zur Assyriologie und vorderasiatischen Archäologie
U.F.	Ugarit-Forschungen
W.A.	World Archaeology
Z.A.	Zeitschrift für Archäologie
Z.Ä.S.	Zeitschrift für Ägyptisches Spräche und Altertumskunde
Z.D.P.V.	Zeitschrift des Deutschen Palästina-Vereins
Z.f.A.	Zietschrift für Assyriologie und Vorderasiatiche Archäologie

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