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CARBON 14 EVIDENCE AND NEOLITHIC SITES:

Dating the Architectures of Boncuklu Tarla and Gobekli Tepe

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Boncuklu Tarla: The excavation site as of July 20, 2017. Source:

<https://www.hurriyetdailynews.com/excavations-in-turkeys-southeast-reveal-10000-year-old-belief-in-afterlife-115695>

This paper is dedicated to the authors' daughters Daphne and Alexia.

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Copyright statement

Abstract

This paper is basically, but not exclusively, an updated version of two previous papers by this author, found in references [1] and [2]. It addresses some additional evidence presented by the archeologist in charge of the excavation at Boncuklu Tarla and published in reference [3]. This author was unaware of that reference, while writing the two cited papers. No revisions are required in either of the papers in references [1] and [2]. However, this paper elaborates on some of the material contained in reference [3]. In addition, this paper brings up some general points regarding the significant problems encountered when utilizing carbon-14 evidence from samples found in Neolithic sites, to date their excavated structures, especially when these structures are heavily layered. The discussion goes far beyond Boncuklu Tarla and its temple; it refers to other Neolithic sites in Anatolia and more broadly in the Levant, with special attention paid to the carbon-14 based PPNA/B dating of Gobekli Tepe.

Introduction

In the prior set of two papers found in references [1] and [2], the author examined the uncovered (as of 2019) archeological evidence at the Boncuklu Tarla site of Anatolia. In reference [1], the author examined the publicly available information on the excavation site at Boncuklu Tarla (BT from now on) in the Mardin region of South-Eastern Anatolia, in Asia Minor of current day Turkey. The author uncovered major discrepancies and contradictory statements in the public record from various announcements regarding the site from the archeological team. Moreover, based on the overall Architecture of the site at BT, the author determined that not only the site is much older than Gobekli Tepe (GT from now on) by about two millennia; but also, that it belongs to the middle-late 8th millennium BC, and not the middle to late 11th millennium BC date, as argued by the archeological team of BT. The temple at BT was judged to be about one and one-half millennium older than the GT's earliest Temple (structure D, Layer III). The arguments will not be repeated here; the reader is directed to references [1] and [2] to review them.

In reference [2], the author focused exclusively on the Architecture of the temple of BT, and its immediate vicinity. The findings of reference [1] were re-enforced and elaborated upon as the site and floor plans of the temple were analyzed at length. Again, the analysis and the arguments will not be repeated here, as the reader is directed to reference [2] for more details. The dating of the BT **temple's** initial construction was pegged to the early 7th millennium BC time frame. It was found to pre-date the Temple (and last) Phase at Nevali Cori (NC from now on); and to be at least a millennium older in its last days than the initial construction Phase of the earliest structure D (Layer III) at GT. Since the posting of the set of two papers by this author, a new publication came to light. It is written by the head of the excavation team at BT. Access to that reference (written in French, and in a rather obscure publication outlet) is offered in reference [3]. That publication and some of its evidence, are discussed in the following section of the paper. A particular subject of concern is the carbon-14 (C-14 from now on) dating information presented in reference [3], which contains a glaring contradiction and numerous inconsistencies.

The issues are significant and so are the associated problems; hence, the last section of this paper is devoted to the subject of C-14 dating and Neolithic sites, with particular emphasis placed on the dating of the GT site. Gobekli Tepe has become the lightning rod of current day Neolithic Archeology, and has given rise to questionable (not to mention peculiar) theories. It is high time that some in depth analysis and judicious discussion commences on both GT and the use (possible misuse and at times even abuse) of C-14 dating in the field of Neolithic Archeology.

GT has produced a remarkable and unprecedented “date inflation” in Neolithic Archeology. This inflationary trend has been clearly fueled by at times faulty application of carbon dating. The paper is a call for more stringent guidelines, and application of stricter rules in the use of this scientific technique in the field of Archeology, especially in the case of claims involving **structures**.

The new evidence

In reference [3], the new (but undated) evidence (considered as “new” for the purposes of this paper) is presented. In page 5 of the article, six layers of stratigraphy are mentioned:

Layer 1 represents (according to the article’s author) a “newer PPNB phase”;

Layer 2 represents a “medium PPNB phase”;

Layer 3 represents an “older PPNB phase”;

Layer 4 represents a “transitional phase between PPNA and PPNB”;

Layer 5 represents a “PPNA phase”; and,

Layer 6 represents an “Epipaleolithic phase” (all thus assigned according to reference [3]).

This author calls to the reader’s attention, in specific, Table 1 (page 5, reference [3]) of the evidence. Three layers of the BT site are listed in this Table, Layers 2, 3 and 5. Yet, in Table 1, Layer 2 is carbon-dated to be older than Layer 3, in contradiction to what they are supposed to be, according to the very author of the article. The two samples used from Layer 2 show (with two standard deviations) a range of: 8546-8502 BC, for the first sample; and 8498-8302 BC for the second sample. In Layer 3, supposedly an older layer than Layer 2, the single sample shows a range of 7592-7522 BC, i.e., a stratigraphically younger by one millennium layer than Layer 2. Obviously, something is wrong with this C-14 dating of BT’s stratigraphy, as reported in [3].

It is also quite noticeable that no C-14 dating is supplied for levels 1, 4 and 6. In effect, it is possible that this site is presented by the archeological team as having been continuously inhabited from the Late Epipaleolithic (at the latest circa 10500 BC) till the circa 6500 BC time frame, the time till pottery is said to have been introduced in the Anatolian region of the Levant. In effect, what this settlement represents, always according to the archeologists at BT, is the extraordinary case of a sedentary society, settled continuously at the same location for possibly more than four millennia. And this is for a settlement that had just emerged from the Late Paleolithic. More on the C-14 dating issue at BT (and elsewhere) is provided in the next section of this paper.

In reference [1], and the cited (there) references from the BT site's archeologists (as of 2019), one thing that impresses the analyst is the **density** of layers discovered at BT. There were in fact **sixteen** different layers identified, in a span of about **seven** meters of height. That type of layering (but with mudbrick construction) is encountered in Catal-Hoyuk, a site that has been extensively addressed in the set of four papers by the author on GT, and also in reference [1]. However, in reference [3], the archeologist in charge of the excavation refers to only **six** layers, the last layer involving the Epipaleolithic, apparently having **suppressed** all sixteen original ones into just five.

That density of layers interferes significantly with the C-14 dating. It is extremely difficult to assign carbon bearing material to specific layers with any degree of certitude, when such high density of different layers is encountered within stratigraphic sections. It is one of the reasons why, in the next section, specific guidelines are suggested on how to deal with attempts to C-14 date sites, where different layers in architectural structures are involved. A key reason for the apparent **contradiction** in Table 1 of reference [3], discussed earlier, is the extremely dense layering of BT's architectural (mortar, dried mud tied rubble stone, masonry) structures.

The evidence in reference [3] discusses (besides Architecture), lithic evidence (tools), beads, funerary procedures and rituals, as well as the lack of statuettes from the site. This author has discussed the Architecture of BT (and especially its temple) in references [1] and [2]. None of that will be repeated here. As for the lithic evidence (and any mobile artifacts), this author has written a set of articles on the subject of artifacts' mobility (i.e., the motion in space-time of all movable entities found in archeological sites), see references [4] and [5]. In summary, it is rather tenuous to attempt to date sites exclusively based on mobile artifacts. However, what BT lithics establish is, that at the end of the 7th beginning of the 6th millennium BC, the sharpness and variety of obsidian tools were there (in the Upper Levant) to carve on stone the artwork we encounter in both NC and GT.

In any case, in general, **fills and artifacts do not date structures. Structures' Architecture and Engineering date structures.** It is structures that the author focuses on analyzing the structures' Architecture and Engineering, building technologies and material, as well as construction methods and techniques. The effort is to place any Neolithic structure within the temporal-spatial context of an **Evolving** Early (including Epipaleolithic) Architecture. Obviously in that context, factors related to Climate, Geology, Geography, Culture (Economics, Sociology, Politics, Art, etc.), enter the calculus. The totality of these, largely uncertain and complex, dynamic, interacting factors were mentioned by this author in archeologically dating GT, BT, NC, and Catal-Hoyuk.

Carbon-14 dating and Neolithic sites

Having discussed the inconsistencies found in the carbon-14 dating of the BT stratigraphy of reference [3], and especially Table 1 of that reference, now the focus of the paper switches to examining the use of C-14 in archeological sites, and specifically its reported use in both the BT and GT cases, in reference to their **structures**. A few comments are in order, however, before these two cases are discussed, as an introduction to this extremely critical subject.

As a result of a clearly erroneous GT C-14 dating, see the set of four papers this author has written on this topic, cited in reference [2] (and not re-cited here), the Pre-Pottery Neolithic A and B (PPNA/B from now on) dating is almost now routinely assigned to numerous early Neolithic settlements of the Levant (Anatolia, the Western Near-East and Mesopotamian sites), especially those excavated over the past quarter century or so. A **date inflation** is taking place, of unprecedented proportions in Neolithic Archeology. For instance, the dating of GT, is over-estimated by about three millennia. To a lesser extent, other Neolithic sites, like BT and NC, are also assigned (by archeologists) dates that are significantly inflated. For more on this dating inflation subject, see the Note at the end of the paper.

What is addressed in this section of the paper is the topic of C-14 in BT and also in the case of GT. As discussed in earlier sections, the dense layering of BT (sixteen layers originally announced, that were reduced to six layers in reference [3], with only three shown in Table 1 of that article) in a height span of about seven meters, presents significant problems for assigning particular carbon bearing substances, unearthed by archeological excavation, to specific layers. Not only inter-layer contamination may have taken place, but also mis-assigned or erroneously assigned carbon-bearing samples to specific layers could have occurred. Particularly so, when a very dense stratigraphy exists, like that of BT, with many stratigraphic layers involving material, structures and specific places that have been inter-generationally recycled over a period of at least two (and according to the BT archeologists) possibly up to four millennia.

Here are, according to this author, some conditions that need be met, guidelines and rules that should govern C-14 dating and ought to be strictly followed in presenting evidence, and claiming credibility for the findings, in so far as **architectural structures** are concerned.

The only credible C-14 evidence that can be used to date a structure is when **uncontaminated** carbon-bearing samples from **directly below the hard (not porous) floor** of the structure are recovered, and when only the **ground level is below the structure**. Otherwise, inter-layer contamination is possible, and in-migration of carbon-bearing material from elsewhere could have reached the spot the sample was collected. Consequently, samples from **around** or **inside** the structure (i.e., the **fill**) can't be reliable when **used to date a structure**. A note: In general, and aside from C-14 issues, fills of any type do not date structures. They do not offer either a *terminus post quem*, or a *terminus ante quem*. As this author has argued in the past (found in his work on the Kasta Tumulus, near Amphipolis, Macedonia, Greece), one can fill Tutankhamun's tomb with soil that contains modern day carbon-bearing samples from a sand deposit along the Nile in Egypt; that would not make the tomb a contemporary tomb. On the other hand, one can fill the same tomb, with soil known to date back to the Pleistocene; that would not make the same tomb twelve thousand years old either.

Hence, reporting of the **precise spot** and **time** (i.e., when and where a carbon-bearing sample had been collected during the excavation), and precise **documentation** on **how** it was collected (besides the exact "where" and "when" during the excavation and stratigraphic documenting processes, so that this sample's collection, and transportation **can be retraced** with evidence,

and questions about its processing can be specifically answered), are a *sine qua non* for proper dating, and acceptance of the dating outcome. The manner in which the sample was stored *in situ* and then shipped to a particular laboratory for analysis and testing must also be documented and announced to the public (and of course to the scientific forum to which publication is sought).

Due to the multiple conflicts of interest involved in the dating of a sample (see the Note at the end of the paper on that subject), which laboratories carried out the analysis must be announced. Furthermore, due to unavoidable testing errors and imperfections, carbon-bearing samples from the **same spot** must be sent to a **number of laboratories** (not one), and the results from each laboratory to be made public. This is how credibility of C-14 related dating of sites (and especially structures) can be attained. Otherwise, many questions can be brought up, when a C-14 date is announced and significantly differs from an expected norm (date). Hence, the efficient and effective **management** of samples (or lack thereof) in the entire production of output/results chain, from collection and processing to reporting, as well as the **transparency** of the entire process, must play a significant role in the public's (and scholarly circles') decision to accept the announced by the archeological team C-14 dating results.

It is understood that the guidelines and rules, very briefly outlined above, constitute a very tedious, copious, expensive and time-consuming enterprise. This is admittedly an extraordinary albeit essential set of actions. It is especially needed when **extraordinary claims** about dates of Neolithic sites are made. And especially so, when vast discrepancies arise in dating structures that deviate from the (at times) apparent date one would expect, based exclusively on Architecture, as well as Art, Engineering, Geography, Geology, Climate, and other, not directly related to C-14 dating, evidence.

None of what was briefly outlined above, in terms of a rigorous documentation and implied streamlined processes regarding proper C-14 dating, are met by the announcements (publicly in the press or published) about the BT **and** the GT (as well as NC) sites. The only exception is, in the case of GT, when the approximate locations of the **very few** spots, where from samples were extracted and C-14 tests were conducted, was made public. All but one of these spots at GT, where carbon-bearing samples were collected, where **outside** the structures. Only one was **inside** the structure, from where one carbon-bearing sample was used for C-14 testing and dating. That sample was possibly contaminated by the fill, as pointed out by this author. See the set of four papers by the author on GT, cited in references [1] and [2], but not re-cited here, documenting these severe weaknesses in the C-14 dating of GT.

Yet, with such little evidence, and so much questionable C-14 dating on GT, so much has been written and said about Neolithic History in an attempt to re-write it. To a large extent, the GT C-14 dating has also affected the views of the archeologists of BT, as it can be seen from their public statements provided in reference [1]. In those statements, constant comparisons of the BT dating of structures were made to GT's alleged dating, and BT was continuously referenced in the context of the alleged PPNA/B structures at GT. The C-14 dating of GT is not written on stone.

Thus, one observes this date inflation, that emanated from GT, to have now spilled over to, and is now affecting the dating, in a domino-like effect, of numerous Neolithic sites in the Levant. That is indeed quite unfortunate.

Conclusions

This was a follow-up paper to the previous two papers written by this author, see references [1], and [2]. Although new evidence was discussed, no revisions were necessary to be made to the conclusions reached by this author in either of the prior papers. Here, in this short paper, use was made of a recent (albeit undated) report (reference [3]) by the head of the archeological excavation at the Boncuklu Tarla site of South-Eastern Anatolia. The glaring contradiction reported in the carbon-14 evidence of Table 1 in that reference, brought about the issue of C-14 dating structures (and to an extent also sites). It was pointed out that the issue is exacerbated in the case of Boncuklu Tarla, because of the unusually high density of overlapping structures there (up to sixteen in a span of about seven meters). The paper presented a set of rules and guidelines that must accompany carbon 14 dating of Neolithic sites. It points out that most of these procedures were not followed in the case of the carbon-14 dating of Gobekli Tepe.

In reference [3], the archeologist in charge of the excavation at Boncuklu Tarla admits that (with the exception of Layer 2) the dating of the other layers (from Layer 1 to Layer 5, one assumes that he means) do not stylistically match the carbon 14 dating given in Table 1 of reference [3]. He mentions that this discrepancy will be the subject of “future work”. However, such work hasn’t appeared yet (to this author’s knowledge). There have been nine years since the dig at Boncuklu Tarla commenced (2012). Yet many significant issues remain unsettled.

Note on date inflation

This short Note deals with a huge subject, requiring further research, analysis, and retrospection in the field of Archeology. It concerns an apparent (and natural) effort, by archeologists and the funding agencies involved (usually a host of government authorities or quasi-public entities), to push back the dates of archeological sites, especially Neolithic sites, and often to a considerable degree. **Date inflation** is an issue that needs some serious and extended study and analysis.

The reasons behind date inflation in Archeology are complex, and multiple. They are not to be addressed at present in any detail, although some of them are quite obvious, like for example efforts and attempts by governments to boost tourism; while others are more ideology based, and thus less obvious. Possible conflicts of interest in the process of dating Neolithic (and other) sites, artifacts, and structures are ubiquitous, and instances where they could arise are plentiful. Numerous government agencies are involved, at all levels, from the very local to the international (including UNESCO); hence and inevitably, politics are entangled with archeological work and findings. A lot of resources are at stake, and especially, a lot of ideological stock is waged on the outcome of these, mostly carbon-14 based, dating procedures. Thus transparency is paramount.

Obviously, this short Note (and this paper) can't address in depth the matter of date inflation. In a previous section, some measures were outlined on how the carbon-14 dating processes and procedures need to be revamped, strengthened and streamlined. It is hoped that this set of suggestions might ignite a serious effort in addressing this topic.

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Reference [1]. Dimitrios S. Dendrinis, May 5, 2021, "Boncuklu Tarla: Why evidence also from this Neolithic settlement supports the theory that Gobekli Tepe is a 6th millennium BC site"; the paper is found here:

[\(PDF\) BONCUKLU TARLA: Why evidence also from this Neolithic settlement supports the theory that Gobekli Tepe is a 6th millennium BC site | Dimitrios S Dendrinis - Academia.edu](#)

Reference [2]. Dimitrios S. Dendrinis, May 10, 2021, "On the Architecture of Boncuklu Tarla's temple"; the paper is found here:

[\(PDF\) ON THE ARCHITECTURE OF BONCUKLU TARLA'S TEMPLE | Dimitrios S Dendrinis - Academia.edu](#)

Reference [3]. Ergul Kudas, undated, "A New Aceramic Neolithic site in the Upper Tigris Valley: preliminary results of Boncuklu Tarla". The paper is found here:

https://www.exoriente.org/repository/NEO-LITHICS/NEO-LITHICS_2019.pdf

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Reference [5]. Dimitrios S. Dendrinis, February 10, 2018, "On Ancient Artifacts II: an application of the Universal Map of discrete spatial relative dynamics in Archeological time". The paper is found here:

[\(PDF\) On Ancient Artifacts II: An Application of the Universal Map of Discrete Spatial Relative Dynamics in Archeological Time | Dimitrios S Dendrinis - Academia.edu](#)

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