

^{14}C AND THE EARLY IRON AGE OF ISRAEL – WHERE ARE WE REALLY AT?

A COMMENTARY ON THE TEL REHOV RADIOMETRIC DATES

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Abstract

Recently-published radiometric dates from Tel Rehov (Israel) have been claimed to prove the traditional, high Levantine Iron Age chronology. Reconsideration of these, alongside other published dates indicates that at present the available data is much more compatible with the low chronology and that the controversy is far from being over.

INTRODUCTION

The chronology of the early Iron Age in Israel has turned into one of the major archaeological controversies of the last decades. The ‘low’ chronology, proposed by I. FINKELSTEIN (1996) is only about 75 years lower than the traditional biblically-derived ‘high’ chronological scheme, but with tremendous implications for nearly every issue of archaeology, history and historiography around the Mediterranean (see references in GILBOA and SHARON 2001; 2003).

Some scholars consider the matter decided (in one direction or the other), on the basis of historical considerations (DEVER 2001; BEN-TOR 2001). For those of us, however, who are willing to concede that the archaeological scenario can be stretched to fit either historical narrative, radiometric dating presents the best hope of escaping from the chronological limbo we were cast into.

Several years ago we published a preliminary set of data, based on 22 radiocarbon measurements from Ephraim Stern’s excavations at Tel Dor, on Israel’s Mediterranean coast (GILBOA and SHARON 2001; SHARON 2001). These, we then claimed, form the first empirical support for the ‘low chronology’. We did, however, caution against hanging the entire chronology of the Eastern Mediterranean over several ‘centuries of darkness’ on a single limited data set, from a single site, mostly analyzed by a single laboratory.

THE TEL REHOV DATES

A second data set, lately published by BRUINS, MAZAR and VAN DER PLICHT (2003) was, however, claimed to clinch the case in the other direction. Based on a series of 34 ^{14}C dates from Mazar’s excavations at Tel Rehov, in the Jordan Valley, analyzed by the Groningen Center for Isotope Research, the authors claim to have proven the traditional high chronology. The dates originate from a well stratified sequence: Stratum VII at Rehov, defined as Iron Age I (or alternatively, the Iron Age I/II transition in the supporting online material to that article), and Strata VI, V, IV – all defined by Mazar as Iron Age IIA. Two main conclusions were drawn from these dates: (a) That the Iron Age I/II transition at Tel Rehov occurred ca. 980 BCE; and (b) That the dates from the Stratum V destruction are the ones which best fit a postulated destruction of the site by the Egyptian king Shoshenq I, conventionally dated around 925 BCE. If these conclusions are accepted, extrapolating the Tel Rehov ceramic sequence and its accompanying dates to other sites in Israel, would indeed render a substantial support to the high chronology. Indeed, these conclusions were hailed by Harvard’s Lawrence Stager as “the nail in the low chronology’s coffin” (cited in HOLDEN 2003). Let us, then, have a closer look at this nail.

REASSESSMENT

We conducted a very simple formal test to assess the Rehov team’s main conclusions. Using the same software package used by them, OxCal v.3.5 (BRONK RAMSEY 2001), we constructed the probability distribution for the boundaries between Stratum VII (Iron Age I) and VI (earliest Iron Age IIA); between Stratum VI and V (both within Iron Age IIA) and between Stratum V and IV (also within Iron Age IIA, Shoshenq’s visit according to BRUINS *et al.* 2003).¹

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¹ The analysis is based on 32 out of the 34 published dates,

as it is unclear whether two measurements from local phase D-2 should be attributed to either Stratum V or VI (A. Mazar, personal communication).

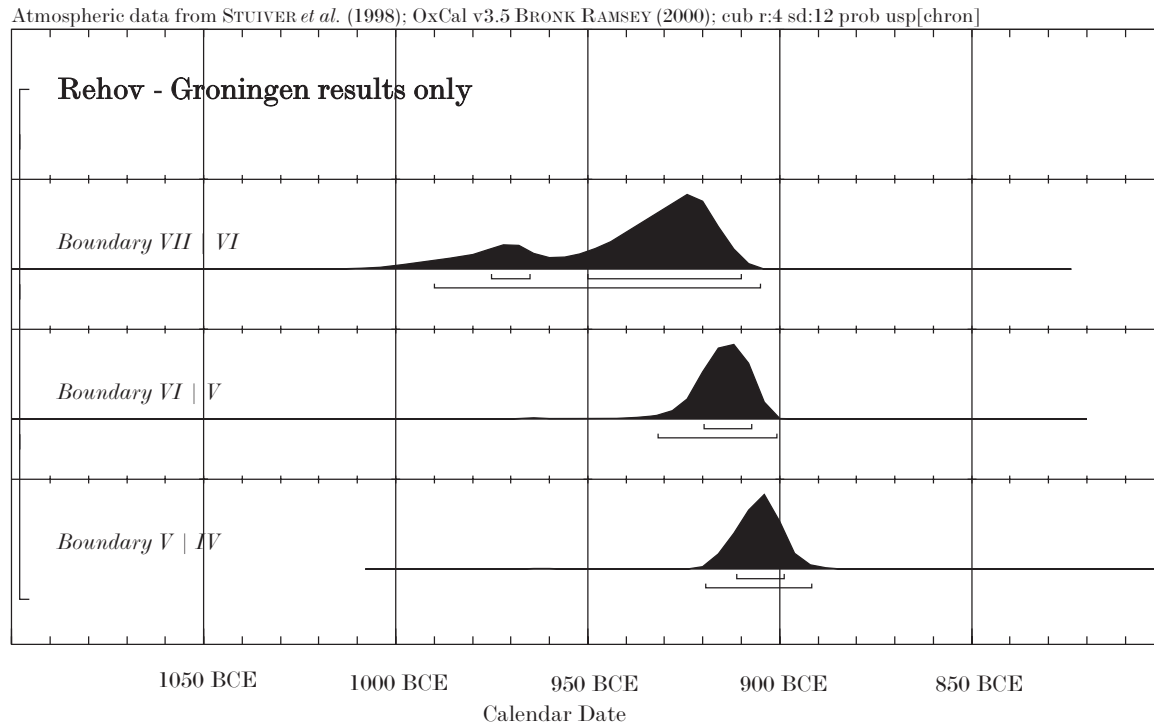


Fig. 1 Oxcal 3.5 analysis of the transition dates between the Tel Rehov strata, using only data published in BRUINS *et al.* 2003

The upper plot in Fig. 1 presents the Iron I/II transition at Tel Rehov, placed by Bruins *et al.* ca. 980 BCE. Most of the distribution indeed falls in the 10th century BCE; the transition could have occurred anywhere in that century. But while the distribution *does* have a peak ca. 980, this peak is secondary and the more likely option is in the second half of that century, peaking between 930–920 BCE. This, let us be reminded, is exactly the claim of the low chronology, namely that Iron IIA begins in the late 10th century at the earliest, and that, if anything, Shoshenq I terminated Iron Age I strata (e.g., FINKELSTEIN 1996, 183).

The dates for the boundary between Strata VI and V at Tel Rehov (the middle plot in Fig. 1) fall in the last third of the 10th century BCE, peaking between 920 and 910 BCE. The transition between V and IV (the postulated 925 Shoshenq destruction) falls actually, with 95% probability, between 919–892 BCE (lower plot in Fig. 1). This means that if one seeks the occupation at Tel Rehov that might have been destroyed by Shoshenq I, Strata VII and VI at Rehov are also eligible candidates; in fact, they are better candidates than Stratum V.

This last suggestion can be demonstrated in a very simple visual manner:

Fig. 2 has been extracted from BRUINS *et al.* 2003: fig. 2. It is important to pay attention to the fact that

one distribution plot in this figure is not an actual ¹⁴C date: It is a simulated ¹⁴C date for a sample whose ‘real’ date would be ca. 925. As may be seen – it was placed between the dates of Stratum V and those of IV – asserting the authors’ conviction that this transition is the one chronologically compatible with Shoshenq. In reality, they were placed after the Stratum V dates in spite of the fact that in general the distributions of the latter have later ‘tails’.

We suggest alternative placements of Shoshenq and his simulated date – between Strata VI and V (Fig. 3) and between VII and VI (Fig. 4). The advantage of these placements, especially the latter, is that now the simulated Shoshenq date is located before *all* the dates which have a somewhat later distribution – a much better positioning in the sequence. As claimed above – this means that both these strata are better nominees for the towns called upon by Shoshenq.

Moreover, in their 2003 paper, the Tel Rehov investigators chose to present and take into consideration only the (34) dates obtained at the Groningen lab. They ignore other dates from the same contexts at Tel Rehov, recently published by Mazar himself: 9 dates analyzed at the ¹⁴C laboratory at the University of Arizona and 12 analyzed at the Weizmann Institute, Rehovot (MAZAR and CARMi 2001). When *all* published dates from Tel Rehov are considered in the manner outlined above, the categorical conclu-

Atmospheric data from STUIVER *et al.* (1998); OxCal v3.5 BRONK RAMSEY (2000); cub r:4 sd:12 prob usp[chron]

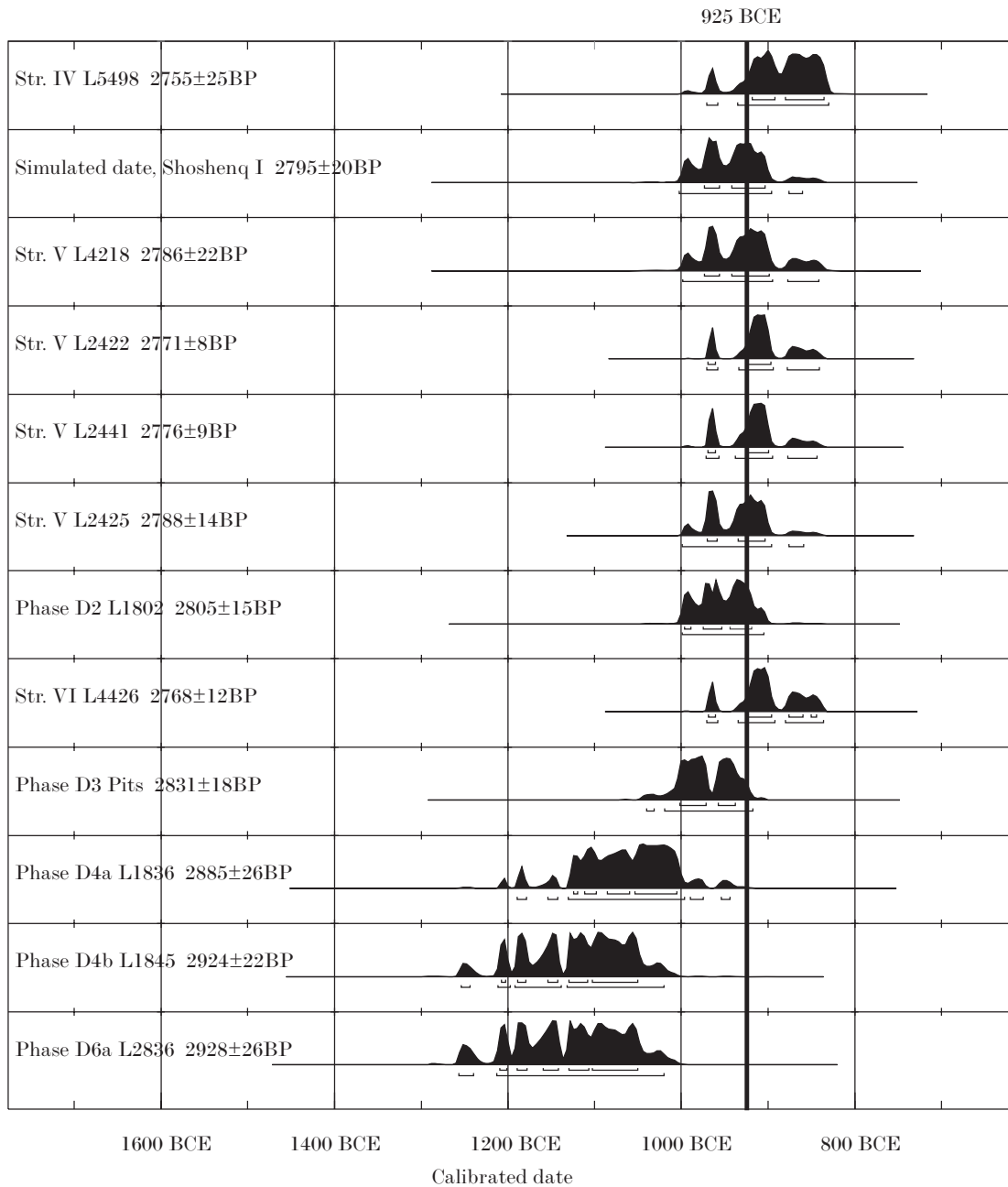


Fig. 2 Tel Rehov sequence after BRUINS *et al.* 2003: fig. 2 with Shoshenq I simulated date placed between Strata V and IV

sions presented in BRUINS *et al.* 2003 become even less plausible (Fig. 5):²

The transitions between Strata VII and VI and between VI and V are similar to the above, but the

transition between V and IV (‘Shoshenq’s 925 campaign’) is now placed between 880 and 850 BCE with 95% probability. These dates, again, squarely agree with the low chronology.³

² We have considered in this analysis only measurements on short-lived samples. Several other dates, on constructional wood, are cited in MAZAR and CARMi 2001.

³ After the publication of BRUINS *et al.* 2003, Mazar (personal communication) avers that he is no longer sure that

L2425, from which 20 of the dates were obtained (2 in Groningen, 9 in Arizona, 9 in Rehovot) is indeed in Stratum V – it may belong to IV. If the analysis is redone with all the L2425 dates in IV, the results very closely resemble those of the first run presented here.

Atmospheric data from STUIVER *et al.* (1998); OxCal v3.5 BRONK RAMSEY (2000); cub r:4 sd:12 prob usp[chron]

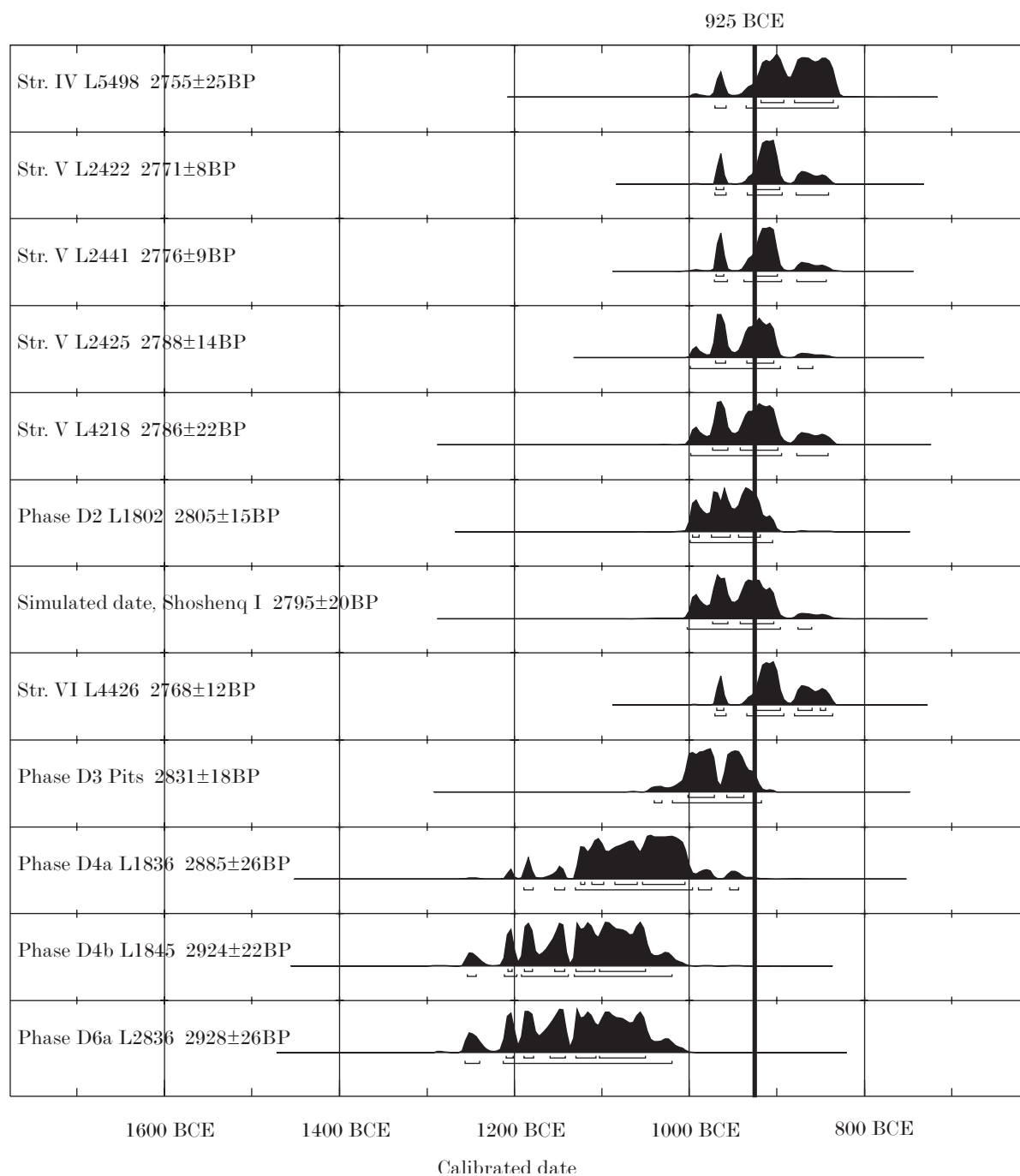


Fig. 3 Tel Rehov sequence in BRUINS *et al.* 2003: fig. 2 re-arranged, option 1: Shoshenq I between Strata VI and V

SUMMARY

As opposed to the conclusions reached by the Tel Rehov team, we maintain that the Rehov dates can much better be accommodated in a low chronology framework (see similarly FINKELSTEIN and PIASETZKY 2003). This has also been our conclusion regarding the other major relevant sequence of radiometric dates – that from Tel Dor (GILBOA and SHARON 2001;

2003; SHARON 2001: fig. 1), which was dismissed in Bruins *et al.* 2003 as “ambiguous”.

Nevertheless, the Tel Rehov and Tel Dor dates are not easily reconciled – but the discussion of this discrepancy is outside our scope here.

So – where are we really at – and more importantly – where do we go from here?

Picking some dates and rejecting the rest, without explicit and well-founded reasoning will simply

Atmospheric data from STUIVER *et al.* (1998); OxCal v3.5 BRONK RAMSEY (2000); cub r:4 sd:12 prob usp[chron]

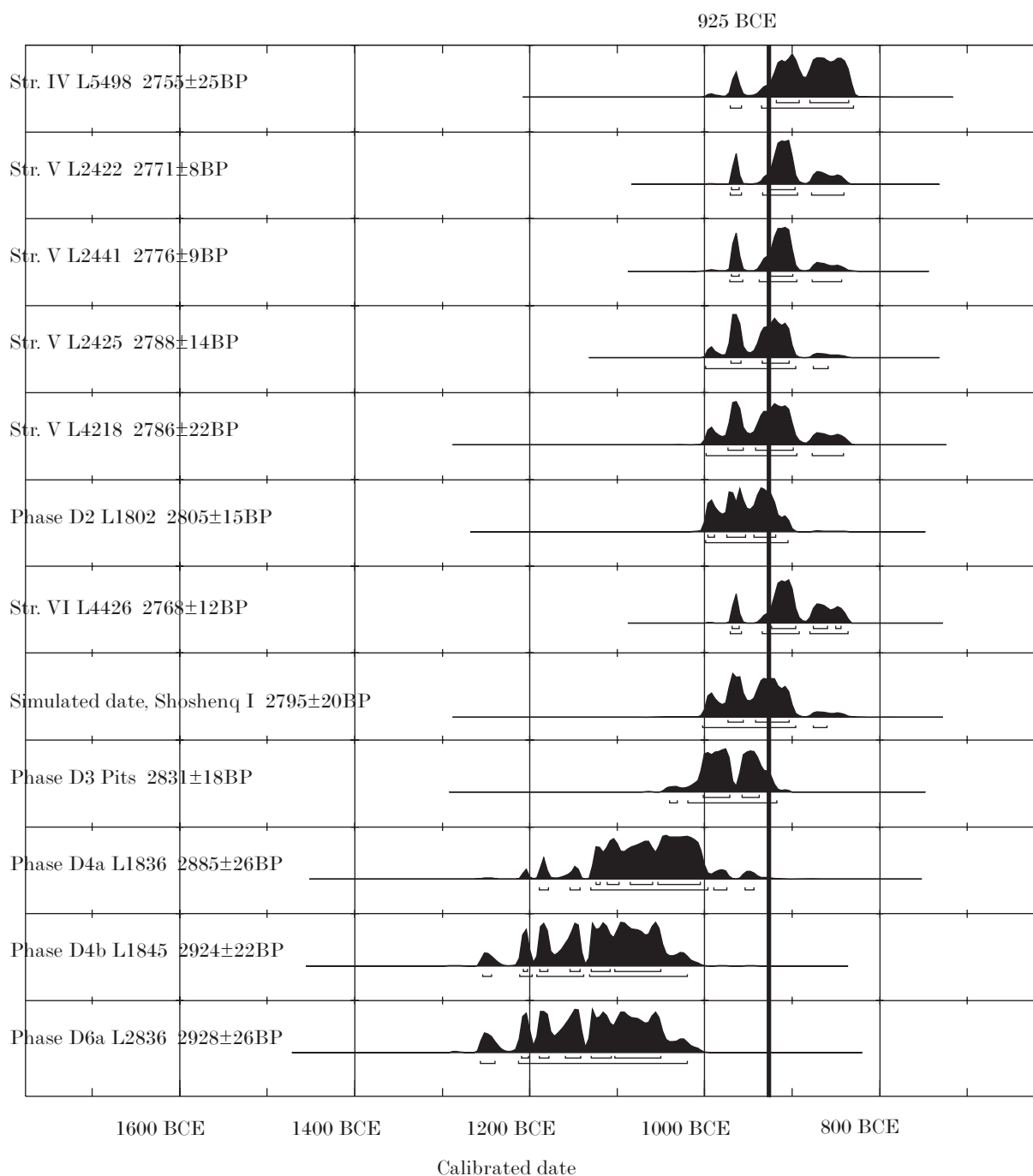


Fig. 4 Tel Rehov sequence in BRUINS *et al.* 2003: fig. 2 re-arranged, option 2: Shoshenq I between Strata VII and VI

not do. Even with state-of-the-art radiocarbon dating, differentiating between chronological hypotheses separated by a less than a century can only be achieved with *hundreds* of dates from many sites, collated on the basis of careful stratigraphic and comparative artifactual sequences, to form a statistically-significant data base. These should be dated by several labs, using different pretreatment proto-

cols and dating methods, in order to investigate the possibility of biases in any of these. Four years ago the three of us initiated such a project, involving some 25 excavations in Israel (including Rehov). It is our conviction that it will take many more nails before we may faithfully proclaim to have sealed this or other coffin.

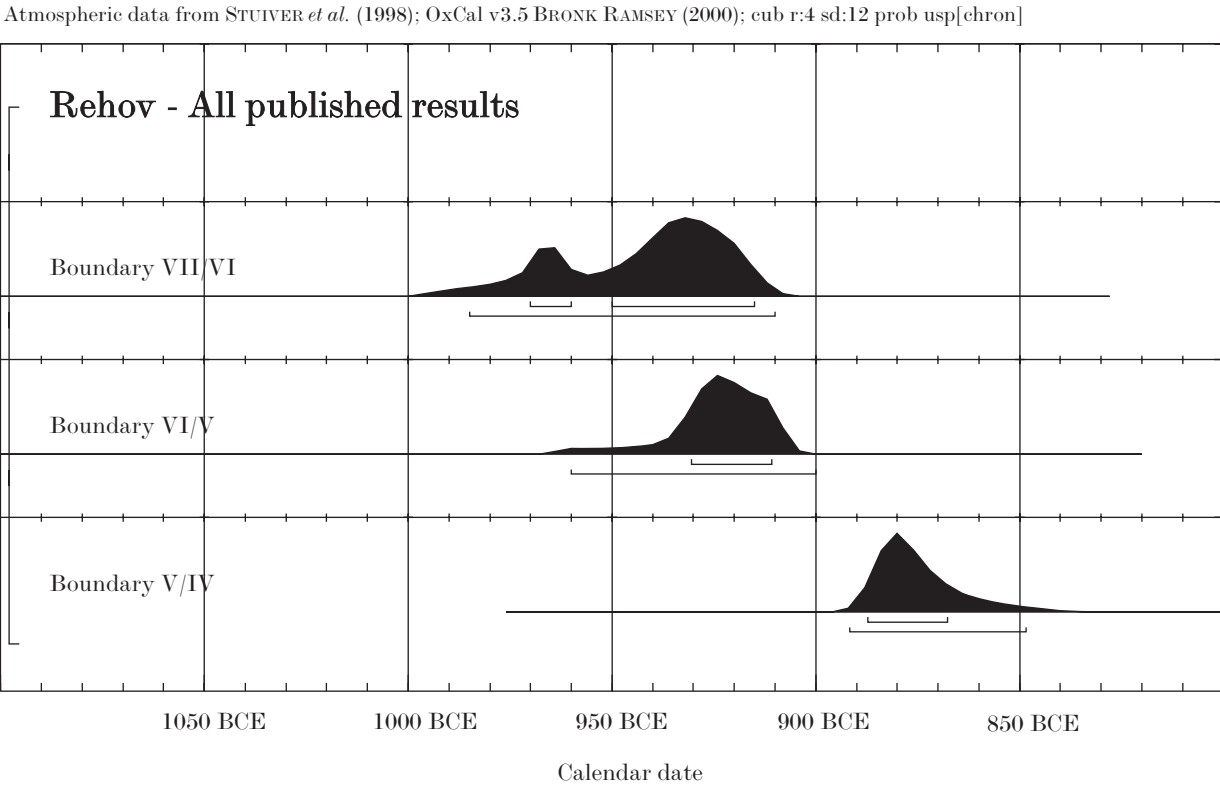


Fig. 5 Oxcal 3.5 analysis of the transition dates between the Tel Rehov strata, using all published data

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