HEADING WEST: CONSIDERATIONS ON GRAVE ORIENTATION IN 3RD MILLENNIUM BC MESOPOTAMIA

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ABSTRACT

The paper presents a survey of sub-pavement burials and cemetery graves from Early Dynastic sites aiming at highlighting the presence of meaningful patterns in the orientation of the graves. The archaeological evidence is then interpreted on the light of cuneiform sources. Pending further and more accurate archaeoastronomical analyses and notwithstanding a general variability in the Mesopotamian ED funerary practices, a "solar-based" interpretation of the burials' orientation is proposed, and the preferred western orientation is tentatively connected with the sun-set on the basis both of the location of the Netherworld and of the chthonic aspects of the sun-god Utu/Shamash.

INTRODUCTION

Grave orientation is one of the elements, visible in the archaeological record, which might indicate aspects of the ancient funerary ritual practices. Though Mesopotamian archaeology is aided by cuneiform sources, few are the indications on the way in which funerals were carried out and graves realized during the 3rd mill. BC. For example, Lagash texts inform us on the élite ritual and on some aspects of the celebrations related to the death of important members of the society that are relevant from the administrative point of view (e.g., food and drinks consumed by the participants to the ceremony; Romano 2019). The archaeological evidence shows the coexistence of different funerary practices, with e.g. the coeval presence of sub-pavement graves and of burials in cemetery, as noted by several scholars (e.g., Hall - Wooley 1927; Woolley 1934; Postgate 1980; Martin 1988). In this frame of high variability, the orientation of the graves was regarded as casual in most of the cases. However, defining the orientation of graves as random based, though not impossible, might hide difficulties in determining "what the controlling factors were, rather than that the gravedigger made an arbitrary decision according to a passing whim" (Rahtz 1978: 2)

The idea behind the present paper is derived from the evidence coming from funerary contexts excavated by the author at Abu Tbeirah. The excavations carried out at Abu Tbeirah since 2012

brought to light the remains of ca. 28 individuals from grave contexts and some sparse remains, due both to intentional and post-depositional dislocation. The graves excavated up to now are mainly dated to the ED/Akk. transition. These burials are attesting an interesting wide spectrum of practices. One of the aspects observed during the excavations is the apparent western preference in the orientation of the inhumed bodies (Romano 2019).

Aiming at verifying the validity of the tendency highlighted at Abu Tbeirah, a survey of the contemporary 3rd mill. BC funerary evidence from other sites is here performed, considering also the inhumations from Ur (Woolley 1934), Ubaid (Hall - Woolley 1927), Fara (Martin 1988), Abu Salalbikh (Martin et al. 1985), Khafaja (Delougaz et al. 1967).

The data presented in this preliminary survey might led in the future to a more in-depth archaeo-astronomical study that will better clarify the reasons behind the highlighted preferred orientation. Notwithstanding the necessity of further analyses, after the survey, an interpretation of the reasons behind the trends and tendencies highlighted will be tentatively proposed, taking into consideration our knowledge of ancient Sumerian beliefs on the afterlife.

METHODS

In general, as summarized by Rahtz 1978 and Kurila 2013, the orientations of the graves can be rarely casual or more often determined by several factors (alone or in combination):

- Individual aspects such as gender, age, origin, occupation, social status, rank, cause of death, or on the base of a judgment on the moral behavior during life of the inhumed, etc.;
- Movement of celestial bodies (sun, moon, stars);
- Presence of natural elements;
- Presence of other structures such as burials, monuments, sacred buildings, houses;
- Religious beliefs.

In the following sections a schematic representation of graves orientation is reported for each considered site. The orientation reported is that of the body and not of the grave. However, while the shape and orientation of earth-pits simply dug into the soil might have been influenced by soil conditions or being altered by post-depositional factors, the orientation of the grave chamber should be considered potentially meaningful.

In determining the orientation of the skeletons, the head was considered as the main pointing element on the basis of some considerations. The head was in general charged of peculiar meaning in Mesopotamia, identifying the individual himself. Cutting someone else head was the maximum desecrating act against a corpse or a statue (see e.g. Dolce 2018). On the contrary skull removal practices and secondary burial of skulls or of entire skeletons are attested at Abu Tbeirah and in several Mesopotamian contexts, though often interpreted as proof of ancient looting (see e.g. Woolley 1934: 200). The peculiar care (or hate) surrounding the detached head of an individual makes this body part as more suitable in representing the individual himself and possibly in

determining the direction in which the life after the death will continue. Though it cannot be completely excluded that the orientation of a corpse was defined by the position of the feet, the extreme variety of the way in which corpses were deposed (in extended, semi-flexed or fetal positions) makes this hypothesis less likely. Anyway, though the orientation dictated by the head is emphasized here, the diagrams presented might be easily interpreted ideally prolonging the line towards the sector of the compass opposite to the head and thus considering the direction determined by the feet.

In order to reproduce the intended direction of the inhumations and not the accidental one caused by changes due to post-depositional alteration of the original position, only the graves and skeletons with a good degree of preservation and/or clear orientation were included in the study. It is important to stress that the graphic representation should be considered as illustrative: the position in the scheme is derived from the illustrations and the reports by the excavators, without further adjustments of the orientation. Only the graves with a published plan were considered and the chronological and spatial subdivision was maintained as far as possible. It should also be noted, in particular for Ubaid graves, that in some cases the orientation reported in the description was different from that on the plan (e.g., Ubaid G.68 and 70): in such cases, the second one was preferred.

Several sites will not be considered in detail due to the lack of precise information but are however remarkable in the frame of a complete analyses of the inhumation practices of the period. Tell Uqair cemetery, discovered immediately under the surface in the south-eastern lower part of Mound B, is an interesting evidence of an ED cemetery with graves "dug at random into the ruins of earlier private houses" (Lloyd - Safar 1943: 136): the abandonment of the area and the modification of its use might be linked with the "canals" full of sand cutting the remains of the ED occupation on the top of the mound (Lloyd - Safar 1943: 136).

Kish evidence (Mackay 1925; 1929) was not added due to the absence of published plans. However, it should be mentioned here that Mackay (1925: 12) summarized as follow the orientations of the bodies discovered in Cemetery A: 12 with the heads towards N; 4 towards NW; 27 towards W; 14 towards SW; 13 towards S; 8 towards SE; 6 towards E; 7 towards NE.

Other two cases should be considered beyond those presented below: the earlier ED I evidence from Ahmad Al-Hattū (Sürenhagen 1979; 1980; 1981; Eickoff 1987; 1993) and Kheit Qasim (Forest 1980). Some of the built graves from Kheit Qasim show on the west side two/four small parallel walls: it is not clear if these walls were the inner supports for an earthen ramp, but their position on the west side is quite peculiar. Moreover, the skeletons found in connection inside Kheit Qasim built graves are all oriented with the head toward W, while the bodies discovered in the multiple graves from Ahmad Al-Hattū have all the head toward SW.

GRAVE ORIENTATION IN ED/AKK MESOPOTAMIAN SITES

Abu Tbeirah

Abu Tbeirah excavations are bringing to light a highly differentiated repertoire of funerary practices: beyond the presence of burials within the household environment and in cemetery, simple and double inhumations in simple pits or in sarcophagus, secondary inhumations and postmortem manipulation of skeletons are attested as well (Romano 2019: 68ff).

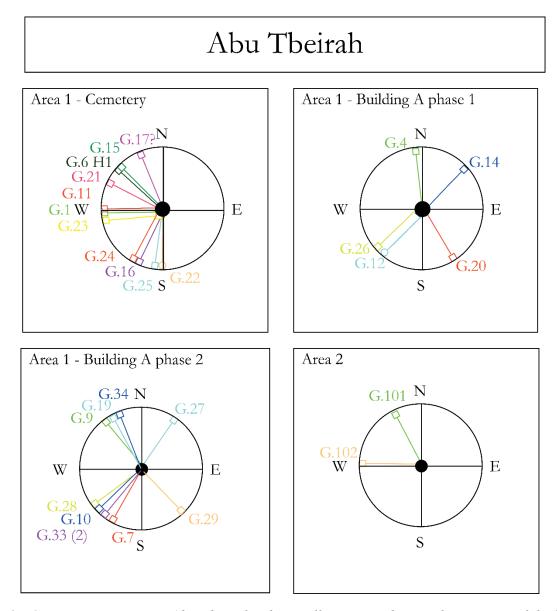


Fig. 1 - Grave orientations at Abu Tbeirah. The small square indicates the position of the head.

Fig. 1 reports the orientation of all the graves found at Abu Tbeirah. In the SE part of the site (Area 1) sub-pavement inhumations belonging to the two phases of occupation of a huge household (Building A) have been brought to light. The structures of the household were cut in the latest phase of the area by garbage pits and graves interpreted as belonging to a Cemetery (Romano

2019). The evidences related to the gradual abandonment of the area that led to the interpretation of these later graves as belonging to a cemeterial rather than a household context are summarized in Romano 2019: 66-68. The situation highlighted in Area 1 might potentially be comparable to that of Tell Uqair (Lloyd - Safar 1943).

In the NE part of the site (Area 2) instead the domestic structures of the end of 3rd mill. BC were cut by several graves (one of them particularly rich), in turn strongly disturbed by later activities, possibly belonging to a now eroded upper phase (D'Agostino – Romano 2015). The skeletons were preserved only inside Graves 101 and 102.

Area 1 cemetery graves are mostly with the head pointing toward the western arc. Building A phase 1 and 2 sub-pavement graves are aligned with the walls of the structure that is oriented with the corners towards the cardinal points, as typical for houses in arid regions (Shepperson 2017). Nevertheless, a general prevalence of the orientation with the head toward the western horizon is also evident for the sub-pavement graves of the household. The only two graves discovered in Area 2 are also with the head oriented to the W. In addition, also the donkey burial discovered here is oriented with the head toward SW (D'Agostino et al. 2015; Alhaique et al. 2019). On the contrary, the dog skeleton, deposed without head inside Building A Room 22, is instead oriented toward NE (Alhaique 2019).

Ur

Regarding the orientation of the graves in the Royal Cemetery of Ur, Woolley states that: "Where the body can lie indifferently in any one of four directions (these four being in fact multiplied by all the minor variations which it seems best to disregard) there can be no religious principle determining its orientation" (Woolley 1934: 141). Beyond the published graves, also "Woolley's Field Note Cards" from http://www.ur-online.org were considered.

If compared to other sites, Ur (Fig. 2) differs for the presence in graves of several bodies, often deposed with different orientation. Also Khafaja presents a similar evidence, but in a reduced and in a less "spectacular" way. In general, most of the bodies at Ur are oriented with the head toward NW, with a consistent group with the head pointing toward SW.

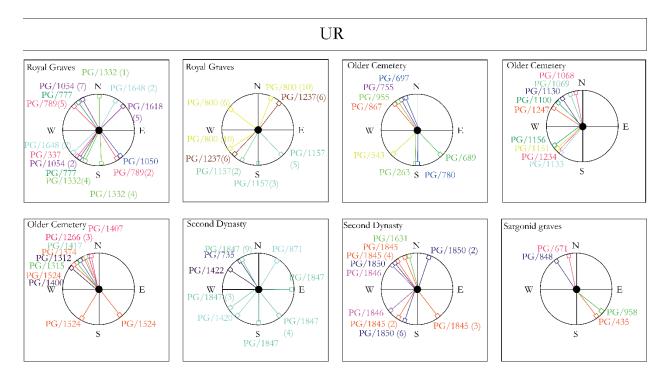


Fig. 2 - Grave orientations at Ur. The small square indicates the position of the head. For the sake of clarity of the graphic representation, graves belonging to the same phase of the cemetery were divided in different diagrams.

Ubaid

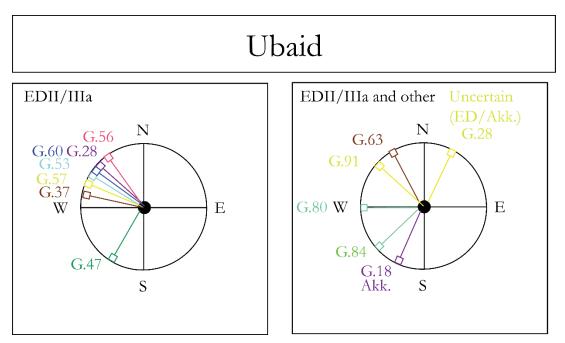


Fig. 3 - Grave orientations at Ubaid. The small square indicates the position of the head.

Ubaid graves were interpreted by Woolley as belonging to a proper cemetery and he affirmed that: "no significance attaches to the orientation of bodies" (Hall – Wooley 1927: 174). Lately, H. Martin in her re-evaluation of Ubaid graves stated that: "graves at Ubaid had a very regular orientation along NW-SE and NE-SW axes; this is easily explained if the graves had been excavated from houses with walls following the usual NE-SW, NW-SE orientation found in Mesopotamia. Graves excavated within houses at other sites (Khafaja, Abu Salabikh, Fara) usually align with the house walls in this fashion. Any such Early Dynastic houses were either completely eroded away or missed in the excavations" (Martin 1982: 146-147).

In the diagram in Fig. 3 only the graves with a published plan were reported. Moreover, for the case in which the orientation in the description made by Woolley was in contrast with the plan, the orientation from the latter was taken into consideration, as said above. The scheme is based on the chronological subdivision made by Martin (1982). In considering Obeid graves, the interpretation made by Woolley will be maintained: the evidence from Ur with the bodies oriented along NW-SE and NE-SW axes makes this element unsuitable in discerning sub-pavement graves from the cemetery ones.

Fara

The main source of information on the excavation carried out at Fara is the reassessment made by H. Martin (1988). According to Martin (1988: 107) "the burials seem to follow the orientation of the walls of the houses in which they were dug". Fig. 4 shows that most of the graves are oriented toward the western horizon, though N, NNE and SSE orientations are attested as well. However, four graves contrasts with this picture, showing an orientation toward west. In addition, G.23 is oriented toward N.

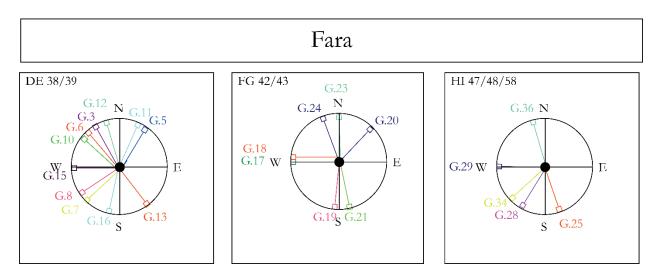


Fig. 4 - Grave orientations at Fara. The small square indicates the position of the head.

Abu Salabikh

Abu Salabikh graves were all sub-pavement inhumations and N. Postgate interprets their orientations as the result of the alignment with the structures below which they were realized: "there are no firm rules governing the orientation of the head: on the other hand, the body rarely lies toward one of the modern cardinal points of the compass. We doubt that this has much significance: the alignment of the body is of course determined by the orientation of the grave-chamber and this in turn is related to the walls of the room from which (in some cases at least) the grave-shaft was dug" (Postgate 1980: 69).

Fig. 5 shows indeed a certain variety with some graves oriented toward the NE and SE and a concentration of inhumations toward NNW and SSW. However, the graves with the head oriented toward the western horizon are well distributed along the arc from N to S.

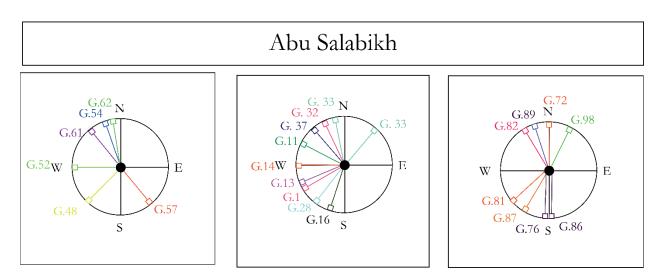


Fig. 5 - Grave orientations at Abu Salabikh. The small square indicates the position of the head.

Khafaja

Fig. 6 considers all the graves attributed to the ED period, belonging to Houses 10 to 1. Delougaz et al. (1967) describe the graves as dug from the living surfaces inside the buildings, showing often no trace of the cut on the floor due to the continue occupation and use of the houses. Some of the burials were simply dug under the floor surface while others were built with plano-convex mudbricks and in some cases in bricks. Apart from four graves oriented toward the due west, all the others are grouped in the four directions dictated by the walls of the buildings. It must be considered that the construction of the houses around the walls of the Oval Temple affected the layout of some rooms and this resulted in the adaptation of some graves to the existing layout (see for example Grave 110 under room 6 of House XL in Houses 4). In addition, some further elements might have influenced the orientation, mitigating the actual difference with the other inhumed bodies: the skeletons of 108, 116, 125 are deposed in built chambers oriented according to the

structure, while skeleton 119B was deposed in the space between a built grave chamber (119A) and one wall of the structure. Grave 124 and 143 are the only evident exceptions.

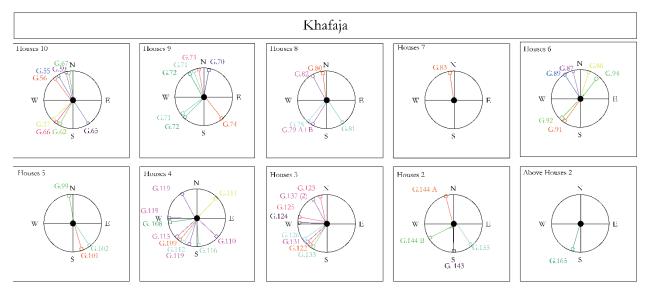


Fig. 6 - Graves orientation at Khafaja. The small square indicates the position of the head.

RESULTUS AND DISCUSSION

Analysis of the data

Including both cemeterial and sub-pavement inhumations, the evidence presented above suggests that, notwithstanding a degree of expected variability, most of the graves considered (70%) were realized deposing the bodies with the head toward the western horizon (or on the contrary with the feet toward the eastern one) as summarized in Figs 7-8. Pending further and more accurate archaeoastronomical research, only a wide subdivision of the orientations was carried out, though a more accurate distinction in the orientation would possibly lead to further meaningful grouping. However, the patterns highlighted for each site in Figs 7 and 8 allow some general considerations.

Starting from the sub-pavement graves, it could be argued that these were in general realized following the structures (see e.g. the interpretation given by Martin for Fara graves quoted above) that, as common in arid regions, were usually oriented with the corners toward the cardinal points, in order to optimize the inner thermal conditions (Shepperson 2017). The picture delineated from Khafaja (see also Fig. 6) shows indeed a quite clear concentration of the graves in the directions set by the presence of the structures, considering also the curve layout imposed to the buildings by the presence of the Oval Temple. Ubaid, Abu Salabikh and Fara show the same concentration on the NE-SW and NW-SE axes but with an apparently more even distribution of the graves in the western horizon. In all the contexts there is however a predominance of west oriented graves.

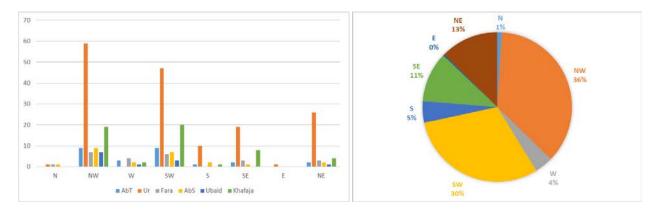


Fig. 7 - Graphic representation showing the orientations of all the bodies for each site subdivided on the basis of the context. The small square indicates the position of the head.

As far as the graves orientation in cemetery is concerned, beyond the homogeneous evidence from the site of Ahmad al-Hattū and Kheit Qasim (see above §1) and the less regular one from Kish (49% toward the western horizon; 24% toward the eastern one; 13% and 14% respectively toward N and S), the patterns highlighted from Abu Tbeirah, Obeid and Ur (Fig. 7) are highly divergent. Ur pattern seems to be not only quite similar to that of Kish but also of Khafaja, showing in a way a higher regularity. This might be obviously due to the difference in numbers or in the social status of the population inhumed in the contexts of Abu Tbeirah and Obeid. Also the presence of built chambers, especially those containing a high number of inhumed bodies, influences this picture.

Notwithstanding this, other factors might have played an important role in the realization of Ur burials. While Abu Tbeirah and Obeid cemetery burials are quite well distributed on the western horizon, at Ur most of the graves are oriented with the head toward NNW. In this case it should be considered the possibility that the realization of private graves in Ur, the city of the moon-god, was based on the presence of an important focal point NNW of the cemeterial area: the complex dedicated to Nanna/Sin and later to the Ziqqurat.

The presence of a second group of burials oriented towards SW is also worth noting. This evidence might be even more meaningful, if the spectacular evidence of the two most famous Royal graves is also considered: the Great death Pit and Puabi's tomb and the associated death Pit (Fig. 9).

As already highlighted by M. Vidale (2011: 428) the plan of the Greath Death Pit (PG 1237) loses clarity but acquires more significance if oriented after its cardinal points: apart from the six soldiers (Vidale 2011: 446) located at the entrance with the head toward NE, all the accompanying deads had their head towards SW.

Inside PG/800 Puabi's skeleton was laying with the head toward WSW. The other bodies were all located in the access pit. P. Zimmerman (1998: 39) highlighted some inconsistencies in Woolley's attribution of the death pit to this grave and proposed to attribute it to a later not preserved grave (see also the reconstruction reported at https://www.penn.museum/blog/museum/ur-project-

october-2014/). The position of the bodies found here by Woolley is interesting. Leaving aside the not well-preserved skeletons near the chariot, five bodies, to be interpreted as guards (Wooley 1934: 74), were lying in a dromos with the head toward SE. Most of the accompanying bodies were in the bigger shaft, oriented NE-SW and were deposed in connection with the remains of a chariot. The corpses laying in two parallel rows had the head respectively toward NW and SE. The ground-surface of this part of the pit "was flat but sloped down a little-perhaps half a metre in all-from the north-east to the south-west" (Woolley 1934: 73). The picture delineated by Woolley seems to correspond to a sort of imaginary funerary procession (descending?) toward SW. In this case not the orientation of the single body but the ensemble of the scene should be considered, an exception fully justified by the singularity of the context. Whether or not this death pit belonged to Puabi's grave, it is singular that the inhumed body of the woman was lying with the head toward the same direction of the procession of the possibly later grave. This element seems to reinforce again the idea that is the head to define the orientation in Mesopotamian graves.

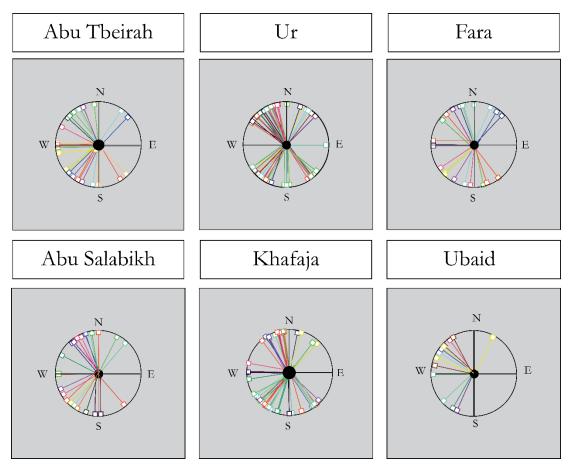


Fig. 8 - Histograms showing the distribution of bodies orientation in cemeteries and sub-pavement burial for each site; pie-charts showing the total percentage of bodies orientation for each direction from all the considered contexts.

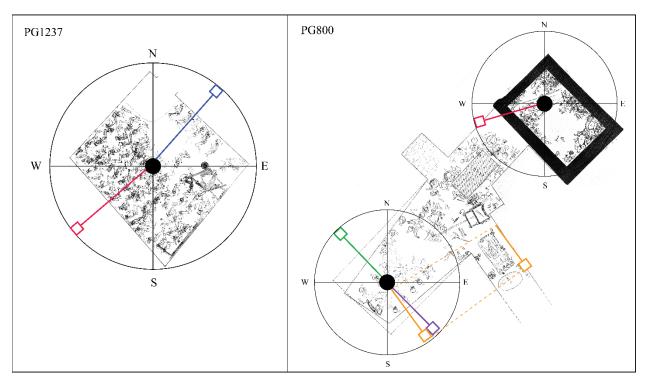


Fig. 9 - Body orientation inside Ur PG/1237 ("The Greath Dead Pit") and PG/800 (Puabi's Grave).

From the grave to the Netherworld

The grave is a fundamental element in the journey of the dead to the underworld. In order to understand if the orientation of the grave is meaningful in the frame of the beliefs of 3rd millennium BC Sumer, the first point to be addressed is: where is the Sumerian Netherworld located? D. Katz summarizes as follow the possible locations of the underworld according to cuneiform sources (Katz 2003: 47): "(i) directly under the ground to its full extent [...]; (2) deeply underground [...]; (3) somewhere in the west where Shamash descends or on the route eastward; (4) maybe in the north-eastern Zagros mountains, as suggested both by the term kur and the description of the netherworld as a mountain [...] The last two possibilities are not completely contradictory". The co-presence, especially for the 3rd mill. BC of several beliefs might fit well with the high variety of graves orientation highlighted in the data presented above.

In addition, about the two opposed routes toward east and W, Katz convincedly demonstrates that these are: "two different theological attitudes to the netherworld, the one reflected in southern Sumerian texts that point to the east, and the other prevalent in Old Babylonian sources that point to the west" (Katz 2003: 51). The contemporary diffusion of several beliefs during the 3rd millennium BC is overcome in the second millennium BC when Shamash becomes "the judge over the dead and the netherworld is commonly associated with the mythological 'sunset'" (Katz 2003: 53). In Mesopotamian mythology the sun god Utu/Shamash possesses, indeed, strong

chthonic aspects, a characteristic that is further emphasized in the west Semitic pantheon where the solar deity is considered as psychopomp (Sedláček 2015: 193). Utu/Shamash's role in the judgment of the dead is attested since the Old Babylonian period and it is testified by his epithet "judge of those above and below" (Heimpel 1986; Horowitz 1998; Katz 2005). Moreover, the sun seems to have played an important role in the access to the realms of the afterlife. In "Gilgamesh, Enkidu and the Netherworld" (George 2003), the God Enki helps Gilgamesh through Utu/Shamash: the sun-god opens the gates of the Netherworld, bringing Enkidu with him. Though a role in the judgment of dead is attested also for the moon-god Nannar/Suen and other deities, Shamash remains as the one that presides the "netherworld tribunal" (Steinkeller 2005: 15 and passim).

The passage highlighted by Katz form one belief to the other was obviously not a radical but a gradual one, though not widely reflected in cuneiform sources (see e.g. Lu'utu inscription about the construction of Ereshkigal temple at Umma reported always in Katz 2003). It can be supposed that the changing beliefs documented by the cuneiform sources were instead more visible in the life of normal people and might find an earlier evidence in the variety of orientation of the 3rd millennium BC graves.

Comparing the evidence presented above with the location of the netherworld attested by the texts and considering the head as main element in determining the direction of an inhumed body, the following picture can be derived:

i-ii. underground or deeply underground: the depth of the graves is high variable and depending on several factors, including the difference due to the cemeterial or household context; obviously all the graves considered can be connected to these beliefs;

iii.a somewhere on the W (sunset): it corresponds to the 68% of the bodies inhumed in cemeteries and to the 75% of those in the sub-pavement graves (70% if both contexts are considered);

iii.b somewhere on the east (sunrise): it corresponds to the 26% of the bodies inhumed in cemeteries and to the 21% of those in the sub-pavement graves (24% if both contexts are considered);

iv. toward the Zagros at NE (kur): it corresponds to the 15% of the bodies inhumed in cemeteries and to the 9% of those in the sub-pavement graves (13% if both contexts are considered); this can be considered a subcase of iiib. In this way most of the graves might be considered consistent with the attested beliefs, except for a small percentage of graves oriented toward S and N, respectively the 5% and 1% of the record. It must be however significant that most of the graves in cemeteries and under the floor surfaces of the houses are oriented toward W.

On the preferred western orientation

In the attempt of pushing forward the analysis carried out here, the evidence from the cemeteries will be considered in deeper detail. Indeed, though a general preference for the western horizon is evident also from sub-pavement burials (75%), in the houses the presence of structures surely

imposed physical constrains to the orientation of the graves. On the contrary the inhumations in cemeteries were surely realized with a greater freedom: without constrains, cemetery might be more helpful in understanding the beliefs at the basis of the chosen orientation.

The cemeterial contexts analyzed can be roughly divided in two groups: 1. Cemeteries in which there is a striking preference for the western horizon (Kheit Qasim, Ahmad al-Hattu, Obeid, Abu Tbeirah); 2. Cemeteries in which the bodies are oriented along the NW-SE and NE-SW axes with the heads pointing to the western or to the eastern horizon (Ur and Kish), but always with a higher number of western oriented graves (thus with a pattern similar to that highlighted for the households).

Looking at the cemeteries of the first group, though the detailed information is limited to the graves of Obeid and Abu Tbeirah, it is interesting to note the distribution on the western horizon of the graves. In these regards some hypothesis might be tentatively proposed as a base for future analyses.

If the orientation toward W was related to the sunset, it might be possible that the changes in the direction of the graves in cemeteries were directly related with actual setting of the sun. In general, the identification of the sun (or of the moon) as principal factor in the spatial orientation of graves should be based on a good distribution on the western horizon (Brown 1993b: 323) derived from a "moving focal point" (see as comparisons Kurila 2013 for Lithuanian Graves). Indeed, the sun, as well as the moon, changes its setting position on the western horizon during the year (SW during the Winter; W during spring and autumn, NW during the Summer). Sumerians were aware of the path followed by the sun, rising in the E and setting to the W (Sedláček 2015; on the cosmic geography see also Ramazzotti 2009). The place reached by the sun (and the moon) after dusk is however controversial (see e.g. Heimpel 1986; Horowitz 1998; Katz 2005; Sedláček 2015; Steinkeller 2005): according to some scholars the two gods reach the netherworld, while others propose that the two gods stay at the gates/limits of heavens, where they proceed to the judgment of the dead. Though cuneiform sources regarding the movement of the celestial bodies are later than 3rd millennium BC, the terms for rising and setting are indeed used in several texts in order to indicate the two cardinal points (Horowitz 1998: 196). Moreover, in the MUL.APIN the movement of the sun toward S and toward N is described as happening respectively after the Summer and the Winter solstice (Horowitz 1998: 196).

Nevertheless, if the present solar path diagram at Abu Tbeirah is considered (Fig. 10) and compared with the orientation of the graves of the cemeteries of the second group, most of the northernmost and southernmost graves fall outside the arc defined by the changing position of the sun on the horizon. The situation does not change also if the modifications in the obliquity of the ecliptic are considered: "the width of the sunrise and sunset arc as viewed from any given terrestrial location was somewhat wider in the last few millennia than it is now. Compared with the shifts in stellar rising and setting positions due to precession, the differences are small: for example, in tropical zones around 2500 BC, the sun rose and set approximately its own diameter (0.5) further N at the June solstice, and the same amount further S at the December solstice, than now (Ruggles 2015b: 479).

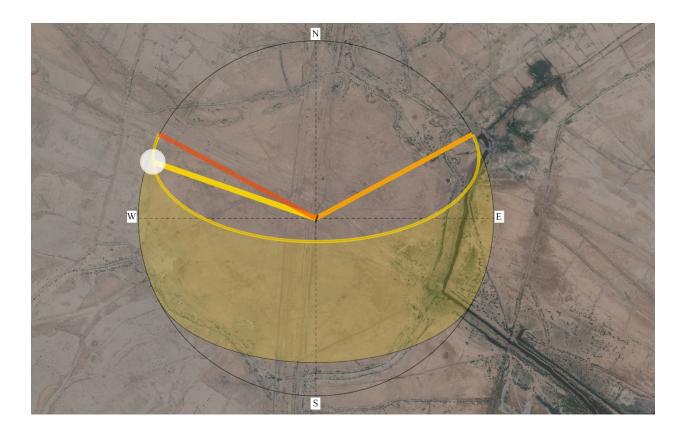


Fig. 10 - Present annual solar path at Abu Tbeirah. Satellite imagery courtesy e-GEOS. Diagram modified from http://andrewmarsh.com/apps/staging/sunpath3d.html (© Dr. Andrew J. Marsh 2014).

However, the case of the graves considered here should not be compared with monumental structures, such as e.g. the Ziqqurat, that can be the result of more detailed and accurate observation of the sky by Sumerians (see Nadali - Polcaro 2016). A modern precision in the orientation should not be expected in dealing with the common Sumerian funerary practices and in particular with the simple graves dug into the soil. A complex system of factors may have played an important role: beyond the aspects listed above, also the characteristics of the excavated soil, the moment of the day in which the pit was realized, the sky visibility (e.g., presence of clouds) as well as the individual perception or accuracy should be considered.

The analysis of the second group shows that the orientation along the NW-SE and NE-SW axes, though apparently fitting well with the presence of buildings oriented as toward the cardinal points, cannot be considered as key criterion for discerning sub-pavement burials from cemetery ones. This is obviously valid if further proofs of the presence of later eroded structures or activities are not present. At Abu Salabikh the presence of later activities, cutting from above the stratigraphy, testify the continuity of occupation of the area and allow the attribution of the graves discovered immediately under the surface to later not preserved structures (Postgate in Martin, H.P. et al. 1995: 4-6 and passim). On the contrary, at Abu Tbeirah the gradual abandonment of the area is

testified by the reuse of the area and of some rooms as dump, activity followed by the excavations of at least some of the graves (Romano 2019: 66-68). A similar situation might be that described by Lloyd in Uqair: here the ED houses on the top of Mound B were cut by canals full of sands, testifying a change in use of the area, while in the lower part of the hill several graves were found cutting the earlier structures (Lloyd - Safar 1943).

The pattern of the second group is comparable to that of the sub-pavement burials and it is similar to that highlighted for Obeid graves and interpreted as follow by Kopanias and Barlagianni (forth.): "In our sample, the graves and the bodies did not always have the same orientation; nevertheless, they are almost always aligned according to the course of the sun, since they were placed with their feet to the W and head to the E, or vice versa". This interpretation is comparable to an interesting theory by Rahtz (1978). He proposes for other contexts a "solar arc model", based on the moment in which the sun is observed, including e.g. morning, noon or the early afternoon. Rahtz (1978: 3) writes: "At the Wadi Halfa in the Sudan a solar orientation of a Mesolithic cemetery is apparently demonstrable (heads to W), but here although (with the exception of one apparent aberrant) the most northerly burial corresponds with the summer solstice at 65°, the rest of the range extends well S of the winter solstice at 115°, so a sunrise or sunset model is excluded. If on the other hand an early morning to early afternoon time is chosen to observe the sun's direction, then not only can most of the burials be included but even the apparent aberrant northerly one. In this latitude at the summer solstice period the sun passes overhead, not to the S, but at high noon crosses N of overhead. This is the solar traverse model rather than that of sunrise or sunset".

This wider model, clearly represented by the second group of cemeteries and by the sub-pavement burials, fits well with the "horizontal perspective" highlighted by Katz (2005: 53-54) associating E and W in defining the cosmos. The graves of the first group and also the general preference of the orientation toward the western horizon seem to point at dusk as preferred moment (or direction) for the inhumation. This should correspond to the "vertical perspective" based on the strong relationship between the setting and the netherworld evident in the later Mesopotamian cuneiform sources. This perspective is indeed exemplified by an Old Babylonian incantation describing the evil spirit's passage to the netherworld as "the gate of sunset" and indicating its location in the grave (Katz 2005: 44).

CONCLUDING REMARKS

The absence of a standard procedure in the orientations of bodies in graves is well connected with the presence of multiple funerary practices and beliefs. This variety is in general interpreted, from a socio-historical perspective, as evidence of "striking intracommunity distinctions" (Pollock 1999: 206) during the second half of the 3rd mill. BC, a period of dramatic social, cultural and economic changes (Laneri 2007). Beyond the evolution from a city state organization of Mesopotamia, with a diffuse leadership, to the edification of the Sargonic empire, this period of important changes is characterized, according to Pollock (1999: 208), by "tensions between oikoi on the one hand and kin-based households on the other", well represented in the different deposition of the dead in cemetery or in houses and possibly in the differences in the placement of

corpse. It is surely intriguing that the orientations of the bodies in the most famous and rich graves of the Royal Cemetery of Ur differ from the main group of NW burials. Is this a symptom of "ideological and political struggles" (Pollock 1991; Cohen 2005; Pollock 2007), with "tombs producing and displaying household identities and affiliations through their specific ritual practices" (Pollock 2007: 210)?

The presence of a preferred, but not unique western orientation might be evidence of these tensions and of negotiation of identity among social actors, played on the ground of their religious beliefs. This preliminary survey of ED/Akk. evidence revealed the potentiality of the study of grave orientations though further researches and new evidences from the excavations are obviously needed to verify the hypothesis of a connection of the orientation with the solar path and/or with the sunset. Furthermore, the use of Artificial Neural Nets might further contribute to the validation and interpretation of the highlighted pattern (see e.g. Ramazzotti 2012; 2016; 2018). The western oriented graves from Kheit Qasim and Ahamad al Hattu, earlier than Abu Tbeirah (EDIII/Akk.) and Obeid (EDII/Akk.) graves considered here, might be the reflection of the northern beliefs as defined by Katz (2005: 54-55). The later graves belonging both to cemetery and household contexts might hide, behind the high percentage of western oriented graves, the passage from the horizontal to the vertical system of beliefs, from an access to the netherworld located or in the E or in the W to a preference for the identification of the gates to the afterlife in the direction where the sun sets.

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