HOW OLD IS THE KINGDOM OF EDOM? A REVIEW OF NEW EVIDENCE AND RECENT DISCUSSION

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Summary: How Old is the Kingdom of Edom? A Review of New Evidence and Recent Discussion
Recently Levy *et al.* have published two papers in which they claim to provide "less biased" high-precision radiocarbon dates from Khirbat en-Nahas in southern Jordan, and on the basis of those dates make wider claims for the dating and development of the Iron Age of southern Jordan (the kingdom of Edom). Levy *et al.* 2004 present two sets of data. The first set are the standard calibrated radiocarbon dates. The second set are Bayesian calibrated dates. In the case of Khirbat en-Nahas, the BCal results are the opposite of what one would expect: not only are the BCal ranges wider than the "normal" calibrated ranges, but they are also consistently earlier. The second claim that Levy *et al.* make is that of the rise of secondary state formation in Edom in the 10th century BC, on the basis of the presence of the copper industry and the fortress. The presence of a 10th or 9th century BC fortress at Khirbat en-Nahas is no indication, let alone proof, of the early rise of the Edomite kingdom.

Keywords: Edom - Khirbat en-Nahas - Radiocarbon dates - Secondary state formation

Resumen: ¿Cuán antiguo es el reino de Edom? Una revisión de la nueva evidencia y de la discusión reciente
Recientemente, Levy *et al.* publicaron dos trabajos en los cuales proveen datos radiocarbónicos de alta precisión "menos sesgados" provenientes de Khirbat en-Nahas, en el sur de Jordania y, sobre la base de esos datos, realizaron amplias observaciones acerca de la datación y desarrollo de la Edad de Hierro en el sur de Jordania (el reino de Edom). Levy *et al.* 2004 presentaron dos conjuntos de datos. El primer conjunto está constituido por los datos radiocarbónicos calibrados estándares. El segundo está conformado por los datos calibrados bayesianos. En el caso de Khirbat en-Nahas, los resultados BCal son lo

opuesto de lo que uno podría esperar: no sólo son los rangos BCal más amplios que los rangos calibrados "normales", sino que también son, consistentemente, más tempranos. La segunda observación que Levy *et al.* realizaron, tiene que ver con el surgimiento de una formación estatal secundaria en Edom en el siglo X a.C., sobre la base de la presencia de la industria del cobre y la fortaleza. Por cierto, la presencia de una fortaleza del siglo X o del IX a.C. en Khirbat en-Nahas no es una indicación, y mucho menos prueba, de un surgimiento temprano del reino edomita.

Palabras clave: Edom - Khirbat en-Nahas - Fechados de radiocarbono - Formación estatal secundaria

Recently Levy *et al.* have published two papers[1] in which they claim to provide "less biased" high-precision radiocarbon dates from Khirbat en-Nahas in southern Jordan, and on the basis of those dates make wider claims for the dating and development of the Iron Age of southern Jordan (the kingdom of Edom). The first paper in particular, in *Antiquity* (2004), attracted a lot of attention, especially outside the professional archaeological world, with a number of newspaper articles prompted by a press release from the principal authors. The reason for the media attention is the claim the paper seems to be making for the historicity of "biblical Edom". The never-ending discussion about whether archaeology can prove (or disprove) the historical truth of the Bible was given a new and powerful push with this paper.

The *Antiquity* paper instigated a discussion which is still ongoing. The present authors published a response to Levy *et al.* 2004,[2] to which they responded.[3] Further data were published in Levy and Higham 2005, and the debate has since continued on the website of the Wadi Arabah Project.[4] In Levy and Higham 2005 the results are modified, partly as a result of newly published data. However, the "can of worms", as they put it, had been opened, and the modified results of Levy and Higham 2005 still leave a number of questions unanswered, and do not seem to be able to bring the discussion out of the sensational sphere back to the professional level where it belongs. Therefore, a summary of the discussion seems useful in this context.

[1] Levy *et al.* 2004; Levy and Higham 2005.

[2] van der Steen and Bienkowski 2006.

[3] Levy *et al.* 2006.

[4] http://www.wadiarabahproject.man.ac.uk

Edom is the area south-east of the Dead Sea which was a kingdom in the early first millennium BC, known from Assyrian, epigraphic and biblical sources. Certainly by the 8th and 7th centuries BC there was heavy settled occupation, coinciding with textual sources referring to kings of Edom. How much earlier or later the kingdom can be dated –that is, some form of polity with a recognised overall ruler, called a "king" (possibly a "tribal" kingdom)[5]– is still a matter of debate hindered by lack of adequate evidence. Settled occupation in the region, at least at some sites, may have continued through the Persian period and even into the Hellenistic period.[6] Radiocarbon evidence collected from slag piles in the Faynan region hints at some copper mining in the 12th to 10th centuries BC; there are aceramic graves in the Wadi Fidan C14-dated to the 10th and 9th centuries BC; and settlements at Barqa al-Hetiye and Khirbat en-Nahas, also in the Faynan area, have C14 dates published several years ago dating them to the 9th century BC.[7]

Khirbat en-Nahas is one of the most important sites for the archaeology of southern Transjordan, the region identified with ancient Edom. It is the largest copper-smelting site in the southern Levant, consisting of a copper-working site, followed by a possible fortress, in the Wadi Faynan, on the east side of the Wadi Arabah. The site was first reported by Alois Musil in 1907, and surveyed by Fritz Frank and Nelson Glueck in the 1930s. In the 1990s the Deutsche Bergbau-Museum undertook archaeo-metallurgical investigations in the Faynan region, which included analysis of a number of slag mounds at Khirbat en-Nahas.[8] The site has been re-excavated by Levy *et al*., who have collected a number of radiocarbon samples from several layers, and they presented the first results in the *Antiquity* paper, embedded in the chronology that the C14 dates provide. The results, they claimed, are "spectacular". The dates range from the 12th to the 9th century BC and "prove beyond doubt" that the roots of the Edomite kingdom lie in the 12th or 11th century, within the Iron I period, rather than later, in the 8th/7th centuries BC, within Iron II, as argued heretofore.

However, there are serious problems with the dates they present, particularly in the 2004 paper, and their methodology.

Levy *et al.* 2004 present two sets of data. The first set are the standard calibrated radiocarbon dates (using the INTCAL calibration curve), which are

[5] Cf. Bienkowski and van der Steen 2001.

[6] Bienkowski 2002.

[7] Bienkowski 2001.

[8] Hauptmann 2000.

presented in a table.[9] The second set, which is consistently referred to within their text, are Bayesian calibrated dates. The Bayesian calibration tool[10] has been developed as a means to combine calibrated radiocarbon dates with *a priori* chronological information such as stratigraphic sequences of layers, or absolute dating information from other sources (such as texts). Using this information the BCal program can narrow down or modify the radiocarbon ranges and make them more reliable.

Clearly, the results of the BCal calibration are completely dependent on the nature of the other chronological data, and the way they have been fed into the programme. A "normal" result would be a narrowing down of the calibrated radiocarbon dates by the BCal tool. Even then, given the sensitivity of the programme, it is essential to specify which additional data have been used and how.

In the case of Khirbat en-Nahas, the BCal results are the opposite of what one would expect: not only are the BCal ranges wider than the "normal" calibrated ranges, but they are also consistently earlier (see Table 1 here).

Take, for example, the fortress in Area A: the calibrated ^{14}C range of Stratum A4a, which predates the construction of the fortress, is 1010-920 BC. The BCal date range for Stratum A4a according to the text[11] is 1130-970 BC, with a modal (highest probability) value of 1120 BC. This modal value is 110 years earlier than the earliest limit of the "normal" calibrated radiocarbon range, with no explanation provided.

The earliest phase in Area S (S4), a cooking installation, has a calibrated ^{14}C range of 1130-1015 BC. According to the text, the BCal results date this stratum to 1260-1240 BC and 1215-1012 BC.[12] This phase is followed by a heavy layer of metal waste (S3), dated to 1005-965 (normal calibration) or 1055-915 (BCal). On top of this was a four-room building (S2b), dated to 905-830 (normal calibration) or 970-830 (BCal).

At each step, Levy *et al.* attempted to push the dates as early as possible, on average about a hundred years or so earlier than the calibrated radiocarbon evidence allows for. The main problem seemed to be that they did not specify what additional

[9] Levy *et al.* 2004: 870, Table 1.

[10] Buck *et al*. 1996; and cf. http://bcal.sheffield.ac.uk/

[11] Levy *et al*. 2004: 871.

[12] Some of the confusion and excitement about the original *Antiquity* paper originated in a typing error in this paper which stated that the modal value for S4 was pre-1190 BC. This should have been post–1190 BC, see Levy *et al*. 2005.

sources they used to reach these results. In the sequels to the original 2004 paper it became clear that no other external data had been used, and the Bayesian dates were the result entirely of the stratigraphic sequence. However, in the *Antiquity* paper they did use other data to corroborate their Bayesian results[13]: they refer to scarabs and ceramics which they claim corroborate their early, 12th century BC dates, although all this material was found in later contexts. They tentatively date two Egyptian scarabs from the 12th century BC on, but accept that they are probably residual. This is likely to be the case, especially since much earlier, Middle Bronze Age scarabs were found in their own excavations at the nearby WF40 cemetery radiocarbon-dated to the 10th century BC.[14] The scarabs should not, therefore, be used to amend the radiocarbon dates. The ceramic evidence cited by Levy *et al.* is the so-called "Negebite Ware" and "Midianite pottery" (the latter also known as Qurayyah painted ware). Although it is not disputed that these wares occur as early as the 12th century BC, in fact both have long lifespans well into the Iron II period: "Negebite Ware" continues at least as late as the 7th century BC, and "Midianite pottery" has been found in a context at Barqa el-Hetiye, near Khirbat en-Nahas, radiocarbon-dated to the 9th century BC, and at Tawilan stratified with otherwise purely 7th/6th century BC material.[15] Neither type of pottery can therefore be used to corroborate the radiocarbon dates, rather the reverse: the calibrated radiocarbon dates should properly be used to fix the precise dates of the pottery.

We have attempted to replicate the results of the Bayesian calibration published in Levy *et al*. 2004, using their published C14 dates and stratigraphic information. We used the BCal programme that is provided by The University of Sheffield.[16] Our results differ significantly from those presented by Levy *et al*. 2004. The outcome of our tests puts especially the earliest dates 40-50 years later than theirs, and the highest probability values generally fall within their original, calibrated C14 ranges.

Higham *et al*. 2005 includes the Bayesian analysis of a further 27 dates from Khirbat en-Nahas. Our main critique, that the BCal modelling of the calibrated C14 dates pushed these dates back significantly, is addressed by Higham *et al.* Indeed, they state quite clearly that BCal modelling does *not* push the dates back! Referring to Area A, they state:

[13] Levy *et al.* 2004: 874-876.

[14] Levy, Adams and Shafiq 1999.

[15] Bienkowski 2001.

[16] http://bcal.sheffield.ac.uk

> *"The Oxford results show that the modelling has had a limited influence. The posterior distributions show little difference when compared with the original radiocarbon likelihoods themselves."*

Regarding Area S:

> *"The Bayesian analysis yielded little additional chronometric data compared with that derived from the radiocarbon likelihoods".*[17]

Comparison of the data published in the various papers suggests that in order to reach the spectacular early dates in Levy *et al.* 2004, the authors used the maximum (95.4%) probability range of the BCal results.

In Levy *et al.* 2005 the additional data published by Higham *et al.* 2005 are integrated into the discussion, but the confusion about the dates continues. For example, Levy *et al.* 2005 provides a sequence for area A based on these new results, stating that stratum A4a is dated by two samples (GrA 25318 (calBC 1210-1045) and GrA 25354 (calBC 1185-1180, 1125-945).[18] These samples were taken from stratum A3, but ascribed to A4a, seemingly because they were too early! Higham *et al.* 2005[19] discard these two results as unreliable, ironically on the basis of Bayesian modelling.

The four-chamber gate of A3 is dated by Levy *et al.* 2005 to the early 10th century on the basis of the original Oxford laboratory sample (OxA 12366 [calBC 1000-985]). Two other, new samples (GrA 25321 and GrA 25322), which would date the building to the 9th century BC[20] are pushed into the next stratum. Higham *et al.* 2005 date the transition (boundary probability) between A4a and A3 to 900 BC, and consequently the building of the gate to after 900 BC. So, once again, there is a discrepancy between the results of Higham *et al.*'s 2005 analysis of the radiocarbon data, and Levy *et al.*'s 2005 interpretation of them, of about 100 years.

We suggest that the calibrated radiocarbon dates be taken at face value, and not pushed artificially to about a century earlier. Levy *et al.* 2004 conclude that there is radiocarbon and ceramic evidence for a main phase of metal production in the 12th-11th centuries BC, preceding the construction of the fortress in the

[17] Higham *et al.* 2005: 167.

[18] Levy *et al.* 2005: 138.

[19] Higham *et al.* 2005: 170.

[20] Levy *et al.* 2005: 138; Higham *et al.* 2005: 170.

10th century BC. In our opinion, their own calibrated radiocarbon dates, and a proper reading of the ceramics, indicate instead cooking activity in Area S between the (late?) 12th and 10th centuries BC (aceramic, non-settled, therefore *possibly* mining by pastoralist groups who are known to have inhabited the area at that time), and some mining activity at the very end of the 11th century. The Area A fortress, whether it belongs to the 10th [21] or the 9th [22] century BC, was apparently an isolated, short-lived phenomenon. This latter scenario is supported by all the other evidence from this region, and is nothing new, having already been discussed by the present authors in 2001.[23]

The second claim that Levy *et al.* 2004 make is that of the rise of secondary state formation in Edom in the 10th century, on the basis of the presence of the copper industry and the fortress. Unfortunately, one fortress does not make a kingdom. Or, to put it differently, most kingdoms may have fortresses, but not every fortress belongs to a kingdom (and, of course, the interpretation of the structure as a fortress is no more than a hypothesis). Neither does industrial production require a state structure.[24] Recent research suggests that local corporate groups are very capable of conducting and maintaining large-scale industrial activities, and building up the infrastructure, such as fortified buildings and housing, that comes with it. So far nothing else has been found in southern Transjordan to justify the incorporation of the Khirbat en-Nahas fortress in a larger polity. The presence of a 10th or 9th century fortress at Khirbat en-Nahas is no indication, let alone proof, of the early rise of the Edomite kingdom. In fact, if, as the authors claim, the copper industry-cum-fortress of Khirbat en-Nahas would be evidence of an Edomite kingdom, we may wonder why it ceased to exist exactly at the time when the other features of that kingdom make their appearance, the 8th and 7th centuries BC.

In their response on the Wadi Arabah Project website, Levy *et al.* claim that there is a constellation of fortresses in southern Jordan and the Negev that can be dated to the 10th century BC: Nahas, En Hazeva and Tall al-Kheleifeh. However, there is absolutely no evidence for 10th century material at Kheleifeh, the earliest material identified there dating to the 8th/7th centuries BC, which in any case is quite different from the Nahas material.[25] The fortress at En Hazeva,

[21] Levy *et al.* 2005.

[22] Higham *et al.* 2005.

[23] Bienkowski and van der Steen 2001: 23, notes 2, 3.

[24] Philip 2001: 167.

[25] Cf. Pratico 1993.

the earliest stratum of which is C14-dated to the 10th/9th centuries BC, was part of a chain of settlements that flourished in the Beersheba Valley, and which may have been part of a trade route, perhaps connected to the Arabian trade.[26] It seems more likely, therefore, that Khirbat en-Nahas flourished as a result of its connection with this trade route, which would also explain some of the finds at the copper-refining and trading site of Khirbat al-Mshash in the Negev. There is therefore no need to create unsubstantiated connections with sites in the Edom Highlands, and to claim that this is evidence of a state structure.

Levy *et al*. claim that their "*high-precision radiocarbon dating is liberating us from chronological assumptions based on Biblical research*".[27] However, with that statement they ignore a range of recent publications about the Iron Age in Transjordan, based exclusively on archaeological evidence.[28] Ironically, it is Levy *et al*. themselves who consistently refer to "biblical" Edom and claim that their work is of key importance for understanding Edom "*known from biblical sources*".[29] Levy *et al*.'s 2005 conclusions, like their 2004 paper, still push the radiocarbon results back in order to fit the question of whether David or Solomon built the Nahas four-chambered gate, and are liberally peppered with quotes from the Bible. This hardly supports their claim that the new results finally release us from Bible-related interpretations of archaeology in the region.

We do not underestimate the importance of the excavations at Khirbat en-Nahas. It is one of the most important sites in the region, and can give us much information about the economy of copper production, and the social organization of the region in a period of which little is known. However, the evidence published in the various papers by Levy *et al.* lacks transparency and is misleading and inconsistent, leading to claims that cannot at present be substantiated.

References

Bienkowski, P. 2001. "Iron Age Settlement in Edom: A Revised Framework". In: P.M.M. Daviau, J.W. Wevers and M. Weigl (eds.), *The World of the Aramaeans II: Studies in History and Archaeology in Honour of Paul-*

[26] Bienkowski and van der Steen 2001; Jasmin 2006.

[27] Levy *et al*. 2004: 865.

[28] Cf., for example, Bienkowski and van der Steen 2001; Bienkowski 2001; Bienkowski 2002; Pratico 1993.

[29] Levy *et al*. 2004: 866.

Eugen Dion. Journal for the Study of the Old Testament Supplement Series 325. Sheffield, Sheffield Academic Press, pp. 257-269.

BIENKOWSKI, P. 2002. *Busayra: Excavations by Crystal-M. Bennett 1971-1980*. British Academy Monographs in Archaeology No. 13. Oxford, Oxford University Press.

BIENKOWSKI, P. and E. VAN DER STEEN. 2001. "Tribes, Trade, and Towns: A New Framework for the Late Iron Age in Southern Jordan and the Negev". In: *Bulletin of the American Schools of Oriental Research* 323, pp. 21-47.

BUCK, C.E., W.G. CAVANAGH and C.D. LITTON. 1996. *The Bayesian Approach to Interpreting Archaeological Data*. Chichester, Wiley.

HAUPTMANN, A. 2000. *Zur frühen Metallurgie des Kupfers in Fenan*. Der Anschnitt, Beiheft 11. Bochum, Deutsches Bergbau-Museum.

HIGHAM, T., J. VAN DER PLICHT, C. BRONK RAMSEY, H.J. BRUINS, M. ROBINSON and T.E. LEVY. 2005. "Radiocarbon Dating of the Khirbat en-Nahas Site (Jordan) and Bayesian Modeling of the Results". In: T.E. LEVY and T. HIGHAM (eds.), *The Bible and Radiocarbon Dating: Archaeology, Text and Science*. London, Equinox, pp. 164-178.

JASMIN, M. 2006. "The Emergence and First Development of the Arabian Trade Across the Wadi Arabah". In: P. BIENKOWSKI and K. GALOR (eds.), *Crossing the Rift: Resources, Routes, Settlement Patterns and Interaction in the Wadi Arabah*. Levant Supplementary Series 3. Oxford, Oxbow Books, pp. 145-152.

LEVY, T.E., R.B. ADAMS, M. NAJJAR, A. HAUPTMANN, J.D. ANDERSON, B. BRANDL, M.A. ROBINSON and T. HIGHAM. 2004. "Reassessing the Chronology of Biblical Edom: New Excavations and ^{14}C Dates from Khirbat en-Nahas (Jordan)". In: *Antiquity* 302, pp. 865-879.

LEVY, T.E., R.B. ADAMS and R. SHAFIQ. 1999. "The Jabal Hamrat Fidan Project: Excavations at the Wadi Fidan 40 Cemetery, Jordan (1997)". In: *Levant* 31, pp. 293-308.

LEVY, T.E. and T. HIGHAM (eds). 2005. *The Bible and Radiocarbon Dating: Archaeology, Text and Science*. London, Equinox.

LEVY, T.E., T. HIGHAM and M. NAJJAR. 2006. "Response to van der Steen and Bienkowski". In: *Antiquity* 80 no. 307 (http://antiquity.ac.uk/ProjGall/levy/index.html)

LEVY, T.E., M. NAJJAR, J. VAN DER PLICHT, N.G. SMITH, H.J. BRUINS and T. HIGHAM. 2005. "Lowland Edom and the High and Low Chronologies: Edomite State Formation, the Bible and Recent Archaeological Research in Southern Jordan". In: T.E. LEVY and T. HIGHAM (eds.), *The Bible and Radiocarbon Dating: Archaeology, Text and Science*. London, Equinox, pp. 129-163.

PHILIP, G. 2001. "The Early Bronze Age I-III Ages". In: B. MACDONALD, R. ADAMS and P. BIENKOWSKI (eds.), *The Archaeology of Jordan*. Sheffield, Sheffield Academic Press.

PRATICO, G.D. 1993. *Nelson Glueck's 1938-1940 Excavations at Tell el-Kheleifeh: A Reappraisal*. ASOR Archaeological Reports No. 3. Atlanta, Scholars Press.

VAN DER STEEN, E. and P. BIENKOWSKI. 2006. "Radiocarbon Dates from Khirbat en-Nahas: A Methodological Critique". In: *Antiquity* 80 no. 307 (http://antiquity.ac.uk/ProjGall/levy/index.html)

Locus	Stratum	Cal BC range	Bayesian range
356	S4	**1130-1015 BC**	**1260-1240 BC 1215-1020 BC (highest probability value pre-1190 BC)**
341	S3	1005-965 BC	1055-915 BC
336	S2b	905-830 BC	970-830 BC (modal value 895 BC)
331	S2a	895-875 BC	900-760 BC (modal value 815 BC)
95	A4a	**1010-920 BC**	**1130-970 BC (modal value 1120 BC)**
94	A3	1000-985 BC	1005-870 BC
92	A2b	900-875 BC	920-815 BC (modal value 885 BC)
61	A2a	900-805 BC	990-790 BC (modal value 835 BC)
539		910-886 BC	
511		829-801 BC	

Table 1.
Comparison of the calibrated radiocarbon dates of the Khirbat en-Nahas samples (Levy *et al*. 2004: 870, Table 1) with the Bayesian (BCal) dates cited throughout the text of the same paper.