CHAPTER SEVEN

THE EMERGENCE OF SPECIALIZED COMBAT WEAPONS IN THE LEVANTINE BRONZE AGE

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INTRODUCTION

From a geostrategic point of view, the Levant is one of the most interesting areas for the diffusion of innovations into the Bronze Age worlds: not only does it form a bridge of land between Anatolia, Mesopotamia and Egypt, but it also offers access to the Eastern Mediterranean. During the Levantine Middle and Late Bronze Ages (second and first millennium BC), close contact was established with Crete, the Aegean, Egypt, Southwestern Anatolia and Cyprus, through which goods, rituals, styles and techniques were exchanged, as suggested, for instance, through trade via the Uluburun vessel (Yalcin, Pulak and Slotta 2005) and the wide distribution of amber objects (*inter alia* Czebreszuk 2011; Negroni Catachio 1999; Radina and Recchia 2010).

Looking for structural shifts in the modes of exchange and production in the Early Bronze Age in the Levant is therefore not arbitrary and might serve as a model for other regions.

Near Eastern copper swords are known from the late fourth millennium onwards, while in Europe they were not seen for another millennium and a half. According to Everett Rogers (2003) diffusion can be understood as several stages where (1) the relative advantage, (2) the compatibility, (3) the complexity, (4) the individual triability and (5) the observability of an innovation decides whether it is accepted or not. This makes increasing numbers of people over time accept the innovation until there is no more demand,

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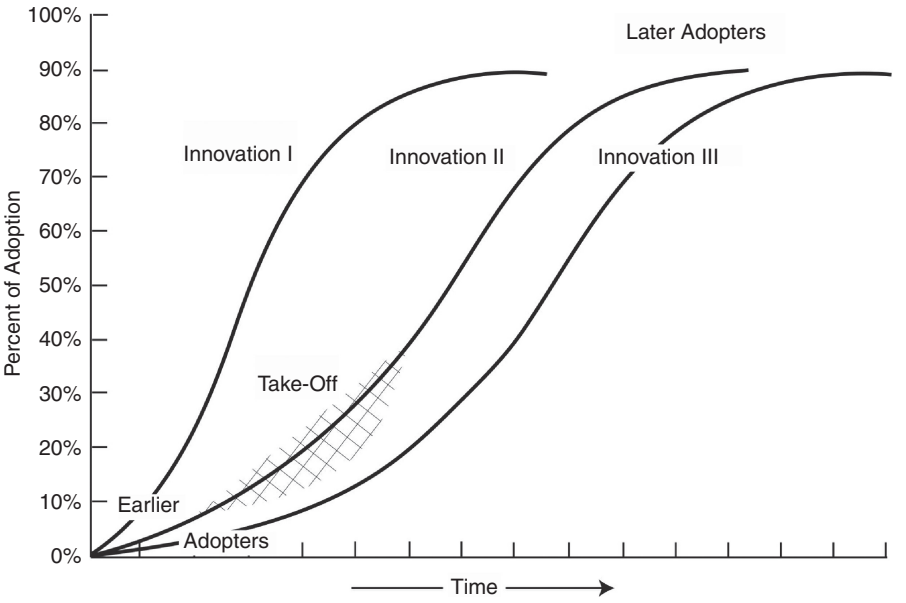

7.1: The diffusion of innovations. (Graphic by Rich Potter after Rogers 2003: 11, fig. 1.2.)

implying that it is accepted and thereby ceases to be an innovation (Fig. 7.1). It is not possible to thoroughly discuss why swords were adopted so late in Europe in this chapter, but a discussion of the sociotechnical context of early metal weaponry in the Levant will highlight similarities and differences. This chapter will deal with several aspects: but first, a slight glance at the newly awakened interest in an archaeology of warfare is taken and my theoretical framework will be laid. This will be followed by an introduction to the local chronology and a short description of early swords and their social context.

CHRONOLOGY AND AREA OF OPERATION

The area of operation will be the Southern Levant (i.e., the modern states of Israel, Jordan, Lebanon, the Palestine Autonomous Territories and parts of Syria; Fig. 7.2) because the state of research is relatively high in this region and therefore comparable to Europe. This chapter takes a long-term perspective on the evolution of warfare techniques. It will begin with the Chalcolithic, represented by the Ghassulian culture during roughly the second half of the fifth millennium BC (Gilead 1988; 2009). It is superseded by the Early Bronze Age (Milevski 2011; cf. Regev, de Miroschedji and Boaretto 2012; Regeve et al. 2012 for the chronology). The Phases Ia, Ib, II and III are currently hotly debated as new C14 dates from some sites suggest a considerably earlier beginning (cf. Golani 2004; Klimscha 2009), and there are several chronological programs running (Regev, de Miroschedji and Boaretto 2012; Regev et al.

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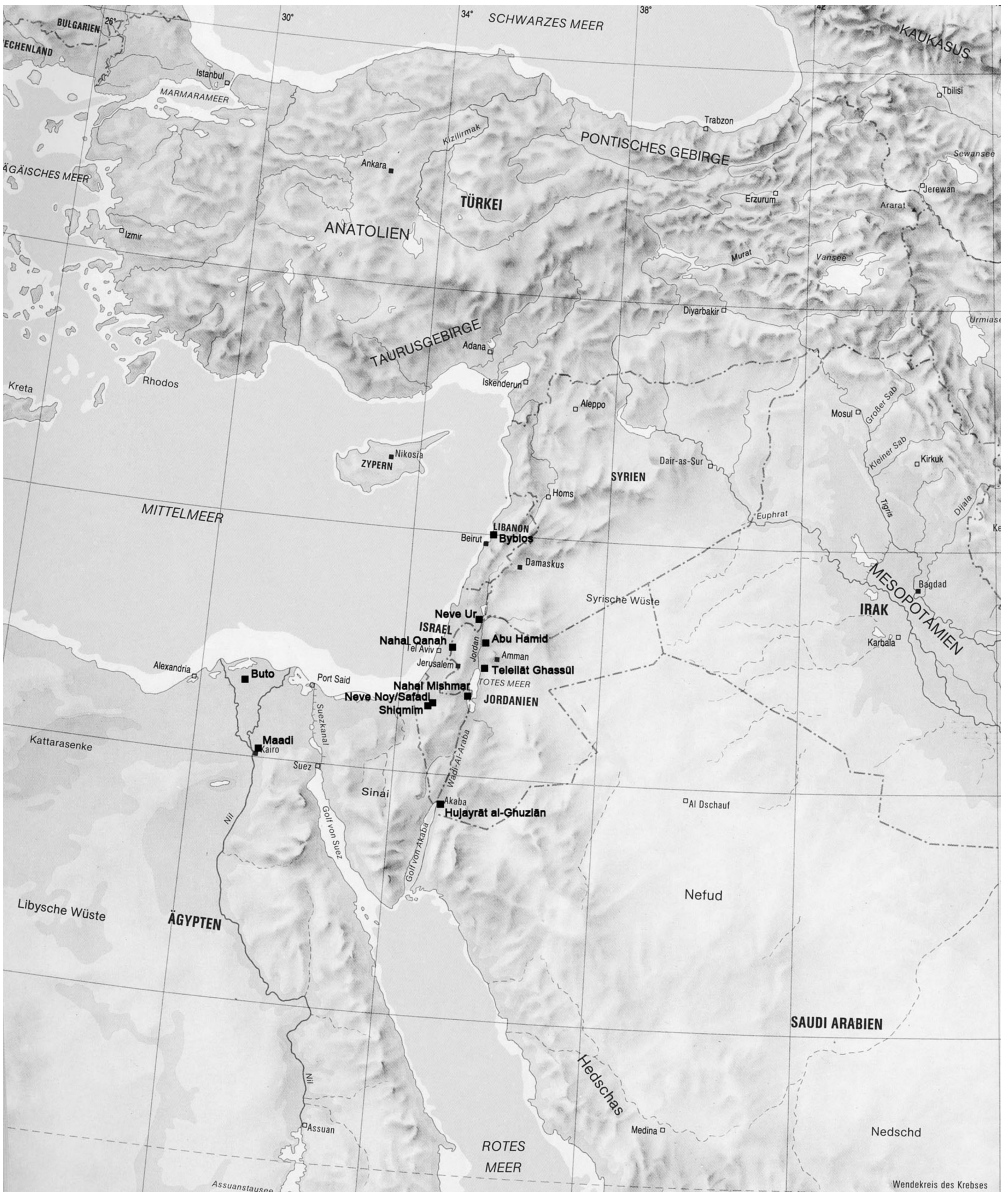

7.2: Map of the southern Levant with sites mentioned in the text.

2012). It seems safe to say at the moment that Early Bronze Ia and b fill the fourth millennium, while Early Bronze II and III take place during the third millennium. Early Bronze IV is sometimes also called the Intermediate Bronze Age because large numbers of weapon graves as well as tin bronze appear. It is therefore considered to be the beginning of the true Bronze Age in the European meaning of Reinecke's Bronze Age. Egypt will also be focused on from time to time because it plays a decisive role in this narrative.

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MODELS FOR PREHISTORIC WARFARE

Dealing with warfare in the prehistoric past means dealing with the positions of Jean-Jacques Rousseau and Thomas Hobbes. Were primordial humans peace-loving or natural born killers?

Lawrence Keeley (1996) argued that warfare in prehistoric societies was an everyday business. It was neither less brutal nor less lethal than modern warfare between states. Apart from ritualized battles, massacres and raids were common forms of solving conflicts. This is the type of warfare Herfried Münkler (2007) called 'The New Wars'; a term which was introduced by Mary Kaldor (1999) to describe the high level of violence in conflicts in former Yugoslavia. Münkler, conversely, came to the conclusion that the so-called New Wars were a general type of conflict that appeared regularly when violence in conflicts was not monopolized by states but 'privatized'; they are structurally similar to the Balkan Wars or the Thirty Years War and happen to reappear in the guerilla fights of modern *resistancias*, freedom fighters and terrorists. This frees the term 'war' from Clausewitz's notion of being exclusively possible between states and also allows using what Münkler describes as *smouldering* (German *schwelend*) *wars* as a model for pre- and protohistoric warfare. Charismatic leaders used a *Gefolgschaft* of warriors to raise an *economy of violence* in which they controlled the transport and accumulation of goods, especially those termed prestigious. New Wars could affect whole regions and enabled warlords to seize and perpetuate their power.

Massacre finds like Talheim near Heilbronn, Southwest Germany, in which thirty-four humans were slain with shoe-last celts, suggest that this kind of warfare has been used periodically since the Early Neolithic (Wahl and König 1987; cf. also for the topic of Early Neolithic massacres: Husemann 2006; Petrasch 2001; Teschler-Nicola 1996; Windl 1996; Windl 1999). New Wars are therefore, in fact, older than the Old Wars.

What does this mean? Do we have to imagine an eternal Thirty-Years War in prehistory? Or do such finds 'just' represent periods of intense conflict? Several authors seem to advocate the first option, using either Hobbesian archetypes (Sofsky 1996) or ethnographical data (Clastres 2008; LeBlanc 2003). The latter is not unproblematic: most societies researched by social anthropologists had contact with so-called complex or industrialized societies, or knew neighbouring groups who had. The living space of such groups were increasingly reduced during the period of colonialism and, as a consequence, of heavy industrialization.

Therefore, they in no way represent an original way of life. Although ethnographical data can be very good for modelling human behaviour on a very broad, comparative level, one should be extremely careful about simply generalizing the living conditions and social relations of the few groups who have evaded Western

influence to model a general and universal stage of human social evolution (cf. also Wolf 2010).

From the archaeological record it also has to be concluded that Talheim and similar finds are only one facet of human conflicts in prehistory, there is also plentiful evidence for completely different and chronologically, as well as geographically, highly differentiated conflict strategies (cf. Guilaine and Zammit 2001; Harding 2007; Ivanova 2008; Otto et al. 2006; Peter-Röcher 2007).

A TECHNICAL ARCHAEOLOGY OF VIOLENCE

Warfare will be approached from a technological point of view in this chapter, following V. Gordon Childe (1951), who demonstrated the strengths of putting technology at the centre of attention. The analytical tool for this is the *châine opératoire*, a term which was invented by André Leroi-Gourhan to understand the different steps of production, usage, repair, discard and recycling which defined the shape of lithic artefacts. Analysing metal weapons in a *châine opératoire* helps to clarify the social dimensions of technology.

The word 'technology' already implies that, apart from the artefacts (the mechanical aspect of the technique), there is knowledge, organization or know-how involved (the symbolic aspect of the technique). Every technique requires specific bodily movements or embodied knowledge.

Technique is decisive for successful warfare. Examples from historical times are manifold: the Italian Historian Carlo Cipolla (1999), for instance, explains the military superiority of European colonial powers in the nineteenth century from a technological viewpoint: between the fourteenth and eighteenth centuries AD, the small size of sailing ships made it necessary to reduce the size and weight of cannons, which resulted in a better manoeuvrability and quicker reloading times. This resulted in the usage of these cannons, which were designed for ship-to-ship combat, as superior field guns. The European periphery was therefore able to subdue the medieval centres of knowledge and innovation.

Even though it would be a misconception to explain the creation of empires in prehistory with only innovation in weapon technology, it is intriguing to analyse warfare as a set of techniques which can be communicated. The first contact between societies using different warfare techniques often gave rise to hybrid-violence cultures and allowed the diffusion of superior weapons and the necessary techniques which were often very creatively translated into new social and environmental conditions (cf. Walter and Kundrus 2012 for further examples).

An archaeology of technique is not simply studying the shape, dimensions and material of a sword, but understanding how and why it was produced, used and discarded.

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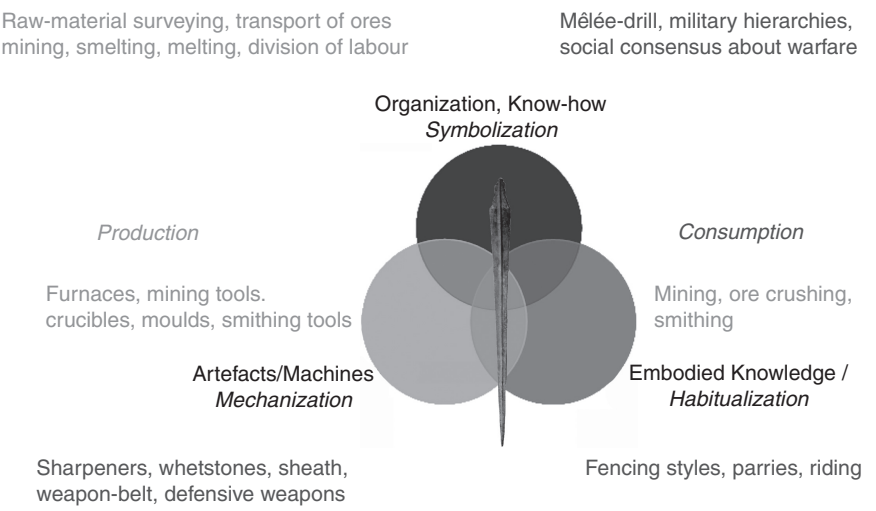

7.3: Simplified scheme of the habitual, arithmetical and symbolic usage of swords.

Techniques do not only consist of the artefacts and their production, they also include habitual and algorithmic components; meaning that the artefact cannot be taught without proper training in how to use it or without a set and consensus of rules both ideological and symbolically backing up the social substructure (Rammert 2007: 16). Thus, from the procurement of raw materials, through the production, consumption and use until the final deposition, a given technology affects the society using it (Léroi-Gourhan 1988). Technologies can therefore be understood as being part of a network of social relations in which they are one actor among the various producers and users.

For swords, this includes diverse aspects (Fig. 7.3). Apart from casting and forging proficiency, it is also necessary to learn how to fight with swords because, in contrast to battle-axes, swords have no lithic predecessors. There also needed to be either a sanctioning of ranged weapons or constant drill to prevent warriors from routing when shot at.

These social implications of artefacts cause humans to behave differently. In the long run, technology therefore modifies society, but it is also affected by the social conditions in which it can evolve. When taking warfare as one aspect of society, it can be assumed that the modes of war were also determined by the available weapons. Weapons, on the other hand, will be adjusted to fit the way fighting is done. The interconnections are probably many and never ending.

Even though copper has been collected since Mesolithic times and was used for beads and hammered objects in the Neolithic, the pyrotechnical progress which led to smelting and melting around 5000 BC was a technological breakthrough (Radivojević and Rehren 2015; Roberts, Thornton and Piggot 2009; Yalçin 2000). In contrast to stones, metal can be recycled and shaped quite differently. This had important consequences on weapons and on how wars

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were fought. In this chapter, specialized weapons shall be defined as those weapons which were only meant for fights between human beings.

SPECIALIZED WEAPONS IN THE CHALCOLITHIC

The first artefact group which has to be dealt with are maces. Maces can be used for very few tasks except killing snakes and fighting humans. The oldest metal mace-heads appear in a hoard find in the so-called Cave of the Treasure at Nahal Mishmar in the Judean Desert, Israel (Bar-Adon 1980; Moorey 1988; Shalev and Northover 1993). The hoard contained 426 pieces of copper, stone and ivory; the majority of the finds, however, are copper mace-heads. All of the pieces were originally wrapped in a straw mat and hidden in a natural crevice of a cave. While the hoard was originally dated to the middle of the fourth millennium, new C14 dates from the straw mat and typological analogies make it clear that it in fact belongs the forty-third or forty-second century BC; this makes it nearly contemporary with the famous cemetery of Varna in Bulgaria (Aardsma 2001; Klimscha 2013).

The metal pieces fall into two categories: those made of pure copper and those of a copper-arsenic-antimony alloy. All tested mace-heads are made from pure copper, while various vessels, crowns and standards were made from alloyed copper (Shalev 1991). The importance of the copper mace-heads for warfare is difficult to assess. Casting defects on some pieces show that not all of them were made for practical use (e.g., Potaszkin and Bar-Avi 1980: 235). Typologically identical mace-heads are a common find in settlements, but they are made from stone, even in much later times (Fig. 7.4). The impact of

7.4: Stone mace-heads from Tall Hujayrat al-Ghuzlan, Aqaba, Jordan. (Photo: Becker, DAI Orient Department.)

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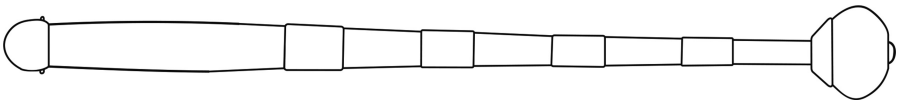


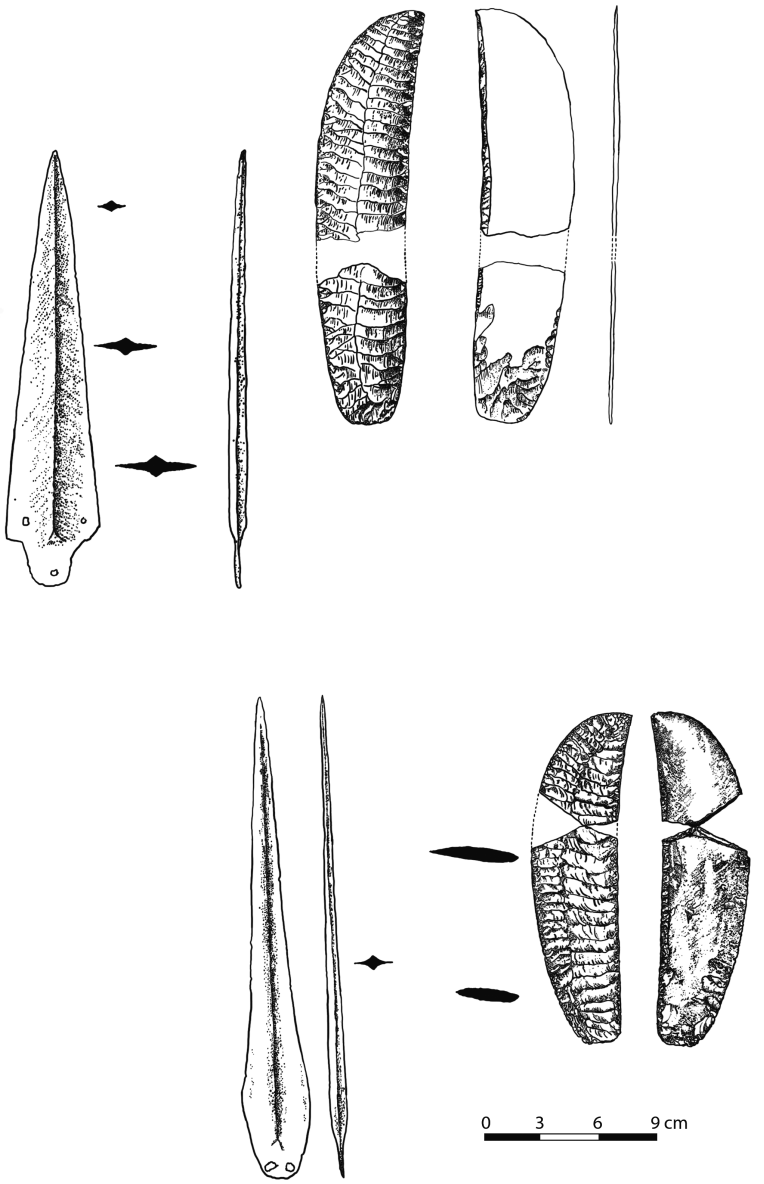
7.5: Byblos 'eneolithic cemetery'. Ivory mace-head with silver shaft. (Drawing by Christian Horn after Cauvin 1968.)

metallurgy therefore seems to have been relatively unimportant at first glance (cf. Klimscha forthcoming). However, the Nahal Mishmar finds are important for another reason. The alloyed finds were cast using the lost wax technique; although the alloys have been seen as unintentionally mixed Fahlores for a long time, new research at Abu Matar near Be'er-sheva in the Northern Negev Desert argues that the alloys were in fact intentional (Goren 2008: 376; Gošić 2008: 71–72; cf. also the ethnoarchaeological arguments brought forward by Lechtmann 1996). Thus, shortly after smelting was first practiced in the Levant, an experimental stage of complex casting and alloying techniques began for at least 300 years. Finds similar to Nahal Mishmar are also known from various other sites in Israel and Jordan (cf. Shalev 1991 for an overview), but the lack of systematic research on caves in the Northern Levant and Transjordan makes it difficult to say whether this is the prehistoric reality or the state of research.

Many graves in the Eneolithic cemetery of Byblos include imports from the Southern Levantine Chalcolithic and therefore should have the same age as Nahal Mishmar (cf. Gilead 1988). Of importance is an ivory mace-head with a silver shaft which the author interprets in a similar way as the copper mace-heads (Fig. 7.5): it was a weapon used as a status symbol. The same connotation of weapons with power can be seen in the richest graves at Varna, where stone battle-axes had golden shafts (Fig. 7.6). The connection between both sites is one of structure and not of contact. Metals, especially precious ones, helped to differentiate between people and was important for establishing hierarchies (Klimscha 2013; Klimscha forthcoming).

EARLY BRONZE AGE WEAPONS AND THEIR CONTEXT

The production of prestigious alloyed items does not continue into the Early Bronze Age as the production of several lithic tools (Rosen 1997: 112–115), like stone axes, does. It is assumed that a larger quantity of metal was circulating. In the Early Bronze, there were several innovations in various areas of social life; one important example was the appearance of new metal weapons: daggers with midribs. These have close parallels in contemporary Egypt, whence new prestigious items like ripple-flaked knives of extraordinary workmanship were imported (Fig. 7.6). The close interconnections between Egypt and the Levant resulted in an intensified exchange of commodities (cf. Hartung 1998).



7.6: Early Bronze I copper dagger and ripple-flaked knife from Azor, Israel, and copper dagger and flintknife of the Naqada II period. (Drawing by Christian Horn after Ben Tor 1975 and Hartung 2001.)

While the fifth millennium exchange of metal objects was fairly local, limited to the area west of Jordan (Shalev and Northover 1993), a rise and restructuring of the sites producing metals in the first half of the fourth millennium (Genz 2000), as well as new transport technologies like the sailing boat (Wengrow 2006: 93, fig. 4.6) and the domestic donkey allowed more frequent contact (Grigson 1995; Klimscha forthcoming; Milevski 2011).

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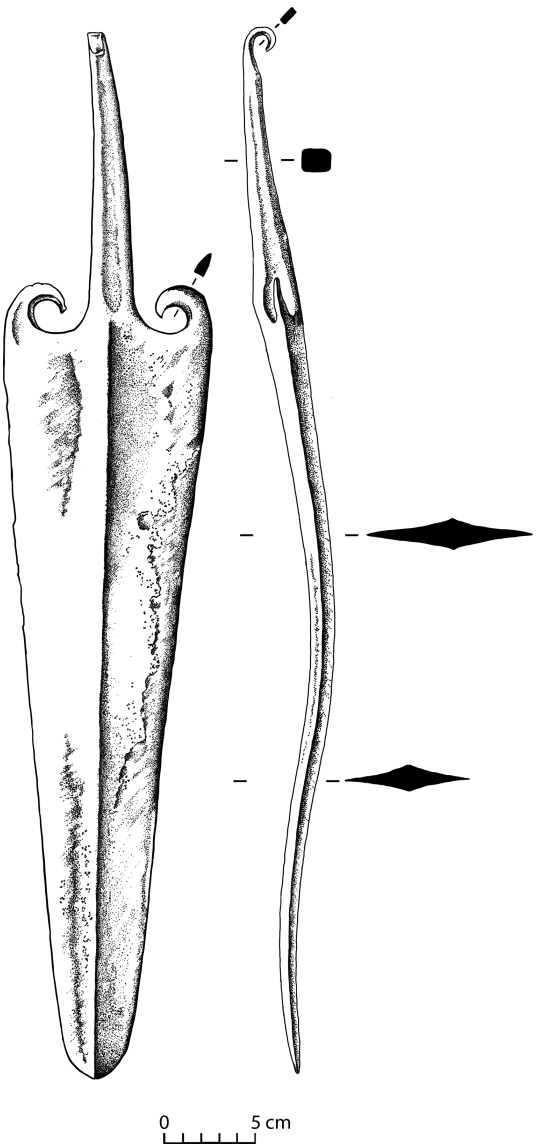
As a consequence, copper was cast into ingots and traded between Transjordan and the Nile Delta (Khalil and Schmidt 2009). The quantitatively and qualitatively better availability of copper, as well as innovations in the casting process, led to the Southern Levant adopting the international code of power of the fourth millennium BC: the copper dagger (Fig. 7.7; cf. Anthony 1996). The new interest in bladed weapons was connected with the oldest sword finds. In Tell Megiddo, several contexts were recently redated by Eveline van der Steen (2005: 2–3). This had consequences for a previously



7.7: Copper sword from Megiddo dating to Early Bronze Ib. (Drawing by Christian Horn.)

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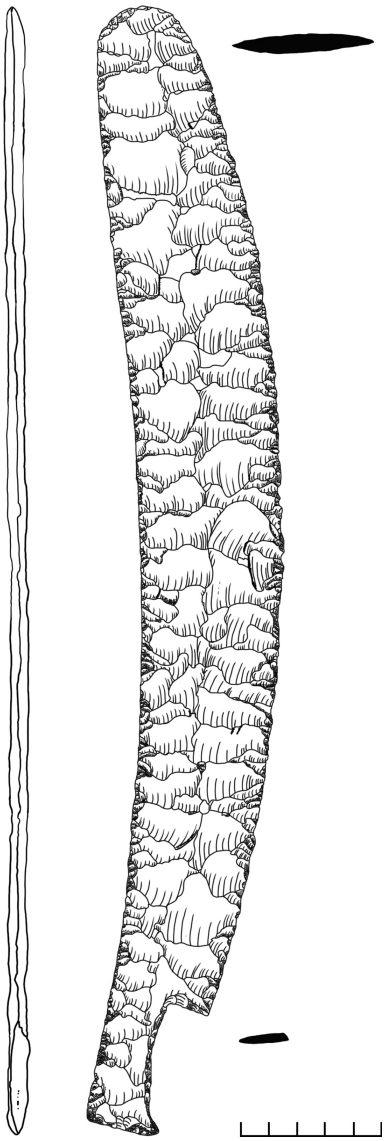

7.8: Abydos Umm el-Qaab; 72 centimetre-long flintsword from the Grave of Chasechemui. (Drawing by Christian Horn after Hikade 1997, 87, fig. 1.)

ignored sword from an altar which can now be dated to the Early Bronze Ib Period (i.e., c. 3300–2900 BC; cf. Regev et al. 2014; Fig. 7.8). The sword is 57 centimetres long, 2.5 centimetres thick and weighs 2.3 kilograms. Swords of similar sizes and from a similar age are found in Arslantepe as well as in the northern Pontic region (Palmieri 1981: 109–110).

These weapons are considerably longer than the daggers of Early Bronze Ia. The ability to cast long, yet thin and narrow objects without defects needs not only casting moulds but an expert knowledge of alloying and casting copper

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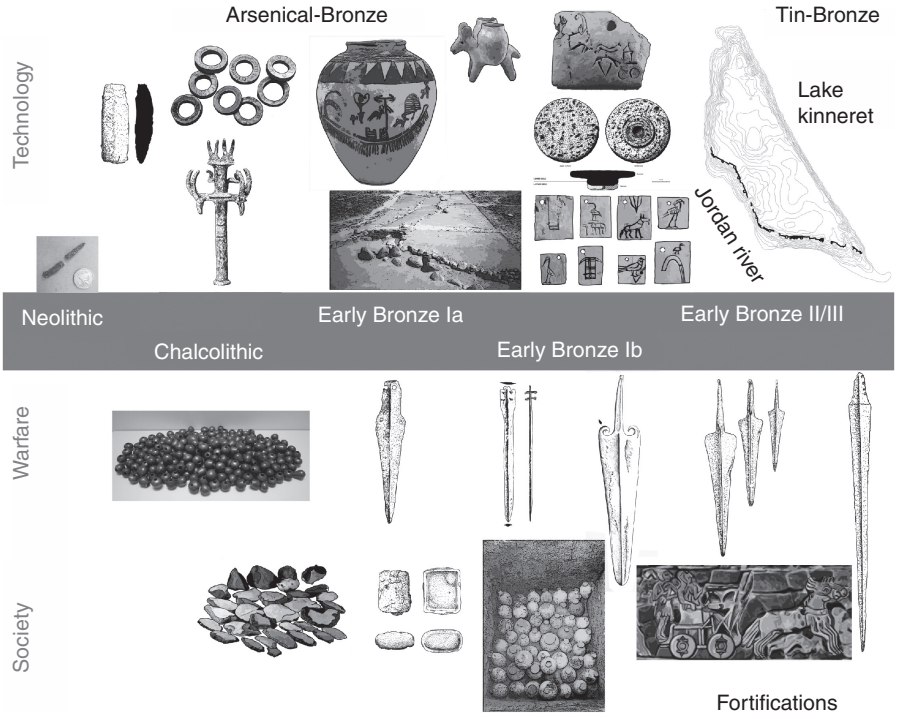
(Hansen 2011). From the perspective of an archaeology of technique, the sword is therefore also partially the result of a tradition of nearly a millennium of experimentation. From the Late Chalcolithic to the Early Bronze, copper axes became significantly thinner while still remaining functional. It is difficult to say how this was achieved, but this kind of experimentation, as well as the production of daggers, could be seen as the technological components for the casting of swords (Klimscha forthcoming, fig. 9). If the sword is indeed just the consequence of experimentation with axes and daggers, then early swords need not necessarily be the result of diffusion at all, but could be explained by the independent progress of several long-existing workshop traditions and metallurgy knowledge reservoirs. The different typology of the early swords would indeed favour such a perspective: swords from the Caucasus, from Arslantepe and from the Levant do not resemble each other at all (Fig. 7.9).



7.9: Socio-technological interaction during the fifth-third millennia BC in the Levant and neighbouring regions. (Drawing by Christian Horn after: Gopher and Tsuk 1996 frontispiece; Dayagi-Mendels and Rozenberg 2010: 28, fig. 20; Ben-Tor 1992, 92, fig. 4.6; Klimscha 2013; Khalil and Schmidt 2009: 30, fig. 12–13; Hartung 2001: 300 Abb. 55; Fansa and Burmeister 2004: 14 Abb 5 and 22 Abb. 17; Ben-Tor 1975: 4546 fig. 12–13; Klimscha, Siegel and Heemeier 2012: 129, fig. 7; Roux and Miroschedji 2009: 158, fig. 2.)

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All of these early swords only seem to have had a ritual use. They were probably iconic pictures of real swords which we have yet to find. They nevertheless imply a hierarchy and an organization of warfare yet unknown. Fights between swordbearers need to be more controlled.

Swords allow new attack styles but require more training. To be an effective swordfighter required the ability to endure missiles and not run away; this made special drills and possibly armour necessary.

I argue that it is not by chance that the appearance of bureaucracies controlling the distribution of long-distance exchange can be seen in contemporary graves like that of King Scorpion at Abydos Umm el-Qaab U-j, where several hundred pots from the Levant marked with small bone and ivory plates demonstrating provenance and quantity of the contents were found (Hartung 2001). Trade also grew quantitatively – especially via the Mediterranean (Mark 2006). This dimension of exchange cannot be explained by gift-giving alone, which in turn implies a pacification of larger areas. The exchange of gifts was freed of social bonds, which were replaced by a bureaucracy controlling the circulation and distribution of artefacts (Klimscha 2013). The Southern Levant, whose metallurgy was very special in the Chalcolithic, was included into the system of economic relations between Egypt and the Northern Levant (Wengrow 2006: 127–150).

Yet swords are found more often in the early third millennium when also other weapons were produced, like the spear-heads from the hoard from Kfar Monash in Israel; these weapons are still made from arsenical copper and are accompanied by a large number of copper plates which were originally interpreted as a scale armour (Hauptmann, Schmitt-Strecker and Begemann 2011; Hestrin and Tadmor 1963). No copper swords are known from Egypt, but a 72 centimetre-long flint sword can only be understood as an imitation of copper weapons. It was found in the tomb of Khasechemwy at Hierakonpolis, the legendary conqueror of both Upper and Lower Egypt (Hikade 1997). Drilled armies of warriors who were able to face casualties from bows and slings without panicking could have been one means of achieving this. Early swords were the result of technical enhancements, but also reflect a new understanding of warfare in complex, hierarchical societies (Peter-Röcher 2011), where warriors were socially sanctioned not to flee in combat. While this made battles deadlier and more violent, the limitation of weapons must also have been bound to a code of honour (e.g., not using missile weapons), suggesting a different quality to the new style of warfare (Ignatieff 2000: 141–148). This may be ambivalent from our point of view and still allows the use of force against non-combatants. It was instead a set of rules limiting the totality of warfare common in smouldering wars (but very possibly a limitation which was only valid between warriors armed in the same manner). As explained earlier, early swords were only iconic pictures of

weapons simply used as prestigious items belonging to elite warriors. This would not necessarily imply a shift in combat, but it shows that combat-specific prestigious (or ceremonial) items were continually used since the Chalcolithic.

Other technologies were also now used more frequently for warfare, showing that it had reached a new dimension. The archaeological record shows fortifications, including towers and bastions, which can only be understood as reactions to intensified warfare. Oxen-pulled wheeled vehicles are known from the middle of the fourth millennium (Burmeister 2004), but the first use of equid-pulled battle wagons was contemporary with the sword boom as well as with the spear-armed ranks of warriors shown on the 'War Panel' of the Standard of Ur (www.britishmuseum.org/explore/highlights/highlight_image.aspx?image=an12543.jpg&retpage=19094).

CONCLUSION

How does this fit into the big picture? I have tried to demonstrate how smelting technology led to the casting of copper axes and shortly thereafter experimentation with complex metallurgy and the first metal weapons. Trade with metals was initiating closer contact between the Levant and neighbouring regions, which resulted in daggers and Egyptian flint knives substituting the Chalcolithic prestigious objects. It was closely interconnected with new means of transport, but demographic factors can also be seen in the appearance of complex irrigation systems that allowed settling the desert regions (Klimscha et al. 2012). Several means of controlling trade were among other innovations in the second half of the fourth millennium, especially wheeled vehicles and the first copper swords. This 'package' of technologies was then unleashed on the world of the third millennium and the basis was laid for building chariots of war, even longer swords, spearmen formations and the first empires. The final act for the formation of the Bronze Age of the Eastern Mediterranean, with its chariot-driving warriors, would then begin.

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