



CONTACTS BETWEEN EGYPT AND THE SOUTHERN LEVANT IN THE LATE EARLY BRONZE AGE: AN OPEN QUESTION

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ABSTRACT

The second half of the third millennium BCE is traditionally interpreted as a period of intense interactions between the southern Levant and Egypt. In past scholarship, interpretative frameworks for these activities have centered either on conflicts or commercial relations linked to the trade of southern Levantine copper with Egypt, both considered limited to the time of the Old Kingdom with virtually no evidence of contacts afterward until the early Middle Kingdom. However, nothing is virtually known about southern Levantine–Egyptian connections during this time span. This article reconsiders, from the southern Levant perspective, the impact of the lack of chronological resolution in the sub-phasing of the southern Levantine Early Bronze IV on this question and discusses how recent archaeological research may enhance our understanding of this phase in an interregional context.

KEYWORDS

Southern Levantine–Egyptian connections, Early Bronze Age III, Early Bronze Age IV, absolute chronology, relative chronology, copper trade, connectivity, mobility

INTRODUCTION

The existence of intense contacts between the southern Levant and Egypt during the second half of the 3rd millennium BCE is traditionally considered a fact. Scholars have often assumed that Egyptian raids during the late Old Kingdom played a role in the end of the southern Levantine fortified settlements of Early Bronze III.¹ Alternatively, contacts between the two regions have been framed within the hypothesis of commercial relations linked to the trade of southern Levantine copper with the late Old Kingdom Egypt, with virtually no evidence of contacts afterward until the early Middle Kingdom.² However, this remains, in fact, an open question. Although it is believed that there were trade contacts between the late Old Kingdom

Egypt and the southern Levant, by then no longer urban if one follows the revised chronology (discussed below), this is still virtually an entirely unattested argument.

This paper will address current issues in the study of the late Early Bronze Age in the southern Levant, in particular the demise of urbanism between Early Bronze III (c. 2850–2500 BCE) and Early Bronze IV (c. 2500–1950/1920 BCE), and developments in the non-urban Early Bronze IV. It will also propose a short overview of recent research results at Khirbet Iskander in Jordan that may enhance our understanding of the passage from the Early Bronze III to the Early Bronze IV in the eastern Dead Sea Plain. In fact, this latter area has been traditionally connected with the control over the exploitation

of copper in the Faynan and 'Arabah regions, so critical to traditional interpretations of southern Levantine–Egyptian connections in the later Early Bronze Age. The analysis will not focus on material culture evidence of such contacts during the second half of the third millennium BCE, already addressed in past scholarship and admittedly very limited. Rather, the paper will discuss biases in the study of connections with Egypt in this time span resulting from still ill-defined ceramic and radiometric sub-phasing of the late Early Bronze Age in the southern Levant.

THE LATE EARLY BRONZE AGE AND THE DEMISE OF URBANISM IN THE SOUTHERN LEVANT

The late Early Bronze Age in the southern Levant (FIG. 1) is concerned with the crisis of urbanism in this region. According to the most recent periodization of the third millennium BCE in this region, the period spanning from c. 2500 to 1920 BCE³ is currently labeled by scholars as either Intermediate Bronze Age or Early Bronze IV. The second definition is used throughout this article. It is agreed that Early Bronze IV was a non-urban phase following the end of the archaic urbanization that developed locally during the Early Bronze II–III (c. 3100/3000–2500 BCE).⁴ Actually, the true urban nature of the Early Bronze II–III has been broadly discussed during the past three decades, with various scholars supporting different interpretative frameworks for the archaeological evidence, ranging from the city-state model to scalar versions of urbanism up to the refusal of urbanization in favor of models centering on heterarchy, corporate society, or similar non-hierarchical socio-political organizations.⁵

Lately, fresh research has increasingly produced solid evidence that the southern Levant as a whole was involved in a trajectory towards archaic urbanism all through the Early Bronze II–III. Archaeological correlates of this phenomenon can be seen in 1) the nucleation of often massively fortified sites within a hierarchically organized pattern of settlements that encompassed proper cities, towns, and rural villages, as well as active interactions with the pastoral components; 2) the appearance of temples and “non-residential” or “public buildings” with evidence for the concentration of staples and wealth of goods (often called “proto-palaces” and palaces); and 3) the concentration of production activities (e.g., crops processing, olive oil production, and pottery production) within these compounds.⁶



FIGURE 1: Location map of the sites mentioned in the text (map by Luca Volpi).

Moreover, it is becoming increasingly clear that these correlates can be found, during the first half of the third millennium BCE/Early Bronze II–III, not just in the southern Levant but also in the northern and central Levant, the regions corresponding to present-day Syria and Lebanon.⁷ This suggests that a similar and broadly contemporaneous trend (with regional variations) toward urban complexity might have developed across the whole Levant during this time,⁸ before various regions within this larger area developed otherwise in the second half of the third millennium BCE/Early Bronze IV. In fact, during the Early Bronze IV, the northern Levant saw continued urbanism and even archaic state formation (although with alternate fortunes at various sites, as well as with important changes in socio-political and socioeconomic balances), whereas the southern Levant reverted to a non-urban/rural economy and society.⁹

In general, recent research showed that the transition, in the southern Levant, from an Early

Absolute BCE dates	Southern Levant / Traditional periodization	Southern Levant / Revised periodization	Northern Levant
2700 2600 2550 2500/2450 2400	First half of Early Bronze III (Early Bronze IIIA)	Later Early Bronze III (starting ca. 2850 BCE)	Early Bronze III
2300 2200 2100 2000 1950 1900	Second half of Early Bronze III (Early Bronze IIIB)	Early Bronze IV / Intermediate Bronze Age	Early Bronze IVA
	Early Bronze IV / Intermediate Bronze Age / Middle Bronze I (up to the 1990s)		Early Bronze IVB
	Middle Bronze I / Middle Bronze IIA*	Early Middle Bronze I	Early Middle Bronze I

TABLE 1: Differences between the traditional and the revised absolute dates associated with archaeological periods for the time span relevant to this article.

*Up to the 1990s, Middle Bronze IIA was used for the southern Levant and Middle Bronze I was used for Early Bronze IV; it has more rarely been used later too, up to the early 2000s.

Bronze III archaic (and unstable) urbanism to an Early Bronze IV ruralism and agropastoralism was a multifaceted process across the whole area. This might have resulted from diversified regional responses to a crisis starting already during the last Early Bronze III phase; in fact, the later Early Bronze III seems characterized differently at various sites throughout the Levant.¹⁰

At different sites, the later Early Bronze III phase appears as either the climax of archaic urbanization followed by abandonment (e.g. Khirbet Yarmouk/Tel Yarmouth), destruction (e.g. Tell es-Sultan/Jericho), or abatement / decline followed by abandonment (Khirbet Kerak/Beth Yerah),¹¹ or as part of a longer trajectory of resilience and reorganization that bridges between the late Early Bronze III and the Early Bronze IV occupation (Khirbet Iskander).¹² Such diverse processes happening around 2500 BCE, or rather, perhaps, with differentiated timings across the region from 2600 to 2400 BCE, may have involved changes in settlement patterns within the southern Levant, and, in some cases, movements across the region both during Early Bronze III and in the passage to Early Bronze IV.¹³ This suggestion seems reinforced by the increasing evidence of a discrete archaeological *facies* identified in several one-phase sites associated with radiocarbon dates clustering around the 25th century cal BCE, as discussed below.

This phase of changes and transformations seems to have happened in the wake of either crisis or resilience scenarios, depending on the various trajectories of individual sites, the latter scenario being seemingly the case of Khirbet Iskander, in central Jordan

(FIG. 2). Moreover, this phase seems to have been followed by an initial phase of reorganization and restructuring at the beginning of the Early Bronze IV. In the long term, this developmental path may have allowed for new growth in the following phases of the Early Bronze IV. In fact, it is increasingly evident that, despite the non-urban social structure, during Early Bronze IV there were complexity, connectivity, and technological developments and progress that would gradually pave the way for the regeneration of urbanism during the following Middle Bronze Age.¹⁴

CHRONOLOGY, STRATIGRAPHY, MATERIAL CULTURE, AND THE EVIDENCE FROM KHIRBET ISKANDER

(JORDAN) AT THE EARLY BRONZE III–IV TRANSITION

During the past ten years, there has been a revision of the absolute chronology of the southern Levantine Early Bronze Age (see Table 1, indicating differences between the traditional and revised absolute dates associated with archaeological periods for the time span relevant to this article).¹⁵ In particular, the local Early Bronze III is now dated to circa 2850–2500 BCE instead of c. 2700–2300 BCE, and the Early Bronze IV is now dated from c. 2500–1950/1920 BCE instead of 2300–2000 BCE. There are two most significant consequences to this change for interregional synchronisms, analyzed in several recent papers and books.¹⁶ First, the southern Levantine non-urban Early Bronze IV phase, would coincide with the florescence of urbanism and state formation in the northern Levant during the local Early Bronze IVA (c. 2500–2000 BCE).¹⁷ Second, the non-urban Early Bronze IV in the southern Levant



FIGURE 2: Khirbet Iskander, Jordan; aerial view of the site, looking northwest, with the excavation areas (photo: copyright APAAME, APAAME_20141013_REB-0161.jpg, photographer Rebecca Banks; edits by Marta D'Andrea for this article).

would not just coincide with the “problematic” First Intermediate Period in Egypt, but with a longer time span stretching from the late Old Kingdom to the early Middle Kingdom in the latter region.¹⁸

Although the revised chronology is increasingly accepted,¹⁹ a universal scholarly consensus has not yet been reached, as there are some relevant exceptions.²⁰ It is the opinion of the author that there are some advantages in the revised chronology for the southern Levantine Early Bronze Age. Realigning Early Bronze III and IV in the northern and southern Levant, for instance, may allow us to get a better grasp of contacts between these two areas throughout most of the third millennium BCE.²¹ What is still problematic in the new chronological scheme is that we do not yet seem to have enough stratified data from the southern Levant to fit into such a longer Early Bronze IV. In general, radiocarbon dating of different subphases of the southern Levantine Early Bronze IV is still at the beginning and, in some respects, problematic. There are virtually no long Early Bronze IV sequences that are radiocarbon-dated. One exception is Tell Abu en-Ni’aj in the northern Jordan Valley, though even the radiocarbon date series from this site are not framed within a continuous Early Bronze III–

Early Bronze IV–Middle Bronze I sequence, and do not bridge over the end of the third millennium BCE.²² Obviously, this general situation affects our current ability to define the upper and lower boundaries of the Early Bronze IV absolute chronology. This problem increases moving toward the central and later phases of this time, which are well characterized in the stratigraphic sequences of regional key sites (e.g., Tell Umm Hammad, Tell es-Sultan/Jericho, and Khirbet Iskander)²³ but are not yet radiocarbon-dated.

An archaizing material culture looking more like an impoverished, or rather, a vestigial Early Bronze III tradition than an Early Bronze IV one proper is attested at a few sites with different individual trajectories: Sites with previous Early Bronze III occupation (Phase Sultan IIIId1 at Tell es-Sultan/Jericho, and Phase 1 in Area C Khirbet Iskander); one-phase sites with short-lived occupation (Elevation Point-167, Khirbet el-’Alya Northeast, and Khirbet al-Minsahalat); sites resettled after long-term abandonment (Stage 5 at Tell Umm Hammad); and villages established *ex-novo* (Phase 7 at Tell Abu et Ni’aj).²⁴

The available radiocarbon dates associated with the ceramic assemblages fall either within the 25th

century BCE, with short intervals, or, more rarely, within roughly the third quarter of the third millennium BCE, with larger intervals.²⁵ At most of these sites, this chronological and material culture horizon may have equal chances to correspond to either an initial Early Bronze IV or to a terminal Early Bronze III phase or, more generally, to an Early Bronze III/IV transitional phase.²⁶ As discussed in the following section, the case of Khirbet Iskander (like the case of Jericho) in that the earliest Early Bronze IV phase is clearly nestled between the latest Early Bronze III and the middle Early Bronze IV levels within a long and continuous Early Bronze III–IV stratigraphic sequence.²⁷

As said above, the exact date for the end of the Early Bronze IV is still unknown because of the lack of radiometric dating. Generally, there are few radiocarbon dates spanning the last centuries of the 3rd millennium BCE (Hazor,²⁸ Bab edh-Dhra',²⁹ and a few sites in the Central Negev³⁰) or with intervals bridging the 3rd and 2nd millennia BCE; again, the ones that are available are neither associated with a long Early Bronze IV sequence³¹ nor with continuous Early Bronze IV–Middle Bronze I sequences. Therefore, as suggested in previous works, we do not know if the later Early Bronze IV phases with transitional Middle Bronze I traits attested at certain sites overlapped with the archaic Middle Bronze I phases with conservative Early Bronze IV traits identified at other settlements, or if the two phases evolved from one another or how much time elapsed between them³². As we shall see in the following sections, the blurring definition of the upper and lower chronological boundaries of the Early Bronze IV also affects our understanding of contacts between the southern Levant and Egypt during this phase.

To determine unambiguously the beginning and the end of the Early Bronze IV within multi-period continuous stratigraphic sequences at individual sites, it would be necessary to anchor radiocarbon dates with short intervals to stratigraphic phases associated with discrete material culture assemblages. As an example of a work in progress on a continuous and imposing Early Bronze III–IV stratigraphic sequence of a southern Levantine site, I will shortly discuss the results of the most recent archaeological research at Khirbet Iskander in central Jordan. On the one hand, this is relevant to the issue of correlating stratigraphy and chronology for the southern Levantine Early Bronze III–

IV. On the other hand, due to its “proto-urban” characteristics in the non-urban phase (including “non-residential” architecture and the reuse or even the reconstruction of fortifications³³), the site has been often evoked in reconstructions of southern Levantine–Egyptian connections as linked to the exploitation of the Faynan copper mines in southern Jordan during Early Bronze IV.³⁴

Khirbet Iskander may offer an example of a work on correlations between stratigraphy, phased pottery assemblages, and radiocarbon dates at a site spanning the Early Bronze III and IV. The recent discoveries in Area C at Khirbet Iskander, in the southwest sector of the site, may be connected to the evidence for multiphase Early Bronze III and IV strata excavated previously also in Area B, on the northeast edge of the site, where the remains of a multilayered Early Bronze III settlement with imposing fortifications, enhanced and rebuilt several times, were uncovered.³⁵ As the importance of the Early Bronze III occupation in Area C became apparent during the 2019 season,³⁶ this is now being investigated more deeply. However, Khirbet Iskander’s complex stratigraphic sequences in both areas constitute altogether one of the longest continuous Early Bronze III–IV occupations identified thus far at a southern Levantine archaeological site (FIG. 3).

It seems clear that after a destruction around the middle Early Bronze III, identified previously in Area B³⁷ and seemingly found also in Area C at the end of the 2019 season,³⁸ the site saw continuous domestic occupation during Early Bronze III and into Early Bronze IV. During the 2019 excavation campaign, we clearly isolated the last phase in this long Early Bronze III sequence (FIG. 4) and the associated pottery (FIG. 5). This was immediately followed and directly overlain by the earliest Early Bronze IV phase (FIG. 4), with its ceramic assemblage clearly discrete though showing strong continuity with the Early Bronze III tradition because of the presence of new traits with a definite Early Bronze IV “feel” (FIG. 6). This evidence of possible Early Bronze III–IV residential continuity is still being investigated.

However, for the time being, Suzanne Richard, Jesse Long, and the present author explain it as the outcome of a possibly long episode of resilience starting already during later Early Bronze III (after the destruction) and paving the way for what seems to be a phase of stability already in the earlier Early



FIGURE 3: Khirbet Iskander, Jordan; general view of the multi-layered Early Bronze III-IV remains in Area C (Squares C8 and C6, from north to south), from the top, end of 2019 season (© Archaeological Expedition to Khirbat Iskander).

Bronze IV phase.³⁹ This earliest Early Bronze IV phase at Khirbet Iskander with its well-made walls and plaster floors, and its associated pottery with a “transitional” Early Bronze III/IV flavor seems much more substantial in terms of architecture and planning than the contemporary occupation attested at other sites in the region and mentioned before.⁴⁰

This archaic Early Bronze IV phase was followed by other two major Early Bronze IV phases that eventually saw the gradual transformation of this domestic area into a public multifunctional complex interpreted as a monumental gateway to the inner sector of the site.⁴¹ This long Early Bronze IV stratigraphic sequence has allowed S. Richard to isolate well-phased pottery assemblages associated with each phase.⁴²

Some radiocarbon dates are available. A few dates associated with the destruction in the middle of Early Bronze III in Area B place this event in the interval between c. 2900 and 2700 cal BCE but are still unpublished. Recently, modeled radiocarbon dates were obtained for the Early Bronze III sequence in



a



b

FIGURE 4: Khirbet Iskander, Jordan; architectural remains of the last Early Bronze III phase in Squares C8 (top, looking south) and C6 (bottom, looking east) uncovered in the 2019 season in Area C. Note the Phase 1/earlier Early Bronze IV phase walls sealing the remains of the previous Early Bronze III occupation (© Archaeological Expedition to Khirbat Iskander).

Area C, placed between 2600 and 2500 BCE, with the Early Bronze III/IV transition in Area C falling at or slightly before 2500 cal BCE (2515–2496 cal BCE in the 1-sigma range).⁴³

Radiometric dating of Area C Phases 2 and 3 is still challenging. Phase 2, which is the middle Early Bronze IV phase in this sector of the site according to stratigraphy, yielded a radiocarbon range that falls in the interval spanning the entire first half of the Early Bronze IV.⁴⁴ This is too broad for fine-tuning the internal sub-phasing of the latter. Other recent dates obtained from Phases 2 and 3 are too high, yielding ranges like those of Phase 1 and the preceding phases and must, therefore, be considered



FIGURE 5: Khirbet Iskander, Jordan; selected pottery sherds associated with the last Early Bronze III phase in Area C (© Archaeological Expedition to Khirbat Iskandar).



FIGURE 6: Khirbet Iskander, selected pottery sherds from the earlier Early Bronze IV phase in Area C (after D'Andrea 2014a, Vol. 2, Pls. I, III; © Archaeological Expedition to Khirbat Iskandar).

problematic.⁴⁵ Accordingly, Khirbet Iskander's long Early Bronze IV sequence now awaits series of radiocarbon dates to be associated with the stratigraphy and the pottery assemblages of each phase. This might allow us to answer questions concerning Early Bronze IV in connection with the current difficulty to bridge the gap between stratigraphy and material culture, especially for the advanced Early Bronze IV phases and the Early/Middle Bronze nexus.⁴⁶

The above re-examination of current chronological issues in the study of the second half of the third millennium BCE in the southern Levant has set the framework for reconsidering the question of possible south Levantine–Egyptian contacts during this period within the current state of research. In fact, as discussed in the following section, evidence of intense contacts between Egypt and the southern Levant during the second half of the third millennium BCE is virtually absent whether we use the traditional or the revised chronology.

SOUTHERN LEVANTINE–EGYPTIAN CONTACTS DURING THE EARLY BRONZE IV AND THE QUESTION OF COPPER TRADE

Written and iconographic records from this time (such as the autobiography of Uni/Weni dating from the Sixth Dynasty), used to define the nature of interactions between Egypt and the southern Levant within the framework of either commercial contacts or conflicts,⁴⁷ are somewhat problematic. There is no consensus whether toponyms mentioned in the inscriptions and other texts should be placed

in the northern or southern Levant; it is even questioned whether it is possible to locate them at all. Likewise, there is no consensus whether the term *Wnt* refers to the southern Levantine fortified centers and if the word ʿ3mu, traditionally translated as “Asiatics,” refers to Levantine people in general, to southern Levantine people specifically, or to Bedouins settling the Sinai desert.⁴⁸ Since this issue has been discussed to some length, we bring only a few basic pieces of information, referring the readers to past scholarship.⁴⁹

In general, for the late Old Kingdom texts and inscriptions, one-to-one correlations between geographic names and real places are uncertain, as is the correspondence between peoples' names and the inhabitants of the Early Bronze III fortified settlements of the southern Levant. For the following period, the First Intermediate Period, written records (mainly literary texts) are sometimes used to contextualize the lack of contacts between Egypt and the southern Levant within the framework of political instability in the former region and deurbanization in the latter area, but their reliability may be impacted by their very propagandist nature.⁵⁰

Besides the aspects discussed above, the dearth of Egyptian material in the southern Levant during Early Bronze III has been already pointed out by K. Sowada, who also suggested that the bulk of Egyptian finds from this region dates from the earlier Early Bronze III phase, many of them also possibly being heirlooms.⁵¹ Likewise, Egyptian materials in the southern Levant during Early Bronze IV are limited to a few Meydum bowls and other sherds found at sites in the Central Negev and northwest Sinai.⁵² Notwithstanding, the notion that copper mined in the Faynan and Arabah regions was traded to Egypt at this time has become a firm point, especially in studies that take the view from the arid regions of the southern Levant. In fact, it is widely held that copper mining and trading activities carried out at a large scale during Early Bronze IV would have been controlled by sites in the eastern Dead Sea plain, such as Bab edh-Dhra' and Khirbet Iskander.⁵³ Likewise, it is believed that copper trade would have prompted the flourishing of settlements in the Central Negev and the establishment of campsites in northwest Sinai.⁵⁴ This hypothesis has found a place also in conceptual frameworks using the revised absolute chronology.⁵⁵

Recent scholarship has suggested that radiocarbon dates falling in the interval between the 26th and the 23rd century cal. BCE and associated with red-slipped pottery would attest for a major phase of occupation in the Central Negev and intense exploitation of copper mines in the Faynan and 'Arabah regions during the first half of the Early Bronze IV,⁵⁶ in continuity with the late Early Bronze III (which are, altogether, contemporaneous with the Old Kingdom in Egypt).⁵⁷ In this earlier non-urban phase, metallurgical activities would have been managed by desert people trading copper to the Late Old Kingdom Egypt.⁵⁸ This hypothesis would concur with the mention of ʿ3mu *stt*, usually translated as “Asiatic copper,” in the “Abusir Papyrus” dated to the Fifth Dynasty.⁵⁹

According to a recent proposal,⁶⁰ this phase would have been followed by a smaller-scale occupation of the southern Levantine arid margins and limited copper mining for internal consumption between c. 2200 and 2000 BCE, in the second half of the Early Bronze IV.⁶¹ This latter phase is characterized by the presence of pottery decorated with the wavy and horizontal combed motives typical of the south-central areas of the southern Levant at the Central Negev sites, at some of them also associated with a few later radiocarbon dates.⁶²

This proposal is somewhat problematic when confronted with the extant datasets. Since 2012, the present author has called attention to the need to confirm beyond doubt that the already published red-slipped pottery from the Central Negev sites date from Early Bronze III, with parallels also in the corresponding assemblages from Khirbet Hamra Ifdan.⁶³ In fact, all the analogies at hand are sealed stratified assemblages whose date, the later Early Bronze III, is even secured by radiocarbon datings concurring with the revised chronology.⁶⁴

To my knowledge, no single, published, later assemblage radiocarbon-dated to the 25th century BCE (by 14C dates with reasonably short intervals) shows pottery types and styles comparable to the published red-slipped and burnished ceramics found at En Ziq, Bir er-Resisiyeh/Be'er Resisim, and Khirbet Hamra Ifdan. Also, as discussed at length in previous works,⁶⁵ the older radiocarbon dates from these sites are by no means conclusive for dating the settlements in the Central Negev and the Faynan regions to the first half of Early Bronze IV. In fact, they are characterized by very large intervals that may equally encompass the late Early Bronze III,

the Early Bronze III/IV transition, and the first half of Early Bronze IV, with no chances to further trim down the chronological range.

As suggested in previous works, the available evidence may point to the absence of sedentary occupation of these areas and a lack of evidence for significant exploitation of the copper mines in the earlier phases of Early Bronze IV.⁶⁶ This may suggest that copper mining and trading activities that were carried out there on a large scale during the urban Early Bronze III might have been halted or at least slowed down, reducing considerably at the beginning of Early Bronze IV following the demise of the local archaic urbanization and the associated socioeconomic structures. Alternatively, during the earlier Early Bronze IV phase, such activities might have been organized around a system that would not entail permanent settlements as in the previous (Early Bronze III) and in the following (middle-to-late Early Bronze IV) phases.

Large-scale copper mining and trading might have resumed only later, when band- and wavy-combed pottery is attested at sites in the Wadi Faynan and the Central Negev. However, as said before, the latter phase is not yet sufficiently well radiocarbon-dated within long Early Bronze IV stratigraphic sequences to place it within the new longer timeline of absolute dates for this time suggested by the revised chronology.

Considering the bulk of the published pottery from the 'Arabah, the Faynan, and the Central Negev, the latter assemblages with band- and wavy-combed pottery are the only ceramics from those sites that can be confidently ascribed to the Early Bronze IV. In fact, parallels for these vessel types and styles are available from well stratified, sealed assemblages from the advanced Early Bronze IV phases at Tell es-Sultan/Jericho and Khirbet Iskander.⁶⁷ In addition, radiocarbon dates with intervals falling in the last centuries of the third millennium BCE come from 'Ein Ziq in the Central Negev (2200 and 1980 cal BCE⁶⁸), from 'En Yahav (1-sigma: 2030–1920 cal BCE; 2-sigma: 2140–1880 cal BCE), a copper smelting site in the 'Arabah,⁶⁹ and Khirbet Hamra Ifdan (2201–1884 cal BCE).⁷⁰

The dates from 'En Yahav and Khirbet Hamra Ifdan, in particular, suggest that the 'Arabah and Faynan copper was exploited in this period. However, in general, the correlation between phased ceramic assemblages and radiocarbon dates is not yet sufficient for all these regions of the southern

Levant (Dead Sea Plain, Judean foothills, Shephelah, Central Negev, and the Arabah and Faynan areas) to reconstruct a timeline of occupation and use in the second half of the third millennium BCE, either ceramically and/or radiometrically.

Of course, as suggested earlier, we cannot rule out that desert tribes that certainly kept settling the Negev, the Faynan and the Arabah regions might have exploited the copper mines to some extent in the earliest Early Bronze IV phases. Moreover, getting a firmer grasp on this and, more generally, on interactions of desert nomads with the resilient communities of the eastern Dead Sea Plain at that time—such as the one that may have continuously settled Khirbet Iskander throughout the Early Bronze III and IV—might be crucial for understanding if and how intense copper exploitation resumed later in Early Bronze IV.⁷¹ Likewise, the hypothesis that southern Levantine copper was traded to Egypt during the third quarter of the third millennium BCE/the late Old Kingdom/the first half of the Early Bronze IV cannot be definitively ruled out until proven, on a solid basis, that it was not.⁷² Also, the question of the “Asiatic copper” might need some reconsideration.

It is difficult to establish a one-to-one correspondence between the “Asiatic copper” mentioned in the Abusir Papyrus and the southern Levantine copper mined in the Faynan and the Arabah during Early Bronze IV. In fact, this identification remains speculative. Recent archaeometric analyses of Old Kingdom metal artifacts have suggested different sources of the copper used for the objects examined. Two studies led by two different research groups and published in 2018 have pointed, in most cases, to the Eastern Desert and southern Sinai as the most likely sources of copper used for the Egyptian metal objects from selected Old Kingdom contexts examined through lead isotope analyses.⁷³ Actually, Egyptian seasonal expeditions to southern Sinai for the procurement of copper and turquoise seem documented from the Third to the Sixth Dynasty, and it has been suggested that the fortress site at Ras al-Budran in the Wadi Maghara region may have served to secure it against Bedouins incursions.⁷⁴ On the one hand, even the latest information obtained from the chemical and physical characterizations of Old Kingdom metal objects from Egypt mentioned above and pointing to sources of copper different from the Faynan and Arabah regions may not be taken as a definitive proof that southern Levantine copper was

not traded to Egypt in this period. In fact, Ben Yosef has proposed that, in contrast to the interpretations put forward in the two studies mentioned above and based on lead isotope analyses, the available data may support a connection between some Old Kingdom period metal artifacts and the 'Arabah copper.⁷⁵ It also has to be taken into consideration that the similarity between the geology of the Arabah and the Sinai might not always enable identifying copper chemically or geologically as clearly sourced from either region.

It is also likely that patterns of trade of southern Levantine copper during the Early Bronze IV included other possible recipients that could be sought in different regions. Actually, looking only to the southwest for potential entities interested in the southern Levantine copper trade would mean ignoring the wider Early Bronze IV interregional scenario. In fact, the growth of urbanism during the 25th century BCE and the formation of archaic states in the northern Levant from at least the 24th century BCE is seldom considered in recreations of possible patterns of distribution of southern Levantine copper during Early Bronze IV. However, the socio-political and socioeconomic dynamics accompanying developed urbanism and the formation of emergent states triggered interregional interactions of unprecedented scale for the procurement of goods, raw materials, and even livestock (see below in relation to Egypt), as well as high mobility of specialists in control of the necessary technological know-how for specific activities. In this conjunction, specialized animal breeding⁷⁶ and metallurgy stem out. In such a new interregional context, the quest for copper might have allowed the southern Levant to fuel northern demand for this metal, for example, from sites on the Lebanese coast that during Early Bronze IV might have been centers of metallurgical production.⁷⁷

As suggested in earlier works, if we look at the spatial distribution of southern Levantine copper ingots in Early Bronze IV, different paths of circulation may be discernible. If the presence of such copper ingots at several Central Negev sites is any evidence of a west-east route pointing toward Egypt (?), a path of circulation pointing northward also emerges clearly, although from still limited evidence.⁷⁸ In fact, crescent-shaped copper ingots in the southern Levant have so far been found not only in some Central Negev sites but also in the Shephelah, in the Hebron region, at Tell es-Sultan/

Jericho and at Tell el-Waqas/Hazor.⁷⁹ In all these instances, the pottery associated with the finding contexts suggested a (relative) date in the second half of the Early Bronze IV (referring to traditional stratigraphic correlations, although, in the case of Hazor, the Early Bronze IV occupation is now also radiocarbon-dated to the second half of this era).⁸⁰ Hopefully, future research will shed more light on contacts between the most southerly regions of the southern Levant and the oasis of northwest Arabia that are increasingly coming into sharper focus as other potential major agents of interactions with the Levant, at least in the later Early Bronze Age and at the time of the Early/Middle Bronze transition.⁸¹

CONCLUSIONS: SOME THOUGHTS FOR FUTURE ANSWERS TO AN OPEN QUESTION

Based on the above, it certainly cannot be ruled out that contacts existed between the southern Levant and Egypt during the late third millennium BCE, despite how problematic the textual records and tenuous the archaeological evidence for them might be at present. Inconspicuous archaeological evidence of southern Levantine-Egyptian connections is not per se suggestive of a lack of contacts altogether or of the limited intensity or importance of contacts. On the contrary, different data sets should be used to reassess this question. In other words, attempts to stick to the longtime established interpretative frameworks of southern Levantine-Egyptian relations occurring out of a pharaonic interest for "Asiatic copper" mined in the 'Arabah and Faynan areas during the Late Old Kingdom may lead us to ignore more appropriate data sets to investigate interregional interactions. Therefore, reanalyzing this issue from different perspectives may bring out possible hidden connections to light.

For example, for the previous Early Bronze III, recent works have suggested that some types of mediums fueling interregional contacts at the time may be invisible macroscopically. Recent studies have showed evidence that livestock raised in Egypt was exported to the southern Levant during Early Bronze III, pointing to a different sort of intensive exchange between these two regions (although, for the time being, this was proved only in one direction). Through isotopic analyses of animal remains, Arnold and colleagues have discovered evidence that domestic (a goat) and draught/draft (a donkey) animals raised in the Nile Delta migrated to the site of Tell es-Safi/Gath in the Shephelah.

They used this study to suggest that the range of Egyptian–southern Levantine connections may have been multifaceted and more articulated than previously thought.⁸² Likewise, Sowada, based on a reexamination of texts and iconographic records, has suggested that cattle raised in Egypt was exported to the southern Levant during the Early Bronze III.⁸³

As for the Early Bronze IV, Sowada has suggested that “the continuous movement of domestic animals back and forth the Way of Horus (or by sea) during the third millennium BCE (...) is plausible,”⁸⁴ although, as she admits herself, this still has to be proved. Moreover, based on isotopic evidence, Stantis and colleagues suggested that “an influx of non-locals can be observed” in the Nile Delta starting from the Twelfth Dynasty, the beginning of which is now considered to be contemporary with the end of Early Bronze IV according to the revised chronology.⁸⁵ In this regard, it is worth noting that in her reexamination of the pictorial record of the early Middle Kingdom elite tombs at Beni Hasan, Mourad suggested that foreign people with different kinds of expertise, some of them of seemingly Levantine origin, crossed Egypt or even resided there at the time of the early Twelfth Dynasty, as well as possibly earlier in the Eleventh Dynasty.⁸⁶ This would be in a time span that may also cover the later part of the southern Levantine Early Bronze IV,⁸⁷ although, as said before, this still must be better assessed because of the current blurring lower absolute chronological boundary of the latter time.

In sum, albeit preliminary and patchy, residential mobility of animal and humans is being increasingly demonstrated through multiple lines of research for part of the third and the early second millennia BCE. As said before, for the Early Bronze IV, southern Levantine–Egyptian contacts



FIGURE 7: Khirbet Iskander, complete or restorable pottery vessels from Area B comparable to Early Bronze IV ceramics found at Khirbet Hamra Ifdan and the Central Negev sites (© Archaeological Expedition to Khirbat Iskandar) (Nos. 2–4 after D’Andrea 2014a, Pls. IX, XV:7; © Archaeological Expedition to Khirbat Iskandar).

are suggested by limited archaeological evidence of Egyptian materials in the southern arid regions of the southern Levant and by the distribution of campsites with mixed Egyptian and southern Levantine ceramics along the Way of Horus.

Therefore, it would be worth re-investigating the range of activities that might have triggered and sustained southern Levantine–Egyptian connections during the Early Bronze IV/ the second half of the third millennium BCE and may have been broader and differentiated and not just pivoting around trade of southern Levantine copper mined in the ‘Arabah and Faynan areas to Egypt. In fact, it is not unlikely that, in the centuries that bridged the Early and the Middle Bronze Ages, livestock moved between the southern Levant and Egypt as also did people who were in control of different technologies and expertise that might have been required or prized in an interregional context.

Investigating if such interactions happened in the Early Bronze IV, to what extent and through what kinds of mediums, might allow us to reassess the otherwise quite puzzling presence of hundreds of campsites along the Way of Horus that yielded southern Levantine pottery and Egyptian sherds.⁸⁸ However, the chronology, contemporaneity and duration in time of these sites remains obscure until a time when it will be possible to trim down the chronological range to which we may ascribe the southern Levantine pottery found at the campsites. In fact, we are not yet able to refine the chronology of campsites distributed along the Way of Horus within the Early Bronze IV, since ceramic parallels for the published pottery are to be sought in later Early Bronze IV stratigraphic assemblages at multiphase sites of this

Figure #	Khirbet Iskander	Parallels
6:1	Area B, Phase B	Central Negev: Ein Ziq, Cohen 1999: fig. 102:5, 7, 10
6:2	Area B, Phase B	Faynan: Khirbet Hamra Ifdan, Fase 6: Adams 2001, fig. 21.9:8 Central Negev: Ein Ziq, Cohen 1999: fig. 110:1,7
6:3	Area B, Phase B	Central Negev: Ein Ziq, Cohen 1999: fig. 108:2
6:4	Area B, Phase B	Central Negev: Ein Ziq, Cohen 1999: fig. 108:1

TABLE 2: Parallels from sites in the Faynan and Central Negev for the Early Bronze IV pottery from Khirbet Iskander shown in Figure 6.

time, such as Jericho and Khirbet Iskander (FIG. 7, Table 2), that, as said before, are not yet associated with radiocarbon dates.

In conclusion, this article by no means intended to establish new paradigms, but rather aimed at calling attention to issues that may be faced not just when analyzing the records, but especially when trying to compare and combine our individual interpretations, each built on what may be both qualitatively and quantitatively different record types, into one coherent explanatory framework. There are hints to south Levantine–Egyptian connections lasting and intensifying during the following Middle Bronze Age being perhaps established during Early Bronze IV. However, their chronology, duration, evolution through time, as well as the types of activity and the agents of such interregional contacts must still be defined. We should establish our chronological grids—both relative and absolute—more clearly before we can suggest more appropriate conceptual frameworks for contacts between those two regions in the later 3rd millennium BCE. Work on the sequences of key sites has started but more cooperation among scholars working on different data sets, in different regions, and with varying professional backgrounds is needed.

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REFERENCES

- Adams, Matthew J. 2013. “The Main Sector of Area J.” In Israel Finkelstein, David Ussishkin, and Eric H. Cline (eds.), *Megiddo V: The 2004–2008 Seasons*, Vol. 1. Monograph Series of the Sonia and Marco Nadler Institute of Archaeology 31, 47–118. Eisenbrauns: Winona Lake, Indiana.
- . 2017a. “The Egyptianized Pottery Cache from Megiddo’s Area J: A Foundation Deposit for Temple 4040.” *Tel Aviv* 44 (2): 141–164.
- . 2017b. “Egypt and the Levant in the Early/Middle Bronze Age Transition.” In Felix Höflmayer (ed.), *The Early/Middle Bronze Age Transition in the Ancient Near East: chronology, C14, and climate change*. Oriental Institute Seminars 11, 493–515. Chicago: The Oriental Institute of the University of Chicago.
- Adams, Russel B. 2000. “The Early Bronze Age III–IV transition in Southern Jordan: evidence from Khirbet Hamra Ifdan.” In Graham Philip and Douglas Baird (eds.), *Ceramic and Change in the Early Bronze Age Southern Levant*. Levantine Archaeology 2, 379–402. Sheffield: Sheffield Academic Press.
- . 2006. “Copper trading networks across the Arabah during the later Early Bronze Age.” In Piotr Bienkowski and Katharina Galor (eds.), *Crossing the Rift, Resources, Routes, Settlement Patterns and Interaction in the Wadi Arabah*. Levant Supplementary Series 3, 135–142. London: Council for British Research in the Levant and Oxbow Books.
- Arnold Elizabeth R., Gideon Hartman, Hashkel J. Greenfield, Itzhaq Shai, Lindsay E. Babcock, and Aren M. Maeir. 2016. “Isotopic Evidence for Early Trade in Animals between Old Kingdom Egypt and Canaan.” *PLoS ONE* 11/6: e0157650. <https://doi.org/10.1371/journal.pone.0157650>.

- Avner, Uzi. 2006. "Settlement Patterns in the Wadi Arabah and the Adjacent Desert Areas: A View from the Eilat Region." In Piotr Bienkowski and Katharina Galor (eds.), *Crossing the Rift. Resources, Routes, Settlement Patterns and Interaction in the Wadi Arabah*. Levant Supplementary Series, 51–74. London: Council for British Research in the Levant and Oxbow Books.
- Bar, Shay. 2020. "Khirbet el-Meiyyiteh and Elevation Point-167: Evidence of Fortified and Rural Early Bronze IV Settlements in Eastern Samaria." In Suzanne Richard (ed.), *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 347–364. University Park, PA: Eisenbrauns.
- Ben-Yosef, Erez. 2018. "Provenancing Egyptian metals: A methodological comment." *Journal of Archaeological Science* 96: 208–215.
- Ben-Yosef, Erez, Aaron Gidding, Lisa Tauxe, Uri Davidovich, Mohammed Najjar, and Thomas E. Levy. 2016. "Early Bronze Age Copper Production Systems in the Northern Arabah Valley: New Insights from Archaeomagnetic Study of Slag Deposits in Jordan and Israel." *Journal of Archaeological Science* 72: 71–84.
- Burke, Aaron A. 2020. *The Amorites and the Bronze Age Near East: The Making of a Regional Identity*. Cambridge: Cambridge University Press.
- Callaway, James A. 1978. "New Perspectives on Early Bronze III Canaan." in Peter R.S. Moorey and Peter J. Parr (eds.), *Archaeology in the Levant: Essays in Honor of Kathleen M. Kenyon*, 46–58. Warminster: Aris & Phillips.
- Chesson, Meredith S., Cheryl Makarewicz, Ian Kuijt and Charlotte Whiting. 2005. *Results of the 2001 Kerak Plateau Early Bronze Age Survey*. Annual of the American Schools of Oriental Research 59, 1–62. Boston: Eisenbrauns.
- Cohen, Rudolph. 1999. *Ancient Settlement of the Central Negev*, Vol. I: *The Chalcolithic Period, the Early Bronze Age and the Middle Bronze Age I*. Israel Antiquities Authority Reports 6. Jerusalem: Israel Antiquities Authority.
- Cohen, Susan L. 2012. "Synchronisms and Significance, Reevaluating Interconnections between Middle Kingdom Egypt and the Southern Levant." *Journal of Ancient Egyptian Interconnections* 4(3): 1–8.
- . 2017. "Reevaluation of Connections between Egypt and the Southern Levant in the Middle Bronze Age in the Light of the New Higher Chronology." *Journal of Ancient Egyptian Interconnections* 13: 34–42.
- . 2018. "Continuity, Innovation, and Change. The Intermediate Bronze Age in The Southern Levant." In Assaf Yasur-Landau, Eric H. Cline, and Yorke Rowan (eds.), *The Social Archaeology of the Levant From Pre-history to the Present*, 183–198. Cambridge: Cambridge University Press.
- . 2019. "Not so Vile? Rhetoric and Reality in Egyptian–Levantine Relationships in Sinai during the Old and Middle Kingdoms." In: Jana Mynářová, Marwan Kilani, and Sergio Alivernini (eds.), *A Stranger in the House — the Crossroads III, Proceedings of an International Conference on Foreigners in Ancient Egyptian and Near Eastern Societies of the Bronze Age held in Prague, September 10–13, 2018*, 73–90. Prague: Czech Institute of Egyptology.
- . 2022. "The Negev in the Intermediate Bronze Age: Questions of Subsistence, Trade, and Status," *Journal of Ancient Near Eastern History* 9(2): 221–241. <https://doi.org/10.1515/janeh-2021-0012>.
- D'Andrea, Marta 2012. "The Early Bronze IV Period in South-Central Transjordan: Reconsidering Chronology through Ceramic Technology." *Levant* 44(1), 7–50.
- . 2014a. *The Southern Levant in Early Bronze IV. Issues and Perspectives in the Pottery Evidence*, Vol. 1: *Texts*, Vol. 2: *Appendices and Plates*. Contributi e Materiali di Archeologia Orientale XVII. Roma: Scienze e Lettere.
- . 2014b. "Townships or Villages? Remarks on the Middle Bronze IA in the Southern Levant." In Piotr Bieliński, Michal Gawlikowski, Raphael Koliński, Dorota Ławecka, Arkadiusz Sołtysiak, and Zuzanna Wygnańska (eds.), *Proceedings of the 8th International Congress on the Archaeology of the Ancient Near East, 30 April–4 May 2012, University of Warsaw*, Vol. 1, 151–172. Wiesbaden: Harrassowitz Verlag.
- . 2016. "Pottery Production at Khirbat Iskandar, Jordan: Preliminary Results of the Technological Study of EB IV Pottery from the Site." In Rolf A. Stucky, Oskar Kaelin, and Hans-Peter Mathys (eds.), *Proceedings of the 9th International Conference on the Archaeology of the Ancient Near East, 8–14 June 2014 Basel*, Volume 3, 533–548. Wiesbaden: Harrassowitz Verlag.
- . 2018a. "The EB–MB Transition in the Southern Levant: Contacts, Connectivity and

- Transformations." In Barbara Horejs, Christoph Schwall, Vera Müller, Marta Luciani, Mattias Ritter, and Monica Guidetti, Roderick B. Salisbury, Felix Höflmayer, and Teresa Bürge (eds.), *Proceedings of the 10th International Congress on the Archaeology of the Ancient Near East 25–29 April 2016, Vienna*, Volume 1, 81–95. Wiesbaden: Harrassowitz Verlag.
- . 2018b. "Le relazioni tra Egitto e Levante meridionale nella seconda metà del III millennio a.C.: Una visione d'insieme e un esame critico delle problematiche più recenti." In Agnese Vacca, Sara Pizzimenti, and Maria Gabriella Micale (eds.), *A Oriente del Delta. Scritti sull'Egitto ed il Vicino Oriente antico in onore di Gabriella Scandone Matthiae*. Contributi e Materiali di Archeologia Orientale XVIII, 195–222. Roma: Scienze e Lettere.
- . 2019a. "The periodization of Early Bronze IV in the Southern Levant: bridging the gap between stratigraphy and absolute chronology." In E. Gallo (ed.), *Conceptualizing Urban Experiences: Tell es-Sultan and Tall al-Hammām Early Bronze cities across the Jordan*. *Proceedings of a workshop held in Palermo, G. Whitaker Foundation, Villa Malfitano, June 19th 2017*. Rome «La Sapienza» Studies on the Archaeology of Palestine & Transjordan, 13), 61–78. Rome: Rome «La Sapienza» Expedition to Palestine & Jordan.
- . 2019b. "Before the Cultural Koinè: Contextualizing Interculturality in the "Greater Levant" during the Late Early Bronze Age and the Early Middle Bronze Age." In Manfred Bietak and Silvia Prell (eds.), *The Enigma of the Hyksos volume. I*, ASOR Conference Boston 2017 – ICAANE Conference Munich 2018 – *Collected Papers*. Contributions to the Archaeology of Egypt, Nubia and the Levant 9, 13–45. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- . 2020a. "About Stratigraphy, Pottery and Relative Chronology: Some Considerations for a Refinement of Archaeological Periodization for the Southern Levantine EB IV." In Suzanne Richard (ed.), *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 395–416. University Park, PA: Eisenbrauns.
- . 2020b. "Ebla and the South: Reconsidering Inter-Regional Connections during Early Bronze IV." In Marco Iamoni (ed.), *Broadening Horizons 5. Civilizations in Contact. Volume I. From the Prehistory of Upper Mesopotamia to the Bronze Age Societies of the Levant*. West & East. Monografie 2, 201–222. Trieste: Edizioni Università di Trieste.
- . 2020c. "Some Thoughts on Early Bronze Age Religious Complexes at Megiddo and Khirbet ez-Zeraqon and Interregional Connections." *Studia Eblaitica* 6: 1–29.
- . 2021a. "Developing Connections and Changing Clusters: The Levant between c. 2600 and 1900 BCE." In Manfred Bietak and Silvia Prell (eds.), *The Enigma of the Hyksos Volume IV. Changing Clusters and Migration in the Near Eastern Bronze Age. Collected Papers of a Workshop held in Vienna 4th–6th of December 2019*. Contributions to the Archaeology of Egypt, Nubia and the Levant 12, 31–81. Wiesbaden: Harrassowitz Verlag.
- . 2021b. "Urbanism, Collapse and Transitions: Considerations on the EB III/IV and the EB IV/ MB I Nexuses in the Southern Levant." In William G. Dever and Jesse C. Long Jr (eds.), *Transitions, Urbanism, and Collapse in the Early Bronze Age. Essays in Honor of Suzanne Richard*, 43–66. Sheffield: Sheffield Academic Press.
- D'Andrea, Marta, Long, Jesse C. Jr, and Richard, S. 2022. "New Insights about the Early Bronze Age Sequence at Khirbat Iskandar: The 2016 Excavations." In Fadi Balawi and Pearce Paul Creasman (eds.) *Studies in the History and Archaeology of Jordan XIV. Culture in Crisis Flows of People Artifacts, and Idea. Proceedings of the 14th International Conference on the History and Archaeology of Jordan, Florence, Italy, 21–25 January 2019. Part I*, 224–249. Department of Antiquities of Jordan: Amman: Department of Antiquities of Jordan 2022.
- D'Andrea, Marta, Suzanne Richard, and Long, Jesse, C. Jr. 2020. "Khirbat Iskandar." *Archaeology in Jordan 2: 2018 and 2019 Seasons*: 89–91. <https://publications.acorjordan.org/articles/khirbat-iskandar-2018-2019/>.
- D'Andrea, Marta and Agnese Vacca. 2015. "The Northern and Southern Levant during the Late Early Bronze Age: a Reappraisal of the "Syrian Connection." *Studia Eblaitica* 1: 43–74.
- . 2020. "Alike but Different. Drinking Vessels in the Eastern Mediterranean around 2500–2000 BC." In Stefano Valentini and Guido Guarducci (eds.), *Between Syria and the Highlands. Studies in Honor of Giorgio Buccellati and Marilyn Kelly-*

- Buccellati. Studies on the Ancient Near East and the Mediterranean 3, 122–138. Roma: Arbor Sapientiae.
- Dever, William G. 2014. *Excavations at the Early Bronze IV Sites of Jebel Qa'qir and Be'er Resisim*. Harvard Semitic Museum Publications 6. Winona Lake, IN: Eisenbrauns.
- Dever, William G. and Miriam Tadmor. 1976. "A Copper Hoard of the Middle Bronze Age I." *Israel Exploration Journal* 26: 163–169.
- Dunseth, Zachary C., Andrea Junge, Markus Fuchs, Israel Finkelstein, and Ruth Shahack-Gross. 2016. "Geoarchaeological Investigation in the Intermediate Bronze Age Site of Mashabe Sade." *Tel Aviv* 43: 43–75.
- Dunseth, Zachary C., Andrea Junge, Joanna Lomax, Elisabetta Boaretto, Israel Finkelstein, Markus Fuchs, and Ruth Shahack-Gross. 2017. "Dating Archaeological Sites in an Arid Environment: A Multi-Method Case Study in the Negev Highlands, Israel." *Journal of Arid Environments* 144: 156–169.
- Dunseth, Zachary C., Israel Finkelstein, and Ruth Shahack-Gross. 2018. "Intermediate Bronze Age subsistence practices in the Negev Highlands, Israel: Macro- and microarchaeological results from the sites of Ein Ziq and Nahal Boqer 66." *Journal of Archaeological Science: Reports* 19: 712–726.
- Falconer, Steven E. and Patricia L. Fall. 2006. *Bronze Age Rural Economy and Village Life at Tell el-Hayyat, Jordan*. British Archaeological Reports – International Series 1586. Oxford: Archaeopress.
- . 2016. "A Radiocarbon Sequence from Tell Abu en-Ni'aj, Jordan and its Implications for Early Bronze IV Chronology in the Southern Levant." *Radiocarbon* 58/3: pp 615–647. DOI: 10.1017/RDC.2016.26.
- . 2017. "Radiocarbon evidence from Tell Abu en-Ni'aj and Tell el-Hayyat, Jordan and its implications for Bronze Age Levantine and Egyptian chronologies." *Journal of Ancient Egyptian Interconnections* 13: 7–19.
- . 2019. *Early Bronze IV Village Life in the Jordan Valley. Excavations at Tell Abu en-Ni'aj and Dhahret Umm el-Marar, Jordan*. British Archaeological Reports – International Series 2922. Oxford: Archaeopress.
- Fall, Patricia L., Steven Falconer, and Felix Höflmayer. 2020. "New Bayesian radiocarbon models for Early Bronze IV Tell Abu en-Ni'aj and Middle Bronze Age Tell el-Hayyat, Jordan." *Radiocarbon* 63(1): 41–76. <https://doi.org/10.1017/RDC.2020.104>
- Fall, Patricia L., Suzanne Richard, Suzanne E. Pilaar Birch, Elizabeth Ridder, Marta D'Andrea, Jesse C. Long Jr, and Steven Falconer. 2022. "New AMS chronology for the Early Bronze III/IV transition at Khirbat Iskandar, Jordan." *Radiocarbon*: 1–16. DOI: 10.1017/RDC.2022.22
- Finkelstein, Israel, Matthew J. Adams, Zachary C. Dunseth, and Ruth Shahack-Gross. 2018. "The Archaeology and History of the Negev and Neighbouring Areas in the Third Millennium BCE: A New Paradigm." *Tel Aviv* 45, 63–88. DOI 10.1080/03344355.2018.1412054.
- Gee, J. 2015. "Did the Old Kingdom Collapse? A New View of the First Intermediate Period." In Peter Der Manuelian and Thomas Schneider (eds.), *Towards a New History of the Egyptian Old Kingdom. Perspectives on the Pyramids Age*. Harvard Egyptological Studies 1, 60–75. Leiden and Boston: Brill.
- Genz, Hermann, Simone Riehl, Canan Çakırlar, Francesca Slim, and Alison Damick. 2016. "Economic and Political Organization of Early Bronze Age Coastal Communities: Tell Fadous-Kfarabida as a Case Study." *Berytus* 55: 79–119.
- Gidding, Aaron and Thomas E. Levy. 2020. "Manufacturing Copper in the Periphery: Radiocarbon and the Question of Urbanism during the Early Bronze III–IV Transition." In Suzanne Richard (ed.) *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 312–326. University Park, PA: Eisenbrauns.
- Greenberg, Raphael. 2017. "No Collapse: Transmutations of Early Bronze Age Urbanism in the Southern Levant." In Felix Höflmayer (ed.), *The Late Third Millennium in the Ancient Near East. Chronology, C14, and Climate Change*. Oriental Institute Seminars 11, 31–58. Chicago, IL: The Oriental Institute of the University of Chicago.
- . 2019. *The Archaeology of the Bronze Age Levant. From Urban Origins to the Demise of City-States, 3700–1000 BCE*, Cambridge: Cambridge University Press.
- Greenberg, Raphael and Emanuel Eisenberg. 2006. "Area BS: the Bar-Adon excavations, southeast, 1951–1953." In Raphael Greenberg, Emanuel Eisenberg, Sarit Paz, and Yitzhak Paz (eds.),

- Bet Yerah. *The Early Bronze Age Mound. Volume I. Excavation Reports 1933–1986*. Israel Antiquities Authority Reports 30, 117–234. Jerusalem: Israel Antiquities Authority.
- Gundacker, Roman. 2017. “The Significance of Foreign Toponyms and Ethnonyms in Old Kingdom Text Sources.” In Felix Höflmayer (ed.), *The Late Third Millennium in the Ancient Near East. Chronology, C14, and Climate Change*. Oriental Institute Seminars 11, 333–426. Chicago, IL: The Oriental Institute of the University of Chicago.
- Haiman, Mordehai. 1996. “Early Bronze Age IV Settlement Pattern of the Negev and Sinai Deserts: View from Small Marginal Temporary Sites.” *Bulletin of the American Schools of Oriental Research* 303: 1–32.
- . 2009. “Copper Trade and Pastoralism in the Negev and Sinai Deserts in the EB IV.” In Peter J. Parr (ed.), *The Levant in Transition. Proceedings of a Conference Held at the British Museum on 20–21 April 2004*. Palestine Exploration Funds Annuals IX, 38–42. Leeds: Maney.
- Hauptmann, Andreas, Sigrid Schmitt-Strecker, Thomas E. Levy, and Friedrich Begemann. 2015. “On Early Bronze Age Copper Bar Ingots from the Southern Levant.” *Bulletin of the American Schools of Oriental Research* 373: 1–24.
- Hausleiter, Arnulf, Marta D’Andrea, and Alina Zur (in collaboration with Mohammed Al-Hajri). 2018. “The EB–MB Transition from Early to Middle Bronze Age in Northwest Arabia: Bronze Weapons from Burial Contexts at Tayma, Arabia and Comparative Evidence from the Levant.” *Zeitschrift für Orient-Archäologie* 11: 412–436.
- Helms, Svend. 1986. “Excavations at Tell Umm Hammad, 1984.” *Levant* 18: 25–49.
- Höflmayer, Felix. 2014a. “Egypt and the Southern Levant in the Late Early Bronze Age.” In Felix Höflmayer and Ricardo Eichman (eds.), *Egypt and the Southern Levant in the Early Bronze Age*. *Orient-Archäologie* 31, 135–141. Rahden/West: Marie Leidorf.
- . 2014b. “Dating catastrophes and collapses in the ancient Near East: The end of the first urbanization in the southern Levant and the 4.2 ka BP event.” In Lorenzo Nigro (ed.), *Overcoming Catastrophes: Essays on disastrous agents characterization and resilience strategies in pre-classical Southern Levant*, Rome «La Sapienza» Studies on the Archaeology of Palestine & Transjordan, 117–140. Rome: Rome «La Sapienza» Expedition to Palestine & Transjordan.
- . 2015. “The Southern Levant, Egypt, and the 4.2 ka BP Event.” In Harald Meller, Helge Wolfgang Arz, Reinhard Jung, and Roberto Risch (eds.), *2200 BC – Ein Klimasturz als Ursache für den Zerfall der Alten Welt? 7. Mitteldeutscher Archäologentag vom 23. Bis 26. October 2014 in Halle (Saale). 7th Archaeological Conference of Central Germany*. Tagungen des Landmuseums für Vorgeschichte 12/I, 113–130. Halle (Saale): Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt.
- . 2017. “Introduction: The Late Third Millennium BC in the Ancient Near East and Eastern Mediterranean.” In F. Höflmayer (ed.), *The Late Third Millennium in the Ancient Near East, Chronology, C14, and Climate Change*, 1–29. Oriental Institute Seminars 11. Chicago, IL: The Oriental Institute of the University of Chicago.
- Holdorf, Paul, S. 2010a. “Quantitative Analysis of the Early Bronze IV Tell and Tomb Ceramic Assemblages.” In Suzanne Richard, Jesse C. Long, Paul S. Holdorf, and Glenn Peterman (eds.), *Final Report on the Early Bronze IV Area C Gateway and Cemeteries*. American Schools of Oriental Research Archaeological Reports 14/ Archaeological Expedition to Khirbat Iskandar and its Environs, Jordan 1, 113–132. Boston: American Schools of Oriental Research.
- . 2010b. “Comparison of EB IV radiocarbon results from Khirbat Iskandar and Bab adh-Dhra’.” In Suzanne Richard, Jesse C. Long, Paul S. Holdorf, and Glenn Peterman (eds.), *Final Report on the Early Bronze IV Area C Gateway and Cemeteries*. American Schools of Oriental Research Archaeological Reports 14/ Archaeological Expedition to Khirbat Iskandar and its Environs, Jordan 1, 267–270. Boston: American Schools of Oriental Research.
- Kennedy, Melissa A. 2015. “Life and Death at Tell Umm Hammād, Jordan: A Village Landscape of the Southern Levantine Early Bronze Age IV/Intermediate Bronze Age.” *Zeitschrift des Deutschen Palästina-Vereins* 131(1): 1–28.
- . 2016. “The End of the 3rd Millennium BC in the Levant: New Perspectives and Old Ideas.” *Levant* 48(1): 1–32.

- . 2020. "Horizons of Cultural Connectivity North–South Interactions and Interconnections during the Early Bronze Age IV." In Suzanne Richard (ed.) *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 328–346. University Park, PA: Eisenbrauns.
- Kmošek, Jiří, Martin Odler, Marek Fikrle, and Yulia V. Kochergina. 2018. "Invisible connections. Early Dynastic and Old Kingdom Egyptian metalwork in the Egyptian Museum of Leipzig University." *Journal of Archaeological Science* 96: 191–207.
- Kochavi, Moshe. 2009. "The Intermediate Bronze Age (IBA) in the Negev, Forty Years Later." In Peter J. Parr (ed.), *The Levant in Transition. Proceedings of a Conference Held at the British Museum on 20–21 April 2004*. Palestine Exploration Funds Annuals IX, 43–48. Leeds: Maney.
- Lev, Ron, Shlomit Bechar, and Elisabetta Boaretto. 2021. "Hazor EB III city abandonment and IBA people return: Radiocarbon chronology and its implications." *Radiocarbon* 63(5): 1453–1469. <http://doi.org/10.1017/RDC.2021.76>
- Lev, Ron, Ora Shalev, Joanna Regev, Yztak Paz, and Elisabetta Boaretto. 2020. "Bridging the gap EBIII–IBA: Early Intermediate Bronze radiocarbon dates from Khirbat el-'Alya Northeast, Israel." *Radiocarbon* 62(6): 1637–1649. <http://doi.org/10.1017/RDC.2020.83>
- Levy, Thomas E., Russell B. Adams, Andreas Hauptmann, Michael Prange, Sigrid Schmitt-Strecker, and Mohammed Najjar. 2002. "Early Bronze Age Metallurgy: A Newly Discovered Copper Manufactory in Southern Jordan." *Antiquity* 76: 425–437.
- Long, Jesse C. Jr. 2010. "The Stratigraphy of Area C." In Suzanne Richard, Jesse C. Long, Paul S. Holdorf, and Glenn Peterman (eds.), *Final Report on the Early Bronze IV Area C Gateway and Cemeteries*. American Schools of Oriental Research Archaeological Reports 14/ Archaeological Expedition to Khirbat Iskandar and its Environs, Jordan 1, 37–68. Boston: American Schools of Oriental Research.
- Long, Jesse C. Jr., Suzanne Richard, and Marta D'Andrea. 2019. "Khirbat Iskandar." In *Archaeology in Jordan 1: 2016 and 2017 Seasons*, ACOR, Amman, 59–60, <https://www.acorjordan.org/wp-content/uploads/2018/12/AIJ-2016-2017-High-Res.pdf>.
- Luciani, Marta. 2016. "Mobility, Contacts and the Definition of Culture(s) in New Archaeological Research in Northwest Arabia." In Marta Luciani (ed.), *The Archaeology of North Arabia: Oases and Landscapes. Proceedings of the International Congress Held at the University of Vienna, 5–8 December, 2013*. Oriental and European Archaeology 4, 21–56. Vienna: Austrian Academy of Sciences Press.
- Mazar, Amihai. 2006. "Tel Beth-Shean and the Fate of Mounds in the Intermediate Bronze Age." In Seymour Gitin, J. Edward Wright, and J.-P. Dessel (eds.), *Confronting the past: archaeological and historical essays on ancient Israel in honor of William G. Dever*, 105–118. Winona Lake, IN: Eisenbrauns.
- Mazar, Benjamin. 1968. "The Middle Bronze Age in Palestine." *Israel Exploration Journal* 18: 65–97.
- Miroschedji, Pierre de. 2002. "The Socio-Political Dynamics of Egyptian–Canaanite Interaction in the Early Bronze Age." In Edwin C. M. van den Brink and Thomas E. Levy (eds.), *Egypt and the Levant. Interrelations from the 4th Through the 3rd Millennium BCE*. New Approaches to Anthropological Archaeology, 39–57. London and New York: Leicester University Press.
- . 2009. "Rise and collapse in the Southern Levant in the Early Bronze Age." *Scienze dell'Antichità* 15: 101–129.
- . 2012. "Egypt and Southern Canaan in the Third Millennium BCE: Uni's Asiatic Campaigns Revisited." In Mayer Gruber, Shmuel Ahituv, Gunnar Lehmann, and Zipora Talshir (eds.), *All the Wisdom of the East. Studies in Near Eastern Archaeology and History in Honor of Eliezer D. Oren*. Orbis Biblicus et Orientalis 255, 265–292. Fribourg – Göttingen.
- . 2014. "The Southern Levant (Cisjordan) during the Early Bronze Age." In Margrete L. Steiner and Ann E. Killebrew (eds.), *Oxford Handbook of the Archaeology of the Levant*, 307–329. Oxford: Oxford University Press.
- . 2018. "The Urbanization of the Southern Levant in Its Near Eastern Setting." *Origini* XLII (= Marcella Frangipane and Linda R. Manzanilla [eds.], *Rethinking Urbanization and Its Living Landscapes from the Inspiring Perspective of a great "Maestro"*): 109–148.
- . 2019. "Early Bronze Age Palaces in the Southern Levant." In Manfred Bietak, Paolo Matthiae, and Silvia Prell (eds.), *Ancient*

- Egyptian and Ancient Near Eastern Palaces. *Proceedings of a workshop held at the 10th ICAANE in Vienna, 25–26 April 2016*, Volume II. Contributions on Ancient Egypt, Nubia and the Levant 8, 159–179. Wiesbaden: Harrassowitz Verlag.
- Mourad, Anna-Latifa. 2020. "Foreigners at Beni Hassan: Evidence from the Tomb of Khnumhotep I (No. 14)." *Bulletin of the American Schools of Oriental Research* 384: 105–132.
- Mumford, Gregory. 2006. "Tell Ras Budran (Site 345): Defining Egypt's Eastern Frontier and Mining Operations in South Sinai during the Late Old Kingdom (Early EB IV/MB I)." *Bulletin of the American Schools of Oriental Research* 342: 13–67.
- Nichols, John J. and Jill A. Weber. 2006. Amorites, Onagers, and Social Reorganization in Middle Bronze Age Syria. In Glenn M. Schwartz and John J. Nichols (eds.), *After Collapse: The Regeneration of Complex Societies*, 38–57. Tucson, AZ: University of Arizona Press.
- Nigro, Lorenzo. 2003. "Tell es-Sultan in the Early Bronze Age IV (2300–2000 BC) Settlement vs Necropolis: a stratigraphic perspective." *Contributi e Materiali di Archeologia Orientale* IX: 1–38.
- . 2016. "The End of the Early Bronze Age in the Southern Levant Urban Crisis and Collapse seen from two 3rd Millennium BC-Cities, Tell es-Sultan/Jericho and Khirbet al-Batraway." In Tim Cunningham and Jan Driessen (eds.), *Crisis to Collapse. The Archaeology of Social Breakdown*. Aegis. Actes de Colloques 11, 149–172. Louvain: Presses Universitaire de Louvain.
- . 2019. "Archaeological Periodization vs Absolute Chronology: What Does not Work with High and Low Early Bronze Age in the Southern Levant." In Elisabetta Gallo (ed.), *Conceptualizing Urban Experiences: Tell es-Sultan and Tall al-Ḥammām Early Bronze cities across the Jordan. Proceedings of a workshop held in Palermo, G. Whitaker Foundation, Villa Malfitano, June 19th 2017*. Rome «La Sapienza» Studies on the Archaeology of Palestine & Transjordan, 13, 1–46. Rome: Rome «La Sapienza» Expedition to Palestine & Transjordan.
- . 2020. "Tell es-Sultan/Jericho in the Early Bronze Age III: Apogee of an Unusual "Palatial Society" in Palestine." In Suzanne Richard (ed.), *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 195–212. University Park, PA: Eisenbrauns.
- Nigro Lorenzo, Lucio Calcagnile, Jehad Yasin Elisabetta Gallo, and Gianluca Quarta. 2019. "Jericho and the chronology of Palestine in the Early Bronze Age: A radiometric re-assessment." *Radiocarbon* 61(1): 211–241.
- Oren, Eliezer D. and Yuval Yekutieli. 1990. "North Sinai during the MB I Period: Pastoral Nomadism and Sedentary Settlement." *Eretz Israel* 21: 6–22.
- Palumbo, Gaetano. 1990. *The Early Bronze Age IV in the Southern Levant: Settlement Patterns, Economy and Material Culture of a "Dark Age."* Contributi e Materiali di Archeologia Orientale III, Roma: Sapienza University of Rome.
- . 2001. "The Early Bronze IV." In Burton MacDonald, Russel B. Adams, and Piotr Bienkowski (eds.), *The Archaeology of Jordan. Levantine Archaeology*, 233–269. Sheffield: Sheffield Academic Press.
- . 2008. "The Early Bronze IV." In Russel B. Adams (ed.), *Jordan: An Archaeological Reader*, 227–262. London: Equinox.
- Philip, Graham. 1988. "Hoards of the Early and Middle Bronze Ages in the Levant." *World Archaeology* 20: 190–208.
- . 2008. "The Early Bronze Age I-III." In Russell B. Adams (ed.), *Jordan: An Archaeological Reader*, 161–226; London: Equinox
- Prag, Kay. 2014. The Southern Levant during the Intermediate Bronze Age. In Margrete L. Steiner and Ann E. Killebrew (eds.), *Oxford Handbook of the Archaeology of the Levant*, 388–400. Oxford: Oxford University Press.
- Priglinger, Elisa. 2019a. "One Ticket to Egypt Please!" Migration from Western Asia to Egypt in the Early Second Millennium BCE. In Manfred Bietak and Silvia Prell (eds.), *The Enigma of the Hyksos volume. I, ASOR Conference Boston 2017 – ICAANE Conference Munich 2018 – Collected Papers*. Contributions in the Archaeology of Egypt, Nubia and the Levant 9, 209–223. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- . 2019b. "Different Aspects of Mobility and Migration during the Middle Kingdom." *Ägypten & Levante* 29: 331–353.
- Rademakers, Frederik W., Georges Verly, Luc Delvaux, and Patrick Degryse. 2018. "Copper for the afterlife in Predynastic to Old Kingdom Egypt: provenance characterization by chemical and lead isotope analysis (RMAH collection,

- Belgium)." *Journal of Archaeological Science* 96: 175–190.
- Rast, Walter E. and R. Thomas Schaub. 2003. *Bâb adh-Dhrâ': Excavations at the Town Site (1975–1981). Part 1: Text, Part 2: Plates and Appendices*. Reports of the Expeditions to the Dead Sea Plain Jordan II. Winona Lake, IN: Eisenbrauns.
- Regev, Johanna, Israel Finkelstein, Matthew J. Adams, and Elisabetta Boaretto. 2014. "Wiggle-Matched ¹⁴C Chronology of Early Bronze Megiddo and the Synchronization of Egyptian and Levantine Chronologies." *Egypt and the Levant* 24: 243–266.
- Regev, Johanna, Pierre de Miroschedji, and Elisabetta Boaretto. 2012. "Early Bronze Age Chronology: Radiocarbon Dates and Chronological Models from Tel Yarmuth (Israel)." In Elisabetta Boaretto and Noemi Rebollo Franco (eds.), *Proceedings of the 6th International Radiocarbon and Archaeology Symposium*, 505–524; *Radiocarbon* 54(3–4).
- Regev, Johanna, Pierre de Miroschedji, Raphael Greenberg, Eliot Braun, Zvi Greenhut, and Elisabetta Boaretto. 2012. "Chronology of the Early Bronze Age in the Southern Levant: New Analysis for a High Chronology." In Elisabetta Boaretto and Noemi Rebollo Franco (eds.), *Proceedings of the 6th International Radiocarbon and Archaeology Symposium*, 525–566; *Radiocarbon* 54(3–4).
- Richard, Suzanne. 2010. "The Area C Early Bronze IV Ceramic Assemblage." In Suzanne Richard, Jesse C. Long Jr, Paul S. Holdorf, and Glenn Peterman (eds.), 2010. *Khirbat Iskandar. Final Report on the Early Bronze IV Area C 'Gateway' and Cemeteries*. American Schools of Oriental Research Archaeological Reports 14/ Archaeological Expedition to Khirbat Iskandar and its Environs, Jordan 1, 69–112. Boston: American Schools of Oriental Research.
- . 2013. "Khirbat Iskandar Tall, Tombs, and Bab adh-Dhra': A Multidimensional Quantitative Approach." In Fares al-Hmoud (ed.), *Studies in the History and Archaeology of Jordan XI: Changes and Challenges*, 783–791. Amman: Department of Antiquities of Jordan.
- . 2014. "The southern Levant (Transjordan) during the Early Bronze Age." In Margrete L. Steiner and Ann E. Killebrew (eds.), *The Archaeology of the Levant c. 8000–332 BCE*, 330–352. Oxford: Oxford University Press.
- . 2016. Recent Excavations at Khirbat Iskandar, Jordan. The EB III/IV Fortifications. In Rolf A. Stucky, Oskar Kaelin, and Hans-Peter Mathys (eds.), *Proceedings of the 9th International Congress on the Archaeology of the Ancient Near East*, Vol. 3, 585–597. Wiesbaden: Harrassowitz Verlag.
- . 2020. "New Vistas on the Early Bronze Age IV of the Southern Levant: A Case for "Rural Complexity" in the Permanent Sedentary Sites." in Suzanne Richard (ed.), *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 417–453. University Park, PA: Eisenbrauns.
- Richard, Suzanne and Jesse C. Long, Jr. 2007a. "Social Institutions at Khirbat Iskandar: An Argument for Elites in EB IV." In Fawwaz al-Khraysheh (ed.), *Studies in the History and Archaeology of Jordan* 9, 71–81. Amman: Department of Antiquities of Jordan.
- . 2007b. "Khirbet Iskander: A City in Collapse at the end of the Early Bronze Age." In Thomas E. Levy, P.M. Michele Daviau, and Randall W. Younker (eds.), *Crossing Jordan: North American Contributions to the Archaeology of Jordan*, 269–276. Anningdon: Taylor & Francis.
- . 2009. "Khirbet Iskander, Jordan and Early Bronze IV Studies: A View from a Tell." In Peter J. Parr (ed.), *The Levant in Transition. Proceedings of a Conference Held at the British Museum on 20–21 April 2004*. Palestine Exploration Funds Annuals IX, 90–100. Leeds: Maney.
- . 2010. "Summary and Conclusions." In: Suzanne Richard, Jesse C. Long, Jr, Paul S. Holdorf, and Glenn Peterman (eds.), *Khirbat Iskandar Final Report on the Early Bronze IV Area C 'Gateway' and Cemeteries*. American Schools of Oriental Research Archaeological Reports 14/ Archaeological Expedition to Khirbat Iskandar and its Environs, Jordan 1, 271–279. Boston: Eisenbrauns.
- Richard, Suzanne, Jesse C. Long Jr., and Marta D'Andrea. In press. "Expedition to Khirbat Iskandar and its Environs: the 2019 Season." *Annual of the Department of Antiquities of Jordan*.
- Richard, Suzanne, Jesse C. Long Jr, Marta D'Andrea, and Rikke Wulff-Krabbenhöft 2018. "Expedition to Khirbat Iskandar and its Environs: the 2016 Season." *Annual of the Department of Antiquities of Jordan* 59: 597–606.

- Schneider, Th. 2017. "What Is the Past but a Once Material Existence Now Silenced?": The First Intermediate Period from an Epistemological Perspective." In Felix Höflmayer (ed.), *The Late Third Millennium in the Ancient Near East. Chronology, C14, and Climate Change*, 311–322. Oriental Institute Seminars 11. Chicago, IL: The Oriental Institute of the University of Chicago.
- Segal, D. 1999. "Results of Carbon-14 Tests of Samples from Early and Middle Bronze Age Sites in Eretz-Israel and Neighboring Areas." In Rudolph Cohen (ed.), *Ancient Settlement of the Central Negev. Volume I. The Chalcolithic Period, the Early Bronze Age and the Middle Bronze Age I*. Israel Antiquities Authority Reports 6, 336–339. Jerusalem: Israel Antiquities Authority.
- Shai, Itzhaq, Hashkel J. Greenfield, Joanna Regev, Elisabetta Boaretto, Adi Eliyahu-Behar, and Aren M. Maeir. 2014. "The Early Bronze Age remains at Tell es-Safi/Gath: an interim report." *Tel Aviv* 41(1): 20–49.
- Sowada, Karin. 2009. *Egypt and the Eastern Mediterranean during the Old Kingdom*. Orbis Biblicus et Orientalis 237. Fribourg and Göttingen: Vandenhoeck & Ruprecht Verlag.
- . 2014. "Never the Twain Shall Meet? Synchronising Egyptian and Levantine Chronologies in the 3rd Millennium BC." In Felix Höflmayer and Richardo Eichmann (eds.), *Egypt and the Southern Levant in the Early Bronze Age*. *Orient Archäologie* 31, 293–314. Rehden - Westf.: Marie Leidorf.
- . 2016–2018. "Hidden Exports: A Likely Early Bronze Age Exchange in Egyptian Cattle to the Levant." *Bulletin of the Australian Centre for Egyptology* 26: 71–78.
- . 2020. "Perspectives on Egypt in the Southern Levant in Light of the High Early Bronze Age Chronology." In Suzanne Richard (ed.), *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 149–168. University Park, PA: Eisenbrauns.
- Stantis, Chris, Arwa Kharobi, Nina Maaranen, Geoff M. Nowell, Manfred Bieak, Silvia, Prell, and Holger Schutkowski. 2020. "Who were the Hyksos? Challenging traditional narratives using strontium isotope ($^{87}\text{Sr}/^{86}\text{Sr}$) analysis of human remains from ancient Egypt." *PLoS ONE* 15/7: e0235414. <https://doi.org/10.1371/journal.pone.0235414>.
- Thalmann, J.-P. 2008. "Tell Arqa et Byblos: essai de corrélation." In Manfred Bietak and Ernst Czerny (eds.) *The Bronze Age in the Lebanon: Studies on the Archaeology and Chronology of Lebanon, Syria, and Egypt*. Denkschriften der Gesamtakademie 50/Contributions to the Chronology of the Eastern Mediterranean 17, 61–78. Vienna: Verlag der Österreichischen Akademie des Wissenschaften.
- Ussishkin, David. 2018. "Was the Egyptianized Pottery Cache from Megiddo a Foundation Deposit of Megaron Temple 4040? Response to Matthew J. Adams." *Tel Aviv* 45: 216–223.
- Vacca, Agnese. 2014–2015. "Recherches sur les périodes pré et proto-palatale d'Ébla au bronze ancien III–IVA1." In Paolo Matthiae, Mohammed Abdulkarim, Frances Pinnock, and Mohammed Alkhalid (eds), *Studies on the Archaeology of Ebla after 50 Years of Discoveries*. *Les Annales Archéologiques Arabes Syriennes* LVII–LVIII, 15–42. Damas: Ministère de la Culture, Direction Générale des Antiquités et des Musées.
- . 2015. "Before the Royal Palace G. The Stratigraphic and Pottery Sequence of the West Unit of the Central Complex: The Building G5." *Studia Eblaitica* 1: 1–32.
- . 2018. "Centralization Before the Palace. The EB III–IVA1 Sequence on the Acropolis of Tell Mardikh/Ebla." In Paolo Matthiae, Frances Pinnock and Marta D'Andrea (eds), *Ebla and Beyond Ancient Near Eastern Studies after Fifty Years of Discoveries at Tell Mardikh Proceedings of the International Congress Held in Rome, 15th–17th December 2014*, 35–73. Wiesbaden: Harrassowitz Verlag.
- Vacca, Agnese and Marta D'Andrea. 2020. "The Connections between the Northern and Southern Levant during EB III, Re-evaluations and New Vistas in the Light of New Data and Higher Chronologies." In Suzanne Richard (ed.), *New Horizons in the Study of the Early Bronze III and Early Bronze IV in the Levant*, 120–145. Winona Lake, IN: Eisenbrauns.
- Weinstein, James M. 2003. A new set of radiocarbon dates from the Town Site. In Walter E. Rast and R. Thomas Schaub, *Bâb edh-Dhrâ': Excavations at the Town Site (1975–1981). Part 1: Text, Part 2: Plates and Appendices*. Reports of the Expeditions to the Dead Sea Plain Jordan II, 638–648. Winona Lake, IN: Eisenbrauns.

- Wilkinson Tony J., Graham Philip, Jennie Bradbury, Robert Dunford, Donald Donoghue, Nicolas Galiatsatos, Dan Lawrence, Andrea Ricci, and S.L. Smith. 2014. "Contextualizing Early Urbanization, Settlement Cores, Early States and Agro-pastoral Strategies in the Fertile Crescent during the Fourth and Third Millennia BC." *Journal of World Prehistory* 27: 43–109.
- Yahalom-Mack, Naama, Yuval Gadot, Eliyahu Behar, A., Shlomit Bechar, Sana Shilstein and Istral Finkelstein 2014. "Metalworking at Hazor: A Long-Term Perspective." *Oxford Journal of Archaeology* 33(1): 19–45.
- Yekutieli, Yuval. 2002. "Settlement and Subsistence Patterns in North Sinai during the Fifth to Third Millennia BCE." In Edwin C.M. van den Brink and Thomas E. Levy (eds.), *Egypt and the Levant. Interrelations from the 4th through the 3rd Millennium B.C.E.* New Approaches to Anthropological Archaeology, 422–433. London – New York: Leicester University Press.
- Yekutieli, Yuval, Sana Shilstein, and Sarel Shalev. 2005. "'En Yahav: A Copper Smelting Site in the 'Arava." *Bulletin of the American Schools of Oriental Research* 340: 1–21.
- NOTES**
- ¹ Mazar 1968; Callaway 1978; more recently Miroschedji 2019; Sowada 2020.
 - ² See, for instance, Ben-Yosef et al. 2016, 80, 82; Dunseth et al. 2016, 70; 2018, 723–724; Finkelstein et al. 2018, 63, 73–77; Cohen 2019, 78–79; 2022. Kochavi 2009 places southern Levantine–Egyptian interactions in the First Intermediate Period within the framework of the traditional chronology for the southern Levantine Early Bronze IV during the last quarter of the third millennium BCE.
 - ³ Regev et al. 2012; Regev et al. 2014.
 - ⁴ On this time, see the analysis in Palumbo 2008; D'Andrea 2014a; 2019a; 2020a; Cohen 2018; Greenberg 2019, 136–176; Richard 2020.
 - ⁵ See discussions in Philip 2008; Richard 2014; Miroschedji 2018; Greenberg 2019, 128–131; D'Andrea 2021a; 2021b, all citing further references.
 - ⁶ Miroschedji 2018; Richard 2014; Nigro 2016; 2020; D'Andrea 2021b, 28–36, 40–41. See also Greenberg 2019, 70–135.
 - ⁷ Lebanon: Genz et al. 2016; western inland Syria: Vacca 2014–2015; 2015; 2018.
 - ⁸ Vacca and D'Andrea 2020. See also Wilkinson et al. 2014, 85–86.
 - ⁹ See recent comparative overviews in D'Andrea 2019b; 2021a.
 - ¹⁰ See, although with different interpretations, D'Andrea 2014a, Volume 1, 265–272; 2021a; 2021b; Nigro 2016, 166 and Tab. 8.1; Greenberg 2017; 2019, 125–131, 144–148.
 - ¹¹ D'Andrea 2014a, Volume 1, 265–272; Nigro 2016; earlier see Mazar 2006.
 - ¹² D'Andrea, Richard and Long 2020.
 - ¹³ For southern Jordan, this was already noticed by Adams (2006, 139), describing this phenomenon as intermittency within continuity. On earlier proposal of sustained Early Bronze III–IV continuity in the region see also Avner 2006, 64–65.
 - ¹⁴ D'Andrea 2014a; 2020a; Richard 2020.
 - ¹⁵ Regev et al. 2012; Regev et al. 2014a; Shai et al. 2014; Höflmayer 2017.
 - ¹⁶ See, recently, D'Andrea 2020a; Kennedy 2020; Richard 2020.
 - ¹⁷ See, for instance, the remarks in D'Andrea 2019b; 2020b; 2021a.
 - ¹⁸ Höflmayer 2014a; 2015.
 - ¹⁹ See, for instance, the various contributions in Richard ed. 2020, but also syntheses on this time, such as Prag 2014; Cohen 2018; Greenberg 2019, 136–176.
 - ²⁰ Nigro 2019; 2020; Nigro et al. 2019.
 - ²¹ D'Andrea and Vacca 2015; 2020; D'Andrea 2018a; 2020b; 2021a; Vacca and D'Andrea 2020. See also Kennedy 2020.
 - ²² Falconer and Fall 2016; 2017; 2019; Fall, Falconer and Höflmayer 2020.
 - ²³ For a regional discussion of the middle and advanced Early Bronze IV phases in the southern Levant, see D'Andrea 2012; 2014a, Volume 1, 187–221; 2016, 540–543, 545; 2020a, 401–405, 408–409 and figs 22.2–22.4, 22.5: 1–8; 2021b; for site-specific treatments of individual sites, see Helms 1986, 43–45, figs 17: 4–8, 10–14, 18: 4–9, 19: 2–11 (for ceramic phasing of the latter site, see also Kennedy 2015); Nigro 2003, 131–133 (Tell es-Sultan/Jericho); Long 2010, 40–67, and Richard 2010, 93–94, figs. 4.6–4.7 (Khirbet Iskander).
 - ²⁴ This phase has been analysed and discussed on a regional scale according to general characteristics of material culture and patterns of settlement in D'Andrea 2012, 21–25; 2014a,

- Volume 1, 183–187, figs 5.16–5.18; 2016, 537, 544–545 and figs. 3, 5.8–18; 2019a, 64–67 and fig. 2; 2020a, 399–401, 405–406, 408, and fig. 22.1; 2021a; 2021b; see recently also Greenberg 2019, 138–139. For site-specific descriptions, see Helms 1986, 43, figs 17: 1–3, 18: 1–2, 19: 1; for ceramic phasing of the latter site, see also Kennedy 2015); Nigro 2003, 133–134 (Tell es-Sultan/Jericho); Greenberg and Eisenberg 2006, 151–157, fig. 5.96–5.99 (Khirbet Kerak/Beth Yerah); Long 2010, 37–40, and Richard 2010, 933, fig. 4.5 (Khirbet Iskander); Falconer and Fall 2019, 42–45, figs 6.1–6.6 (Tell Abu en-Ni'aj); Bar 2020, 358–360 and fig. 19.10 (Elevation Point 167); Lev et al. 2020 (Khirbet el-'Alya Northeast).
- ²⁵ Khirbet al-Minsahalat: EGS-AQ244: 2840–2500 cal BCE; ISGS-AG245: 2565–2460 cal BCE; ISGS-A0247: 2618–2471 cal BCE (Chesson et al. 2005); Tell Abu en-Ni'aj Phase 7: 2524–2486 cal BCE (Falconer and Fall 2019, 72 and Tab. 5.2; Fall, Falconer and Höflmayer 2020, 27, Tab. 5, with slightly different ranges in earlier publications: Falconer and Fall 2016, 621 [2591–2486 cal BCE, 1-sigma]; Falconer and Fall 2017, Tab. 5 [2518–2483 ca. BCE]); Elevation Point 167: 2480–2240 cal BCE (Bar 2020, 359 and tab. 19.1); 2570–2460 cal BCE (2-sigma) Khirbet el-'Alya Northeast (Lev et al. 2020, 16422 tab. 1, 1643).
- ²⁶ D'Andrea 2021a; 2021b.
- ²⁷ D'Andrea, Richard and Long 2020, 90–91, fig. 2; Richard, Long and D'Andrea in press.
- ²⁸ Lev et al. 2021.
- ²⁹ Rast and Schaub 2003, 639–640: sample 134016: 2341–2139 cal BCE (1-sigma), 2462–2128 cal BCE (2-sigma); sample 134017: 2145–2013 cal BCE (1-sigma), 2211–1915 cal BCE (2-sigma); P-2573: 2290–2131 cal BCE (1-sigma), 2351–2026 cal BCE (2-sigma); sample SI-2872, 2342–2141 cal BCE (1-sigma), 2462–2128 cal BCE (2-sigma); sample SI-2875: 2039–1889 cal BCE (1-sigma), 2139–1753 cal BCE (2-sigma).
- ³⁰ Segal 1999, 338; Avner 2006, 59, Tab. 5. R-2514 ('Ein Ziq): 2166–1951 cal BC; RT-1558: 2124–1744 cal BC (Har Dimon); Ben-Yosef et al. 2016, 82, Tab. 3.
- ³¹ While several scholars support the notion that there is a multi-phase EB IV occupation at Bab edh-Dhra' with three EB IV subphases (Palumbo 1990, Fig. 28; Rast and Schaub 2003; Holdorf 2010a; Richard 2013), the present author believes that the occupation attested in the three areas at the site was shorter (D'Andrea 2012, 28–29; 2014a, Volume 2, 156–158; 2020a, 398).
- ³² D'Andrea 2014b, 157 and fig. 9; 2019b, 70–72 and figs 4–5; 2020a, 408–409; 2021, 55–57, 59–60, and figs. 16–17; Cohen 2017, 36–39.
- ³³ Richard 2016, 585–586, 593–595; 2020, 427428, figs 23.4a–b, 23.5, citing earlier references; D'Andrea, Richard and Long 2020, 90 and fig. 1.
- ³⁴ See, for instance, Goren 1996, 63, 67; Haiman 1996, 20; 2009, 40.
- ³⁵ Richard, Long, D'Andrea and Krabbenhøft 2018, 603–604; Long, Richard and D'Andrea 2019, 90; D'Andrea, Long and Richard 2022, 227–230.
- ³⁶ D'Andrea, Richard and Long 2020, 90; Richard, Long and D'Andrea in press.
- ³⁷ Richard 2016, 586, 593; D'Andrea 2021b.
- ³⁸ Richard, Long and D'Andrea in press.
- ³⁹ D'Andrea, Richard and Long 2020; Richard, Long and D'Andrea in press.
- ⁴⁰ D'Andrea 2021a, 42.
- ⁴¹ Richard and Long 2007a, 79 and fig. 7; 2009, 94–95 and fig. 4; 2020, 430, fig. 23.6a–c; Long 2010 (in particular pp. 50–67 for the stratigraphy and architecture of the “gateway”); Richard and Long 2010, 273.
- ⁴² Richard 2010; Holdorf 2010a; Richard 2013.
- ⁴³ Fall et al. 2022. In particular, Sample UGAMS-53624 places the earliest Early Bronze IV, Phase 1, in the following intervals: 2511–2493 cal BCE (1-sigma), 2522–2475 ca BCE (2-sigma), with a median of 2502 cal BCE; sample UGAMS-53630 places the last Early Bronze III phase at the site in the following intervals: 2520–2498 cal BCE (1-sigma), 2576–2489 cal BCE (2-sigma), with a median of 2510 cal BCE; sample UGAMS-53623 gave the following results for the same Early Bronze III phase: 2519–2499 cal BCE (1-sigma), 2580–2489 cal BCE (2-sigma), and a median of 2510 cal BCE (Fall et al. 2022, Tab. 2 on p. 8 and Tab. 3 on p. 9).
- ⁴⁴ Holdorf 2010b, Tab. 15.1 sample # 2: 2576–2277 (2 σ , 91.7%), charcoal.
- ⁴⁵ Fall et al. 2022, Tab. 2 on p. 7 and Tab. 3 on p. 9. UGAMS-53626 (Phase 3): 2471–2456 cal BCE (1-sigma), 2487–2409 cal BCE (2-sigma), 2464 cal BCE (median); UGAMS-53627 (Phase 3): 2471–2457 cal BCE (1-sigma), 2488–2408 cal BCE (2-sigma), 2464 cal BCE (median); UGAMS-53622 (Phase 3): 2472–2460 cal BCE

- (1-sigma), 2491–2408 cal BCE (2-sigma), 2466 cal BCE (median); AA-50178 (Phase 3): 2474–2458 cal BCE (1-sigma), 2492–2408 cal BCE (2-sigma), 2466 cal BCE (median); Tübingen (Phase 2): 2491–2467 cal BCE (1-sigma), 2508–2456 cal BCE (2-sigma), 2479 cal BCE (median); UGAMS-53625* (Phase 2): 2661–2500 cal BCE (1-sigma), 2846–2491 cal BCE (2-sigma), 2603 cal BCE (median).
- ⁴⁶ Hayyat cannot be used to assess this question, because Early Bronze IV architecture has not been identified at the site; the Early Bronze IV pottery ascribed to Phase 6 was found in a basal level and might have been no longer in a primary context, due to the construction works for the following Phase 5 temple (Falconer and Fall 2006, 33).
- ⁴⁷ See, e.g., Miroshedji 2002; 2012.
- ⁴⁸ See Sowada 2009, 13, fn. 13; Gundacker 2017, 349–355, 373.
- ⁴⁹ D'Andrea 2018b.
- ⁵⁰ Gee 2015; Schneider 2017.
- ⁵¹ Sowada 2009, 123–124; 2014, 296; 2020, 152.
- ⁵² See discussions of these materials in Sowada 2009; D'Andrea 2014a, Volume 1, 252 and fig. 6.11; 2018b. In addition to this, there is M. Adams's recent proposal (Adams 2017a; 2017b) to redate the cache of Egyptianizing vessels found at Tell el-Mutesellim/Megiddo and earlier associated with the Early Bronze IB temple to EB IV based on suggested parallels with pottery in the funerary temple of Mentuhotep I (Eleventh Dynasty/First Intermediate Period), and to understand it as a foundation deposit for Temple 4040. Some scholars have rejected this new dating (Ussishkin 2018; Nigro 2020, 208). The present author has presented elsewhere her considerations on the local pottery (D'Andrea 2020a, 404–405) published by Adams (2013, 328–330, fig. 8.17) as supporting evidence for an Early Bronze IV date of the temple, as well as on hints of a possible construction of the three temples in Early Bronze III and use during part of the Early Bronze IV (D'Andrea 2020c, 2–6).
- ⁵³ See endnote 34.
- ⁵⁴ See, for instance, Sowada 186–187 (SOWADA 2009?).
- ⁵⁵ See, for instance, Burke 2020, 34–35. Further literature is discussed within the text and quoted below.
- ⁵⁶ Dunseth et al. 2017, 166; 2018, 719.
- ⁵⁷ Ben-Yosef et al. 2016, 80, 82; Dunseth et al. 2016, 70; 2018, 723–724; Finkelstein et al. 2018, 63, 73–77; Gidding and Levy 2020, 322–323; Sowada 2009, 186–188; 2020, 155; Kennedy 2016, 17–18; Cohen 2019, 78–79. On the pottery see also Dever 2014, 220–222, 227.
- ⁵⁸ Dunseth et al. 2017, 166–167; 2018, 723–724; Finkelstein et al. 2018, 75.
- ⁵⁹ Sowada 2009, 187, citing earlier references; see also Sowada 2014, fig. 2.
- ⁶⁰ Ben-Yosef et al. 2016, 82.
- ⁶¹ Ben-Yosef 2016, 82. See also Cohen 2022, 223.
- ⁶² Dunseth et al. 2018, 719.
- ⁶³ D'Andrea 2012, 33, 36, and figs. 13:12–13, 14:12–16; 2014a, Volume 1, 126–128, Tab. 7; 2020a, 401. For the pottery of Khirbet Hamra Ifdan and its chronology, see Adams 2000; 2006.
- ⁶⁴ Khirbet Yarmouk/Tel Yarmouth, Khirbet al-Batrawy, and Bab edh-Dhra': D'Andrea 2012, fig. 14:1–11 and Tab. 4:1–11. The article still refers to the traditional absolute dates, as it appeared right before the publication of the first proposals of a higher chronology for the southern Levantine Early Bronze III and IV. However, this has no impact on the attribution of the assemblages to Early Bronze III, which was based on stratigraphy and ceramic chronology. For radiocarbon dates: Khirbet al-Batrawy: Höflmayer 2014b, 129–132, figs. 3–4; Khirbet Yarmouk/Tel Yarmouth: Regev, Miroshedji and Boaretto 2012; Bab edh-Dhra': Weinstein 2003, 638, tab. 22.2.
- ⁶⁵ D'Andrea 2019a; 2020a; 2021.
- ⁶⁶ D'Andrea 2012, 44–47; 2014a, Volume 1, 127–129; 2021a, 42–43, 46, 48.
- ⁶⁷ See endnote 64.
- ⁶⁸ Samples RT-2514 and RT-1558 respectively: Segal 1999.
- ⁶⁹ Sample RTT-4683 (EY 17): Boaretto in: Yekutieli, Shilstein and Shalev 2005, 19–20.
- ⁷⁰ Sample Beta-143812: Levy et al. 2002.
- ⁷¹ D'Andrea 2021a, 43.
- ⁷² Based on a recent reappraisal of the radiometric evidence from Arad, Gidding and Levy (2020, 322) have suggested that “the Central Negev sites associated with the production of copper in the Faynan were continuously occupied following the rule of Narmer (c. 3100 BCE) through sometime during the latter half of the EB IV (c. 2300–2100 BCE).

- ⁷³ Kmošek et al. 2018; Rademakers et al. 2018; but cf. Ben-Yosef 2018.
- ⁷⁴ Mumford 2006, 54.
- ⁷⁵ Ben-Yosef 2018, 210, 213.
- ⁷⁶ For the northern Levant and wider interregional connections, see, for instance the case of the KUNGA, a specialized equid breed, and the case of onagers, whose rearing was apparently in the hands of Amorite groups (Nichols and Weber 2006). For a possible involvement of the southern Levant into activities connected with animal breeding (in this case, sheep and goats), see Wilkinson et al. 2014, 90–92, while the Kennedy's proposal to include the Central Negev into this scenario (Kennedy 2016, 16–18,) seems more problematic.
- ⁷⁷ Thalmann 2008, 72–76, figs 8–9.
- ⁷⁸ D'Andrea and Vacca 2020, 129; D'Andrea 2021a, 48 and fig. 9.
- ⁷⁹ Dever and Tadmor 1976; Philip 1998; Hauptmann et al. 2015, citing earlier references; Yahalom-Mack et al. 2014.
- ⁸⁰ Lev et al. 2021.
- ⁸¹ Luciani 2016, 25–26, 28–30; Hausleiter, Zur and D'Andrea 2018. For the question of copper, see further comments in Ben-Yosef 2018, 211.
- ⁸² Arnold et al. 2016.
- ⁸³ Sowada 2016–2018.
- ⁸⁴ Sowada 2020, 157.
- ⁸⁵ Stantis et al. 2020. For the early second millennium BCE see also Priglinger 2019a and 2019b, considering residential mobility and migrations between the Levant and Egypt in the framework of commercial contacts, but also of environmental degradations in the arid margins of the Levant and of political shifts in the early twentieth century BCE.
- ⁸⁶ Mourad 2020, 117–126.
- ⁸⁷ For lower dates of the beginning of Middle Bronze I corresponding to the early Twelfth Dynasty see Cohen 2012; 2017.
- ⁸⁸ Oren and Yekutieli 1990; Yekutieli 2002.