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Abbildung Titelseite:

Mitten im einsamsten Anti-Atlas und absolut schwierig erreichbar befindet sich diese sehr hochgelegene Bergkuppe mit einer Ansammlung merkwürdiger Bauten, die offenbar nicht für das tägliche Leben sondern für kultische Zwecke konstruiert wurden (nahe Tazigzaout / Marokko). Man sieht mehrfach die von den Kanarischen Inseln (Lanzarote), dem Mittelmeerraum und dem Nahen Osten her bekannten langgestreckten rechteckigen sowie U- und L-förmigen Grundrisse. Diese Mauern wurden bewusst nicht nur in diesem Hochgebirge errichtet, sondern auch komplett ohne Dächer konzipiert, beides wohl um bestimmten Gottheiten näher sein zu können. Die in Ulbrich (2023) vertretene Meinung, man müsse diesen bronzezeitlichen und zugleich megalithischen Stil auch für die marokkanische Westküste in Betracht ziehen, scheint sich zu bestätigen. (Text: HJU - Photo: Google Earth)

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Andoni Sáenz de Buruaga\* & Mark Milburn\*\*

## Notes on the radiocarbon dating of the Tingefuf E-1 goulet (Dougaj, West Sahara)

Keywords: chronology, goulet, Tiris, West Sahara

### Resumen:

La datación AMS-14C de los restos humanos de la inhumación documentada en el túmulo "principal" del goulet de Tingefuf E-1 posibilita situar la construcción del monumento en un momento avanzado de la segunda mitad del II milenio cal. B.C. Un tramo cronológico en el que se registran en la región del Tiris diversas expresiones culturales relacionadas con una naciente Protohistoria bereber.

### Abstract:

The radiocarbon dating of human remains of the funeral documented in the "main" burial mound of Tingefuf E-1 goulet make it possible to situate the construction of the monument at a late time in the second half of the II millennium cal. B.C. A chronological span in which diverse cultural expressions related to a nascent Berber Proto-history was recorded in the Tiris region.

### Zusammenfassung:

Die Radiokarbon-Datierung menschlicher Überreste einer Begräbnisstätte des "hauptsächlichen" Hügels des Tingefuf E-1 genannten Goulets ermöglicht es, das Monument zeitlich in einer späten Phase der zweiten Hälfte des zweiten Jahrtausends v. Chr. (kal.) anzusiedeln. Eine chronologische Spannweite existiert in der Region von Tiris, in der sich verschiedene kulturelle Ausdrucksformen entwickelten, die einer aufstrebenden proto-berberischen Kultur zuzuordnen sind.

### 1. Presentation.

The Tingefuf E-1 goulet is located in the SE quadrant of Western Sahara, in the Tiris region within the territory managed by the authorities of the Sahrawi Arab Democratic Republic (SADR). Its geographical coordinates refer to the following values: X = 655885; Y = 2442335; Z = 303 m a.s.l., located a few kilometers NE of the Dougaj site.

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The monument was discovered by M. Milburn in 2005 and registered by A. Sáenz de Buruaga in 2010 in the "Archaeological Inventory of Tiris" project (Sáenz de Buruaga 2014, no. 215: 392-393). In March 2013, an archaeological survey conducted on the "main" tumulus (burial mound) from which the two lobes of the goulet were derived clearly revealed the funeral function of the specimen (Sáenz de Buruaga & Milburn 2014 and 2016).

An initial attempt of radiometric analysis based on bone collagen was unsuccessful. Years later, the radiocarbon testing of the apatite fraction has produced a satisfactory and chronologically consistent result, finally making it possible to situate the monument on the time scale. This undoubtedly involves major new data which shall help to significantly improve the information about this specimen which we provided at that time; it shall help to clarify the chronology of these particular Saharan lithic monuments, as well as their relationship with the original cultural framework.

## **2. Brief description of the monument and its archaeological survey.**

As we noted at that time, the Tingefuf specimen is defined by two stone segments of lobed design, with a respective perimeter of 47 m, longitudinally separated by an aisle or straight corridor with a double row of blocks, 38 m long with a W.SW-E.NE orientation. The two lobes or "wings" of the goulet start from a flattened burial mound, with a sub-circular floor plan, of approximately 2.50 x 2.00 x 0.40 m, located in the W sector and sitting directly on a rocky dike that extends there from NE to SW (Fig. 1). Around the central section of the corridor, a secondary and partially dismantled lithic structure is conserved with a ring-shaped morphology delimited by a perimeter of blocks, which have a diameter of approximately 7 m and height of 0.30 m. And as complementary data, we highlight that on the internal surface of the "wings", especially the southernmost one, there are different small pieces of quartz intentionally scattered, the majority of which have a whitish colour. (Fig. 2).

On 23rd of March 2013, an archaeological control survey was carried out precisely on this "main" mound with the aim to determine its possible burial nature. A verification that was corroborated by the presence of several bone splinters and part of a human tibia located at a depth of a little more than 0.50 m, immediately below the stone mass -about 0.45 m thickness - and already comprising part of the roof of the infratumular soil; all of them, evidential testimony of the practice of an individual burial *in situ* (Fig. 3). Hence having determined the funeral function of the monument, the archaeological survey was concluded: the long bone was maintained in its original position and

several of the small splinters were collected to carry out eventual laboratory analyses; no other archaeological evidence was found in the excavation process (*cf.* Sáenz de Buruaga & Milburn 2016: 89-90).

### **3. Absolute chronology of the Tingefuf E-1 goulet and some relationships with other monuments.**

An initial attempt of radiometric analysis was conducted at the "Curt-Engelhorn-Center of Archaeometry" of the University of Tübingen (Mannheim, Germany), at the end of 2013; it did not provide positive results due to the absence of collagen in the bone sample.

With the aim to seek an answer to the chronological issue that remained pending, at the end of 2020, we sent the small reserve of bone splinters collected in the excavation to "Poznan Radiocarbon Laboratory" of Adam Mickiewicz University (Poznan, Poland). In this case, the analysis method would be performed by means of an apatite fraction, a resource with which we have achieved highly satisfactory results in that laboratory in recent years, and on this new occasion, it would also be achieved.

Indeed, the obtained AMS-14C dating provided a date, in conventional values, of  $2970 \pm 30$  B.P. (Poz-130807), which in calibrated terms would be adjusted to between 1284-1055 cal. B.C. (with a probability of 95.4%).

Accordingly, the construction of the monument would date back to a late time period in the second half of the 2nd millennium B.C., which can probably be linked to the existence of a Proto-Berber cultural environment in the region. In these time coordinates, it is also fitting to remember the dating obtained from a human skull found in a partially dismantled lithic structure with an incipient rigged construction model, which we located in 2008 on the slopes of the Gleb Tinlluleg (Aguanit) mountain, in the same southern section of the Tiris around 90 km N.NE of Tingefuf, and whose conventional value placed it at  $3020 \pm 30$  B.P., or in calibrated terms between 1320-1250 cal. B.C. (Sáenz de Buruaga 2013: 57). This would support the existence in the area of other particular lithic morphologies for funeral use at the same time, in addition, to certain logical prevailing models of a more "tumular" construction tradition.

At the moment, the Tingefuf E-1 goulet represents the only monument of this type identified in the Saharan Tiris lands and defines one of the southern-most examples of the Western Sahara region. An isolated case which certainly contrasts with the more numerous and varied references documented in more northern regions in this Saharan context: such as in the Saharawi area of Zemmur (Milburn 1974 and 2001) -some of them even excavated, such as the goulet assigned to "Site 338" in Tifariti (Milburn 2010; Ehrenreich & Fuchs

2012)- or in the Wadi Tata area, around the middle section of the Wadi Drâa, in southern Morocco (Delor & Germond 2010).

Specifically, the tumulus excavated in "Site 338" of Tifariti (West Sahara), at approximately 550 linear km NE of Tingefuf, an extremely low structure associated with the western sector of a goulet with modest dimensions, did not seem to contain bone material and it is possible to consider that no burial ever took place in it. A hypothesis that should be considered when we observe how a huge goulet adjacent to it does not seem to have been finished, with a large part of its curvilinear stone layout remaining incomplete and the most stable elements of its structure are defined by a long straight corridor, more than 400 m long, and by a tumulus located in the western sector, which may or may not be contemporary with the rest of the architecture. All the above could reinforce the idea that the complex of stone structures in which the goulet excavated in "Site 338" is articulated was left unfinished, hence it did not manage to carry out the initially foreseen functions.

Nevertheless, the excavation of the slight tumulus of Tifariti, located at the western end of the smallest goulet, provided, among other archaeological evidence, a number of ceramic remains deposited inside the stone structure. The OSL chronometric analysis of 10 of these fragments obtained values between the late 2nd and early 1st millennium B.C., specifically between  $3169 \pm 845$  and  $2006 \pm 305$  B.P., with the vast majority of mean values grouped in the first half of the 1st millennium B.C. (Milburn 2012 and 2014). In this way with the proper reservations due to the major statistical deviation which they involve, we could suggest that, although some of the OSL values of the Tifariti goulet burial mound could converge in the time span provided by the AMS-14C dating of the mound of the Tingefuf E-1 goulet, another significant part of them would reflect a somewhat more advanced chronology, in any case, also culturally framed in the Berber tradition immediately prior to the historical stage.

#### **4. Conclusion.**

The radiocarbon dating of human remains from the burial performed at the "main" burial mound of Tingefuf E-1 goulet suggest that the construction of the monument probably took place in the last quarter of the II millennium B.C.

An accurate chronological interval which in principle, would be compatible with the presence and development of the first cultural manifestations of Proto-Berber environments in this SE sector in Western Sahara. Original archaeological expressions, including several engravings of metal weapons, of undoubtedly Atlasic ancestry, were executed on the surfaces of rocky blocks in several outdoor cave painting stations in the southern area of the Tiris, and

specifically in the geographical environment of Dougaj (Sáenz de Buruaga 2018: 83-89; *id.* 2019: 37ss).

In these particular circumstances, the goulet, as a monumental production, can perhaps also be understood as a timely cultural indicator of a new Berber proto-history in the region. An episode that would take shape in the area throughout the second half of the 2nd millennium B.C. and in the gestation of which relations and cultural contacts with other more northern areas in this part of NW Africa seem to have played a major role. In the specific case of the goulets, this could be corroborated by numerous examples documented in the aforementioned regions of Zemmur, to the north-east of Western Sahara, and other nearby areas in southern Morocco.

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### **Figures:**

- Fig. 1. General view of Tingefuf E-1 goulet. In the foreground, the tumular structure in the W sector of the monument where the archaeological excavation was conducted.
- Fig. 2. In the centre of the image, a secondary lithic structure with a ring-shape morphology, partially dismantled, and on the right and left, pieces of white quartz on the surface of the goulet "wings", especially concentrated with greater intensity in the most southern area (to the right of the photograph).
- Fig. 3. Excavation in the burial mound of the western perimeter of the goulet: in the background and upper section of the image, part of a human tibia with a longitudinal fracture.



Fig. 1

Fig. 2





Fig. 3