Gobekli Tepe, Tell Qaramel, Tell Es-Sultan:

Why is Gobekli Tepe a 6th millennium BC site, and Evolution of Early Neolithic Architecture

Dimitrios S. Dendrinos

Emeritus Professor, School of Architecture and Urban Design, University of Kansas, Lawrence, Kansas, USA.

In Residence at Ormond Beach, Florida, USA.

Contact: cbf-jf@earthlink.net

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Gobekli Tepe excavation site's aerial view. Source of photo: [2.1]

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The Tell Qaramel excavation site, ground view from the South. Source of photo: ref. [2.3]

Abstract

This is a sequel to the paper by the author in ref. [1.1]. It expands the analysis summarized there by incorporating information from two other archeological sites, namely Tell Qaramel in North-East present-day Syria, and Tell Es-Sultan (the ancient city of Jericho) at the West Bank of River Jordan. In addition, by incorporating also additional material made available to the public by the archeological team in charge of the excavation at Gobekli Tepe, the arguments expressed by the author in [1.1] are further elaborated upon and strengthened. The outline of an Early Neolithic Architecture and its Evolution over possibly seven millennia (from the 12th to the 6th millennium BC) is set. It leaves little doubt that on the basis of the preponderance of archeological evidence available to date, the large in scale and sophisticated in both Architecture, Engineering as well as Art monolithic megalithic monument at Gobekli Tepe, specifically Layers III involving the structures C and D their stone enclosures, and their limestone megalithic monoliths' Architecture and complex Art are middle to late 6th millennium BC construction with a Bronze Age burial.

Summary

Corroborative evidence to the effect that Gobekli Tepe is a 6th millennium BC large-in-scale limestone monolithic megalithic monumental site and the outcome of large-in-scale quarrying unencountered in Epipaleolithic, Natufian and Sultanian Architectures and mining traditions is offered by examining in some detail the monuments at Tell Qaramel's 12th down to early 9th millennium BC phases, and the earliest phase of construction at Tell Es-Sultan (the ancient city of Jericho) with the 12th to 7th millennium BC found therein structures. A close look is taken also into the Architecture and Engineering of the structure referred to as the "tower of Jericho", and some questions are raised in its conventional dating. The Tell Qaramel and Tell Es-Sultan settings do contain masonry construction, but not of the monolithic megalithic type, certainly nowhere near the scale and sophistication of the monolithic megalithic construction seen at Gobekli Tepe.

Physical structures at Tell Qaramel and Tell Es-Sultan are viewed as the residential quarters of their respective site's social elites, the Tells acting as their "citadels". The then Human Geography contexts of these settings is analyzed, and the formation of an archetypal social structure at Tell Qaramel is laid out. In that framework, the "citadels", "fortifications" and "towers" encountered in these two sites (Tell Qaramel and tell Es-Sultan) are interpreted and their Architectures framed. The broader site plans of these two settlements are also examined, as are their linkages to neighboring sites. Their Human Geography is analyzed within a spatial and evolving hierarchically interacting network of human settlements.

On the road to dating Gobekli Tepe (an archeological site delineated by the archeological team to be close to 120 Ha, that is 120,000 sq. meters, see ([1.1] for more on this topic) and through a **comparative analysis** of the smaller in scale Tell Qaramel (a site estimated by the archeologists to extend to about 40 Ha) and the also quite smaller in scale than Gobekli Tepe but slightly larger

in-scale than Tell Qaramel, the about 45 Ha Tell Es-Sultan, a rough outline of an Evolutionary schema in Early Neolithic Architecture is uncovered. Notwithstanding the necessarily gross approximations in dating structures of that extensive, substantial, and expansive time period, where at times the range in dating a structure might be about 10% to 15% of the estimate's lower bound (the older a structure, the greater the range thus the uncertainty), and the daunting task of a comparative analysis of Architectures spanning about seven millennia (from the 12th down to the 6th millennium BC), the outline of "an Evolutionary Theory of Early Neolithic Architecture" and its developmental path seems to clearly emerge.

In the framework of this "Evolutionary Theory of Neolithic Architecture" processes qualitatively similar to Biological Evolution can be found. Not quite similar to "biological clocks", there are "architectural clocks" but with differing speeds. A casual look at the architectural morphologies of the last two millennia makes the point; Constantinople of 1000 AD was very different than Istnbul of 2000 AD, and so were/are their rates of change. By analyzing the 12th millennium BC pre-Natufian Architecture of Tell Qaramel, down to the 6th millennium BC Architecture of Gobekli Tepe, one can derive "speeds of change" in architectonic form and function. Speeds of evolutionary change were of course much slower in the 9th to 8th millennium BC than the 1st to the 2nd millennium AD time frame. Such evolutionary paths are naturally tied to changes in both the environment (Climate and Geology) and the cultures (Economics, Demographics, Sociology) that built them, changes at times significant, hence serving as time markers that punctuated these evolutionary paths. Thus, this study can be construed as a first attempt towards establishing the backbones and foundation of a millennia in time scale Evolutionary Theory of Architecture. We may not yet be close to a formal phylogenetic and taxonomic classification of Architecture types and the sub-categories, but some benchmark time markers can be and are set here. In so doing, we are confronting the currently suggested, and resetting somewhat, dating associated with specific monuments of two key monumental sites, Gobekli Tepe and Jericho.

A region of the Levant in early 12th millennium BC pastoral nomadic Epipaleolithic pre-Younger Dryas impacted Era, was associated with hunter-gatherers, but also with initial phases of herding animals and an early animal husbandry and domestication stage in human social preoccupation. Semi-nomadic life styles emerged, spatially coexisting with, gradually making inroads into the hunting-gathering based human activity. A primordial social elite was forming as a result of an increasing socio-spatial interaction at the time of the Epipaleolithic. It led into a quasi-sedentary living, seasonally housed in humanly constructed masonry edifices. These were the first instances we encounter of human design in Architecture and Engineering. That construction is depicted by the 12th millennium BC "tower 01" at Tell Qaramel. At the start of the 11th millennium BC, the early phases of Natufian Architecture took hold. This primordial Architecture morphology was shaped by the climatic impacts of the Younger Dryas at the Western leg of the Fertile Crescent at the Upper Levant. Such living accommodations are surveyed and recorded in the sedentary middle Natufian 11th millennium BC (circa 10600 BC) Architecture of "tower 0" at Tell Qaramel. It is an Architecture we encounter also in numerous sites along the Jordan River basin, below sea level. A mature phase of Natufian Architecture was reached by the middle of the 10th millennium

BC. It was associated with a fully sedentary, agriculture (farming and animal husbandry) based preoccupation of early farming centered human societies. Within these proto societies, a socio-economic-cultural elite was forming, and a primordial land tenure system was taking effect. We detect this societal evolution as taking place in the residential spatial forms and allocation schemes of the exclusively Natufian Tell Qaramel human settlement site.

A hierarchical social structure's elite class members were initially residing in modest-in-scale masonry structures of early Natufian Architecture. Archetypal arc and circular in shape edifices gradually evolved later into rectangular buildings. Within some dominant and strategically pivotal structures, the forming of proto palaces and temples, situated within relatively larger-in-scale settlements seems to have occurred in the Levant. At Tell Qaramel, an evolving hierarchy of complex masonry based edifices is encountered. This edifice based hierarchy is defined by the relative size of the masonry structures, their floor plan complexity, their building materials mix, and their different as well as auxiliary and linked with them neighboring land uses as well as by the form of a spatially expanding community. Overall, within the entire community at Tell Qaramel, an increasingly higher quality in construction is evidenced, from the middle 12th to the early 9th millennium BC Architectures there. The combination of different materials utilized, and the application of increasingly more efficient building techniques of adaptation to changing environmental and social conditions is imprinted onto the structures we come across at both Tell Qaramel and Tell Es-Sultan at that period. In the case of Tell Es-Sultan, we encounter a transitional stage in Architecture and its evolution into a Sultanian Style, with initial phases in late 9th millennium BC pre-pottery Neolithic A (PPNA) and down to early pre-pottery Neolithic B (PPNB) period (from the early 8th to the 7th millennium BC). But maybe most importantly, the start of a social stratification is detected to have emerged at the earliest phases of the settlement at Tell Es-Sultan, just as it had occurred a couple of millennia earlier at Tell Qaramel.

Social stratification is detected by the relative location within the broader geographical layout of an elite social class, a relatively small share of the total community, occupying a strategic spot within the entire community's spatial extent, as recorded by the Tell's various key and durable structures. Within such differential, location-based, spatial schema the relative comparative advantages various structures enjoyed can be mapped. Such a complex interplay and network of structures is the type of consistent spatial and residential arrangements we come across during the various phases of construction at Tell Qaramel, circa 12th millennium BC, all the way down to the 7th millennium BC, and the Sultanian construction phases at Tell Es-Sultan from its Natufian 10th millennium BC PPNA down to the 7th millennium BC late PPNB Architecture and site plan.

Hence, what we see is that following the receding impacts from the Younger Dryas, a set of new Architectures appeared in the Region. The Sultanian phase in architectonic development is of fundamental import, whereby the Natufian approximately circular (or apse and arc type) masonry structures, partially but largely built inground, were succeeded by an architectural style and engineering structure of mass in scale production of rectangular edifices built by the cheaper and more affordable but efficient modular dry clay, mudbrick, laying on stone foundations, but

largely over ground. This transition was the result of the dry and cold Younger Dryas effects upon the Region having gradually receded and having ended by the end of the 10th millennium BC along the entire Fertile Crescent Region. It is the period at Tell Es-Sultan that a modest in scale megalithic construction is underway, seen in its first Jericho wall, and possibly in the first monumental "tower" (the Jericho tower) we come across there, although the dating of this tower will be brought under scrutiny in this study. No matter the specific dating of the Jericho tower, this is the time of major inter and intra-communal social upheavals, dramatic social events that followed the ending of the large in-scale climatic event and impacts of the Younger Dryas. As gradual receding of the climatic impacts moved North, the mudbrick structures rectangular in form Sultanian Architecture style of Tell Es-Sultan propagated North as well, to the early 8th millennium BC phases of Catalhoyuk and eventually diffused to the last (early 6th millennium BC) advanced rectangular Temple phase (which also entailed some modest monolithic megalithic construction) at Nevali Cori. Later, it found its way to the rectangular monolithic megalithic structure at Gobekli Tepe. But the bulk of Gobekli Tepe's early Architecture was the Tell Qaramel, Upper Mesopotamian, and River Jordan Valley Natufian style Architecture of approximately circular stone enclosures, although the design of these enclosures was far more complex now.

The Sultanian type Architecture had a modest impact on Gobekli Tepe. About half of a millennium down the road, under a combination and evolution of the Sultanian Nevali Cori and Natufian Jerf el-Ahmar Architectures, see ref. [1.1], coupled with the ability to quarry large scale monoliths in the Chalcolithic, the monumental large-in-scale, sophisticated monolithic megalithic Architecture we find at Gobekli Tepe's middle to late 6th millennium BC enclosures emerged out of significant advances in Natufian Architecture. It involved T-shaped orthostats and pillars of extraordinary sizes, Engineering and architectonic dressing as well as complex Art. Gobekli Tepe was the pinnacle of Levant Architecture, igniting and launching the truly monolithic megalithic Neolithic Architecture movement in Western Eurasia. Some roots of that monumental Architecture we also find at the staircase of the Jericho tower passage, and its lintels.

The eventual architectural spark from the monolithic megaliths and stone enclosure shapes and Engineering impacts of Gobekli Tepe (here viewed as a middle to late 6th millennium BC initial phase of construction monument with a Bronze Age burial) along with the construction Architecture and Engineering of the Jericho tower and its stairway passage covered by lintels were strong, durable and widespread. They propagated onto and radiated into a much larger Region breaking away from the narrow confines of Upper Mesopotamia. The Gobekli Tepe and Jericho tower impact Region included to the West and North of the entire Mediterranean Basin (reaching Malta and Sardinia), all of Continental Europe (from the Iberian Peninsula to Brittany), well into the British Isles. Of course, they impacted the whole of the Fertile Crescent and Lower Mesopotamia, as well as Northeastern Africa and Egypt to the South. It is impossible to underestimate the Gobekli Tepe Architectonic influences on menhirs and monoliths, at the end of the 6th millennium BC, as it is impossible to underestimate the impact of the Jericho tower Architecture and Engineering over the dolmens and passage tombs of Eurasia. In this paper, we also provide a more comprehensive and revised narrative on the tower of Jericho's chronology.

Gobekli Tepe was a setting supported by and in turn serviced (in multiple ways) an association of regional settings in Upper Mesopotamia and South-East Asia Minor. Its and their collective rise occurred just a millennium past the beginning of the Chalcolithic period (an era commencing circa 6300 BC) and outlasted all contemporary phases of the Ubaid period in Lower Mesopotamia (a period stretching from circa 6500 BC that lasted till about 3800 BC). Gobekli Tepe's monolithic megalithic monumental Architecture and Art flourished over the ensued two plus millennia (from about 5000 to c 3000 - 2500 BC) and dominated the numerous settings of Upper Mesopotamia. It is certainly notable that Gobekli Tepe coexisted with the early phases of the Eridu period of Uruk (circa 5000 BC) till its Uruk's Eanna District period (circa 3000 BC). We encounter its Architecture and Art influences down to the 2nd millennium BC Palace phases of Uruk, see [1.1] for more discussion on these issues. With this paper, the analysis of architectonic impacts from GT is extended and supplemented to include the influences of the Engineering and Architecture from Jericho's tower onto the Neolithic monumental Architecture of the entire Eurasia.

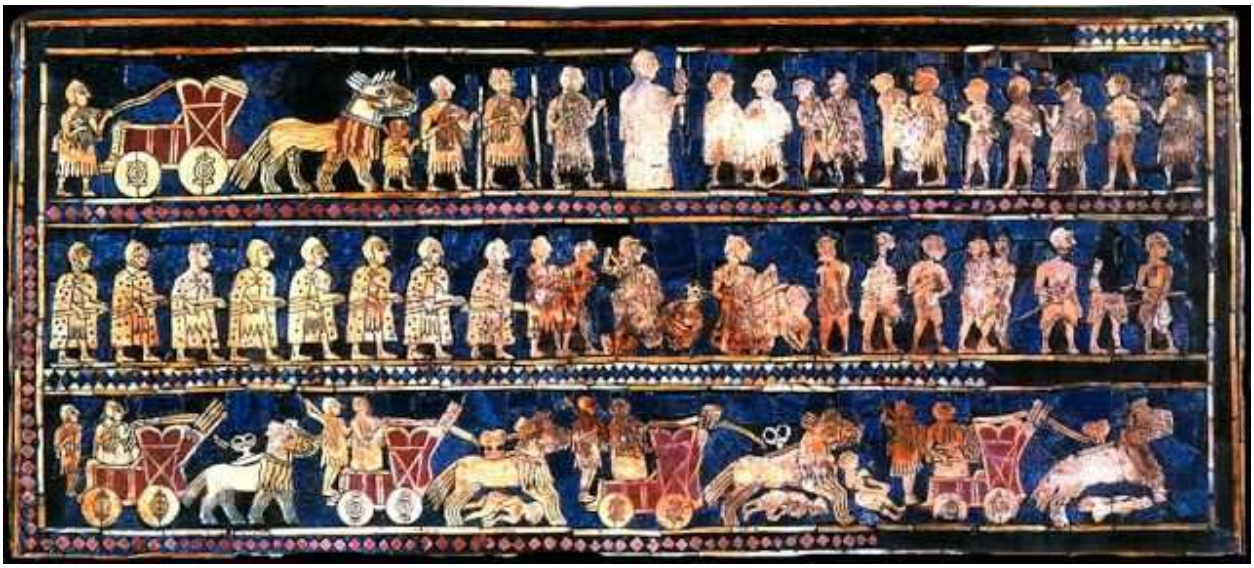


Figure W. Standard of Ur, War Panel, circa 2600 BC. Source of photo: ref. [2.54].

Gobekli Tepe and its associated network of communities and geographically linked settings filled the Upper Mesopotamian power vacuum of the Chalcolithic, the time period where the mining and use of minerals, namely obsidian and flint, was gradually succeeded by the mining and use of metals, in this instance copper. Gobekli Tepe was the dominant Western Eurasian setting of the Chalcolithic period. But as technological advancements and their diffusion propelled Gobekli Tepe's ascent, they also brought about its eventual demise. The tin of the British Isles, and the copper of the Mediterranean basin brought about the Era of Bronze, and with it the end of Gobekli Tepe and its burial phase. The approximately two and one-half millennia long life of Gobekli Tepe' Upper Mesopotamian dominance and its closely associated settings' prosperity unsuccessfully met the dawn of the Bronze Age. Gobekli Tepe's influence was swept away by the

gale force winds of the rising Southern Mesopotamian powers and by the new technologies, economies, societies and cultures that rose during, and especially at the aftermath of the Lower Mesopotamian's Ubaid period. The rise or Uruk's walls at around 2900 BC, a quantum leap in fortifications from the smaller in scale original masonry Neolithic wall to a Bronze Age large in scale Sultanian type wall at Tell Es-Sultan, and most importantly the spectacular ascent to prominence, dominance and power of Ur, through its civil bureaucracy, large in scale armies, but perhaps most importantly its cuneiform writing, are indicative of a host of factors which combined and spelled Gobekli Tepe's demise. Ur dominated the associated plethora of Lower Mesopotamian settings by force. Gobekli Tepe had dominated its Upper Mesopotamian brethren by culture. At the end, by 2500 BC, Gobekli Tepe existed no more. Burial of the monument at Gobekli Tepe took place in stages, and it was likely initiated at the beginning of the Bronze Age, circa 2700 - 2500 BC. It, very likely, succumbed to large scale social, cultural and technological upheavals which necessarily must have followed the transition from the Neolithic to the Bronze Age. Although it coincided with the rise in dominance and power of the Lower Mesopotamia, its influences were stamped onto the Architecture and Engineering of the Eanna District at Uruk.

Evidence seems to suggest that Gobekli Tepe's burial occurred in at least two distinct phases. An initial partial burial of the monument was likely malevolent, as it was accompanied by some destruction of the megaliths at the site. It was succeeded by a second and final, very likely benevolent, phase burial when the followers of the Gobekli Tepe religious sect or cult tried to maintain the monument for posterity, through a careful meticulous and complete soil coverage carried out very likely in stages. But Gobekli Tepe's influences were powerful, and lingered over space-time. Some of the Art from Gobekli Tepe we see having migrated to the Uruk Palace structures of the 2nd millennium BC. The seeds of Gobekli Tepe's Architecture had both, considerable temporal longevity as well as spatial diffusion strength and momentum in them. They spread onto the entire Mediterranean basin and Northwestern Europe. The consequences were profound in both Architecture and Art, hence in Culture. And so were the consequences from the innovating Architecture and Engineering found inside the staircase of Jericho's Tower.

Tell Es-Sultan (the ancient city of Jericho), view from the East. **Source of photo: ref. [2.4].**

Introduction

In a previous paper, see reference [1.1], the author supplied in a summary form and in terms accessible to the general public (that is, largely without technical jargon or requiring highly specialized historical, archeological, architectural, engineering, demographic, geographic, climatic or other knowledge) a set of reasons why the claim that Gobekli Tepe (GT hereon) is a Pre-Pottery Neolithic of either the earlier (referred to as PPNA) or the later (referred to as PPNB) Era (roughly covering in total the period 10000 BC to 6800 BC) is erroneous.

The author put forward reasons why this is so in two previous papers, see references [1.2] where the author argued that Gobekli Tepe is a 6th millennium BC initial construction phase monument; and [1.3] where the author supplied evidence from various fields and offered a number of reasons, which he further extended with a number of Human (Economic) Geography based arguments in [1.1], why the position by the archeological establishment arguing for a PPNA/B monument at Gobekli Tepe is flawed. This criticism on the interpretation of the C-14 and other evidentiary material should **not** be construed as a criticism by this author of the GT archeologists' capabilities of carrying out an effective archeological excavation, and it is in **no way** a criticism on their recording as well as documenting and disseminating the evidence obtained.

In summary, the author argued that the interpretation of C-14 based evidence by the archeological team in charge of the excavation, at the site currently referred to as "GT" in present day Turkey, that led them to a PPNA/B conclusion is largely misguided. Furthermore, the author offered reasons why the GT site is a monument that was constructed very likely during the Chalcolithic (a period roughly associated with the 6200 BC to the 2500 BC period in Western Eurasia). Further, it was argued that its construction followed the Temple phase of the Nevali Cori settlement (of the early 6th millennium BC, which in turn was a stage of construction that possibly coexisted with the last phases before the abandonment of the settlement at Catalhoyuk, circa middle of the 6th millennium BC). Moreover, it was asserted that the structures at Gobekli Tepe were finally buried in stages at the beginning of the Bronze Age (circa 2700 - 2500 BC). Reasons behind this narrative and its historiography drew from a number of disciplines including Climatic, Demographic, Human and Physical Geography, Architecture, Engineering, and Art.

The three above-cited papers also questioned the carbon-14 related interpretation of evidence, on which the archeological team mostly relied in making their case for a PPNA/B GT monument, by supplying Architecture based evidence pointing to contamination from the fill of plaster covering GT's orthostat (#33) in structure D Layer III. In this paper, and in a later section, the same argument of corrupted carbon-14 evidence is made for the plaster of the interior side wall of the same structure. All other C-14 based readings were obtained from locations outside all enclosures. Thus, these samples' C-14 analysis date the portions of the fill (the soil used to bury the monumental structures, or even used by the original builders of the stone enclosures to support the structure' walls and orthostats, some of it being what is known as "backfill") containing the samples, and not the structures themselves.

The C-14 evidence and its interpretation is further analyzed here. The discussion draws from, and it is largely based on, a report produced by the communications outlet of the archeological team, Tepetelegrams, published on June 22, 2016, see reference [2.2]. Along with this C-14 based evidence and its interpretation by the archeological team in charge of GT, evidence from the Architecture as well as Physical and Human Geography of the 12000 BC to 8000 BC at the Fertile Crescent, South-Eastern Asia Minor and Mesopotamia Region is also presented in this paper and juxtaposed to GT's Architecture as well as its Physical and Human Geography conditions.

In presenting the Architecture related context of the study area, the rough outline of a theory of Early Neolithic Architecture is formed. Elements of the Late Epipaleolithic, or last phase of the Upper Paleolithic (otherwise also referred to as Natufian) Architecture and construction Engineering are discussed along with its Human and Physical Geography context, covering the pre- and during the Younger Dryas (12000 BC to the 9600 BC) climatic period which largely overlaps the Natufian Architecture period.

Natufian style Architecture was succeeded by the Sultanian type Architecture. The architectonic and engineering elements of that style are also presented here, accompanied by the Human Geography conditions of the Region under study that framed this type of Architecture. Sultanian Architecture was the dominant (although not exclusive) construction mode during the late Pre-pottery Neolithic (PPNA) and during the PPNB archeological period, a period which lasted from circa 9500 BC to about 6800 BC. It coincides with the aftermath of the Younger Dryas in the Region, as the impacts from dry and cold conditions had receded.

Architectonic evidence from the Tell Qaramel, containing C-14 evidence from certain key 12th and 11th millennia BC Natufian as well as PPNA and transitioning to Pre-pottery Neolithic B Architecture structures in it are discussed. Also analyzed is recent architectural evidence from Tell Es-Sultan in Jericho. Both of these sites were not discussed in the sequence of papers by the author found in references [1.1], [1.2] and [1.3]. However, they are key sites for the subjects to be covered here. Thus, this work is an elaboration on that prior analysis by the author, and an extension of, as well as amendment to it. Moreover, the ashlar masonry construction found in these two human settlements, in conjunction with their Human Geography contexts, are the focus of this paper, as the Architecture of these sites from the period 12000 BC to 6800 BC is carefully and in some detail analyzed.

It is documented that although irregular ashlar masonry structures do appear in both Tell Qaramel and Tell Es-Sultan, and they are encountered in both Natufian and Sultanian Architectures of the PPNA and PPNB periods (with the possible exception of the late PPNB at Nevali Cori Temple Phase construction, a case which was addressed in [1.1], [1.2] and [1.3] by the author and will be also extensively further discussed here) **no evidence exists** to date that these two Tells (or any other sites falling within this period in this Region, or any other region in Eurasia and Africa) and their respective Architectures had **megalithic monolithic construction** in them, and certainly not of the **monolithic scale** seen at GT, over the critical 12000 – 6800 BC period. **Quarrying of megalithic monoliths** not only was **not** possible at that time, but most

importantly, we have absolutely no evidence to suggest that the human societies of the time had the means or the aims to create monolith-based megalithic monuments, or that they mined monoliths of that magnitude in quarries of the region.

However, this is not the only pillar of arguing the case that Gobekli Tepe isn't a PPNA/B archeological site. More evidence and careful analysis of the site Tell Es-Sultan in the ancient city of Jericho is also brought into focus. Especially, the structure called the "Jericho tower". This tower's exterior and interior Architecture and Engineering is more closely analyzed, and some revisions are recommended in so far as its dating is concerned. In addition, its real monumental impacts in Neolithic Architecture are traced. Analysis of Jericho's structures (initial Neolithic masonry wall and the Jericho tower), in combination with Tell Qaramel's structures also, allow for a more accurate pegging of Gobekli Tepe's Architecture relate features.

Some additional Architecture and Art related evidence from Nevali Cori is also included here now. Utilizing these additions, the proposition is further advanced (as it was initially put forward in [1.2] and [1.3]) that the site at GT is a post Nevali Cori Temple (last) Phase construction. Nevali Cori is a Sultanian type Architecture settlement thought to have been in existence during the early to late PPNB period. However, this author places its Temple and last phase in an early 6th millennium BC period. It clearly is a far more advanced version of the later phases of the more primitive Catalhoyuk settlement's Architecture. Catalhoyuk is a setting estimated to have ben inhabited under sedentary conditions in a post-PPNA, and more exactly during the PPNB period, specifically in the 7500 – 5700 BC time frame, abandoned by the middle of the 6th millennium BC.

In their June 22, 2016 report to the public titled "How Old is it? Dating Gobekli Tepe", cited in ref. [2.2], the architectural team starts their reporting by a very welcome statement. In the second line of the very first paragraph, they mention that "These questions (author's note: about the GT dating) are absolutely legitimate…" In this frame of reference, and in recognizing that legitimate (as even the archeologists admit) questions have been raised about the official GT chronology and historiography, this paper is written. The propositions advanced here are not meant to imply that definitive answers are offered. Such firm answers are extremely rare in Archeology, where periods and their limits (upper and lower) are blurry. Pegging events to exact time periods and locations is an exercise in Fuzzy Sets Theory, and cases abound where views are often contradicted and routinely rendered obsolete by new findings. However, this study is aiming at clarifying two key positions taken by this author since 2016: first, that the GT layer III stone enclosures C and D are very likely not PPNA/B construction and in fact they contain quite a bit later type Architecture; and second, that the likely starting date for initial construction of Layer III, structures C and D, could not have taken place prior to somewhere in the second half of the 6th Millennium BC, and quite possibly close to its ending. Two other central questions will be addressed: first, how was the monument buried; and second, since the GT monument is a monument built and utilized in a post-PPNB archeological time period in the Neolithic, how come and there is no evidence of pottery on the ground and inside the enclosures of the six (A, B, C, D, E and F) structures so far excavated.

As it was the case with all three of the prior papers by the author on GT, this paper also is written for the general public. It would require some only minimal exposure to the extremely complex and quite involved (as well as at times highly controversial) Archeology of the sites to be mentioned here. Dealing with the details of each of the sites discussed is itself a significant task. However, the central issue is quite clear: Architecture is the product of human activity influenced by the Environments and the Culture that created it. Cultures are themselves impacted in turn by the Environment. This paper is a study, analysis and re-evaluation of this complex interactions as they played out in the 11500 BC – 2500 BC nine millennia long period in the Levant, and certain key regions and key dates of the Fertile Crescent Architectures that appeared there at that time.

Architectural structures, artifacts found, stratigraphy of these sites from that period are complicated matters. Each of these sites' Archeology is accompanied by a voluminous technical literature. Intricate, detailed and controversial issues surround all of these sites and their constituent elements. Little of their Archeology and Architecture is beyond any dispute and reasonable doubt. Having said that, and putting the reader already on notice that the relevant literature is indeed extraordinarily lengthy and complex, often obscure and inaccessible, it should also de noted that in essence and in summary the major issues tackled here with this study are quite simple and pretty straight forward.

it is remarked that only selective and (in this author's judgement) main and easily accessible references are cited in this paper, so that the reader can with relative ease access and confirm statements himself or herself. Consistently with the adage, that extraordinary claims require extraordinary evidence, this author considers the claim by the architectural establishment, that Gobekli Tepe is a PPNA/B site to be an extraordinary claim, backed up by underwhelming evidence. On the other hand, this author recognizes that to challenge the establishment view is also an extraordinary task requiring extraordinary counter-arguments, based on evidence and an interpretation of that evidence almost beyond reasonable doubt. It is expected that at the time the open-minded reader finishes the reading of this 100-page long paper, and the prior three papers by this author on Gobekli Tepe, the reader will leave with at least the impression, if not the conviction, that a good case has been made.

The careful and methodical reader is asked also to locate additional references beyond the ones cited here, as deemed necessary and appropriate. As is the case with all Sciences, Natural and Social, and all professions (including Architecture and Engineering) the reader must keep an open, inquisitive and vigilant mind in reviewing the subjects addressed in this paper. Of course, this advice applies not only with regards to this paper's subjects, but to all works in Science and the professions.

Tell Qaramel: 8.6x5.4 cm (with a ratio of 1.6, quite close to the Golden Ratio) PPNA/B lithic artifact, example of PPNA/B Art in this part of the Levant's region. Source of photo (processed by the author) in ref. [2.37]

Tell Es-Sultan: just below center, the cone-like structure referred to as the "tower of Jericho", at the Eastern end of the Western trench, and dated by Kathleen Kenyon to c 8000 -7000 BC. Source of the photo: public domain photo from ref. [2.57].

Tell Es-Sultan: aerial view from the North. The size of the Hill is about 130x345 meters. The 1950s Kathleen Kenyon dug Western trench is at top right; at the trench's Eastern end is where Jericho's "tower" is located. Many excavations have been carried out at the Tell over the past century or so. At center right also, the Neolithic wall of Jericho segment is seen. At center top the Ain Es-Sultan springs are located. River Jordan is about four miles to the left, while the Mediterranean coastline is about 40 miles to the right. The Tell is on ground that slopes from the bottom of the Jordan Rift valley (left) towards the sea level (right), about 280 meters up. Source of photo: ref. [2.23].

Tell Qaramel, Tell Es-Sultan (Jericho) and Gobekli Tepe

Architecture, Engineering, Physical and Human Geography Contexts

As is the case with the Archeology of many archeological sites, the Archeology of these three sites is the outcome of multiple phases in both construction and destruction. The sites are associated with very distinct, differing and culturally complex micro-Architectures, under a complex Geology, Geography and stratigraphy. Architectural styles and Construction Engineering methods, techniques and materials used at the micro level appeared under varying, some micro but also macro, socio-economic-cultural and environmental conditions, some possibly critical of these specific conditions still unclear to us today.

By examining, however, the broader macro-archeological and geographic contexts of the various monuments' phases and in conjunction with the different Architecture and Engineering milieu of these three sites' surviving structures, at their various phases of construction, decay and eventual demise, one can obtain direct albeit partial evidence and information as to their likely rough chronology, and a possible narrative behind their appearances at a particular point in space-time. Hence, Architecture and Engineering of structures can often serve as potential time markers, as can the size of the settlements (their scale) i.e., their Human Geography.

Three general (abstract, not confined or restricted to any specific point in space-time) principles can be stated as governing (on the average, there of course could be distributions about the mean values of these variables) the evolution of the **Architecture** and **Engineering** as well as the **Human Geography** of built structures and settlements at these early stages of human sedentary living and community formation. (**a**) In early Neolithic (as in any) Architecture, we observe a gradually increasing **complexity in architectonic design**, i.e., in the configuration of the architectural floor plan and sections, *in toto* that is, the manner in which the architectonic spaces of a structure are organized. This is a factor identifying the utilitarian and functionality component of the structure. (**b**) In Engineering, we detect the use of increasingly **sturdy, durable and involving a wider mix of materials** construction to more effectively and efficiently meet the basic needs for human shelter, safety and comfort. And (**c**) in an Architecture and Urban Design, as well as in a Human Geography context, we record an increase in the **scale** (size) of the structure and the setting to which it belongs, i.e., in both the site plan of a structure as a component of the settlement's map; and in the prominence of the setting in its regional geographic context.

Especially at the upper echelon of the **hierarchical network** of settlements the setting belongs we observe in the study period (due to **demographic** changes as well as due to increasing economic **returns to scale**) an increase in the absolute population size as well as its share of total population concentrations at the hierarchy's top level (primacy). Evolution in this regard implies, on the average, an increasingly and more complex and multilayered Central Place Theory framework, see ref. [1.1]. Ideally, one could add the aesthetic appeal aspect of the structure as well, its Art content. However, this is a far more difficult to handle component in the Architecture and Engineering of a structure, that involves cultural and symbolic analysis, and present-day

conjectures about the aesthetics of distant and largely unknown today past cultures, responsible for the construction of these monuments – topics outside the aims of this paper. Although this is an angle on the Architecture of an edifice that we might be on a lesser solid ground to analyze, it does not necessarily follow that it is (or that it was back then) of lesser importance.

As the **demographic** conditions associated with an increasing regional population base evolve; as a higher level of an economic **diversification** of the employment mix occurs and **division of labor** accompanies it; as a more complex **social interaction** nexus comes about; as a greater **specialization of land** among more uses and differential land valuations emerge, reflective of differential access among them the result of shifts in locational **comparative advantages**; all these socio-economic (cultural) dynamics forge **socio-spatial evolution**. Denser settlements, more varied production and consumption of products, more sophisticated technologies, and thicker flows in the settlements' spatial interactions occur in the flow of time. A structure built by humans then can be placed in the context of this fundamental processes in architectural, engineering and settlement formation dynamics and evolution, on the basis of the three basic principles (increasing complexity in design, use of more environmentally efficient mix of materials, and greater scale). They must be kept in mind as we step into the three sites we plan to explore next in the sections that follow. These technical and specialized subjects the author has summarized in certain sections of references [1.4] and [1.5] for scholars, researchers and analysts in Archeology not familiar with these fields of Human Geography, where subjects of Economics, Demography and Spatial Interaction are explored in a dynamic framework.

In concluding these introductory comments, a point need be made, a point emphasized by this author in all three prior papers ([1.1-3]). It is a point at the core of the methodology employed, and on how these three specific evolutionary principles may be applied, no matter where a site is located and whether or not all of its associated sites have been excavated or not. All settlements (no matter the time period examined), are and have always been part of a network of spatially interacting settlements of a **varying in population stock sizes** (and always obeying a Zipf-size distribution) and of an increasing over time complexity in interaction flows. No settlement can be viewed and studied in isolation. Moreover, no settlement is identical to any another, as the local micro Physical and Human Geography conditions vary and differentially evolve over time, differentially affecting the scale of a setting. These settlements' dynamic paths may be parallel or diverging, in the same sosio-spatial neighborhood, or at distant points in phase-space, with slightly or distinctly different starting positions, and slightly or considerably divergent end-states. Qualitative properties of this type are essential in a theory of evolution (in this case, Evolution in Architecture). It is within this framework that all three of the sites analyzed here must be conceptualized. This is a fundamental issue in Dynamic Human Geography and Dynamic Central Place Theory, and hence in the dynamics of any socio-spatial system. A settlements' **hierarchical linkages to other settlements** constitute the least well understood principle in societal evolution, because these linkages are not immediately apparent or tangible. Whereas the other two, those associated with evolution in their Architecture and Engineering, are far more obvious, ubiquitous and tangible, hence easier to trace, record and analyze.

Figure 1.1. Tell Qaramel site. Google Earth map from 7/12/2016. The site is at about 460 meters (1400 feet) above sea level; the photo was taken from an altitude of approximately 930 meters (2800 feet) above ground level. Source: the author from Google Earth map available in the public domain.

PART 1. Tell Qaramel: the first Natufian citadel of the first socio-economic elite to date

Physical and Human Geography contexts. It is at present somehow established (although some reservations have been expressed regarding the C-14 dating of the site, see ref. [2.3]) that the oldest sedentary settlement (of a relatively small scale) excavated to date in the entire Eurasia is that at Tell Qaramel (TQ hereon). The tell is located in Northern present-day Syria, about 14.7 miles (in straight airline distance) North-East of the city of Aleppo' center at an altitude of about 460 meters above Sea level, at the very top of the Fertile Crescent arc in the Upper fringes of Mesopotamia, at a distance of about 70 miles (straight airline distance) from the current Eastern coastal line of the Mediterranean Sea and the Gulf of Iskenderun. And, far more importantly, it is located 18.7 miles South of the foothills of the Taurus mountain range, and on the Western banks of River Qoueiq and its limestone plateau, see ref. [2.5], a report written by the lead archeologist in charge of the excavation there, Ryszard Mazurowki.

TQ's approximate geological coordinates are: 36.38°N, 37.27°E, see map in Figure 1.1. This site is hence, about 86 miles (airline distance) South-West of GT (which has coordinates 37°13'23"N, 38°55'21E). In sharp contrast to GT, and a significant geographic factor, TQ lays on a riverbank (as is Nevali Cori) – whereas GT not only is more than 20 miles away from a river, it was also constructed on a natural hill. Human settlements are located close to where potable (fresh) water is found, specifically riverbanks and steams, or around sources of ground water (springs, aquifers and hyporheic zones). The greater the quantity of available fresh water and the greater the access to it, in a spatial extent delineating the source' market area, one must expect the greater the population stock and the corresponding population density within the specific point's market area (in Human Geography's Central Place Theory context) to be at any point in time. In addition, rivers (as do coastal lines) offer the additional advantage of riverine (and maritime, respectively) communication and transport capabilities (affecting access). Thus, they (in a spatial context) contain endogenous locational comparative advantages, which largely (although not exclusively) determine population sizes (in absolute and/or relative terms). In this regard then, TQ enjoyed considerable locational advantages over the first millennia of its existence as an initially quasi-nomadic and then later as a sedentary agriculture (farming and livestock) tied settlement. The Hill at TQ is a cone structure with an elliptical base (at the current physical ground level). The ellipse's major axis is about 110 meters, whereas its minor axis is about 85 meters. Hence the area of the Hill is about 1Ha (about 9,400 sq. meters). Currently, the Hill's summit is about 20 meters above the ground. TQ's mound and the surrounding land area have not been fully excavated. Only selected trenches and spots have been dug thus far. In Figure 1.1 the locations of the main trench (facing Southwest) and two squares off the Tell where archeological excavations have taken place are shown. The oldest structures are found in the trench facing towards the Southwest, see ref. [2.5].

Successive building activity over the thirteen millennia that have elapsed since its initial construction phase (a late 12^{th} millennium BC layer – with a structure referred to by the archeologists as "tower 01" sitting below another structure christened by the archeologists

"tower 1" and dated to about 10600 BC, see ref. [2.6] and [2.7]) have formed the Tell. Undoubtedly the initial construction (raised on culturally sterile ground) utilized a natural mound as a protection to the Northerly wintertime wind. There has been some economic activity on the Tell since the period analyzed here, but certainly nothing compared to that at Tell Es-Sultan.

The Younger Dryas and their effects. The period of initial construction is critical, as the Region was at the tail (in space-time) end and margins of the impacts associated with the Younger Dryas. The spatial extent of Younger Dryas associated impacts (with no gradients, unfortunately) of dry and cold weather is shown in Figure 1.2. The cold and dry climate related impacts in the affected area, which included the entire Asia Minor, and lands well down into the Middle Mesopotamian Region (the Levant's Upper section of the Fertile Crescent), were key factors that shaped the Architecture of the Epipaleolithic, and where the "Natufian" Architecture got a foothold. Both the Younger Dryas impacts and the Natufian Architecture lasted till circa 9600 BC, see ref. [2.20].

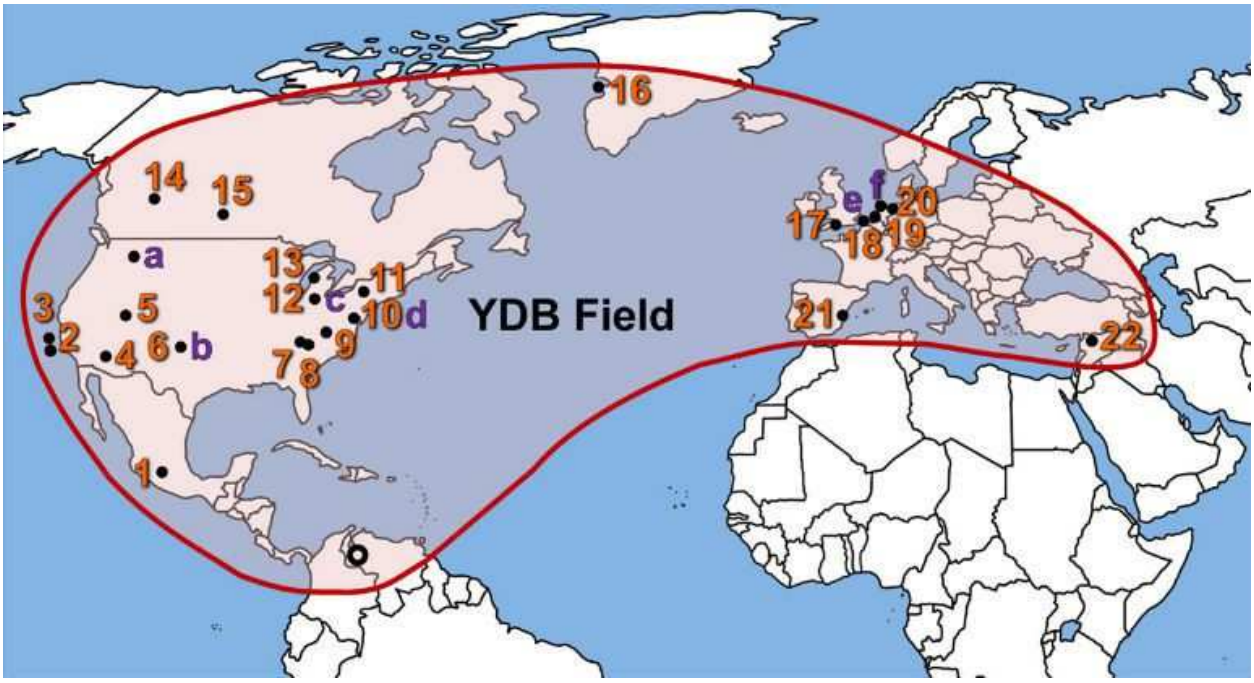


Figure 1.2. The Younger Dryas (10900 – 9700 BC) sharp borders: the impacts' spatial extent *sans* gradients. The entire Asia Minor is covered. In the Southern border at the Eastern Mediterranean Basin is Tell Es-Sultan. Upper Mesopotamia is included in the impacts field. Source: ref. [2.13].

The Younger Dryas was a major climatic event that marked the geological transition from the Pleistocene to the Holocene. Its more than a millennium long duration covered the time interval 10900 BC to 9700 BC, see ref. [2.28]. The origins and causes of the event are subject to dispute, and conflicting evidence is employed in analyzing it, although the dominant explanation seems

to be a change in the Northern Atlantic Ocean's currents, see ref. [2.29]. Alternative explanations also exist, see ref. [2.30]. Be that as it may, the Younger Dryas caused a significant and apparently sudden drop in temperatures over the Northern Hemisphere (from 2° to 6° Celsius) and produced unusually dry conditions, as the glaciers advanced, [2.29]. Borders' fuzziness has been neglected.

Younger Dryas and Agriculture. Two major agriculture-related factors can be attributed to the Younger Dryas effects. One is the production of cereals, that is thought to have been positively affected by the specific climate related conditions as they prevailed in the Fertile Crescent and specifically at the Upper Levant, at the time, see ref. [2.31] where a review of the region is undertaken, from 12500 BC to 9000 BC, and it is labeled as "Early and Late Natufian", and "Pre-pottery Neolithic Period" (see the paper's Abstract). The paper's chronology of periods, which slightly differ from those in other references, will be addressed subsequently. In [2.31] the point is made that the intense and cooling effects of the Younger Dryas (taking place right in the middle of that time period) lowered the "carrying capacity" of the area to sustain its population. Of course, this must have been a reason why the farmers and proto "cattle ranchers" of the Upper Levant's Early Neolithic left their homelands and migrated to Europe, setting the stage for the Neolithic European Civilization, that extended from the Near East to the British Isles. This is a migration movement that the author has examined in more detail in ref. [1.4]. The issue will be further addressed, when the subject of land tenure is analyzed a bit further down, when the site at TQ is approached as being the first "citadel" of the first social elites of the Neolithic. The immediately prior to the Younger Dryas Architecture, is the first humanly drawn Architecture.

Younger Dryas and Architecture types. As we shall discuss momentarily, the Younger Dryas effects (cold and dry weather pattern) were the key and among the most critical factors in shaping the Architecture and layout (land use pattern and site plans) of the first structures of the first human settlements that appeared in the Epipaleolithic, the early and late Natufian and the early and late Sultanian styles and settings. An isolated glimpse of an example from the Epipaleolithic Architecture will be shown in the case of "tower 01" at TQ. For a discussion on the Natufian Architecture see [1.1] and [1.2], where this type of 10^{th} millennium BC Architecture (abundant at TQ and other sites) is extensively analyzed. More on this Early and late Natufian Architecture will be supplied here, as material from TQ is incorporated. Here also the early and late Sultanian type of Architecture will be further and in detail reviewed, when the Tell Es-Sultan (TeS), the ancient city of Jericho, and from where the Architecture draws its name, is discussed. However, before we enter this discussion proper, a few notes are needed on both the C-14 dating of TQ structures and the Geology, Climatology, Archeology terms and periods to be mentioned.

The details of the TQ carbon dated spots and their indicated dates obtained by the laboratory work, including those results not accepted by the archeological team, are shown in Figure 1 of ref. [2.3]. They raise some issues of concern, as they show three phases (what they define as Horizons 1, 2 and 3), with considerable variance (from 11400 BC to 9400 BC) within each phase (Horizon) based on material obtained from the same archeological stratum level, see ref. [2.3], a problem we shall address further a bit later in this section.

The archeologists settled on an original construction date of around 10600 BC for the initial phase of what they call (and which turns out to be a key structure at TQ) “tower 0”. No matter the details of the C-14 dating and the overall reliability of C-14 dating that ref. [2.3] expresses, namely the difficulties in often reconciling stratigraphic evidence with carbon-14 dating, the issues about Architecture we shall explore here leave little doubt as to their comparisons with GT. Of course, the younger TQ proves to be, the stronger the author’s arguments about GT. On the other hand, the earlier into the Younger Dryas the C-14 dating points for TQ, the lesser in strength its validity.

Some discipline-specific glossary, dates/periods and carbon dating. The Younger Dryas was a critical period in Human History. One might characterize it as a phase transition that occurred in aggregate human socio-economics in Eurasia. Social groups at various points in the South-Western Eurasian space (close to the Taurus mountain range) more or less independently and simultaneously went from a hunter-gatherer state and economic preoccupation to a **nomadic or quasi-nomadic** life mode phase. It continued to include the mining, transport and barter trading of flint and obsidian and the manufacturing of lithic (from available natural rocks) and mineral (from mined flint and obsidian) tools. This state evolved to a **sedentary** phase which included domesticated animal husbandry and proto (small scale, subsistence) agriculture. It was the transition from the late Upper Paleolithic to the Pre-Pottery Neolithic, the so-called late Epipaleolithic, see ref. [2.8] a term usually referring to lithic mobile artifacts but not Architecture.

Since already mentioned (or, to be mentioned shortly) a variety of terms associated with Geology (the border of the Pleistocene and the Holocene – approximately the 9700 BC boundary), Climate Sciences (Younger Dryas), Archeology (Paleolithic, Epipaleolithic, Natufian, Sultanian, Pre-pottery Neolithic A and B, Neolithic, Bronze Age, Ubaid period, etc.) it must be noted that these terms denote eras of different types and they are of course approximately pegged to actual dates (to be expressed here in the most easily understood and recognizable manner, utilizing the term “BC” – “Before Christ”). Although boundaries might be close and coterminous in certain instances, like for example the terms “late Epipaleolithic” “Natufian” and “Younger Dryas”, it should be kept in mind that these are, to an extent, different eras involving gross approximations in so far as their actual time and spatial boundaries are concerned. Eras do not have sharply delineated upper and lower bounds; their boundaries are in fact fuzzy over time and space. Architectures of the period under study here (roughly the nine to ten millennia period 12000 BC to 3000 - 2000 BC) do not have their own terms. In Architecture, the term “Natufian” is customarily used to characterize the structures of the first part of that Era (the approximately 12500 – 9500 BC time period). To some, Natufian is the period from about middle of the 13th millennium BC to the end of the 11th millennium BC, see ref. [2.9]. A difference of about half a millennium (11500-1200 BC) is an example of lack of consensus regarding a host of periods’ dates.

There are differences on dates not only among archeologists but also among geologists, paleontologists, anthropologists, and cosmologists in references to the dating of their subjects as well. It seems that a variance in assigning chronologies to periods is a deep-rooted issue in these fields and in fact in all scientific fields. This author has decided to take averages from the

more than 50 publications cited (under "work by others" in the References section of the paper). As a result, there might be some minor differences between dates on periods cited here and in those equivalent ones of papers [1.1], [1.2] and [1.3]. At a final analysis, the conclusions drawn from the preponderance of physical evidence cited by and examined in this paper and are based on the presentation of the key material on Architecture of the monuments under investigation, and specifically to the extent that the Architecture of Gobekli Tepe is concerned, differences in the assignment of exact chronological dates to sites, terms and periods are largely immaterial. On that count, "Natufian" is not a purely architectonic, structures-based, term. It is a term devised by archeologist Dorothy Garrod to describe and label lithic evidence, see [2.25]. It was coined by her after the location Wadi an-Natuf, where the Shuqba cave she excavated in the mid to late 1920s is situated, see ref. [2.27] for more on this cave. The term "Natufian" is used to describe, among others things, items of Art and also cultures. It is even a term associated with Genetics of individuals found buried at these sites and traced to that time period, see [2.26].

There is a distinction often made between "Early Natufian" (the 11500 BC to 10800 BC time interval) and "Late Natufian" (10800 BC to 9500 BC) settings. According to that distinction, "tower 0" at TQ is an early stage of Late Natufian Architecture, since its time period is pegged by the archeologists to 10600 BC. But this raises some definitional problems which also touch methodological issues. The TQ archeologists' breakdown of TQ construction involves five distinct stratigraphically defined "Horizons" – starting from "Horizon 0" (the "Epipaleolithic Horizon") to "Horizon 4" which is defined by them as being the transition Horizon-Phase to PPNB stage construction. This is a period roughly extending for about three millennia (11500 BC to 8800 BC, see discussion below on PPNB approximate starting dates). Thus, "Horizon 1" is a post "Epipaleolithic" phase of construction. For them, Epipaleolithic is "Horizon 0", and Horizons 1, 2, and 3 cover the Natufian and PPNA periods till the start of the PPNB phase at the site at Tell Qaramel. "Horizon 0" is associated with "tower 01", the "tower" just under "tower 0" (declared to be Natufian by them) an early Natufian "tower". See ref. [2.3], associated with item "Gd 12799" on the basis of which the dating of "tower 0" was derived.

This fuzziness is only an example of and due to the varying assignments of periods to dates by various researchers involved in archeological analysis, a phenomenon widespread in a number of scientific fields and not confined to Archeology. In trying to address this difficulty, the so-called "ASPRO" chronology was set up, a type of chronometry that we shall encounter and refer to in a bit. Fuzziness is also due to, and this might be a more difficult to deal with subject, the inherent inconsistencies in the stratigraphic evidence, inconsistencies not necessarily confined to TQ. Bottom line conclusion however is that the above listed fine distinctions may mean very little in actual Architecture related substance. To the extent that carbon dating can provide gross ranges, see for instance the ranges on dates for all four "Horizons" of the carbon dating for TQ in ref. [2.3], and the discussion about their reliability; and to the extent that significant social and environmental events did take place at that range of uncertainty; the carbon dating evidence should be taken as indicative (as should be definition of terms and associated terminology) at the micro scale (in space-time), and very carefully at the macroscale (in offering the "big picture").

So, as already mentioned, it is pointed out in [2.3] that **there are some inconsistencies between the stratigraphic evidence and the carbon-14 derived evidence for TQ**. This anomaly (or inconsistency) occurs when C-14 dating of an element at a particular stratigraphic level comes up to have an older dating than an element located at a lower stratigraphic level. Or, like the case of the Horizons 1, 2, and 3 (chronological phases on the basis of stratigraphy, so that Horizon 1 is an older phase than Horizon 2, which in turn is older than Horizon 3) of the TQ's archeologists, the ranges extracted from C-14 dating to an extent contradict stratigraphic evidence. For example, a C-14 based evidence drawn from Horizon 2 has a range indicating an older specimen from a stratigraphic level below it. Thus, in reading these terms and associated time periods, a strong note of caution is warranted. The case of TQ is far easier than GT in interpreting C-14 dating because there is no indication that the various strata there were intentionally buried.

Conclusions on chronology drawn by the archeologists at TQ was largely based on the basis of pyrolithic C-14 dating from abundant organic material from hearths located inside as well as outside the structures of TQ, see [2.5] and [2.6]. This abundance must have been due to the multiple uses of these places for generating heat – need for heating, cooking, and possibly manufacturing of clay figurines that have been located at TQ, see Figure A.1, A.2, A.3. Deriving a precise chronometry for these mobile artifacts however presents in general the analyst challenges far greater than those associated with dating immobile architectural structures. Mobility is one of the main reasons why Architecture and Engineering offer far more solid grounds to date sites than artifacts. Before we address artifacts, some further chronology related notes must be inserted here, as a finer breakdown is needed to divide a vast amount of time which spans about nine millennia of prehistory (11500 – 2500 BC), the time frame touched upon with this study, as three monuments in specific (TQ, TeS, and GT) are addressed.

Later Pre-Pottery Neolithic A and B (a period covering roughly the beginning of the 10^{th} millennium BC to the 7^{th} millennium BC time frame) is more finely subdivided according to ASPRO, see [2.10] and also [2.11]. The Khiamian period (circa 10200 BC till about 8800 BC) is associated with the form of a lithic arrowhead found in El-Khiam, see ref. [2.12]. This period contains what is referred to as PPNA (9500 BC to 8000 BC) and it includes the initial phases of the Architecture called Sultanian (derived from the Tell Es-Sultan at the ancient city of Jericho, a setting we shall extensively analyze in Part 2 of this section of the paper), along with the early phases of Mureybet – a settlement in Northern Syria, and spatially close to TQ, this author reviewed in all three papers cited ([1.1], [1.2] and [1.3]). It also includes the early phases of the settlement at Jerf el-Ahmar, a key settlement that the author also extensively covered as to its Architecture in papers [1.2] and [1.3]. Both settlements are clearly a pre-GT (in terms of site plan complexity, floor plan design and masonry construction) stone enclosure type set of structures.

The PPNA period is followed by the PPNB (often cited as 7600 -6000 BC) period, which is at times considered to cover the time interval of 8800 BC to about 6900 BC, see [2.12]. The author has adopted the 7600 – 6000 BC time frame to designate the PPNB period and argued in [1.1], [1.2], and [1.3] that GT is a post PPNB construction site, a claim that will be further documented below

by taking a closer look first at the Architecture of TQ's various phases from the earliest (suggested to be Epipaleolithic) to its latest, the PPNB transition phase. Many sites covered in [1.1] and [1.2], like for instance Hallan Cemi and Jerf el-Ahmar, critical sites with Natufian and pre-GT intermediate Architecture; and sites such as Catalhoyuk and Nevali Cori that contain Sultanian type Architecture, will not be extensively discussed again here. Interested readers are directed to the above references for more on the study's spatial extend and time period.

Definition of a "tower". Before we analyze the two Tells, and specifically the site at TQ, a note on the term "tower" is due. This is a term we shall encounter being used in the Archeology of both sites, Tell Qaramel (TQ) and Tell Es-Sultan (TeS). It is a rather misleading term, given what it connotes to a modern reader, especially so in the case of TQ's "towers". The structures, which we shall explore in some detail at both Tells, do not contain over the study period either city fortification walls or towers under what it is currently meant by and how we currently define or understand these two terms. Especially so in the case of TQ and its five alleged "towers" that, according to the archeologists in charge, TQ contains. It would had been far more appropriate to refer to them as approximately circular masonry structures, or at most as "proto tower" type structures rather than "towers". In any case, the study will try to avoid when possible using these culturally loaded terms. The term "structure" will be used instead with an architectural description, to the extent one is able to identify and fully describe these structures at present.

The Architecture and layout of Tell Qaramel. A look at structures from TQ's earliest phases points to some evolutionary aspects not only for local Architecture but also for a regional Architecture of the Levant spanning about two and one-half millennia (from roughly 10600 BC to about 8000 BC). In three macro-layers of structures, in a complex array of excavated micro and macro-level archeological strata, the archeologists at TQ identified five distinct micro stratigraphic layers, that they called "Horizons". Horizon 0, contains the isolated case of what they called "tower 01" a glimpse of which is seen in Figure 3, underneath the "tower 0" of macro stratigraphic layer one (which includes Horizon 1 – to use the archeologists' term) the main item of Figure 3. The vast majority of structures found at TQ under carbon dating are shown to be of the Natufian (Early and Late stages) Architecture. Starting with "tower 0", the marquee structure of the site at TQ, a 10600 BC structure, the preponderance of structures (Horizons 1, 2 and 3) are Natufian (including PPNA phases). Then, in Horizon 4 (the last micro stratigraphic level of the last macro layer) one encounters transitional structures from PPNA to PPNB Natufian Architecture.

As it can be seen, these are mostly archeological periods, not architectural periods. Already addressed were the difficulties in putting stratigraphy, carbon dating and archeological chronologies together. Now, some more complexity is added, as an attempt will be made to add an architectural chronology to that mix. At a local space-time level, chronometric classifications might not precisely match, although they do at the macro level. At the local level and on the topic of archeological stratigraphy and its laws, the reader is directed to the literature on the Harris laws and matrix and its underlying analytical model, see ref. [2.15]. In the case of the TQ archeological excavation stratigraphic evidence is complex in its micro and macro composition,

and so is (at a far greater extent) at Jericho. At TQ it reaches *in toto* two to three meters in depth, at Jericho is about ten times thicker. The relevant diagrams for TQ are shown in ref. [2.14] p. 581 and 582. Not much more will be added here on stratigraphy and carbon dating related methods and readings, as the focus will be on Architecture, Engineering and site plan (Human Geography).

In Architecture (as in lithic evidence and in Art in general) styles linger sometimes beyond certain *a posteriori* and more or less arbitrarily designated (and fuzzy) upper and lower boundaries. For any Architecture or Art style, there is an innovation point in space-time, rarely well-defined and firmly identified, where some successful innovation got a foothold prior to its eventual spatio-temporal diffusion. Adopters follow in time and space the innovators of other, possibly distant, places and time periods. Rarely however adopters adopt these innovations intact, without modifying them to some extent. Hence, spatially and temporally defined sub-classifications of styles emerge. Meantime, new architectural styles and Art forms may appear, while co-existing for a while with prior Art and Architecture forms.

Thus, and in general, there is an overlap of both Architectures and Art forms (and certainly of their sub-classifications) at any specific location and time period. Rarely does one come across a site where **purity in form** is the exclusive norm and lasting for a very extended time horizon. In this regard, the settlement at Catalhoyuk might be an exception. This purity in form seems to be particularly characterizing the various Natufian phases (Horizons) of the TQ site as well, given the temporal length and spatial extent of the Natufian style.

Figure 2. Tell Qaramel's earliest macro layer Early Natufian Architecture structures; view from the South. The structures belong to the 10600 BC construction phase and they are purportedly among the oldest human masonry structures excavated to date. They are at the vicinity of the structure shown in Figure 3, "tower 0". Source: [2.6].

In all three macro-scale layers of TQ, one encounters similar Architecture. Roughly circular, partly in ground structures, forming arcs, apses, quasi-elliptical, and quasi-circular masonry enclosures. These are all the types of structures encountered at TQ, see Figures 2, 3 (representing the 10600 BC macro layer), and Figures 4 and 5 (representing later macro layers). The Engineering associated with the structures' material is quite simple, and basically unchanged throughout the Epipaleolithic to the PPNB period (about five millennia, indicative of extremely slow speeds of change): pebbles to small stones, in dry highly irregular ashlar construction possibly involving an intervening agent, a mildly adhesive mud substance. This is a very important **Architecture related Evolutionary finding**. In all structures, at all macro strata exposed, one **does not encounter large scale masonry construction, let alone megalithic structures**.

The closest one comes to some regular in design, large masonry containing blocks, stone enclosure is at Square J-7, K-7, Stratum V, level 10, tower 0 (this is the archeologists' identification of the stone enclosure), see [2.14] (p. 575, Figure 2) and shown in Figure 3 here. The diagram clearly shows that the largest stone used was no more than 78 cm long, with a width of no more than 50 cm and 35 cm at most in thickness. Only three masonry blocks of this scale have survived and are shown in Figure 3, with a few (no more than five) at a scale about half of that in size. **The vast majority of the construction material is mud, and small pebbles**. It is quite obvious that the durability of these structures in terms of withstanding physical pressure (from either earthquakes or enemy assaults) was minimal. The entire set of layers from the Epipaleolithic to the PPNB phase **do not show mudbrick material to have been used** in the construction of these structures.

One may argue that, larger stone blocks **may** have been used at earlier phases, then possibly recycled and re-used at later construction, on top *in situ* or elsewhere. These imaginary large in scale stone blocks, time **may** have filtered out. This may have been a reason why these bigger blocks do not show up now there. However, there is absolutely no evidence to support the foundations of megalithic construction at any of the phases covering the period in question, and this assertion (not made by the archeologists of TQ, and just brought up here as a historiographic scenario) remains a hypothetical and in the realm of impossibility based on the current evidence uncovered thus far at TQ or in other regional sites, and also on **architectonic speeds of change**.

In fact, the oldest circular structure (the archeologists' "tower 0") encountered before reaching culturally sterile ground (floor, that is, which does not involve humanly made structures below it), is on foundations of an earlier structure (dubbed "tower 01" by the archeologists). It had walls with thickness half as much as that of the structure above it. This is an indication that the older structure may have been an early phase of **seminomadic habitation** (involving non-winter habitation); whereas the thicker (in fact, double in thickness) walls structure above it (that shown in Figure 3) may have been the result of full scale year-round **sedentary habitation**. This is the time period of the locally **full-blown effects** from the Younger Dryas, and the main phase of the Natufian Architecture speeds of change. TQ may have also been the site where formation of proto socio-economic-cultural elites took place. The Tell may have been their residential quarters site, possibly containing a proto palace and a proto religious center, the first in Human History.

Figure 3. Tell Qaramel, layer above the oldest one of the Tell. Layer dated to 10600 BC; it belongs the late Epipaleolithic (late Upper Paleolithic). Its Architecture is of the early Natufian type. The walls of the 6-meter (counting the walls' thickness, approximately 1.50 meters) at maximum long axis structure (which is referred to by the archeological team as "tower 0") sit on top of a similar in shape Epipaleolithic structure underneath it, labeled "tower 01" by the archeologists in charge of the excavation, with walls half in thickness. The inground structure is dated to the middle or late (the C-14 dating on it contains some variation) 12th millennium BC. Source: ref. [2.14].

A striking feature of the site is the number of hearths found there, both inside and outside the structures shown in Figures 2 - 5. Hence, one might be safe in suggesting that their abundance and relatively high density was the result of weather and climate related patterns at the time. The individuals and social groups who built and utilized these structures obviously had to deal with the macro-scale climatic (the local Younger Dryas effects) and geographic conditions (and their micro-climate) there (at a high above sea level plateau) and then weather related factors. The altitude above sea level (about 460 meters); a desert environment; and the seasonal requirements for protection (the local winters, snow and rainfalls) are some of the factors determining the architectonic design of these structures. On top of these environmental factors, the walls of these structures had to provide coverage and protection from outside raids by social groups in competition with the residents of this settlement for resources and safety. To assume that these structures were "towers" and "fortification walls" in a contemporary definition of these terms must be discounted. Simple application of force would imperil the Engineering based structural integrity of these edifices. Any even weak lateral force applied would make these meager structures collapse, and bury inside them any would-be seekers of protection from outside raids. Moreover, torching the inside of these structures from outside marauding raiders, and thus generating even a small-scale conflagration, would be quite a simple feat to accomplish.

Figure 4. Tell Qaramel structure at PPNA macro excavation (stratigraphic) level containing Natufian Architecture (circa 10000 BC). The fragile from an Engineering viewpoint construction is partially in-ground and consists mostly of pebbles and mud. Its height must had been very modest. The archeologists consider it to be a "tower" as well. Source of photo: ref. [2.6].

Vulnerability, specifically the turning of entire structures into deadly traps, is the single most evident aspect of these structures. They contain very simple Architecture and Engineering design and construction. Seeking environmental protection is detected as having been the primary objective in building these structures, not shelter from social threats. No matter the structures' intended socio-economic-cultural functions, these were not means of mounting any serious defense, bringing into question the use of the term "tower". Their walls' thickness (about a meter, rarely reaching a meter and a half at most, at their early stages) were simple means to attain some temperature regulation for their enclosed spaces. The total height of these structures at the time of their design and construction is unknown. It could not have been more than two meters, since geological conditions (earthquakes) would quite probably render them uninhabitable, in a region prone to significant earthquakes.

The structure "tower 0". The largest structure of the first macro layer, the macro layer dated at 10600 BC by the archeologists, has some interesting design features. The surviving part of the structure, see Figure 3, made mostly out of pebbles, is an approximate semicircle with an extension showing at the righthand side. It is not at all clear if this structure's original design was to be at the finish of its construction an approximate circle or an apse. Be that as it may, on the basis of the surviving component of the structure, and on the basis of the scaled diagram of the structure as offered by the archeologists, one can derive the following architectonic design conclusions, without relying on the assumption that the end product was to be a circle:

(1) the total area taken by the approximately semicircular (as is) structure is about πR^2/2=56.50 square meters, where R=6 meters; (2) the interior space used for shelter (or any function, residential or ceremonial or storage) area is about πP^2/2=14 square meters, where P=3 meters; (3) the total area taken up by the walls is 42.50 square meters; (4) the ratio of used space to protection space (wall) is about 14/42.5=.33, that is the **used space is only about one third of the support space**. This is an **efficiency measurement (or index)** to be considered as a key component of an architectural design of that Era. This efficiency measurement (or index) will be revisited later when the "Jericho tower" will be analyzed, and in Note 5 at the end of the paper.

As mentioned earlier, the original height of this structure is unknown. Unknown is also the type of cover (roof) it had and how this roof was anchored onto the masonry structure. Theories exist on that, as is also the *in situ* archeological evidence which points to timber poles supporting a roof probably made from plant material. The Engineering based structural stability of such a roof is of course open to question, as is its vulnerability to fire and strong gale force winds and storms, not to mention outside raids. Archeological *in situ* evidence, see ref. [2.6] suggests that the structure succumbed to fire, as signs of considerable conflagration were located by the archeologists. It can be fully asserted that the cover of these structures did not involve masonry construction (lintels, an element we come across at TeS) or any sort of corbelling, architectonic elements which appear in Neolithic Architecture, post late 6th millennium BC (with dolmens and passage tombs). The structure of Figure 3 has a floor from clay, bedded on pebbles, see ref. [2.6].

Furthermore, it must be noted that the element of an "orthostat" is **absent from all structures** at TQ. Orthostats are components which tie up the masonry ring structures of enclosures. Orthostats are encountered at both sites, Natufian Jerf el-Ahmar and Sultanian Nevali Cori, see ref. [1.3]. The size and placement of orthostats within a ring structure are key factors in identifying evolution in both architectural design and engineering construction. The greater the spacing among orthostats the more advanced the engineering of the stone enclosure. Similarly, the size of the orthostat determines the evolutionary stage of a ring enclosure. These attributes clearly indicate that the Temple phase at Nevali Cori is a subsequent to the settlement at Jerf el-Ahmar. The lack of orthostats at TQ's entire inventory of masonry units of all phases clearly shows an architectonic temporal sequence: **Jerf el-Ahmar and Nevali Cori followed TQ**. In addition, the presence of an orthostat in a later Natufian structure signifies evolution in Natufian Architecture.

TQ: a "citadel" of the socio-economic local elite: a proto city. A few points will be made about the potential uses and users of the space in the structure of Figure 3, the "tower 0" structure as referred to by the archeologists in charge of the excavation at TQ. As they have suggested, to the immediate South of the Tell, a considerable amount of land has been identified as linked to the Tell. It is estimated to be about four hectares (4 ha=40,000 square meters), see ref. [2.24]. This land could comprise of both farms and residences of workers (farmers and other possibly skilled workers) supporting and governed by a proto social elite structure that potentially could reside (or occupy) the settings uncovered by the archeologists and belonging to the period 11500 BC till the Natufian PPNB period at around 9500 BC.

It can thus be argued that the type of “fortifications” or “towers” unearthed by the archeologists were the residential quarters and proto palaces (religious as well as administrative domain) of the local ruling elites at the time. The citadel was also the place of the ruling class’ necropolis. In ref. [2.24] it is reported that 27 graves containing human skeletons belonging to that era were found. The custom of a citadel containing the social elite’s tombs (an evolution of the custom of a house containing the dead in the household) is a custom we encounter down to the Mycenaean Era at the citadel of Mycenae. Here is a site (possibly among others still to be found) where this custom might had originated.

In the context of a citadel, the spatial arrangement (allocation scheme) of the population stock as stratified by economic and social status in the framework of the entire region surrounding the Tell might provide a clue as to the factors giving rise to such a spatial distribution and residential pattern for the elite, their servants, artisans and associated workers of the palace, thus shaping their residential structures’ forms in the manner recorded and surveyed. The surrounding area may have also acted as the “first defenses” of the structures at TQ in terms of protecting it from outside threats, small in scale of course (nothing compared to the outside threats facing settlements and cities of the Bronze and Iron Ages), as well as economically supporting it, attenuating the need for stronger citadel fortifications of a later era. The Tell may have also acted as the storage space of surplus livestock and necessary inventory (for the palace residents as well as for those needed to survive periods of shortages among the farming labor force) of grains from farming.

One might detect at TQ the kernels of a spatially distributed proto urban structure with a proto citadel in its midst. It must be kept in mind that, as the term “tower” and “fortification walls” are terms that connote different things at present and thus attention was drawn and caution was sought as to their use by the archeologists, under the same terms is the notion of a “citadel” employed here. It is not the highly inaccessible and heavily defended setting, situated at significant heights above ground. This is what is implied by the contemporary use of the term, as for example in the case of the Iron Age, 15th century BC, citadels at Mycenae and Hattusa. Scale must be taken into account, as perception of heights and inaccessibility were different back then, as it was the notion of “threat” and the composite purpose and notion of a “citadel”.

Comparative advantages in citadel living combined a number of factors: protection from adverse weather conditions (avoiding floods for instance and blocking the Northerly winds) was coupled with social status for residing at a high above ground level. This advantage however had to be mitigated to the extent that the elite group was not too much (thus, dangerously) removed from the farmland’s workers. This view of a “citadel” at the Neolithic (Early, Middle, or Late) might explain why many of the ancient cities excavated are located on Tells. Of course, the initial Tell may had been considerably lower than the last phase of construction on them, as successive building activity accumulated over the millennia raising the Tell’s height.

Spatial dominance by residing on top of mounds and hills is an important component in the bundle of factors demonstrating social dominance over their subordinate social classes by the ruling social elites at any time period. Citadels were the sites to house social elites and the top of a social group's hierarchical social structure - up till the time that the Greek City States were founded, when the entire population of a city (no matter its social class or economic preoccupation) was housed inside a city's walls, forming complete City-States. Enjoying the viewshed, and other comparative advantages attached to living on hills at present may not have been playing a similar role in the locational decision-making of that Era.

During the Neolithic, the formation and site plan of a citadel must have been geared more towards protecting the needed inventory of grains and livestock for the social elite's immediate survival. That objective might had been traded off with the aim at protecting slave labor working at subsistence levels the fields. It is not surprising that an aurochs' entire skeleton was found inside one of the "houses" of TQ. The citadel was a site where the palace (and the temple) were located and protected, as well as the elite's proto necropolis. All these various land uses were for the first time in need of some rationalization and conflict resolution, given space limitations.

Storage rooms is a dominant component in a citadel's site plan, since it houses the elite's essential inventory of foodstuff for a perceived as necessary time period. Uncertainty over this time period, may had to a large extent determined the total area of the foodstuff containing spaces, as the amount of storage space must had been a function of anticipated crop failures over a time horizon the elite group was willing to speculate, as well as agricultural productivity of the surrounding dominated by the elite fields. Thus, some economic sophistication involving foodstuff **inventory controls** play a major role in the floor plan design (shape and share of area) in a citadel. More so at the early phases in citadel formation than later, as overtime advances in better handling and speculating about crop failures were coupled with better performance of an increasingly organized agriculture.

Increasing returns to scale in communal living was the major force in the need to aggregate, in which shared need for various types of protection and safety are included in the bundle of forces constituting these returns to scale. It was a key factor in determining the, at the time, optimum spatial and population size of a citadel, only to be countered by the perceived **negative external effects of agglomerations**. All these issues from Human Geography the author has discussed in his papers on archeological matters found in ref. [1.4] and [1.5].

These elementary aspects of spatial allocations one detects in the proto clustering of families into small scale settlements at the early Neolithic, the beginning of proto cities, possibly first proto city being TQ in the Levant. Since the excavations at TQ are not finished, the entire size of the community (in both area and estimated population) can't be at present fully gauged. Once finished, a better handle can be obtained in finding (or better, estimating) the size of this possibly first human settlement.

Figure 5. Tell Qaramel structure at PPNB (circa 9600 - 9000 BC) level containing late Natufian type Architecture with some midsize stone blocks involving dry ashlar construction mixed with pebbles and mud. This partly inground structure is also considered by the archeological team to be a "tower". Similar in Engineering as that of Figure 4, this structure's height must have been modest (no more than two meters – otherwise the structural integrity of the edifice comes into question). These structures, as well as the population size of this citadel settlement are informative not only in regards to their Architecture and Engineering foundations (contexts), but also because they are indicative of the **scale** of the settlement in question and the associated (linked with) regional settlements as well. Source of photo: ref. [2.6].

PPNA/B structures' Architecture at TQ. In Figures 4, 5, and Figures 5.A(1 and 2) and 5.B, some TQ structures (also identified as "towers" by the archeological team of TQ) are shown. Their Architecture (see Figure 4) is either partially in-ground Middle Natufian, or (see Figure 5) Late Natufian PPNA type Architecture. Both demonstrate the presence of approximately round masonry construction, with walls mostly made out of pebble – although meter (or less) in size meso-scale highly irregular dry ashlar masonry block in the construction is also present. This is demonstrated by the remains of the structures in Figure 5, and also in Figures 5.A.1 and 5.A.2.

An Early Natufian construction, PPNA, is shown in Figure 4. In Figure 5.A, (1 and 2) a transitional period between PPNA and PPNB structure is shown, so labeled because of its C-14 readings and so classified on the basis of its stratigraphy. This is the youngest of structures uncovered to date at TQ. The condition these structures were uncovered by excavation is of interest. Both "towers" in Figures 4 and 5.A(1+2) are shown to have been partially demolished. The cause is not known, although likely it was the result of earthquakes.

The use of these structures can't be ascertained, although either residential or as a storage space of foodstuff could be a good guess. It isn't also quite clear where access to the interior was attained from the outside. Points of egress from the interior are more obvious in the case of the "tower" structure shown in Figure 5.A. The structure of Figure 5.A(1+2) also demonstrates a higher level of complexity in the partitioning of its interior space, sporting two distinct levels and having a clay covered finished floor. It is very likely that this was the residence of a person of high ranking within the social elite structure of that time period there.

Figure 5.A.1 Tell Qaramel. The last (Horizon 4) transitional to PPNB late Natufian structure at the site. Noticeable are a number of features, especially the thickness of the stratigraphic layer above it, and the scale of the almost circular stone enclosure structure. Its distance from the surrounding structures (neighboring houses or temples or administrative units) hence the density of residence is also noticeable. Increased sophistication in the interior of the structure's space, the floor material and the wall plastering are indicative of an evolution in the edifice's Architecture and optimal adaptation to a changing environment. The presence of auxiliary spaces surrounding the structure is indicative of an evolving site plan. More durable and better-preserved walls, are strong indications of increasing sophistication in the construction of the edifice and an evolution in building technologies. Walls are made by employing various sizes of pebbles and stone, and by tying these materials together with mud. Source of photo: ref. [2.32].

It is these structures (no matter the precise initial phases of the earliest units, “towers 01 and 0”) shown in Figure 3; and the latest (youngest) units as those shown in Figure 5.A, that were in existence at the time that the archeologists of GT suggest **neighboring with TQ, GT’s** structures C and D, Layers III were constructed. No matter the possible disputes on the C-14 based interpretation of the evidence from the structures at TQ, it is **clearly unfounded on Architecture, Engineering, and Human Geography grounds to argue that these two types of neighboring settlements (GT and TQ) co-existed then**. There is absolutely no evidence that the GT monolithic megalithic monumental construction can be temporally coterminous with the structures of TQ. TQ not only does not possess monolithic megalithic construction, it does not even contain megalithic Architecture. This conclusion must be viewed in conjunction with the claims that the more distant from GT than TQ settlement of TeS affected GT. Examining TeS a similar conclusion is drawn by comparing GT structures with structures we are about to review from Tell Es-Sultan.

Figure 5.A.2.. Tell Qaraamel, another view of the structure shown in Figure 5.A.1. The partitioning of the interior space is shown, as are the egress spots from the interior to the outside area. The postholes surrounding the structure could had been spots to place wooden poles to support a roof, and also spaces for auxiliary to the structure uses (such as storage and other ancillary spaces). The structure represents the last phases of construction (located thus far) at Tell Qaramel, and it is found in sector J-7, K-7 (not to be confused with the structures of Figures 2 and 3) of the archeological site. Source of photo: ref. [2.33].

Neolithic land tenure at TQ and the spreading of Agriculture. One of the major events in Human History has been the post Younger Dryas spreading of Agriculture into Western Eurasia and Northern Africa (and also to other areas of Asia, East of the Fertile Crescent). At TQ we may have the kernels of this historic event, and its possible causes. These causes might be imprinted on, as well as implied by, the very **uses and users** of the structures we are looking at in the set of Figures 2 – 5.B, and the **location** of these elite residential units. Quite possibly administrative proto palatial, very likely religious proto temple, and certainly wholesale storage facilities, together with ancillary at the time spaces, are the first land uses of these prime anchor locations. The vast amount of fertile lands surrounding the Tell was the market area (in a Central Place Theory context of Human, Economic, Spatial Geography) and the domain of the elite group' control over the fertile plateau of River Qoueiq's space. Certainly, luxurious for the then prevailing residential standards of the Upper Paleolithic's cave communal dwelling accommodations, the Epipaleolithic and Early Natufian cultures that inhabited TQ must have considered these units as representing a quantum leap in residential and living quality and comfort as well as privacy and safety.

Figure 5.B. Tell Qaramel archeological site. An approximately circular, partly in-ground, stone enclosure structure covered by mud with a clay floor at square J-7, K-7 (again, not to be confused with the prior structures' designations) at the site. The Architecture is Late Natufian with sophisticated interior space partitioning. The structure must had been part of the residential quarters of an upper echelon elite family. Source of photo: ref. [2.34].

It was the good times of a pre-Younger Dryas environment, when the quasi nomadic life style of hunter-gatherers' high spatial mobility, was gradually transitioning into a sedentary low mobility but diversified in employment and production as well as consumption life style. It was becoming a primarily agriculture (farming, fisheries, animal husbandry and forestry) economy. But it was far more sophisticated than that. Economic activity involved also the mining of obsidian and flint; trade on major land paths and proto roads and through quite possibly riverine proto transport; manufacturing of a host of products ranging from stone tools and proto stone and clay household appliances and utensils, as well as a battery of offensive and defensive weapons, building materials (stones, mudbricks and clay), and the construction of houses, hearths and proto kilns. It included the production of various implements extracted from plants and animal bones, and of course proto jewelry and decorative Art. But maybe most importantly, it must had produced experts in **accounting and record keeping**, specialized workers likely in high demand by the ruling elite. **Division of labor** was getting underway. And with it came **specialization in land uses**.

Figure 5.C.1. Artifact found at Tell Qaramel, indicative of the State of the Art then. Source of photo: ref. [2.37].

Division of labor, specialization in production and ability to trade, as well as assisting the ruling elite structure for administration and social services (mostly religious practices and observances) were becoming rare skills of importance to the elites and sources of socio-economic prestige. An **associate class** to the ruling families was forming, being placed at the totem social pole between the land owners (those who were the first settlers and placed a stake on land and became the *de facto* rulers) and the slave labor who served them and farmed for them in exchange for protection and some guarantee to subsistence living.

Funeral practices and conditions of the human skeletons found at the site, see ref. [3.36] describing about 27 skeletons' remains at TQ, along with lithic evidence, see ref. [2.35] offer a glimpse into their social life. These limited finds seem to indicate a prosperous relatively violence-free social elite group must had resided then on, and at selected areas around, the Tell. The surrounding land mass, where the vast majority of the Natufian individuals very likely resided, has not been excavated and most likely their residential quarters did not survive the millennia. Demographically, the total population residing at TQ's central residential quarters (the social elite group) must had been about a tenth pf the total population size of the entire area, which included the fields belonging to the Tell's market area with a much lower average residential density than the Tell's. The artisan and skills bearing intermediate social class must had been at least twice possibly three times the population size of the elite group, residing at an area about equal to half the size of the elite's residential quarters at the Tell, or a close by sub-center, and at a density of about two to three times the density of the social elite's quarters. These are approximate estimates from typical residential patterns of communities, to a great extent having remained dynamically stable over space-time. See some analysis and discussion of these topics in ref. [1.5].

Figure 5.C.2. Tell Qaramel; the archeologists' maquette (model of reconstruction) showing a possible version of the settlement's spatial aggregate form. The emphasis on rectangular configurations depicting the residential quarters of the ruling elite class and its skilled workers and associates could be brought into question, given the forms of the individual structures uncovered. Questions can also be raised regarding its overall scale. Source of photo: ref. [2.37].

A reconstruction of the settlement (in effect a proto village) has been offered by the TQ archeologists. It is shown in the maquette of Figure 5.C.2. Of course, one can easily envision a slightly different reconstruction, highlighting the roundness ("tower") element of each unit and a freer land use pattern with less rectangular modular rigidity in the spatial allocation schema within the compound. Such a suggested here schema would have been more appropriate in replicating the settlement's overall morphology then, given the shapes of building we see in Figures 2 – 5. This type of site plan morphology and order might be more appropriate for a Sultanian based Architecture (like for example that at Catalhoyuk) rather than a Natufian one. Another point of possible contention might be the scale of the community in this proto village, as discussed already. TQ was neither a farmer's farm house nor a cattle ranch. It was a proto community, the very beginning of an "urban area". It must be kept in mind that the key factor here in determining the size and density in the structures of the maquette is socio-economic and cultural in nature. Whether one is to assume that all farm laborers were in fact residing in these dwellings or not is a profound question in need of in depth socio-economic analysis. However, this immense in the literature subject, will only be dealt with here in summary. It is the assertion of this author that only the social elite (the proto king or proto priest) together with his/her immediate associate class were the residents there.

However, no matter the position one is to take on this social stratification and residential pattern, this is a secondary issue. The primary, and by far the most important, factor in the Land Use and Site Plan blueprint of the Tell and its environs is the **land tenure** (in use and ownership rights) issue. Although obviously no formal land markets and real estate prices were yet developed, rudimentary **land values** were formed as a result of the **specialization of the land space**. Living on Tells must had conveyed and entailed the presence of a **land premium**. Due to lack of evidence, however, on possible answers to this basic question regarding land markets in the Neolithic, the **citadel related propositions** put forward remain at the hypothesis level. But they are based on the implied conditions from the **observed residential patterns** on the Tell. It must be reasonably suggested that the rights to own land belonged to the Tell dwellers. These dwellers could not exist as a self-supporting community and residential unit under such relatively luxury accommodations at the scale excavated. They needed farmers and workers and slaves to support their life style. Then the Younger Dryas period came. As we discussed earlier, the **carrying capacity** of the site was strained and eventually it was reached and then exceeded. As the end of the large-in-scale cold spell was nearing, and the dry impacts were receding along the Asia Minor hinterland and the Mediterranean coastal lines, some of the surplus farmers (in farming and animal husbandry), even proto cattle ranchers and land scale farmers and other skilled workers in their struggle for survival decided to seek better pastures elsewhere. They simply packed up and left. Hardly were they aware then that by so doing they were sowing the seeds for Humanity' greatest adventure – the launching of the Neolithic Revolution. In [1.4] the author outlined the demic process that this spatial and temporal stepwise **out-migration flow** entailed. In waves, and in travelling ever longer distances, by the 5^{th} millennium BC the Near Eastern farmers had reached the British Isles. It was a very complex flow, with sharp and smooth edges, discontinuous

and continuous at times, occurring in leaps and bounds, with multiple origins and destinations. The full analytical formulation of this epic, five millennia in duration, flow is still awaiting a full description. But that complex spatio-temporal flow was not a mere population stock flow. It was combined with parallel movements by fellow travelers, picked up on the way. It entailed flows of Culture, Religion, Technology, Architecture and Art. Along with the agriculture related deities of the Fertile Crescent, evolved versions of Natufian and Sultanian Art and Architecture also traveled along the continental and maritime routes to North-West Europe. In so doing, they also evolved. But their roots are found deep into the structures we analyze in this paper, around the foothills surrounding the Tells of the Levant. Tell Qaramel and Jericho potentially were two major sources of that flow that shaped the fortunes of Humanity over the ensuing ten millennia.

Figure 5.C.3. Tell Qaramel, lithic finds. They are indicative of the Art and Technology available in the PPNA/B period in the Upper Levant region of Eurasia. Source: ref. [2.37].

The lithic evidence at TQ. Part of the Archeology of TQ deals with a rich inventory and repertoire of lithic finds in the site's different macro layers. A few of these numerous mobile artifacts are shown in Figures 5.C.1 and 5.C.3. An interesting aspect of the lithic evidence is the relative plethora of flint (and not obsidian) tools found *in situ*. Of course, tools (and pottery sherds) are notorious archeological artifacts, and they must be looked at and interpreted very carefully. Being mobile items, their origins, manufacturing and transport as well as their artistic veins and historiography of their successive provenances are largely unknown and quite difficult to trace. Their value as archeological evidence is far inferior to the corresponding value of immobile structures and their Architecture. Isotopic evidence of the raw material used might supply valuable and concrete evidence in regards to the mining location (thus transport links and cultural as well as socio-economic trade-related histories) of these artifacts' original part of their histories. But they can offer little about their overall chronology, making and sequencing in provenance. Only comparative analyses can supplement and offer some insights into these artifacts' provenance. But that part of the narrative is quite partial and a matter of interpretation of evidence subject to considerable debate. No matter the limitations of Architecture related evidence, the lithic evidence is subject to much more severe questioning. In regards to the **flint** component of the majority of tools found *in situ* at TQ, a few notes are warranted. TQ is at the Southern borders of Asia Minor, a source of significant amount of obsidian. On the other hand, flint sources are further away and thus less accessible than corresponding obsidian sources. It would had been extremely helpful if the source of the flint tools found *in situ* at TQ were to be identified by chemical analysis. To this date, and to this author's knowledge, their raw material sources haven't been identified. Why was flint the raw material the great majority of the tools found at TQ were made, and not obsidian is a question in need of an answer and till then it remains an open question. An informative source on flint is ref. [2.16], and on flint and obsidian and their sources is ref. [2.17]. Since this is intended to be a paper on the Architecture of the site and not its mobile lithic evidence not much more will be added here on this topic.

Some conclusions from Tell Qaramel. Even a cursory review by a casual not trained in Architecture reader would recognize that the Architecture and Engineering of the structures excavated and the Art in the mobile artifacts found at the excavation site of TQ do not share much with the equivalent ones at GT. Most of all, and besides their morphology and construction details, they are not of the same scale. They do not contain the megalithic monoliths (orthostats and pillars) of GT. They do not have almost anything in common with the Art (in iconography and elaborate detail) carved on the GT stone enclosures' monolithic megaliths. But the review of the site at TQ went a step further. The analysis of these structures and the careful recording of their engineering and architectonic elements allowed for a rough outline of an Evolutionary Theory in Early Architecture. The examination of the Physical and Human Geography (involving both Spatial, Economics and Demography) components of the site, allowed also for an interpretation of the Land Use and Site Plan of the area at the Tell and around it. This analysis hence afforded the derivation of a socio-cultural scenario of **social stratification along with division of labor, land use specialization, and a proto land values system**. Moreover, an explanation of the **post-**

Younger Dryas event of **out-migration of Agriculture and farmers** from the Fertile Crescent towards Europe was offered. It was linked to a social stratification in a hierarchy of socio-economic classes, to the likely prevailing **land ownership patterns**, and the reaching of the local environment's **carrying capacities** during the Younger Dryas event and immediately following it. Relieving that excess capacity of farm labor, once the climate improved after the receding of the severe Younger Dryas related impacts to the North and West, must have been the push factor behind the triggering of the large scale and long-term **out-migration movement** that spread agriculture, its gods, the derivatives originally of the Natufian and later of the Sultanian Architectures and Engineering methods and techniques into Western Eurasia, Northern Africa and elsewhere.

A few notes on archeological sedimentation and stratigraphy. Earlier, the work by Edward Harris (on the laws of stratigraphy and the associated model) was mentioned. For the interested reader, and more references, see [2.39] and [2.40]. This is not a paper containing work that is intended to focus on such subjects. Nonetheless, a few comments are in order, on this very complex topic, involving a very complex physical and geological process, that of sedimentation and formation of archeological stratigraphy. To these topics one could add the biological process of sedimentation described by Charles Darwin as well. See on this subject ref. [2.47]. It acquires additional import, when Tells are involved and Human Geography, while only vertically dug trenches are dug and not complete 3-d (horizontal and vertical) discovery is possible - for a host of factors. It is on the chronological issues associated with the stratigraphy of Tells, and the presence of a very complex set of factors included in the bundle of forces contributing to sedimentation, that the following brief comments are made. Tells, to the extent that they are not natural geological hills (a combination of rock formations and soils Geology), but the product of social and spatial dynamic processes involving successive strata of human habitation and layers of humanly made and destroyed structures, demonstrate a complexity which presents significant challenges. This is simply because, earlier created structures, as a result of either human or naturally occurring events (for example earthquakes) can fall on top of later built structures. Consequently, they can violate the basic principle in stratigraphy that has earlier structures laying below later ones. Depth in stratigraphy may also present the following counterintuitive phenomenon: earlier made structures may appear much closer to the surface than later made ones. This is especially true when Tells are involved, the top layer of which can be brought up to the surface as a result of soil erosion dynamics. Whereas, as human spatial distribution of a central community initially located at the summit or natural hill slopes high above ground, to avoid flooding among other reasons, eventually expanded and spread out towards the foothills of the Tell and beyond into the adjacent flatlands under socio-spatial dynamics, newer communities are found downhill and on flatlands. As the result of soil erosion however, these flatlands can be filled with sediment brought downhill from the Tell, thus burying the late structures while revealing the early ones.

In summary, these comments demonstrate why stratigraphic evidence must be interpreted under a confluence of factors, not all immediately apparent, hence very carefully.

PART 2. Tell El-Sultan: the first Sultanian citadel of the largest ruling elite to date

Brief Introduction. We now switch attention to a site which (due to its lithic evidence) is referenced by the GT archeologists in the description of GT (the TQ site is not). Since we do not focus on lithic evidence in this paper but on Architecture and Engineering as well as Human Geography, a few specific monuments' Architecture at Tell Es-Sultan (TeS) will be reviewed. They are: a structure which represents the Sultanian phase in pre-pottery Neolithic Architecture; the "tower" of Jericho and the Neolithic wall of Jericho. A note at the outset is needed. The Neolithic wall of Jericho is not the Early Bronze Age wall with the stone revetment, a retaining masonry wall supporting a mudbrick fortification structure on top of it and having numerous towers, encircling a spatial expansion of the Neolithic phase of TeS. The Bronze Age wall has been the source of controversy and confusion due to Biblical references erroneously attributed to it. It is one of many walls encountered at TeS's complex stratigraphy.

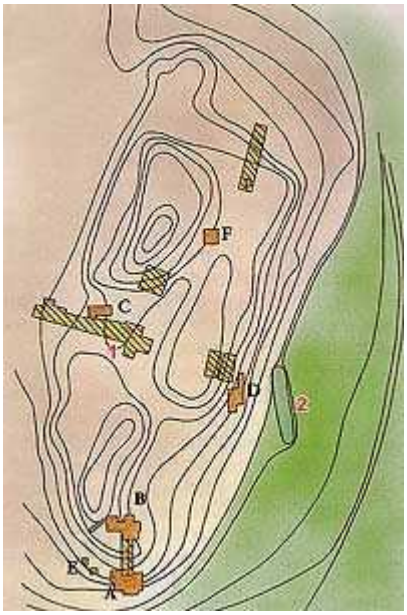


Figure 6.1. The many excavations at Tell Es-Sultan. #1 is the K. Kenyon Western trench; A-G are the L. Negri 1997-2000 first stage excavations. Source of diagram: ref. [2.58].

Architecture, Engineering and Human Geography at TeS. References will be made here to the publications by the archeologist in charge of the most recent excavations at TeS, which was carried out during the period 1997 – 2000 (first stage) and the 2009-2014 dig (during a second stage), Lorenzo Nigro, see ref. [2.18] and its many webpages. Additional easy accessible material by other researchers, like for instance the work reported in ref. [2.38] will also be examined and critiqued. The classical source on Jericho is of course Kathleen M. Kenyon's reports, ref. [2.41] - [2.45]. As already noted the archeological work on TeS is not controversy free and many views

expressed are far from being universally accepted in the archeological community for a host of factors. Although the details surrounding the many Architectures of the TeS site are complex, as patches of different horizontal collage of spatial patches and vertical layers of stratigraphy intermingle in a complex web of Archeology, History, Myth, and Architecture, the rough outline of the Tell is simple and straight forward.

Figure 6.2. Tell Es-Sultan; a Google Earth map of the site in the ancient city of Jericho at about 280 meters below Sea level. The fertile fields that supported the Tell's various over time social elites still surround the Hill, especially to the East and South. The main trench dug by archeologist Kathlyn Kenyon in the 1950s is shown at the Western side. The many trenches dug over the last century are shown in Figure 6.1, including the trenches dug by Lorenzo Nigro in his in-two-stage excavations, the 1997 – 2000 period and the 2009 year of the 2009-2014 period. The Ain Es-Sultan springs are at the Eastern side of the Tell, just South of center. North is straight up. Source of the map: the author, from a public domain 12/4/2009 Google Earth map software program.

The archeological outline of TeS could be described as two major phases of Architecture, marked by two major chronological periods. One stretches through the pre-pottery Neolithic B period; and another covers the Early Bronze Age, at the Neolithic to the Bronze Age boundary. These two periods are linked by an almost complete hiatus of significant monumental construction activity

at the Tell. These two boundaries, the 7th millennium transition between pre-pottery Neolithic to pottery Neolithic, and the circa 2500 BC marker are major points in the Archeology of the Levant and time markers that define all three of the sites explored in this paper. From an evolutionary dynamic stand point they can be characterized as follows: A rather simple relatively **slow motion eight millennia long** period of construction (the 10500 to 2500 BC frame) was punctuated by fast moving two **early** (at the PPNA to PPNB boundary, and the PPNB to pottery Neolithic boundary) transitions, and a **late** (the Neolithic to the Early Bronze Age, c 2700 – 2500 BC boundary) phases. It was followed by a barrage of relatively **fast three millennia** long phase (c 2500 BC – 700 AD) involving turbulent and relatively rapid changes. This study aims at and concentrates on the first five millennia of that eight millennia long period. The PPNA to PPNB boundary and the Neolithic to the Bronze Age boundaries were marked also by the build-up of two major walls at Jericho.

An early Neolithic (with roots in the middle 11th millennium BC initial small-in-scale settlement made out of seasonal residences for pastoral nomads), see ref. [2.62] on this chronology, located on the Jericho mound, grew in the ensuing two to three millennia to a sizable citadel in the pre-pottery Neolithic period. TeS was a slowly developing citadel during the 9th to the 7th millennium BC period, and these dynamics in particular will be the focus of the work here. Eventually, it is not very clear at what speeds and under what cultural conditions, the community grew in the post 7th millennium BC and spatially expanded beyond and escaped the confines of the Neolithic settlement's masonry wall physical boundary to the East of the mound. By the Early Bronze Age, the spatially expanded borders had reached spatial limits delineated by a Bronze Age, large-in-scale wall, the scale of which the Levant (and the Western Eurasia Region) had never seen. It fully encircled the demographically and spatially exploding community at the citadel, possibly the largest in the entire Fertile Crescent, as it approached the Neolithic to the Early Bronze Age boundary. On that wall is what most of the work by L. Nigro and his associates concentrated. However, this aspect of the monument at TeS will not preoccupy the analysis here. Nonetheless, it must be noted that the 6000 BC to the 2500 BC spatial growth at the Tell didn't take place on virgin territory. Prior construction was there, although the full specifications and Architecture of that construction phase is still unclear and still laying buried under the Tell's soil. Of course, Jericho's Bronze Age wall is what has attracted worldwide attention, mostly due to its Biblical associations. As it has been amply demonstrated by Archeology, references to it found in the Hebrew Bible (or the Christian Old Testament) are chronologically inaccurate and largely legendary. They are not based on concrete and documented historical and archeological evidence. Here, from the voluminous literature on TeS only selected references will be made to the extent that they bear directly on the discussion about the Architecture, Engineering and Human Geography contexts of the Neolithic monuments already mentioned and specifically the Sultanian Architecture site's features and milieu.

Many strata of History (at some count more than two dozen distinct layers of Architecture, Archeology and History) are associated with and meshed at TeS. However, only the earliest 10th to 7th millennium BC mudbrick and masonry related construction Architecture will be the focus of this paper. Jericho offers a unique window into a set of complex horizontal collage and vertical

superposition of multiple Architectures. Successive layers and neighboring patches of construction within a 12-millennium long horizontal and vertical stratigraphy, see [2.19], have accumulated in time. They have dynamically interacted. They have created at present an amalgamated in 3-d Tell of about 48,300 square meters in total area, an elongated ellipsoid of about 140 meters along its minor axis and approximately 345 meters along its major axis at ground level, and about 45 meters in height. The 48.3 hectares of a mound reveals an uninterrupted continuum of architectural phases affording us a unique peak into the Evolution of Humanity's complex web of Western Eurasian Architecture. TeS and its spatial neighborhood, which extends all the way down to and encompasses the present modern city, supply an array of spatio-temporal sequences, culturally varied architectonic specimens that have coalesced over the millennia, creating a laboratory for studying millennial in time-scale Socio-Spatial Dynamics. However, from the entire book of Jericho, only the few first pages will be read.

Tell Es-Sultan, Tell Qaramel and Gobekli Tepe. There are numerous similarities (in micro and macro Climate, Physical and Human – Economic, Demographic and Spatial - Geography, Architecture and Engineering) between TQ and TeS. **None** of these environmental similarities, Human Geography conditions, as well as architectonic and engineering equivalences point to GT's site as being a place and a time (12^{th} till 9^{th} millennium BC) where and when the Architectures seen at these two Tells originated. In fact, to the contrary, they all point to these two Tells (among many other sites in the broader Northern and Eastern sections of the Fertile Crescent) as being the origins of architectonic construction phases containing preliminary archetypal designs, morphologies and materials that ended up, in far more sophisticated and complex configurations and at a much larger scale, involving monolithic megalithic construction and at a far later date to the type of Architecture we observe at GT. Consequently, we are forced to conclude that GT is a subsequent (and by a long shot) archeological site, in which the Architecture, Engineering and Art related influences from both Tells (TQ and TeS) coupled with the technological advancements of a subsequent time frame (the 6300 -2500 BC Chalcolithic period) played out.

TQ and TeS comparable features. Physical similarities exist between the two sites, as it will be shown shortly. Beyond these qualitative and, to an extent also, quantitative similarities there is, however, a deeper evolutionary chain link between them. The two Tells are such that the **far smaller in scale Tell (TQ) had also an earlier initial construction phase,** an element consistent with evolutionary principles in Architecture and Human Geography regarding the two top settings in their respective hierarchies. Having satisfied this evolutionary principle, the focus is now on their specific similarities and difference, both significant. In analyzing their commonalities and distinctions the first steps are taken in formulating an **Evolutionary Theory of Architecture**. First, a review of the two Tells' major **differences**.

Whereas, TQ's architectonic horizontal collage and vertical superposition of states included (a) the Epipaleolithic (12^{th} millennium BC) structure; (b) the 11^{th} millennium BC and 10^{th} millennium BC Natufian PPNA structures; and (c) the 9^{th} millennium BC transitional PPNB Architecture (the J-

7, K-7 round structures of Figures 5.A.1,2). Whereas, TQ included the modest in scale but spatio-temporally **nodal** 10600 BC structure ("tower 0" of Figure 3) and its horizontal neighboring structures of Figure 2, as well as its vertical stratigraphic foundations, structure "tower 01". Whereas, TQ's Architecture style throughout these phases changed little, remaining basically a morphologically homogeneous Natufian Architecture. Whereas, TQ' life cycle lasted about three to four millennia. And whereas, TQ is at about 430 meters above Sea level.

All that must be contrasted with the corresponding comparable **differing attributes** of TeS.

TeS is located at about 280 meters below Sea level. TeS sports in a span of about a millennium in the PPNA – PPNB boundary (the 8th millennium BC) three distinctly different and functionally as well as morphologically dis-similar but **nodal** monuments and Architectures meshed at the site: (a) the first Jericho masonry wall, see Figure 9; (b) the 'Jericho tower" (a monument with a current estimated construction date varying between the 9000 – 7000 BC and as it will be argued it could in fact be an early 7th millennium BC monument), see Figures 8.a and 8.b; and (c) the 9th to 7th millennium BC Sultanian community of structures, see Figure 7. It is unclear from the currently available literature and the various interpretations of the existing physical evidence which was built first and when exactly, as well as what their function was. This author will argue, on Architecture based evidence, that the wall preceded (and possibly by as much as a millennium) the raising of the truncated cone-like tower, and that their functions were multiple. TeS's life cycle has lasted for more than ten millennia, assuming an initial sedentary habitation period at least since the 10th millennium BC possibly earlier (some nomadic habitation at the Tell could stretch into the middle 11th millennium BC as already noted). The ancient city of Jericho is still alive to this day - with human activity teaming around the Tell in its immediate environs, as is cultural conflict, a social characteristic with apparently long legs in History and pre-History there. Although the Northern mound (TQ) had an earlier start (due to its locational comparative advantages – closer to the Taurus mountain range, possibly), the Tell Es-Sultan lasted longer and surpassed TQ in scale, that is, in population and areal size, as well as overall densities.

Now, the accounting of the two Tells' **similarities**.

Both settings represent human settlement activity on Tells. Both are close to rivers and fresh water sources. Both appeared during the Younger Dryas, but flourished after the effects from the Younger Dryas in their respective regions receded. At the time of its initial phase of construction (whether it was the 'wall" or the "tower' matters little) TeS must have been the dominant setting in the broader Region's spatially linked hierarchies of associate settings. And so must have been the site at TQ (there is no evidence to the contrary). From currently available evidence there is no reason to argue that this dominance didn't persist throughout the first couple of millennia, thus it must have ben durable and not ephemeral. Throughout their life span both Tells acted as the residential sites of their farming communities' socio-economic elites. They both served as proto citadels, the location of centers containing the administrative, religious, economic, and cultural activities and associated land uses of their respective regions and market areas.

TeS and its three monuments to be analyzed. TeS' horizontal collage contains a circa 8000 BC wall, as dated by K. Kenyon, which she refers to as "PPNA construction", see ref. [2.46]. In reef. [2.59] p. 235, further specifications of this wall are given, as containing a circa 8300 BC PPNA community of between 400 and 900 individuals (presumably residing on the mound) having **circular mudbrick homes with plastered floors around circular courtyards**. The homes were made from standardized modular mudbricks. The internal spatial allocation scheme of these communities has never been described in detail. This author contends that they must had been spatially distributed so they were forming small communal nuclei around the courtyard (i.e., clusters). The entire (social elite forming) community (noting that the vast majority of the region's population finding themselves inside the spatial broader market area of the Tell, see Figure 6.2 and Map M, being those farmers working the fields, must had lived in relatively ephemeral farmhouses outside the community) was surrounded by a **masonry irregular dry ashlar wall**.

It is in the description of this Neolithic Jericho wall that the differences and controversies surrounding Jericho's Archeology commence. This wall was probably built by workers (or slaves) living outside this wall. The dimensions of that wall are given as: 6 and ½ feet (about two meters) wide, and 12 feet (four meters) high, see ref. [2.59]. However, in ref. [2.60] p. 180, the height is listed as half of that (about two meters), as is a 600-meter long (forming an approximate circle of 191 meters, although the actual shape must had been elliptical) perimetric ditch, carved out of bedrock about 8.2 meters wide and 2.7 meters deep, see also ref. [2.61]. In ref. [2.46] a very different view is presented of this wall. This view draws from a K. Kenyon graph and wall description. And this description will be the foundation of this author's review of its Architecture and Human Geography aspects, to be discussed in great detail later. No matter what the Neolithic Jericho wall was actually like, obviously, this is already a very different community and Architecture (TeS during PPNA) than the community encountered at TQ (during PPNA).

Associated with this massive stone wall is another structure, a massive tower, the so-called "tower of Jericho", another landmark of TeS, and another source of controversy in Archeology. This paper will explore this tower in significant detail, and provide a modified narrative to the current one(s). What is further of significant importance to this work, which aims at deriving a Theory of Evolution in Neolithic Architecture, is a critical finding from the excavations at Jericho's TeS. **A very massive Bronze Age fortification wall made out of mudbricks was encasing a Neolithic stone wall underneath it,** see ref. [2.62] as mentioned by L. Nigro, the archeologist in charge of the excavations at TeS during the two most recent excavation periods (1997-2000, and 2009-2014) there. We shall explore this finding further later, because, although not exactly "encasing" but simply laying on top of the revetment stone wall, the fact that a mudbrick wall sits on top of a stone wall is a very important finding. It is a finding we also come across in Sultanian residential Architecture, and in need of further analysis, since it points to possibly a different maybe complimentary, certainly evolutionary use of the revetment.

Given the time periods we now associate with PPNA (9500 BC to 8000 BC) the initial TeS wall must have been a late PPNA construction and marking a TeS transition to PPNB (7600 BC to 6000

BC). Kenyon also documented that the "wall" was built prior to the "tower" of Jericho, as stated in ref. [2.38]. However, according to the report in [2,38] the author of a study on the perceived shadows allegedly cast upon the tower by a nearby hill, it is argued that the tower is a 9000 BC structure. It will be argued here that this is not possible on Architecture grounds. It will be shown shortly that the tower of Jericho is a much later structure than the initial Neolithic TeS wall, and that both are quite later structures than what has been commonly accepted. In fact, the tower might have been built by a different culture than that which built the initial Neolithic wall (and that which later constructed houses in the Sultanian style). For sure, there is no evidence to suggest that the Natufian Architecture was the product of the same culture that applied Sultanian Architecture in construction. To the contrary, it must be hypothesized that it was not the same.

In Figure 7, the key part of the TeS settlement is shown. It represents the first example (possibly the origin) of what has since been christened by K. Kenyon as "Sultanian" Architecture. Sultanian architectonic structures thus seem to have originated at the **far larger in scale than TQ human settlement of TeS**. This must not have been a pure coincidence or a haphazard event, as it will be argued more in depth in a bit. Appearing later in time and on a far greater demographic base, architectural and engineering knowledge and technological knowhow, as well as abundant natural, human and land resources in hand, enjoying far more favorable climate at the end of the Younger Dryas, with elites exercising effective control over greater land areas Tell Es-Sultan as a site prospered. Innovation is not unexpected under such socio-cultural circumstances.

More on citadels, mounds, and social elites' socio-spatial dynamics. The Tell is shown at its current condition in Figure 6.2. Its structures over the millennia were used to house the socio-economic-cultural elite and upper echelons of the social hierarchy of the time in that region of the River Jordan Valley. The current great spatial expanse is not that different than that of the past, ripe for social and economic exploitation. The landscape's expanse is captured by the size of the mound and its surrounding land mass. Mound formation and colonization of mounds by social elites presents the grounds for some interesting socio-spatial dynamics, as already discussed in the case of TQ. These dynamics will be briefly and further elaborated upon next.

It is demonstratively clear that this elite group in possession not only of the mound but the entire area surrounding it (and possibly extending its control quite a bit further) possessed and had full control over the landscape and the masses of slaves, laborers or workers (whatever the social stratification might had been at the time). Comparing TQ and TeS we derive the following principle: **The greater the Tell, the greater the degree of dominance in space-time.** And with this public display of dominance the elite group at TeS was demonstrating a far greater degree of confidence in holding onto, and the means to control strategically important and significantly larger chunks of space and masses of people. But the socio-spatial dynamics involved here are a bit more complex. The distance above ground, and the space between it and the mases the elite group wanted to keep under its control, had to be at an **optimum level**: not too far above or away, yet not too close to the ground and from the farms and the peasants either. The elites had to decide to place themselves someplace at the **goldilocks** of the spatial (regional) expanse.

Mounds of the TeS and TQ were ideal for the scale of dominance and size of the elites and their market areas. At Tell Es-Sultan, and given its scale, the elite sought to **enhance the image of that dominance** by the construction of the "tower of Jericho". It must had been one of the key reasons why this structure appeared then and there. Of course, this must not had been the only reason. Monuments of that size and scale (given the multiple and significant in quantity resources required to build them) must have had many other reasons pegged and riding on them, to socially justify the spending of resources required for their construction and long-term survival. As it was argued in [1.4] by the author (in another context, that involving the megalithic Neolithic monuments of the British Isles) there must had been an inter-generational social contract involved, whereby a multi-century discounting of expected social benefits and costs analysis based calculus would render such enterprises feasible. Although, none of the three nodal monuments at TeS are multigenerational in their planning and construction, they certainly did have multigenerational impacts, for sure not having escaped their builders and users attention.

Figure 7. Tell Es-Sultan foundations of a circa 6800 BC PPNB structure, what is being referred to as the "Sultanian" style Architecture (of the 8300 – 6800 BC period). Source of photo: ref. [2.20].

Jericho's "tower" must have been an enlargement of the elite's spatial dominance, possibly an added "aggrandizment" on the mound. It may have been a necessary step to take, if their social control was brought under question by the masses in the Valley or other outside groups. But the Tell (any Tell) continued to be the elites' citadel. Their function through their various architectonic and socio-historical phases throughout the Neolithic, down to the Bronze and Iron Ages and onto the Islamic conquest of the region remained constant. It is not to be lost the point that the Hill of the ancient city of Jericho is currently being referred to as "the Hill of the Sultan". The process by which the socio-economic elites may have been motivated to colonize a Tell and the reasons behind it might be quite a bit evident and far clearer (the "tower of Jericho" assisting along those lines) at TeS. The reader must be rest assured that this was also behind the takeover of the original mound and rise of the settlement at TQ, although at an earlier date and at a far more modest scale. It is within this context that the "tower of Jericho" and the settlement of Tells can best be understood. In this discussion, it should not escape attention that there are also other factors motivating the ruling elites to occupy high grounds, and as already noted flooding is one of them. We shall see how this factor entered the calculus for building the initial wall of Jericho.

Physical Geography of TeS. As already mentioned, similar to TQ, and in contrast to Gobekli Tepe, TeS is located close to a river, about four miles from the Western banks of the River Jordan given the river's current course. Being in the Rift Valley and about 280 meters below Sea level, the local ground, in its macroscale, slopes from East to West as one moves from the depths of the Rift towards the Mediterranean Coast. About eight kilometers (five miles) South-East of the Tell is the Dead Sea. The Tell's distance from the current Mediterranean coastal line is about 47.5 miles (in a straightly drawn airline distance measurement). The site is situated at the exact Southernmost Asian borders of the Younger Dryas Impact space, see Figure 1.2. The building of the Sultanian Architecture, see Figure 7, a structure we shall look at in this paper in some detail, is found at the Tell, and was initially excavated by K. Kenyon. All monuments we shall examine were put in place at the end of the Younger Dryas, which occurred at around 9600 BC, and some structures date quite a bit later than that. The site's geological coordinates are approximately 31°52'16"N, 35°26'39"E. It is located about (in airline distances) 340 miles South, South-West of TQ, and approximately 410 miles South-West of GT. The all-important fresh water springs are at the Eastern side of the Tell.

Human Geography and TeS. In the Theory of Spatial Interaction, within the broader fields of Human (Economic and Spatial) Geography and Regional Science, see references to these fields in the series of papers {1.1] – [1.3] on GT and in [1.4] and [1.5] on other spatio-temporal contexts, the author has pointed out that, within a Central Place Theory context, spatial interactions occur in flows (cultural, population, economic, transportation, trade etc.) in a cluster of settings determined by a Newtonian Physics based law: the flow's intensity is directly proportional to masses at the origin and destination of the flow among nodes in a cluster, and inversely proportional to some function of distance (inaccessibility). Thus, in a spatial interaction context, in which temporal diffusion processes are also incorporated, hence in an Evolutionary context, distances among the three settings are of essence. Similarly, distances are of essence among the

many other settings considered in the paper ref. [1.2] by the author, in where the Central Place Theory context of a 6th millennium BC GT centered cluster was presented. Similar contexts can be derived for the much later urban agglomerations of Uruk and Ur in Lower Mesopotamia, two settings that will enter a bit the analysis in a later section of the paper.

Overview of the three monuments in focus at TeS. Much is in dispute, and little enjoys any high degree of confidence in the Archeology of TeS. What we shall address here are a few nodal monuments in this complex array and interplay of archeological micro and macro stratigraphy and layers at the Tell. It should be noted again, that the trenches K. Kenyon dug in the 1950s offer a vertical view (as do the recent excavations by Nigro) and supply selected glimpses of the Tell's stratigraphy. However, they do not offer a horizontal perspective, a full collage at the monumental site's different layers. This is a reality, and possibly a necessity, which comes at a considerable archeological cost: the impossibility of obtaining a holistic view of what is there, since a great deal of that collage is not visible. Thus, it might be impossible to detect what has transpired back at the 9000 – 6000 BC period, and even prior to that, at TeS, as this part of the history is hidden below the Hill' soil.

The three specific monuments at TeS that will preoccupy our analysis here tell a story because of their Architectures. They set the upper limits as to the timing of GT, acting as architectonic barriers (*terminus post quem*) on the dates that GT could have appeared in the architectonic world of the Neolithic. One is the monument of Figure 7, the foundations and a few above ground layers of a set of adjoining structures of a PPNB edifice explored by K. Kenyon in the 1950s, and going by a moniker coined by her. The structure, see ref. [2.20] is now considered to be of the so-called Sultanian type, a type of Architecture following the earlier Natufian Architectural style of PPNA. It is an Architecture style that has taken its name from this very structure. It must be noted that this specific structure is, erroneously, referred to in ref. [2.63], the 2009 report by the archeological team at TeS and in Figure 4 of that report, as a Bronze Age construction. This dating may be referring to the surrounding wall, but certainly not to the mudbrick *cum* masonry block foundations structure, a Sultanian structure *par excellence*. The second structure to be analyzed here is the, by far more famous and glamorous, so-called "tower of Jericho" that much has been written and said about (mostly historically **and** archeologically inaccurate). Two photos of this structure are shown in Figure 8.a, with an informative close up photo of its structure in Figures 8.b and 8.c, and a photo of its interior shaft containing a staircase shown in Figure 8.d. An even closer up photo of the tower's masonry construction is shown in Figure 10. Finally, the third structure that will be analyzed comprise a segment from the remnants of the first masonry wall, one of the so-called "walls of Jericho", shown in the photo of Figure 9. It is possibly the oldest of all masonry structures excavated thus far at TeS, the ancient Jericho.

Sultanian Architecture. Two are the distinct characteristics of this architectonic style, which prevailed in Jericho and initially appeared during the 8300 – 7300 BC and succeeded the local Natufian Architecture. A late specimen of this Architecture, circa 6800 BC, is shown in Figure 7. The style is characterized by the use of **multiple materials** involving a mix of modular

(standardized) **mudbricks** on top of modest in size blocks of **limestone masonry** foundations. However, may be the most important feature of this Architecture is the **rectangular shape** in the floor plans of these structures, shape that implies some type of **standardization in construction and mass production of spatial cluster attached units** type Architecture going far beyond the individual modular mudbrick as it is now recorded on the entire structure. Mudbricks as materials for construction are a combination of loam (that includes clay), sand, water and a binding agency, usually straw, all being the abundant easily available **natural resources** of the Region. Of interest are also a number of site plan features, entailing possible **blueprint** implications for this particular floor plan design. Current archeological evidence seems to suggest that his settlement could be the innovator of such design, a blueprint-replicator with a specimen shown in the structure of Figure 7. Another feature is the **location** it occupies within its environs. Finally, the areal and population stock size of the community housed there, and the resulting **relatively high density** of residential uses are all topics that will be expanded upon next.

The Architecture style we are about to analyze was not the first (or only) Architecture found *in sit*u. At the nearby site of Ain El-Sultan, close to the springs, Natufian Architecture coexisted with it, as to the West of this site is where the structure in Figure 7 is located. The walls rest on flat mid-size (about half a meter long) limestone boulders, and are laid in a series of standardized mudbrick (bricks made out of sun-dried clay mixed with straw quite likely produced within wooden containers) in almost equal width and height layers. These layers, possibly reaching two to two and a half meters in height, in some instances, formed dividing walls separating both interior residential spaces, as well as individual residential units. Possibly, larger scale edifices (palaces and temples) were constructed in the same construction manner as well. Kenyon reports the finding of a “shrine” within these compounds. The height of each individual structure must had been proportional to the thickness of the walls (at about a fifth to a sixth ratio) with enough strength not to raise issues of structural stability. The late versions of this PPNB era Architecture, circa 6800 BC, and the buildings in Figure 7, contain floors having **terrazzo style surface** made from pinkish lime. This finding is extremely important in placing GT in its proper chronological perspective, as such terrazzo type floor surfaces is encountered there (as is the case with Nevali Cori’s Temple). Rectangular rooms surround a central courtyard, and this is another design innovation in PPNB Neolithic Architecture. It is recalled that the earlier Natufian Architecture structures at TeS, the circular mudbrick houses on the top of the Tell had mud based plastered finishing floors. This feature of interior dressing is indicative of a stage when some advanced level in both Architecture and Engineering constructions had been reached. Moreover, Geometry now becomes an impressive feature in the Architectural form, where sharp edges and rectangles mesh in their yellow Earth hue colors with the natural curves of the surrounding sand containing hills of the local landscape. Architectonic **aesthetics** start to set into the design of homes and in a clustering system of structures. The steps of small staircases shown in the photo of Figure 7, demonstrate an ability to functionally and aesthetically join different levels of living spaces. Roofs were made out of wooden beams supporting a mix of plant branches and leaves mixed with dry mud, offering good insulation and some protection from the elements and inclement weather.

Rectangular shapes in Sultanian Architecture succeeded the apse and arc, as well as the circular shapes of Natufian Architecture. This brought about a more rational and utilitarian use of interior spaces. But it also provided for standardization in construction – since the wall of a structure could act as the separating wall of a neighboring structure as well. Initial steps towards a standardization in residential construction were taken, and a new drastically different architectonic style, pegged to that innovation, had come into existence. This particular innovation was possibly the single most important, one must characterize it as revolutionary, innovation in construction brought about by the new style of Sultanian Architecture.

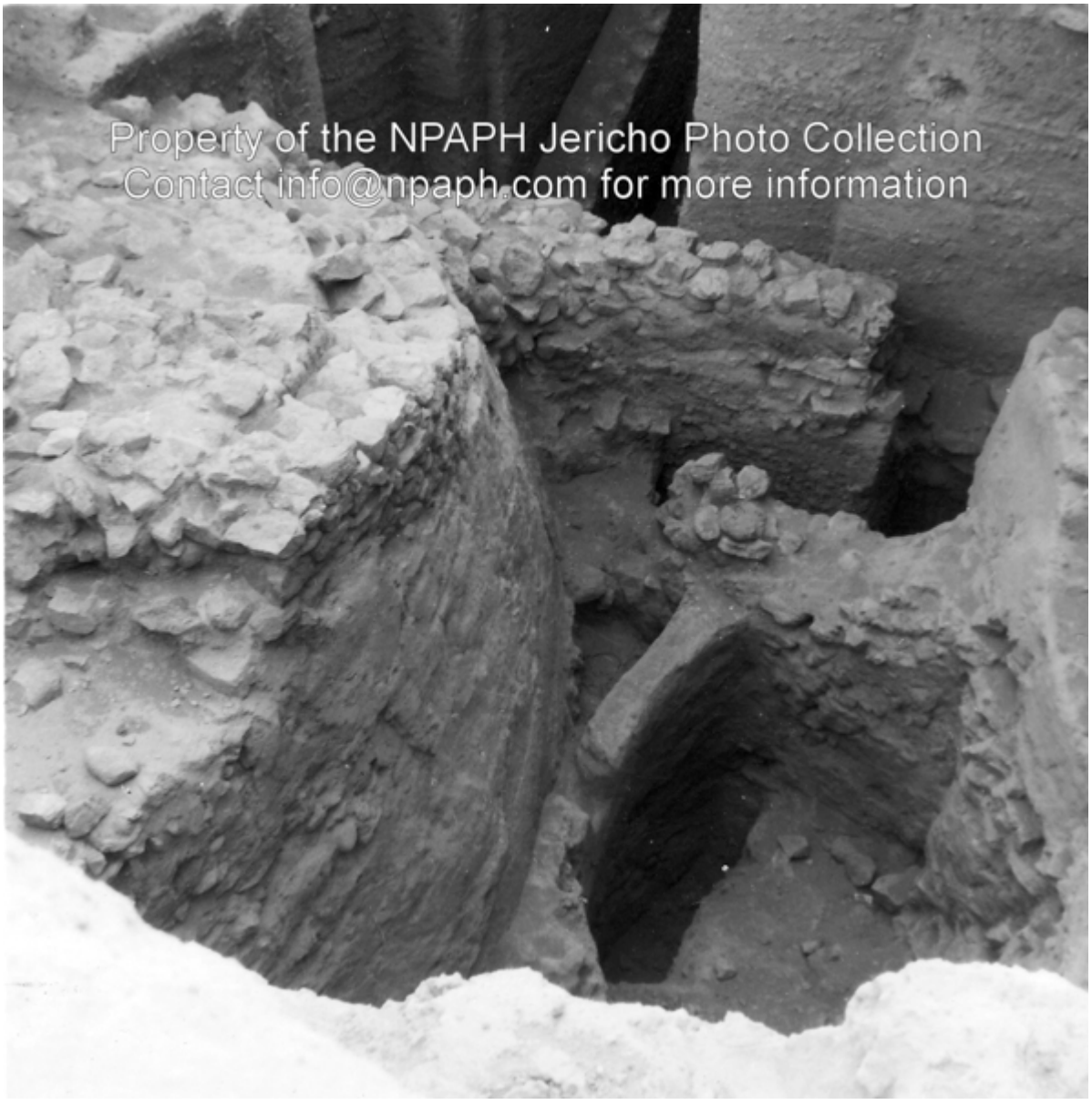
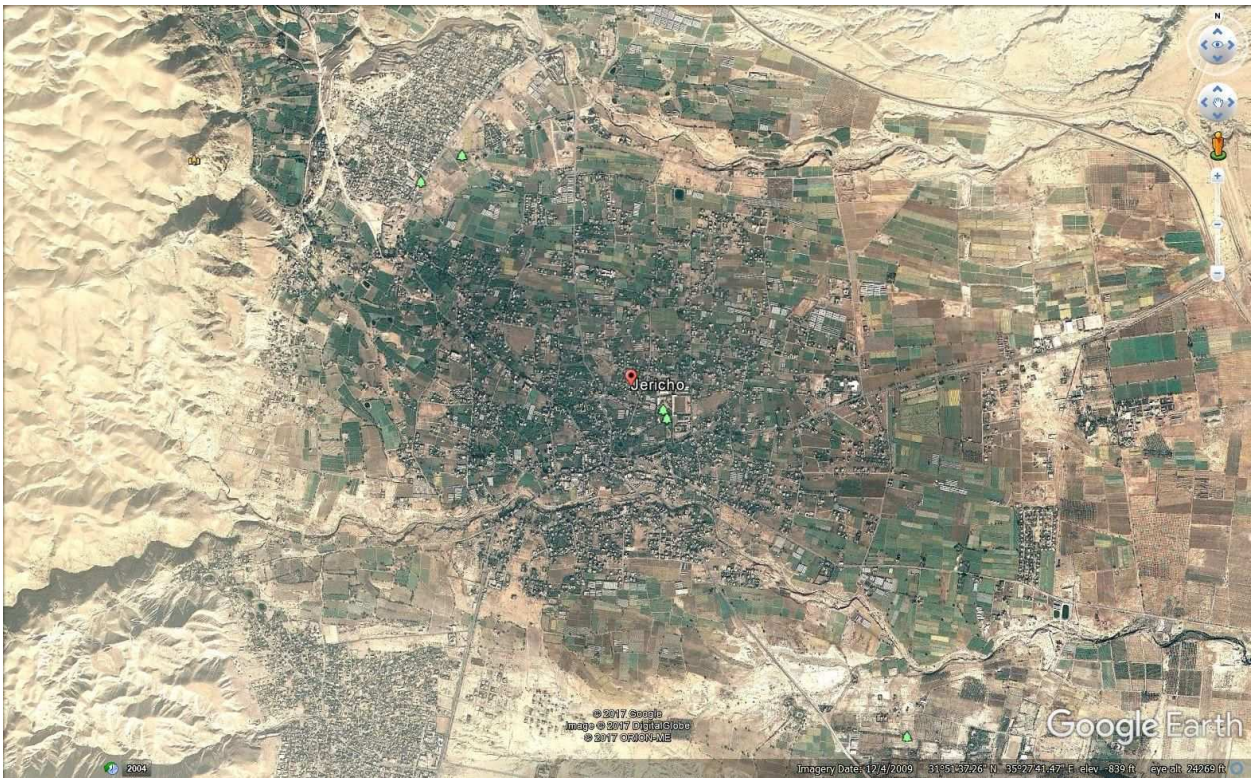


Figure 8.a. Tell Es-Sultan, the so-called "tower of Jericho" at left, showing recent excavations at the base. These excavations show that the ground beneath the tower is not culturally sterile. See text regarding its Architecture (form and possible uses, functions). Source of photo is on it.

It was a very successful style. We see the Sultanian style becoming now the norm of constructing entire communities on the basis of such residential, and quite possibly administrative and religious, design. Catalhoyuk's PPNB Architecture is an application of this type of rectangular standardized design in residential community development and building activity. We encounter such rectangular design also at Nevali Cori. Were the last two cases the adopters of a spatio-temporally diffused construction innovation that first occurred in Tell es-Sultan? Possibly this was the case, since Jericho was the major setting in the Levant at the time. This Human Geography based conclusion seems to be consistent with K. Kenyon's view, who coined the term "Sultanian" Architecture. Was it possible, however, that this design was independently derived at these three locations? Or was the residential settlement at the Tell of Catalhoyuk the originator? In [1.1], [1.2], and [1.3] the author argued that the Architecture of Catalhoyuk preceded the settlement at Nevali Cori, and certainly its temple phase. Thus, the issue here is, which one was first, Catalhoyuk or Tell Es-Sultan?



Map M. City of Jericho, from Google Earth maps. Taken on 12/4/2009 from an altitude of about 24,300 feet (8,000 meters) above ground level. The ground is at 840 feet (280 meters) below sea level. The TeS is at 10 o'clock from the center of the modern town, and about one mile (1.6 km) away. The dimensions of the map are approximately 5x3 miles (8x5 km). The spatial extent may indicate that TeS probably had a subsidiary sub-center (a smaller human settlement) someplace between it and the SE corner of the map, a location with access to River Jordan and the Dead Sea. Vulnerability from the East (the Jordan River valley) is evident. Source: the author.

Of course, besides Archeology, Architecture has some input in the deliberations and in resolving this question. Both, employed plastering by mud to finish the interior walls and floors. This was the initial phases of interior spaces dressing of the Sultanian interior Architecture. At the late PPNB phase of the compound in Figure 7, the floors' dressing was terrazzo style from lime powder. But, Catalhoyuk's mudbrick residential sector was multi-level, where residential units were vertically linked and accessed from the terraces. Its initial interior space dressing was just plaster from mud, and later the floors carried terrazzo type covering. The high-rise building type construction at Catalhoyuk, notwithstanding the primitive state of its interior spaces, must be considered an **evolution of the single story residential** of Tell Es-Sultan initial phase, used possibly to house a community less affluent than that at TeS.

Figure 8.b. The Tell Es-Sultan "tower of Jericho" structure. At the top of the truncated cone-like structure, the stairway shaft (entry into and exit from an underground level) is shown. The stairway and its interior structure is in Figure 8.d. Source of the photo: ref. [2.21].

This author hence finds that K. Kenyon was justified in calling this style, “Sultanian” type Architecture. Strong similarities in their Architectures, given the current state of knowledge from archeological excavations, seem to imply that there was an originator, and that originator was the culture who occupied TeS at around the middle of the 9th millennium BC (approximately in the 8300 – 7400 BC period), see ref. [2.49]. Since archeological finds have established that Catalhoyuk is a settlement of the 7500 – 5600 BC time period, see documentation in [1.1] and [1.2], the architectonic evidence seems to support the archeological evidence in this case. Moreover, it points to a potential difference in the average wealth (measured as an index of domestic product) generated by the inhabitants of these two early Neolithic human settings.

By the mid of the 10th millennium BC, and on the basis of the currently available archeological evidence, it is estimated that Jericho’ citadel was the home of about 70 households, see the three documents cited in ref. [2.50]. The population base of this count at about five persons per household implies a total population of the Tell (the total population size of the elite group of the culture that resided in the entire area of Jericho, in effect TeS’ market area) at the time to have been about 350 individuals. At a rate of elite to total population of about 10%, this count corresponds to a community of about 3500 to 4000 individuals, a relatively large farming community at the end of the Younger Dryas. Arable land to the North, East and South of the Tell is about thirteen square kilometers, see map M below. That count in turn corresponds to an average gross residential density of about 270 persons per square kilometer, a relatively high count for that Era.

There is no compelling evidence so suggest that the Demographics or Economics of the area and its carrying capacity to employ and sustain the labor force and its residential size significantly changed in the two succeeding millennia. Agriculture production and technologies did progress in the course of these two millennia. Possibly, any appearing at the time **excess labor supply was absorbed by the out-migration of farmers to the rest of the Eurasian space**, under one of the greatest outflow movement of population and technological knowhow in Human History: the movement West, South and East that saw Agriculture, its gods and Architectures spread throughout that Region of the World (Eurasia and Northern Africa). As it can be seen in Figure 7, the Sultanian community (the elite’s residential quarters) were surrounded in part by a masonry wall. It is not clear that this particular wall is a continuation of the original masonry wall of Figure 9. This is the first instance we come across of a community cluster being surrounded by a wall, being gated. It seems to be an evolved version of the original wall, thus not a part of it and subsequent in chronology. The purpose of the original TeS wall is debated, with flood prevention and defense being two dominant theoretical explanations. The surviving section of this modest wall isn’t either long enough, strong enough, or high enough to allow for a clear answer regarding its intended use.

It is unknown how many times this wall has been repaired and by whom, as it is unknown when was it first put in place. But it characterized by a distinct Architecture that allows us to place it (as it has survived in its last modification) in some context. Its three surviving layers are made out

of small to mid-size limestone boulders, in somewhat regular dry ashlar style. Regularity in its ashlar construction technique seems to indicate that its dating must be subsequent not only to the date of the Sultanian structures it partially surrounds, but it also must be a **significantly later construction (possibly of the late 7th millennium BC or later)** when compared to the surviving section of a wall which is the first masonry wall, the Neolithic wall, the youngest among all of Jericho's walls, shown in Figure 9. The reader must keep in mind that this is not the famous Bronze Age wall. It will be the subject of analysis and some discussion in the last subsection of this Part, after a review of the structure that is known as the "tower of Jericho" is supplied next. It must be kept in mind that this is the start of the Ubaid period of Lower Mesopotamia, a period when large scale conflicts appeared in the historical and archeological record in that region. These topics will be explored a bit later.

Figure 8.c. Tower of Jericho, masonry detail: different size boulders in dry ashlar, irregular leveling construction. The detail shows (at lower right) how the wall and the tower intersect, as the two bodies' surfaces interact. That higher tower and its partial "covering" of the wall implies that at this section of the wall pre-existed and the tower followed. Source of photo: ref. [2.48].

The "tower of Jericho": a multi-purpose megalithic structure. Much has been written about this monument, by many, and for many reasons. This is also the case for the last monument to be addressed here, the Neolithic Jericho's wall. No part of that voluminous and controversial, as well as conflicting literature on the tower will be repeated or reviewed here. Instead, the focus will be on a powerful innovation hidden inside this wall, its staircase, an innovation that seems to have escaped analysts' attention. What then will be the angle and aim of approaching this structure is the goal of tying it to the architectural tradition of the early Neolithic, namely the Natufian Architecture. This structure and its staircase will be viewed and considered as an evolution of an architectonic style already extensively analyzed here, a post Natufian construction, branching out of the mature Natufian style but at a differing direction than the Sultanian style. Here one is confronted with a **bifurcation of styles**, a speciation process. In this context, one might ponder its connections (if any) to the subsequent distinctly different architectonic style that emerged in this region, the purely Sultanian style Architecture. In so doing, one may attempt to place this structure in a time framework, and examine whether the 9000 BC construction date suggested by the authors (R. Barkai, R. Liran) of work reported in ref. [2.38], or the generally suggested dating of 8000 – 7000 BC (a dating which K. Kenyon has proposed), see ref. [2.56], are valid. Or whether (as it will be argued it is very likely) an even later date is more appropriate for the tower of Jericho. Parenthetically, and since shadows were brought up, through ref. [2.38], this author must mention that indeed **shadows** do play an important part in monumental architectonic design, and especially so in monuments of the Neolithic. A number of papers have been written by this author and a number of others on the role that shadows played in the design of monuments during the last six millennia of the BC Era, and the interested reader might search for these papers in the references section of the papers listed in sites mentioned under Note 2 at the end of the paper. Since the role of shadows does not directly enter the analysis of this paper, these references are not cited here.

In discussing any monument, ancient or modern, specific questions must be addressed, such as: **why was a particular monument located at the exact location it is found**. This is a question especially pertinent for the post Epipaleolithic the Era broadly referred to as the Neolithic (the period between 12000 BC to about the 2500 BC), and also during both the Bronze Age (2500 BC to 1500 BC) and the Iron Age (the period between 1500 BC to the Greek Classical period, circa 5^{th} century BC). It is critical, because (among other factors) it is a period in which the number of monuments in existence was relatively small and their density in space far below what it is at present. Hence, the location of a monument to be erected then was not as much tied to the location of a prior monument or monuments (as it is the case when the density of monuments increased in subsequent time periods). Two other specific questions must be asked: why does a specific monument (like for example, the Jericho tower) have the dimensions that it does (a question related to the monument's scale); why does it have the design specifications that it does (a question tied to the monument's morphology). Associated with these basic questions, a host of others do of course follow. Like for instance, what culture built it; what were the initially intended uses and who were ultimately their users; if done in phases, what were they and when

did they occur. These are some of the questions to be answered. Some of these key questions will be addressed here, to the extent that they have not been satisfactorily addressed before in the existing literature, for the tower of Jericho.

In pondering the size of the Jericho's tower, the key question becomes what was Jericho's population size at the time – since **the two sizes are related**. It is unknown of course, what was the exact size of the TeS in the 9000 BC – 7000 BC period. Earlier, some rough estimates were produced on the population size (and density) of the settlement. Obviously, the intended users of the tower must had been more numerous than in any other settlement anywhere within the market area of the TeS site and within the broad Region hierarchies' core cities, simply because at no other site of that era in that region do we come across such a monumental construction. The presence of the Neolithic Jericho wall seems to also lend support to that conclusion. By inspecting the current location of the tower on the mound, we find it to be quite **close to the very center** (the barycenter in fact) of the Tell. Hence, one of its functions (purpose) must had been to mark an important and distinct, from a geometric viewpoint, **location on the mound**.

Defining such a point was not of course the only (or possibly major) aim the builders of the tower had in mind at the time. Undoubtedly, many other functions and uses were to be made of this large in scale enterprise and building project. Some of these uses we may be able to identify at present. Many of their real aims we may not be able ever to recount, since entering the creative minds of these peoples and cultures or fully recording the then prevailing socio-cultural conditions might be an impossible task. What one can say with some degree of certainty is that these functions and uses constituted a bundle, containing enough social benefits to overcome the considerable socio-economic costs to building it at the time of its construction. In that bundle Art-related (it could be the base of a sculpture composition long gone), economic (a place to assemble and trade, a proto agora type forum), ritual-religious (the scene and platform of ceremonies), defense and display of dominance related, political (a platform for the ruler/priest addressing an assembly of people at the ground level, the act of appearing from the shaft and climbing the stairway, see Figure 8.d, before addressing the masses could be a spectacle), could be a few of the many possible uses and functions of this tower.

Unknown is whether this tower stands where some prior monument was there, possibly built by a prior culture than that who built the tower. The digging shown in Figure 8.a seems to indicate that it isn't built on culturally sterile ground or bedrock. Be that as it may, its current form is extraordinary. The Mathematics of the tower's form are of considerable interest. Their complexity might be an indication of the structure's age. It is not a fully stand-alone monument. It **doesn't contain any large-in-scale monoliths** within it. But it is a **large-in-scale megalithic structure** nonetheless. It touches the Jericho's original masonry wall. The structure has the morphology of a truncated cone-like geometric shape. In detecting which structure was build first, the tower or the wall, one must look at the manner in which the two bodies interact, touching each other. The intersection of a plane with a cone presents interesting geometric and construction features and detail, and the mastery of these details is an indication of

advancements in Architecture and also markers for dating the structures**. It seems that the wall was put in place first**, as its shape and surface isn't compromised by the addition of the tower; whereas the tower's shape (and outer surface) is compromised and it seems to "cover" part of the wall. Furthermore, the two bodies' interacting surfaces are of different material: the adobe finishing of the interior part of the wall touches the exterior surface of the masonry tower with the exposed blocks. Hence, the dating of the crudest material (the constituent element of the wall) must be acting as a temporal upper bound and a *terminus post quem* for the tower.

Figure 8.d. Tower of Jericho, the interior of the staircase. This modest shaft's Architecture is of great significance, as it carries far reaching implications for the Neolithic monumental Architecture of the entire Eurasia. Lintels were used for the first time in forming the roof of the shaft, a narrow passage, containing the staircase of approximate 80x80 centimeters. These are possibly the first lintels used in any human monument. However, the presence of lintels must be construed as evidence that this is a later than the 8000 -7000 BC structure (as claimed by K. Kenyon). The staircase contains 22 steps, reaching about three quarters down the tower's height. The rough masonry ashlar structure of the side walls is noted. Source of photo: ref. [2.48].

Another strong indication for a later construction for the tower is the lintels (the flat stones that cover the stairway). It is not a usual architectonic element encountered in 9th millennium BC Architecture. Lintel is a feature we come across far later in construction and Engineering, and specifically in the 4th millennium BC Maltese Architecture, where significant and architectonically advanced shaping of orthostats and pillars is observed, along with a sophisticated lintels' dressing. Earlier (5th millennium BC) use of lintels (with a much rougher dressing) is encountered in the various dolmens and in the 4th millennium BC passage tombs of Eurasia. Considered in isolation, this architectonic component may indicate a much later than 9000 BC (the claim of rf. [2.38]) and later than the 8000 – 7000 BC date (which is the date of the tower's construction claimed by K. Kenyon) for the construction of the tower. The careful look into the tower's staircase in combination of the megalithic scale of the structure require a revision and re-setting of Jericho tower's chronological narrative.

Furthermore, what might be the determining factor for dating anew the tower is its morphology. That morphology will be analyzed a bit more extensively now. It is a truncated cone-like 8.5 meters high structure (h=8.5), with an approximately 9-meter in diameter circular base (and thus a radius R=4.5) and an about 7-meter diameter almost circular top surface (hence a radius r=2.25). The tower's walls are about 1.5 meters thick, see ref. [2.51]. See Note 5 for more on the tower's interior and its efficiency index. The monument, assuming it can be approximated well enough by a truncated cone under these measurements, has a total volume **V** given by the geometric formula **V** = {πh(R^2 + r^2 + Rr)/3} = 315.7 m^3. Of course, the actual total volume of the tower is less than three hundred cubic meters, as it is somewhat hollow on the inside. But there are no detailed architectural sections (or 3-d diagrams from the tower having been scanned, to the author's knowledge, at present). Thus, it is not possible at this time to derive an exact volume calculation of the tower's morphology. What we have though is an upper bound of about three hundred cubic meters. It is estimated, see ref. [2.53], that it took about 100 men 100 labor days to build the tower. Under this estimate, the 300 cubic meters of volume would be constructed at a rate of about 33.3 man-days per cubic meter. If quarrying, transport, modest dressing and placing the masonry blocks (actually rough boulders) *in situ* are included, then this might be a good guestimate. This guestimate of course does not include the pre-construction planning and management and political decision-making process, required even at that period for such a megalithic monumental construction. It would also require some accounting capabilities of an unprecedented for the time in question scale and mathematical sophistication.

By any measure the Jericho tower is a major megalithic construction, although **not** a monolithic based megalithic construction. What can be said with certainty is that the truncated cone form of this megalithic structure is **not** an 8000 -7000 BC shape and undertaking. The current archeological record has offered no evidence that architects of the 8000 -7000 BC Neolithic were capable of conceiving such complex geometric structures. Not only isn't there in Architecture such shape found elsewhere in this or any other region of Eurasia, but moreover, it can be added that such truncated cone structures, one does not encounter also in any Art or mobile artifact of that period or earlier either. Consequently, this date must be questioned on the basis of the

Architecture and Art (as well as Mathematics - Algebra and Geometry) of the time. Truncated cones (in Geometry as well as in Art and Architecture) must have become instruments of design after the whole cone structure appeared as a distinct recognizable shape in the Neolithic.

Figure 9. Section of the original masonry wall at Tell Es-Sultan, a part of the array of various "Jericho walls" found there. Possibly, it is the oldest massive masonry construction at TeS, a linear or arc in shape structure. The large in size block at the lower left of the photo is an exception to an otherwise mid to small-sized boulders-based masonry construction. The modest in both thickness and height wall follows the natural ground contours. Source of photo: ref. [2.22].

This is an argument based on the degree of complexity involved in the two schemata and the principle that in the Evolution of Form, **simpler structures must have preceded more complex structures**, as is the principle that **in structures of identical shape, the smaller size structure must had preceded the larger in scale**. From an Engineering viewpoint, opting for a cone-like shape for the tower (rather than a much simpler cylindrical but more massive structure) could have been dictated by an effort to more effectively deal with the lateral forces generated by an

8.5-meter high structure on the supporting walls of the stairway. An efficient bearing of vertical weight load on the lintels, and easing the lateral forces exerted on the staircase's side walls is attained by the conic form of the structure. The very presence of the stairway and its shape can be seen from the same Engineering standpoint as a load relieving mechanism. It shelters an area from excessive weight, and the resulting lack of loads could be seen as alleviating the forces exerted on the structure's walls and most importantly upon its foundations.

Figure 10. Tell Es-Sultan. The construction detail of the structure called the "tower of Jericho". Masonry dry ashlar irregular blocks and small stones plus mudbrick with mud filaments was the way that the exterior surface of the monument was finished and dressed. This is in sharp contrast to the manner in which the masonry (including the two sidewalls, roof and steps) staircase (see Figure 8.d) was enclosed. Source of the photo: ref. [2.21].

There is little doubt that the tower of Jericho is an evolution of Natufian Architecture. The round masonry construction found in Natufian morphology of residences and public building during the Natufian period is the archetypal design of the tower, and the evolution of cylindrical 3-d shapes

into conical forms. But the leap from two meters in height, partially inground Natufian cylindrical home to a tower of this magnitude and shape is a significant evolutionary step. Granted, the dynamics of innovation (in Architecture or any other field) aren't always smooth, continuous and moving in a straight line. They occur in leaps and bounds, they contain discontinuities and sharp jumps, and in general they are characterized by nonlinear segments. However, in examining time spans of millennia, and regions of great spatial extent, these discontinuities and nonlinearities smoothen out and one may approximate trends with relative ease without violating sequencing.

Broad, simple and clear patterns emerge as the detail is overtaken hidden in the big picture, the tree is lost in the forest, and the eye moves further up and away from the specific scene, event and place in time. So, one comes to recognize that this tower is also unique in the architectural menu of the period for any region in Eurasia, for its **large scale**. As a design scheme, it remained an isolated event, not replicated or reproduced anywhere and at any scale. It is not encounter in Neolithic Architecture, in either shape or size, till the masonry truncated cone structures of the Helladic space, of Cyclopean megalithic scale, see ref. [2.52] with their construction estimated to have taken place during the late 3rd to early 2nd millennium BC. This narrative draws from the tower's exterior morphology. Its interior staircase and lintels outline a very different story, and point to a very different direction. That interior staircase, Figure 8.d, to a very large degree and scale had far reaching consequences than the tower's morphology. The **first lintels** laid on top of this modest stairway and the passage they created point to the widely observed and for a long-term period practiced monumental Architecture over the entire Eurasia from the 5th millennium BC to the Bronze Age period: **it launched the Era of dolmens and the passage tombs of Eurasia.**

Dating of the Jericho tower must also take under account the relatively rough state of the masonry ashlar structure at its exterior surface, see Figure 10. The highly irregular layers of stones, and the significant variation in the blocks' size (from pebbles, to small stones, to medium size boulders) seems to indicate a relatively primitive stage of megalithic ashlar masonry construction. Such is the state of the art in stone enclosures we observe at the PPNA stage of residences at TQ's Natufian Architecture, and especially the transitional PPNA to PPNB TQ Natufian style. However, it does not necessarily follow that the Jericho tower is a temporal neighborhood of the Natufian PPNB transitional TQ structures evolving Architectures. The PPNA "tower 0" at TQ and the Jericho tower are of a very different scale, and quite different morphology. There is no reason to deny that the TQ Architecture evolved into the Jericho tower. But that was a quantum leap type evolutionary step, thus very likely a significant time distance separated them. Their differences in scale and morphology must be inversely proportional to the architectonic evolutionary speed at work, within that evolutionary branch. The size of the TQ structures increased quite modestly over a period of about three millennia. From six meters in diameter (TQ, - "tower 0") to a nine-meter in diameter (Jericho tower) must had taken a good two plus millennia, considering both the scale and morphology accompanying developments.

Parenthetically, calling the TQ structures "towers" constitutes, given the above discussion, clearly a misnomer. A "proto tower" designation it would had been a far more appropriate term.

This historiography and architectonic narrative might point to a very late 8th millennium BC possibly an early to very possibly a middle 7th millennium BC tower construction at TeS, by a culture that utilized certain basic architectonic components of an earlier Natufian culture at the region, but significantly improved it in terms of megalithic (8.5-meter high) construction, by employing new methods in Engineering (lintels) and Mathematics (truncated cone) and thus by creating a new branch of Architecture. In a race for heights Gobekli Tepe's enclosures didn't break the record set by the Jericho tower at the (likely) 7th millennium BC mark. GT's 6th millennium BC 7-meter tall structures however broke another record, as they became monolithic – that being their contribution to Architecture's evolution (among other features added then). The fact that this Jericho type of a tower is not encountered in later architectonic specimens might be an indication that the culture responsible for its building didn't survive long – an interesting feature pointing to monuments of a grand scale as being leading indicator for a culture's decline, and a lagging indicator of a culture's economic growth stage. The topic, the extent to which the magnitude of a society's monumental Architecture is connected to a society's stage of growth is a theme this author has addressed in prior publications.

The possible fact that the builders of Jericho's tower didn't last long or propagated their ware, could also imply that the associated settlements' sizes never reached the Jericho population size. However, it remains a basic question: how could a culture that had advanced to a considerable degree, and to the point that it could effectively mount an enterprise of such sophistication and scale, and which mastered such significant and considerable innovation and construction Engineering detail by the middle of the 7th millennium BC, was not able to last long. This seemingly contradictory evidence must be weighed in gauging the monument's more precise construction date.

TeS and the Neolithic wall of Jericho. Last, the ancient (and first) Neolithic wall which was excavated by K. Kenyon in the 1950s is briefly analyzed. The reader should not confuse it with the much later (during the Early Bronze Age) built "revetment wall" at Tell Es-Sultan. Various dates, structures, and narrative on these walls (and a number of others present on the Tell structures) abound. The modest in both height and thickness masonry Neolithic wall follows the gently sloping and undulating ground surface. However, the constituent elements of this wall (and all others) are not exactly crystal clear. The reader is directed to a number of references, where the maze of fortifications at TeS is addressed by different individuals, all stating 'facts' about the original wall at the Tell and a number of other walls, as if they are absolutely certain about these 'facts'. Of course, there is no agreement among all of these analysts and that includes the various archeologists of the Tell, as well. These various narratives create considerable confusion to the unfamiliar reader, and this is especially so regarding the Jericho' original Neolithic wall. One is not exactly sure as to what precisely is looking at, observing any segment of any fortification at TeS. Here's a sample of fourteen articles, see [2.59] - [2.72], in which this confusion reigns supreme. The analysis here will attempt to selectively integrate the common components found in them all, and produce (by mostly relying on K. Kenyon's narrative) a coherent interpretation, without of course claiming perfect accuracy and/or infallibility.

This first masonry Neolithic Jericho wall structure has been interpreted as being either a defensive mechanism or a flood preventing structure. However, a number of peculiar aspects of this "wall" seem to go counter to either one or both of these readings and interpretations. First of all, this structure is set on top of the mound, and almost at its very center, on a North-South (actually a slightly North-East to South-West) axis, see K. Kenyon's drawing on p. 115 of ref. [2.73], Figure 5.5. The relatively short section of it uncovered, shown in Figure 9, represents a line or a slightly curving arc (actually a very wide apse, as shown in figure 5.5 of the above reference [2.73]). The apse is pointing to the West, that is the arc is convex from the West and concave from the East; put differently, it seems to be a defensive structure for invaders coming from the West, the mountainous area of the region, and from the direction of the Mediterranean Sea. It does not seem to be aiming at repelling possible enemies from the East, the River Jordan Valley. What is perplexing with this interpretation of being a "defensive wall" is its height. Part of the Neolithic wall of Figure 9 and a larger view of this segment is shown in the photo of Figure 11. Moreover, it doesn't seem to be "enclosing" any significant area on the mound. Its relatively low height in combination of the open flanks bring into question its defensive effectiveness and capability. Thus, its 'defense purpose" is hard to gauge. In the above-mentioned diagram by K. Kenyon, the reconstructed (envisioned by Kenyon and not actually excavated *in toto* initial Neolithic wall), had a length of about 260 meters, and a width at the Northern (and wider) side of about 94 meters. Moreover, its position raises questions. The wall is sitting along a linear stretch and very close to the top of the hill. At its Eastern side, the top of the hill is only about 35 meters away of the (then) mound. It is hard to see what type of flooding protection was there to offer and to whom. The key element in its construction that we do know from the Kenyon excavations is that it does have (and acquired, as discussed, at a subsequent phase of Neolithic construction on the Tell) an association with the "tower" of Jericho. Hence, the raising of the tower was integrally linked to the presence of the pre-existing Neolithic more or less linear (at most arc in shape) wall. All this, leads one to conclude that either the wall was not a "defensive" mechanism the way we today view "city walls as encircling human settlements on all sides for defensive purposes"; or, we need to redefine what we currently imply by "defense". It may well have been a "linear frontal defensive mechanism" and a first stage or phase of building 'defenses" in a "first" or "last" **line** of defense. And this line could be a line of defense from either side, East or Wes, depending from which side of this "amphiwall" the enemy was to come. In this sense, which is likely the most appropriate way to describing this monument, this structure is a proto (and unique in the history of city fortifications "amphiwall" defensive mechanism. On the other hand, it can simply be an unfinished public project, and given that this probably is the first large scale human enterprise, it could simply be just that. Finally, it could also be some type of a proto megalithic monument, the full essence of it escaping our ability to fully conceptualize this culture's desires. It must have come at a time when external, massive, well organized, persistent threats must have first appeared in the region, requiring a massive, well put together, durable defensive counter measure. Within this framework, we need to approach the essence of this specific structure. Later, possibly at the scale of a millennium or so, the tower was added to,

among other things, enhance the defensive capabilities of the Neolithic wall, possibly by another culture than that that built the tower.

The time when such well-organized external threats appeared in the horizon for the residents of the Tell must had been a time when enough was to be protected by this proto defense linear wall-tower system. The first Neolithic masonry wall of Jericho was most likely, given the current evidence from excavations in the Region to date, the first one in the entire Levant. It is of course not known how the builders of this Neolithic "wall" called it. Or, what were they trying to protect by building it. However, we can guess that agricultural surpluses and possibly valuable livestock stored at the citadel could be part of the insured by the wall commodities and were offered protection. However, there is another aspect to this wall (and tower), given the locational and scale prominence it (and they, the wall and the tower, in combination) enjoyed. The message sent by the mere size such unique for the time "fortifications", along with attempted intimidation, it could have been received as an **attractor for invasions** as well.

Figure 11. Jericho's original Neolithic masonry wall, a broader view of the segment shown in Figure 9. The structure in the foreground, and the fill at the background are not part of this wall. Source of photo: ref. [2.55].

Hence, to the then perceived and expected benefits for building this wall-tower combination, there must had also been expected costs. What was the specific calculus in the manner in which the perceived expected benefits were to successfully counter the perceived expected costs is quite difficult to consider about nine millennia later. Exactly how these two components in this

complex social benefits vs social costs combination were counted and played out may escape our modern capabilities to fully conceive. Nonetheless, the relatively short-lived presence of the culture that built the tower, as already alluded to earlier, may provide some hints as to their success or failure in fully accounting all real and materialized benefits and costs. The culture responsible for the tower's construction short presence may indicate that these calculations had backfired on them. The longevity of the Neolithic wall builders on the other hand, and the innovative Neolithic wall design, stand in contrast to the short-lived tower builders. But what was the objective of the tower-wall system, the specific objects that the system intended to protected in a linear fashion still remains an open question.

Mobile artifacts and valuables, including tools and household goods, as well as foodstuff and humans are commodities and entities offered potential partial protection by the wall of course. However, the all-important springs were to the East of this wall, and so was the bulk of the fertile landmass exploitable for agriculture. So, the question remains, what exactly was it being protected by this defensive instrument that seems to have been shaped so that it would protect potential invaders from the West. Besides, and setting aside for a moment the shape given it by K. Kenyon and assume it as perimetrically encircling a small thinly and linearly located community on top of the Tell, bypassing and avoiding the wall-tower system altogether, and access the springs and the fields to the East of the Tell looks like an easy maneuver for anyone charging from the West. And of course, these resources would be an easy prey to invaders from the East. There are no records recounting these earliest societal intra- and inter-settlement conflicts, them being the earliest possible times when such raids and mayhem potentially would have occurred. Only indirect evidence exists, in the form of lithic weapons and skeletal remains to gauge the conflicts' scale and veracity, and account for counter-measures. But this proto Neolithic wall and especially its subsequent combination with the tower might be a good source to draw some preliminary answers on these outstanding questions. In this context, a more precise and realistic estimation of the wall's construction date becomes a matter of significant import. K. Kenyon suggested that this was a pre-pottery Neolithic wall, thus a pre- 7th millennium BC construction at least.

It is highly unlikely that the first human settlement at the Tell Es-Sultan was the settlement that built the wall one sees in Figure 11. This argument can be supported on a number of grounds. First and foremost is that Natufian Architecture did exist in the River Jordan Valley, in the Jericho region (specifically at Ain-Es-Sultan springs) and on TeS. The structure in Figures 9 and 11 is not purely Natufian, either in scale or morphology. **But it is an evolution of pre-pottery Neolithic Natufian Architecture**. The large boulder in the middle of the wall and at the center of the photo in Figure 11 (and at the lower left in Figure 9) is not Natufian. And neither is the mortar used to hold these boulders together seen in Figure 11, forming a modest two to three meters in height and a meter to meter and a half thick wall. This is likely early 7th millennium BC construction, certainly no older than late 8th millennium BC Architecture. Noticeable is in this context the walls surrounding the Sultanian type structure of Figure 7. At the back of the residences and places (and/or temple) compound, there is a low in height and thin wall. This wall's construction is post

Sultanian and in effect it is an amalgamation of both Natufian and Sultanian style. The wall segment of Figures 9 and 11 is a more primitive, thus prior construction to that wall of Figure 7.

Hence, in the TeS site of the pre-Bronze Age and post Natufian Era we encounter a Phase I evolved Natufian type masonry wall and a Phase II wall (that of Figure 7), a Natufian-Sultanian hybrid. The Phase I taller and thicker masonry wall must have appeared at early 7th millennium BC period. Whereas, the Natufian-Sultanian hybrid, (Phase II N-Sh), slimmer and lower but more developed masonry wall must have been in place by the middle to late 6th millennium BC. The Phase II N-Sh wall was put there to protect the Sultanian Era advances in surplus economic value and cultural achievements of the Sultanian culture at TeS. The lower wall structure of the Phase II N-Sh may indicate that the Era was more peaceful, and social (inter- as well as intra-communal) conflict lower in the post middle 6th millennium BC period, than the late 7th millennium BC time frame in the Region.

This circumstance might be of interest in regards to Gobekli Tepe construction period, a period which it likely was characterized by a period of relative peace and tranquility in that part of the fertile Crescent region, as it will be further discussed in the next section of the paper. Given, as argued in the earlier subsection, that the so-called “tower of Jericho” is a post first masonry Neolithic Jericho wall structure, it follows that the tower is a middle 6th millennium BC monument, and its purpose might not have been primarily defense, but ceremonial and social.

Setting speeds of change in Architecture’s Evolution, during the 12th millennium BC to the 6th millennium BC period, becomes now a bit more manageable. A detailed look into the monumental structures of the period, allow for such classifications, and possible phylogenetic taxonomy. The transition from Natufian I (the structure underneath “tower 01” at TQ) to Natufian II (the key structure “tower 0” at TQ) to Natufian III the transitional PPNA to PPNB of the Structures at TQ brought about the PPNB Sultanian I phase of the 8300 – 7400 BC period, with a post PPNB Sultanian II phase, the foreground structure (circa 6800 BC) of Figure 7. The first masonry wall of Jericho must then be an early 7th millennium BC structure, with the wall of Figure 7 at the background being an early to middle 6th millennium BC construction (about a millennium later than the Sultanian Architecture at the foreground).

The total outline of the Phase II N-Sh wall is presently unknown. But the Evolutionary Principles articulated in this paper imply that it must had been longer and encircling a good section, major cluster possibly containing the **core** of the citadel’s entire socio-cultural elite’s community. It must have been bigger in scale (length and height possibly, but not necessarily thicker as it was sturdier) than the original Jericho Neolithic wall, obeying the rule that has a larger structure chronologically follows a smaller in scale structure of the same architectural style.

Finally, the well-known Bronze Age “wall of Jericho” acquires under this analysis a new interpretation. It has been argued by archeologists that its masonry lower part was used as **revetment**, in its function as a supporting component and part of the Bronze Age fortifications of a spatially expanded community on the Tell. However, this is only after most likely this masonry

construction was used **to terrace** the slopes of the hill, and make it more amenable to residential use for a settlement that "**suburbanized**", and that very likely had increased in population size (and with a lower density of living, as standards of living increased under an advanced by now economic system and demographic conditions) at least modestly in the intervening millennia. It is noted again, this is the period of the large **out-migration movements** out of the Fertile Crescent onto the rest of Eurasia. This specific spot at the Western leg of the Levant's Fertile Crescent was the major feeding source of that outmigration flow. From a design standpoint, it is an evolution of Natufian II Architecture. In fact, it is an Evolutionary intermediate step between Natufian I and the Cyclopean walls of the Late Bronze early iron Age of the Hittite and Mycenaean Cultures.

Figure 12. Tell Es-Sultan: The masonry foundations of the Bronze Age (3000 – 2500 BC) masonry "wall of Jericho". On top of this structure a wall from mudbrick blocks was raised, of about equal height. Source of photo: ref. [2.66].

The base of the Bronze Age wall of Jericho is a specimen far more complex that the sophistication shown in its masonry structure. That Bronze Age Jericho wall of Figure 12 is also a Phase III Sultanian (a distant, by three millennia) evolution of late Natufian Architecture of the middle 6th millennium BC. Its leaning walls' line is from the earlier experiment with the cone-like structure of the megalithic tower of Jericho. Moreover, the concept of having **mudbrick blocks on top of stone foundations** is precisely the mix we encountered in the case of the Sultanian Architecture

ensemble of residences and palaces of Figure 7. But of course, now we come across this evolutionary path in design (from both the megalithic tower and the rationalized and efficient mix of materials) in a **much larger scale, obeying the scale principle in architectonic evolution.** Middle to late 6th millennium BC is about the time the post Natufian involving stone enclosures Architecture of Gobekli Tepe appears in the horizon, with their monolithic megalithic features in their orthostats and pillars. The time of the appearance of the structure, shown in Figure 12, supporting the mudbrick superstructure of the Bronze Age Jericho walls takes place at the Neolithic to the Bronze Age boundary. It is this boundary that this wall of Jericho marks, and it is this boundary when the site at Gobekli Tepe is buried. To that site we turn next.

Figure A. Babylonian Marduk holding the purification symbol. Wall relief. The symbol is a key feature and link between Gobekli Tepe and Lower Mesopotamia at the Bronze Age, ref. [1.3].

Gobekli Tepe C-14 Related Evidence: Contaminated and Largely Irrelevant

Introduction

In this section three prior papers by the author, ref. [1.1], [1.2] and [1.3], are revisited. The stimulus to do so is a report by the archeologists in charge of the excavation at Gobekli Tepe (GT), see ref. [2.2]. A very detailed diagram is offered in their report, which shows the exact locations from where samples containing organic material has been extracted from the monument and C-14 dating analysis has been performed. Based on the readings from these C-14 analyses, among other reasons cited by the archeologists and enumerated in the set of publications cited in the aforementioned papers, the conclusion has been derived that the archeological site at GT contains PPNA/B monuments. It is the purpose of this section to show that this is not necessarily so, by adding onto the arguments already stated in the three above listed papers by the author.

Contaminated evidence

Location of samples used for C-14 dating. The focal point of the comments offered here pivots on the diagram of Figure 13. The diagram is from ref. [2.2], which contains a June 22, 2016 announcement from Tepetelepgrams, the publication outlet of the archeologists at GT. In this diagram, the exact points are shown, from where samples containing organic material have been extracted. Analysis of these locations and what they imply for dating the structures C and D of the GT site is carried out in this specific section. Casual inspection of the diagram indicates that all the samples (with the exception of two, that will be examined in more detail in a bit) are taken from spots located **outside** the key structures C and D, and their Layers III – these being the oldest structures (and layer) at the site, according to the archeologists. It is that these specific stone enclosures C and D (the archeologists argue that structure D is the oldest) are the ones who "date" GT. Whether C or D is the oldest structure does not affect the arguments here, since what will be presented applies equally to both.

It has been argued in [1.1], and it is not a supposition but an archeological given, that fills do not date structures. It is a commonsense statement, even trivial, easily being understood by all. For example, one can use today's soil (that is taken from some place that contains living microorganisms) and fill a monument built in antiquity (say for example, Tutankhamun's Tomb). This fill would in no way affect the dating of the tomb (a 14^{th} century BC structure). One can also use soil from a site that contains exclusively Holocene-Pleistocene boundary (c 12^{th} millennium BC) organic material. Again, this should in no way affect the dating of the tomb. The rule is simple: **fills do not date structures**. Only the **Architecture of structures dates structures**, or material **underneath the structure and not above it or outside of it**. This general principle must be also qualified by underscoring the importance of stratigraphy, to ensure that what has been accumulated underneath the structure was placed there by geological dynamics related processes obeying the law that further down strata imply geologically older strata and not by a local geological folding anomaly. Further, that the observed stratification was not the outcome of human intentional action, whatever that intent might have been.

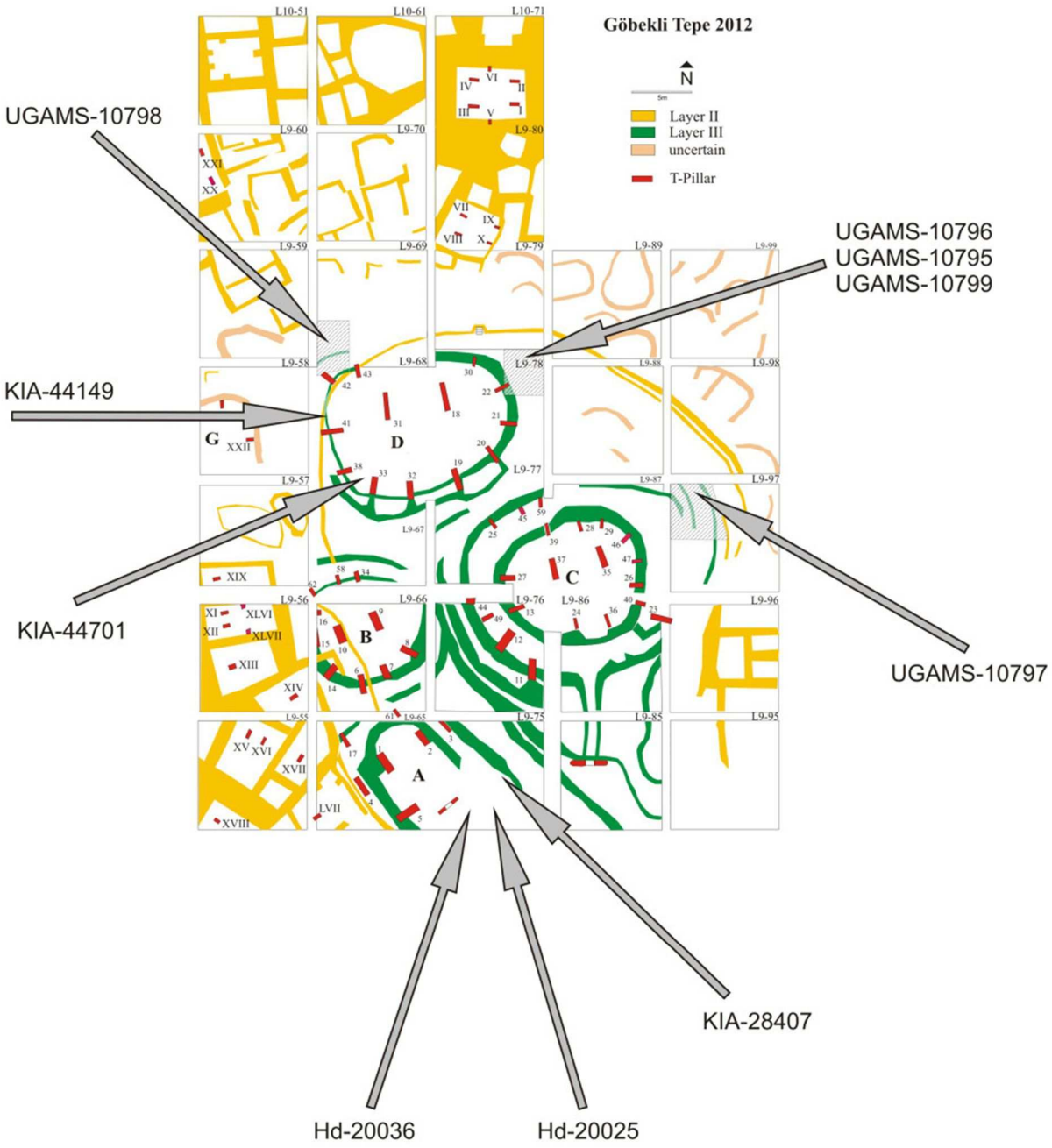


Figure 13. Gobekli Tepe: the locations where samples containing organic material have been extracted, that underwent C-14 dating. Source of diagram: ref. [2.2].

Hence, the only pertinent material found **inside** the key structures C and D, is the sample designated as KIA-44701 from an orthostat's plaster dressing inside structure D. Another sample,

designated as KIA-44149 is also taken from the **inner** surface of the side (ring) wall's plaster on stone enclosure, structure D. The orthostat #33 of structure D, from which sample KIA-44701 is taken, is a finely dressed, megalithic monolith, with well-defined rectangular sides, and perfect edges. As we have seen in the extensive coverage of PPNA/B structures in both TQ and TeS, as well in all PPNA/B sites this author analyzed in papers [1.1], [1.2] and [1.3], **nowhere** do we encounter such monolithic megalithic construction in the Levant – or anywhere on Earth for that matter, at that time period.

Moreover, and these are Art and Architecture based arguments fully developed in the above cited three references and will not be repeated here in any detail, this type of megalithic cut and cover (dressing) of stones was simply not in the cards at that time period, the pre-pottery Neolithic. And neither was the Art found on them. In short, plastering of orthostats (or walls) was not practiced then, and the only plastering (covering) of interior walls we have in pre-pottery Neolithic houses is from mud as we saw in both case examine here (TQ and TeS). Only in late 7th millennium BC do we encounter the earliest examples where sophisticated dressing of walls, floors and small in scale pillars, as is the case with the Temple (last) construction phase of Nevali Cori, a late 7th millennium BC structure, takes place.

Sample KIA-44701. To slightly add and largely end this part of the analysis regarding the obtaining of evidence on the dating of the site from orthostat #33 surface plaster, it is noted that (as the archeologists of GT have stated) pillars and orthostats at GT were found to have been usually re-surfaced. Often, they stated, there are indications that prior iconography on orthostats was erased, and new iconography was applied onto them. Hence, if this plastering is the last surface plastering that was applied onto orthostat #33, it directly follows that the orthostat itself could be a far earlier construction than that indicated from C-14 analysis of its plaster. Of course, this pushes the credibility of the dating mechanism further into the abyss. Another factor analyzed in [1.1] affecting the degree of contamination suffered by the specific type of plaster used to dress orthostat #33 easily amenable to contamination and thus corruption of the results, and it is due to the permeability of the plastering agent. In a final analysis, the way out of this conundrum on how to deal with the C-14 paradox (versus the concrete Architecture evidence – among the many other factors, not listed here but found in the three above mentioned papers by the author) is to accept the obvious: that the specific spot from where the sample of plaster was taken for carbon dating analysis was contaminated by a PPNA/B spot inside the fill used to bury the monument. There is absolutely no dispute to the fact that the GT structures were buried in large part by soil from a PPNA/B site. This is an interesting aspect of the entire narrative on GT, the spatio-temporal origins of the soil used to bury the monument. Yet, precious little has been offered by the archeologists and other analysts of GT on this topic. More on this subject will be added at the last section of this paper. And it holds some surprises regarding the manner it was carried out.

Sample KIA-44701 was the key and single most important evidence that was cited by the original archeologist in charge of the excavation at GT, Klaus Schmidt, as the critical evidence on which to base the narrative that GT is a PPNA/B site. It was mentioned in a key publication (and

numerous others), cited in ref. [1.1], as the overriding factor for calling Gobekli Tepe as pre-pottery Neolithic site. Other factors, including lithic evidence again from the fill, was also cited to support this argument. No Architecture, Art, Human and Physical Geography, Demographics, Economics, Climatic or Geology related evidence by the archeologists has been supplied. But these factors were all put together into what became the trio of papers by the author arguing that it is virtually impossible for Gobekli Tepe to be a pre-pottery Neolithic monument. Evidence from the two additional sites (Tell Qaramel, and Tell Es-Sultan) offered here now further validate these arguments by the author. The reader can just look at the Architecture and Art of the PPNA/B period (much of it was presented here), and ask the simple question: how is it possible that these socio-cultural conditions in the Levant that produced so many but not so different settings – settings analyzed in the prior three papers and the two additional settings analyzed here – to have co-existed with Gobekli Tepe, a setting so different in so many respects from **all others**. It simply isn't possible.

Sample KIA-44149. This is the new evidence found in Figure 13, evidence not known to this reader when the papers [1.1] – [1.3] were written, thus, it was not included there. But it is addressed here now. The sample was taken from the interior surface of the wall of enclosure (structure) D's inner ring, located between orthostats #41 and $42. This new evidence doesn't alter a single iota of the many arguments already stated, it simply implies that the conditions of contamination applicable in the case of KIA-44701 apply to KIA-44149 as well. What in effect these samples date is the patch of the fill which was in contact with these structural elements of enclosure D.

On the rest of the samples and their locations. A number of other (eight) samples have been carbon dated, as shown in Figure 13. What exactly these samples date is as unclear. For sure they date the fill section from where these specific samples have been drawn and were in contact with their contaminated patches on the structures. These samples certainly do not date the structures proper. Appropriate dating of the other structures or their outer rings could potentially provide a historiographic narrative of the entire site of course. As already stated, it is still unclear whether structure C or structure D is the oldest among the two, and where do the rest of the structures (E and F, and more to come) stand in chronological order. In [1.1] and [1.2] the author has made some hypotheses with regards to the chronology of a number of GT structures. However, the specific chronological sequence, not being the purpose of this paper, not much will be added. The interested reader is directed to these papers for more analysis and details. There might be grounds to suggest that the rather primitive outer layers of GT's well-formed structures are much earlier stone enclosures. That those "onion type" layers surrounding the well enclosed masonry structures A, B, C, D, are of the Natufian style and were constructed utilizing the then familiar forms of primitive arcs or apses. However, these arc-type structures do not contain any orthostats or pillars in them. They possibly could be pre-pottery Neolithic in design. Subsequently, the far more sophisticated stone enclosures of the C and D type might have come into existence, in fact much later, quite possibly as already has been suggested in the middle to late 6th millennium BC.

In general, and in summary, the meticulous and careful process of filling the structures with PPNA/B soil and bury then, as carried out by those who ended the monument's life has apparently contaminated many parts of this site. What in effect the fill has done is to **render the C-14 evidence irrelevant**.

More difficulties with the dating. In a number of occasions, throughout the analysis offered by the archeologists in ref. [2.2] (a reference containing the Tepetelegrams, overall a quite informative outlet) one comes across other segments which clearly lend support to the arguments put forward here. For example, in the paragraph just under the photo in the report showing K. Schmidt in structure D, the archeologists mention that "objects from the past were intentionally deposited in the fill". Such observation directly implies that the fill was indeed older than the structure, reasonably assuming that the characterization "past" refers to the time the structure was built and not to the time of the fill. The culture that ended up benevolently burying the monument (as we shall see in the last section, there could be two different agencies involved in the burial - an initial agency under malevolent intent, and a final agency under benevolent intent) was apparently interested in preserving history. If so, they must have attempted to preserve artifacts from their past, considered sacred by them, well before the "sanctuary" and "ceremonial center" of GT was constructed. At the end, these artifacts were placed in the sanctuary for safekeeping in posterity, given that the sanctuary itself (this socio-cultural site we collectively refer to as GT now) was built for them and what these artifacts represented from the very start.

There is more unsettling evidence on the carbon-14 dating. Further down in the report (ref. [2.2]), two paragraphs below the above remark, and on line 8 (second line from the bottom of the paragraph) the archeologists note: "Therefore, the data fail to provide absolute chronological points of reference to architecture and strata". According to them, the evidence is so "erratic" as it offers readings for as back as the 9th millennium down to the 7th millennium calBC. We discussed this problem with some carbon-14 evidence in the case of TQ earlier as well. The archeologists go on to state that "they provide a 'terminus ante quem' for the backfilling of the enclosures and the abandonment of the site". They put this at the Layer II phase, implying that they can peg a lower bound on the time that the final burial of the site took place. However, this backfill does precious little to date either the structure (and especially Layer III of structures C and D, the key so far stone enclosures at GT) or to date the specific time period the final filling was carried out. Backfill could had come from anywhere from any geological time zone (stratum). In their narrative, the historiography of the site is such that it calls for a 7th millennium BC burial – as they obviously reject a 9th millennium BC burial of the site, a rejection NOT based on carbon-14 dating but on their own assumptions about the monument. One can easily agree that the 9th millennium BC burial is "unrealistic", but so is the 7th millennium BC burial. Both are based not on evidence drawn from the structures themselves, but from samples that have little to do with the structures.

Lithic evidence. Similar to the arguments about the C-14 dating are the arguments about the lithic evidence. It is here that the Jericho site comes into the picture, as the GT archeologists mention lithic evidence from Jericho. Parenthetically, it was precisely this reference that prompted this author's work on Jericho, not the lithics of Jericho but its Architecture. Coming back to lithics, if the soil used to fill the structures was PPNA/B soil, it is of course natural that the lithic evidence found in it is also PPNA/B. Again, the lithic evidence **might** date the fill not the structure. As already stated, in a final analysis, **Architecture dates structures.**

Gobekli Tepe Architecture Related Evidence: Post Temple Phase Nevali Cori

Introduction

In this section of the paper two specific Architecture related pieces of evidence will be presented, as they are not included in the three papers [1.1], [1.2] and [1.3] written by this author on GT. One is related to some recent evidence produced by the archeologists at GT and is related to structure B of the site. The other is some evidence that links the Nevali Cori archeological site with the Gobekli Tepe site, and it has to do with their pillars and orthostats. These two pieces of evidence will be addressed in turn.

Figure 14. Gobekli Tepe, structure B: the location of the porthole (at the bottom of the stone block indicated by the red arrow). The wall of interest here is that one towards the South-East facing the revetment wall, part of which is this porthole block. Scale and North are shown on the center-left part of the photo. Source of photo: ref. [2.74].

The wall in structure B

Structure B at GT, see Figure 13, is an enclosure that the archeologists of the site do not consider to be as old as structures C and D, although they have never specified its date. In a recent Tepetelegram report dated April 3, 2017, see ref. [2.74] the archeologists present its spatial arrangement and discuss at some length the porthole and the iconography associated with two foxes and a bucranium. What the archeologists did not address in that report is a wall to the South-East of that pothole. This wall is what will be the subject of this subsection, as its Architecture speaks loud and clear as to the possible dating of this part of the stone enclosure.

In Figure 14, a photo from the top of the structure B is shown, in which a detailed view from part of the enclosure is offered. A section also from orthostat #58 (see Figure 13) is shown, at bottom center of the photo. What is of significant interest, is the upper part of the sideways U-shaped masonry wall to the North-East of the orthostat and to the South-East of the porthole. The porthole is located directly in front of the orthostat's narrow side towards the North-West. The author has analyzed this interesting wall in a research post (see Note No. 4 for more details).

The U-shaped space, as is the space to the North of it, although too narrow for human utilization as living space, could be useful spaces to keep animals (dead or alive). In the case of live animals (and the two foxes and a bull iconography might point to that effect) there was a space to keep animals ready for possible sacrifice. However, there could also be other uses for these spaces and their constituent walls. Especially the U-shaped wall to the right of the orthostat might well have been a partial structural support to this orthostat #58. Given the scale of the photo, the orthostat's width must be around 25 centimeters, and it length approximately 80 centimeters.

In this U-shaped masonry wall, the interesting (from a structural Engineering viewpoint) section of it is its Northern branch. It is made from medium size boulders and small size stones. The width of this leg of the wall is too narrow to be simply of the dry ashlar type. Boulders of that size mixed with small size stones simply form a highly unstable ensemble, impossible for them to be resting on each other for any significant height over any significant length of time. They need a mortar with considerable adhesive capability and power to hold the structure together. Usually, cement or concrete is used for this purpose.

It is not known what mortar type was used to provide structural stability to this wall. No matter what it was, the wall must have been a much later than 6th millennium BC construction, since to date **no archeological site has produced evidence that masonry walls of that thickness and composition were possible under dry ashlar conditions**. Mud was often used as an adhesive agent to hold stones and boulders together in wall construction till the 5th millennium BC. However, that was for walls with a significant width, at least a meter thick; or for cases when heights did not excessively exceed widths.

The Nevali Cori pillar

Nevali Cori is a now inundated by the Ataturk dam water site, which this author extensively analyzed in all of his prior three papers on GT, see ref. [1.1], [1.2], [1.3]. it was argued that this particular site is a **noda**l one in understanding Gobekli Tepe, and its chronology. The arguments will not be repeated here, where some new material will be added regarding the pillar found in Nevali Cori's rectangular in floor plan Temple. If there is a specific Architecture and Art related subject which identifies an unmistakably one-directional linkage (implying a clear chronological sequence, whereby a prior structure points to a subsequent one) is the limestone pillar of Nevali Cori's Temple when compared to the central limestone pillar of structure D (megalithic monolith #18) at GT. In Figures 15.a, 15.b, and 15.c the Nevali Cori approximately one meter in height T-shaped pillar is shown; whereas in Figure 15.d the monolithic megalithic T-shaped more than six meters in height #18 pillar in structure D is found.

Figure 15.a. Nevali Cori, Temple (last phase of construction there). The T-shaped monolithic pillar under discussion is the megalith standing at the central place of the terrazzo rectangular floor (center left) at where it is anchored. Apparently, there were two monoliths in the Temple's main space, but only one survived. From the size of the floor opening to support the monolith's base it could be inferred that its size might had been greater than the one that survived. The author has analyzed this Temple in [1.2] and [1.3]. Of interest are also the small scale orthostats at the rectangular temple's masonry pews. Source of photo: ref. [2.75].

In accordance with the **fundamental principle of Evolution in Form**, as having been expressed by this author in this paper and other relevant publications, in both Architecture and Art, and also based on extensive empirical evidence validating this principle – some of it presented already in this paper - an Architecture structure which is more complex and of a **larger scale** but involving the same qualitative theme, must come **later** than an Architecture structure which is simpler and **smaller in scale**, where the theme was possibly first conceived, tested and launched. The time distance between the periods when the two structures appeared is a function of their respective differences along these two variables (complexity and scale). The two structures shown here, the Nevali Cori T-shaped pillar and the Gobekli Tepe T-shaped pillar #18 are cases in point.

Figure 15.b. Nevali Cori central limestone pillar (about a meter in height). Source of photo: ref. [2.75].

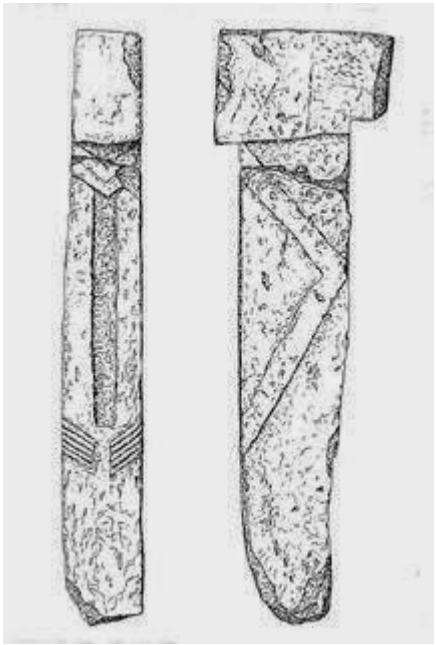


Figure 15.c. Drawing of the two sides of the Nevali Cori's Temple central monolithic T-shaped pillar. A primitive motive is shown which later was expanded in both its complexity and symmetry qualities as well as scale at Gobekli Tepe. Source of drawing: [2.76].

Both contain similar iconography, but the extraordinary complexity and symmetry found in pillar #18 at Gobekli Tepe (on which complexity and symmetry this author has extensively elaborated in his trilogy of papers on GT cited earlier) unmistakably point to a much later dating for GT and an earlier Temple Phase of Nevali Cori. On top of this clear arrow of time at work here associated with the iconography's **complexity**, the difference in **scale** is also very telling: the Nevali Cori monolith is not megalithic (coming at slightly less than a meter in height); whereas GT's monolithic megalith is taller and by a long shot (at more than six meters). **The same applies to the two settings' orhostats.** The orhtostats of Nevali Cori Temple's benches (and thus the Temple itself) represent a sub-category of orhthosts found first in the Jerf el-Ahmar Natufian branch of Architecture. Of interest is that Nevali Cori's Temple is an evolution and thus a branch of Sultanian's rectangular Architecture. Hence, Nevali Cori (a river settlement) represents a **nodal** architectural style. It is from this 20-mile away setting that Gobekli Tepe's Architecture took off and became the monolithic megalithic Architecture in which both Advanced Natufian and Advance Sultanian styles met and cross-fertilized.

In the prior three papers, the author made the case that Nevali Cori's last phase, the Temple Phase, must have been an early 6^{th} millennium BC structure, and certainly following the Catalhoyuk early and middle phases. Both are characterized by Sultanian Architecture. At GT, pure Sultanian Architecture did arrive also. There is a rectangular enclosure there, see Figure 15.e. But this enclosure must had come after the Nevali Cori Natufian-Sultanian temple. It also must had come after the significantly evolved Natufian phase of the main enclosures at GT, structures C and D.

Figure 15.d. Gobekli Tepe, one of the two central limestone pillars in structure D. it is more than six meters in height. The very sophisticated design and extraordinary symmetry of this T-shaped megalithic monolith (pillar #18) the author has extensively analyzed and discussed in his papers on GT, especially in ref. [1.2]. Source of photo: ref. [2.77].

Figure 15.e. The rectangular structure at GT. This structure represents an evolution of the equivalent Nevali Cori rectangular Temple structure. It contains monolithic megalithic pillars and orthostats, to small scale pillars and orthostats of the Nevali Cori Temple. Source of photo, ref. [2.78].

It would be of interest to set the speeds of evolution and new style and sub-style formations in the Early Neolithic Architecture, based on the cases reviewed in this paper. The task would require a fine calibration of dates, given some rates of change at the micro-level, consistent with the macro level steps of Architecture's Evolution from pre-Natufian at the Epipaleolithic to the 6th millennium BC GT advanced Natufian advanced Sultanian monolithic megalithic styles. Roughly, at the macro-level, the two major styles of the Early Neolithic Architecture took about six millennia to unfold. Of that, about three millennia were almost exclusively monopolized by the Natufian style, from the middle 12th millennium BC pre-Natufian "tower 01" at TQ, to the middle 9th millennium BC, when the Sultanian style appeared at TeS. The next three millennia were shared by an evolving Natufian style, a Sultanian style, and their mix. The culmination of these two styles was the Architectures of GT. The late advanced Natufian constructions at GT, and the lintels of Jericho's tower, were the structures that launched the extraordinarily varied 6th to 3rd millennium BC Neolithic monolithic megalithic Architecture of Eurasia. In that evolution, the lintels from the tower at Jericho's stairway played as big of a role as the pillars of GT.

Gobekli Tepe's Burial: Bronze Age and in Two Phases

Introduction

In this section of the paper the burial of this extraordinary middle to late 6th millennium BC monument is discussed. It is a topic that rarely, if ever, gets any detailed mention in various analysts (including the archeologists) work, and only in passing is addressed and largely enjoys undocumented remarks. Since not much information is available on the topic, the majority of the analysis offered here must be construed as working hypotheses. These hypotheses are subject to further verification from information hopefully forthcoming from not only GT related sites, but also from associated areas and Regions of the Levant and the Fertile Crescent, particularly the Southern part of the Taurus mountain range, the Mesopotamian Basin (both, Upper and Lower Mesopotamia), and the Jordan Rift Valley. GT's burial as it was practiced might be a more complex event than its formation, and not a necessarily a unique event that only occurred at GT. In the GT case, most likely two distinctly different and major phases took place in its burial, where at least two different agencies (cultures) were most likely involved. These two phases are elaborated in turn next. Some possible scenarios are put forward in this context. They may open up windows towards a new approach in analyzing GT.

Phase I: destruction and possible first attempted burial?

Not all of GT's so far unearthed structures were found intact and in pristine condition. Some of the orthostats and pillars were found damaged. Indications from the fractures seen on some marquee components of the sanctuary (or ceremonial/cultural center) seem to suggest that some of the damage was intentionally inflicted, and some was caused by neglect. Damage is indicated by toppled structures, both orthostats and pillars, as well as from fractured mobile objects. Some of the damage was topical, and small in scale. There is no evidence revealed so far to suggest considerable and large in scale, intentionally inflicted, wholesale damage. Cases of damage carried out with direct malevolent intent, or malevolent negligence (hence attributed to environmental decay and a natural capital depreciation process without upkeep) are evident in Figure 16.a.

Three cases of damage implying malevolent intent are those of the central pillar in the photo (where the pillar was intentionally fractured at two points at least); the fractured pillar in the foreground (at bottom center of photo); and the orthostat at right (just below center). Other isolated damaged areas on pillars and orthostats are also evident, some of it possibly due to environmental degradation of the limestone, abandoned to the elements for some prolonged time period. Another example of possible malevolent damage to an orthostat is the case shown in Figure 16.b. Some small in scale destruction on it seems to have aimed at partially destroying the frontal top of the T-shaped limestone megalith. However, this damage could also be due to (malevolent nonetheless) neglect, and environmental degradation.

Although this is not a study in History (or pre-History), it is nonetheless worth mentioning that the period of hiatus in the Tell Es-Sultan post Jericho tower phase coincides with the rise of GT. It is a theme that will be further touched upon in the next and last sub-section of this paper.

Figure 16.a. Gobekli Tepe, indications of intentionally inflicted destruction. Source of photo: ref. [2.79].

Obviously, the culture which attempted to intentionally inflict damage to the monument could not have been the same culture that built this extraordinary set of structures. Was there an attempt to bury the monument by those who initially inflicted the damage at specific places in specific enclosures? It is not yet known as a complete historiography of the entire monument at GT is lacking at present. It has been established (although dating remains controversial) that not all structures were constructed, and possibly damaged or buried, at the same time. Could it be that some destruction and burial was taking place as new construction was underway? That would have meant that maybe the monument as a whole underwent partial transitions in cult worshiping. The presence of often differing iconic symbols on the pillars and orthostats could

signify small or large in scale transitions in particular cult dominance. It looks highly unlikely that the monument as a whole was under one (and homogeneous) cult for its entire life cycle of about 20 to 25 centuries. But destruction is present at the monument's various structures, and that destruction preceded the monument's final burial of course. Obtaining a handle on the destruction and burial might shed light on its forming.

Figure 16.b. Gobekli Tepe's pillar with the Bull; indication of small scale destruction, or intentional long-term neglect of the monument. Public domain photo.

Phase II final burial and protection

To address the question, how was the monument buried, by whom and when, a basic question must first be addressed: if the entire site was buried at the same time, where did this considerable volume of soil and pebbles, that made up the material used to carefully and meticulously bury all its structures to their very top, come from? Places where monoliths were

quarried do not supply such quantities of soil for that purpose. A derivative question is, how come and in the fill (which this author contends came from a place, or places, that contained PPNA/B stuff) soil and artifacts from much later cultures and time periods (taken to be remnants of the Classical Era, Byzantine and Islamic cemeteries, the latter two according to University of Chicago archeologists that first examined this site in the 1960s and dismissed it as an unimportant and archeologically more or less sterile ground) was found? These two basic questions we are set to explore at some depth next. In so doing, a new window opens up to a new view of Gobekli Tepe.

The two Faultline events. At the outset, it must be noted that individuals do not bury monuments, cultural forces do. Specific individuals may carry out the actual act, but they are simply agents acting on behalf of those broader and much more powerful societal, transitional and transformative cultural forces. Culture ignites and fosters religious and social objectives which in turn create, maintain or destroy, abandon and bury monuments. The size of monuments by their makers reflects the size of those motivating forces; as the degree of destruction of monuments also reflects the strength in the underlying hostility and resentment by the destroying culture towards the one whose monument it destroys. Thus, scale in monuments is directly proportional to the creating culture's strength. In a Central Place Theory, Zipf-size distribution context, see ref. [1.4], [1.5] on those subjects, the top culture dominates within its market area. The top cluster of this hierarchy creates the greatest in scale monuments, and back then, that was GT. In the entire spatial domain where such a Central Place Theory hierarchical structure has formed (in our context, the Western Eurasia Region) very few clusters were the core centers, at any point in time, and the top setting was that represented by GT, which enjoyed primacy among all other cores. Human Geography Dynamic Central Place Theory and evolving Zipf-size rules govern the Evolution of Societies, their Architectures, and their monuments alike.

It is this set of very powerful forces that are responsible for the creation of the very few and very large in scale Neolithic megalithic monuments of Humanity over the millennia, like Stonehenge, the Pyramids of Giza, and the Ziggurat of Ur during the Neolithic and the Bronze Age in Western Eurasia. Both construction and destruction of monuments' dynamics at a large spatio-temporal scale are the outcome of aggregate socio-economic-cultural dynamics operating on these monuments, Architectures and Societies. Such large in scale cultural forces operate over long in time scale periods and cover a vast amount of space, they are not local and short in term events. GT was a large in scale monumental site, as it was Jericho, and as it was Tell Qaramel at its time. Hence, to fully grasp the broad societal factors that gave rise to GT and ultimately caused its demise, one need to look at the large in scale events underway at both ends, its construction phase (considered here to be the 6^{th} millennium BC) and at its burial phase (considered here to be the 25^{th} century BC) in the entire Levant.

Middle 6^{th} millennium BC experiences the full swing of the Chalcolithic, the end of the PPNB period. It is when proto writing occurs, and new clusters of settlements start to appear in the Balkans and North-East Africa as the agriculturalist from the Levant and the Fertile Crescent spread West from the Eastern Mediterranean shores. This is the period that produces the large

in scale event represented by the Gobekli Tepe site formation, and the initial stages of the Ubaid period in Lower Mesopotamia. On the other end, the 25th century BC is another historical Faultline in Eurasia, the boundary between the Neolithic and the Bronze Age. This is the period that witnessed the final burial of the largest archeological site the entire Eurasia had seem constructed between these two benchmarks, GT. The evolutionary path between these two Faultline periods was not smooth and continuous, and neither was Gobekli Tepe's lifespan. At either end, the start and the finish of this large in scale monumental site, events of both creation and burial were not instantaneous, sharp and short in time duration. Very likely they took centuries to unfold, and they occurred in stages, micro-stages compared to the larger time horizons involved in the monument's life cycle.

Possible recycling of enclosures involved. The conclusion is that the burial didn't happen at once, it was not fast and it likely took centuries to complete and occurred in phases. Hence, one may ponder the question: is it possible that the various structures at GT were "re-cycled" – meaning, one (or a few) was(were) created, then buried and the next one (a few) created as a follow up, possibly the result of another cult dominance? If this question is answered in the affirmative, then one can imagine that there is **no need** to find in one step a very large quantity of soil to bury the entire site, as the soil extracted from the making of one (or a few) structure(s) was used to bury the previous batch. Thus, there could be recycled soil and possibly spots. Such a scheme represents **a time lapse wave function, sequentially creating and burying monumental structures (enclosures)**. Each step possibly lasted over a few centuries, the entire process spanning two and one-half millennia (possibly slightly longer). If there are in ground at GT 20 separate sets of structures or so (as possibly indicated by ground penetrating radar), **each set of structure on the average may have lasted about a century**.

And this presents an entirely different view of Gobekli Tepe as a ceremonial center. It also might **explain the vast discrepancies** obtained from the C-14 dating. The operative question is this: why was there a need to have all the more than 20 (possibly 30 or 40, again, if ground penetrating radar indicators are accurate) ceremonial stone enclosures (clusters) functioning simultaneously? What size of a ceremonial center could support such scale of monumental construction, management, maintenance and operation? The Demographics are simply daunting and at least questionable, even for a Bronze Age (last phase) dominant setting. Working out the demographic demands for such an operation could be a worthwhile research project.

The contents of the GT fill. Next comes the other basic question, having to do with the contents of the fill, in both categories, namely why they contain what they have been found to contain (including extraneous material); and why they do not contain what they were supposed to contain if they were pottery Neolithic monumental enclosures. Putting it in slightly different terms, how come and there are no pottery sherds in the monument, while there is extraneous stuff in it? To answer this set of questions, detailed stratigraphic evidence is needed, to which the author has no access, except what it is in the public domain as announcements by the archeologists in charge of the excavation.

Announcements by the archeologists of GT abound indicating the presence of PPNA/B material in the fill. That is apparently undeniable, and this author certainly does not deny it. The question is however, from where did this PPNA/B material come? The answer then, in view of the scenario outlined, is equally clear: successive digging up of PPNA/B material containing ground, for the new circular in-ground space for the new enclosure (with the orthostats and pillars), while concomitantly filling up the prior circular enclosure's space with the PPNA/B soil produced from the digging. PPNA/B ground material was simply recycled from one circular enclosure to the next. No one denies that the archeological GT site *in toto* sits on PPNA/B material containing soil. This scenario is consistent with the archeologists' findings of PPNA/B material in the fill's soil; and it also answers the question, where did all that soil come from to fill all these structures' space: **it is the very soil on and from which these structures were constructed and to which they returned**. One may be willing to detect some profoundly symbolic gesture/acts to this sequence of new construction and burial of the old structure. The next basic question is easily answered; the fills contained extraneous material simply because later activity all over the site inserted stuff into it from later land uses.

Consequently, one is left with the final and most difficult question to address: since the GT site was created and operated during the pottery Neolithic, how come and it didn't leave any traces of its pottery Era past? The answer to this critical question is potentially found in the careful manner and meticulous care of its very burial as it was carried out in stages by ultimately benevolently acting cultures willing to preserve the monument's enclosures.

Figure B. The purification sign at the head of the T-shaped megalithic monolith #11 in Layer II, of structure C, at Gobekli Tepe. Author's cropped section of a photo in the public domain.

All movable objects, including possibly all pottery, was apparently taken in stages from one structure to the next, or it was permanently removed. This stepwise, sequential, discrete dynamics involving process (on the average lasting century-long time periods), also included the last filled structure(s) to undergo this act of "return to where the structure(s) came from" its soil and its land. The pottery evidence hence was not buried, but recycled and moved to someplace else. And to that hypothesis, there is evidence to support it.

For the mobility of symbols, engraved (and in, some instances, erased and re-engraved) on the orthostats and pillars, moving to different and far away spaces we have evidence: the purification symbol, see Figure B, of the orthostat #11 on the outer Layer II of structure C, from GT travelled to Uruk, Sumer and Babylonia, to become the symbol shown to be held by Marduk's right hand in the photo of Figure A, (placed at the beginning of this section of the paper).

This scenario leaves one last part of the question on traces of pottery Neolithic **not** left behind still unanswered. What happened to the hearths at GT? Why is there no evidence of burned material in the grounds of all these structures? Why are there no kilns? Was heat not an element needed there, then? Total lack of hearths or kilns in any structure excavated thus far, brings up a set of other (mostly environmental in nature) type of questions. It certainly provides airtight proof that the **Gobekli Tepe site was not a Younger Dryas Era setting**.

War and Peace at the Neolithic – Bronze Age Boundary (N-BA b). At the start of this paper, in Figure W of page 7, the War side of the Standard of Ur was shown. In Figure P below, the other major side of this geometrically interesting trapezoidal 3-d solid is shown, the Peace side. The Neolithic – Bronze Age (N-BA) boundary it seems was not a particularly peaceful boundary. It was actually a boundary in Humanity's History characterized by significant social strife and conflict. Profound technological advances were underway, and as a result old socio-cultural settings' dominance was being challenged by new settings' rising military, socio-economic, and demographic dominance. In short, deep cultural transitions were underway. The old core prime setting of a previously dominant cluster in a Central Place Theory context, had declined. A new core and primal setting was on the ascent, the Lower Mesopotamian settings and their cluster and of course the cluster's dominant prime urban agglomerations, first Uruk and then Ur. Locational comparative advantages spatially shift in the long haul; they do not stay put for prolonged time periods – they are "foot loose".

This paper does not of course intend to delve into these large in scale spatio-temporal transformative events of Mesopotamia and the Levant of that period. But one in specific aspect of this event is the Mesopotamian conflict involving the Upper and Lower Mesopotamia as well the East of the Tigris and West of the Euphrates rising threats to the Mesopotamian World. In the thick of these space-time horizons are the three major settings addressed here, their monuments and their Architectures. At the very center of these large in scale territorial conflicts, at that temporal (N-BA b) boundary, were the city-states of Uruk and Ur and their associated (in a Central Place Theory context) settings in the Lower Mesopotamian region, and Gobekli tepe and its associated settings in the Upper Mesopotamian region. It came then a time when the

centers of the two major regional clusters of settings in the Levant faced a fatal conflict. The military-industrial complex of the South (largely due to its advances in technology and management) got the upper hand. The successive adjustments by the GT settings (seen in the burying of the old and the creating of new structures at GT) was not enough, as by the end of the N-BA b the last of the structures of GT fell victim to the gales of creative destruction, and vanished from History, till it was uncovered by archeologist Klaus Schmidt in the late 1990s.

Figure P. The Standard of Ur, the "peace" side. The complex trapezoid is a circa 2600 BC artifact found in the royal cemeteries of Ur. Source of photo: ref. [2.54].

Conclusions

Gobekli Tepe is a fascinating setting for Archeology, History, Architecture, Engineering, Art, Human Geography, Demography, Economics, and a number of other related fields. And so are the two other settings analyzed in this paper, Tell Qaramel and Tell Es-Sultan (the ancient City of Jericho). In combination, and within a comparative analysis framework, these three settings provide an excellent ground for formulating an **Evolutionary Theory of Early Neolithic Architecture**. Only the outline of such a dynamic theory of Architecture was supplied with this monograph. Much needs to still be done. A very brief summary of what was suggested follows.

Three major styles were advanced as representing the schema of an evolutionary tree, in which various branches may be attached – leading possibly towards a phylogenetic and taxonomic classification scheme of Early (and then a not elaborated here subsequent, late torrential evolution of) Neolithic Architecture, a formal task left to future research and to any interested

reader. It is of some additional interest that all these major architectonic styles seem to have appeared in the Levant. There were reasons for what appeared in that space-time milieu, as it will be briefly restated next.

In a single sentence, the initial early stages of Architectonic Evolution can be captured as follows: a **Natufian** style first appeared, which was succeeded by a **Sultanian** megalithic style, which in turn produced the Gobekli Tepe type monolithic megalithic monumental (3M) style of Early Neolithic Architecture. It was established that these three major and distinct styles occurred at specific boundaries of socio-spatial-temporal and environmental transitions. They set major time markers in Human History, and left major monumental sites at landmark locations in the Levant and Western Eurasia. In more detail, the transition associated with the hunter-gatherer type human condition being transformed into a **pastoral nomadic living style** brought about the pre-Younger Dryas Natufian (thin walls) masonry arc and circular construction Architecture seen at Tell Qaramel's tower 01. The Younger Dryas event resulted in a fully sedentary Natufian (thick walls) masonry Architecture of the PPNA style at Southern Asia Minor (South of the Taurus Mountain Range) and the River Jordan Rift Valley. **The end of the Younger Dryas** brought the transition to a **PPNB and a pre-Sultanian style Architecture**, involving standardized mudbrick on masonry foundation walls and thus a combination of construction materials (stone and mudbrick), a style that experienced its peak in performance and efficiency during a transitional post-PPNB Architecture, that of the early 7th millennium BC Architecture of the Tell Es-Sultan at Jericho. Sultanian type Architecture is also encountered in many settings during the PPNB (from early to late) period, including the settlements of Catalhoyuk and Nevali Cori. The **start of the Chalcolithic** in the late 7th millennium BC period, and the beginning of the Ubaid period in Lower Mesopotamia, mark a major societal phase transition, also impacting and encountered in Architecture. The **lintel** of the tower of Jericho's staircase, and of course the megalithic monument of the tower itself and the first masonry city wall of Jericho bring about a new Era in monumental construction by the River Jordan, at Tell Es-Sultan, and set time markers and landmarks in the Evolution of Neolithic Architecture. The dawning of an Era takes place when the **monolith(s)** at the Temple (last Phase of construction) at the Nevali Cori settlement by the Euphrates where the coupling of orthostats and Natufian Architecture of Jerf el-Ahmar met the Sultanian rectangular style and produced the unique Architecture of Nevali Cori's Temple.

The Natufian and Sultanian combination of styles Architectures, at the Chalcolithic transition point, produced the **megalithic monolithic monumental (3M)** construction at Gobekli Tepe by the middle to late 6th millennium BC. The Jericho innovation of the lintel, and the 3M Architecture of GT launched the new **Neolithic Monumental Architecture of Eurasia**, the era of the T-shaped monoliths, lintels, stone ring enclosures, menhiirs and dolmens, as well as the passage tombs' chambers and their corridors. Coupled with the tumulus burial traditions of the Kurgan Culture that had migrated from the Pontic step of Caucasus, the Levant laid the foundations of the Western Eurasia monumental landscape of the 5th and 4th millennium BC, from Malta, to Brittany to the Irish passage tombs of River Boyne, the Orkneys and eventually lead to the 3rd millennium BC Stonehenge.

Gobekli Tepe's future was sealed at another major transition period, punctuated by the **Neolithic to the Bronze Age boundary (N-BA b**), when its last stone enclosure structure at GT is buried. This occurs when the Bronze Age walls are raised at Jericho. A new Era of violent social events marks a period of significant technological innovations, including writing, that rendered the underlying cultural foundations of an unprotected (walls-free) peaceful iconographic Gobekli Tepe, a sanctuary and center for ceremonial functions exalting Nature and its creatures, obsolete and possibly hostile to the new Era's ruling elites' power base and the people's economic, social and religious mores that glorified conflict.

But the legacy and cultural (including Art, Engineering and Architecture) impacts left behind by GT proved to be literally earthshaking. A millennium later we find the GT iconography of the "purification symbol" all over the Sumer palaces of Uruk. We find the various animal cult represented at GT's megalithic monoliths imprinted in the cult figures of Southern Europe and beyond, all the way from Malta into the British Isles. The full story of influences exerted by GT upon the Eurasia's monolithic megalithic monumental Architecture, Engineering and Art is still to be written.

In presenting this historiography, spanning close to ten millennia in time, and the entire Western Eurasia and North-East Africa Region, some major hypotheses were advanced in formulating the outlines of spatio-temporal influences giving rise to major stages in the Evolution of Early Neolithic Architecture. A major motivating factor in this endeavor was of course to rationalize the Architecture of Gobekli Tepe, given that the dating accepted by the archeological establishment is considered by this author to be simply erroneous. In accepting lithic evidence from Jericho, for instance, as proof that the settlement at GT is a PPNA/B structure (thus admitting an arrow of influence pointing from Jericho to GT), while not actually encountering any influences from GT towards Jericho's Architecture, since the alleged underlying premise is that these two settings co-existed in time, or even that GT predated Jericho, is flawed logic. This would by necessity require a two-way flow of influences, which is not observed. Hence, the alleged dating of GT, that it is a PPNA/B construction, is not a defensible proposition. The Architecture evidence (on which this paper mainly focused) strongly points to GT being a later than Jericho site, thus admitting in essence into evidence the Jericho towards GT arrow of lithic influence, while solving the perplexing problem of lack of influences flowing the other way.

Funerary practices. An issue not addressed at all by this paper is the topic of "ancestral worship" and that of "skull plastering" customs and practices. That there are common funerary practices among settings is a very important factor in identifying their social and cultural linkages, thus also and by necessity their Art and Architecture linkages (or lack thereof). This topic, although not addressed here, further strengthens the chronology of events and the typology of Architectures as stated in this paper, as well as it further lends support to the temporal sequencing of the sites' Architecture, thus the sites themselves. A key symbolic (and, as such, a topic in the religious and cultural aspects of monuments' use and functions) is the connection between "worship", "reverence", and "love" extended by the living to the dead. Obviously, there is some evolutionary

aspect to that connection. It is also a topic for analysis for Architecture, since this bond to a large extent affected architectonic and design decisions. Cultures built monuments, and although individual elite members and architects may have planned, managed, financed, designed, built and maintained these structures, it was individuals belonging to the cultures who used, modified on the way, and ultimately destroyed or buried these monuments as agents acting on behalf of the cultural forces they represented. **Funerary practices were intimately linked to these large-scale forces, for both the life and dead of the individuals and the monuments they built and buried.**

Astronomy and Early Neolithic Architecture. In concluding this summary, a point need be made which, to some degree also is a call for further research, as all major topics of this paper are. The Astronomy of the Natufian and Sultanian Architectures is a topic not well developed, and in fact, not developed at all. It must be looked at carefully, as it might indicate the first steps and the early beginnings of the **proto Astronomy** related forces that shaped the design of monuments in the earliest phases of human construction activity, at the Epipaleolithic and the Early Neolithic. Such a study might shed additional light on the motivating factors that shaped Astronomy considerations in the design and use of structures during and under subsequent Neolithic Monumental Architecture style(s). it was a way not only to link their monumental constructions to the Heavens, but also to tie these structures to the Earth and its Agriculture connected duality, fertility and uncertainty, known and unknown, growth and decline, birth and death rites

Note 1.

The author cites in a few instances work either by or reporting on professor Ryszard Mazurowki work at Tell Qaramel written in Polish. It must be noted that the author does not read Polish. Thus, the references cited here to work and photos included in those references do not take under account the commentary written in Polish but simply the photos. The analysis by this author of these photos is of course carried out in conjunction with citations by the archeologists of Tell Qaramel, available in English.

Note 2.

The author's work on the roles of shadows in Neolithic monumental Architecture (among a host of other subjects) is found in a number of papers located at the following three sites:

https://kansas.academia.edu/DimitriosDendrinos

https://www.researchgate.net/profile/Dimitrios_Dendrinos

https://dimitriosdendrinos.academia.edu/

Note 3.

A first comment on the subject of Gobekli Tepe's carbon-14 dating and the diagram of Figure 13 was first made in a post by the author on his Facebook page:

https://www.facebook.com/permalink.php?story_fbid=1756631001244210&id=100006919804554

Note 4.

On April 6, 2017, the author analyzed the structure B wall, the subject of the subsection in a Facebook post in a group here: https://www.facebook.com/groups/586321761560342/

On June 1, 2017, the author discussed the evidence on Nevali Cori's pillar (found inside the rectangular floor plan Temple there), in the same group as he discussed that structure B wall issue. This is a Facebook group created and administered by this author where subjects related to Gogekli Tepe are discussed among its members.

Note 5.

Some more details on Jericho's tower

Here a further elaboration is offered on the Geometry of Jericho's tower, and its interior. It assumes that the tower has a 1.5-meter wall, and the interior space is simply the remaining part of the truncated cone once this wall's volume is taken out. This computation will allow one to derive an efficiency measurement, similar to that obtained for "tower 0" of the Tell Qaramel 10600 BC structure, and make some comparisons of an evolutionary nature in comparing the two versions of Natufian Architecture. The interior of the tower, assuming 1.5 meters of wall, is simply obtained by using the same formula used earlier for computing the total volume V, except now the lengths are as follows: R=3 meters and r=2 meters, as the height remains the same. Parenthetically, it is obvious that this can't be a full description of the tower's interior; but for lack of any more detail of the interior's structure, the above specifications will be used. The formula gives a total open interior space of 170 m^3. This volume in turn implies that the amount of tower volume taken by the walls is equal to 145 m^3. In turn, this count implies an efficiency index of space utilization of 170/145=1.17, a significant improvement compared to that of the TQ's "tower 0", of about 3.3. Thus, it is a quantitative confirmation of an evolutionary index in measuring construction efficiency, in verifying that the Jericho's tower is a later construction than the TQ's "tower".

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