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The Architectural Bias in Current Biblical Archaeology

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Abstract

This paper aims at highlighting a methodological flaw in current biblical archaeology, which became apparent as a result of recent research in the Arava's Iron Age copper production centers. In essence, this flaw, which cuts across all schools of biblical archaeology, is the prevailing, overly simplistic approach applied to the identification and interpretation of nomadic elements in biblical-era societies. These elements have typically been described as representing only one form of social organization, which is simple and almost negligible in historical reconstructions. However, the unique case of the Arava demonstrates that the role of nomads in shaping the history of the southern Levant has been underestimated and downplayed in the research of the region, and that the total reliance on stone-built archaeological features in the identification of social complexity in the vast majority of recent studies has resulted in skewed historical reconstructions. Recognizing this “architectural bias” and understanding its sources have important implications on core issues in biblical archaeology today, as both “minimalists” and “maximalists” have been using stone-built architectural remains as *the* key to solving debated issues related to the geneses of Ancient Israel and neighboring polities (e.g., “high” vs. “low” Iron Age chronologies), in which—according to both biblical accounts and external sources—nomadic elements played a major role.

Keywords

biblical archaeology – Edom – Genesis 36 – nomadism – tribal kingdoms – state formation – Iron Age – Faynan (Punon) – Timna – copper production – Arava Valley – Ancient Israel – United Monarchy

So when all Israel saw that the king hearkened not unto them, the people answered the king, saying, What portion have we in David? neither have we inheritance in the son of Jesse: to your tents, O Israel: now see to thine own house, David. So Israel departed unto their tents.

1 KINGS 12:16



While the challenge of identifying tents and other remains of nomadic groups in the archaeological record has long been recognized in the archaeological research of the southern Levant,¹ new evidence from the Aravah Valley suggests that attempts to cope with this challenge and address historical issues related to nomadism have been flawed in current biblical archaeology. By providing compelling evidence for a centralized and powerful early Iron Age nomadic kingdom, the case of the Aravah demonstrates that most studies dealing with nomads in the Late Bronze and Iron Ages in the southern Levant have underestimated the level of social complexity that nomadic societies could have achieved and misevaluated their possible historical impact. The case of the Aravah is unique, as it is the only instance so far in southern Levantine archaeology in which nomads left remains that enabled their study in high resolution; as will be detailed below, this was the result of their engagement in copper production, with mines that scarred the landscape and smelting activities that produced rapidly-accumulated mounds of industrial debris mixed with materials of daily life. Indeed, it seems that the shortcomings in dealing with nomads in biblical archaeology are first and foremost the result of the archaeological invisibility of these societies, although other factors, such as a deficiency in the application of relevant theoretical frameworks and misuse of ethnographic references—notably the common comparison to the Bedouins of the modern era—should also be considered.

In order to highlight and better define the methodological and interpretative problems in the treatment of nomads in current biblical archaeology,

1 See e.g., Finkelstein and Perevolotsky; and Finkelstein 1992. Although it might be possible to detect the presence of nomads in the archaeological record by specifically-designed research (see in particular Rosen, pp. 53-70 and references therein), an in-depth study of their social organization and other aspects of their history is remarkably difficult in comparison to sedentary societies. Moreover, it should be noted that such research has not been an integral part of the common archaeological work in the southern Levant, and has rarely been conducted in regions other than the central Negev in modern day Israel.

this paper presents the new evidence from the Aravah and its interpretation, including arguments in support of its association with early Edom. The evidence from the Aravah is contextualized within a wider anthropological and historical frame in order to evaluate the possible role of nomads in shaping the history of the region. This is followed by a discussion of selected current studies that exemplify the prevailing simplistic approach towards the identification of social complexity in societies with non-sedentary components. The paper is concluded with an attempt to track the possible origin of the methodological flaw, which seems to be rooted in the history of biblical archaeology, and in particular in its relation to biblical criticism.

The scope of this paper does not allow for a detailed discussion of the biblical accounts related to early Edom; however, the new understanding of the “archaeological Edom” as a powerful tribal kingdom that preserved its semi-nomadic (and agro-pastoralist) way of life for several centuries, provides a fresh background for evaluating these accounts, and in particular the one in Genesis 36, which most scholars agree contains authentic materials on Edom before the days of David.² For example, the list of kings who ruled in Edom “before any Israelite king reigned” (Genesis 36:31), reflects a non-dynastic monarchy whose geographic center of power shifted constantly, a mode of kingship that fits a nomadic tribal kingdom much better than a sedentarized one.³ Furthermore, the biblical accounts themselves indicate that tent-dwelling was practiced by the Edomites well into the 9th century BCE (2 Kings 8:21); this fits well the archaeological evidence for a rather late sedentarization of the Edomites (more below).

1 Recent Discoveries in the Aravah Valley

The history of archaeological research on the two major ancient copper ore districts of the southern Levant—Faynan and Timna—is a remarkable lesson in the fluidity and fragility of archaeological interpretations.⁴ While the mines and smelting sites in both areas were first dated to the era of King Solomon and

2 The literature on this account is vast. See for example Avishur; Bartlett.

3 Contrasting nomadism and monarchy is so rooted in biblical archaeology (and biblical criticism) that this by-default assumption is often not even explicitly expressed, let alone questioned (see for example the title of the book *From Nomadism to Monarchy* regarding Ancient Israel [Finkelstein and Na’aman]). The present paper questions this prevailing assumption and suggests an alternative view (see also Ben-Yosef, in press).

4 For a detailed overview of the history of research, see Levy et al., 2014b (Faynan); Ben-Yosef, 2018 (Timna); Bimson and Tebes (Timna).

considered to be a major contributor to the wealth of the United Monarchy,⁵ modern research conducted during the second half of the 20th century completely overturned this view. In Faynan, which is situated just below biblical Bozrah (less than 20 km as the crow flies), the results of Crystal Bennett's extensive excavations in the Edomite Plateau implied a late Iron Age date for the main activities at the mines and their direct connection to the interests and involvement of the Assyrian empire in the region.⁶ In Timna, on the other hand, the discovery and excavations of the Hathor Shrine (Site 200) resulted in dating the main activities in the valley almost exclusively to the Late Bronze Age (late 14th–mid 12th centuries BCE), and their attribution to the initiative and control of the Egyptian New Kingdom.⁷ Consequently, while in both areas models related to external imperial powers were applied for explaining the social organization behind the massive exploitation of copper, the archaeology of the northern and southern Aravah was separated by ca. 500 years.

This shift in the interpretation of the Aravah copper mines might not be surprising given the overwhelming archaeological record of mining and smelting activities in Faynan and Timna. While both the British research on the Edomite Plateau and Rothenberg's research in Timna intentionally avoided using the Old Testament as a background to archaeological interpretations—in accord with the increasing awareness of biblical criticism in these decades—attributing the successful and intensive exploitation of copper in the logistically challenging region of the Aravah to external, historically documented supra-regional powers was almost an explanation by default. In Timna, the growing evidence for the enormous efforts invested in the copper production enterprise reinforced this interpretation to the level of a research paradigm, which dictated every aspect of the studies conducted by Rothenberg and the Aravah Expedition for decades.⁸

5 See e.g., Glueck; Albright, pp. 127–128.

6 See e.g., Bienkowski, 1990; Finkelstein and Silberman, pp. 174–5.

7 See e.g., Rothenberg.

8 On the “Egyptian paradigm” in the research on Timna see recently Yagel et al.; between 1970 and 2012 this paradigm was so dominant that contradicting evidence was suppressed and overlooked (cf., Ben-Yosef et al., p. 743). The confusion in the dates of the mines and smelting camps of Timna should be understood against the quality of this archaeological record, which is fundamentally different than the typical record of Late Bronze and Iron Age sites in the settled regions (cf., Ben-Yosef et al., 2008; Peters et al., 2017): Dateable material culture is almost entirely absent in the mines, the ceramic assemblages in the smelting camps are slim and the pottery types have many local attributes that hamper (relative) dating by comparison to the southern Levantine typological sequences (which were established in sites located hundreds of kilometers away). Thus, it is not surprising that the discovery of the Hathor Shrine and the inscriptions bearing the names of 19th and 20th Dynasties pharaohs,

However, recent systematic research in the Aravah resulted, once again, in a fundamental revision of the interpretation of the archaeological record of the mining districts.⁹ While evidence for large scale production—which had to have been orchestrated by a centralized power—continued to accumulate in both Faynan and Timna,¹⁰ hundreds of new radiocarbon dates demonstrated that the main production phase in both copper ore districts started *after* the Egyptians had left the region in the second half of the 12th century BCE, and lasted until no later than the second half of the 9th century BCE.¹¹ This new chronological framework, which leaves the intensive copper production of the Aravah without empires in the background, necessitated a reevaluation of the social models used to explain the archaeological record. Based on various aspects of the evidence from Faynan and Timna, the simplest new model includes a reconstruction of a local, nomadic or seminomadic¹² tribal society that achieved a state-level organization in the early Iron Age.¹³ This polity, which should be identified with the Edomite kingdom (below), controlled the entire Aravah Valley¹⁴—and probably also the adjacent regions to the east

which indeed testify to an Egyptian imperial involvement in the Late Bronze Age, overshadowed any contrasting evidence available at the time (cf., Ben-Yosef et al., 2012, pp. 60-62).

- 9 For the results of the most recent research on Iron Age Faynan see Levy et al. 2014c; Levy et al., 2012 (and see also Hauptmann; Mattingly et al.). For the main results of recent research on Iron Age Timna see Ben-Yosef et al., 2012; Ben-Yosef, 2016; Ben-Yosef, 2018.
- 10 See, for example, Ben-Yosef et al., 2009; Ben-Yosef, 2010; Ben-Yosef et al., 2010; Sapir-Hen and Ben-Yosef, 2014; Levy et al. 2014c; Sukenik et al.
- 11 See, in particular, Levy et al., 2008; Ben-Yosef et al., 2012.
- 12 Seminomadism in this case refers to the possibility that in addition to pastoralism, the early Iron Age society of the Aravah engaged in agriculture, while migrating seasonally from their base in the lowlands of Faynan to the Edomite Plateau where arable land and favorable climate allow the cultivation of crops on a relatively large scale. As shown by Knabb (pp. 232-233) and Mattingly et al. (pp.282-285), the early Iron Age agro-pastoral society of the Aravah most probably practiced agriculture in the oases of Faynan itself; given this evidence, it is likely that at least some of the thousands of undated terraces on the slopes of the plateau to the east of Faynan represent early Iron Age agricultural activities, as might be indicated by early Iron Age ("Iron I") pottery found in many locations there (Finkelstein, 1992a). Incidentally, the debate over the chrono-typological identification of these sherds (Bienkowski, 1992; Finkelstein, 1992b) is yet another manifestation of architectural bias, as the controversy stems from the sherds not being associated with sedentary settlements or well-defined stratigraphic contexts from sites with stone-built architecture (thus, according to Bienkowski, an Iron I phase cannot be securely identified in the region and an Edomite polity could not have existed before the late 8th century BCE).
- 13 For an early suggestion see Levy et al., 2004; Levy, 2009.
- 14 For the social unity of Timna and Faynan in the early Iron Age see in particular Ben-Yosef, 2010.

(the Edomite Plateau)¹⁵ and west (the Negev Highlands)¹⁶—from its center in Faynan, where perennial water sources and cultivable land allowed the intensive occupation of a large group of people.¹⁷

The early Iron Age polity of the Aravah was based on a tribal, agro-pastoralist nomadic society that dwelt in tents in the vicinity of the mines and smelting camps. The remains of these tents were partially documented in Faynan, in surveys that were specifically designed for this purpose;¹⁸ however, it is reasonable to assume that the lion's share of such remains was entirely washed away by massive floods,¹⁹ and thus even if such surveys were more comprehensive, they would still provide only fragmentary information. The smelting sites, on the other hand, were not used for dwelling.²⁰ With some exceptions related to defense and manifestation of power,²¹ these sites were dedicated predominantly to industrial activities, which are reflected by various metallurgical installations (some of which are stone-built) and large mounds of copper production debris. These remains, which are concentrated in designated sites that were continuously used for several generations,²² together with the archaeology of the mines, allow the investigation of a nomadic society in resolution that is unachievable in studies of typical archaeological records of ancient nomads.

The results of various new studies on different aspects of the material culture excavated in the copper smelting sites indicate that the early Iron Age society

15 See Finkelstein, 1992a; and footnote 12 above.

16 This possibility is strengthened by Martin et al.'s recent discovery of slag inclusions in pottery from contemporaneous Negev Highland sites.

17 See Ben-Yosef, 2012.

18 See Knabb et al.; note that even when tent remains were documented, their dating was extremely challenging.

19 Mega-floods occur in the region every several decades or more, resulting in the flooding of wadi plains far above the wadi channels (beds). Given the rarity and unpredictability of these floods and the constant movement of the population, it is likely that the common practice of setting up tents did not take into account such events; for geomorphological evidence and a detailed review of this phenomenon with further references see recently Ginat et al.

20 See for example Kleiman et al.

21 Most notable are structures at Khirbat en-Nahas in Faynan (Levy et al., 2014e), which include a 10th century BCE fortress and several 10th–9th centuries BCE “administrative” buildings. It is assumed that in addition to their industrial function the smelting sites were used as administration hubs from which the entire copper production enterprise was managed, and where the ruling elite (which was closely associated with the highly skilled metalworkers) resided (cf., Ben-Yosef, 2016); the defended sites were probably also used as strongholds for the greater population in times of war.

22 This is in contrast to the archaeology of tents (the main detectable feature of nomadic societies), which is based on remains that are spread over vast areas and lack any substantial accumulation of waste, the fundamental substance of archaeological investigations.

operating the mines was centralized and hierarchical, and its social complexity was at a level that can be attributed to an early state.²³ This interpretation is minimalistic, given that until recently the same archaeological record was attributed to empires (above), the importance of copper in the regional and global economy of the early Iron Age,²⁴ and the logistical and organizational efforts required for a successful operation in the scale evident by the mines and smelting sites.²⁵ That said, the new studies have provided additional and *direct* evidence for the social organization of the people operating the mines.

Substantial new data were obtained from careful stratigraphic excavations in the mounds of copper production debris (“slag mounds”) in Faynan and Timna. These mounds, which represent a constant and rather fast accumulation of material culture,²⁶ enabled a detailed investigation of the industry

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- 23 Definitions of a ‘state’ proliferate in the anthropological and archaeological literature (see a recent overview in Scheidel), and here we follow Claessen and Skalnik, according to whom the mechanism of maintaining dominance by the ruling class in an early state is based on a common ideology “of which reciprocity is the basic principle.” It is beyond the scope of the present paper to discuss in detail the various definitions of states and their applicability to the case at hand. However, it is important to note that the archaeological record of the Aravah reflects the principal components of all of the common definitions, and in particular those which stem from the seminal work of Max Weber; the existence of an elite who successfully maintained the social order by mechanisms of coercion is evident by the mere fact that the copper production enterprise was successful and sustainable (yet, see below for additional supporting evidence). It is possible that a mechanism of “coercion by physical means” was a core component in the emerging political organization in the Aravah, as was assumed to be the case for the Egyptian and Assyrian involvement in earlier models that explained the same archaeological record (although here excluding the possibility that the local population perceived this type of coercion as legitimate); however, at the moment the model of an early state—which is less socially dichotomous—seems more applicable to the organic development of a state based on a coalition of autochthonous tribes (cf., Schloen for a possible, more specific, model based on the function of the patrimonial household in obtaining and maintaining political legitimacy).
- 24 Copper extraction was one of the most lucrative industries of the time, supplying raw material for the production of weapons, agricultural tools and objects of cult and prestige. It seems that the introduction of iron, which became widespread in the southern Levant not before the 10th or 9th centuries BCE (Yahalom-Mack and Eliyahu-Behar), had little effect, if any, on the status of the copper industry; for many uses of copper iron is not a suitable substitute, and copper continued to be a highly desired commodity during the entire Iron Age (and in fact, throughout antiquity).
- 25 These include dozens of smelting sites in Faynan and Timna (with over 100,000 tons of slag in Faynan alone), and thousands of prospection and mining shafts, up to 70 m deep; see in particular Hauptmann, p. 147, 153; Ben-Yosef et al., 2009; Conrad and Rothenberg.
- 26 This is best exemplified by the large slag mound at Khirbat en-Nahas, Area M, whose excavations from topsoil to bedrock revealed more than six meters of fine layers that represent

and the society behind it through time; for example, analyses of technological waste reinforced previous observations on the advancement and sophistication of the early Iron Age smelting technologies,²⁷ and revealed a major technological leap in the second half of the 10th century BCE.²⁸ Moreover, the new chronological frameworks of Faynan and Timna were based primarily on information from these mounds: the results of radiocarbon analyses of numerous charcoal and other organic samples from excavations of the stratified production debris demonstrated that the industry reached its peak during the 10th century BCE in Timna and the 10th–9th centuries BCE in Faynan.²⁹ In addition to the rich deposits of copper smelting debris, important information on the structure of the early Iron Age society of the Arava is based on other features present at the smelting sites and in the landscape of the copper mining districts, and on the record of the mines themselves; all of which provide further support to the reconstruction of a stratified (hierarchical) society.³⁰

Within the unique case of the early Iron Age Arava, where the engagement in copper production rendered a nomadic society highly archaeologically-visible, the archaeological record of Timna represents an even more exceptional situation, as the extraordinarily preserved organic materials there open a window into various aspects of past societies that are rarely represented in

in detail four centuries of copper production and related activities; see Levy et al., 2014e, pp. 136–155; Levy et al., 2008; Ben-Yosef, 2010.

- 27 The highly advanced early Iron Age smelting technologies were the “High Tech” of the time; based on tapping techniques and skillfully designed installations, these technologies reached a zenith in the late 10th century BCE, with achievements parallel to the technologies of the Roman and Early Islamic periods. See in particular, Ben-Yosef, 2010; Ben-Yosef and Levy.
- 28 This major technological transition, which was also associated with reorganization of the entire industry and the introduction of domesticated camels for improving desert transportation, is probably related to the effects of the Egyptian campaign to the region in the days of Pharaoh Shoshenq I (biblical Shishak). See in particular Sapir-Hen and Ben-Yosef, 2013; Levy et al., 2014a; Levy et al., 2014d; Ben-Yosef and Levy; Ben-Yosef, 2010; Ben-Yosef et al., 2010; Fantalkin and Finkelstein.
- 29 See for example, Levy et al., 2014a; Ben-Yosef, 2016; Finkelstein and Piasezky.
- 30 For a summary of the evidence from Faynan and a detailed discussion see in particular Levy et al., 2014a (note especially the “elite residences” found at Khirbat en-Nahas). In Timna, it is worth noting some examples, including the fortress at Yotvata (Meshel) and an interesting system of “surveillance” posts identified at the mines and interpreted as representing a state mechanism of exerting control by the ruling elite (Yekutieli and Cohen-Sason; although these posts were published as “Egyptian” based on the accepted dates of the smelting camps at the time, they should now most probably be dated to the early Iron Age).

the archaeology of the southern Levant, including other desert sites.³¹ These materials include dozens of textile fragments, basketry and cordage, thousands of uncharred seeds, many pieces of leather, substantial assemblages of animal bones, animal dung, and other materials on the microscopic scale such as pollen. Several new studies on the organic materials from Timna provide evidence of a stratified society, whose elite had access to the finest textiles³² and exceptionally rich foods,³³ some of which were brought to the valley by long-distance trade with the Mediterranean region.³⁴ Evidence for trade specifically with the southern Levantine Mediterranean coastal plain was recently obtained by analysis of the assemblage of early Iron Age fish bones from Timna, which surprisingly was not typical of the nearby Red Sea.³⁵ In addition, the considerable investment in the maintenance of a successful large-scale production in Timna, where the workers (estimated in the many hundreds or thousands) and livestock had to be constantly supplied with water and food, and the smelters with wood (charcoal),³⁶ clay, ore and flux,³⁷ ground stones³⁸ and other materials, is also reflected in the results of a recent study on the remains of donkey dung from a 10th century BCE stable in the gatehouse complex of Site 34. The analyses of pollen and seeds indicate that the donkeys, which were the main means of transportation at least up until the introduction of camels in the

31 Indeed, the preservation of organic materials in Timna is unparalleled in any of the other early Iron Age sites in the entire Levant. Even in other parts of the southern Levantine deserts, including Faynan and the Negev Highlands, the somewhat wetter climate did not allow the preservation of uncharred organic materials. For the extremely arid climate of the southern Aravah see Bruins.

32 See Workman; some of the recently discovered textiles had patterns of red and blue, which were found to be the result of complex chemical dyeing with Mediterranean plants (identified as madder and woad, see Sukenik et al.).

33 See for example, Sapir-Hen and Ben-Yosef, 2014, who provide evidence of a differentiation in the quality of meat (goats and sheep) consumed by different groups of people at the smelting camp of Site 34 ("Slaves' Hill"). The evidence also suggests a close association between smelters and the ruling elite at the site.

34 These include, for example, grapes, figs, olives, barely, wheat, almonds and pomegranates, all of which could not be grown in Timna and could not have been easily cultivated in the Aravah oases (Ben-Yosef, 2016). It is possible that some of the supply originated from the Edomite Plateau above Faynan, where a narrow Mediterranean climatic 'strip' allowed the cultivation of such crops.

35 See Sapir-Hen et al.

36 On the question of the charcoal supply, see recently Cavanagh.

37 On the mines of Timna, see recently Smitheram.

38 On the ground stones of Timna, see Greener and Ben-Yosef.

second half of the 10th century BCE,³⁹ were fed with hay and grape pomace that were also brought to Timna from the Mediterranean region.⁴⁰

The engagement in copper production undoubtedly placed the geographically peripheral polity of the Aravah as a major player in the history of the entire southern Levant and beyond. Bronze artifacts from Iron I settlements in Canaan, from Tel Dan in the north to Giloh in the vicinity of Jerusalem in the south, were found to be made exclusively from the Aravah copper,⁴¹ and it is assumed that the Aravah was *the* source of this metal to the emerging and constantly embattled local Iron Age polities.⁴² That said, a recent study demonstrated that during the 10th and 9th centuries BCE the Aravah copper reached far beyond the local markets, and at least as far as Greece.⁴³ Indirect evidence suggests that Egypt was also an important consumer of Aravah copper at this time,⁴⁴ and it is reasonable to assume that other substantial markets will be identified in the future, as more analytic studies on metal artifacts become available.

Finally, it should be stressed once again that the ever-growing archaeological evidence in support of a powerful *nomadic* kingdom in the early Iron Age Aravah is merely the result of the exceptional archaeological record there. Had the economy of this kingdom been based on anything other than copper, including agriculture and trade, it would have been inconspicuous in common archaeological research, even if its historical significance was substantial. In such a hypothetical case, if some stone-built features were to be identified in the archaeological record, the existence of “communities” or some other sort of simple social organization would have probably been argued by the archaeologists; otherwise, it is most likely that simple forms of nomadic society or even an occupational gap would have dominated historical reconstructions of the Aravah in the early Iron Age, resulting in a completely different understanding of early Edom.

39 See Sapir-Hen and Ben-Yosef, 2013.

40 See Ben-Yosef et al., 2017.

41 See Yahalom-Mack and Segal.

42 See for example Finkelstein and Piasezky; Finkelstein and Lipschits; Yahalom-Mack et al., pp. 174-175.

43 See Kiderlen et al.; the evidence, which attests to “a well-organized Levantine—Aegean copper trail,” is based on copper tripod cauldrons from Olympia and Delphi. Incidentally, it seems that the prosperity of Philistia and especially that of the urban center of Gath, which started already in the 11th century BCE, is directly related to the copper trade, whose most important outlet was the Philistine coastal plain; see discussion in Ben-Yosef and Sergi.

44 See discussion in Ben-Yosef and Sergi.

1.1 *The Genesis of Edom—a Brief Outline for the Emergence of a Nomadic Kingdom*

The identification of the early Iron Age archaeological record of the Aravah as the remains of the early Edomite kingdom is based on several arguments related to the material culture of the Aravah sites⁴⁵ and historical sources.⁴⁶ In that regard, it is important to note that the relevant historical and biblical sources allow, if not support, the emergence of Edom in the geographical area of the Aravah,⁴⁷ and that there is no basis for the prevailing notion that the core of Edom was in the area called *today* the Edomite Plateau already in its early days.⁴⁸ Based on this identification and the results of the recent studies in the Aravah (above), it is now possible to suggest a revised model for the genesis of Edom,⁴⁹ which reflects and explains the process of a nomadic society's evolution into a kingdom *prior* to its sedentarization.

The consolidation of local tribes⁵⁰ into a centralized political entity and the development of political institutions were probably facilitated by the Egyptian involvement in the Aravah copper industry during the 13th and first half of the 12th centuries BCE.⁵¹ In this early phase, which occurred around the mines of Timna and probably was an offshoot of the more elaborate and extensive

45 See in particular Smith and Levy, p. 85 (pottery); Ben-Yosef, 2010, p. 959 (metallurgical traditions).

46 The region was referred to as “Edom” as early as the 13th century BCE (Kitchen) and the people inhabiting it as “Edomites” not later than the late 9th or early 8th centuries BCE (Millard); thus, identifying the society reflected by the early Iron Age archaeology of the region as Edom is evidently the simplest interpretation (cf., Mazar, 2014, p.365). In fact, referring to this society in ostensibly ‘neutral’ (i.e., not biblical) terms such as a “desert polity” (Finkelstein and Piasezky), or the “Tel Masos Chiefdom,” (Fantalkin and Finkelstein, p. 33; cf. “Tel Masos formation” in Finkelstein, 2014), inflicts more interpretative difficulties, as it implies a population shift in the transition between the early Iron Age and the late 9th century BCE, when Edomite presence in the region is attested in an extra-biblical source.

47 See Bartlett; Edelman; Rainey and Notley; Zucconi.

48 This prevailing notion, which probably is the background for some scholars' preference to use ‘neutral’ terms to describe the Aravah polity while detaching it from the history of Edom (see Tebes and f.n. 46 above), is a bias stemming from an early misperception in the history of research in the region; see discussion in Zucconi.

49 For earlier models, see in particular Bartlett; Edelman (ed.); Knauf; LaBianca and Younker; for more recent models based on the new finds in the Aravah see Levy, 2004; Levy et al., 2014a; Mazar, 2014 pp. 365-367. The current model is elaborated on in Ben-Yosef, in press; there I also discuss the possibility that the lack of any explicit biblical reference to Edomite copper is a deliberate omission done in the redaction process, when Edom was abhorred and could not have been connected to a metal that had sacred qualities.

50 Possibly the “Shasu of Edom” mentioned in Egyptian sources, see Levy et al., 2004.

51 Ben-Yosef, 2018; Yagel et al.

Egyptian enterprise in the copper and turquoise mines of southern Sinai, the local nomadic population of the southern Aravah region was harnessed by the Egyptian expeditions as part of their efforts to obtain copper.⁵² However, it is not clear to what degree the Egyptians were involved in the actual orchestration of the industry,⁵³ and it is possible that they took advantage of an already existing polity of some sort, which, by virtue of not previously engaging in copper production, is unknown to us in the archaeological research (the region is described as being “empty” during the centuries preceding the Egyptian-propelled copper production). In any case, the engagement in the challenging (and profitable) task of copper production certainly contributed to the evolution of the local Aravah polity, which became most powerful *after* the Egyptian withdrawal. At that time the scale of production increased, and the tribes of the entire Aravah and neighboring regions formed a strong coalition in order to exploit the ore bodies more efficiently, to facilitate trade and to better protect the sensitive enterprise.⁵⁴ As part of these changes the center of the emerging kingdom shifted to Faynan, where enormous smelting sites were established near the permanent water sources, and a central cemetery was founded.⁵⁵

In contrast to other cases of nomadic kingdoms in history (below), the prosperity of the early Edomite kingdom did not prompt substantial sedentarization, a process that took place in Edom during the 8th century BCE, several decades after the large-scale copper production ceased in the second half of the 9th century BCE.⁵⁶ This ‘delayed’ sedentarization might be explained by the all-encompassing engagement of the Edomite tribes in the vast system of copper production, which required seasonal movement of large groups of

52 This is evident in the ceramic assemblages: petrographic studies (for example, Glass; Slatkine) demonstrated that most of the pottery was produced locally in the southern Aravah (probably at the vicinity of the permanent water sources there), and that foreign pottery constitutes only a minor component. The latter includes pottery from the Hijaz (the so-called “Midianite Pottery” or Qurayyah Painted Ware, see a recent overview by Intilia), whose appearance in the copper production sites probably reflects the presence of skilled metalworkers who possessed the ‘know-how’ of the sophisticated smelting technology (rather than trade; see recently Kleiman et al. pp. 257-258).

53 For example, see Avner, who suggests that the Egyptians were merely clients of a locally-organized (and controlled) industry.

54 On the vulnerability of large-scale metal production systems see Ben-Yosef et al., 2009. The main evidence for military threats in the Aravah, including stone-built fortifications, is dated to the 10th century BCE; see most recently Ben-Yosef et al., 2017.

55 The cemetery includes more than 1000 stone-built cist graves dated to the 11th–10th centuries BCE; see Beherec et al.

56 In fact, Edom was the latest to sedentarize among its neighbors, including Israel and Moab; see LaBianca and Younker.

people and transient encampments in inhospitable regions (such as Timna); for that, keeping a nomadic way of life was certainly advantageous.

The emergence of Edom, like the other southern Levantine polities, should be understood against the background of the political vacuum in the region following the collapse of the Late Bronze Age empires and “international” trade systems.⁵⁷ For Edom, the latter was crucial, as the break in the Cypriot copper flow created an unprecedented opportunity for the local tribes to make immense profit by producing copper for the starving local and global markets. The reestablishment of Cypriot hegemony over the Eastern Mediterranean copper production and trade, which was probably facilitated by the Aramaeans, was one of the main reasons for the end of the Arava copper industry.⁵⁸ As a consequence, the main economy of Edom shifted to the Arabian trade, which probably began already in the 10th century BCE, while the copper industry was thriving.⁵⁹ Incidentally, several centuries later, this trade propelled the emergence of another desert polity—the Nabataean kingdom (and it is worth noting that while also based on a strong coalition of tribes led by kings, its early nomadic phase is not known to us in the archaeological record).⁶⁰

2 A Comment on Nomadic States in History

A thorough discussion of the anthropology of nomadic societies is beyond the scope of the present paper; however, it is important to note that the case of the early Iron Age nomadic kingdom of the Arava certainly does not stand alone in history. As stressed above, archaeology is not pertinent to the search of similar examples, as except in rare cases of unique circumstances, it is difficult to identify nomads in common archaeological practice, let alone to study

57 See e.g., Ward and Joukowsky; Cline.

58 See Ben-Yosef and Sergi.

59 See Namdar et al.

60 The Nabataeans probably represent another case of a nomadic kingdom, with historical references to kings dated to the 3rd century BCE (Graf) and other evidence for their strong geopolitical influence as early as the 4th century BCE (Pearson), far before the accepted date of their sedentarization in the early 1st century BCE. Note that Graf uses the 3rd century references to Nabataean kings to support his claim for a yet-to-be-archaeologically-discovered earlier sedentarization process. However, presupposing that the presence of kings necessitates a settled society exemplifies the prevailing flat perception of nomads among western scholars, rather than being based on any strong evidence; ironically, such an approach still echoes the disparaging description of the Arabian nomadic tribes by ancient Greek historians, a “western bias” which Graf himself identifies.

the structure of their society and to assess their social complexity.⁶¹ On the other hand, ethnography and textual evidence provide ample descriptions of nomadic societies, and although the typical and most common examples indeed attest to a simple form of social organization,⁶² there are exceptions. One of these is the well-documented case of the Mongol Empire, which started as a coalition of nomadic tribes under the strong leadership of Genghis Khan in the early 13th century CE.⁶³ This case is particularly informative in regard to the main argument of the current paper, as it demonstrates the failure of archaeology to reflect complex social organization of a society based on nomads; until recently, the early stages of the Mongol Empire were not recognized in the archaeological record, and even after concentrated research efforts our archaeological knowledge derives almost exclusively from graves and stone-built fortifications.⁶⁴

Among the other examples of complex nomadic societies, the most relevant to the case at hand might be the Nabataean Kingdom mentioned above,⁶⁵ the nomads of northern Mesopotamia in the Old Assyrian and Old Babylonian periods,⁶⁶ and the case of “seminomadic agropastoralists” of Elam.⁶⁷ In all three cases, no less informative than the evidence itself is the scholarly discussion surrounding it, which is imbued with preconceptions and assumptions based on “the skewed and biased ancient literature [in regard to nomads] and some twentieth century ethnographic views of nomads in relation to powerful nation-states,”⁶⁸ resulting in a tendency to underestimate the complexity of these societies or to belittle their role in history.⁶⁹ Nevertheless, the evidence at the core of these cases does support the existence of complex nomadic societies that formed important and influential polities.

61 In turn, this difficulty must have affected to some degree anthropological models of nomadism, as those are based on archaeology for their past perspective (for example, Bar-Yosef and Khazanov).

62 See Khazanov.

63 On the Mongol Empire and other nomadic states of the Central Asian steppes see for example Barfield.

64 See in particular Kradin et al.; it is interesting to note that stone-built fortifications were used also by the nomadic kingdom of Edom (cf., Ben-Yosef et al., 2017).

65 See f.n. 60.

66 Evidence for a relatively advanced social organization might be provided in the “Assyrian King List,” whose early kings are described as those “who dwelled in tents” and at least the latest are accepted to be historical figures (Veenhof), and texts from the archive of Mari (19th-18th centuries BCE, see Durand; Matthews; Kupper).

67 Alizadeh.

68 Alizadeh, p. 353; cf. Potts.

69 Alizadeh.

3 Examples of Architectural Bias in Recent Studies

The identification of a nomadic kingdom in the early Iron Age Aravah (biblical Edom) has far reaching implications on the archaeology of this period in other parts of the southern Levant, and in particular on the way the archaeological evidence is translated into social realities and historical reconstructions. In light of the above, it becomes evident that the prevailing methodology is flawed, and that the nomadic components were misidentified or misinterpreted by biblical archaeologists. This flaw can be described as an “architectural bias,” which is essentially the overemphasis given to stone-built features in the identification of social complexity, geopolitical power, and historical role of biblical-era societies. In fact, this bias is so rooted in current biblical archaeology that it is probably the main reason why the debate over the chronology of the early Iron Age has been so heated and dominated the research over the last twenty years.⁷⁰ The important archaeological observations of Finkelstein on the stratigraphy of Megiddo and his consequential suggestion for a “low” chronology have started the debate, and as both “maximalists” and “minimalists” rely heavily on architectural remains to assess social complexity, enormous efforts have been invested in dating contexts with substantial stone-built features by scholars from both sides. Inadvertently, the debate and the focus on the chronological placement of architectural remains have deepened the reliance on stone as *the key* for assessing the strength, size, geopolitical impact and even mere existence of biblical-era kingdoms, and in turn for “solving” questions related to the historicity of the biblical accounts.

An example of the architectural bias in the archaeological research on the Aravah and early Edom is the debate over the date of the large fortress at Khirbat en-Nahas in Faynan.⁷¹ While the new early Iron Age dating of the enormous slag piles was accepted without difficulties by all scholars, the dating of the stone-built fortress to the 10th century BCE has been rejected by scholars who, while accepting the evidence of nomads engaging in smelting (though playing down the implications on social complexity), could not accept the possibility that they erected some stone-built walls as part of their defense and manifestation of power.⁷² The same scholars also adhere to the notion that

70 See e.g., Mazar, 2005.

71 Levy et al. 2018.

72 See e.g., Finkelstein, 2014, who dates the structure to the 7th century BCE and attributes it to the Assyrians. It is interesting to note that the fortress, while massive, is empty of inner structures or any stone-built dwelling compartments, strengthening the interpretation of its use by the Edomite nomadic kingdom during the 10th century BCE (and cf., f.n. 64 above).

control over the copper industry was exerted from Tel Masos, an idea that is solely based on the presence of large, early Iron Age stone-built structures at this site and goes against the ceramic evidence and other considerations.⁷³

The architectural bias is manifested to some degree in the vast majority of recent studies on the early Iron Age southern Levant; however, it is most apparent in the attempts to reconstruct the process of state formation in regard to Ancient Israel and its neighbors, as this stage in particular involves nomadic components that are, as emphasized above, inconspicuous in the archaeological record. Some examples include Bienkowski's reconstruction of the Edomite Kingdom,⁷⁴ Finkelstein and Lipschits' model for the genesis of Moab,⁷⁵ and Sergi's recent treatment of the emergence of Judah.⁷⁶ In all three cases, the nomadic component (i.e., the people who did not leave walls behind) is reduced to a single form of social organization that could not have formed any sort of political entity or had significant impact on the history of the region. The identification of territorial polities or kingdoms is based entirely on remains of permanent settlements, and the size of the walls is a simple proxy for the complexity of the society and its possible geopolitical impact.⁷⁷

4 Orientalism and Dearth of Theory

A survey of the history of biblical archaeology suggests that the architectural bias and misinterpretation of non-sedentary societies are predominantly the result of three factors: (1) the fundamental challenges in archaeology of nomadism, (2) a crucial deficiency in the application of anthropological-theory

73 See e.g., Finkelstein, 2014; and f.n. 46 above. For a discussion of the ceramic evidence, see recently Ben-Dor Evian; Tel Masos is located in the eastern Beer-sheba Valley, a region whose geography and history is distinctly separated from that of the Arava Valley and the Negev Highlands.

74 Among his many publications, see in particular Van der Steen and Bienkowski.

75 Finkelstein and Lipschits.

76 Sergi. On the possibility that the ancient Israelite society had substantial nomadic components even during the 10th century BCE, and the architectural bias in the study of the United Monarchy, see Ben-Yosef, in press.

77 In the case of Edom, the land is assumed to be empty prior to the establishment of Bozrah—with its walls and palaces—in the late 8th century BCE under the auspices of the Assyrian empire (and cf., Porter for a model of 'complex communities' based on limited architectural finds); in Moab, the establishment of a territorial polity is directly connected to the short-lived appearance of sites with stone-built fortifications at the late Iron I (what happened to it after these sites disappear?); and in the case of Judah, the dependency on the urban center of Jerusalem is at the core of the suggested model.

and pertinent ethnographic and historical parallels when interpreting such societies, and (3) a strong motivation by biblical archaeologists to place archaeology as a major player in biblical criticism, which has resulted in overplaying the capacity of archaeological research to serve as the ground truth for assessing the historicity of biblical texts.

The deficiency in the application of pertinent theoretical framework to the interpretation of nomadic societies is especially evident in Israeli and European archaeology, where the archaeological training is detached from the social sciences and anthropology and goes hand in hand with culture history (in contrast to the situation in North America).⁷⁸ This situation is even more acute in biblical archaeology, since biblical (Old Testament) studies—rooted in 18th and 19th century Europe—has suffered from orientalism and a romantic perception of the nomads of the East since its consolidation into a prominent research discipline in the corridors of German and other Western European universities.⁷⁹ Most influential were the “exotic” Bedouin tribes of the southern Levantine deserts, to which the nomads of the biblical-era were paralleled almost by default,⁸⁰ and whose way of life was used as a model for the nomadic components in the biblical narratives. In fact, the (still existing) allure of the orient and the highly accessible ethnographic information have rendered the use of Bedouin society as a direct equivalent to ancient nomads prevalent in all fields of Ancient Near Eastern studies, so much so that the Arabic term Bedouin has been used in modern scholarship to directly translate the word for nomads in ancient Akkadian texts,⁸¹ thus inadvertently *imposing* an interpretation which is based on one particular model of nomadism, which might not necessarily be applicable (above).

78 However, even prominent American biblical archaeologists basically ignore the possibility of exceptional cases of complex nomadic societies (e.g., Porter). It is evident, then, that also anthropological archaeologists often adhere to outdated rigid schemes of social evolution and definitions of civilization (for example, the four-fold classification of Elman Service and the Childean definition of a city, respectively), and thus exceptional cases are missed.

79 The output of biblical studies in its early days epitomizes the concept of *orientalism* as introduced by Said, with distortions and research biases stemming from the unconscious filters that afflicted western scholars and a scholarship centered around the west, glorifying its classical past and contemporary age (of enlightenment, in the case of the 18th century). For a detailed and informative recent study of one of the aspects of orientalism and German biblical scholarship in the late 18th century see Ilani.

80 See for example Wellhausen, who claimed that “without kingship the biblical *Bedouin* society could not have had *any* historical role.”

81 E.g., Durand.

Resorting to ethnography of the contemporary Bedouin society for extracting insights on the elusive nomads of the Bible is prevalent in current biblical archaeology. This might not be surprising given that the Bedouin tribes inhabit the same geographic region (although, based on the biblical narrative, the tribes of Israel dwelt *in tents* also in the heart of the mountainous regions of Canaan, places that were usually not occupied by the Bedouins); however, equating the early Iron Age nomadic tribes to the Bedouins results in the dismissal of the possibility that this period represents an exceptional case of a different, more complex, social organization of nomads (such as is now evident for the Aravah)—a possibility supported by the uniqueness of the period within the *longue durée* of the history of the land.⁸²

Finally, the challenges in archaeology of nomadism discussed above and the ambition to play an important role in biblical criticism are straightforward reasons for the architectural bias. The tendency in biblical archaeology to treat absence of evidence as evidence of absence (in the case at hand, of social complexity) should be expected, as doing otherwise would undermine the role of archaeology in the discourse of biblical scholarship.

5 Conclusions: Recognizing the Limitations of Archaeology

The recent archaeological research in the Aravah revealed a unique case of archaeologically-visible nomads dated to the early Iron Age. Copper production remains that until recently were attributed to empires are now understood to represent the early tribal kingdom of Edom. This kingdom was a coalition of nomadic or seminomadic tribes, centered around the mines and permanent water sources of Faynan (biblical Punon), and led by strong rulers—kings (and cf. Genesis 36).⁸³ Several different avenues of research have demonstrated that, notwithstanding its nomadic background, this kingdom was based on a complex, hierarchical and centralized society that was able to maintain an extensive industry whose products were recently identified as far as Greece.

The new insights from the Aravah indicate that the role of nomadic societies in shaping the history of the region has been underestimated by biblical

82 The major changes in Canaan that followed the collapse of the Late Bronze Age civilizations have been extensively discussed in the literature; they include a break in the long-lasting Egyptian hegemony over the region and a spell of exceptional aridity (Langgut et al.), which were both conducive to the accumulation of power by typically-marginal societies.

83 On the early Edomite “nomadic monarchy” see also Ben-Yosef, in press.

archaeologists. This is mainly the result of the challenges in properly identifying and characterizing nomads in the archaeological record, coupled with a flat view of nomadic social organization and an inadequate and unscrutinized use of Bedouin ethnography practiced by both archaeologists *and* biblical scholars. The misinterpretation of the nomadic components in biblical archaeology and the total reliance on stone-built features to assess social complexity—described here as the “architectural bias”—have had a fundamental impact on the attempts to assess the historicity of biblical accounts based on the archaeological record, evidently by generating a tendency towards minimalism. This is especially relevant to the constant efforts to understand the genesis of Ancient Israel and its neighboring kingdoms, as all of these polities had a tribal and nomadic background, which is well attested to in biblical and external accounts; these processes should now be reevaluated, in light of our new understanding of the *possible* complexity of nomadic societies at this particular time in the history of the southern Levant.

There are ways in which to better address issues related to biblical-era nomads and to correct their place in current biblical archaeology, including better integration of anthropological, ethnographic and historical comparative studies of nomadism as a complex and varied human phenomenon;⁸⁴ however, it is much more important to recognize and be wary of the limitations of archaeology in tackling questions related to such societies, and for biblical archaeologists to be more modest about their role in solving textual issues, especially those related to the non-sedentary components of the societies of the region.⁸⁵

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84 Such attempts were occasionally done in previous research; see for example Bodi, who compares David's stories to those of nomads in the Mari and Amarna texts in order to illuminate the process of tribal sedentarization.

85 Cf., Gottwald, p. 201; Na'aman; Japhet.

presented above are based on many years of field work in Faynan and Timna, and countless conversations with fellow staff members of both the Edom Lowlands Regional Archaeology Project (ELRAP) and the Central Timna Valley Project (CTV). Thus, thanks are also due to these individuals, who shared with me their enthusiasm for the exploration of the archaeology of the Arava and the people it represents. That said, it should be noted that I alone am responsible for the content of this paper and the conclusions presented above.

Works Cited

- Albright, W.F., *The Archaeology of Palestine* (Harmondsworth, Middlesex, 1949).
- Alizadeh, A., "The Rise of the Highland Elamite State in Southwestern Iran", *Current Anthropology* 51 (3) (2010), pp. 353-83.
- Avishur, I., "Edom", in F. Skolnik (ed.), *Encyclopedia Judaica* (2nd edn., 6; Jerusalem, 2007), pp. 151-58.
- Avner, U., "Egyptian Timna Reconsidered", in J.M. Tebes (ed.), *Unearthing the Wilderness: Studies on the History and Archaeology of the Negev and Edom in the Iron Age* (Leuven-Paris-Walpole, 2014), pp. 103-62.
- Bar-Yosef, O., and Khazanov, A., (eds.), *Pastoralism in the Levant—Archaeological Materials in Anthropological Perspectives* (Madison, 1992).
- Barfield, T., *The Perilous Frontier: Nomadic Empires and China, 221 BC to AD 1757* (Cambridge, 1992).
- Bartlett, J.R., *Edom and the Edomites* (Journal for the Study of the Old Testament, Supplement Series; Sheffield, 1989).
- Beherec, M., Najjar, M., and Levy, T.E., "Wadi Fidan 40 and mortuary archaeology in the Edom Lowlands", in T.E. Levy, M. Najjar, and E. Ben-Yosef (eds.), *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Los Angeles, 2014), pp. 665-722.
- Ben-Dor Evian, S., "Follow the Negebite Ware Road", in O. Lipschits, Y. Gadot, and M.J. Adams (eds.), *Rethinking Israel: Studies in the History and Archaeology of Ancient Israel in Honor of Israel Finkelstein* (Winona Lake, 2017), pp. 19-27.
- Ben-Yosef, E., *Technology and Social Process: Oscillations in Iron Age Copper Production and Power in Southern Jordan* (Ph.D. dissertation, University of California, San Diego, 2010).
- Ben-Yosef, E., "Environmental constraints on ancient copper production in the Arava Valley: implications of the newly discovered site of Khirbat Manaiyah in southern Jordan", *Tel Aviv* 39 (2) (2012), pp. 186-202.
- Ben-Yosef, E., "Back to Solomon's Era: Results of the First Excavations at Slaves' Hill (Site 34, Timna, Israel)", *Bulletin of the American Schools of Oriental Research* 376 (2016), pp. 169-98.

- Ben-Yosef, E., "The Central Timna Valley Project: Research Design and Preliminary Results", in E. Ben-Yosef (ed.), *Mining for Ancient Copper: Essays in Memory of Beno Rothenberg* (Tel Aviv, 2018), pp. 28-63.
- Ben-Yosef, E., "A False Contrast? On the Possibility of an Early Iron Age Nomadic Monarchy in the Arabah (Early Edom) and Its Implications to the Study of Ancient Israel", in O. Lipschits, O. Sergi, and I. Koch (eds.), *From Nomadism to Monarchy? "The Archaeology of the Settlement Period" Thirty Years Later* (Winona Lake, in press).
- Ben-Yosef, E., and Levy, T.E., "The material culture of Iron Age copper production in Faynan", in T.E. Levy, M. Najjar, and E. Ben-Yosef (eds.), *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Los Angeles, 2014), pp. 887-959.
- Ben-Yosef, E., and Sergi, O., "The Destruction of Gath by Hazael and the Arabah Copper Industry: A Reassessment", in I. Shai, J.R. Chadwick, L. Hitchcock, A. Dagan, C. McKinny, and J. Uziel, (eds.), *Tell it in Gath. Studies in the History and Archaeology of Israel Essays in Honor of Aren M. Maeir on the Occasion of his Sixtieth Birthday* (Münster, 2018), pp. 461-480.
- Ben-Yosef, E., Levy, T.E., and Najjar, M., "New Iron Age copper mine fields discovered in southern Jordan", *Near Eastern Archaeology* 72 (2) (2009), pp. 98-101.
- Ben-Yosef, E., Levy, T.E., and Najjar, M., "Ras al-Miyah Fortresses: New Discoveries at One of the Gateways to the Iron Age Copper Production District of Faynan", in F. Khraysheh (ed.), *Studies in the History and Archaeology of Jordan* (Amman, Jordan, 2009), pp. 823-42.
- Ben-Yosef, E., Langgut, D., and Sapir-Hen, L., "Beyond Smelting: New Insights on Iron Age (10th c. BCE) Metalworkers Community from Excavations at a Gatehouse and Associated Livestock Pens in Timna, Israel", *Journal of Archaeological Science: Reports* 11 (2017), pp. 411-26.
- Ben-Yosef, E., Shaar, R., Tauxe, L., and Ron, H., "A new chronological framework for Iron Age copper production in Timna (Israel)", *Bulletin of the American Schools of Oriental Research* 367 (2012), pp. 31-71.
- Ben-Yosef, E., Levy, T.E., Higham, T., Najjar, M., and Tauxe, L., "The beginning of Iron Age copper production in the southern Levant: new evidence from Khirbat al-Jariya, Faynan, Jordan", *Antiquity* 84 (325) (2010), pp. 724-46.
- Ben-Yosef, E., Tauxe, L., Ron, H., Agnon, A., Avner, U., Najjar, M., and Levy, T.E., "A New Approach for Geomagnetic Archaeointensity Research: Insights on Ancient Metallurgy in the Southern Levant", *Journal of Archaeological Science* 35 (2008), pp. 2863-79.
- Bienkowski, P., "Umm el-Biyara, Tawilan and Buseirah in Retrospect", *Levant* 22 (1990), pp. 91-109.
- Bienkowski, P., "The Beginning of the Iron Age in Edom: A Reply to Finkelstein", *Levant* XXIV (1992), pp. 167-69.

- Bimson, J.J., and Tebes, J.M., "Timna Revisited: Egyptian Chronology and the Copper Mines of the Southern Arabah", *Antiquo Oriente* 7 (2009), pp. 75-118.
- Bodi, D., *The Demise of the Warlord: A New Look at the David Story* (Sheffield, 2010).
- Bruins, H.J., "Desert Environment and Geoarchaeology of the Wadi Arabah", in P. Bienkowski and K. Galor (eds.), *Crossing the Rift: Resources, Settlements Patterns and Interaction in the Wadi Arabah* (Oxford, 2006), pp. 29-44.
- Cavanagh, M., Sustainability of an Industry on the Fringe: A Dendroarchaeological Investigation into Fuel Sources at the Iron Age Copper Smelting Sites of the Timna Valley (M.A. thesis, Tel Aviv University, 2016).
- Claessen, H.J.M., and Skalnik, P., "The early state: Models and reality", in H.J.M. Claessen and P. Skalnik (eds.), *The Early State* (The Hague, 1978), pp. 637-50.
- Cline, E.H., *1177 B.C.: The Year Civilization Collapsed* (Princeton, 2014).
- Conrad, H.G., and Rothenberg, B., (eds.), *Antikes Kupfer im Timna-Tal* (Bochum, 1980).
- Durand, J.-M., *Documents épistolaires du Palais de Mari, Tome II* (Paris, 1998).
- Edelman, D.V., "Edom: A Historical Geography", in D.V. Edelman (ed.), *You Shall Not Abhor An Edomite—Edom and Seir in History and Tradition* (Atlanta, 1995), pp. 1-11.
- Edelman, D.V., (ed.), *You Shall Not Abhor An Edomite—Edom and Seir in History and Tradition* (Atlanta, 1995).
- Fantalkin, A., and Finkelstein, I., "The Sheshonq I campaign and the 8th Century BCE earthquake: more on the archaeology and history of the south in the Iron I-IIA", *Tel-Aviv* 33 (2006), pp. 18-42.
- Finkelstein, I., "Edom in the Iron I", *Levant* xxiv (1992b), pp. 159-66.
- Finkelstein, I., "Stratigraphy, Pottery and Parallels: A Reply to Bienkowski", *Levant* xxiv (1992a), pp. 171-72.
- Finkelstein, I., *Living on the Fringe—The Archaeology and History of the Negev, Sinai and Neighbouring Regions in the Bronze and Iron Ages* (Sheffield, 1995).
- Finkelstein, I., "The Archaeology of Tell el-Kheleifeh and the History of Ezion-geber/Elath", *Semitica* 56 (2014), pp. 105-36.
- Finkelstein, I., "The southern steppe of the Levant ca. 1050-750 BCE: A framework for a territorial history", *Palestine Exploration Quarterly* 146 (2) (2014), pp. 89-104.
- Finkelstein, I., and Perevolotsky, A., "Processes of Sedentarization and Nomadization in the History of Sinai and the Negev", *Bulletin of the American Schools of Oriental Research* 279 (1990), pp. 67-88.
- Finkelstein, I., and Silberman, N.A., *David and Solomon—In Search of the Bible's Sacred Kings and the Roots of Western Tradition* (New York, 2006).
- Finkelstein, I., and Piasetzky, E., "Radiocarbon and the History of Copper Production at Khirbet en-Nahas", *Tel Aviv* 35 (2008), pp. 82-95.
- Finkelstein, I., and Lipschits, O., "The genesis of Moab: a proposal", *Levant* 43 (2) (2011), pp. 139-52.

- Finkelstein, I., and Na'aman, N., (eds.) *From Nomadism to Monarchy: Archaeological and Historical Aspects of Early Israel* (Jerusalem, 1994).
- Ginat, H., Meeshly, D., Avner, U., and Langford, B., "Evidence of past flood intensities in the Nahal Amram copper mines", in E. Ben-Yosef (ed.), *Mining for Ancient Copper: Essays in Memory of Beno Rothenberg* (Tel Aviv, 2018), pp. 188-98.
- Glass, J., "Petrographic Investigations of the Pottery", in B. Rothenberg (ed.), *The Egyptian Mining Temple at Timna. Researches in the Arabah 1959-1984* (London, 1988), pp. 96-113.
- Glueck, N., *The Other Side of the Jordan* (New Haven, 1940).
- Gottwald, N.K., "Rethinking the origins of Ancient Israel", in D.M. Gunn and P.M. McNutt (eds.), *Imagining Biblical Worlds* (Sheffield, 2002), pp. 190-201.
- Graf, D.F., "In Search of Hellenistic Petra", in T.E. Levy, et al. (eds.), *Crossing Jordan* (London, 2007), pp. 333-39.
- Greener, A., and Ben-Yosef, E., "The Ground-Stone Assemblage of a Metal Workers Community: an Unexplored Dimension of Iron Age Copper Production at Timna", *Journal of Lithic Studies* 3 (3) (2016), pp. 191-220.
- Hauptmann, A., *The Archaeometallurgy of Copper—Evidence from Faynan, Jordan* (Berlin, 2007).
- Ilani, O., *In Search of the Hebrew People* (Jerusalem, 2016).
- Intilia, A., "Qurayyah Painted Ware: A Reassessment of 40 Years of Research on Its Origins, Chronology and Distribution", in M. 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* (Budapest, 2016), pp. 175-255.
- Japhet, S., "The Bible and History", in L.I. Levine and A. Mazar (eds.), *The Controversy Over the Historicity of The Bible* (Jerusalem, 2001), pp. 84-89 (Hebrew).
- Khazanov, A.M., *Nomads and the Outside World (2nd Ed)* (Madison, 1994).
- Kiderlen, M., Bode, M., Hauptmann, A., and Bassiakos, Y., "Tripod cauldrons produced at Olympia give evidence for trade with copper from Faynan (Jordan) to South West Greece, c. 950-750 BCE", *Journal of Archaeological Science: Reports* 8 (2016), pp. 303-13.
- Kitchen, K.A., "The Egyptian Evidence on Ancient Jordan", in P. Bienkowski (ed.), *Early Edom and Moab—The Beginning of the Iron Age in Southern Jordan* (Sheffield, 1992), pp. 21-34.
- Kleiman, S., Kleiman, A., and Ben-Yosef, E., "Metalworkers' material culture in the early Iron Age Levant: The ceramic assemblage of Site 34 ("Slaves' Hill") in the Timna Valley, Israel", *Tel Aviv* 44 (2) (2017), pp. 232-64.
- Knabb, K., *Long-term socioeconomic strategies in ancient Jordan: rural perspectives from the Iron Age through the Roman Period* (Ph.D. dissertation, University of California, San Diego, 2015).

- Knabb, K., Jones, W.N., Najjar, M., and Levy, T.E., "Patterns of Iron Age mining and settlement in Jordan's Faynan district: The Wadi al-Jariya survey in context", in T.E. Levy, M. Najjar, and E. Ben-Yosef (eds.), *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Los Angeles, 2014), pp. 577-626.
- Knauf, E.A., "Edom: The Social and Economic History", in D.V. Edelman (ed.), *You Shall Not Abhor an Edomite for He is Your brother: Edom and Seir in History and Tradition* (Atlanta, 1995), pp. 93-117.
- Kradin, N.N., Kharinsky, A.V., Baksheeva, S.E., Kovychev, E.V., and Prokopets, S.D., "Archaeology of Genghis Khan Empire in Mongolia and Transbaikalia (in Russian)", in N.D. Russev (ed.), *Pax Mongolica and Eurasian Shocks in the 13th-14th Centuries* (Saint Petersburg – Kishinev – Odessa – Bucharest, 2016), pp. 17-43.
- Kupper, J.R., "Le rôle des nomades dans l'histoire de la Mésopotamie ancienne", *Journal of the Economic and Social History of the Orient* 2 (2) (1959), pp. 113-27.
- LaBianca, O.S., and Younker, R.W., "The Kingdoms of Ammon, Moab and Edom: The Archaeology of Society in Late Bronze/Iron Age Transjordan (ca. 1400-500 BCE).", in T.E. Levy (ed.), *The Archaeology of Society in the Holy Land* (London, 1995), pp. 399-415.
- Langgut, D., Finkelstein, I., and Litt, T., "Climate and the Late Bronze Collapse: New Evidence from the Southern Levant", *Tel Aviv* 40 (2) (2013), pp. 149-175.
- Levy, T.E., "Some Theoretical Issues Concerning the Rise of the Edomite Kingdom—Searching for 'Pre-Modern Identities'", in F. al-Khraysheh (ed.), *Studies in the History and Archaeology of Jordan* (Amman, 2004), pp. 63-89.
- Levy, T.E., "Pastoral nomads and Iron Age metal production in ancient Edom", in J. Szuchman (ed.), *Nomads, Tribes, and the State in the Ancient Near East* (Chicago, 2009), pp. 147-76.
- Levy, T.E., Adams, R.B., and Muniz, A., "Archaeology and the Shasu Nomads-Recent Excavations in the Jabal Hamrat Fidan, Jordan", in W.H.C. Propp and R.E. Friedman (eds.), *Le-David Maskil: A Birthday Tribute for David Noel Freedman* (Winona Lake, IN, 2004), pp. 63-89.
- Levy, T.E., Ben-Yosef, E., and Najjar, M., "New Perspectives on Iron Age Copper Production and Society in the Faynan Region, Jordan", in V. Kassianidou and G. Pappasavvas (eds.), *Eastern Mediterranean Metallurgy and Metalwork in the Second Millennium BC* (Oxford, 2012), pp. 197-214.
- Levy, T.E., Münger, S., and Najjar, M., "A newly discovered scarab of Shoshenq I: recent Iron Age explorations in southern Jordan", *Antiquity Project Gallery Online* (2014d).
- Levy, T.E., Ben-Yosef, E., and Najjar, M., "The Iron Age Edom Lowlands Regional Archaeology Project: Research, Design and Methodology", in T.E. Levy, M. Najjar, and E. Ben-Yosef (eds.), *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Los Angeles, 2014b), pp. 1-87.

- Levy, T.E., Najjar, M., and Ben-Yosef, E., "Conclusions", in T.E. Levy, M. Najjar, and E. Ben-Yosef (eds.), *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Los Angeles, 2014a), pp. 977-1001.
- Levy, T.E., Najjar, M., and Ben-Yosef, E., *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Cotsen Institute of Archaeology; Los Angeles, 2014c).
- Levy, T.E., Ben-Yosef, E., and Najjar, M., "Intensive Surveys, Large-Scale Excavation Strategies and Iron Age Industrial Metallurgy in Faynan, Jordan: Fairy Tales Don't Come True", in E. Ben-Yosef (ed.), *Mining for Ancient Copper: Essays in Memory of Beno Rothenberg* (Tel Aviv, 2018), pp. 245-58.
- Levy, T.E., Higham, T., Ramsey, C.B., Smith, N.G., Ben-Yosef, E., Robinson, M., Münger, S., Knabb, K., Schulze, J.P., Najjar, M., and Tauxe, L., "High-precision radiocarbon dating and historical biblical archaeology in southern Jordan", *Proceedings of the National Academy of Science* 105 (2008), pp. 16460-65.
- Levy, T.E., Najjar, M., Higham, T., Arbel, Y., Muniz, A., Ben-Yosef, E., Smith, N.G., Beherec, M., Gidding, A., Jones, I.W., Frese, D., Smitheram II, C., and Robinson, M.A., "Excavations at Khirbat en-Nahas 2002-2009: unearthing an Iron Age copper production center in the lowlands of Edom (Southern Jordan)", in T.E. Levy, M. Najjar, and E. Ben-Yosef (eds.), *New Insights into the Iron Age Archaeology of Edom, Southern Jordan* (Los Angeles, 2014e), pp. 89-245.
- Martin, M.A.S., Elyahu-Behar, A., Anenburg, M., Goren, Y., and Finkelstein, I., "Iron IIA slag-tempered pottery in the Negev Highlands, Israel", *Journal of Archaeological Science* 40 (2013), pp. 3777-92.
- Matthews, V.H., *Pastoral Nomadism in the Mari Kingdom* (Cambridge (MA), 1978).
- Mattingly, D., Newson, P., Grattan, J., Tomber, R., Barker, G., Gilbertson, D., and Hunt, C., "The making of early states: the Iron Age and Nabataean periods", in G. Barker, D. Gilbertson, and D. Mattingly (eds.), *Archaeology and Desertification: The Wadi Faynan Landscape Survey, Southern Jordan* (Oxford, 2007), pp. 271-304.
- Mazar, A., "The Debate over the Chronology of the Iron Age in the Southern Levant: Its history, the current situation, and a suggested resolution", in T.E. Levy and T. Higham (eds.), *The Bible and Radiocarbon Dating—Archaeology, Text and Science* (London, 2005), pp. 15-30.
- Mazar, A., "Archaeology and the Bible: Reflections on historical memory in the Deuteronomistic history", in C.M. Maier (ed.), *Congress Volume Munich 2013* (Leiden/Boston, 2014), pp. 347-69.
- Meshel, Z., *Yotvatah Springs—History, Landscape and Sites* (Jerusalem, 1990).
- Millard, A.R., "Assyrian Involvement in Edom", in P. Bienkowski (ed.), *Early Edom and Moab—The Beginning of the Iron Age in Southern Jordan* (Sheffield, 1992), pp. 35-39.
- Na'aman, N., "Does archaeology really deserve the status of 'High Court'?" in B. Becking and L. Grabbe (eds.), *Between Evidence and Ideology* (Leiden, 2011), pp. 165-183.

- Namdar, D., Gilboa, A., Neumann, R., Finkelstein, I., and Weiner, S., "Cinnamaldehyde in early Iron Age Phoenician flasks raises the possibility of Levantine trade with Southeast Asia", *Mediterranean Archaeology and Archaeometry* 13 (2) (2013), pp. 1-19.
- Pearson, J., *Contextualizing the Nabataeans: A Critical Reassessment of their History and Material Culture* (Ph.D. dissertation, UC Berkeley, 2011).
- Peters, I., Tauxe, L., and Ben-Yosef, E., "Archaeomagnetic dating of pyrotechnological contexts: a case study for copper smelting sites in the central Timna Valley, Israel", *Archaeometry* DOI: 10.1111/arcm.12322 (2017).
- Porter, B., *Complex Communities: The Archaeology of Early Iron Age West-Central Jordan* (Tucson, 2013).
- Potts, D.T., "Review of 'Near Eastern Tribal Societies during the Nineteenth Century: Economy, Society and Politics between Tent and Town' by E. van der Steen", *Journal of the American Oriental Society* 138 (3) (2018), p. 688.
- Rainey, A.F., and Notley, S.R., *The Sacred Bridge: Carta's Atlas of the Biblical World* (Jerusalem, 2006).
- Rosen, S., *Revolutions in the Desert: The Rise of Mobile Pastoralism in the Southern Levant* (London and New York, 2017).
- Rothenberg, B., "Archaeo-metallurgical researches in the southern Arabah 1959-1990. Part 2: Egyptian New Kingdom (Ramesside) to Early Islam.", *Palestine Exploration Quarterly* 131 (1999), pp. 149-75.
- Said, E.W., *Orientalism* (New York, 1978).
- Sapir-Hen, L., and Ben-Yosef, E., "The Introduction of Domestic Camels to the Southern Levant: Evidence from the Arava Valley", *Tel Aviv* 40 (2) (2013), pp. 277-85.
- Sapir-Hen, L., and Ben-Yosef, E., "The socioeconomic status of Iron Age metalworkers: animal economy in the 'Slaves' Hill', Timna, Israel", *Antiquity* 88 (341) (2014), pp. 775-90.
- Sapir-Hen, L., Lernau, O., and Ben-Yosef, E., "The Diet of Ancient Metal Workers: The Late Bronze and early Iron Ages in the Arabah Valley (Timna and Faynan)", in E. Ben-Yosef (ed.), *Mining for Ancient Copper: Essays in Memory of Beno Rothenberg* (Tel Aviv, 2018), pp. 64-80.
- Scheidel, W., "Studying the State", in P.F. Bang and W. Scheidel (eds.), *The Oxford handbook of the state in the ancient Near East and Mediterranean* (Oxford, 2013), pp. 5-56.
- Schloen, D., *The House of the Father as Fact and Symbol: Patrimonialism in Ugarit and the ancient Near East* (Winona Lake, 2001).
- Sergi, O., "The Emergence of Judah as a Political Entity between Jerusalem and Benjamin", *Zeitschrift der Deutschen Palästina-Vereins* 133 (2017), pp. 1-23.
- Slatkine, A., "Etude microscopique de poteries anciennes du Negev et du Sinaï", *Paléorient* 4 (1978), pp. 113-30.
- Smith, N.G., and Levy, T.E., "The Iron Age Pottery from Khirbat en-Nahas, Jordan: A Preliminary Study", *Bulletin of the American School of Oriental Research* 352 (2008), pp. 41-91.

- Smitheram, C., *OSL Dating of Timna's Copper Mines: Insights on Technological Evolution and Social Organization* (M.A. thesis, Tel Aviv University, 2016).
- Sukenik, N., Iluz, D., Amar, Z., Varvak, A., Workman, V., Shamir, O., and Ben-Yosef, E., "Early Evidence (Late 2nd Millennium BCE) of Plant-Based Dyeing of Textiles from Timna, Israel", *PLOS ONE* 12 (6) (2017), pp. e0179014.
- Tebes, J.M., "The Kingdom of Edom? A Critical Reappraisal of the Edomite State Model", in Y. Milevski and T.E. Levy (eds.), *Framing Archaeology in the Near East—The Application of Social Theory to Fieldwork* (London, 2016), pp. 113-22.
- Van der Steen, E., and Bienkowski, P., "How old is the kingdom of Edom? A review of new evidence and recent discussion", *Antiquo Oriente* 4 (2006), pp. 11-21.
- Veenhof, K.R., *The Old Assyrian List of Eponyms* (Ankara, 2003).
- Ward, W.A., and Joukowsky, M., *The Crisis Years: the 12th century BC—From Beyond the Danube to the Tigris* (Dubuque, 1992).
- Weber, M., *Economy and Society: An Outline of Interpretive Sociology (Orig. German 1922)* (Berkeley, 1978).
- Wellhausen, J., *Ein Gemeinwesen ohne Obrigkeit; Rede zur Feier des Geburtstages seiner Majestät des Kaisers und Königs am 27. Januar 1900 im Namen der Georg-Augustus-Universität, Göttingen* (Göttingen, 1900).
- Workman, V., *The Fabric of Copper Production: The Textile and Cordage Artifacts from Iron Age Timna* (M.A. thesis, Tel Aviv University, 2016).
- Yagel, O., Ben-Yosef, E., and Craddock, P., "Late Bronze Age Copper Production in Timna: New Evidence from Site 3", *Levant* 48 (1) (2016), pp. 33-51.
- Yahalom-Mack, N., and Eliyahu-Behar, A., "The transition from bronze to iron in Canaan: Chronology, technology and context", *Radiocarbon* 57 (2) (2015), pp. 285-305.
- Yahalom-Mack, N., and Segal, I., "The Origin of the Copper Used in Canaan During the Late Bronze—Iron Age Transition", in E. Ben-Yosef (ed.), *Mining for Ancient Copper: Essays in Memory of Beno Rothenberg* (Tel Aviv, 2018), pp. 313-31.
- Yahalom-Mack, N., Galili, E., Segal, I., Eliyahu-Behar, A., Boaretto, E., Shilstein, S., and Finkelstein, I., "New insights into Levantine copper trade: analysis of ingots from the Bronze and Iron Ages in Israel", *Journal of Archaeological Science* 45 (2014), pp. 159-77.
- Yekutieli, Y., and Cohen-Sason, E., "Surveillance at ancient imperial labor camps in the desert: a southern Levantine perspective", in R. Hormann and G. Mackenthun (eds.), *Human Bondage in Cultural Contact Zone: Transdisciplinary Perspectives on Slavery and Its Discourses* (Munster, 2010), pp. 33-62.
- Zucconi, L.M., "From the Wilderness of Zin alongside Edom: Edomite Territory in the Eastern Negev during the Eighth-Sixth Centuries B.C.E.", in S. Melena and D. Miano (eds.), *Milk and Honey—Essays on Ancient Israel and the Bible in Appreciation of the Judaic Studies Program at the University of California, San Diego* (Winona Lake, 2007), pp. 241-56.