

**The Transition from Bronze to Iron in the Near East and in the Levant:  
Marginal Notes**



Carlo Zaccagnini

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# THE TRANSITION FROM BRONZE TO IRON IN THE NEAR EAST AND IN THE LEVANT: MARGINAL NOTES\*

CARLO ZACCAGNINI

UNIVERSITY OF BOLOGNA

The considerable increase of archaeological discoveries, laboratory analyses, and historical speculations concerning early Cypriot involvement in copper mining and the bronze industry along with that island's crucial role in the shift from bronze to iron metallurgy have become a favorite topic of interdisciplinary investigations and debates. This review article focuses on historical issues relevant to the socio-economic setting of the transition to iron in the Near East.

THE HISTORICAL IDENTITY AND DEVELOPMENT of Cypriot material culture during the Bronze Age have recently become a favorite area of scholarly investigations of various kinds,<sup>1</sup> most of which are primarily concerned with the definition of the role played by this island in the complicated network of international relationships that linked the Levant with continental Greece and the western Mediterranean, Crete, Asia Minor, Syria-Palestine, Egypt and—to a certain extent—also inner Syria, Anatolia and Mesopotamia, especially in the period between ca. 1800 and 600 B.C. The stimulus for this veritable blossoming of research and debate is primarily the paramount importance of Cyprus as a source of copper for the Near Eastern and Levantine bronze industry; on the other hand, Cypriot archaeological evidence provides fundamental clues to the crucial period that marks the transition between the Late Bronze and Early Iron ages, especially from the perspective of the continuity of urban settlements and the technological changes that brought about the full use of iron vs. bronze. The many items of discussion that crowd the Cypriot

agenda have yielded a considerable amount of scientific literature: the two volumes that prompt the present notes are but a sample of an ever-increasing output that includes both ample works of synthesis<sup>2</sup> and contributions of detail.<sup>3</sup> Within the wide range of issues focused upon by Knapp and the authors of *Early Metallurgy*, I have chosen to concentrate here on a selected range of topics closer to my own interests and within the limits of my historical competence.

Knapp's main concern is to detect the cultural significance of the connection between Cypriot economic activity, centered on the copper industry, and the sphere of religious ideology, as revealed by the presence of well-known artifacts, such as 1) bronze statuettes representing male or female figures (= gods?) standing on an oxhide ingot; 2) miniature ingots (with possible "votive" functions?); 3) ingot representations in bronze stands, painted decorations on ceramics, and carved seals. Knapp further investigates the much debated topic of the spatial association between Cypriot metallurgical installations and "religious" structures.<sup>4</sup> The author is very cautious in his accurate

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\* A review article of: *Copper Production and Divine Protection: Archaeology, Ideology and Social Complexity on Bronze Age Cyprus*. By A. BERNARD KNAPP. Göteborg: PAUL ÅSTRÖMS VORLAG, 1986. Pp. vi + 179.

*Early Metallurgy in Cyprus, 4000-500 B.C.* Edited by JAMES D. MUHLY, ROBERT MADDIN and VASSOS KARAGEORGHIS. Acta of the International Archaeological Symposium, Larnaca, Cyprus, 1-6 June 1981. Nicosia: THE PIERIDES FOUNDATION, 1982. Pp. xi + 382, 38 pls.

<sup>1</sup> The present article derives from the research project "Production and Exchange in the Ancient Near East," which I direct at the Department of Ancient History of the University of Bologna with the financial support of the Italian Ministry of Education.

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<sup>2</sup> See most recently C. Baurain, *Chypre et la Méditerranée orientale au Bronze Récent* (Paris, 1984).

<sup>3</sup> See, among others, the papers collected by A. Bernard Knapp and T. Stech, *Prehistoric Production and Exchange: The Aegean and Eastern Mediterranean* (Los Angeles, 1985) for very important methodological insights. The important article by J. A. Brinkman, "Textual Evidence for Bronze," in *Babylonia in the Early Iron Age, 1000-539 B.C.*, ed. J. Curtis (London, 1988), 135-68, appeared too late to be considered in my discussion.

<sup>4</sup> Cf. the important contribution of J.-C. Courtois, "L'Activité métallurgique et les bronzes d'Enkomi au Bronze

treatment of the latter archaeological evidence which, *per se*, is far from self-evident with respect to the topographical nature and “superstructural” implications of this association, which would appear clear in some cases, much less in others—cf. the remarks about the stink that would originate from the workshops where copper ores were roasted and smelted.<sup>5</sup> At any rate, in his challenge of Catling’s views, Knapp goes a step forward and asks what exactly is the nature of the connection between statuettes, stands, miniature ingots, etc., and the Cypriot bronze industry: “Can these objects tell us anything about the touted theocratic character of the copper industry?” (p. 61); “What are the implications of the spatial proximity of industrial (copper-working) installations and monumental architecture for the understanding of social process or political organization on Bronze Age Cyprus?” (p. 62).

The answer to these questions requires a very elaborate methodological and historical itinerary, but its basic outcome can be roughly summarized as follows: in the period between ca. 1700 and 1400 B.C. Cyprus evidences an important transformation from an “isolated, village-based culture into an international, urban-oriented, complex society.” The main, if not exclusive impetus for this cultural change was the development of copper mining and smelting activities within the framework of a wider international trading scene that placed Cyprus in the midst of an economic (and political) web of relationships never before experienced. The impact of external affairs sooner or later caused a significant feedback to the inner Cypriot socio-economic, cultural, and religious organization, witnessed by the appearance of writing, monumental architecture, new burial practices, etc. (see esp. pp. 70–84). Hence, the undeniable emergence of an ideological/religious superstructure—centered upon the representation of ingots in statuettes, stands, seals, etc.—attesting to the crucial importance of the main Cypriot economic resource, copper.

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Récent (1650–1100 avant J.-C.),” in *Early Metallurgy*, 155–74.

<sup>5</sup> Cf. *Early Metallurgy*, 102 (Tylecote, Rothemberg), 175 (Peltenburg, Courtois). However, J. D. Muhly, with whom I recently discussed a number of topics related to the Cypriot copper industry, convincingly suggests that the metallurgical operations carried out in the Cypriot urban workshops did not concern the smelting of ores (note the absence of slags). Rather, people melted the small fragments of unrefined metallic copper obtained from previous ore-roasting and smelting in the mining areas and casted these fragments into ingots.

The fact that most of this archaeological evidence is to be assigned to the last period of the Cypriot Bronze Age<sup>6</sup> need not be interpreted, as in Catling’s opinion, as a “mechanism of sanctification to legitimize the authority of 12th century B.C. Mycenaean and Levantine newcomers in the eyes of the indigenous population” (Knapp, p. 89) and consequently as the appearance of a new cultural era, but rather as the last archaeologically preserved piece of evidence for a well-established, ideological setting that potentially reaches far back in the history of Cypriot copper exploitation (cf. pp. 115–18). The metallurgical activities that flourished from the 17th century onwards created a socio-economic elite whose political power was consolidated and sanctioned through a well-organized complex of religious imagery and practices. The dissolution of this all-embracing framework and the collapse of the copper and bronze industry brought about a new political, economic, and technological setting that also witnessed the rise of the iron industry.

Before attempting a discussion of the most relevant factors that mark the transition from bronze to iron, some marginal comments on the historical reconstruction offered by Knapp are in order. The author’s approach to the interpretation of the religious paraphernalia closely related to the Cypriot copper industry is indeed convincing, especially because it moves from, and witnesses to, an exceptionally sound, incisive methodological background that must be welcomed as a true turning-point in this area of archaeological investigation. It is beyond my capacity to discuss matters of detail of Cypriot archaeology; consequently, my comments shall be limited to some historical issues touched by Knapp’s analysis.

The evidence pertaining to the ideological/religious aspects of Cypriot involvement in copper mining, smelting, casting and trade activities, to all appearances, is confined only to a later phase of a historical process that has a long prehistory and indeed continued after the close of the Late Bronze Age. As concerns the former point, one need only recall the well-known occurrences of Cypriot copper in the Mari archives<sup>7</sup> and the joint record of Cypriot and Dilmunite copper in Babylonia in a tablet dated 1745–44 B.C.<sup>8</sup> These data are of extreme importance, since

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<sup>6</sup> Chronological controversies are summarized by Knapp, 85–86.

<sup>7</sup> See now *ARM XXV*:483, 691, 719 and cf. 718 (bronze).

<sup>8</sup> A. R. Millard, *JCS* 25 (1973): 211–14. In this connection, something about the alleged occurrence of Cyprus in the Ebla archives (cf. Muhly’s paper in *Early Metallurgy*, 258;

they witness to the importation of copper from Cyprus to Syria and Mesopotamia during the mid-18th century B.C. (at Mari possibly even at an earlier date) as a complement and alternative to the traditional trade routes from the Persian Gulf. As for Egypt, note the “tributes” from Cyprus recorded in the annals of Thutmosis III, in the course of his 34th, 38th and 40th regnal years,<sup>9</sup> prior to the well-known Amarna occurrences and the later Ugaritic and Hittite imports.<sup>10</sup> In short, the continuity of the historical record pertaining to the export of copper from Cyprus is self-evident.<sup>11</sup>

The ideological implications attached to foreign relationships that are mainly based on the export of copper can be fully observed in the small but very homogeneous lot of Amarna letters from Alašiya: from these documents it is clear that during the first half of the 14th century B.C. Cyprus was thoroughly involved in the procedural and ideological framework that ruled interactions between the great powers of the Near East<sup>12</sup>—the king of Alašiya implicitly considers himself a Great King, since he addresses the Pharaoh as his “brother” and even suggests that he should be considered a better partner than the king of

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cf. p. 269) should be said. The word GA-BA-LUM, which occurs in an Ebla lexical text as equivalent to Sumerian urudu “copper” (*MEE* 3, nos. 1100 and 0448), transcribed by G. Pettinato *kà-pá-lum* and hypothetically connected with the Greek name of the island (KPL = \*KPR = Kypros), in fact is to be related to the Sumerian complex KA.BAR, which appears in the logogram UD.KA.BAR “bronze.” The term thus designates a kind of copper alloy (as does urudu in administrative Ebla texts: cf. H. Waetzoldt, *OA* 23 [1984]: 4–5 with n. 13). Interestingly enough, in a Hittite-Hurrian bilingual text (H. Otten, *Jahrbuch der Akademie der Wissenschaften in Göttingen* [1984]: 59) the Hurrian term for copper/bronze is *ka-ba-li*. A short note on this matter is now in print.

<sup>9</sup> W. Helck, *Die Beziehungen Ägyptens zu Vorderasien im 3. und 2. Jahrtausend v. Chr.* (Wiesbaden, 1971), 385; I. Vincentelli, *Alašia: Per una storia di Cipro nell'età del bronzo*, Biblioteca di antichità cipriote, 3 (Roma, 1976), 20–22.

<sup>10</sup> See briefly C. Zaccagnini, *OA* 16 (1977): 244–45.

<sup>11</sup> Within this context, note the staggering find of the Ulu Burun shipwreck with as much as 200 copper ingots, together with tin ingots, tentatively dated to the 14th century B.C.: G. F. Bass, *AJA* 90 (1986): 269–96; idem, *National Geographic* 172.6 (1987): 692–733; most recently C. Pulak, *AJA* 92 (1988): 1–37.

<sup>12</sup> C. Zaccagnini, *Lo scambio dei doni nel Vicino Oriente durante i secoli XV–XIII* (Roma, 1973), *passim*.

Hatti or the king of Babylon.<sup>13</sup> Indeed, this state of things might have changed towards the end of the 13th century when Tudhaliya IV and Šuppiliuma II conquered (or claimed to have conquered) Cyprus and made that island tributary to Hatti.<sup>14</sup>

Once all this is taken into account, one should reconsider the bearing of Cypriot symbolic artifacts that more or less patently link copper production to the sphere of religion and the sacred: these items, in Knapp’s view, archaeological “indicators” of a new social organization, are not earlier than the 13th–12th century (cf. p. 77), and for some of them an 11th century dating might be appropriate. This means that we have no “indicators” (statuettes, stands or whatever) for a period of at least four centuries (i.e., 18th down to at least 14th century B.C.) when the copper industry at Cyprus must have been of great importance; rather, these “indicators” are concentrated in a period in which Cyprus might have suffered some sort of defeat and political subjugation by the Hittites—a period, moreover, marked by the collapse and disruption of most Late Bronze Age palace-centered organizations. Cyprus itself was affected by these disturbances as the sequence of destructions in the years between ca. 1225–1175 clearly evidences (cf. pp. 91–92, 101).

If, now, these symbolic paraphernalia pertain to and reflect the very final phase of Cypriot political organization at the end of the Late Bronze Age, in a period in which the island was undergoing a serious crisis (pp. 90 and 109)—the rejected alternative being that these artifacts belong to the new cultural horizon of the Iron Age—they cannot at the same time also be taken as “indicators” of the socio-economic, political and religious setting current in those previous phases of the Late Bronze Age that were marked by an impressive development of the copper industry. The point is that we lack any comparable piece of archaeological evidence for this earlier period, and to assume a general phenomenon of re-casting and reuse for all the objects of that kind would hardly be conceivable were it not for the extreme abundance of copper on Cyprus. To make the point more explicit, what puzzles me is not the suggested appurtenance of the bronze symbolic array to the critical period at the end of the

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<sup>13</sup> EA 35:49–53, in the interpretation of I. Vincentelli, *RSO* 46 (1971): 143–46.

<sup>14</sup> See briefly A. B. Knapp, *JCS* 32 (1980): 43–47; cf. the non-mention of the king of Alašiya among the great kings in Tudhaliya’s treaty with Šaušgamuwa of Amurru: C. Kühne, H. Otten, *Der Šaušgamuwa-Vertrag* (Wiesbaden, 1971), 14: IV 1–3.

Late Bronze Age—although in my opinion it could also be assigned to the post-Late Bronze phase, since copper mining, processing and export did not cease at all after the 1200 destructions and troubles—but rather the link between the 1200 crisis (with burial and preservation of figurines, etc.) and the fully prosperous setting of 1700–1200 (with no figurines, etc., being cast and preserved).

On the other hand, there is evidence that Cypriot involvement with copper overlaps the 1200 crisis. An optimal though indirect piece of archaeological evidence is provided by the Gelidonya shipwreck (for the dating of which see my old remarks in *OA* 10 [1971]: 166–68 and now G. F. Bass, *AJA* 90 [1986]: 269 n. 4, who accepts the view that the ship might have sunk in the 12th rather than in the 13th century).<sup>15</sup> Architectural remains related to copper smelting and bronze artifacts dating to 12th–11th century<sup>16</sup> clearly attest to the maintenance of the Cypriot copper industry beyond the end of the Late Bronze Age. The same situation can be observed throughout the Levant and the Near East during the first half of the first millennium, especially for certain classes of artifacts. Consequently, it may reasonably be inferred that, notwithstanding the political events which took place between the end of the 13th and the beginning of the 12th centuries, Cyprus' main activity was not substantially affected; the end of political organizations that were centered upon palace structures (with their ideological and procedural paradigms) did not bring about the end of copper exploitation and the commercial activities stemming from it. Whether the symbolic paraphernalia analysed by Knapp belong to this later phase rather than to the former would thus still seem to be open to debate.<sup>17</sup>

<sup>15</sup> See also the prudent remarks of Muhly in *Early Metallurgy*, 256.

<sup>16</sup> Detailed literature seems unnecessary here; see, however, the fresh analysis of a number of Cypriot "diagnostic" objects, with close Italian (particularly Sardinian) parallels, dated to the 12th–11th century, by F. lo Schiavo, "Le componenti egea e cipriota nella metallurgia della tarda età del bronzo in Italia," in *Magna Grecia e mondo miceneo*, Atti del XXII Convegno di studi sulla Magna Grecia, Taranto 1982 (Taranto, 1983), 285–320.

<sup>17</sup> Here follow some marginal notes on points of detail raised by Knapp. Pp. 43–45—olive oil production at Cyprus: see now *Olive Oil in Antiquity*, ed. M. Heltzer and D. Eitam (Haifa, 1987). Pp. 76 and 114—standardization of weights and measures: see now C. Zaccagnini, "Aspects of Copper Trade in the Eastern Mediterranean during the Late Bronze

The crucial topic of the transition from bronze to iron is the end-point of Knapp's investigation as well as a central issue in a number of contributions collected in *Early Metallurgy*.<sup>18</sup> There is now a general consensus linking the collapse of many Near Eastern palace organizations (noticeably in Anatolia and in Syria-Palestine) and the substantial decline of other political entities (primarily Egypt) with a change in long established trade networks and patterns of production, a change that both caused the crisis, and

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Age," in *Traffici micenei nel Mediterraneo* (Taranto, 1986), 413–24, with previous bibliography (in particular, I call attention to the works of N. F. Parise). P. 84—quantity of copper supplied by Cyprus to Egypt, on the basis of the Amarna evidence: Aside from the methodological considerations expressed by M. Liverani, "La ceramica e i testi: commercio miceneo e politica orientale," in *Traffici micenei*, 405–12 (written documents vs. archaeological evidence, politics vs. trade), it is to be noted that the terminology of the Amarna letters recording shipments of copper to Egypt is far from univocal and may refer either to talents or to ingots (of the oxhide shape), the weight of the latter possibly based upon the unit of one talent (see "Aspects of Copper Trade," in *Traffici micenei*, esp. pp. 414–19). Considering that the largest shipment of copper recorded in the Amarna letters is that of EA 33:16: "200 (ingots of) copper" (500 URUDU in EA 35:10 in my opinion means "500 [shekels of] copper; cf. *ibid.*, 414, with previous literature), this figure matches the cargo of the Ulu Burun wreck perfectly (cf. now C. Pulak, *AJA* 92 [1988]: 34–35). This would imply—*per absurdum*—that the entire amount of copper of which there is extant record in the Amarna letters sent from Alashiya to Egypt was no more than three full shiploads. It is conceivable that many more Cypriot ships than that reached the Delta in a lapse of time of ca. 25 years and that the copper they carried must have been many times the total amount recorded in the Amarna correspondence. At any rate, all this is not "staggering," nor is it so in the light of comparable evidence pertaining to Mesopotamian copper imports from the Ur III period onwards. P. 99—ethnic affiliations of the Sea Peoples: A considerable amount of literature has accumulated on this topic in the past three decades. In any case, the identification of Shardana with Sardinians and Danuna with Greek Danaans is either controversial or simply untenable.

<sup>18</sup> See esp. A. M. Snodgrass, "Cyprus and the Beginning of Iron Technology in the Eastern Mediterranean," 285–94; R. Maddin, "Early Iron Technology in Cyprus," 303–12; J. C. Waldbaum, "Bimetallic Objects from the Eastern Mediterranean and the Question of the Dissemination of Iron," 325–47; also V. Karageorghis, "Metallurgy in Cyprus during the 11th Century B.C.," 297–301.

eventually the end of the bronze industry, and at the same time fostered the introduction of iron as an alternative metal.

No doubt the ultimate disappearance of the cosmopolitan society of the Late Bronze Age—with its internal organization (including the administration of “vassal” entities) centered upon a strictly redistributive pattern and its procedures of international interactions based on a reciprocative paradigm among partners of equal rank—brought about the end of a particular political model.<sup>19</sup> These considerable changes might also have affected the copper industry inasmuch as the care for the central organization of mining, smelting, and foreign trade activities was a primary concern of the palace structures. I would not, however, agree entirely with assertions like

in what can only be presumed to be widespread conditions of anarchy, copper from Cyprus—or indeed any metals in demand—would have been increasingly difficult to obtain through the usual channels. In the Levant and Greece alike, the sophisticated, complex, palatial institutions that had supported the bronze industry were replaced by a technologically sophisticated but socially less-complex iron-producing industry, based on local resources and conducted on a local scale (Knapp, 103–4).

What seems an important point to me is to ascertain whether we have to postulate a strictly functional link between the fall of some major palace organizations and the introduction of iron as a substitute for the collapsed bronze industry, or if the two phenomena, although chronologically more or less related, are to be viewed as complementary aspects of a wider set of political, socio-economic, and technological transformations.

<sup>19</sup> Cf. M. Liverani, “Elementi ‘irrazionali’ nel commercio amarniano,” *OA* 11 (1972): 297–317; “Dono, tributo, commercio: ideologia dello scambio nella tarda età del bronzo,” *Annali dell’Istituto Italiano di Numismatica* 26 (1979): 9–28; C. Zaccagnini, *Lo scambio dei doni*; idem, “Patterns of Mobility among Ancient Near Eastern Craftsmen,” *JNES* 42 (1983): 245–64, esp. pp. 249–57; “Aspects of Ceremonial Exchange in the Near East during the Late Second Millennium B.C.,” in *Centre and Periphery in the Ancient World*, ed. M. Rowlands, M. Larsen and K. Kristiansen (Cambridge, 1987), 57–65. Muhly’s important contribution, “The Nature of Trade in the LBA Eastern Mediterranean: The Organization of the Metals’ Trade and the Role of Cyprus,” in *Early Metallurgy*, 251–66, can also be better appreciated in the light of the literature quoted above.

The indisputable fact that in eastern Mediterranean areas iron replaced bronze in the manufacture of weapons and tools in a comparatively short time (between the 12th and the 10th century)<sup>20</sup> is now tentatively explained by the hypothesis of some sort of drastic cut in the supplies of copper and/or tin—supplies previously ensured by palace-administered trades<sup>21</sup>—and the consequent necessity to resort to an alternative metal—iron—which was more easily accessible and required less infrastructure for its processing. I am not competent to judge whether steel is technologically “easier” than bronze.<sup>22</sup> Nevertheless, it seems worthwhile to point out that, aside from the specific phenomenon of bimetallism (for which see below), archaeological and textual evidence indicates that the production of copper and bronze artifacts continued throughout the first millennium. This means that the supplies of copper and tin were in fact ensured after the close of the Late Bronze Age even if we admit to a possible crisis in the eastern Mediterranean—but not necessarily also in the Near Eastern—trade network in the course of the 12th–11th centuries.

In principle the replacement of bronze by iron for essential items, such as weapons and tools (and the consequent disuse of iron as a precious material for jewels), might merely have been the result of the accidental discovery of totally new working techniques (carburization, quenching, tempering)<sup>23</sup> that ensured the functional predominance of iron vs. bronze. (I am ready to admit that very few scholars, if any, would subscribe to this seemingly naive and provocative suggestion. All I can say in response is that my personal scientific attitude toward the problem of Near Eastern iron has always been colored by a marked scepticism against deterministic historical paradigms and rather inclined to take into consideration the bearing of evolutionary episodes that ultimately depend upon fortuitous and “anomalous” events. To put it plainly, iron was not “discovered” as a “consequence” of a dramatic urgency caused by lack of copper + tin = bronze but rather because new techniques of ironworking were accidentally detected, thus

<sup>20</sup> See the histograms of J. C. Waldbaum, *From Bronze to Iron* (Göteborg, 1978), 38–58.

<sup>21</sup> Cf. Knapp, 108, and M. Liverani, “The Collapse of the Near Eastern Regional System at the End of the Bronze Age: The Case of Syria,” in *Centre and Periphery*, 66–73, esp. pp. 71 and 73.

<sup>22</sup> Cf., e.g., Maddin, in *Early Metallurgy*, 303–12.

<sup>23</sup> *Ibid.*

revealing the unquestionable superiority of steel vs. bronze.) Restricting ourselves, however, to the issues raised in most recent historical reconstructions, it might be asked to what extent the Late Bronze Age turmoils caused a) a shortage of tin supplies to Cyprus; b) a shortage of copper supplies from Cyprus; c) a crisis of the bronze production in and outside Cyprus—all this in turn prompting a search for alternative sources of tin (cf. the later Phoenician movement towards the west) and of copper (?), and a substitute metallurgy (viz., iron) whose earliest stages of technological advancement were achieved in Cyprus due to its high metallurgical “predisposition.” Here follow some comments on these issues.

As argued above, the supplies of Cypriot copper continued throughout the 12th–11th centuries, in spite of the fact that the serious troubles in the Eastern Mediterranean at the close of the Late Bronze Age might have caused certain changes in the palace/state organization that held firm control over the exploitation of the island’s ore deposits. In this regard it is important to underscore the bearing of the Gelidonya ship, sailing westward with its cargo of ingots. Note, too, the presence of Cypriot copper and bronze artifacts in the western Mediterranean, which might have stimulated copper mining activities and bronze metallurgy in ore-rich Sardinia (cf. F. lo Schiavo, in *Early Metallurgy*, 271–82, with Muhly’s criticism concerning early dates for Cyprus-Sardinia contacts, *ibid.*, 261–62).<sup>24</sup> At any rate, I would not hesitate to suggest that Cypriot mining and metallurgical activities were alive and well after the 13th century. On the other hand, the prosperity of Cyprus in the course of the 11th century has been stressed again by V. Karageorghis in *Early Metallurgy*, 297–301.

It is thoroughly conceivable that in the course of the 12th century the eastern Mediterranean—Cyprus included—and Syria-Palestine (?) might have undergone a (serious) shortage of their tin supplies. The

*terminus post quem* is in any case the Gelidonya shipwreck, which carried tin ingots along with its large cargo of copper ingots. Whatever the original source(s) of tin for upper Mesopotamia, Anatolia, Syria-Palestine and the Levant during the third and second millennium,<sup>25</sup> it remains beyond doubt that an important trade route for this metal led up the Euphrates through northern Syria to the Mediterranean harbors that supplied Cyprus and Crete.<sup>26</sup> The collapse of Syrian states at the end of the Late Bronze Age might have caused a disruption of this trade network, effecting a temporary crisis for the “western” bronze industry. Hence the possible stimulus for an alternative metallurgy (i.e., iron, but see above) and the stimulus for alternative supplies of tin. The annals of Tiglath-pileser I are totally silent regarding tin imports/tributes, contrasted to the record of notable tributes of copper and bronze (cf. ARAB I, §§222, 223, 232) from non-western areas, i.e., areas not supplied by Cypriot copper. In other words, it is reasonable to surmise that the Late Bronze Age disturbances caused a two-way interruption in the trade routes that brought tin to Syria and the Levant and, vice versa, copper (and bronze) from Cyprus to upper Mesopotamia via Syria. In later times one should also take into account the progressive consolidation of Assyrian military and political presence in the west starting from the 10th century. This consolidation might well have prolonged previous interruptions in the supplies of eastern tin for the Syrian and Cypriot ateliers, thus strengthening the need for Phoenician involvement in tin imports from the western Mediterranean. The ultimate result of this process could have been the following: Cyprus and the Levant benefited from the western tin ensured by Phoenician trade activities. Assyria did not provide its Iranian (or any other) tin to Syria-Palestine (and Anatolia, Cyprus, etc.) but on the contrary benefited from the supplies of the metal from the west, carried to coastal Syria and Lebanon from Phoenician sea-traders.

Interesting clues that such was the case can be detected in Assyrian textual sources, and these can be coupled with the well-known passage of Ezek 27:5–25 (in spite of the uncertainty about its chronological setting). From Ezek 27:12 we learn that Tyre im-

<sup>24</sup> On the still controversial relationships between Cyprus and Sardinia see F. lo Schiavo, “Le componenti” (n. 16). See further eadem, E. MacNamara and L. Vagnetti, “Late Cypriot Imports to Italy and their Influence on Local Bronzework,” *Papers of the British School at Rome*, 53 (1985): 1–71; L. Vagnetti, “L’Egeo e Cipro,” in *La Sardegna nel Mediterraneo tra il secondo e il primo millennio a.C.*, (Cagliari, 1987), 359–67, with bibliography; also N. H. Gale and Z. A. Stos-Gale, “Oxhide Ingots from Sardinia, Crete and Cyprus and the Bronze Age Copper Trade: New Scientific Evidence,” in *Studies in Sardinian Archaeology*, 3, ed. M. Balmuth (Oxford, 1987), 135–77.

<sup>25</sup> Cf. J. D. Muhly, *Copper and Tin* (New Haven, 1973), 248–61, and my remarks in *OA* 16 (1977): 249–51; see further note 28.

<sup>26</sup> The text A 1270, published by G. Dossin, *RA* 64 (1970): 97–106, is now *ARM* XXIII 556; tin shipped from Mari to Qatna also in *ARM* XXV 316.

ported tin from Taršiš (= southern Spain ?)<sup>27</sup> thus suggesting that, in comparison with the third- and second-millennium patterns, a totally new trade route had opened. The Neo-Assyrian annals offer interesting pieces of information only during the 9th century (Tukulti-ninurta II, Ashurnasirpal II, Shalmaneser III): in the main, the metal was collected starting from the middle Euphrates (e.g., Sūhu, Lāqê), going then north-west along the upper course of the river (e.g., Karkemiš) and reaching northern Syria (Patina) and south-eastern Anatolia (Samʿal, Malatya, etc.). Another route stretched from middle Euphrates and followed the Habūr as far as the “triangle” (e.g., Zamāni). The ultimate provenience of this Assyrian tin is still a controversial matter: I wonder whether the route along the Euphrates can be the same that conveyed “Iranian” tin to Mari via Elam and Ešnunna—and from Mari further west—in the first half of the second millennium.<sup>28</sup> In my opinion, two (complementary) hypotheses could be taken into account: a) Tin originated from the deposits in the area of Tabriz, which to all appearances had played a significant role in Mesopotamian supplies from the Old Assyrian period;<sup>29</sup> b) The other source could have been the western Mediterranean deposits that supplied the metal through Phoenician intermediation: tin reached Cyprus and coastal Syria whence it travelled to Assyria via the Euphrates.

In this connection, note the evidence provided by two Neo-Babylonian texts from Uruk, dated 551–550 B.C., which detail the arrival of various merchandise from the west, including large quantities of copper together with tin.<sup>30</sup> The occurrence of countries such as Egypt, Lebanon, and Yamana (i.e., the Greek world, whatever its exact location: Asia Minor colonies, Mediterranean islands including Cyprus [Yadnana in the Neo-Assyrian sources], Greece itself),

whence copper and iron (and alum) are said to come, and the presence of typical western merchandise (dyes, purple wool, honey, wine, etc.) strongly suggest that tin was also made available and purchased by Babylonian merchants in some Syrian port of trade. It is then quite conceivable that Phoenician sailors brought this tin from western Mediterranean sites to those Syrian ports, thus ensuring the necessary supplies for Near Eastern bronzesmiths, who got their copper from Lebanon and the Greek Levant. Cyprus was probably the primary source for this copper.

So much for tin. Let us now consider copper. It seems clear that Cypriot mining and export activities went on during the first half of the first millennium and later on, as the two Neo-Babylonian documents quoted above and the later Greek evidence suggest. Limiting ourselves to Near Eastern textual material, note the possible implications of a piece of negative evidence: copper is the only missing metal in the list of Tyrian trade activities recorded in Ezek 27; i.e., the Phoenicians neither procured copper for their own needs nor imported it to supply to other countries, unlike the case of tin, lead, silver, gold, and iron.<sup>31</sup> If we take this datum at face value, we must infer that the Tyrians did not or could not take over other pre-existing and well-consolidated trade connections that ensured copper supplies to the Near East. That this copper was still procured—at least to a great extent—from Cyprus is strongly supported by Assyrian historical sources, again starting with Tukulti-ninurta II. The main areas whence the Assyrians got their copper were inner Syria and Phoenicia, the Aramean settlements along the Euphrates and those along the Habūr up to the “triangle.” I surmise that Cyprus was the original source for the Phoenician, Syrian and Euphrates copper, whereas the Habūr copper could have come from Anatolian deposits (Ergani Maden ?), probably the same source that had been exploited in the second millennium.<sup>32</sup>

The drastic decrease of historical records listing tributes of copper and tin (but also of other metals, such as, above all, iron), which starts with Tiglath-pileser III and becomes strikingly apparent in the sargonid period, does not imply a cut in the flow of these metals toward Assyria but is a simple consequence of the new provincial organization of the

<sup>27</sup> For the interpretation of this toponym cf. G. Garbini, *I Fenici: Storia e religione* (Napoli, 1980), 95–116; M. Liverani, “Ez. 27 e il commercio di Tiro,” to appear.

<sup>28</sup> Cf. the bibliography quoted in *OA* 16 (1977): 250–51; the purchase of tin from Elam is now fully established on the basis of documents like *ARM* XXI 218; XXIII 555, 556; XXV 16, 301; cf. H. Limet, “Les Rapports entre Mari et l’Elam à l’époque de Zimri-Lim,” *Studi epigrafici e linguistici* 2 (1985): 48; see also J. D. Muhly, “Sources of Tin and the Beginning of Bronze Metallurgy,” *AJA* 89 (1985): 275–91.

<sup>29</sup> Cf. *OA* 16 (1977): 249. Cf. the Middle Assyrian occurrence of tin imported from Nairi, in a mid-13th-century text from Rimah: D. J. Wiseman, *Iraq* 30 (1968): 183 (TR 3019).

<sup>30</sup> A. L. Oppenheim, *JCS* 21 (1967): 236–38.

<sup>31</sup> Cf. my short remarks in *Opus* 3 (1984): 251–52 n. 92.

<sup>32</sup> For the Old Assyrian evidence see P. Garelli, *Les Assyriens en Cappadoce* (Paris, 1963), esp. pp. 294–95; M. T. Larsen, *The Old Assyrian City-State and its Colonies* (Copenhagen, 1976), 91–92.



territory, now directly controlled by the Assyrians, and of the new administrative mechanisms that conveyed the needed commodities to the center. In fact, we do have ample archaeological and textual evidence for copper and bronze work in Assyria and elsewhere in the Near East throughout the first millennium. This means that the copper trade was fully alive in the Near East of the 8th–7th centuries (see below).

The above remarks lead us to consider various facets of the spread of iron on the Near Eastern scene from the end of the Late Bronze Age down to the mid-first millennium. Before tackling some arguments that bear directly on this matter, it might be useful to recall that from the Old Babylonian period down to ca. 1200 B.C. there is important and non-sporadic evidence of iron-working in the Near East, especially in Syria (Mari,<sup>33</sup> Qatna, Ugarit), Mitanni, and Hittite Anatolia. A chapter of its own is represented by the Old Assyrian evidence pertaining to KÙ.AN, *amuttum* and *ašī'um*, which still awaits satisfactory treatment.<sup>34</sup> As is well known, in most cases iron is used for the manufacture of pieces of jewelry and ornamental items, yet there is good evidence for iron weapons—precious as they might have been—from textual sources stemming from the Mari archives,<sup>35</sup> from the Mitannian correspondence to Egypt,<sup>36</sup> and, above all, from the Boghazköy tablets (which also offer an extremely consistent documentation for tools of various kinds).<sup>37</sup> In spite of the fact that most of these artifacts must have been items of prestige and

show, it is nonetheless significant that iron is used here exactly for the manufacture of those objects that later on will mark the true beginning of a new metallurgical era.

Returning to Hittite sources, it might be pointed out that two administrative texts concerned with religious festivals, to be dated before Šuppiluliuma, expressly mention “ironsmiths” (LÚ.MEŠ.AN.BAR.DÍM.DÍM) along with silver- and coppersmiths.<sup>38</sup> To my knowledge, this is the earliest occurrence of a specific designation that differentiates iron-workers both from makers of utensils, etc. (LÚ.MEŠ.URUDU.DÍM.DÍM “coppersmiths”) and jewelers (LÚ.MEŠ.KÙ.BABBAR.DÍM.DÍM “silversmiths”).

A case in point is the way in which copper and bronze are progressively equalled and eventually overtaken by iron in the manufacture of certain classes of artifacts (weapons and tools). The valuable work of J. C. Waldbaum, *From Bronze to Iron* (1978), is still the best recent summary of the available archaeological evidence, centered mainly on the eastern Mediterranean and adjacent areas.<sup>39</sup> I am not competent to judge to what extent the Mesopotamian, Anatolian, Iranian, etc., archaeological evidence conforms to the situation sketched for the eastern Mediterranean; however, it may be useful to adduce some pieces of Near Eastern textual material that directly concern this topic. The following issues deserve particular attention: a) the contemporary presence of identical or similar artifacts produced now in copper/bronze now in iron; b) the continued production of copper/bronze objects not superseded by iron; c) the phenomenon of bimetallic (i.e., copper/bronze + iron) objects.

An interesting Middle-Assyrian administrative text from Assur, stemming from the archive of Babu-ahaidina, chancellor of Shalmaneser I (1273–1244), lists four daggers of bronze, one dagger of iron and one lance of steel (?) (*hapalkinnu*) received by an official and returned to the “bronze house.”<sup>40</sup> Bronze and iron weapons and tools are often mentioned together in Assyrian historical sources from the 11th century

<sup>33</sup> See now H. Limet, “Documents relatifs au fer à Mari,” *MARI* 3 (1984): 191–96; *ARM* XXI 222–223; XXV 117, 118, 121, 329, 397, 398, 420, 601, 604, 608.

<sup>34</sup> K. R. Maxwell-Hyslop, “The metals *amūtu* and *ašī'u* in the Kültepe Texts,” *AnSt* (1972): 159–62, is a simple collection of passages translated, more or less accurately, by *CAD* A II, 97–98, 441–42.

<sup>35</sup> E.g., *ARM* XXI 222:39; 223:1–4; XXV 397:6; 398:4; 420:1; 601:7, 9; 608.

<sup>36</sup> EA 22 II 16, I 38; 25 II 22 (iron dagger, mace and lance); EA 22 I 32, III 7, 49 (daggers and javelins of a special kind of iron [steel? *hapalkinnu*]).

<sup>37</sup> References have now been gathered by S. Košak, “The Gospel of Iron,” in *Kaniššuwār: A Tribute to H. G. Güterbock*, ed. H. A. Hoffner, Jr. and G. M. Beckman (Chicago, 1986), 125–35, esp. pp. 126–28, 133. Previously E. Laroche, *RHA* 60 (1957): 9–15. Cf. also the iron dagger sent to the prefect of Ugarit most probably from a Hittite dignitary: *PRU* VI 6 for which cf. *RSO* 45 (1970): 20. Important technical observations are offered by J. D. Muhly, R. Maddin, T. Stech and E. Özgen, “Iron in Anatolia and the Nature of the Hittite Iron Industry,” *AnSt* 35 (1985): 67–84.

<sup>38</sup> KBo XVI 68 III 8'–25'; XVII 46 Rev. 26'–29'.

<sup>39</sup> Important contributions on this matter are in *The Coming of the Age of Iron*, ed. T. A. Wertime and J. D. Muhly (New Haven, 1980): see esp. the articles of J. C. Waldbaum, “The First Archaeological Appearance of Iron and the Transition to the Iron Age,” 69–98, and A. M. Snodgrass, “Iron and Early Metallurgy in the Mediterranean,” 335–74.

<sup>40</sup> J. N. Postgate, *Iraq* 35 (1973): 13–15. In the light of this document, the contents of the Hittite letter KBo I 14 can perhaps be better appreciated (cf. C. Zaccagnini, “KBo I 14 e il ‘monopolio’ hittita del ferro,” *RSO* 45 [1970]: 11–20).

onwards: Tiglath-pileser I (1112–1074) used iron arrows<sup>41</sup> but hewed his way with axes of bronze.<sup>42</sup> Ashurnasirpal II (883–859) compared a mountain's peak with the point of an iron dagger<sup>43</sup> and at the same time made use of iron axes and bronze pick-axes.<sup>44</sup> Shalmaneser III (858–824) cut his way through difficult roads and steep mountains with summits like the blade of an iron dagger by using pickaxes of bronze.<sup>45</sup> Comparable evidence is provided, too, by the annals of Sargon<sup>46</sup> and Sennacherib.<sup>47</sup>

Quite similar evidence is offered by administrative records: see, e.g., the bronze and iron armors (*gurpisu*) from Tell Halaf<sup>48</sup> (beginning of the 8th century) and the 280 daggers, 97 of them iron, recorded in an undated text from Nimrud.<sup>49</sup> Later Neo-Babylonian documents fully confirm this picture: see, e.g., a text of the time of Nabonidus that mentions 56 "Akka-dian" arrows, 26 of which have iron heads, and 116 "Cymmerian" arrows, 46 of which have iron heads:<sup>50</sup> i.e., only 40% of the arrows have iron heads: it may be readily assumed that the others were of bronze. Another text, also dated at the time of Nabonidus,<sup>51</sup> mentions 200 "Cymmerian" arrows, 180 of which have bronze heads.<sup>52</sup> Further: "I bow, 9 arrows with

iron heads, 7 ditto with bronze heads, 7 ditto with wooden heads."<sup>53</sup>

As regards the continuing use of copper and bronze in Near Eastern metallurgy during the first millennium, one need only point out the consistent mention of copper- and bronzesmiths in Neo-Assyrian and Neo-Babylonian documents<sup>54</sup> along with the abundant archaeological and textual evidence pertaining to works of handicraft like statues, bas-reliefs, plates, bowls, basins, cauldrons, (ritual) weapons, etc.<sup>55</sup>

A chapter of its own is the practice of bimetallism,<sup>56</sup> attested in the entire Near East, including Anatolia and Assyria, dating back at least to the mid-second millennium. A wide range of artifacts is represented: swords, daggers, knives, sickles, buckets, basins, etc. As concerns weapons and tools, iron is generally, but not always,<sup>57</sup> used for the main part (i.e., the blade) and bronze for other parts (handle, rivets); on the contrary, containers are normally of bronze, and accessories of iron.

The archaeological evidence<sup>58</sup> finds sporadic yet significant parallels in textual material starting with the late second millennium. Cf. Hittite passages like "Down in the dark earth there stand bronze cauldrons:

The sender (Hattušili III) argues with the Assyrian king (Shalmaneser I is, in my opinion, the best candidate) about the non-fulfillment of an Assyrian request for iron daggers—the whole matter accords with the procedural guidelines of Late Bronze Age gift-exchange (cf. C. Zaccagnini, *Doni*, 70–78). However, what matters more here is the coincidence between the import of iron from Hittite Anatolia and the record of iron and steel (?) weapons stored at Assur, just at the time of Shalmaneser. For another occurrence of iron in Shalmaneser I's inscriptions, see A. K. Grayson, *Assyrian Rulers of the Third and Second Millennia BC* (Toronto, 1987), 185:141.

<sup>41</sup> *AKA*, 85: VI 66.

<sup>42</sup> *AKA*, 39: II 8; 65: IV 67.

<sup>43</sup> *AKA*, 270: I 49; 307: II 40.

<sup>44</sup> *AKA*, 230: Rev. 12; 322: II 76–77; 331: II 96.

<sup>45</sup> III R, Pl. VII: I 19 (*ARABI*, §598).

<sup>46</sup> E.g., Sg. 8:24, 329; cf. 224.

<sup>47</sup> E.g., *OIP* II, 138:43; cf. 124:42; 98:89; 126:4.

<sup>48</sup> J. Friedrich (and others), *Die Inschriften von Tell Halaf* (Osnabrück, 1940), 35 no. 49:1–2; 36 no. 52:10.

<sup>49</sup> D. J. Wiseman, *Iraq* 15 (1953): 147 (ND 3480).

<sup>50</sup> *TCL* XII 114:6–9; cf. E. Ebeling, *ZA* 50 (1952): 207.

<sup>51</sup> *YOS* VI 237:1–2; cf. E. Ebeling, *ibid.*

<sup>52</sup> Interesting parallels concerning bronze and iron arrowheads in Urartian and related sites of the 8th–7th century are in C. A. Burney, *AnSt* 16 (1966): 79; R. D. Barnett, *AnSt* 13 (1963): 187.

<sup>53</sup> K 488–489: 8–9; cf. E. Ebeling, *RA* 49 (1955): 140.

<sup>54</sup> Cf. briefly the evidence gathered in *CAD* N I, 309 and E. Salonen, *Über das Erwerbsleben im alten Mesopotamien* (Helsinki, 1970), 125–31.

<sup>55</sup> I have assembled some pertinent Neo-Assyrian epigraphic material in *OA* 10 (1971): 135–43.

<sup>56</sup> See now J. C. Waldbaum, "Bimetallic Objects from the Eastern Mediterranean and the Question of Dissemination of Iron," in *Early Metallurgy*, 325–47. See also the iron sword with 5 bronze rivets from tomb 3 of the Salamis necropolis, ca. 7th century (V. Karageorghis, *Excavations in the Necropolis of Salamis, I* [Nicosia, 1967], 38 no. 95), the fragment of iron knife with traces of one bronze rivet, from tomb 19, ca. 7th–6th century (*ibid.*, 72 no. 8) and the bronze rings, from tomb 47, ca. 700–650 B.C. (*ibid.*, 84 nos. 98–102); cf. the bronze cauldron with iron stand, from tomb 79 (V. Karageorghis, *Chypre* [Genève, 1968], 170); for a pertinent epigraphic parallel see the Neo-Babylonian text quoted in n. 60.

<sup>57</sup> See, e.g., the bronze sword from Nuzi with iron grip: R. F. S. Starr, *Nuzi* (Cambridge, Mass., 1937–39), 475 and pl. 125: KK.

<sup>58</sup> For pertinent comparative material from eastern Anatolia and western Iran see, e.g., R. Pleiner, "The Beginning of the Iron Age in Ancient Persia," *Annals of the Náprstek Museum* 6 (Praha: 1967 [= 1969]): 9–72; cf. also P. R. S. Moorey, *Catalogue of the Ancient Persian Bronzes in the Ashmolean Museum* (Oxford, 1971), esp. 78, 80, 83 and 315–19.

their lids are of lead, their handles of iron,"<sup>59</sup> and the consignment of iron to an ironsmith for making the stand of a bronze kettledrum, in a Neo-Babylonian document.<sup>60</sup>

To sum up, the aim of these remarks is to suggest that the transition from bronze to iron in the Near East is a rather complicated matter in both geographic and chronological terms. It is too simplistic to assume that a crisis in the supplies of copper and/or tin, caused by and coupled with political crises, brought about the "discovery" and swift development of a completely new technology ca. 1200 B.C., primarily in one place (Cyprus) that had long displayed a marked "predisposition" towards metallurgy. True, some of the factors that led to this roughly sketched theory should be given serious consideration; yet the overall paradigm needs to be refined.

Iron metallurgy was already current in *palace* economic organizations in some regions of the Near East (noticeably Hittite and Hattian Anatolia, Mitanni, northern Syria) during the second half of the second millennium (with significant antecedents in Old Assyrian Anatolia and Mari), and received an important stimulus at the very close of the second millennium. After the disturbances of the 12th–11th centuries, which might have included some crisis of tin supply, we note a widespread on-going production and trade of (copper and) bronze objects. In the meantime, with the successful experimentation in steel techniques, iron definitely won a space of its own for certain classes of artifacts.<sup>61</sup> Thus the "new" metal and the "old" alloy reached a state of complementarity. To be sure, the situation is not to be viewed as totally homogeneous throughout the region, since different

areas show different attitudes toward the use of bronze vs. iron.<sup>62</sup>

The indisputable changes in socio-economic structures of the state and "imperial" formations of the first millennium affected the organization of the productive forces in their respective political and territorial entities, but they do not seem to have had any noticeable impact on the metal industry. It remains, of course, beyond doubt that, in comparison with copper and bronze, the value of iron sank drastically during the course of the first millennium: see, e.g., ratios with silver like 281:1 (*ADD* 812:6), 225:1 (*Nab.* 428:11), 243:1 (*YOS* VI 168:15–16 [reign of Nabonidus]), 367:1 (*ibid.*: 17–18), 624:1 (!) (*BIN* I 162:11–12). By way of comparison note that the same *YOS* VI 168 (1, 7) shows that the copper:silver ratio is set at 200:1; i.e., by mid-sixth century iron had become cheaper than copper (and also bronze, even though tin was still more expensive than copper).<sup>63</sup>

The religious and ideological implications attached to copper mining and smelting that have been noted in Late Bronze Age Cyprus are in any case no longer apparent in the following centuries in Cyprus or elsewhere. Rather it seems that the technological aspects of copper casting could at times be particularly emphasized, and that from a totally "lay" viewpoint. The best example is certainly provided by the famous passage of Sennacherib's annals in which the king proudly describes his spectacular achievements in casting gigantic copper colossi.<sup>64</sup> "Divine favour and protection" bestowed on a wealthy and capable elite that had full control over the copper industry have become "divine inspiration" for a mighty and ingenious sovereign who brings about sensational copper works of art.

<sup>59</sup> *KUB* XVII 10 IV 16 (myth of Telepinu); cf. E. Laroche, *RHA* 60 (1957): 14; A. Goetze, in *ANET*, 128. Cf. the parallel occurrences of iron cauldrons with lids of lead: H. Otten, *JCS* 4 (1950): 131:2–4; E. Laroche, *RHA* 60 (1957): 14.

<sup>60</sup> *GCCI* II 54:5–6.

<sup>61</sup> In this connection, I can hardly accept the idea of a diaspora of ironsmiths that emigrated from the ruined palace workshops of Boghazköy, or other Late Bronze Age palaces, and moved around (e.g., to Cyprus) in search of new job opportunities, thereby spreading their technological know-how and effecting an accelerated diffusion of iron techniques. (Cf. my short remarks in *JNES* 42 [1983]: 258.)

<sup>62</sup> Cf., e.g., the remarks of R. D. Barnett, *AnSt* 13 (1963): 186–87 and the Neo-Babylonian documents quoted above, footnotes 50–51. See also the account of Sargon's booty in Urartu: not a single weapon of the long list (Sg. 8:392–94) is of iron.

<sup>63</sup> Cf. B. Meissner, *Warenpreise in Babylonien* (Berlin, 1936), 30, with footnotes 10–12. As a further matter of comparison, note that in the Old Assyrian period the price of iron (*amuttum*) was ca. 40 times higher than silver: see *KTS* 39a: 23; *BIN* VI 28:21–22; J. Lewy, *IEJ* 5 (1955): 156 n. 7 (*VAT* 13534); cf. *ICK* I 39b:2, 5.

<sup>64</sup> *OIP* II, 122–23:14–29.