

The Tomb Next Door:
An update to
“Statistical Analysis of an Archeological Find”

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Abstract

In June of 2010, access via robotic means was obtained to a tomb adjacent to the one studied in Feuerverger (2008). In this update, we lay out and attempt to interpret the remarkable findings from this second tomb, and comment on the statistical and scientific significance of these new data and of their possible inferential connections to the data from the first tomb. Readers are then invited to formulate their own conclusions.

Key words and phrases: *a priori* hypotheses; Book of Jonah; coincidence; exploratory and confirmatory experiments; ossuaries; resurrection; scientific inference; statistical inference.

1 Introduction and Summary.

The purpose of this article is to update the discussion in Feuerverger (2008) (hereafter AF08) concerning a certain tomb (hereafter Tomb 1) in the East Talpiot suburb of Jerusalem in light of recent additional findings. We refer the reader also to the Discussion, as well as to the Rejoinder, of the mentioned paper.

The tomb studied in AF08 contained ten ossuaries, of which six bore inscriptions of names that, while mostly common, were reminiscent of the New Testament (NT) family.

In that paper, the archeological context, background on the practice of ossuary interment, the onomasticon of the era, as well as some historical and genealogical information, were laid out in some detail. There, an ‘historical’ approach was adopted which, in particular, meant that the possible existence of a NT tombstone in the vicinity of Jerusalem was not viewed as being implausible.¹ It was then computed – under various sets of assumptions *which are far from universally agreed upon* – that the probabilities (under random assignment of names from the onomasticon) of drawing a tombstone as closely matching to the NT family as the one at Talpiot were typically less than one percent. Such significantly small probabilities were driven heavily by what was assumed, from among the available names, and on a presumed *a priori* basis, to be the most fitting name for Mary Magdalene; the results are not (statistically) significant without that *a priori* assumption. See, for example, the Rejoinder of AF08, as well as the Appendix to this paper. The reader should, however, also be aware that there are other controversies² surrounding that analysis; a representative selection of these arise in the Discussion of AF08. (See also the Vol. 69 issue of *Near Eastern Archaeology*.) In the Rejoinder of AF08, the potential value of excavations at an immediately adjacent tombstone was alluded to, while noting also the strictness of Israeli laws governing matters that pertain to disturbing burial sites.

At the end of June, 2010, however, R. Arav, S. Jacobovici, and J. Tabor succeeded, after some efforts, to obtain limited access to a tomb (hereafter Tomb 2) adjacent to, and some sixty meters to the north by northwest, of Tomb 1. To obtain that access, it was first necessary to (i) secure permission from the Research Department of the Israel Antiquities Authority (IAA), (ii) obtain an archeological excavation permit from the IAA, (iii) secure cooperation of local police to deal with possible religious tensions, (iv) obtain permission from the tenants association of the condominium building situated above the

¹Although there is a broadly-based social conditioning that this is unlikely or impossible, Jewish customs of the era are consistent with the possible existence of such a tomb, and it is known that Jesus died in Jerusalem, and was, on at least one occasion, buried in a tomb there.

²In assessing such controversies one does, however, need to distinguish between arguments that have a rational basis, and arguments that do not.

tomb, and (v) consult an engineer to assure that the building would not suffer structural damage when metal reinforcements in concrete blocking access to the tomb were cut. Obtaining consent from religious authorities was an entirely separate matter involving delicate negotiations with the spiritual leaders of Bnei Brak-based ultra-Orthodox communities adamantly opposed to any access or interference in Jewish gravesites;³ without that cooperation, access to the tomb would not have been possible.

The agreements that could be reached stipulated, in particular, that the tomb could be explored, but *without any physical entry* into it, and that no bones or ossuaries were to be touched. Therefore, access was secured by means of a shaft, bored through the floor of a corridor of the apartment complex above the site. For that purpose a 20 centimeters diameter custom-made diamond tooth drill was used, together with ground-penetrating radar to assist in determining where to drill.

Through this shaft, a reconfigurable, highly modular, and pneumatically operated multi-actuating extensible robotic arm – designed and custom built for this purpose by robotics engineer Walter Klassen – was inserted. This arm was mounted with a small, waterproof GE Inspection Technologies ‘Pan till Zoom’ module with built-in halogen lighting and high-definition camera. Two smaller holes were also drilled to permit a secondary light source and a still smaller camera to be inserted; their main purpose was to help guide the manual remote control of the robotic arm. By this means, an exploration of the interior of the tomb, and of the ossuaries located within it, was carried out.

The archeological findings that were obtained in this way are described in Section 2, and some possible interpretations of those findings are discussed in Section 3. Some background historical material is postponed to Section 4. The nature of the new findings raises non-trivial questions of statistical and of scientific inference; our discussion of these is presented in Sections 5 and 6, the first of which deals with issues of data, and the second with issues of inference, after which readers are invited to form their own conclusions.

³The sensitivity of ultra-Orthodox Jews (Haredim) to disturbance of burial sites, and in particular to interference with the bones of the dead, stems from a central belief of classical Judaism: namely, that the dead would be raised upon arrival of the Messiah.

Some closing remarks are given in Section 7. Due to its inferential significance, a further discussion concerning the interpretation of the Greek ‘Mariamne’ inscription of Tomb 1, and some relevant new data, are provided in an Appendix.

2 The Archeological Findings.

Whether laid out prior to contact with the data, or (on some ‘best efforts’ basis) only afterwards, it is doubtful that anyone’s set of *a priori* hypotheses could have adequately encompassed the essence of what was found in this adjoining tomb.

Its ceiling lay below current ground level, and a square *golal* (sealing stone) to its entrance was still in place. Within it were scattered human skeletal remains, and three *kokhim* (niches) carved into each of three limestone walls – nine niches in all. Within these niches, a total of *seven* ossuaries were found. Six of the ossuaries were nicely decorated – typically with inscribed and colored (yellow or red) circular rosettes; the seventh could not be examined on all its sides due to limitations of the physical setup, but it appears to have been plain (undecorated). Except for one unfinished rosette, all of the mentioned decorative patterns were rendered fully. One of the ossuaries bore detailed images, and two of them bore inscriptions in Greek lettering. These ossuaries, numbered arbitrarily here, are described as follows:

Ossuary # 1: The front left half of this ossuary is inscribed with an image that appears to be that of a fish pointing downward.^{4,5,6} The mouth of the ‘fish’ is closed, with something round protruding from it. This round object appears to be marked up with interwoven lines. Surrounding the front of this ossuary are smaller ‘fishes’ and bordering.

⁴The front right half of this ossuary could be observed only partially; it appears to consist of unobserved content, surrounded by architectural bordering.

⁵The ‘fish’ is scaled, and has proportionate, appropriately located fins which narrow at the body. It also appears to have both a head and an outwardly fanning tail.

⁶Note to the reader: That the image is that of a fish is *far from uncontested*, and (*qv*) neither is it inconsequential; it has been suggested that it represents either an amphora or unguentarium, or a stele (although this ossuary does appear to contain other fish motifs on it).

The left side of this ossuary contains a bordered cross-like image, while the right side appears to show part of a ‘fish’, possibly diving. This ossuary contains no rosettes or other decorative patterns, and its back is plain. An (unenhanced) photograph of the ‘fish’ on the front of this ossuary is shown in Figure 1; in this photograph the ‘fish’ has been rotated 90° clockwise and is shown facing leftwards.

♠♠ **Figure 1 about here.** ♠♠

Caption for Fig. 1: Front left half of Ossuary #1 (unenhanced photograph, rotated).

Ossuary # 2: The front of this ossuary is nicely ornamented with two painted circular rosettes between which appear four lines of text informally inscribed in upper case Greek script. The first three lines appear to read:⁷

$$\begin{array}{c} \Delta I O \Sigma \\ I A I O \\ \Upsilon \Psi \Omega \end{array}$$

The fourth line is less clear, and may be one of

(a) $A \Gamma B$ (b) $A \Pi \Omega$ (c) $A \Gamma I \Omega$

or some close variant. The two sides and back of this ossuary are otherwise plain. An (unenhanced) photograph of this inscription is shown in Figure 2.

♠♠ **Figure 2 about here.** ♠♠

Caption for Fig. 2: Front of Ossuary #2 (unenhanced photograph) showing four-line inscription between rosettes. The fisheye distortion in this image is due to narrowness of the passage between that ossuary and the niche’s wall.

Ossuary # 3: One side of this ossuary contains the inscription

$$M A P A$$

(i.e., Mara) in upper case Greek script, and an incomplete, primitively rendered rosette. The rest of this ossuary is plain. See Figure 3.

⁷Note to the reader: The readings indicated here are also far from uncontested. See, for example, the detailed discussions posted on the ASOR blog site.

♠♠ **Figure 3 about here.** ♠♠

Caption for Fig. 3: Image of Ossuary #3 within niche (unenhanced photograph) showing the MAPA (i.e. MARA) inscription.

Ossuary # 4: This ossuary is nicely decorated with a border design and two painted circular rosettes carved on its front. On its upper right corner is a stick-like image in the shape of a short caterpillar that could not be deciphered. (Such images on ossuaries are rare.) The remaining sides of this ossuary are plain.

Ossuaries # 5: This ossuary is nicely decorated with two well executed and painted circular rosettes on its front surrounded by border design. Between the rosettes is a symbolic pillar known as a *nefesh*. The *nefesh* symbol is discussed in Section 3. The other sides of this ossuary are plain.

Ossuaries # 6: Due to its positioning this ossuary could not be examined properly. The ossuary was ornamented, and appears to have a Greek name inscribed on it that could not be read.

Ossuary # 7: This ossuary is completely plain.

Ossuary # 8: An eighth and child-sized ossuary that was not in the tomb, but which is known to belong to it, will be introduced in Section 4 where its circumstances will be explained. It is painted and nicely decorated, with two symmetrically arranged circular rosettes between which is carved a *nefesh*.

For these and some further details about the finds, see Tabor (2011), and Tabor and Jacobovici (2012).

3 Some Interpretations.

To understand the evidentiary value of these ossuaries requires consideration and interpretation of their inscriptions. As a general remark, it may be surmised that ossuaries

decorated as nicely as some of these are would typically be thought of as having belonged to more well-to-do families.

We begin with the remarkable Ossuary #1, the one with the image of what may be a fish.⁸ If it is, then it appears to be that of an eastern⁹ fish, reminiscent of the “big fish” [*dag gadol* – sometimes translated as ‘great fish’ or ‘whale’] in the Book of Jonah. This ‘fish’ has scales and fins, consistent with the requirements of kashruth. As its mouth is closed, it is not evidently in the process of swallowing anything, but might instead be spewing something out. The round object outside its mouth is proportionate to a human head, and the carvings – which appear purposeful – that mark up this ‘head’ are consistent with seaweed-like material. In the book of Jonah, Chapter 2:6, there appears the line: “The engulfing waters choked me, the deep surrounded me, seaweed was wrapped about my head.”¹⁰ Attached to this ‘head’ and inside the mouth of the fish appears to be the (stick-like) remainder of a human body. The body is rendered primitively, consistent with the stone medium and with an observation of Jensen (2000, p. 12) that “the earliest examples of Christian art are simple, almost humble, in their manner of presentation.”

Within Christianity, the story of Jonah is commonly interpreted as a story about death and resurrection – a quintessentially Christian theme.¹¹ As Jensen (2000, p. 51) puts it:

“Jonah, especially, serves the double function of symbolizing both Christ’s death and his resurrection - the “sign” of Jonah (Matthew 12:39 and parallels), and the baptism of each believer.”

However, as a symbol of Christianity the fish is not known to have appeared until a significantly later time. Jensen (2000, p. 9) states:

⁸See, however, footnotes 6 and 7.

⁹Israeli specialist of ancient art history, Shua Amorai-Stark, points out that ancient images of western fish are usually easily identified as to species, while eastern fish, like this one, tend to be more abstract [private communication].

¹⁰This theme is echoed in Jonah, Chapter 4:6, “And God created a *kikayon*, and made it to come up over Jonah, that it might be a shadow over his head, and save him from evil.” The exact modern translation for the fast-growing *kikayon* plant is uncertain, and it is commonly mistranslated as ‘gourd’; see, for example, Janick and Paris (2006).

¹¹For Jews, the story of Jonah represents the notion that no one is beyond divine forgiveness; it has a much lesser messianic significance.

“Christian art as such cannot be dated any earlier than the end of the second or beginning of the third century. Before that date, material evidence of Christianity is scarce, and although not entirely nonexistent, often hard to distinguish from objects that belonged to the wider cultural context.”

Quoting further from Jensen (2000):

(p. 21): “Almost all existing pre-mid-fourth-century art work was specifically created to decorate tombs or coffins.”

(p. 172): “The figure of Jonah was by far the most reproduced in early Christian art. ... In the pre-Constantinian era ... Jonah occurs more than seventy times...”

(p. 68-69): “...the story of Jonah is an overwhelmingly favorite subject... Slightly under one hundred Jonah figures are found in the catacombs or carved in sarcophagi dated to the pre-Constantinian era alone.”

Snyder (2003, p. 54) too writes:

“The scene most used by early Christians was the Jonah narrative.”

And, finally, liturgical scholar Seaslotz (2005, pp. 115-116) writes:

“The figure of Jonah was one of the most frequently reproduced images in early Christian art. He is frequently shown being tossed into the sea, being swallowed up by the fish, emerging on dry land, sitting under a gourd vine, and as one who has come to life... Underlying the images is surely the theme of resurrection, and it is directly linked with the text in Matthew 12:39-40 in which Jesus says that just as Jonah was three days and nights in the belly of the fish, so will the Son of Man be three days and nights in the earth. ...the baptismal connection between Jonah and Jesus would be logical. Jonah and the initiate are both immersed in water.

Ancient symbols of Christianity may be found, for example, in the catacombs under the streets of Rome. There, the three most common among the earliest Christian symbols include: the fish (with scales and gills) as a symbol of Christ; the anchor as a symbol of faith; and the overlaid χ -and- ρ formed from the first two letters of *Christos* in Greek. Of these symbols, the fish is the one most commonly found. However those symbols in the catacombs date to the fourth century, or to the third century at the earliest. No uncontestedly Jesus-related artifacts from the first century have ever been found, and it is not known what symbols may have been used by the very first followers of Jesus.

Noteworthy about Ossuary # 1 is that symbols of fish on Jewish funerary objects are virtually nonexistent.¹² Indeed, the use of ‘graven images’ is forbidden in Jewish tradition, so to find such an image in a Jewish tomb of the first century is quite unexpected. This (together with the implication of the scales and fins) suggests that this ossuary is associated with a Jewish person who had transitioned away from prevailing Jewish traditions. Could then the symbol of a fish have been used by the very earliest followers of Jesus, and have *subsequently* found its way into wider use? *If so*, this would constitute the earliest *iconological* evidence for the belief in resurrection ever found – and found on an ossuary box known to date to within decades of Jesus’ death.

The bordered cross carving on one side of this ossuary may or may not be significant; we attach no evidentiary value to it. Cross-marks have appeared on other ossuaries, either as mason’s marks, or as larger decorations.¹³

We next consider Ossuary # 2 and the four lines of text that appear on it. Although these four lines are executed in Greek script, they appear to involve two languages - Greek and Hebrew.¹⁴ The first line, $\Delta I O \Sigma$, is Greek, and essentially refers to ‘The Divine One’ or to ‘God’. The second line, $I A I O$, is a transliteration into Greek script of the Hebrew word for God as it appears in the Old Testament: ‘YHWH’ or ‘Yehovah’. Taken together, the first two lines may constitute an address to Yehovah, using the Greek and Hebrew languages alternately. It is important to appreciate that the name Jehovah (YHWH) of God *never* appears on Jewish funerary objects;¹⁵ such an inscription constitutes a *very* significant violation of Jewish traditions, again evidencing a departure from norms of the era. Furthermore, citing the name of God *twice* in succession in this way symbolically

¹²A crude image of what may be a fish – without anything protruding from an open and upward-pointing mouth – does, however, appear on the ossuary of “Claudius”; see Rahmani (1994, Item 348). As for non-funerary Jewish art, graven images are extremely rare. One image of a fish did occur on a table; see Avigad (1980, illustration 185:4).

¹³The ‘cross’ is generally not believed to have become a symbol of Christianity in the first century, but only at a later time (although this point is not without some recent controversy).

¹⁴The reader is again referred here to footnotes 6 and 7.

¹⁵This is because death is associated with *tuma* (i.e., ritual impurity) and God’s name is *never* placed onto anything impure.

violates the worshipping of only *one* god.

The third line, $\Upsilon \Psi \Omega$ ('UPSO'), is in the Greek language, and unambiguously refers to the act of "raising" or of "lifting up". It could mean "has raised", "will raise", or "is raising". The Greek verb, $\Upsilon \Psi \Omega$, is used some 20 times in the New Testament, including in the gospels of Matthew, Luke, and John, as well as elsewhere. For example, John 3:14 reads: "And as Moses *lifted up* the serpent in the wilderness, so must the Son of Man be *lifted up*"; John 8:28 reads: "When you have *lifted up* the Son of Man, then you will know that I am he"; and John 12:32 reads: "And I, when I am *lifted up* from the earth, will draw all people to myself". These uses of $\Upsilon \Psi \Omega$ pertain to the resurrection of Jesus.

The fourth line of the inscription appears to consist of three characters of which the last two are difficult to read. If in Greek, it could mean "the holy one" (*agios*) or "the holy place" or "from death's realm". If in Hebrew (though in Greek script), it could have the same meaning as the third line, since *hagbah* is the Hebrew imperative for 'lifting'. In the latter case, the inscription involves both Greek and Hebrew, and reads: "God, Yehovah, Raise up, Raise up".

Among other possibilities is that the fourth line was meant to be the name of a person¹⁶ (Agba or Agaba). A further possibility is that the second line of the inscription was meant to refer to Jesus.¹⁷ Professor James Charlesworth, a specialist in New Testament languages and literature at the Princeton Theological Seminary, reads the four line inscription as a plea to Jehovah to lift or to raise someone up from the dead.¹⁸ Either way, it appears, in sum, to be a plea for resurrection. If these readings are correct, then – because ossuary burials ceased in 70 CE – this would represent the earliest *statement* referring to resurrection ever found. Furthermore, if one accepts the interpretations outlined here, the implied meanings of Ossuaries 1 and 2 (found in the same tomb) are mutually reinforcing.

Ossuary # 3 bears the inscription MAPA (MARA) which may be a shortened form of Martha, although other possible interpretations for this name-form were detailed in

¹⁶As a name it is very rare; however, the name Agabus occurs in the Book of Acts (11:28 and 21:10).

¹⁷For instance, John 10:33 states: "... because that thou, being a man, makest thyself God."

¹⁸A still further possible reading is: "I wonderous YHVH, raise up, raise up".

AF08.¹⁹ Because this name on ossuaries is rare, its appearance in both of the adjacent Tombs 1 and 2 evidences a possible link between the families involved.

Ossuary # 8 was likely that of a child. Inscribed between its circular rosettes is a type of pillar commonly known as a *nefesh*; the word *nefesh* means ‘soul’, however the image is symbolic of a monument or a stele. Its occurrence on ossuaries is not rare. This symbol is thought to have been adopted from the Syrians and/or the Nabataeans who viewed it as a dwelling-place for the spirit after death (in lieu of an actual monument), and it was adopted by Jews who may have given it a new meaning.²⁰ The *nefesh* symbol is discussed in detail in Hachlili (2005, Chapter 8).

In sum, the ossuaries in Tomb 2, when taken together, and when viewed in the context of the adjoining Tomb 1, constitute an archeological find of considerable importance. It is a find that has the potential to challenge the interpretations previously assigned to numerous other archeological artifacts unearthed over the years from the ancient city of Jerusalem.

4 Some Historical Matters.

The matters we deal with here refer to recent, not to ancient, history. Tomb 1, discussed in AF08, was discovered on March 28, 1980 as a result of construction activity. The site was visited by district archeologist Amos Kloner on March 29th, and salvage excavations (lasting a few days) were begun on March 30th (under IAA permit 938) by Yosef Gath of the Department of Antiquities and Museums, assisted by Elliot Brown. Shimon Gibson surveyed the site and drew up its plan. See Gath (1981) and Kloner (1996).

The adjoining Tomb 2, described in this paper, was actually first discovered in April, 1981, also as a result of construction activity. The Israel Antiquities Authority was notified, and Kloner and an assistant were dispatched to investigate. Through a hole

¹⁹It may, for instance, have been a title.

²⁰S. Jacobovici [private communication] posits that the *nefesh* symbol may be a coded reference to the afterlife symbolizing the ultimate resurrection of the dead.

inadvertently blasted in its ceiling, the archeologists were able to descend into this 3.5 × 3.5 meters tomb. The tomb's entrance (nowadays some four meters below ground level) was blocked by a square *golal* (a large heavy sealing stone); the other three walls each had three gabled niches carved into them, which also were all blocked with stones. Inside four of these niches, a total of *eight* ossuaries were found, as well as some skeletal remains. However, after only a short time in the tomb,²¹ the archeologists were set upon by an ultra-Orthodox group intent on preserving the sanctity of the site and were forced to leave, having had just enough time to draw a rough map of the tomb's interior, and to take a few brief notes and a few wide-angle black-and-white photographs before the tomb was resealed. Nevertheless, in the melee, Kloner managed somehow to carry away a small, uninscribed, but nicely decorated ossuary. That ossuary is now housed at an IAA warehouse in Bet Shemesh under catalogue number 81-505. It is the one referred to in Section 2 as Ossuary # 8.

Soon afterwards, IAA archeologists Yosef Gath²² and Shlomo Gudovitch,²³ with permits secured, visited the tomb for a period of several days. They removed the (remaining seven) ossuaries from their niches, and recorded that all of them were decorated, and that two had Greek names inscribed on them. However *no details of these inscriptions (and no mention of any images) were noted in their report*, possibly on account of how little time was available to them in the tomb. In fact, just before the remaining seven ossuaries could be hoisted away, the archeologists were set upon by ultra-Orthodox activists who insisted that the bone boxes be put back into the niches. In the circumstances, these replacements were done haphazardly, and the tomb was sealed on April 16, 1981. Fortunately, however, the original placement of the bone boxes had already been recorded, and is known; see Kloner (2000). In particular, the 'big fish' ossuary is known to have come from the first niche at the right of the tomb's entranceway, the niche typically reserved for the patriarch

²¹It is uncertain now whether this was only for a few minutes, a few hours, or a few days.

²²We note that Yosef Gath was the lead archeologist at *both* of the tombs.

²³When recently interviewed, Gudovitch did not recall any specifics concerning this excavation beyond what is described here.

of the family, while Ossuary #2 had been located in a different niche.

Yosef Gath died in 1993 before having published his findings²⁴ on Tomb 2. Partial reports exist in unpublished archives of the Israel Antiquities Authority, and in particular in an IAA internal memo dated April 17, 1981. These reports are *very* brief and contain *very* limited information.²⁵ Two reports on this tomb find were subsequently published: Kloner (1982) and Kloner (2000). Concerning the ossuaries that were found in the tomb, Kloner (1982) states *only* that:

“With the exception of one, all of the ossuaries in the cave were decorated with red or yellow paint or with incised designs, including architectural facades. Two of the ossuaries bore names incised in Greek.”

Except for the robotic entry of June, 2010, the interior of this tomb has not been seen since.

It should be mentioned that there was also a third tomb in the immediate vicinity of Tombs 1 and 2, located approximately 20 meters north of Tomb 1. Unfortunately, however, that tomb was inadvertently completely destroyed during construction activity in the area and no record of its contents is available. It is, of course, also possible that there may be other undiscovered tombs in the region.

Finally, we include here a brief update on the Aramaic-inscribed “James son of Joseph brother of Jesus” ossuary. The trial of its owner, Oded Golan, accused of forgery, which began at the end of 2004, ended in October, 2010, and even though it is a norm to be rendered within 30 days after a trial ends, it was only in March 2012 that a verdict was handed down – a delay of unprecedented duration. While this case was complicated by extraneous considerations, the Court’s decision was that it could find no evidence that the ‘James ossuary’ and its inscription were fake, despite very intensive scientific examination

²⁴Rahmani’s (1994) catalogue includes the ossuaries of Tomb 1 (acknowledging permission from Gath to publish them), but not of Tomb 2, likely because its ossuaries did not find their way into the State collections.

²⁵*Subsequent* to the robotic exploration, an obscure, never before cited clipping dated 22 May 1981 (in Hebrew) from Davar – an Israeli newspaper that ceased publishing well before such materials were put online – was unearthed. The article’s focus was on the Haredim interfering with the dig; it only briefly mentions that there were architectural images, and a vase.

of that ossuary by experts.²⁶ The Court, however, also made it a point to say that this did not mean that the inscription has been proven authentic. See, for example, Golan (2011). Cotton et al (2011, item 531, pages 547-548, by J. Price and A. Yardeni) comment as follows: “Ossuary of Ya’akov son of Yosef brother of Yeshua with Aramaic inscription, 1 c. BCE - 1 c. CE”:

The origins of this ossuary can be traced no further than its possession by a Tel Aviv antiquities collector, who claims he purchased it in Jerusalem in the 1970s. ... The letter-forms seem appropriate for the first century CE and cannot be decisively impugned on palaeographical grounds, although all or parts of the inscription (particularly the last two words) have been challenged... Authenticity is also disputed on the basis of petrographic analysis of the patinas on the surface of the box and within the grooves of the inscription (Ayalon et al.). Yardeni and Lemaire have argued for its authenticity. Yet even assuming it is entirely genuine, the last two words, “brother of Yeshua”, would²⁷ have been added to the normal name + patronym not because “the brother had a particular role...” but... to distinguish this Ya’akov from a relative with a similar or identical name... Moreover, the grammar of the inscription allows Yeshu’a to be the brother of either Ya’akov or Yosef: there is no way of knowing. ... Context was completely lost when the object was looted from its cave.

5 Statistical Issues: Data.

The questions that concern us next relate to the role that statistics, as a discipline, might or might not be able to play in analyzing and interpreting the findings unearthed in Tomb 2, when taken in conjunction with the data obtained from Tomb 1. We begin with a discussion on available sources of data.

The first items of data pertain to the onomasticon – the names of the men and women who lived during the era in question. The study in AF08 relied on three sources: (i) Rahmani (1994), who catalogued the ossuaries in the collections of the State of Israel as of 1989, of which some 233 bore inscriptions, (ii) Tal Ilan’s (2002) lexicon of Jewish names

²⁶Also at issue was whether or not the ossuary was acquired prior to 1978; after that date its purchase would have been deemed illegal so that ownership of the ossuary would transfer to the IAA. Needless to say, if authentic, this antiquity would be priceless.

²⁷The use of the word ‘would’ here, instead of ‘might’ or ‘could’, evidences some degree of conviction on the part of the authors.

in late antiquity that contains some 2826 names when fictitious ones are excluded, and (iii) Hachlili (2005) that contains a subset of Tal Ilan (2002) dating to the late Second Temple period. We point out that there is now a recent, comprehensive fourth source of such data, namely the nine-author edited volume of Cotton et al (2010).

The data in Cotton et al are important for a number of reasons. Firstly, this source provides a much more comprehensive collection of names found on ossuaries than does any other. Specifically, 591 funerary inscriptions are provided (*ibid*, entries 18 to 608), virtually all of which are inscriptions taken from ossuaries. This provides a much larger sample of such names than hitherto available – almost three times as many as in Rahmani (1994). No statistical summary of the names is provided, but such a summary could be prepared by one so inclined. Broadly put, there does not appear to be evidence here that would substantively invalidate the frequencies of the names occurring in the three mentioned earlier sources.

Secondly, Cotton et al provide pictures for a substantial proportion of the inscriptions, and this is important for two reasons. Firstly, such pictures allow us to gauge the ‘quality’ of ornamentation on typical ossuaries, and hence to assess the ornamentation found in Tomb 2. Loosely put, there is some small (although not unduly small) proportion of ossuaries having ornamentation as ‘nice’ or ‘nicer’ than was found in Tomb 2; i.e., most of the ossuaries in Tomb 2 belong to the category of ‘nicer’ ossuaries. Secondly – and this is particularly important – although the pictures in Cotton et al were not intended to focus on images (but rather on written inscriptions), it is nevertheless clear from those many pictures that Jewish funerary art of the era explicitly excluded images of animate objects and, particularly, any references to Yehovah (YHWH). There is, in Cotton et al, not a single image of any animal or of any person evident on any of the many ossuaries illustrated there, nor is there any reference to any Hebrew word for God.^{28,29} This corroborates the fact that graven images were forbidden, in accordance with the Second Commandment. It

²⁸The publication of Cotton et al preceded the robotic exploration of the second cave.

²⁹Note that images of ossuaries may also be found in Rahmani (1994), and in Hachlili (2005).

also lends some credence to the argument that Ossuary # 1 (with the 'fish') and Ossuary # 2 (with the four line inscription) were associated with persons having a decidedly different attitude towards these prohibitions.

The following quotes from Cotton et al (pp. 8-10, by B. Isaac) are also relevant here:

- (a) "...the overwhelming majority of known ossuaries come from Jerusalem and its environs."
- (b) "The expense involved in the excavation of the cave and manufacture of the ossuary would have favored people with more substantial means..." and:
- (c) "Of the ossuaries recorded to date, only about 600-650 are inscribed, and most of these inscriptions only identify the name(s) of the deceased."

It is worth mentioning that Cotton et al (entries 473-478, pp. 495-501, by J. Price and H. Misgav) include in their volume an analysis of the burial cave with the six inscribed ossuaries of Tomb 1. They state:

"Neither the entrance to the cave nor any of the loculi was found sealed, and the excavators noted signs of disturbance and looting before their arrival, perhaps in antiquity. Moreover, the cave was first inspected thoroughly by excavators, and the ossuaries removed, on a Friday; when they returned the next Sunday they discovered that the local residents had entered the cave and removed some of its contents, including bones (Gibson). Much original data, including the original placement of the ossuaries in the tomb and their contents, were lost as a result of the hurried pace of excavations and disturbance by local residents, the untimely death of the original excavator (Gath) and his failure to keep detailed notes, and the disturbance by looters before the modern excavations. Sixteen years passed between the original excavation by Gath and Kloner's final report; by that time the bones recovered from the cave had been reburied without proper analysis."

Cotton et al were aware of media activity generated by that first tomb and further state:

"If not for the coincidence of some of the inscribed names with the central family of the New Testament, this ordinary cave and its unexceptional ossuaries should have attracted little popular attention. ... There is no sound reason to connect any ossuary in this tomb to any known historical figure."

Cotton et al also provide detailed analyses for each of the six Tomb 1 ossuary inscriptions, citing studies in peer-reviewed journals. We shall return to their analysis of the "Ossuary of Mariam(e) with Greek inscription" in the Appendix below. In keeping with the scholarly objectives of their volume, the analyses provided by Cotton et al maintain exemplary reserve. We add here only that their work predates the findings from the second tomb.

In our discussion of the above-mentioned sources of data, the implicit sampling unit, so far, has been the individual ossuary. There is, however, another relevant sampling unit, namely the individual tomb. Cotton et al (pp. 8-9) indicate that to date some 900 tombs have been explored. The data in the four already mentioned sources are not summarized by tomb, but here again, such summaries could be prepared from these sources by one so inclined. A tomb-by-tomb itemization is, however, now available in Kloner and Zissu (2007). In this reference, all tombsites known as of 2002 – a total of some 927 tombsites – are organized by zones (approximately 30 regions). The tombsites are described in varying levels of detail, and references to published sources are given for each. What is amply evident from all of these references, however, is that tombsites that provide so strongly Judeo-Christian a message as Tomb 2 appears to do are considerably more rare than 1 in 100 – a fact that plays some role in the section on inference below.

We mention that the compendium of Kloner and Zissu (2007) includes the two tombs that concern us here. Tomb 1 appears in that reference as item 12-46 (ibid pages 342-343) with the following remarks:

Ten ossuaries, some decorated, were found in the cave and its *kokhim*. Names such as “Yehuda son of Yeshua” “Matya,” “Yose,” “Marya,” and “Yeshua‘ son of Yehosef” were inscribed in Hebrew on some of them. Another ossuary belonged to “Mariamene, (who is also called) Mara”, inscribed in Greek on its long side.³⁰

Tomb 2 appears in that reference as item 12-45 (ibid page 342) with the following remarks:

A burial cave was discovered in the course of development work, and briefly examined by Kloner on behalf of the IDAM.

... eight decorated and painted ossuaries were found in the *kokhim*. Greek names were inscribed on two of the ossuaries. Only one ossuary was removed from the cave.

Gath’s investigation of this tomb is not mentioned, and Kloner and Zissu provide no other pertinent details regarding the tomb.

³⁰We have quoted Kloner and Zissu (2007) here verbatim, including not only their exact punctuation, but in particular, their interpretation of the Greek inscription as “Mariamene, (who is also called) Mara”.

We turn next to elements of data that pertain to images of fish. Concerning such images, the reign of Constantine³¹ provides a convenient historical dividing line. Snyder (2003) studies pre-Constantinian pictorial art and notes that such art is limited to four media: frescoes, mosaics, sarcophagi, and possibly statues (ibid, p. 68). Snyder (ibid, p. 87) produced a comprehensive tabulation of pre-Constantinian Christian biblical pictorial representations. A condensed version of Snyder's tabulation is given here in Table 1. For conciseness, we removed from Snyder's table thirteen representations (i.e., thirteen rows) that do not occur on sarcophagi (and these representations happen also to be relatively rare), and our column for 'Other media' includes frescos and mosaics that Snyder tabulates under separate columns. We have, however, maintained the separate column for 'Roman fragments' only on account of the high incidences that occur in it. In this tabulation, note that a complete 'Jonah cycle' had been counted as three; also, to facilitate its reading, we have set apart – at the top of the table – the three rows that pertain to images of Jonah.

Noteworthy from this tabulation is the very high importance placed on the story of Jonah in pre-Constantinian pictorial representations. Snyder (ibid p. 89) concludes from these data that:

“there can be no doubt that the primary artistic representation of early Christianity was the Jonah cycle”.

Although the story of Jonah originates in the Old Testament, it plays a much lesser role in Jewish than in Christian religious thought, with new meanings having been ascribed to it along Christian themes. Jonah's having being spewed out by the monster fish is symbolic of escaping death. Snyder (ibid p. 92) points out that

“Jesus spoke of the sign of Jonah as a prophetic paradigm of death and resurrection, or baptism and repentance (Matthew 12:38-40).”

Jensen (2000, p. 51) states:

³¹Constantine the Great, commonly estimated to have been born in 272, was Roman Emperor from 306 until his death in 337, and the first Roman emperor to convert to Christianity. See, for example, Cameron and Hall (1999).

Table 1: **Pre-Constantinian biblical pictorial representations**

Biblical representation	Sarcophagi	Roman fragments	Other media	Row Totals
Jonah cast into the sea	8	23	6	38
Jonah & the fish	8	17	3	28
Jonah at rest	7	25	10	42
Adam & Eve	2	0	2	4
Noah in the arc	3	2	3	8
Sacrifice of Isaac	1	2	2	5
Harassment of Moses	1	0	0	1
Moses striking rock	1	0	4	5
Tobit & fish	1	0	0	1
Daniel in lion's den	2	0	4	6
Baptism of Jesus	1	2	3	6
Jesus preaching	1	1	0	2
Healing the paralytic	1	0	2	3
Healing the possessed	1	0	0	1
Multiplying loaves & fish	1	1	0	2
Resurrection of Lazarus	2	1	2	5
Fisherman	2	0	1	3
Woman with blood	1	0	0	1

“Jonah, especially, serves the double function of symbolizing both Christ’s death and his resurrection - the “sign” of Jonah (Matthew 12:39 and parallels), and the baptism of each believer.”

Can it then be that the apparent ‘fish’ on Ossuary # 1 is a significant, earliest known precursor, to what subsequently became a quintessentially Christian iconic representation?

The third and final items of data of which we are aware concern the spatial distribution of ancient tombsites in the vicinity of Jerusalem. We first quote from Cotton et al (2010, pp. 8-9, by B. Isaac):

“A dense band of rock-hewn burial caves surrounded Jerusalem on all sides, extending to about four km from the walls of the city, the densest concentration being closest to the walls. Most were found north, east and south of the city. The locations were always dictated by geology, as the graves had to be situated where the local stone was suitable.often the bones of more than one person were placed in the same box. So far about 900 caves and more than 2000 ossuaries (some estimate more than 3000) have been documented. Presumably there are many more caves

that have not been discovered, and many others were destroyed by modern construction without any record being made. Ossuaries have been shattered or robbed by looters or lost soon after their discovery, and many have disappeared into private collections. Kloner and Zissu estimate that the known caves provided burial space for tens of thousands of people.

“The caves do not seem to form any centralized plan, but were hewn where land was available and the rock suitable.”

Kloner and Zissu’s (2007) study of the necropolis of Jerusalem contains maps showing the locations of known tombs and other burial areas from the Second Temple period. One such map, reproduced here in Figure 4, covers an area of 8×9 kilometers – wide enough to include some neighbouring settlements. Aside from a tendency for tombs to cluster, the locations of tombsites throughout Jerusalem do not follow any particular spatial pattern. To assist in reading this map, a circle of radius 500 meters has been drawn about Tomb 2. That tomb is seen to be part of a tight cluster of three (relatively separated from other known tomb clusters in the vicinity), the lowest (i.e., southernmost) of which is Tomb 1, with the one in between being the one mentioned in Section 4 as having been destroyed. It is, of course, not possible to claim that this map of tombsites is complete, nor that the tombs marked on it constitute a ‘simple random sample’ of all actual ones.

♠♠ **Figure 4 about here.** ♠♠

Caption for Figure 4: Map of the necropolis of Jerusalem. (Source: Kloner and Zissu, 2007.)

6 Statistical Issues: Inference.

Having laid out the available sources of data, we next consider what possibilities there are for inference based on data of the type described. The term ‘inference’, as used here, has two meanings, both technical. One is ‘statistical inference’, which typically includes producing approximations to probabilities with more or less precisely defined inferential interpretations. The other is ‘scientific (i.e. logical) inference’, which is not exclusive to the domain of ‘statistics’ as commonly understood.

Had a ‘meaningful’ collection of names been found on the ossuaries of Tomb 2, there might have been some possibility of ascribing numerical weights to that new evidence and of then combining those weights with the numerical evidence in AF08. For example, one among various *a priori candidates* for a second tomb might (for argument’s sake) have included ‘Joseph of Arimathea’; but no such names occurred.

While a *quantitative* analysis seems out of reach here, there is nevertheless at least one *statistical principle* operating here that is relevant under the more general rubric of *scientific inference*. Tukey (1977) makes the well known distinction between *exploratory* and *confirmatory* experimentation in statistics. Within that framework, one might argue that *the data collected and analyzed from Tomb 1 played an exploratory role in the context of designing a confirmatory experiment, namely that of collecting and analyzing the data from Tomb 2*. Here, what is of essence – from a purely inferential view – is that the *previously unseen* data from the second tomb³² were not obtained via exploration; that tomb was not chosen as ‘best’ of some collection of after-the-fact examined tombs. No: the second tomb was selected for examination only *after* consideration had been given to the outcome of the first experiment. And based solely on those *exploratory* considerations, it is that *one*, and only that *one* tomb, that was selected for subsequent ‘*confirmatory*’ investigation. Furthermore (although these are not entirely independent considerations), not only was the second tomb chosen in this *a priori* way, but it has also the distinction of being the adjoining tomb – of being, literally, the tomb next door. As such, one might argue that it provides reinforcing context to other tombs in its immediate vicinity. Indeed, having been involved in multiple burials over a bounded historical period (and sharing also the rare inscriptions ‘Mara’), it seems plausible that the families associated with these two tombs may have had some degree of interaction and acquaintance. In sum, the data from Tomb 2 were acquired from an experiment of a *confirmatory* nature. The findings from the second tomb ought therefore to carry corresponding evidentiary weight.

³²All that was known of Tomb 2 prior to its robotic exploration is that it contained two ossuaries inscribed with Greek names, and some ossuaries with incised designs; *nothing* about the designs or the inscriptions was known.

The main difficulty with the argument just outlined is that the confirmatory experiment *done* was not the one that ideally *needed to be done*. The needed experiment would have been a direct test of the null hypothesis that Tomb 1 is that of an NT-related family, but of course, no such test is possible. Hence it can be argued that the exploratory-confirmatory paradigm, at best, applies here only partially.

What the data from the second tomb unmistakably tell us – *provided one accepts some of the interpretations posited in Section 3* – is that this tomb was associated with a family (or families) of relatively well-to-do individuals of Jewish origin, some of whom had (and to no small extent) departed from universally accepted norms and strictures of that faith, and who apparently believed strongly enough in resurrection to motivate a significant and deliberate final effort on their part to express that new viewpoint. Furthermore, this tomb – which *very* likely bears connections to Tomb 1 – would therefore be one of the most (if not the most) strikingly Judeo-Christian tombsites ever unearthed – demonstrably more so than even 1 out of 100 tombs. Considering how truly unique are the findings from this tomb, and how profound are its possible meanings, it could then be argued that some of the individuals buried there were foremost among the earliest followers of Jesus.

Although we do not undertake any *cardinal* quantification based on the newly acquired data, a degree of *ordinal* quantification does, in the author's opinion, seem to be possible. Specifically, regardless of how one chooses to quantify the evidence from the first tomb in respect of the likelihood that it is or is not associated with the New Testament family, and regardless of how weak or how strong one views that evidence to be, the *a priori* evidence arising from the data of the *adjoining* tomb – provided (again) that one accepts some of the interpretations posited in Section 3 – serves only to increase that likelihood, and not necessarily by an entirely negligible amount. Of course, each reader will need to decide for themselves the plausibility of such arguments in accordance with their assessment of the mentioned interpretations, with the extent to which they find it reasonable to assume any connections between the two tombs,³³ and with whether or not they find the partially

³³One referee has pointed out that the characteristics of Tombs 1 and 2 are quite different.

confirmatory nature of the experimentation convincingly applicable to any overall analysis of the problem being considered.

7 Concluding Remarks.

The Rejoinder to AF08 alluded to pressures exerted on scholars and others involved in the work discussed here. Having by happenstance become involved with these data, I felt I had no choice but to pursue the facts to their logical conclusion. However, I did not expect new and relevant data ever to become available. Thus, it bears repeating that the subject has both historical as well as archeological significance, and that the statistical issues it gives rise to have methodological interest. We also point out that our analyses do not apply directly to such questions as who was buried in any particular ossuary, or of the relationships among the individuals; such questions necessarily entail separate inferences. Finally, the role of coincidence, as studied in Diaconis and Mosteller (1989), needs also to be taken into account.

Statistics is the science and the art of quantifying and thereby reducing uncertainty, not of eliminating it. From a purely technical viewpoint, the problem studied here highlights subtle aspects of the connections between statistics and the acts of deciding on measures of uncertainty. Certainty itself is rarely an option. The author is of the opinion that, *based on the currently available data*, it is at least a possibility – and one that should be considered seriously – that Tomb 1 is that of a family related to the New Testament. This statement – not more, but also not less – stands as the author’s own conclusion to the work presented here. We must leave it to others, who may be interested, to add to any discussions about the relevance of statistical ideas in assessing data of this nature.

8 Appendix: Which Mary, or What’s in a Name?

Reliable statistical inference requires that highly influential observations be measured reliably. The reader will not have failed to notice that the outcome of any analysis to the problem considered here is influenced heavily by a single item of data, namely, the correct reading of the ossuary in Tomb 1 bearing the Greek inscription. Our aim here is not to resolve this matter for the reader, but only to provide some context to it.

The inscription in question was shown in AF08. It was first read, prior to any controversies being associated with it, by Levi Rahmani, a foremost authority on ossuary inscriptions whose “eye” for such readings has rarely been contested. In Rahmani (1994, p. 14, & p. 222), that inscription is read as

“*Μαριαμηνου (η) Μαρα* of Mariamene, (who is also called) Mara...

Thanks are due to the late J. Gath for permission to publish these ossuaries...

Μαριαμηνου: Here the name is the genitive of *Μαριαμηνου*, a diminutive of *Μαριαμηνη* ... one of the many variants of the name [Miryam] ... The present variant was further contracted to *Μαριαμνη*, which was explicitly equated with *Μαριαμη*...”

Rahmani goes on to say:

“(η) *Μαρα*: The stroke between the *upsilon* of the first and the *mu* of the second name probably represents an *eta*, standing here for the usual *η και* ... used in the case of double names...”

This reading of the inscription was, at the time, corroborated by Leah di Segni, and also accepted by Kloner (1996), one of the original excavators of Tomb 1 as well as of Tomb 2. The same reading for this inscription is given in Kloner and Zissu (2007), this being an English translation of a slightly expanded version of their earlier publication in Hebrew. Independently of this, in 2002 Francois Bovon, a highly respected biblical scholar, published an article on the role of Mary Magdalene in the *Acts of Philip* from which it might have been inferred that Mariamne was a more likely name for Mary Magdalene than more common variants such as Mariam. The plausibility of that inference is enhanced by

the fact that there are *only two* other known instances of the name version Mariamene in all Greek of literature up to the 15th century, both of which refer to Mary Magdalene.

Subsequent to events surrounding the publication of AF08 – during which time the implications of the interaction between Rahmani’s reading and Bovon’s article became clear – two developments occurred. Firstly, Professor Bovon issued a clarification through the Society of Biblical Literature stating that he did “not believe that Mariamne is the real name of Mary of Magdalene” and that “Mariamne is, besides Maria or Mariam, a possible Greek equivalent...” Secondly, Rahmani’s reading of the inscription was challenged by Roger Bagnall, Stephen Pfann, Jonathan Price, and others. Upon reexamination, Rahmani revised his reading of the inscription. We quote from Cotton et al (2010, item 477, written by J. Price) which they describe as “Ossuary of Mariam(e) with Greek inscription, 1 c. BCE - 1 c. CE” and which they read as “*Μαριαμη και Μαρα*, or *Μαριαμ η και Μαρα*”:

“Rahmani’s reading of the first name as *Μαριαμηνου*, as the genitive of *Μαριαμηνη* / *Μαριαμνη*, has generated widespread speculation and misunderstanding. In fact the inscribed letters are without doubt as represented here; the mark between the *iota* and last *mu* is not part of the inscription (compare other gouges and scratches between and around the letters, and all over the box); the *kappa* is clear (it is not an inept *mu*), and the ligature *alpha-iota* is standard and unproblematic. In a personal communication, Rahmani has accepted the correction to his reading in the ed. pr.”

The entry goes on to say:

“The inscribed letters may be parsed in one of two ways, without any firm criterion for preferring one or the other (the bones in the box were not analyzed and are now reburied): either ... ‘Mariame and Mara’ – a reading favored by SEG and BE – or ... ‘Mariam who is also (known as) Mara’.”³⁴

While not unaware of the pressures that must have been brought to bear, there is nevertheless no doubt in my mind as to the intended objectivity of these updates.

There remain three germane matters we have not yet introduced, and which are covered by the following three quotes from Cotton (ibid):

³⁴The abbreviations SEG and BE refer to Supplementum Epigraphicum Graecum, and to Bulletin épigraphique, in: Revue des études grecques.

- (i) "...Mara is not a title, esp. not Aramaic for "lady" or "honorable woman", for which the correct feminine form is Marta..."^{35,36}
- (ii) "Pfann's argument that the letters KAIMARA were added by a different hand cannot be conclusively proven, despite the slight differences in the formation of those letters, since in ossuary inscriptions letters are often formed by the same inscriber in an inconsistent manner..."
- (iii) "This is the only Greek inscription recovered from the cave, but this fact in itself is not pertinent to the identity of the deceased, reflecting rather the skill and choice of the inscriber."

To these we add two observations: If the inscription involved two hands, then the names most likely corresponded to two different individuals. (Mara could then, conceivably, have been a male.³⁷) If only one hand (and at the same time) was involved, then the inscription likely meant to identify a person who was known by two different names, or by a title together with a name.

Of resulting interest are ossuaries bearing double names. The data in Cotton et al show that fewer than 1 in 10 among known inscribed ossuaries bore two names. A summary of those doubly-inscribed ossuaries, by languages used, and by genders, is provided in Table 2. The accuracy of this table is only approximate since a few cases were either ambiguous, illegible, or both. Also, in this table we do not distinguish between Hebrew and Aramaic script. Some ossuaries were, in fact, inscribed in both languages (i.e., in Hebrew/Aramaic and in Greek). The term 'unknown' in three rows of the table indicates that the relationship between the named persons could not be determined. The Mariamne ossuary of Tomb 1 was included in this tabulation in the "Greek script" column, and "Two women; unknown" row. Of the 51 ossuaries in this tabulation, one other (ibid, item 168,

³⁵It is not within our purview to partake of such debates, but note only that Cotton et al do not back up this categorical, but arguable, assertion. [Jacobovici, private communication.]

³⁶In any case, if Cotton et al are correct, two persons are named on that ossuary. In the Gospels, two sisters are mentioned by name: Mary and Martha, the sisters of Lazarus. This Mary is identified there as the one who anoints Jesus' feet and wipes them with her hair, and has traditionally also has been identified with Mary Magdalene. [Jacobovici, private communication.] This logic leads to alternate *a priori* assumptions as in AF08.

³⁷It seems, however, unlikely that any such second individual would have been male, not only because it is less likely for a wife to have predeceased her husband, but also because a husband's name would hardly have been positioned on the ossuary as this one's was: See Figure 1 of AF08.

p. 204, in Hebrew) involved a Martha and Maria/Mariam. No other among the remaining 49 double-named ossuaries is equally noteworthy.

Table 2: **Ossuary inscriptions with multiple names**

Genders of the names on the ossuary	Hebrew and/or Aramaic script	Greek script	Both scripts	Row totals
Father and son	1	1	0	2
Brothers	3	1	1	5
Two men; unknown	3	4	1	8
Mother and daughter	0	0	0	0
Mother and son	3	1	0	4
Mother and children	0	1	0	1
Sisters	0	1	0	1
Two women; unknown	3	2	1	6
Husband and wife	8	2	6	16
Brother and sister	0	2	0	2
Mixed genders; unknown	0	1	0	1
Genders uncertain	2	3	0	5
Column totals	23	19	9	51

The inference method in AF08 is conditional on the observed configuration of the tomb. Here we offer only a limited observation. If (as previously mentioned) it is assumed that Mariamne and Mara referred to two different individuals, and if it is assumed that both were women, then New Testament history suggests for them a plausible *a priori* candidate name pair, namely one from the general name category of Miriam/Mary, and one from the general name category of Martha/Mara; no other two-woman name combination vies equally for *a priori* candidacy.³⁸ If we use Table 2 of AF08, and allow for the fact that the order of the names does not matter,³⁹ the RR value that would then be assigned to the actually observed pairing is⁴⁰

$$2 \times \frac{74}{317} \times \frac{21+7}{317} = \frac{1}{24.25}.$$

³⁸A referee suggested that the Mary and Martha of the NT would more likely be buried in a family tomb at Bethany with their brother, however women were invariably buried with their husbands.

³⁹The factor of 2 for order not mattering may be omitted, as it occurs for all RR name assignments.

⁴⁰We have not allowed here for the rarity of Mariamne within the Miriam/Mary class, which might arguably justify a calculation alternative to the one shown here.

We do not undertake here to consider any required ‘configurational adjustments’, nor to carry out further calculations based on various provisos, but remark only that the computational consequences that ensue are not immediately intuitive. Of course, whatever those consequences are, one needs also to factor in the observations from Tomb 2, and in particular to deal with the second Mara inscription that appears in it.

It does seem indeed remarkable that a question of such considerable historical interest can sometimes revolve around the correct interpretation of a single stroke mark on a piece of stone.

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References

- [1] American Schools of Oriental Research (ASOR), Boston University. Blog site: <http://asorblog.org>.
- [2] Avigad, N. (1980). *Ha'Ir ha'Elyonah shel Yerushalayim: Parashat ha'Hafiroth ha'Arkheologiyot ba'Rova ha'Yehudi shel ha'Ir ha'Atikah bi-Yirushalayim*. Shikmonah be-Shituf im ha'Hevrah le-Hakirat Eretz Yisrael ye'Atikoteha, Jerusalem. [In Hebrew.]
- [3] Bovon, F. (2002). Mary Magdalene in the *Acts of Philip*. In: F. Stanley Jones, ed., *Which Mary? – The Marys of Early Christian Tradition*. Pages 77-89. Society of Biblical Literature Symposium Series 19, Society of Biblical Literature, Atlanta.
- [4] Cameron, A. and Hall, S.G. (1999). *Life of Constantine*. Oxford: Clarendon Press.
- [5] Cotton, H.M., Di Segni, L., Eck, W., Isaac, B., Kushnir-Stein, A., Misgav, H., Price, J., Roll, I. and Yardeni, A., eds. (2010). *Corpus Inscriptionum Iudaeae/Palaestinae*, Vol. 1: Jerusalem. Part 1:1-704. De Gruyter, Berlin.
- [6] Diaconis, P., and Mosteller, F. (1989). Methods for studying coincidences. *J. Amer. Statist. Assoc.*, 84, 853-861.
- [7] Feuerverger, A. (2008). Statistical analysis of an archeological find (with editorial, discussion, and rejoinder). *Ann. Appl. Statist.*, Vol. 2, No. 1, 1-112.
- [8] Gath, J. (1981). East Talpiyot. *Hadashot Arkheologiyot*, Israel Department of Antiquities and Museums, 76:24-25. In Hebrew.
- [9] Golan, O. (2011). The authenticity of the James ossuary and the Jehoash Tablet inscriptions – Summary of expert trial witnesses. A letter by Oded Golan published in April 2011, in the www.bibleinterp.com website.
- [10] Hachlili, R. (2005) *Jewish Funerary Customs, Practices and Rites in the Second Temple Period*. Brill, Boston.

- [11] Ilan, T. (2002). *Lexicon of Jewish Names in Late Antiquity, Part 1: Palestine 330 BCE – 200 CE*, Mohr Siebeck, Tübingen.
- [12] Israel Antiquities Authority. (1981). Internal memo dated August, 2, 1981.
- [13] Janick, J. and Paris, H.S. (2006). Jonah and the “Gourd” at Nineveh: Consequences of a Classic Mistranslation. *Cucurbitaceae*, pp 349-357. <http://www.hort.purdue.edu/newcrop/jonah.pdf>
- [14] Jensen, R.M. (2000). *Understanding Early Christian Art*. Routledge, London.
- [15] Kloner, A. (1982). Excavations and Surveys in Israel 1982, English Edition of *Hadashot Arkheologiyot*, Vol. 1, No. 78-81, page 51, Item B. (October 1982).
- [16] Kloner, A. (1996). A Tomb with Inscribed Ossuaries in East Talpiyot, Jerusalem. *Atiqot*, XXIX, 15- 22.
- [17] Kloner, A. (2000). *Survey of Jerusalem: The Southern Sector*. Israel Antiquities Authority, Jerusalem, p. 84.
- [18] Kloner, A. and Gibson, S. (2012). The Talpiot Tomb reconsidered: The Archaeological facts. In: *The Tomb of Jesus and His Family? Exploring Ancient Jewish Tombs Near Jerusalem’s Walls*, The Fourth Princeton Symposium on Judaism and Christian Origins, J.H. Charlesworth and A.C. Boulet, eds. Erdemans, Grand Rapids, forthcoming.
- [19] Kloner, A. and Zissu, B. (2007). *The Necropolis of Jerusalem in the Second Temple Period*. Uitgeverij Peeters, Leuven.
- [20] *Near Eastern Archaeology*. (2006). A forum: The Talpiot “Jesus” Family Tomb. In: Vol. 69, Nos. 3-4, pages 116-137.
- [21] Rahmani, L.Y. (1994). *A Catalogue of Jewish Ossuaries in the Collections of the State of Israel*. Israel Antiquities Authority, Israel Academy of Sciences and Humanities, Jerusalem.

- [22] Seasoltz, R.K. (2005). *A Sense of the Sacred: Theological Foundations of Christian Architecture and Art*. Continuum, New York.
- [23] Snyder, G.F. (2003). *Ante Pacem: Archeological Evidence of Church Life Before Constantine*. Mercer University Press, Macon, Georgia.
- [24] Tabor, J.D. (2011). A preliminary report of a robotic camera exploration of a sealed 1st century tomb in East Talpiot, Jerusalem. Available at: www.bibleinterp.com/PDFs/Tabor2.pdf
- [25] Tabor, J.D. and Jacobovici, S. (2012). *The Jesus Discovery*. Simon & Schuster, New York.
- [26] Tukey, J.W. (1977). *Exploratory Data Analysis*. Addison-Wesley.

Instructions regarding the figures.

Figure 4 – Necropolis: If possible, please crop this figure from above so that the page number 508 and the heading ‘The necropolis of Jerusalem’ do not show. Also, please crop the figure from below so that the line ‘The map covers a larger area than other maps, in order to include neighbouring settlements’, as well as all material below that line, do not show.

Figure of Mariamne: This figure does not appear in the manuscript because it has already appeared in AF08. However if it were to be desired to reproduce it here (at about page 24) then in that case its caption should read: “Ossuary from Tomb 1 with the Greek inscription.”