

# 1 Tool types and the establishment of the 2 Late Palaeolithic (Later Stone Age) 3 cultural taxonomic system in the Nile 4 Valley

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## 13 Abstract

14 Research on the prehistory of the Nile Valley has a long history dating back to the  
15 late 19<sup>th</sup> century. But it is only between the 1960s and 1980s, that numerous cultural  
16 entities were defined based on tool and core typologies; this habit stopped after the  
17 1980s when the region saw an interruption of research on the later Palaeolithic  
18 periods. Many of the cultural entities of the later prehistory in the Nile Valley (Late  
19 Palaeolithic [LP]) were defined based on different types of cores, backed pieces and  
20 truncations. These types often relied on subjective shape criteria, using a non-  
21 standardised vocabulary, making comparisons with new material or recent reanalysis  
22 of older assemblages difficult. In the Nile Valley, some LP assemblages have been  
23 recently re-analysed but factors of lithic variability in the LP remain poorly  
24 understood and may be clouded by the use of a too rigid taxonomic cultural system.  
25 This study aims to explore the influence of the definitions of cultural entities on  
26 current research and the consistency of their definitions, in order to maximise  
27 comparability between previous and recent research data.

28  
29 **Key-words:** Lithic Taxonomy, History of prehistory, Late Palaeolithic, Nile Valley  
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## 31 1. Introduction

32 North-Eastern Africa is a key region in research related to hominin dispersals

34 within, out of and back-into Africa, with the River Nile forming a ‘natural’ way out  
35 of Africa from Eastern Africa (e.g., Garcea 2016; Van Peer 1998; Vermeersch 2001;  
36 A. Leplongeon 2022b). However, and perhaps paradoxically, the archaeological  
37 record of the Nile Valley has rarely been subject to systematic comparisons with  
38 other regions of the African continent (e.g., but see A. Leplongeon et al. in press;  
39 A. Leplongeon and Goring-Morris 2018). This article seeks to shed light on some  
40 of the reasons for this state of affairs, and particularly to what extent the history of  
41 research on the later Pleistocene archaeology of the Nile Valley has followed a  
42 unique trajectory, that may have contributed to a lack of comparability of  
43 archaeological data produced during the 20<sup>th</sup> century in the Nile Valley and other  
44 regions. Studying the historical and scientific context of how the first cultural  
45 taxonomies were constructed in the Nile Valley may highlight biases that still have  
46 an impact on the use of these taxonomies and current interpretations of the  
47 archaeological record.

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49 In the Nile Valley, the cultural taxonomy remained quite fixed since the 1960s,  
50 despite being based on ways to analyse lithic artefacts, that are somewhat different  
51 from current approaches to lithic data. This article discusses the scientific context  
52 of these (dis)continuities in the cultural taxonomy of the Nile Valley, focusing on  
53 the later Palaeolithic taxonomic framework, and provides avenues of thoughts on  
54 how to overcome biases stemming from it.

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#### 55 *A note on the Late Palaeolithic versus Later Stone Age terminology*

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57 *A note on the Late Palaeolithic versus Later Stone Age terminology*  
58 A long-standing debate exists over which terminology should be used in  
59 Northern Africa, where historically the European terminology (Middle and  
60 Upper Palaeolithic, Epipalaeolithic or Mesolithic, Neolithic) has  
61 predominated. Some researchers argue that the use of this terminology leads  
62 to biased interpretations of the archaeological record, where similarities with  
63 the European record are inferred rather than demonstrated (Garcea 2004b;  
64 2004a; 2009; Kleindienst 2001; 2006; Dibble et al. 2013), and that the  
65 Africanist terminology Stone Age should be favoured. In addition, different  
66 labels for microlithic industries of the end of the Pleistocene in North Africa  
67 have been used, leading to a lack of comparability, so that researchers  
68 propose to group them under the term Later Stone Age (Hogue and Barton  
69 2016). While this terminology appears to be now more and more adopted  
70 (e.g., Barton et al. 2013; Inglis et al. 2018; Bouzouggar, Humphrey, and  
71 Barton 2020), a consensus has however not been completely reached yet  
72 (e.g., Poti and Weniger 2019). Interestingly, in Northeastern Africa, the use  
73 of the label ‘Later Stone Age’ for the industries of the end of the Pleistocene  
74 is still rare (e.g., Kleindienst et al. 2020; Garcea 2020), with some researchers  
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79 arguing for the upholding of the European terminologies due to the actual  
80 similarities with the Eurasian record, for the Upper Palaeolithic for example  
81 (Van Peer and Vermeersch 2007; Wurz and Van Peer 2012; Vermeersch 2020;  
82 but see A. Leplongeon and Pleurdeau 2011). In light of studies showing that  
83 the Late Palaeolithic industries of the Nile Valley seem to mainly represent  
84 local developments with few potential links with the North-Western African  
85 or Central African Later Stone Age (Close 1978; Marks 1968b; F. Wendorf  
86 1968b; Schild and Wendorf 2010), and no demonstrated link with the  
87 Levantine Epipalaeolithic (A. Leplongeon and Goring-Morris 2018), the  
88 general adoption of the Later Stone Age terminology for the North-Eastern  
89 African industries at the end of the Pleistocene appears warranted. As this  
90 paper approaches the topic of taxonomy through an historical lens, the  
91 terminology ‘Late Palaeolithic’ is however kept throughout for consistency.

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## 94 2. Cultural taxonomy during the 95 early 20<sup>th</sup> century (before WWII)

### 96 2.1. The Upper and Late Palaeolithic of the 97 Nile Valley during the first half of the 20<sup>th</sup> 98 century

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100 At the end of the 19<sup>th</sup> century, prehistoric research in Egypt is at the end of a heated  
101 debate opposing Egyptologists and Prehistorians over the antiquity of stone artefacts  
102 found in the Nile Valley and adjacent deserts. It is generally considered that this  
103 debate is put to an end with the publication of the two volumes of *Recherches sur les*  
104 *origines de l'Égypte* by Jacques de Morgan in 1896 and 1897 (Morgan 1896; 1897).  
105 However, they represent the culmination of almost thirty years of prehistoric  
106 research in Egypt by various European scholars (Arcelin 1870; Tristant 2007; Hamy  
107 1869; Lubbock 1875; Pitt-Rivers 1882; Arcelin 1869a; 1869b).

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109 At the beginning of the 20<sup>th</sup> century, the scientific community reaches a broad  
110 consensus over the existence of a Stone Age in Egypt, even if there is still much  
111 concern put on finding artefacts in stratigraphy (e.g., Seligman 1921). Early 20<sup>th</sup>  
112 century works share a focus on finding archaeological evidence associated with  
113 geological and stratified data, in parallel with the development of geomorphology as  
114 a field of study (see Nicoll et al. 2021). Nonetheless, palaeolithic research in Egypt

115 remains a minor component of the archaeological research in the country.<sup>1</sup>

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117 Early 20<sup>th</sup> century Palaeolithic research in Egypt is undertaken by mostly European  
118 (in particular French and British) scholars and their results are communicated mainly  
119 within the European prehistorian community (e.g., A. Leplongeon 2022a). However,  
120 this takes place in a context where a limited but growing number of Egyptian scholars  
121 are also increasingly involved in fields of study that were until then dominated by  
122 European scholars, in parallel with the development of the Egyptian University in  
123 Cairo (Reid 1990). In particular, Mustafa Amer (1896-1973) (Bierbrier 2019) is seen  
124 as the first Egyptian prehistorian (Huzayyin 1941, XXXII). He graduated in  
125 geography at the university of Liverpool (BA in 1921 and MA in 1923), and was also  
126 considered as one of the first Egyptian professional geographers. He participated in  
127 the formation of the Egyptian university's geography department (Reid 1993, 558,  
128 561). He was also the first Egyptian director of the Antiquities service from 1953 to  
129 1956 and was President of the Egyptian Geographic Society. He conducted  
130 archaeological excavations at the predynastic sites of Maadi (1930-35) with O.  
131 Menghin and then on his own (Menghin and Amer 1936; Amer and Menghin 1932;  
132 Amer 1936), of Heliopolis (1950) and of Wadi Digla (1950-53). Following his  
133 example, Soliman Huzayyin (1909-1999) graduated from the Egyptian University in  
134 1929, then graduated in geography from the University of Liverpool in 1933 and  
135 obtained a PhD in 1935 from the Victoria University of Manchester, with a thesis on  
136 *The place of Egypt in Prehistory: A correlated study of climates and cultures in the*  
137 *Old World* (Abulezz 2001; Huzayyin 1941), showing the strong link between  
138 (pre-)history and geography at that time. Huzayyin then became a professor at the  
139 Egyptian university and President of the Egyptian Geographical Society. He created  
140 the University of Asyut and became Minister for Culture. However, despite the  
141 contributions of these prominent Egyptian scholars, the study of Egyptian prehistory,  
142 and in particular its Palaeolithic archaeology, mostly remained, a field practiced by  
143 European scholars.

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145 At the beginning of the 20<sup>th</sup> century, European prehistory therefore forms a reference  
146 framework for the study of the prehistoric record of Egypt. This is particularly  
147 apparent in the fact that the same debates and discussions characterising the  
148 European Palaeolithic are present in the study of the Egyptian Palaeolithic. This  
149 includes for example debates on the existence of a 'Tertiary Man' associated with  
150 'eoliths' (Schweinfurth 1905; Angevin 2012), or on the existence of a pre-Acheulean  
151 industry, the 'Chalossian' (Passemar 1927; Bovier-Lapierre, Vignard, and Vayson  
152 de Pradenne 1931; Passemar et al. 1931; Vayson de Pradenne et al. 1930; A.  
153 Leplongeon 2022a). It is also at that time that the first broad cultural framework for

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<sup>1</sup> This is already apparent in Morgan's first volume where only 14 pages address the *Palaeolithic Man* in Egypt (Morgan 1896, chapter IV), whereas there is abundant discussion of the Neolithic (*Neolithic Man*, (Morgan 1896, chapter V)). See also discussion in (A. Leplongeon 2022a)

167 the Egyptian and Sudanese Palaeolithic is proposed. In particular, the works of  
168 Edmond Vignard (1885-1969) in the Kom Ombo Plain (Vignard 1921; 1922; 1923),  
169 of Gertrude Caton-Thompson (1888-1985) and Elinor Wight Gardner (1892-1981)  
170 at Kharga Oasis (Caton-Thompson and Gardner 1932; Caton-Thompson 1952), and  
171 of Soliman Huzayyin in his attempt to correlate the cultural sequences in Egypt,  
172 North Africa and Europe (Huzayyin 1941) contribute to establish the first chrono-  
173 cultural framework for the Egyptian Palaeolithic.

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175 For what concerns the later Palaeolithic in particular, Vignard is the first to propose  
176 – *contra* Morgan (Morgan, Capitan, and Boudy 1910; Morgan 1922a, 8) – the  
177 existence of an Upper Palaeolithic occupation in the Nile Valley, based on the data  
178 he collected in the Kom Ombo area between 1911 and 1923 (Vignard 1921; 1922;  
179 1923). In 1921, he publishes his observations on a surface assemblage from Nag  
180 Hamadi, which he describes as having similarities with the European Aurignacian.  
181 He uses typologies, which were created to describe the French Upper Palaeolithic,  
182 to classify the different types of burins and endscrapers found in the assemblage.  
183 This leads him to conclude that the industry at Nag Hamadi is *morphologically*  
184 *Aurignacian*, and that it probably is the product of a human migration from Europe  
185 (Vignard 1921). This interpretation is however not accepted by the scientific  
186 community (Morgan 1922b; Huzayyin 1941, 237; Smith 1966a, 44). Despite its late  
187 publication of another site, Menchia, which he attributes to the Middle Aurignacian  
188 (Vignard 1954, 2), Vignard’s ‘Aurignacian’ never formed part of the cultural  
189 sequence of the Egyptian Palaeolithic<sup>2</sup>.

190  
191 Vignard’s most significant contribution to the construction of the chrono-cultural  
192 sequence of the late Pleistocene prehistory of Egypt is the definition of the Sebilian  
193 industry in the Kom Ombo area (Vignard 1923; 1928; 1955a; 1955b, [fig. 1](#)). He  
194 defines three successive chronological stages [*niveaux*] within this industry based on  
195 the geomorphological settings of the assemblages and their typological  
196 characteristics. The following description reflects the different stages [of the Sebilian](#)  
197 as described by Vignard in the Kom Ombo plain (Vignard 1955b; 1955a). The first  
198 stage (Sebilian I) takes place at a time where a lake was present in the Kom Ombo  
199 Plain. It corresponds to a ‘Levalloisian’ industry characterised by the use of diorite,  
200 Nubian sandstone and quartz for the production of Levallois flakes and points. The  
201 specificity of this industry is that the proximal part of these Levallois products is  
202 often removed by an abrupt retouch. When an abrupt retouch also affects the side,  
203 this leads to large tools with a triangular or trapezoidal shape ([see fig. 2](#)). The second  
204 stage (Sebilian II) corresponds to a period with a significant drop in the lake level.  
205 Lithic artefacts are then made from flint as flint outcrops were now exposed.  
206 Levallois production still forms an important part of the assemblages, along with

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<sup>2</sup> Only Smith (1966b, 336) proposes to include it in the Palaeolithic cultural sequence and call it the ‘Menchian’.

207 bladelet production. The toolkit is composed of numerous endscrapers, flakes with a  
208 trimmed base, retouched flakes, with trapezoidal or triangular shape (see fig. 2).  
209 Lunates, and artefacts that Vignard call 'prototypes of microburins', related to the  
210 trimming of the base of the flakes, appear. The third stage (Sebilian III) concerns  
211 occupations located near localised ponds, as the lake levels dropped again. It is  
212 characterised by similar tool types than in the second level, but in a diminutive form.  
213 Levallois production persists although as a minor component. The number of  
214 endscrapers decreases compared to the second stage, but microburins, lunates and  
215 geometric tools in general increase (see fig. 2). Vignard correlates the changes in the  
216 toolkit of the third stage with changes in the faunal assemblage (and reduced water  
217 supply).

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219 With this succession of industries, Vignard sees a gradual change from Mousterian  
220 to microlithic industries, which he tentatively places around the Last Glacial  
221 Maximum, and which he sees as representing the origins of the microlithic industries  
222 of the end of the Upper Palaeolithic in Europe. In his study, he relies on the notion  
223 of a local linear development, with tool types gradually drifting away from each other  
224 (Levallois point with a trimmed base to a point with a geometric form manufactured  
225 using 'proto'- microburins, to microlithic geometrics manufactured using the  
226 microburin technique). If his interpretation of the Sebilian as the origins of European  
227 microlithic industries of the end of the Upper Palaeolithic did not convince the  
228 prehistorian community (e.g., Huzayyin 1941), the Sebilian as a formal taxonomic  
229 unit of the Late Palaeolithic of the Nile Valley remained.

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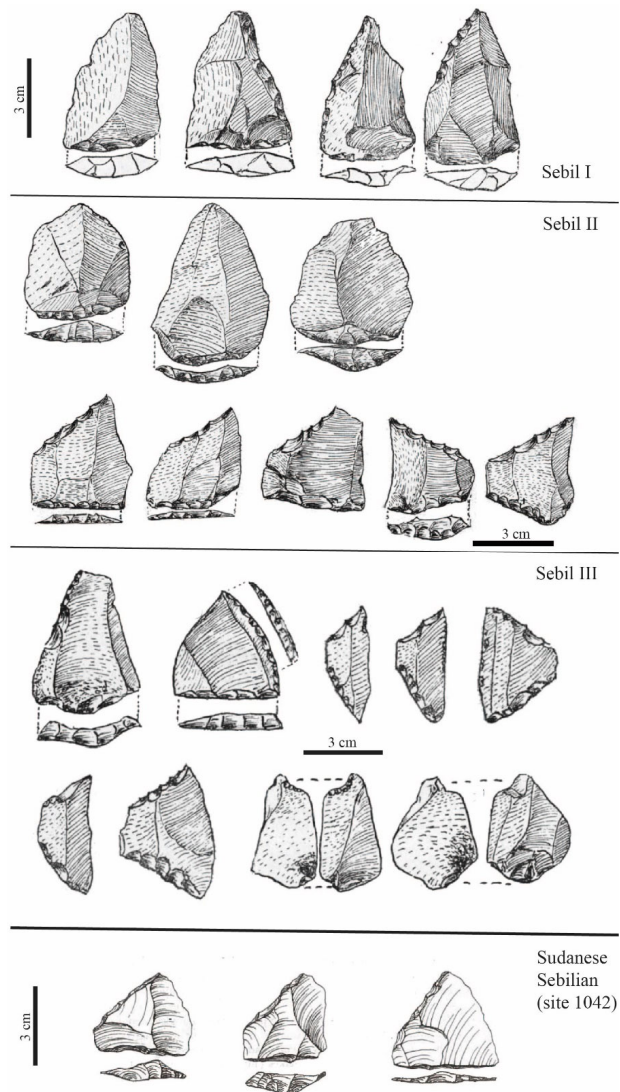
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*Figure 1. Map with main localities mentioned in the text.  
Made using QGIS 3.14. Background: ESRI World Imagery.*





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Figure 2. Sebilian artefacts. Sebilian I artefacts modified after (Vignard 1955b, fig. 5), Sebilian II artefacts modified after (Vignard 1955b, figs 4 & 5), Sebilian III artefacts modified after (Vignard 1955a, figs IX, X&XII), Sudanese Sebilian (Sebilian I/II) artefacts after (Marks 1968b, fig. 8)



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## 2.2. The Sebilian's legacy in the taxonomic system of the Late Palaeolithic of the Nile Valley until the Nubia Campaign

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The history of the Sebilian is significant in that it shows that one of the first formally defined taxonomic unit of the Late Palaeolithic of the Nile Valley was defined using typologies that were used to describe French Upper Palaeolithic industries at the beginning of the 20<sup>th</sup> century, in a theoretical framework where the notion of progressive linear typological change dominates, and which, ultimately, is interpreted as representing an independent local development, possibly at the origins of later Upper Palaeolithic industries in the Mediterranean basin.

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Shortly after the first publication of the Sebilian, Sandford and Arkell include the Sebilian in their observations of the archaeological record of the Sudanese Valley and the Fayum (Sandford and Arkell 1928; 1933). In their work, the Sebilian is however almost interpreted as a geological stage containing diminutive Levallois artefacts. Their use of the Sebilian was challenged by Caton-Thompson and colleagues (Caton-Thompson, Gardner, and Huzayyin 1936). In her review of 'Levalloisian industries of Egypt', Caton-Thompson concludes however that based on existing evidence, there is reason to consider that the term 'Sebilian' as defined by Vignard's collections at the type station is valid only for Southern Upper Egypt and Nubia (Caton-Thompson 1946, 112). In Caton-Thomson's views, the end of the *Levalloisian* (Middle Palaeolithic) in Egypt is characterised by a series of independent regional developments from Levalloisian industries to microlithic, backed-blade industries, which would denote *far-separated palaeolithic groups* (Caton-Thompson 1946, 118). She groups them under the term *Epi-Levalloisian*, at the end of the Middle Palaeolithic, within which the Sebilian (Stages I and II) in Southern Egypt and the Khargan at Kharga Oasis, both characterised by diminutive Levallois forms and basal truncations, and other northern Egypt equivalents (e.g., Huzayyin 1941) are found (see also Kleindienst 2020 for a review of the Khargan Complex). In her view, they are overlapping with the Aterian industry documented at Kharga, then considered as an Upper Palaeolithic industry.

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Most scholars at that time considered the beginning of the Egyptian 'Upper Palaeolithic', which included the Epi-Levalloisian (Sebilian I and II, Khargan) and the Aterian, as broadly contemporaneous to fully-fledged blade industries of the European Upper Palaeolithic (Huzayyin 1941, 265, table XVII). As such, the later Palaeolithic record in Egypt was seen as a persistence of Levalloisian traits, and as "retarded" or "stagnant" compared to the European and Near Eastern Palaeolithic record (see discussion in Smith 1966b). This remained the prevalent idea in the

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286 scientific community until the Nubia Campaign,<sup>3</sup>  
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### 290 **3. Cultural taxonomy during the** 291 **second half of 20<sup>th</sup> century**

#### 293 **3.1. The Upper and Late Palaeolithic of the** 294 **Nile Valley during the second half of the** 295 **20<sup>th</sup> century**

##### 297 **3.1.1. The Nubia Campaign (1960-1971)**

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299 After the pioneering works of the first half of the 20<sup>th</sup> century, archaeological  
300 research in Egypt came to a stop, which is in part due to World War II and the  
301 subsequent political unrest with the Fall of Monarchy, the beginning of war with  
302 Israel and conflicts around the rise to power of Nasser, and the declaration of the  
303 Republic of Egypt in 1953 (Gayffier-Bonneville 2016). Renewal of prehistoric  
304 archaeological investigations in Egypt occur in the 1960s in link with the building  
305 of the Aswan High Dam, which gave rise to an extremely ambitious programme of  
306 salvage archaeology starting in 1960 and until 1971, the Nubia Campaign (Hassan  
307 2007).

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309 For what concerns Palaeolithic research in the frame of the Nubia Campaign, the  
310 main contributions were brought by the Combined Prehistoric Expedition (CPE,  
311 jointly sponsored by the Southern Methodist University (USA), Institute of  
312 Archaeology and Ethnology, Polish Academy of Sciences, and Geological Survey  
313 of Egypt and directed by F. Wendorf, Schild and Wendorf 2002), along with the  
314 Joint Scandinavian, University of Colorado, University of Pennsylvania, Yale  
315 University and Indian and Soviet Union parties prehistoric expeditions. The  
316 publication of the two volumes of *The Prehistory of Nubia* by the CPE in 1968  
317 represents one of the most significant contributions to the building of a chrono-

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<sup>3</sup> This occurred despite Caton-Thompson's arguments that the Epi-Levalloisian might be contemporaneous with the Mousterian and Chatelperronian in Europe (Caton-Thompson 1946, 117). At that time, chronometric dating did not exist yet.

319 cultural framework for the prehistory of the region (F. Wendorf 1968d), but it is not  
320 the only one (Kleindienst 1972; Irwin, Irwin, and Wheat 1968; Smith 1967a; Reed  
321 et al. 1967, and see contributions in the journal *Kush*).

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323 In 1960, Fred Wendorf is the Director of Research and Associate Director of the  
324 Museum of New Mexico. He has at that time no previous experience in African  
325 archaeology but has a solid expertise in salvage archaeology in the USA, and is  
326 very interested in becoming involved in the Nubian campaign (F. Wendorf 2008b;  
327 2008a, chap. 14). In an autobiographical account of these years, F. Wendorf  
328 mentions that his *first action was to go to Europe and search for promising,*  
329 *experienced, young prehistorians who would join [his] staff in Egypt or Sudan.*  
330 *[He] needed to hire several people who knew European Palaeolithic typology. [His]*  
331 *first stop was in Bordeaux to see François Bordes* (F. Wendorf 2008b, 317). This  
332 citation shows the preponderance of the European (and in particular French)  
333 approach to lithic studies in the Old World at that time, as well as the assumption  
334 that the Egyptian prehistoric record would be comparable to the European record,  
335 despite earlier works underlining the specificities of the Egyptian Palaeolithic  
336 record (see above). It is also interesting to note that none of the early members of  
337 the team had previous experience in other regions of the African continent. Perhaps  
338 as a consequence, the typology of the Epipalaeolithic of the Maghreb published by  
339 Tixier in 1963 (Tixier 1963) was not used for the description of new Late  
340 Palaeolithic industries, as it was not known to most of the team members. Wendorf  
341 will regret this in a later publication where he states:

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343       That the contacts [between team members in the field] were not more  
344 frequent was unfortunate because Schild had just spent several months  
345 in France where he learned the new, then still unpublished Late  
346 Paleolithic typology developed by Tixier (1963). Unaware of Tixier's  
347 work, Marks and Shiner developed their own typology based in part on  
348 the one developed by Madam Bordes for the Late and Final Paleolithic  
349 in the Levant. I did not hear about Tixier's typology until after all our  
350 classifications were completed and the results were soon to be  
351 published. (F. Wendorf 2008b, 323)

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353 The two volumes of *The Prehistory of Nubia* form a milestone in the study of the  
354 prehistory of the Nile Valley as they define a chrono-cultural framework, which is  
355 in a large part still used today. In particular, for the Late Palaeolithic, they add a  
356 significant body of radiocarbon dates, and define numerous Late Palaeolithic  
357 industries (e.g., Halfan, Ballanan, Qadan, Arkinian, Gemaian). The CPE was not  
358 the only team who contributed to the taxonomic system of the Late Palaeolithic of  
359 the Nile Valley (see [Table 1](#)). The Silsilian and Sebekian industries were defined by

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361 the Canadian Prehistoric expedition (Smith 1966a), led by PEL Smith, and these  
362 industries were also recognized at other sites in the region (Phillips and Butzer  
363 1973; Butzer and Hansen 1968). Smith also defined the Menchian, an industry with  
364 typological characteristics consistent with what Vignard once called Aurignacian  
365 (Vignard 1954), but which according to the stratigraphic position of the  
366 occurrences observed by Smith could be attributed to the end of the Pleistocene  
367 (Smith 1966a). This industry ~~is however only described at a few sites in the Kom~~  
368 Ombo area. Similarly, the university of Colorado Nubian Expedition documented  
369 in Wadi Halfa an industry with no apparent parallels with others described during  
370 the Nubia Campaign and named the Dabarosan (Irwin, Irwin, and Wheat 1968,  
371 113).

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### 374 **3.1.2. The Sebilian during the Nubia Campaign**

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376 These renewed investigations in the Nile Valley, and in particular the addition of  
377 chronometric dates mark ~~a shift in the interpretation of the Late Palaeolithic in the~~  
378 Nile Valley, as can be seen from the re-interpretation of the Sebilian industry.  
379 Marks (1968b) reports on nine sites identified by the CPE during the Nubia  
380 Campaign in northern Sudan, on the northern end of the second cataract, and north  
381 of Wadi Halfa on the east bank of the Nile. While relying on Vignard's (1955b)  
382 initial definitions of Sebilian tool types, which were based on the shape of their  
383 outline and given geometrics names (e.g., triangles, trapezes), but which were in  
384 practice difficult to apply to Sebilian tools, Marks takes a different approach and  
385 groups retouched tools in categories defined based on whether the tool shows a  
386 basal truncation, oblique truncation, backing, or a combination of these features  
387 (Marks 1968b, 463). Based on these criteria, Marks tentatively correlates the  
388 Sudanese Sebilian with the Kom Ombo Sebilian and finds more similarities with  
389 Sebilian I, even if the microburin technique is present in the Sudanese Sebilian  
390 sites (see fig. 2).

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392 Chronometric dates ~~published in 1968~~ place the Sudanese Sebilian (Sebilian I) at  
393 the very end of the Pleistocene, between 12600 and 13100 cal BP (Marks 1968b; A.  
394 Leplongeon 2021 Suppl. Info. 1c). Interestingly, at around the same time, Smith  
395 reports on several Sebilian sites in the Kom Ombo area as part of the investigations  
396 of the Canadian Prehistoric Expedition, and in particular the site of Sebil VII,  
397 which presents intermediate characteristics between Vignard's Sebilian I and II,  
398 and with radiocarbon dates on shells between 13850 and 16900 cal BP (Smith  
399 1967a; 1967b; Suppl. Info. 1c A. Leplongeon 2021). This suggests a terminal  
400 Pleistocene age for the earliest stage of the Sebilian.  
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404 Based on the chronometric dates for the Sudanese Sebilian sites and their  
405 geomorphological position, Marks argues that these new data make the filiation  
406 proposed by Vignard (and Caton-Thompson) between the latest Mousterian and the  
407 Sebilian unlikely. Marks instead develops the working hypothesis that the peculiar  
408 characteristics of the Sebilian might be explained by some connections between the  
409 Sebilian and Central African industries (e.g., Tshitolian, (Clark 1963)), although  
410 data from regions located between the Nile Valley and Central Africa are needed to  
411 confirm this hypothesis (Marks 1968b, 526–31).

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413 Few Sebilian sites have been identified after the Nubia Campaign. They include  
414 two sites on the Dishna Plain (Hassan 1972) and one site near El Kihl (Hassan and  
415 Wendorf 1974) (see fig. 3). Based on the data published by Marks and these new  
416 data, Hassan proposes to include in the Sebilian only what was originally defined  
417 by Vignard as Sebilian I or Lower Sebilian. According to Hassan, the Middle and  
418 Upper Sebilian are very different and belong to another industry (Hassan 1978;  
419 Hassan and Wendorf 1974). This therefore marks another rupture in the  
420 consideration of the Sebilian as a gradual evolutionary stage between the  
421 Mousterian and microlithic industries. However, despite being considered as *the*  
422 *most widely recognized Egyptian Palaeolithic industry* (Hassan and Wendorf 1974,  
423 211), no further sites belonging to the Sebilian were identified in the region (except  
424 for a few artefacts at one site in Wadi Kubaniya, (Hill, Wendorf, and Schild  
425 1989)), and the many questions around this industry remain open. In particular,  
426 most research following Vignard's research on the Sebilian focused on the earlier  
427 stage of the Sebilian (Sebilian I, considered as 'true' Sebilian by Hassan), and  
428 Vignard's Sebilian III remains without parallel. It is tempting, however, to draw  
429 some parallels between the Sebilian III and the Afian industry, the only other Late  
430 Palaeolithic industry characterized by microlithic geometrics and the use of the  
431 microburin technique (Close, Wendorf, and Schild 1979; A. Leplongeon 2017). But  
432 detailed comparative research alone will be able to confirm or infirm this  
433 hypothesis.

434  
435 This short overview of the history of the Sebilian shows that the Sebilian as it is  
436 defined in the 1970s has few in common with Vignard's 1928 definition, especially  
437 for what concerns its interpretation and significance for the Egyptian Palaeolithic.

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*Figure 3. Location of sites attributed to the Sebilian after the Nubia Campaign. Count of sites is based on an arbitrary grid defining square areas of 5\*5km. Made using QGIS 3.14. Background: ESRI World Imagery.*

446



447 **3.1.3. The Upper and Late Palaeolithic of the Nile**  
448 **Valley after the Nubia Campaign**

449  
450  
451 Besides their work in the Nubia campaign, the CPE conducted major new  
452 prehistoric fieldwork projects in an area of Esna and Dishna, north of the High  
453 Dam, leading to the definition of new Late Palaeolithic industries (e.g., Levallois-  
454 Idfuan, Afian, Isnan) and to tentative correlations of geological formations along  
455 the Nile (F. Wendorf and Schild 1976; Hassan 1974; Lubell 1974; Close 1977).  
456 After a short stop of their research in Egypt in 1969-1972 in the context of the  
457 conflict between Egypt and Israel, the CPE resumes field research in Egypt with  
458 fieldwork in Dakhla Oasis in 1972-1973 (Schild and Wendorf 1977) and then in Bir  
459 Sahara and Bir Tarfawi (F. Wendorf, Schild, and Close 1993; Schild and Wendorf  
460 1981). However, for what concerns the Late Palaeolithic, the main contribution of  
461 the CPE after the Nubia campaign is their work at Wadi Kubbbaniya, which  
462 provided the best chronometrically dated complex of sites and a detailed  
463 palaeoenvironmental model for the Late Palaeolithic of the region, together with  
464 the definition of a new Late Palaeolithic entity, the Kubbbaniyan (F. Wendorf,  
465 Schild, and Close 1980; 1989). Field research at Wadi Kubbbaniya has been ongoing  
466 until recently in the frame of the Combined Prehistoric Expedition Foundation and  
467 the Aswan-Kom Ombo Archaeological Project (CPEF/AKAP, Banks et al. 2015).  
468

469 Other major works for the Late Palaeolithic of the area were conducted by the  
470 Belgium Middle Egypt Prehistory Project (BMEPP) in Middle Egypt in the 1980s,  
471 which led to the recognition of early Upper Palaeolithic sites at Nazlet Khater 4  
472 and Shuwikhat, which were each assigned to distinct industries (Khaterian and  
473 Shuwikhatian). Other Late Palaeolithic sites were assigned to one of the industries  
474 previously defined or left without further labelling than 'Late Palaeolithic'  
475 (Vermeersch 2002; 2000). Works by the Kharga Oasis Prehistory Project and by the  
476 Dakhlah Oasis Project led to the recognition of a number of sites that they attribute  
477 to the Later Stone Age, but limited data is available as to their lithic characteristics  
478 (Kleindienst et al. 2020), as most of the work of the KOPP and DOP focused on  
479 earlier periods of the Palaeolithic. However, it is interesting to note that if methods  
480 used by the CPE and the BMEPP in the Nile Valley derived from the methods used  
481 to describe the European Palaeolithic record, a different approach is taken by the  
482 KOPP and DOP projects where the Africanist terminology is used and the later  
483 prehistory is referred to as the Later Stone Age. The use of European terminology  
484 and methods to describe the Egyptian record has been strongly criticized by M.  
485 Kleindienst :

486 "As an Africanist, I regard Pleistocene Europe as a relatively  
487 unimportant cul-de-sac at the westernmost tip of Eurasia, and the Near

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493 East as the 'hinterland of Africa', if not a direct geographic extension of  
494 Africa. (...) These are certainly not the views that are expressed, for  
495 example, when members of the Combined Prehistoric Expedition  
496 (CPE), working in the Nile Valley or the Western Desert, use the words  
497 'Mousterian' and 'Middle Paleolithic' synonymously (...); or when the  
498 Belgian expedition working in the Nile Valley automatically regards a  
499 blade-based lithic industry as necessarily 'Upper Palaeolithic' (...),  
500 although it dates to over 30,000 years ago, and there are many other  
501 blade-based industries in Africa, some much older than that. An  
502 Africanist view is not taken when Francois Bordes' European typology  
503 and techniques (Bordes, 1961; 1967) are the only ones used by most  
504 prehistorians across northern Africa without any convincing  
505 demonstration of the comparability of the material to European  
506 prototypes (...)." (Kleindienst 2001, 4).

507 Despite this diversity of approaches, most of the Late Palaeolithic industries  
508 of the Nile Valley were defined by the CPE, and this may lead to the  
509 assumption that these industries have been defined in a uniform way, using  
510 the same criteria. This assumption is further investigated below.

511

### 512 **3.2. A uniform way of defining Late** 513 **Palaeolithic taxonomic entities in the Nile** 514 **Valley?** 515

516 For the later Pleistocene archaeology of Egypt and Sudan, most of the data availa-  
517 ble come from a stretch of the Nile Valley comprised between Sohag in Egypt and  
518 the 2<sup>nd</sup> cataract in Sudan. There has been a long standing debate in the literature  
519 over whether the desert was inhabited during the later Pleistocene, focusing on the  
520 chronological attribution and validity of the Terminal Middle Stone Age Khargan  
521 Complex as an archaeological entity (Vermeersch 2009; Kleindienst 2020;  
522 Kleindienst et al. 2020). In particular, Kleindienst (2020) and Kleindienst et al.  
523 (2020) review in detail the “Khargan quandary”. As mentioned above, the Khargan,  
524 was first documented at Kharga Oasis, and was seen by Caton-Thompson as being  
525 a late development of the *Levalloisian succession* (Caton-Thompson 1946). The  
526 Khargan was later identified in other oases of the Western Desert (Dakhla, Kurkur  
527 and Dungul (Hester and Hobler 1969; Kleindienst 2020)), and possibly in the Nile  
528 Valley and west of the Nile Valley. (Debono 1971; 1972; 1973; and Olszewski,

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530 cited in Kleindienst 2020). Taking into account Khargan occurrences' settings, and  
531 state of the artefacts work by KOPP suggests that they postdate the Aterian and,  
532 provisionally, chronologically places them during MIS 3, where ESR (Electronic  
533 Spin Resonance) dates on freshwater pond snail shells document water availability  
534 in these areas (Kleindienst 2020). The Khargan Complex is therefore considered as  
535 a Terminal Middle Stone Age entity. Only three Later Stone Age localities were  
536 identified in Kharga, and their material remains unpublished (Kleindienst et al.  
537 2020, 66). Although palaeoenvironmental data seem to point to periods with water  
538 availability in the oases of the Western Desert around the same time than the Late  
539 Palaeolithic in the Nile Valley, direct association with archaeological material is at  
540 the moment lacking. If partial overlap between the Khargan and Later Stone Age in  
541 the Western Desert oases and the Upper and Late Palaeolithic in the Nile Valley  
542 were to be confirmed, this would open a whole new set of research perspectives on  
543 regional interactions between the Nile Valley and adjacent deserts at that time.  
544 Currently, however, for the end of the Pleistocene, dated archaeological evidence is  
545 only available from the Nile Valley. Out of 18 taxonomic entities defined for the Late  
546 Palaeolithic the Nile Valley, 11 were defined by the CPE, who also contributed to the  
547 re-interpretation of the Sebilian (See tables 1 and 2). Besides some chronological  
548 patterning, some are only found in southern Egypt north of the first cataract, others  
549 only between the first and the second cataract (see table 1 and fig. 4). When cases  
550 for strong similarities between industries north and south of the first cataract were  
551 made, the industries, were merged (such as the Ballanan-Silsilian). Four (the  
552 Khaterian, the Darbarosan, the Menchian and the Sebekian) were only defined at one  
553 site or localized group of sites.

554 Because most of these Late Palaeolithic entities were defined by the same research  
555 group, we could assume a certain homogeneity in the ways of describing lithic in-  
556 dustries. This is true up to a certain extent. The approach used by the CPE to define  
557 these industries in the 1960s relied on the grouping of assemblages based on their  
558 core and retouched tool typologies. In addition, within each defined industry, grad-  
559 ual, directional changes in terms of relative increase or decrease of the proportions  
560 of specific core or tool types are expected to occur with time, the latter defined by  
561 the relative stratigraphic position of each assemblage. This is particularly apparent  
562 for example in the description of the Halfan lithic development within the Halfan  
563 industry (Marks 1968a). For the industries defined after the end of the Nubia cam-  
564 paign in the *Prehistory of the Nile Valley*, published in 1976, a similar approach  
565 seems to have been taken by the CPE, albeit using Tixier's 1963 typology. Indices  
566 such as the Levallois index as well as proportions of specific types of tools such as

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572 burins, tools with ouchtata retouch or backed elements are used to characterize dif-  
573 ferences between assemblages. For example, three stages were defined within the  
574 Isnan industry, suggested by both the relative stratigraphic location of the sites and  
575 their tool composition with lower frequency of endscrapers and higher percentage of  
576 burins (F. Wendorf and Schild 1976, 291).

577 There has been some differences however, on how members of the CPE interpreted  
578 the meaning of these different entities defined on the basis of typological differences.  
579 As faunal assemblages associated with these industries appear similar, Wendorf and  
580 colleagues generally adopted the working hypothesis to consider assemblages within  
581 each industry as *the product of a group of closely related social units that shared a*  
582 *common way of life* (F. Wendorf 2008b). Lubell (1976, 123) however, based on his  
583 study of the Fakhurian assemblages, proposes that *an alternative way of interpreting*  
584 *this variability might be to view certain of these industries as seasonal variants*. This  
585 alternative interpretation is somewhat influenced by the Bordes-Binford debate on  
586 the significance of Mousterian variability taking place at the time (Lubell 1976, 122).  
587 Functional analyses themselves are however little developed for what concerns the  
588 Late Palaeolithic of the Nile Valley, although the ones available have led to a re-  
589 evaluation of categories of artefacts based on typology only (e.g., Jensen et al. 1991;  
590 Becker and Wendorf 1993; Longo 1997). This suggests that future studies integrating  
591 functional analyses have the potential to contribute to the meaning attached to the  
592 definition of these taxonomic entities.

593 But it is the work of Angela Close, who developed and applied a stylistic approach  
594 to lithic variability to lithic assemblages from the Late Pleistocene in North Africa,  
595 that first challenges the idea of the industries representing distinct social groups. In  
596 particular, she states that *it is difficult to interpret the significance of typological sim-*  
597 *ilarity between assemblages, and simplistic to assume it to be a universal indicator*  
598 *of the social affinity of their makers* (Close 1977, 4).

599 In her work, she considers all Late Palaeolithic / Epipalaeolithic industries of North  
600 Africa to be part of the same techno-complex *sensu* Clarke (1968) (Close 1977). She  
601 uses the concept of style (Sackett 1977), which is the idea that different ways exist  
602 to arrive at the same end (e.g., a specific stone tool). Instead of considering inter-  
603 assemblages typological differences, her work is based on the definitions of attrib-  
604 utes that are primarily stylistically determined among the commonest tool-types  
605 found within the Late Palaeolithic / Epipalaeolithic industries of North Africa, i.e.,  
606 backed bladelets (Close 1977), but also end-scrapers, truncations, trapezes or trian-  
607 gles (Close, Wendorf, and Schild 1979). The results of her cluster analyses of assem-  
608 blages based on stylistic similarities are broadly consistent with the grouping of as-  
609 semblages in industries defined on typological criteria. However, she highlights that

610 differences between some industries in the Nile Valley are better explained by other  
 611 factors than socio-cultural ones (e.g., functional, for example between the Afian and  
 612 the Ballanan-Silsilian, or regional, with for example, the Halfan and the Kubbaniyan,  
 613 which could be regarded as regional ‘facies’ of the same industry) (Close 1977, 234;  
 614 1980, 257; Close, Wendorf, and Schild 1979, 231; Close 1989, 764; but see also  
 615 Close 2002).

616 While there has been some debates on the significance of typological approaches in  
 617 the definition of taxonomic entities of the Late Palaeolithic of the Nile Valley with  
 618 the work of Close and Lubell within the CPE, taxonomic entities (industries) defined  
 619 based on tool and core types have prevailed and remained in use (e.g., Schild and  
 620 Wendorf 2010). The way the industries were initially defined can therefore be con-  
 621 sidered as mostly uniform (see also Table 2). However, from the 1980s onwards, the  
 622 rise of technological approaches to lithic assemblage led to problems when discuss-  
 623 ing the place of newly excavated assemblages in this framework.

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 Despite the remaining questions on the meaning and signifi-  
 cance of the typological variability within the Late Palaeo-  
 lithic of the Nile Valley,  
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 excavated assemblages in this framework  
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626 Table 1. List of all Upper and Late Palaeolithic industries defined in North-Eastern  
 627 Africa. Bold values in chronological range show industries with five or more  
 628 chronometric dates (excl. minimum ages) (Data after A. Leplongeon 2021).

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UP/LP industry name	Team	Main references	Geographic area	Chronological range
Khaterian	BMEPP	(Vermeersch et al. 1982; Vermeersch, Paulissen, and Vanderbeken 2002; A. Leplongeon and Pleurdeau 2011)	Nazlet Khater	Ca. 35-40 ka cal BP
Shuwikhatian/Idfuan	BMEPP/CPE	(Vermeersch, Paulissen, and Van Peer 2000; F. Wendorf and Schild 1976)	Middle & Upper Egypt	Ca. 25 ka BP
Menchian	Toronto	(Vignard 1954; Smith 1966b)	Kom Ombo	undated
Sebekian	Toronto	(Smith 1966a)	Kom Ombo	16.5-20 ka cal BP
Levallois Idfuan	CPE	(F. Wendorf and Schild 1976)	Edfu, Esna	19.7-22 ka cal BP
Fakhurian	CPE	(Lubell 1974)	Esna, Wadi Kubbaniya	23-25.6 ka cal BP
Gemaian	CPE	(Shiner 1968)	Wadi Halfa	Undated
Halfan	CPE	(Marks 1968a)	Wadi Halfa, Upper Egypt	<b>19-24 ka cal BP</b>

Kubbaniyan	CPE	(F. Wendorf, Schild, and Close 1989; 1980)	Wadi Kubbaniya	<b>19.3–23.5 ka cal BP</b>
Ballanan-Silsilian / Dabarosan	CPE/Toronto/ Colorado	(F. Wendorf 1968c; Smith 1966b; Irwin, Irwin, and Wheat 1968; A. Leplongeon 2017)	Wadi Halfa, Middle and Upper Egypt	16.3–20.8 ka cal BP
Qadan	CPE	(Shiner 1968; Usai 2020)	Wadi Halfa, Upper Egypt	<b>12–20.2 ka cal BP</b>
Afian	CPE	(F. Wendorf and Schild 1976; Close, Wendorf, and Schild 1979; A. Leplongeon 2017)	Esna, Wadi Kubbaniya, Kom Ombo	<b>14–16.8 ka cal BP</b>
Sebilian	Vignard / redefined by CPE	(Hassan 1978; Marks 1968b; Vignard 1923; 1955b)	Kom Ombo, Dishna	<b>12.6–16.9 ka cal BP</b>
Isnan	CPE	(Hassan 1974; F. Wendorf and Schild 1976)	Middle and Upper Egypt	<b>13.2–16.6 ka cal BP</b>
Arkinian	CPE	(Schild, Chmielewska, and Wieckowska 1968)	Wadi Halfa	11.9–12.8 ka cal BP

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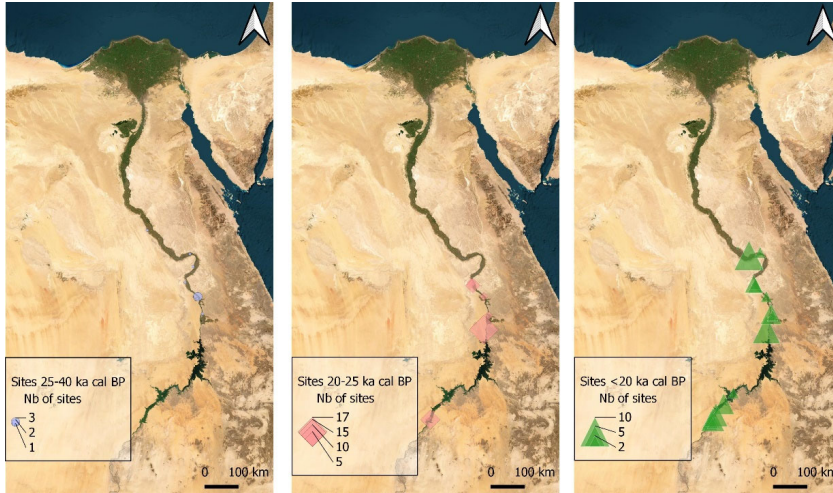
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Table 2. Summary of Upper and Late Palaeolithic industries defined in North-Eastern Africa (Modified after Leplongeon 2021, tbl 2). For references, see table 1.

<u>UP/LP industry name</u>	<u>Main core and tool types</u>
<u>Khaterian</u>	“Upper Palaeolithic-like” blade cores, important diversity in reduction strategies, with dominance of single-platform cores; numerous burins
<u>Shuwikhatian/Idfuan</u>	Blade production using opposed platform cores and crested products; denticulates, burins, endscrapers
<u>Menchian</u>	“Aurignacian-like” industry; blade industry; numerous endscrapers and retouched blades; few burins
<u>Sebekian</u>	Blade/let produced from flat, prismatic or cylindric blade cores; retouched blade/lets, some end-scrappers, burins, perforators
<u>Levallois Idfuan</u>	Blade production using opposed platform cores, use of Levallois and Halfa methods; notches, denticulates are dominant
<u>Fakhurian</u>	Blade and bladelet production, single and opposed platform cores; backed bladelets largely dominant, retouched pieces and perforators
<u>Gemaian</u>	Halfan and Nubian-like cores; denticulates and notches
<u>Halfan</u>	Microolithic aspect; Halfan and Levallois cores; Ouchtata and backed bladelets
<u>Kubbaniyan</u>	Flake and bladelet production, use of single and opposed platform cores, occasional use of Levallois and Halfa methods; Ouchtata and backed bladelets, burins.
<u>Ballanan-Silsilian / Dabarasan</u>	short elongated blanks (blade/let) with single and opposed platform cores; backed pieces, truncations, proximally retouched blade(let)s and notched tools, occasional use of the microburin technique
<u>Qadan</u>	Small dimensions of the artefacts; mainly oriented towards flake production with single and opposed platform cores, several cores reminiscent of the Levallois methods for Qadan point production, bladelet production documented in some but not all sites; Qadan points, burins, small scrapers and backed pieces (the latter only at some sites).
<u>Afian</u>	Wide and small elongated products, planimetric conception of debitage with high frequencies of faceted platforms; truncations, backed bladelets and geometrics
<u>Sebilian</u>	Discoidal and Levallois cores for the production of flakes; truncated and backed flakes, use of the microburin technique
<u>Isnan</u>	Production of flakes and rare blades from single and opposed platform cores; high percentage of endscrapers, followed by notches and denticulates, rare backed pieces
<u>Arkinian</u>	Bladelet and flake production from single and opposed platform cores, presence of bipolar reduction, stone anvils; numerous backed pieces and endscrapers

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Figure 4. Map showing location and number of sites attributed to three main periods of the Upper and Late Palaeolithic in the Nile Valley.

Count of sites is based on an arbitrary grid defining square areas of 5\*5km. Made using QGIS 3.14. Background: ESRI World Imagery.

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## 4. Cultural taxonomy in the Late Palaeolithic of the Nile Valley: current problems and elements of discussion

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Most of the Late Palaeolithic industries of the Nile Valley were defined in the 1960s and 1970s. Many comprise only a few assemblages, some are not well-dated. For example, only five of these industries are dated using five or more radiocarbon dates that have been considered reliable (see tables 1 and 2); they are the Kubbanian (19.3-23.5 ka cal BP), the Halfan (19-24 ka cal BP), the Qadan (12-20.2 ka cal BP), the Afian (14-16.8 ka cal BP) and the Isnan (13.2-16.6 ka cal BP) (see review in A.

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664 Leplongeon 2021, tbl. 3).

665

666 Of these five relatively well-dated industries, Close's stylistic analysis suggested that  
667 the Halfan and the Kubbanian may be considered as two regional variants of the  
668 same industry (Close 1980). In addition, several industries have been subject to  
669 discussions related to their definitions. This is the case for example of the Qadan and  
670 the Afian.

671

672 The Afian was defined shortly after the Nubia Campaign by the CPE during  
673 excavations near Esna, as an industry characterised by the production of short  
674 elongated blanks from wide and flat opposed-platform cores with prepared striking  
675 platforms and a tool-kit where atypical geometric microliths, truncated blades and  
676 flakes and backed pieces predominate (F. Wendorf and Schild 1976). Afian  
677 assemblages from the Esna area were studied in detail by A. Close (Close, Wendorf,  
678 and Schild 1979). However, none of the sites from the Esna area are well-dated, and  
679 all chronometric dates for the Afian are coming from assemblages that have been  
680 later associated with the Afian. These sites include GS-2B-1 in the Kom Ombo area  
681 (Phillips and Butzer 1973; Butzer and Hansen 1968; Reed 1965; Reed et al. 1967;  
682 Stuiver 1969) and Makhadma 4 near Qena (Vermeersch, Paulissen, and Huyge  
683 2000). Attribution to the Afian for the lithic assemblages of these two sites have  
684 however been subject to some debates. At the time of their discoveries, assemblages  
685 from GS-2B-I were attributed to the Middle Sebilian (Sebilian II) (Reed et al. 1967;  
686 Smith 1966a), but they are later included in the Afian by Schild and Wendorf (Schild  
687 and Wendorf 2010). Similarly, attribution of the lithic assemblages of Makhadma 4  
688 was much debated. A first hypothesis was to relate them to the Idfuan or Silsilian  
689 (Vermeersch, Paulissen, and Van Neer 1989, 112). However, Wendorf and Schild  
690 (1989, 811–12) propose an Afian attribution, and the excavators seem to later agree  
691 as they mention it is 'Afian-related' in a later publication of the site (Vermeersch,  
692 Paulissen, and Huyge 2000, 270). A comparative analysis between one assemblage  
693 attributed to the Afian, E71K18-C and published data on the assemblage of  
694 Makhadma 4 however shows a number of important differences leading to  
695 reconsider the grouping of these two sites under the same industry, results suggesting  
696 that Makhadma 4 may be closer to Silsilian sites, as initially suggested by the first  
697 publication on Makhadma 4 (A. Leplongeon 2017). Beyond issues related to the  
698 attribution of assemblages to one or the other industry, these debates illustrate the  
699 need to be cautious when considering the chronological range of industries of the  
700 Late Palaeolithic of the Nile Valley, as this example shows that dating of the Afian  
701 exclusively relies on dates associated with assemblages, which may or may not be  
702 considered Afian, depending on which criteria are taking into account.

703

704 The Qadan was defined by Shiner (1968) based on sites located around the second  
705 cataract in Sudan, but none of the sites described by Shiner provided reliable dates.

706 The Qadan has also been described at sites around Wadi Halfa, Tushka, Ballana and

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708 Wadi Kubbania [in northern Sudan and southern Egypt](#) (see list in A. Leplongeon  
709 2021 Suppl. Info 1b). There has been significant discussion on its definition  
710 (primarily based on its microlithic aspect, and the typological composition of  
711 assemblages (endscrapers, lunates, burins and backed micro-flakes or micro-blades)  
712 (Shiner 1968; F. Wendorf 1968b)), development (increase and decrease of specific  
713 core types and proportions of tools), chronological range and whether specific sites  
714 are indeed Qadan, in particular site 117, or Jebel Sahaba (for a review of current  
715 debates, see Usai 2008; 2020; Crevecoeur et al. 2021 SI). The Qadan received  
716 particular attention as it is the industry that was associated with site 117, which is the  
717 largest cemetery known for the Late Palaeolithic of the area and is associated with  
718 evidence for repeated inter-personal violence (Anderson 1968; F. Wendorf 1968a;  
719 Crevecoeur et al. 2021). Because of this particular context, the meaning put behind  
720 the use of the taxonomic unit Qadan may be of particular significance. It is often  
721 assumed that the different, broadly contemporaneous, industries of the Late  
722 Palaeolithic of the Nile Valley reflect distinct human groups (Schild and Wendorf  
723 2010; Crevecoeur et al. 2021). Together with the renewed evidence for repeated  
724 episodes of inter-personal violence at the Jebel Sahaba cemetery, probably linked to  
725 inter-group (rather than intra-group) violent relationships (Crevecoeur et al. 2021,  
726 8), this leads to the hypothesis (in continuity with hypotheses already formulated by,  
727 e.g., Schild and Wendorf 2010; Vermeersch and Van Neer 2015; Connor and Marks  
728 1986; Butzer 1997) that evidence from site 117 may reflect territorial competition  
729 between distinct human groups living in the Nile Valley in the context of important  
730 palaeoenvironmental changes at the end of the Pleistocene (Crevecoeur et al. 2021).  
731 While the authors remain cautious in their interpretation and refrain from making a  
732 direct link for example between the groups producing Qadan assemblages and the  
733 attackers of the group who buried their dead at Jebel Sahaba, the research history  
734 and debates on cultural taxonomy that have characterised the research on the Late  
735 Palaeolithic of the Nile Valley presented above calls for further work focusing on the  
736 socio-cultural meaning of taxonomic units defined in the Nile Valley.

737  
738 Despite some discussion on the attribution of assemblages to specific industries, the  
739 current taxonomic framework of the Late Palaeolithic of the Nile Valley has  
740 remained more or less fixed until today. The examples of the Afian and Qadan  
741 presented above however show that future work should pay attention to the nature  
742 of this taxonomic system and its relevance to current questions. Debates have indeed  
743 until now focused on whether an industry should be attributed to one or the other  
744 taxonomic entity but have not fundamentally questioned the structure of this  
745 taxonomic system, which, as seen in the examples above, may be the source of the  
746 problems encountered in some cases. Industries are generally considered as  
747 representing to some extent different socio-cultural groups inhabiting the Nile Valley  
748 at the end of the Pleistocene. While this idea may have received some support, at  
749 least for some industries that were defined by the stylistic studies by Close, her  
750 studies also suggested that other factors than socio-cultural factors may explain inter-

751 industry variation. In continuity with her work, present discussions and debates  
752 suggest that renewed discussion on the meaning of these taxonomic units should be  
753 undertaken, using methodological approaches available nowadays. In the general  
754 context of renewed attention on influence of taxonomic systems on current research  
755 questions (Riede, Hoggard, and Shennan 2019; Reynolds and Riede 2019), future  
756 studies on the Late Palaeolithic of the Nile Valley should consider the current  
757 taxonomic system of the LP of the Nile Valley as a useful framework to classify  
758 assemblages according to their core and tool typology but remain cautious to their  
759 interpretation in terms of numerous socio-cultural groups inhabiting the Nile Valley  
760 until further independent evidence may suggest this.  
761

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