Pleistocene Artefacts Inside an Ancient Egyptian Tomb: Lithic Tools from the Courtyard and the Transverse Hall of TT 209, Luxor, Upper Egypt

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The Wadi Hatasun comprises a palimpsest of huge numbers of lithic archaeological remains located there due to the proximity of the Theban Eocene calcareous formation with silicifications, and to the desert processes of deflation and flash floods. The Theban tomb 209 is situated in this wadi. Due to these flooding events, the tomb was virtually filled; this silting process lasted several centuries and concluded approximately two thousand years ago. Within the alluvially deposited sediment, there exists a knapped lithic record with highly varied technical features, alluding to numerous periods of occupation of the wadi. Many of these materials are attributable to the Middle Stone Age. We carried out both lithological and technological analyses in order to characterise this lithic record, and to try to identify the represented technocomplexes and link them with their time frames. The postdepositional sorting of the lithic assemblages on and within the tomb occurred naturally, and thus without any human bias. This offers an opportunity to study a material set representative of the Pleistocene hominid record that can be found on surface all over this area of the Egyptian low western desert, and to point out the value of its necessary preservation.

Artefactos pleistocénicos dentro de una tumba egipcia antigua: instrumentos líticos del patio y la sala transversal de TT 209, Luxor, Alto Egipto

El wadi Hatasun comprende un palimpsesto de un gran número de restos líticos arqueológicos ubicados ahí debido a la proximidad de la formación calcárea eocena tebana con silicificaciones y a los procesos desérticos de deflación y riada. La tumba tebana 209 se sitúa en este wadi. Debido a estos eventos de inundación, la tumba fue virtualmente rellenada; este proceso de colmatación se prolongó durante varios siglos y concluyó aproximadamente hace dos mil años. El sedimento aluvial contiene un registro lítico tallado con una alta variedad de rasgos técnicos, lo que alude a numerosos periodos de ocupación del wadi. Gran parte de este material se atribuye a la Middle Stone Age. En este trabajo, se realiza el análisis litológico y tecnológico para caracterizar este registro e intentar identificar los tecnocomplejos representados y conectarlos con sus marcos temporales. La selección posdeposicional del conjunto lítico sobre y dentro de la tumba ocurrió de manera natural y, por tanto, sin sesgo humano. Dicha circunstancia ofrece una oportunidad para estudiar un material representativo del registro homínido pleistocénico que puede ser hallado en superficie sobre toda esta área del bajo desierto egipcio occidental y para apuntar el valor de su necesaria preservación.

Keywords: Levallois, lithic technology, Middle Stone Age (MSA), Nubian technology, raw materials.

Palabras clave: Levallois, materias primas, Middle Stone Age (MSA), tecnología lítica, tecnología nubia.

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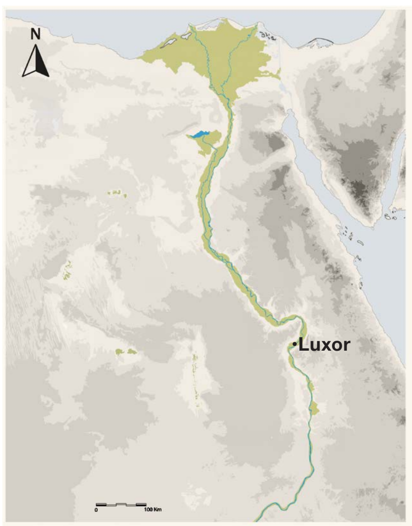

Figure 1. General images displaying the geographic setting of Wadi Hatasun and TT 209. Theban Mountain and Wadi Hatasun seen from the East. Photograph: Proyecto dos cero nueve and J.M. Barrios Mufrege. Luxor satellite image is based on Google Earth, version 10.38.0.0.

The Wadi Hatasun is in the low western desert of Upper Egypt, specifically in the southern foothills of the Theban Mountain (fig. 1), encompassed within the El-Qurna municipality, in the Luxor governorate. The wadi flows south of the remains of the El-Hurubat dismantled hamlet[1] and traverses the area of the necropolis known as South Asasif, just south-east of the Sheikh Abd el-Qurna hill.

1 Molinero Polo *et alii* 2017: 246.

Figure 2. Courtyard and superstructure of TT 209 seen from the South. Photograph: Proyecto dos cero nueve and J.M. Barrios Mufrege.

The Theban tomb 209 (*i.e.* TT 209, fig. 2) is placed in this geographic context. This funerary structure was built for a Nubian official named Nisemro, related to the Twenty-Fifth Dynasty period.[2] However, after a time of disuse, further utilisation during the Persian and Ptolemaic periods is documented.[3]

During and after these use phases, TT 209 was subject to successive inundations, triggered by torrential rains typical of the Egyptian desert pluviometric regime during recent Holocene times.[4] Occasionally, these floods were characterised by their capacity to transport various materials of different nature and origin, resulting in a sedimentary deposit integrated by several stratigraphic units (*i.e.* SU; fig. 3). This ongoing process has gradually filled the tomb, leading to the degradation of the external structure and its eventual burial beneath layers of silt, sand and gravel.

The described phenomena are responsible for the presence of a wide diversity of secondary archaeological remains within a significant portion of the layers identified in TT 209, especially during episodes of heightened precipitation which correspond to the peaks of flood energy. These redeposited objects include ceramics, lithic artefacts, terracotta figurines, and decorative elements, as well as modern replicas of ancient Egyptian items found in the upper SU. These objects eventually became incorporated into the coarse

2 Molinero Polo 2016; Molinero Polo *et alii* 2016: 306.

3 Barahona Mendieta 2017: 21—27; Carballo Pérez and Molinero Polo 2021: 616.

4 Molinero Polo and Soler Javaloyes 2019.

Figure 3. Section of the stratigraphy of TH in the axis east-west, eastern half, showing the complex superposition of sediments, blocks and artefacts –including archaeological lithic assemblages–, that floods introduced in the underground chambers of TT 209. Photographs and montage: Proyecto dos cero nueve and J.M. Barrios Mufrege.

fraction of the alluvial sediments. The extensive chronology of these materials spans various periods of Egyptian history, ranging from Palaeolithic times to the years immediately preceding the expulsion of inhabitants from Nag el-Rasayla, El-Hurubat and Sheikh Abd el-Qurna villages.[5]

Therefore, both the superstructure and the underground chambers, situated on the northern slope and within the bed of the Wadi Hatasun, have served as a repository for sediments mobilised by fluvial and run-off events occurring in the wadi basin in the past three millennia, as well as for a diverse array of archaeological materials from the immediate vicinity of the tomb.

This paper presents the analysis of the lithic assemblages that are part of this record and have been recovered throughout the excavated sequence. The presence of these objects in the site has primarily two origins: the water dynamics of Hatasun, as previously mentioned, and slope processes. Consequently, they appear from the impact of natural phenomena in a heavily anthropogenic context, extending beyond ancient Egyptian times. The significance of their study lies in two aspects: it contributes to clarification of the formation processes of the archaeological sedimentary deposit that covers and fills the mortuary complex; and helps to understand the historic development of the Wadi Hatasun basin.

Undoubtedly, most of this material was transported by natural processes and is thus in a secondary position, as previously noted. This is especially important regarding the Pleistocene archaeological artefacts existing in the wadi. The postdepositional sorting affecting the lithic assemblages present on and within the tomb occurred naturally, and thus without any human bias: this is an opportunity to study a material set representative of the Pleistocene hominin record that can be found on surface all over this area of the Egyptian low western desert.

When examined from this perspective, this study sheds light on the unique evolution of TT 209, but also on the intense historical dynamism experienced by this sector of the Theban necropolis since Pleistocene times.

5 Molinero Polo *et alii* 2017: 261—266.

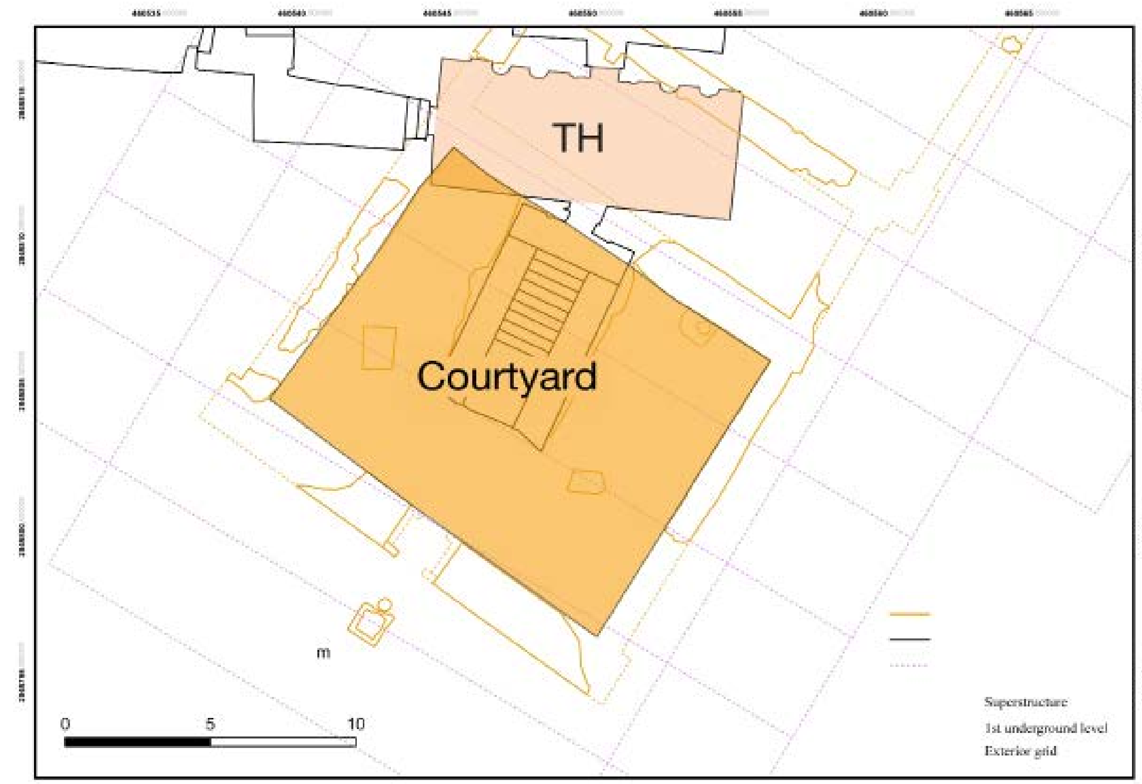

Figure 4. Plan of the courtyard and the transverse hall of TT 209 where the lithic items studied in this article were found. Author: Proyecto dos cero nueve and S. Pou Hernández.

1 | Materials and Methods

A total of 642 archaeological lithic materials from TT 209 have been examined in this study: 454 from the courtyard,[6] and 188 from the transverse hall (table 1; fig. 4). In the case of the courtyard, there has been included the SU 171, which fills a watercourse bed that flows from the middle terrace to the courtyard,[7] and contains a significant number of lithic remains regarding the other SU (n=125). The deposition dynamics of both places are interrelated,

	Lithic elements		Total
	Cores	Knapping products	
Courtyard	55	399	454
Transverse hall	20	168	188
Total	75	567	642

Table 1. Numbers of cores and other knapping products (*i.e.* flakes and blades) coming from the courtyard and the transverse hall.

6 Molinero Polo *et alii* 2017.

7 Molinero Polo *et alii* 2017: fig. 14.

Figures 5a. Bedrock and resedimentation deposits of flint in the Wadi Hatasun.

A: Rounded nodules within the bedrock.

B: Tabular nodules within the bedrock.

C: Colluvial deposit containing flint coming from the dismantling bedrock.

Photographs: Proyecto dos cero nueve and Cristo M. Hernández Gómez.

Figures 5b. Resedimentation deposits of flint in the Wadi Hatasun.

D and E: Wadi Hatasun south terrace where large amounts of scattered both archaeological and anthropogenically unaltered flint can be seen, and detail picture of the accumulation content.

Photographs: Proyecto dos cero nueve and Cristo M. Hernández Gómez.

since some of the alluvial and colluvial deposits covering the courtyard come from above. This is why we have considered to add it to this study. To analyse this lithic assemblage, two analytical approaches within the framework of the technoeconomic perspective are proposed.

The first approach pertains to the lithological conception of the material, which involves studying the raw materials selected by human groups for the manufacture of a wide variety of tools. This study has been conducted by identifying the macroscopic features of archaeological flint, such as: colour; texture; degree of translucency; presence or absence, and abundance or scarcity of inclusions; and cortex characteristics, using some of the nat-

	Raw material		Postgenetic alterations				
	Siliceous limestone	Flint	Patination	Gloss	Permeation	Solar thermoalte-ration	Round-sha-ping
Courtyard	1	453	362	7			
Transverse hall		188	104	1	1	1	1
Total	1	641	466	8	1	2	1

Table 2. Information on raw materials displayed by the lithic assemblages: rock type and postgenetic alterations on flint.

ural siliceous varieties recognised in the Theban mountains as references[8] (figs. 5a–5e).

Additionally, to determine potential sourcing areas, an analysis of the natural marks present on the surfaces of the artefacts has been carried out. These postdepositional alterations result from the postgenetic processes that affected the flint from their formation environments to their human procurement.[9] These marks are the result of erosion, exposure and resedimentation processes of flint, and are identified based on natural shapes, fractures, and the condition of the object surfaces: polish; crash-marks; roundedness; abrasion; permeations; adherences; and, probably, the most common and visible, patination.[10]

The second approach focuses on the technological management of these raw materials, with an emphasis on recognising the manufacturing processes of these tools. The technological interpretation of the assemblage has derived from the analysis of technical features observed on the artefacts, such as butt type, dorsal blank directionality and angle, flaking angle, and retouching characteristics, and the study of the position of each artefact in the operational chain.[11] To develop this analysis, a diacritical scheme of all objects has been created. These schemes allow for the identification of the order and direction of the negative scars and, consequently, the reconstruction of the sequence of technical actions that enable understanding of the knapping strategies.

2 | Results

The lithological and technological analyses performed on these 642 lithic elements recovered in the courtyard and in the TH of TT 209 have provided data regarding the geogenic setting from which they come, the postgenetic processes that affected these items, and the way in which they were manufactured.

2.1 | Raw Materials

The knapped materials that have been studied are mostly flint (*i.e.* 99.84%; table 2). Two main formats have been identified: round-shaped and tabular. The macroscopic characteristics of all the analysed objects coincide with the siliceous varieties recognised in the immediate geotic environment. Only one item (*i.e.* 0.16%) recovered within the SU 17,

8 King *et alii* 2017.

9 Fernandes and Raynal 2006, 2010.

10 Howard 2002; Pawlikowski and Wasilewski 2002; Pawlikowski, Sęk and Sitarz 2014.

11 Boëda, Geneste and Meignen 1990; Guilbaud 1995.

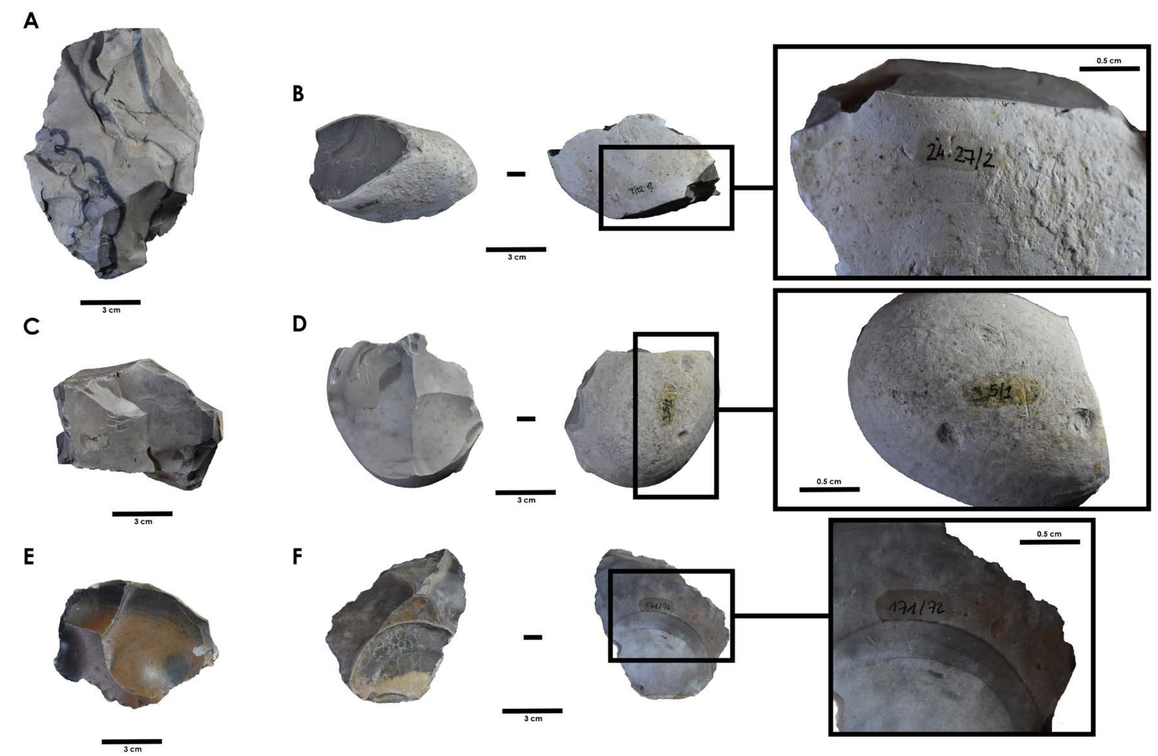

Figure 6. Examples of lithic items from the studied assemblages. The main characteristics of the flint varieties from the El-Qurn formation can be seen in most of them.

A: Flint nodule with biogenic structures.

B: Flint nodule displaying crash-marks, abrasion, and adherences on the cortex.

C: Flint nodule with exposed internal fissures and initial patination.

D: Flint nodule displaying cortical crash-marks, abrasion, and solar domes.

E: Flint nodule with heavy patination.

F: Flint flake displaying biogenic structures, both initial and developed patination, and solar domes.

Photographs: Proyecto dos cero nueve and J.M. Barrios Mufrege.

located in the courtyard, was crafted on siliceous limestone, which is also relatively abundant among the lithological setting of the Wadi Hatasun.

A significant portion of the flint assemblage displays macroscopically visible postgenetic alterations (*i.e.* 74.57%; see table 2). This phenomenon is observed on both natural surfaces and those created by the knapping processes (fig. 6). It involves patination, gloss, signs of solar thermoalteration, such as thermal domes, and mineral or organic subcortical permeations. In most cases, there are postgenetic transformations of the lithological material resulting from the exposure of flint to weathering. Abrasion signs, such as scratches and tiny impact marks, are very frequent. These have been determined as being

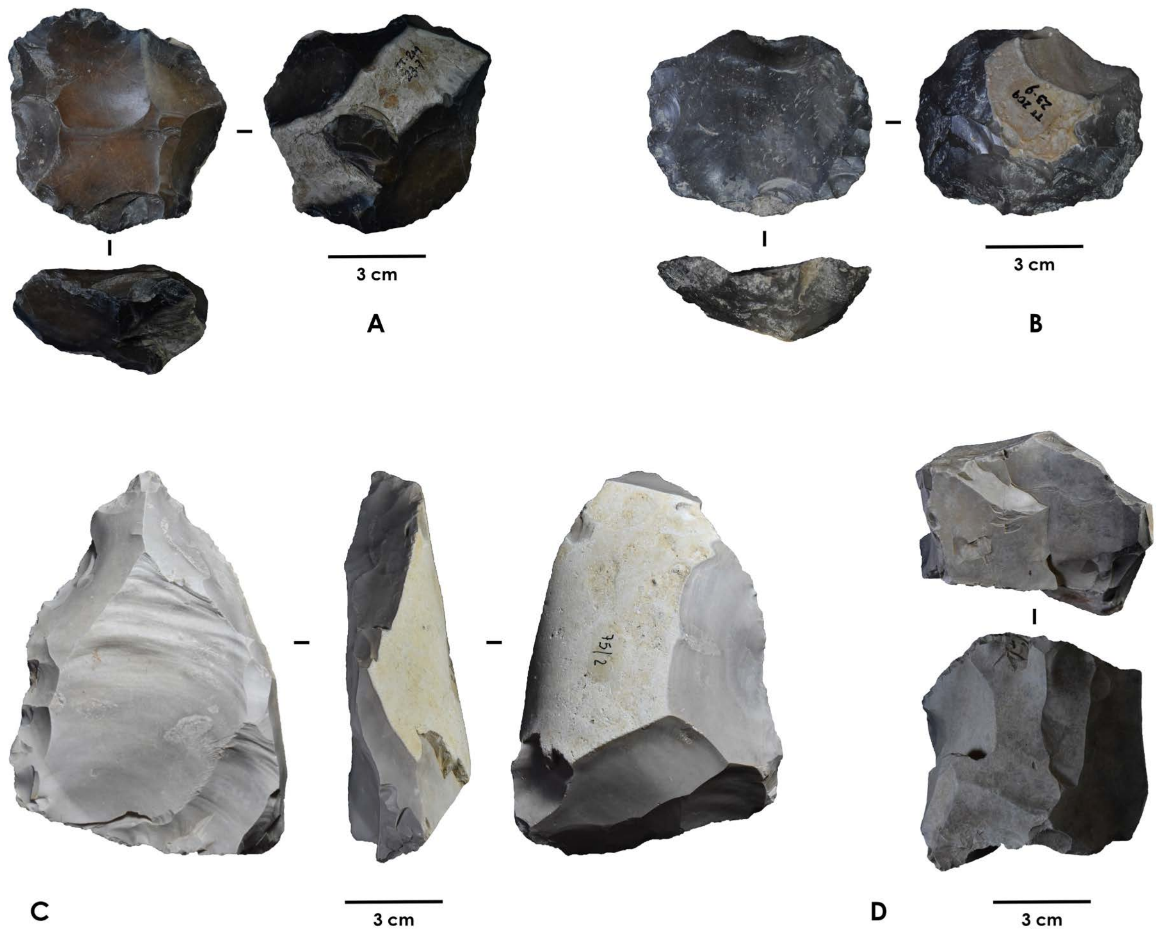

Figure 7a. Several examples of cores within the studied assemblages.
A: Recurrent centripetal core based on the Levallois conception.
B: Preferential core based on the Levallois conception.
C: Point core based on a Nubian knapping strategy.
D: Unipolar core of elongated products.
Photographs: Proyecto dos cero nueve and J.M. Barrios Mufrege.

related to weathering exposure in desert environments.[12]

In contrast to the intense surface alteration experienced by these artefacts, the condition of the edges and the borders framing the flaking blanks is generally fresh (see fig. 6). There are no apparent signs of mechanical wear, such as roll-marks, impact damage or chipping, so

12 Chu, Thompson and Hosfield 2015.

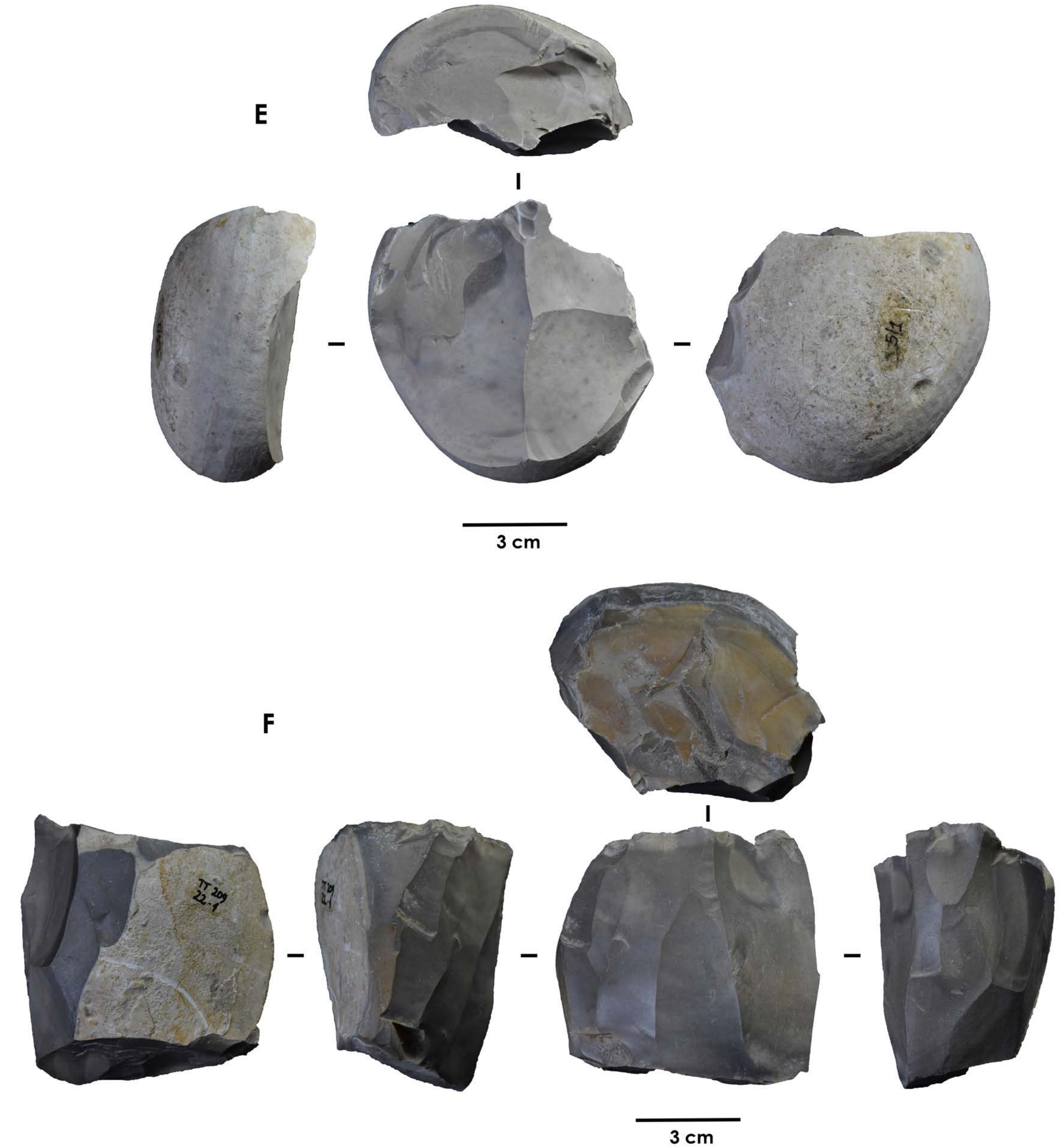

Figure 7b. Several examples of cores within the studied assemblages.
E: Recurrent orthogonal core with scarce preparation of the striking platforms.
F: Unipolar semiprismatic blade core.
Photographs: Proyecto dos cero nueve and J.M. Barrios Mufrege.

it can be inferred that the distance that the material may have travelled from its original deposition site to the tomb was not sufficiently wide or that the detrital processes were not intense or long-lasting enough to erode such elements. Therefore, it can be deduced that the archaeological sources of these materials are not likely to be very distant.

2.2 | Flake Production

By observing the cores and the knapping products, several knapping strategies have been identified: different Levallois modalities, and other polyhedral strategies unrelated to the former. Regarding the Levallois modalities, these configure cores characterised by a surface-centred exploitation of raw materials, based on an architectural design in which the components are hierarchically structured and do not exchange their functions throughout the raw material exploitation process.[13] These cores generally consist of a peripheral striking platform and an adjacent exploitation surface. From this surface, a series of flakes is removed, utilising various knapping strategies.

The Levallois cores recovered in TT 209 consistently appear in nodular forms, which are much better suited to the technical requirements of Levallois knapping modalities than tabular flints. These cores typically have a cortical base, and, in some instances, this natural surface can account for up to half of the item.

Among the studied Levallois cores (fig. 7), the most well-represented knapping modality is the recurrent centripetal one (*i.e.* 14 cores), but there are also documented cores of preferential knapping (*i.e.* 4 cores), aimed at obtaining a primary flake that removes almost the entire exploitation surface, and recurrent unidirectional and bidirectional cores (*i.e.* 4 and 5 cores respectively). There is also one single core resulting from a Nubian knapping sequence. The management of its lateral convexities was carried out by means of secant, short centripetal extractions. Additionally, there is a proximal longitudinal blank made before the preferential exploitation (see fig. 7).

The polyhedral cores receive their name from the morphology that they acquire because of the technical reduction process applied to the raw material. These cores are the outcome of a surface exploitation that affects various faces of the selected flint mass. There is no hierarchy of functions for the different parts of the core, as it is recognised in Levallois modalities. In the case of polyhedral cores, all faces have functioned interchangeably as flaking surfaces and striking platforms. In the assemblages recovered in the courtyard and in the transverse hall, we have identified one core like this. In regards to other non-Levallois schemes, we have recognised nine cores on flakes.

Out of the 512 described flakes, the technological origin could be recognised in 402 specimens (*i.e.* 78.52%). Typically, the technical classification of products relies on their own features, as well as the material reference context, as the latter contributes to the differentiation in cases of common characteristics within distinct operational sequences. The taphonomic influence on the lithic assemblage of TT 209 precludes this latter consideration, so the 402 classified specimens are those of which there is no doubt regarding their technical attribution (fig. 8).

From all these flakes, fifteen (*i.e.* 3.73% of the technologically diagnostic flakes) show retouching on their edges. They are mostly simple (*i.e.* 66.67%), while the rest are abrupt, and all of them are direct, except for one. We have also observed the presence of a flake whose ventral face exhibits flat-angled, unidirectional negatives (see fig. 8). There is no retouch made on the flake, but this lowering is located in the proximal area, and thus opposed to a transversal edge wearing chipping.

A total of 154 flakes have been classified as cortical. These flakes originate from various processes, primarily from debitage, preparation, and maintenance of striking platforms. Additionally, some elements within this group are cortical flakes produced throughout the entire reduction sequence, originating from

13 Boëda 1993.

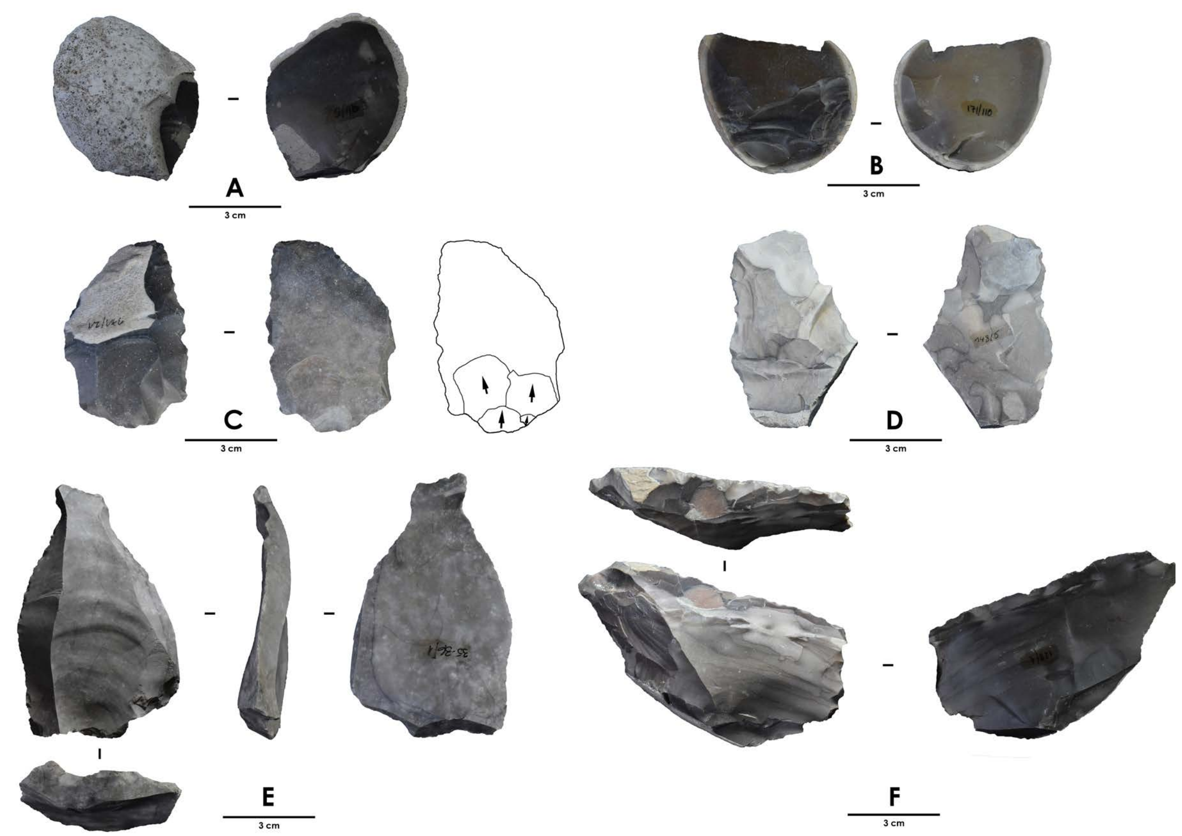

Figure 8. Several examples of flakes within the studied assemblages.
A: Cortical flake.
B: Semiperipherally cortical-backed flake with recurrent unidirectional blanks in the ventral face.
C: Flake with recurrent unidirectional dorsal blanks, and four ventral extractions, which can be observed in the drawing alongside their directionality. Drawing: A. Mayor.
D: Thick and invasive flake with centripetal blanks.
E: Surpassed Nubian preferential flake.
F: Thick flake with a distal transversal retouch.
Photographs: Proyecto dos cero nueve and J.M. Barrios Mufrege.

unipolar knapping sequences. In such operational sequences, a significant number of flakes with lateral, distal, or lateral-distal cortex are generated throughout the process, as it appears that the cores are not subjected to a prior cortex removal phase.

The production of flakes through Levallois knapping modalities is supported by 113 specimens. 108 of them correspond to recurrent centripetal sequences (table 3), and one has been classified as a Nubian preferential flake. In other words, the latter is a deliberate product that trims almost the entire exploitation surface of the core following a Nubian knapping scheme. This flake, coming from SU 23, located in the courtyard, measures nearly 7 cm in length, 5 cm in width, and has a maximum thickness of 1.70 cm (fig. 9). It features a flat platform and six centripetal negatives on the dorsal face.

Approximate cortical proportion (%)						
	0	>0-25	>25-50	>50-75	>75-<100	100
Courtyard	84	157	43	18	12	42
Transverse hall	33	61	13	9	15	25
Total	117	218	56	27	27	67

Platform type								
	Cort.	Dihe.	Face.	Line.	Flat	Punc.	Supr.	Frac.
Courtyard	69	8	17	23	173	14	10	44
Transverse hall	29		9	12	72	5	3	26
Total	98	8	26	35	245	19	13	70

Dorsal blank directionality					
	Bid.	Unid.	Cen.	Ort.	Und.
Courtyard	24	162	89	32	79
Transverse hall	11	66	19	18	42
Total	35	227	108	50	121

Table 3. Main attributes of cores, separated by flake cores, the technological ascription of the latter, and blade cores. Lat.: lateral; up. res.: upper residual; per.: peripheral; sem.: semiperipheral; op.: opposed; up.: unipolar; mp.: multipolar; cent.: centripetal; bid.: bidirectional; unid.: unidirectional; multid.: multidirectional; RC: recurrent centripetal; RU: recurrent unidirectional; RB: recurrent bidirectional; P: preferential; undet.: undetermined.

Finally, non-Levallois production is documented in 132 flaking products. Among them, 83 have between two or four unidirectional scars on the dorsal face, with predominantly plain platforms (see table 3). The remaining three flakes were obtained from the ventral face of other thicker flakes.

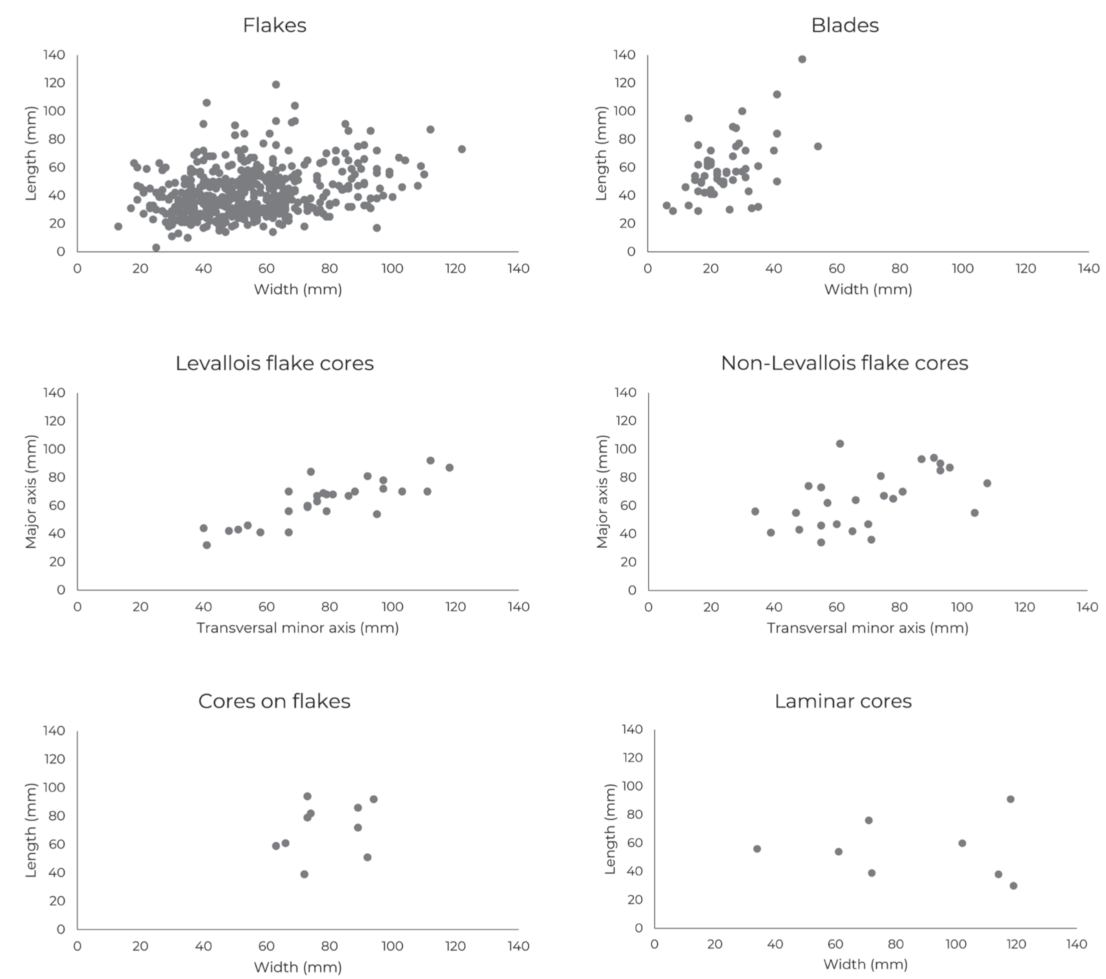

Figure 9. Scatter charts displaying the length-width relation of the different components of the studied assemblages: flakes, blades, cores following the Levallois conception, cores that do not, laminar cores, and cores on flakes.

2.3 | Blade Production

The laminar set constitutes the least represented assemblage among the overall lithic material. It results from a volumetric approach into the raw material reduction process and, from a conceptual standpoint, it involves the application of knapping principles that are quite distinguishable from those described in the previous cases,[14] even if compared to the Levallois exploitation oriented to produce elongated flakes.

Among the laminar cores documented in TT 209 (see fig. 7), no tabular flint nodules have been identified. All of them have been

14 Geneste 1992.

	Flake Cores																		
	Approximate cortical proportion (%)						Cortex location				Polarity					Directionality			
	0	>0-25	>25-50	>50-75	>75-<100	100	Base	Lat.	Up. res.	Both	Per.	Sem.	Op.	Up.	Mp.	Cent.	Bid.	Unid.	Multid.
Courtyard	3	12	17	8	6		29	11	1	1	21	19	3		1	15	12	15	1
Transverse hall	1	2	8	4	5		7	12	1		9	7		2		3	1	13	
Total	4	14	25	12	11		36	23	2	1	28	26	3	2	1	18	13	28	1

	Technological Adscription Of Flake Cores									
	Levallois				Non-Levallois				Kombewa	Undet.
	RC	RU	RB	P	Centripetal	Unid.	Bid.	Multid.		
Courtyard	12	3	5	4	1	9	1	1	6	4
Transverse hall	2	2			1	8	1		3	3
Total	14	5	5	4	2	17	2	1	9	7

	Blade Cores																		
	Approximate cortical proportion (%)						Cortex location				Polarity					Directionality			
	0	>0-25	>25-50	>50-75	>75-<100	100	Base	Lat.	Up. res.	Both	Per.	Sem.	Op.	Unip.	Mp.	Cent.	Bid.	Unid.	Multid.
Courtyard	1		3	1	1		1	3		1	1		1	4			2	4	
Transverse hall																			
Total	1		3	1	1		1	3		1	1		1	4			2	4	

Table 4. Approximate cortical proportion, platform type, and directionality of dorsal blanks of the flaking products contained in the studied assemblages. Cort.: cortical; dihe.: dihedral; face.: faceted; line.: linear; punc.: punctiform; supr.: supressed; frac.: fractured; bid.: bidirectional; unid.: unidirectional; cen.: centripetal; ort.: orthogonal; und.: undetermined.

	Approximate cortical proportion (%)						Platform type								Dorsal blank directionality	
	0	>0-25	>25-50	>50-75	>75-<100	100	Cort.	Dihe.	Face.	Line.	Flat	Punc.	Supr.	Frac.	Bid.	Unid.
Courtyard	27	14	1			1	4		5	1	23	1		9	7	36
Transverse hall	5	6	1						2	1	6	1		2	1	11
Total	32	20	2			1	4		7	2	29	2		11	8	47

Table 5. Approximate cortical proportion, platform type, and directionality of dorsal blanks of the laminar products contained in the studied assemblages. Cort.: cortical; dihe.: dihedral; face.: faceted; line.: linear; punc.: punctiform; supr.: supressed; frac.: fractured; bid.: bidirectional; unid.: unidirectional.

fashioned from round-shaped nodules. They feature a single striking platform and a system for creating longitudinal convexities through the configuration of lateral crests. These cores exhibit prominent metric characteristics, often exceeding 10 cm in length (see fig. 9). Consequently, the blades produced from these cores can attain considerable dimensions.

Some laminar cores are characterised by possessing an inclination of the striking platform and a configuration that correspond to this knapping strategy, but without careful preparation of the convexities. The natural morphology of the nodules is utilised, but neither the flanks nor the distal end are prepared. The consequence of these flint exploitation dynamics is the creation of significant knapping errors: the laminar products are irregular and have not completed their trajectory, resulting in hinged negatives that hinder the continuous management of the nodule.

Cores displaying these characteristics are better suited for schemes that are not prismatic, but that allow volumetric unidirectional exploitations. This type of technical strategies is not exceptional within the lithic assemblage of TT 209 (table 4), as there are other examples that illustrate it.

The knapped products from this kind of exploitation exhibit wide morphometric variability, since there is no standardisation in the production process. These items range from elongated products to shorter flakes. A significant portion of the products generated through this knapping system retains cortex throughout the entire reduction sequence, because the cores are usually not subjected to prior cortex removal phases.

Most of these products have been obtained with a hard hammer, as indicated by the prevalence of plain platforms (*i.e.* 29), which are relatively thick and have marked bulbs. Faceted (*i.e.* 7), cortical (*i.e.* 4), linear (*i.e.* 2), and punctiform (*i.e.* 2) platforms are scarce (table 5; fig. 10). In metric terms, the size of these blades is noteworthy. Many of them measure between 5 and 7 cm in length, at least for twenty-two specimens. However, eleven elements were documented with a longitudinal axis exceeding these dimensions, between 7 and 10 cm, and fourteen were smaller, measuring between 3 and 5 cm in length (see fig. 9).

These data align with the metric characteristics of the predominant flint nodules in the vicinities and, above all, with the ample availability of raw material.[15] It is unknown

15 Dupuis *et alii* 2011; King *et alii* 2017.

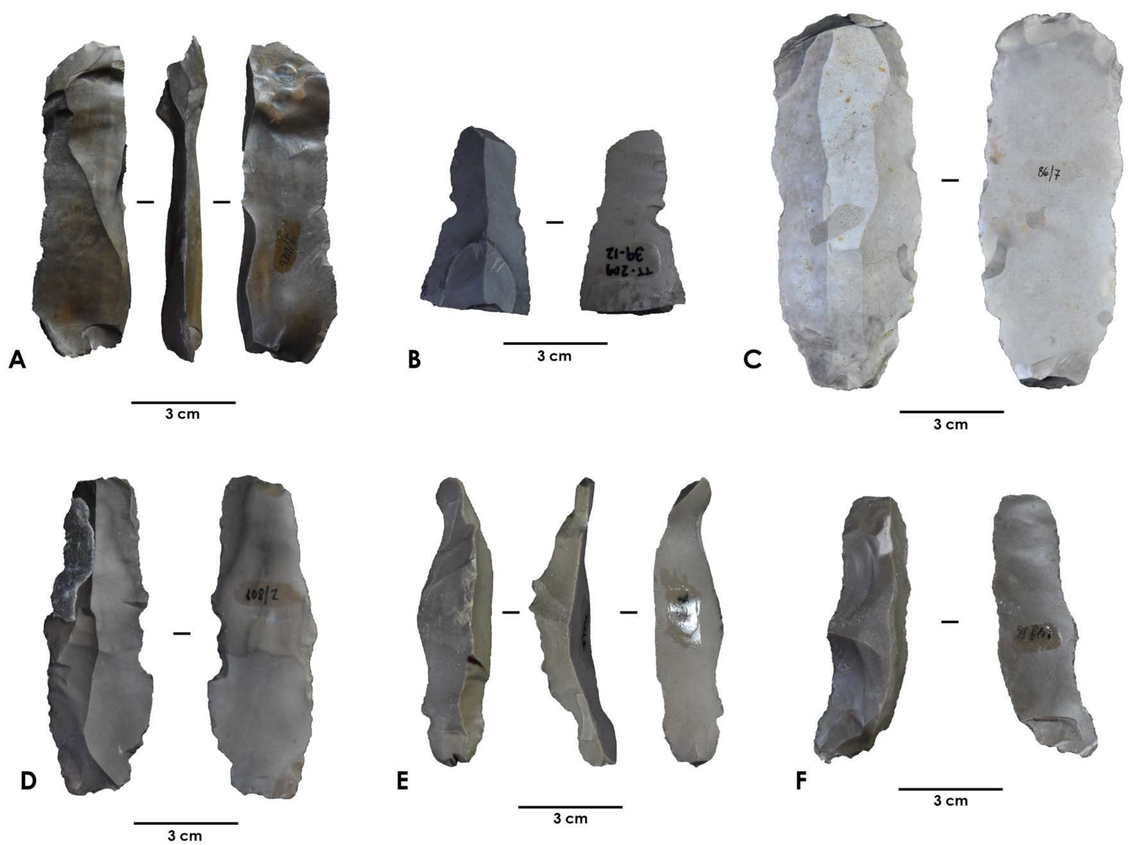

Figure 10. Several examples of blades within the studied assemblages.
A: Blade preserving part of the percussion platform.
B: Distal fragment of a blade.
C: Blade with a distal retouch on the ventral face.
D: Blade preserving a partial cortical back.
E–F: Laminar crests.
Photographs: Proyecto dos cero nueve and J.M. Barrios Mufrege.

to what extent the secondary origin of the lithic record, shaped as a result of local phenomena like flooding and runoff, may bias the technical and even morphometric data of the assemblage.

Lastly, it is worth noting that most of the blade items originate from stages of full production. Only four crests have been documented as evidence of the preparation and reconfiguration phases. The rest of the blade blanks consistently exhibit between two and three parallel negatives on the dorsal surface, with some specimens even having up to six scars on the dorsal face.

In a lithic assemblage such as the one described in TT 209, characterised by its secondary position and, therefore, where each specimen is an individual that cannot be linked to the original operational chain, it is challenging to confidently assign the technological genesis of the blades in all cases. This is because there can be morpho-

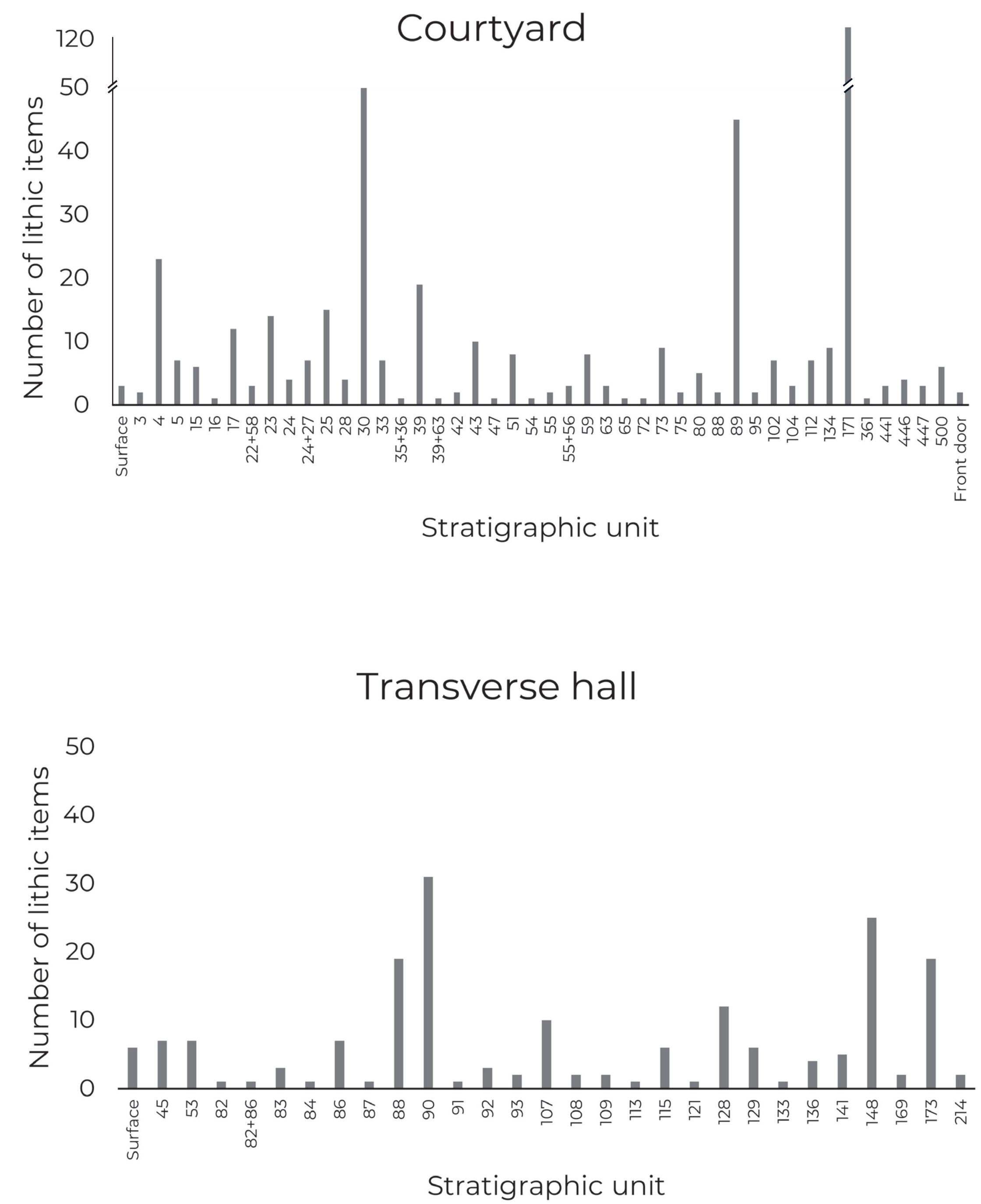

Figure 11. Bar charts displaying the numbers of flint artefacts by stratigraphic unit.

logical overlap between blades obtained through prismatic sequences, and elongated products knapped through unipolar procedures. Prismatic blades are produced by laminar knapping sequences, while elongated flakes are produced by unidirectional or unipolar knapping sequences.[16]

3 | Discussion

The lithic record recovered in the courtyard and in the transverse hall of TT 209 integrates a heterogeneous and chronologically discontinuous assemblage of lithic objects in secondary position. They correspond to different technological traditions and chronological contexts. The flooding processes that filled and buried the tomb, when the great Theban necropolis had not yet lost its role as an active funerary landscape,[17] explain the accumulation mechanisms that gave rise to this lithic assemblage from a taphonomic perspective.

These occurrences are exemplified by clast-based sediments composed of gravel, angular limestone clasts, and blocks, as seen in SU 88, 90 or 148 of the transverse hall, as well as in SU 4, 30, 89 and 171 of the courtyard (fig. 11 and see fig. 3). These are the units where the greatest amounts of flint artefacts can be found, which enables us to associate the floods with the largest inputs of archaeological material. Sometimes, these sediments have been deposited along their longitudinal axis, exhibiting an internal organisation characterised by horizontal laminations. Alternatively, they may display a random arrangement with a massive structure. These sediments possess a greyish colour and a loose consistency. They usually exhibit a lenticular morphology and often feature an erosive contact with the underlying unit, resulting in the formation of small channels. As a consequence, their extension does not occupy the entire surface of the chambers where they manifest.

Thus, the archaeosedimentary sequence of TT 209 has evolved into an intriguing pluviometric archive spanning the last three thousand years in this Egyptian region. Furthermore, it encompasses an archaeological record displaced from its primary position, wherein knapped flint assumes a significant role. Most of the flint exhibits signs of macroscopic alteration, a phenomenon evident on both natural surfaces and those generated by the knapping processes. These alterations manifest as patina, soil gloss, and indicators of natural thermal alteration. In all instances, these postgenetic transformations of lithological material result from the exposure of flint to weathering processes.

Such features support the hypothesis that the knapping processes significantly predate the deposition of the artefacts in the stratigraphic sequence of TT 209. Materials exhibiting these surface alterations remained exposed to intense weathering effects typical of desert environments, including extreme sun exposure, significant thermal fluctuations, or deflation, for a duration that is challenging to precisely determine, but undoubtedly of considerable length before being transported by flash floods and runoff to the funerary building under consideration.

In fact, in relatively flat areas connecting the alluvial plain with the escarpments of the Theban Eocene limestone formation, accumulations of flaked lithic material with lithological and technological characteristics similar to those recovered in TT 209 have been identified. This constitutes a record with limited stratigraphic and chronological references, yet its technological features could shed light on historical processes associated with this geographic context since Pleistocene times, likely extending back to at least the Upper Pleistocene age.

It is noteworthy that this area is situated along the fundamental corridor and habitation zone of Pleistocene human presence in the northeastern African area.[18] In this sense, most of the flakes and especially the recurrent unidirectional, recurrent centripetal and preferential cores recovered in TT 209, which have been considered as representatives of the Levallois conception, are indicative of the lithic production linked with the Middle Stone Age (*i.e.* MSA). Furthermore, some laminar objects point to the existence of the Later Stone Age (*i.e.* LSA) or Upper Palaeolithic in the area of the Wadi Hatasun, as well as in ancient Egyptian contexts.

Many MSA archaeological sites documented in various areas of the nearby Luxor, Qena and Sohag governorates, such as those in Taramsa,[19] Nazlet Khater,[20] Nazlet Safaha,[21] or Abydos,[22] are associated with the acquisition and exploitation of Eocene flint[23], sourced from the limestone bedrocks that flank the alluvial plain on the western bank of the river, forming the geological unit known as the Theban formation. The erosive activity on the limestone formation has released flint nodules from the host-rock, incorporating them as detrital material into the colluvial and alluvial deposits found in the vast plain and creating a landscape rich in this raw material.

The presence of this geotic resource, combined with the availability of biotic resources related to the nearby river, accounts for the high frequency of visitation by groups of hunter-gatherers during the MSA. The Wadi Hatasun is, indeed, one of the areas where flint exploitation by ancient hunter-gatherers was a prominent activity; similar activity can be observed in the Deir el-Bahari area,[24] which is close to South Asasif. The entire flat platform connecting the funerary area to the mountain foothills and slopes is dotted with knapped flint (see figs. 5d and 5e), and the assemblage that we have studied in this paper was part of it before being transported naturally.

It is difficult to determine a precise chronological frame of these materials recovered in TT 209 based solely on technological criteria. However, within the assemblage, there are certain lithic elements that could serve as a kind of chronological markers: the products of Nubian Levallois technology (see fig. 7).[25] These artefacts obtained through this technology could be chronologically located along the marine isotope stages (*i.e.* MIS) 5 and 4, based on the chronometric data obtained by other researchers in nearby archaeological contexts with evidence of this technocomplex.[26]

16 Moncel 1996.
17 Molinero Polo *et alii* 2017.
18 Vermeersch 2001, 2006, 2009, 2010; Wurz and van Peer 2012; van Peer 2016; Leplongeon, Goder-Goldberger and Pleurdeau 2022.
19 van Peer, Vermeersch and Paulissen 2010; Vermeersch 2023.
20 Leplongeon and Pleurdeau 2011.
21 van Peer 1991; Vermeersch, Paulissen and van Peer 1995.
22 Olszewski and Adelsberger 2023.
23 Otte *et alii* 2002; Vermeersch, van Peer and Paulissen 2002a, 2002b, 2002c; van Peer and Vermeersch 2007.
24 Drobniewicz and Ginter 2019, 2020.
25 Olszewski *et alii* 2010; Hallinan *et alii* 2022.
26 Oron *et alii* 2024: 2.

Taking into consideration this technological aspect and the fact that the population density in this area may have experienced a significant decline between MIS 4 and 3 due to intense aridification,[27] it might be hypothesised for future research that the MSA occupation in the Wadi Hatasun may date back to MIS 5 or 4. If we pay attention to the chronometric data of other contexts that might be older, even if the ascription of their so-called Nubian Levallois products has been doubted,[28] these chronologies may go back even further.

Although a specific chronological frame has not been attributed to it, there are also other elements within this assemblage related to a flaking strategy that, nevertheless, has been associated with the MSA: the Bahari technique (see figs. 7 and 8). This technique involves the production of circle-like, flat, and thick flakes, taking advantage of the morphology of nodules from the Theban Eocene formation.[29] These artefacts have been found together with numerous morphotypes characteristic of the MSA, leading to the attribution of this technique to the MSA as well. However, the site that exemplifies this technique (*i.e.* the 21b site in Deir el-Bahari, Luxor, eponymous governorate, Upper Egypt) is a palimpsest of many archaeological materials exposed to the surface due to alluvial and deflation processes, and also contains other more recent prehistoric and historic records, just as the case of the Wadi Hatasun. This is why the MSA ascription must be contemplated cautiously.

Other technical strategies and technological methods and conceptions are represented in the studied assemblage by parts of the material, such as the laminar products (*i.e.* blades or cores). It is difficult to chronologically ascribe these laminar and non-Levallois elongated artefacts, due to their secondary position, and to the extensive duration of the application of these methods. However, there is an assemblage of blades hardly affected by desert patina, produced through prismatic knapping strategies, obtained through hard percussion, and using convexity-recovery procedures based on the manufacture of crests that might be similar to those found in Nazlet Khater 4.[30] This assemblage, alongside that of Taramsa 1,[31] is critical to characterise the emergence of LSA or Upper Palaeolithic in the Nile valley, and the Wadi Hatasun might add more evidence into this debate.

Some undetermined lithic objects do not match the Pleistocene record. The story of these objects must be found in the wide use of the wadi occurring throughout thousands of years after MIS 5, across prehistoric and historic times, including the periods during which this area worked as a necropolis. Its position near the Nile alluvial plain, and the abundance and easy availability of highly knappable flint has to be taken into consideration in order to establish this area as a key space for understanding the socioeconomic processes concealed in the palimpsest of human occupations happening in this region. Therefore, TT 209 and its alluvially originated deposit work as an archive with which we can comprehend the complexity of the mechanisms that shaped the human movements and lifeways of the populations that inhabited this region of the Nile valley in the past.

27 Leplongeon and Pleurdeau 2011: 217.
28 Groucutt 2020: 58—60.
29 Drobniewicz and Ginter 2020; Osypińska *et alii* 2020.
30 Leplongeon and Pleaurdeau 2011.
31 Vermeersch 2023.

Conclusions

The lithic assemblage recovered in the stratigraphic deposit of the courtyard and the transverse hall of TT 209 is a clear testimony of the complex human history that took place in the Hatasun. As a consequence of the important hydrological activity experienced by this wadi in the last millennia, the sedimentary fill of the tomb is structured as an archaeological palimpsest. It comprises lithic materials spanning diverse chronological periods, revealing two crucial historical dimensions. Firstly, it attests to the antiquity of human presence in the South Asasif geographic context. Secondly, it underscores the significance of flint in comprehending the role played by human interactions in this sector of the west bank of Luxor, extending back to at least throughout the Upper Pleistocene age.

The lithic production distinctive of the MSA, as elucidated in this study, facilitates the inclusion of the Wadi Hatasun within the cohort of archaeological sites showcasing substantial human occupations likely associated with the Nile basin, which possesses many sites representative of the population dispersals that took place especially between MIS 6 and 5. Additionally, we have also found archaeological record that could be linked to those prismatic knapping strategies associated with the emergence of the LSA or Upper Palaeolithic in the region. Ongoing analysis of surface lithic assemblages, prevalent in the wadi across diverse alluvial and colluvial deposits, promises to shed light on this early chapter of human history in Egypt.

Furthermore, the data presented herein reveal that the exploitation of the abundant flint from the Theban formation at the base of the Sheikh Abd el-Qurna mountain transcended the Pleistocene period. Knapping activities appear to have had a recurrent presence in this space, persisting even after its transformation into the Theban necropolis: flint supplying and knapping activities were developed simultaneously with the funerary use of this geographic setting. This demonstrates the importance of this kind of archaeological record, even when it is in secondary position as in the case study presented here, for drawing a full picture of the historical dimension of the Nile west bank. However, this record is also very fragile due to its surface position, making it especially vulnerable in relation to its integrity and preservation.

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