ENVIRONMENTAL CHANGE AND HUMAN CULTURE
IN THE NILE BASIN AND NORTHERN AFRICA
UNTIL THE SECOND MILLENNIUM B.C.
Poznań 1993
PL ISSN 0866-9244 ISBN 83-900434-1-6

PHILIP VAN PEER

Levallois variability and the Middle Palaeolithic of the Lower Nile Valley and the Eastern Sahara

Introduction

Since the end of sixties, Near Eastern Middle Palaeolithic research has paid much attention to the analysis of unretouched debitage and to technological aspects of lithic assemblages (Watanabe 1968; Munday 1976; Jelinek 1977; Marks and Volkman 1983). Harvey Crew (1972; 1975) dealt specially with Levallois technology. He introduced a quantitative approach for assessing the variability in Levallois flake samples. Since then, his method has been adopted by others (Boutié 1981; Meignen and Bar-Yosef 1988). The general idea behind these approaches was that such variability, if demonstrated, would reflect a very basic level of variation in terms of human behavior. Indeed, it was believed that variation in the execution of reduction sequences, or at least in some of its aspects, was independent of certain economic conditions, which might for instance be responsible for quantitative typological differences (Crew 1975: 5 - 6; Meignen and Bar-Yosef 1988: 82).

Following the research developments in the Near East, it was my aim to study the Levallois artefacts of the Middle Palaeolithic in Northern Africa, using a methodological approach similar to that of Crew. In this contribution, I will investigate the relationship between variability in Levallois flake attributes and typological taxonomy in that region. Depending on the nature of that relationship, some problematic issues concerning the northeast African Middle Palaeolithic might eventually be clarified.

The state of research

Although dating is certainly one of the most acute problems in Lower Nile Valley Middle Palaeolithic research, the evidence allows us to distinguish at least three gross chronological stages in the probably very long period during which the Middle Palaeolithic is represented (van Peer and Vermeersch 1990: 145).

Early Middle Palaeolithic

The Early Middle Palaeolithic comprises the Nubian and Non-Nubian Middle Palaeolithic, described for Nubia by Guichard and Guichard (1965; 1968). Most of the sites are located in the desert east of Wadi Halfa. They are always surface sites, located on top or at the foot of inselbergs. Artefacts from these sites are more aeolized than those from Nubian and Denticulate Mousterian sites, which occur in similar topographical positions (*cf.* below). This observation may indicate the greater age of the former. Moreover, many assemblages contain important numbers of handaxes.

Mid-Middle Palaeolithic

Mid-Middle Palaeolithic assemblages from Middle Egypt (Vermeersch *et al.* 1978; 1979; 1980; 1990) are usually found in derived position within local wadi deposits (Paulissen and Vermeersch 1987: 38). Such situations point to humid environmental conditions. TL-dates from Wadi Kubbanyia suggest that the last Pleistocene humid period ended before 60,000 B.P. (Schild 1987: 21). Based on a differential use of Levallois methods, two groups can be distinguished within these assemblages: the N-group with the Nubian 1 method and with classical method for flakes; the K-group with only the classical method. Denticulate and Nubian Mousterian sites from Nubia (Marks 1968a), mostly located on the surface of inselbergs at distance from the Nile floodplain, belong to this second stage as well. Scarce typological evidence suggests that the Nubian Mousterian might be equated with the N-group, the Denticulate Mousterian with the K-group. Marks (1968a) distinguished two groups within the Nubian Mousterian (A and B), based on the presence or absence of handaxes. The term Nubian Mousterian as it is used here refers to the Nubian Mousterian A.

Late Middle Palaeolithic

The third stage or Late Middle Palaeolithic comprises the Khormusan in Nubia. The sites are always associated with Nilotic sediments and dune sands. The environment was apparently too dry to support occupation of areas outside the floodplain (Marks 1968b: 321). Radiocarbon dates strongly suggest an age beyond the present range of radiocarbon dating (Wendorf and Schild 1976a: 239; Wendorf *et al.* 1979).

Late Middle Palaeolithic sites are rare in more northern regions. At Wadi Kubbanyia, a small scatter of "Khormusan-like" artefacts was found on the eroded surface of floodplain silts and dune sands (Wendorf and Schild 1986: 36). At the site of Makhadma 6 near Qena, a small *in situ* scatter of Middle Palaeolithic artefacts was situated on top of a gravel layer with rolled Middle Palaeolithic artefacts (Paulissen and Vermeersch 1987: 38). This indicates that the *in situ* assemblage post-dates the last Pleistocene humid period. Its

technological characteristics are similar to that of N-group assemblages. The chert extraction Middle Palaeolithic sites at Nazlet Safaha (Vermeersch *et al.* 1986; Vermeersch, this volume) also belong to the Late Middle Palaeolithic.

The Halfan and Levallois-Idfuan, considered as Upper or Late Palaeolithic industries (Marks 1975: 441; Wendorf and Schild 1975: 163; Close 1987: 320), are characterized by the use of a special Levallois variety, called the Halfa method (Marks 1968c: 394). We have argued that the Halfa method evolved out of the K-group classical Levallois method (van Peer and Vermeersch 1990). A number of other arguments have led us to believe that Halfan and Levallois-Idfuan are technologically transitional between Middle and Upper Palaeolithic (van Peer and Vermeersch 1990). This issue will not be further dealt with here.

As far as the Eastern Sahara is concerned, Middle Palaeolithic sites from Bir Tarfawi and Bir Sahara are associated with successive Pleistocene lakes. Correlations between both areas are not established yet. Absolute dating of the sites is in progress. Assemblages from Bir Sahara have been called Denticulate Mousterian and those from Bir Tarfawi Aterian (Wendorf and Schild 1976b). The former are now referred to as Mousterian (Wendorf, this volume); the latter as Denticulate Aterian (Wendorf *et al.* 1987: 62) or "Middle Palaeolithic with foliates" (Wendorf, this volume).

Aspects of Levallois variability

Twenty-eight assemblages were selected for analysis (Table 1). Some Halfan and Levallois-Idfuan assemblages have been included only to show the relationship between Halfa technology and earlier K-group Levallois technology.

Levallois methods

It has been known for many years that within the global Levallois concept (Boëda 1988: 14) different methods can be distinguished, according to the specific organization of the preparation on the upper core surface. Several Levallois methods occur in our research area. As a matter of fact, three of them have been defined on the basis of Nile Valley material: the Nubian 1 and 2 methods (Guichard and Guichard 1965: 68-69) and the above mentioned Halfa method. The various methods and the industries in which their presence is frequently noticed, are presented in Table 2.

The classical method for flakes has been used throughout the Middle Palaeolithic. The Nubian 2 method occurs frequently only in the Early Middle Palaeolithic. Afterwards, it disappears almost completely. During the second stage, the Nubian 1 method is present in Nubian Mousterian and N-group assemblages. The Halfa or classical-related method finally is attested in the Halfan and Levallois-Idfuan.

Table 1

Assemblages and their taxonomic attribution.

Assemblage		Taxonomic group	Region	Reference
113A	(29)	Non-Nubian Middle Palaeolithic	Nubia	Guichard and Guichard 1965
Brinikol	(18)	Nubian Middle Palaeolithic	Nubia	Guichard and Guichard 1965
400-0	(21)	Nubian Middle Palaeolithic	Nubia	Guichard and Guichard 1965
1033 lower layer	(23)	Nubian Mousterian	Nubia	Marks 1968a
1033 upper layer	(88)	Nubian Mousterian	Nubia	Marks 1968a
1035	(15)	Nubian Mousterian	Nubia	Marks 1968a
1038	(26)	Nubian Mousterian	Nubia	Marks 1968a
1000	(16)	Denticulate Mousterian	Nubia	Marks 1968a
77/17	(40)	N-group	Middle Egypt	Hassan 1979
Nazlet Khater 1			Middle Egypt	Paulissen and Vermeersch 1987
– lower layer	(22)	N-group		
– middle layer	(87)	N-group		
– upper layer	(238)	N-group		
Nazlet Khater 3	(108)	N-group	Middle Egypt	Paulissen and Vermeersch 1987
Nazlet Khater 2	(145)	K-group	Middle Egypt	Paulissen and Vermeersch 1987
Beit Allam	(75)	K-group	Middle Egypt	Paulissen and Vermeersch 1987
Bir Sahara 1	(16)	Mousterian	Eastern Sahara	Wendorf and Schild 1976b
Bir Tarfawi 14 C	(53)	Middle Palaeolithic with foliates	Eastern Sahara	Wendorf, this volume
34A	(49)	Khormusan	Nubia	Marks 1968b
1017	(88)	Khormusan	Nubia	Marks 1968b
34D	(66)	Khormusan	Nubia	Marks 1968b
ANW-3	(136)	Khormusan	Nubia	Marks 1968b
2004	(310)	Khormusan	Nubia	Marks 1968b
101B	(105)	Halfan	Nubia	Marks 1968c
1020	(97)	Halfan	Nubia	Marks 1968c
624	(22)	Halfan	Nubia	Marks 1968c
E71P1A	(28)	Levallois Idfuan	Upper Egypt	Wendorf and Schild 1976a
E71P1C	(101)	Levallois Idfuan	Upper Egypt	Wendorf and Schild 1976a
Nazlet Khater 5	(65)		Middle Egypt	

Numbers of classical flakes analyzed are between brackets.

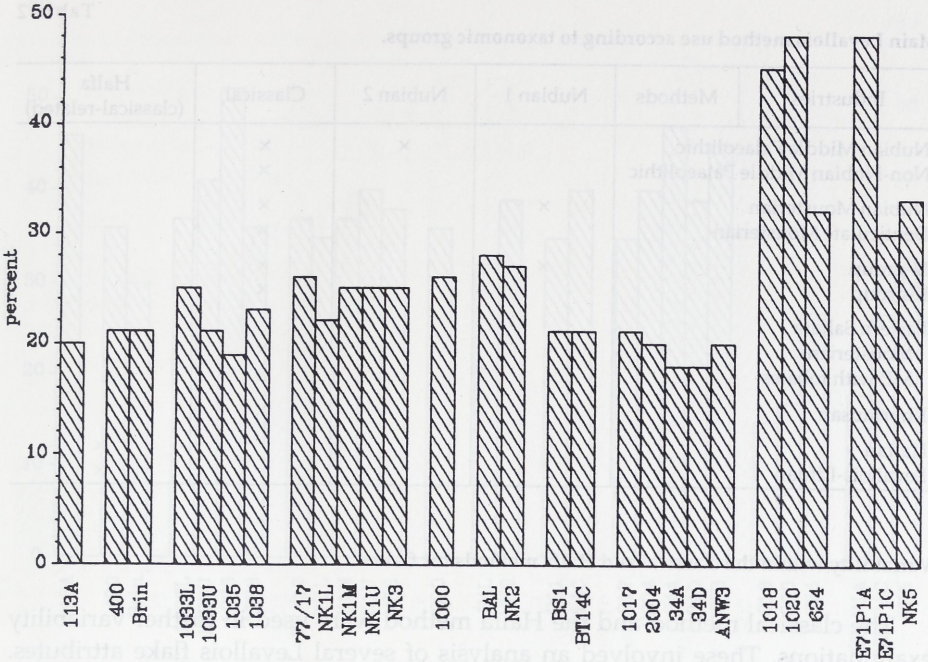

Fig. 1. Percentages of distal scars on classical Levallois flakes.

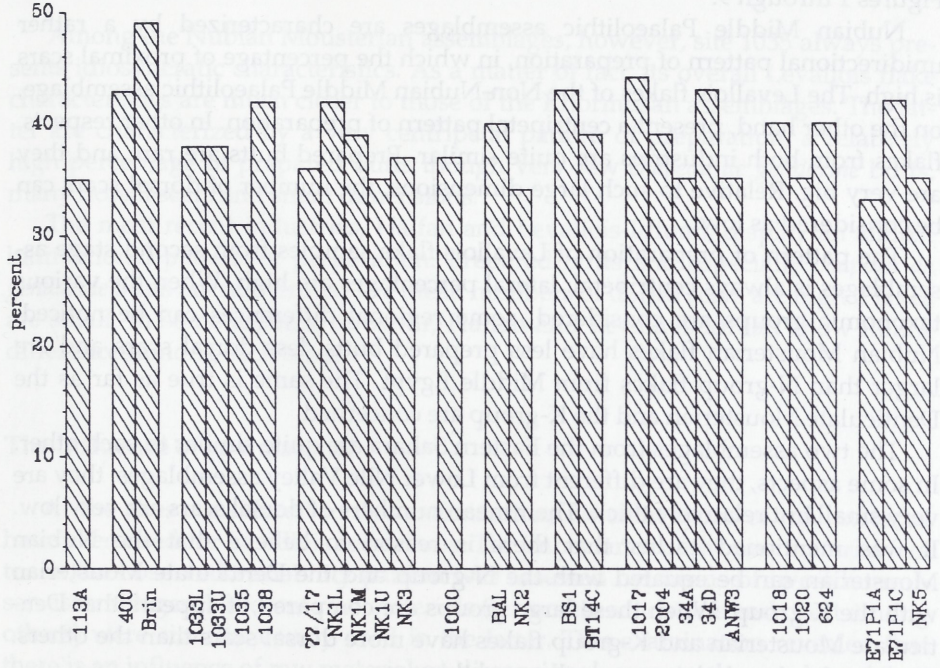

Fig. 2. Percentages of proximal scars on classical Levallois flakes.

Table 2

Main Levallois method use according to taxonomic groups.

Industries	Methods	Nubian 1	Nubian 2	Classical	Halfa (classical-related)
Nubian Middle Palaeolithic			×	×	
Non-Nubian Middle Palaeolithic				×	
Nubian Mousterian		×		×	
Denticulate Mousterian				×	
N-group		×		×	
K-group				×	
Eastern Sahara					
Mousterian				×	
MP with foliates				×	
Khormusan				×	
Halfan					×
Levallois-Idfuan					×

Variability within the classical and Halfa methods for flakes

The classical method and the Halfa method were used in further variability examinations. These involved an analysis of several Levallois flake attributes. Numbers of flakes analyzed are given in Table 1. Results are presented in Figures 1 through 9.

Nubian Middle Palaeolithic assemblages are characterized by a rather unidirectional pattern of preparation, in which the percentage of proximal scars is high. The Levallois flakes of the Non-Nubian Middle Palaeolithic assemblage, on the other hand, present a centripetal pattern of preparation. In other respects, flakes from both industries are quite similar. Prepared butts are rare and they are very big. Relative to such large dimensions, the number of dorsal scars can be considered as low.

The pattern of preparation of Levallois flake samples from second stage assemblages is always centripetal: lateral percentages are high. When the various taxonomic groups are considered, some regional differences can be noticed. Nubian Mousterian flakes have less prepared butts, less dorsal scars and are larger than N-group flakes from Middle Egypt. The same is true as far as the Denticulate Mousterian and the K-group are concerned.

The two assemblages from the Eastern Sahara are quite similar to each other. In some aspects, they are different from Lower Nile Valley assemblages: they are very small but relatively thick. Their mean numbers of dorsal scars are very low. It was mentioned earlier that there is reason to believe that the Nubian Mousterian can be equated with the N-group and the Denticulate Mousterian with the K-group. When these large groups are compared, it appears that Denticulate Mousterian and K-group flakes have more dorsal scars than the others. On the other hand, they are smaller and thinner.

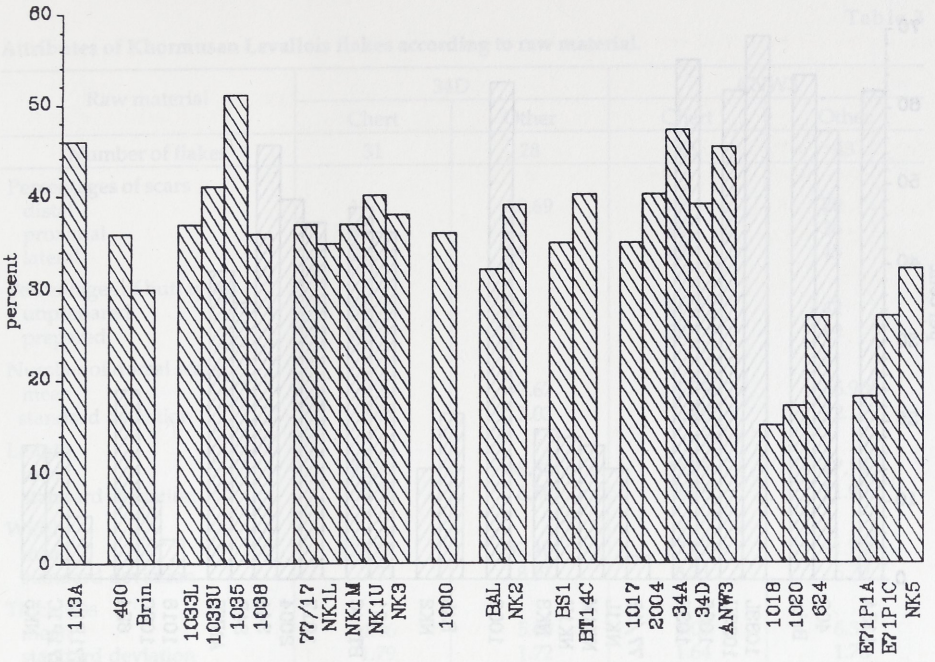

Fig. 3. Percentages of lateral scars on classical Levallois flakes.

Among the Nubian Mousterian assemblages, however, site 1035 always presents idiosyncratic characteristics. As a matter of fact, its overall Levallois flake characteristics are much closer to those of the Khormusan assemblages. The latter are characterized by a very centripetal pattern of preparation, a relatively high percentage of prepared butts though very few *chapeau de gendarme* butts, many dorsal scars and small dimensions.

The most recent industries, Halfan and Levallois-Idfuan, display an almost bidirectional pattern or preparation. Prepared butts and especially *chapeau de gendarme* butts are numerous. The mean numbers of dorsal scars are high. Flakes are small. In some aspects, however, Halfan and Levallois-Idfuan show minor differences among each other.

The influence of raw material

At the sites considered in this examination, different types of raw material have been used for Levallois reductions. The importance of the raw material factor in the observed variability pattern was assessed by means of two Khormusan assemblages. Different raw materials (ferrocrete sandstone and chert among others) were simultaneously used in the latter. This examination revealed that there is an influence of raw material on dimensional aspects, the number of dor-

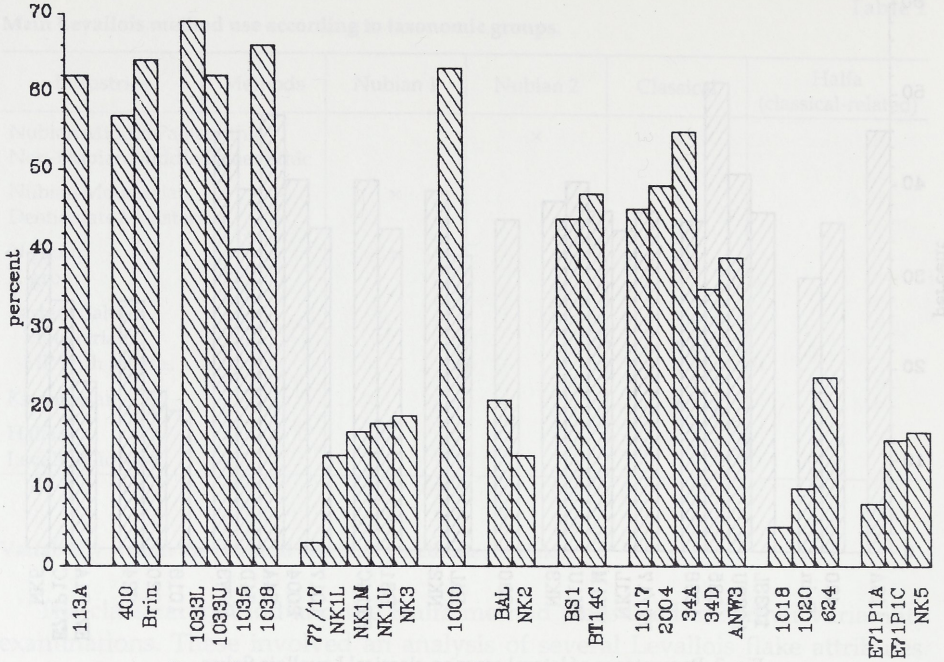

Fig. 4. Percentages of unprepared butts on classical Levallois flakes.

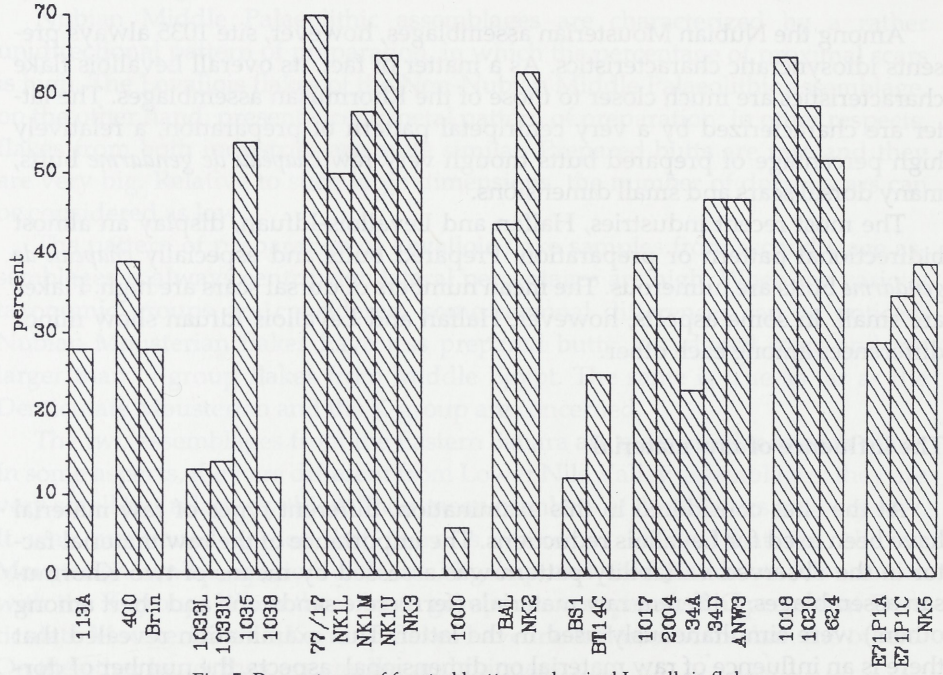

Fig. 5. Percentages of faceted butts on classical Levallois flakes.

Table 3

Attributes of Khormusan Levallois flakes according to raw material.

Raw material	34D		ANW3	
	Chert	Other	Chert	Other
Number of flakes	31	28	55	43
Percentages of scars				
distal	17	20.69	19	20
proximal	45	42	35	36
lateral	38	38	45	45
Percentages of butt types				
unprepared	33	42	34	42
prepared	49	37	58	49
Number of dorsal scars				
mean	8.19	7.67	7.76	6.90
standard deviation	2.71	2.03	2.40	2.17
Length				
mean	32.97	38.54	39.71	47.19
standard deviation	9.58	8.59	9.93	11.99
Width				
mean	24.87	32.40	27.77	31.72
standard deviation	7.31	8.91	8.31	6.79
Thickness				
mean	4.46	5.65	5.03	6.32
standard deviation	1.79	1.72	1.64	1.78

Other is ferrocrete sandstone (site 34D) or Precambrian quartzite (site ANW3). Percentages of scars per sector were calculated according to the system developed by Crew (1975: 13). By unprepared butts, I understand flat and dihedral butts. Prepared butts are faceted and *chapeau de gendarme* butts. Percentages of butt types may not always add up to 100, since some rare types are not included in these counts.

sal scars and butt preparation (Table 3). The pattern of preparation, on the other hand, is not affected. This evidence allows us to explain the overall regional differences for the second stage. Indeed, ferrocrete sandstone was used in Nubia, whereas chert was the preferred raw material in Egypt. In the Eastern Sahara, a coarse quartzitic sandstone was mainly used.

Not only the type of raw material, but also the size and form in which it occurs is of importance. The size difference between Halfa and Levallois-Idfuan flakes, in both cases almost exclusively out of chert, are likely to be due to this factor. In the region where the Halfan occurs, chert pebbles available for use are rather small (Marks 1968c: 459).

The raw material factor must certainly be held responsible for a certain amount of variability. Nevertheless, it is also clear that another part of the variation cannot be explained in terms of differences in raw material use. The pattern of preparation has been shown not to be affected by that parameter. Nevertheless, important variation in the disposition of dorsal scars is attested. Even changes in dimensional aspects, which are the most sensitive to the raw material factor, are not always related to the latter. This is clearly shown by the Middle Egypt second stage assemblages. At Nazlet Khater, similar chert nodules were used for the manufacture of Levallois flakes at three sites. The Nazlet Khater 2 flakes, however, are smaller than those of Nazlet Khater 1 and Nazlet Khater 3.

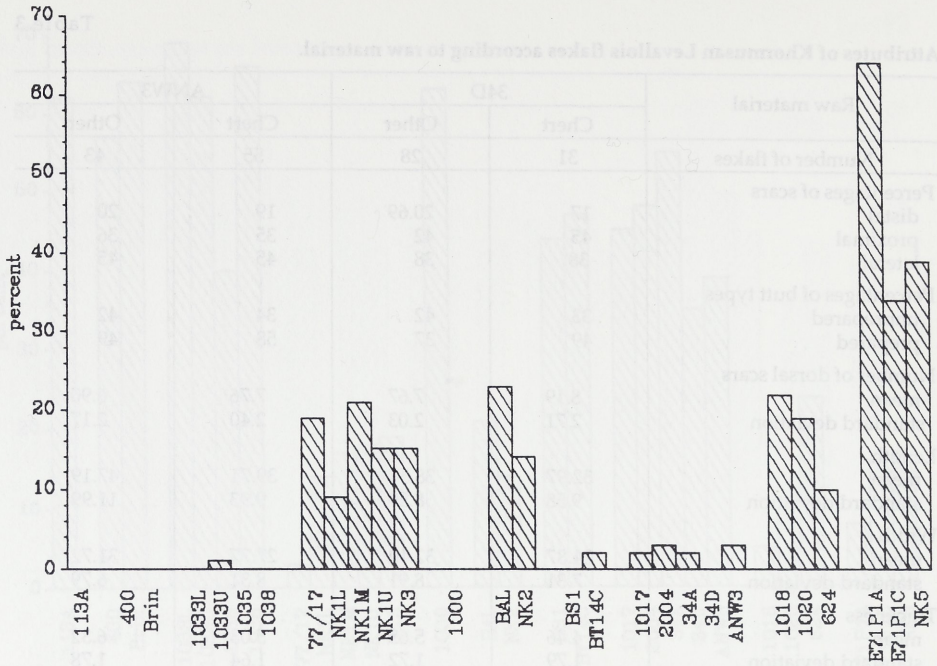

Fig. 6. Percentages of *chapeau de gendarme* butts on classical Levallois flakes.

Diachronous and synchronous Levallois variability

A change through time, largely independent of raw material constraints, is clearly attested both in the use of Levallois methods and in classical Levallois flake attributes. As far as the latter are concerned, there is a change in the pattern of preparation, prepared butt frequencies and dimensions. In later periods, more "delicate" Levallois flakes are produced.

During the Early Middle Palaeolithic, inter-industrial variation can not be detected, except for a slight difference in the pattern of preparation. However, both industries differ in terms of the Levallois methods used. Inter-industrial variation, both in method-use and classical flake attributes, is beginning to show up during the second stage, between the Nubian Mousterian/N-group and the Denticulate Mousterian/K-group. Regional differences between Nubia and Egypt are likely to be due to a differential use of raw material. The Eastern Sahara assemblages are in several respects different from those of the Lower Nile Valley.

In the Late Middle Palaeolithic, the Nubian 1 Levallois method disappears from the Nile Valley. The transitional industries, Halfan and Levallois-Idfuan, both rely on the same Levallois method. Their overall Levallois flake characteristics are reminiscent of those of second stage Denticulate Mousterian/

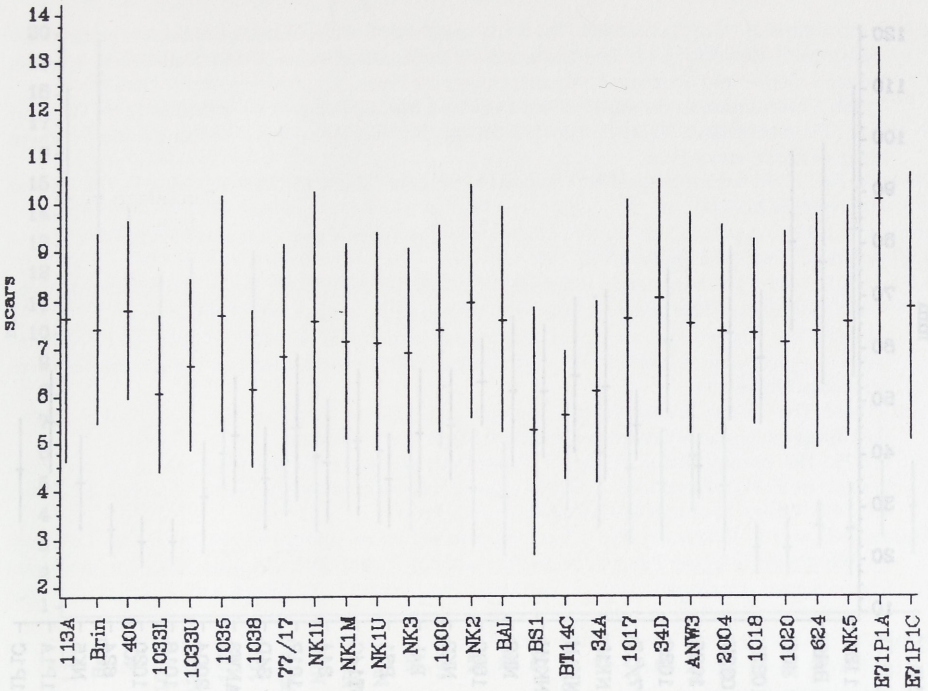

Fig. 7. Mean numbers of dorsal scars of classical Levallois flakes. Lines represent one standard deviation.

K-group assemblages. It seems indeed that the Halfa method is rooted in this particular classical Levallois method and can therefore be called a classical-related method.

Conclusion

The reduction strategies of Middle Palaeolithic industries from the Lower Nile Valley and the Eastern Sahara are for a large part based on the Levallois concept. Within that general concept, variations are attested at different levels. On the one hand, different Levallois methods have been used. On the other hand, a complex variability has been observed within the endproducts – Levallois flakes – manufactured according to one particular method.

There is evidence that, from the second stage of the Middle Palaeolithic on, the pattern of variability in classical Levallois flake samples does largely reflect the various taxonomic groups present in this region. This observation is of importance since it provides us with a more extended basis for taxonomic classification. It also invites us to critically consider earlier classifications. These statements can be illustrated with several examples.

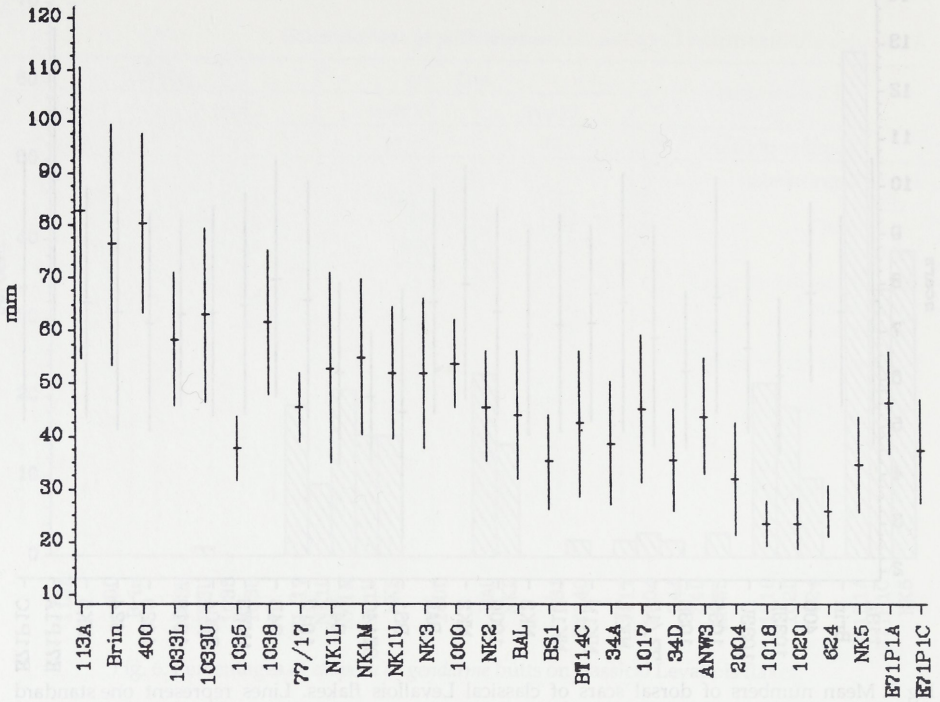

Fig. 8. Mean length of classical Levallois flakes. Lines represent one standard deviation.

The Nazlet Khater 5 assemblage, which remained undetermined in Table 1, may on the basis of its Levallois flake characteristics be integrated within the Levallois-Idfuan.

The peculiar position of the 1035 assemblage within the Nubian Mousterian was already referred to. Since its Levallois flake characteristics are very close to those of Khormusan assemblages, it could be integrated within the Khormusan. In other respects such as Levallois method use, typology, raw material use and site location, however, it is indeed close to Nubian Mousterian assemblages. Assemblage 1035 seems to suggest that the Khormusan has evolved out of the Nubian Mousterian. During this evolution, the Nubian 1 method disappears and occurs only very sporadically in the Khormusan. This phenomenon can be explained in economic terms. Since this method was very raw material intensive and since raw material was much more difficult to procure (in view of the sites being located in the floodplain), the Nubian 1 method had to be abandoned.

As far as the nature of Eastern Sahara Middle Palaeolithic assemblages is concerned, it appears that both assemblages studied are very similar. This suggests that they are to be inscribed in the same industrial tradition. The latter is different from Lower Nile Valley industries of the second stage. The moderate presence of the Nubian 1 method in the Eastern Sahara assemblages, however, suggest some Nile Valley affiliation.

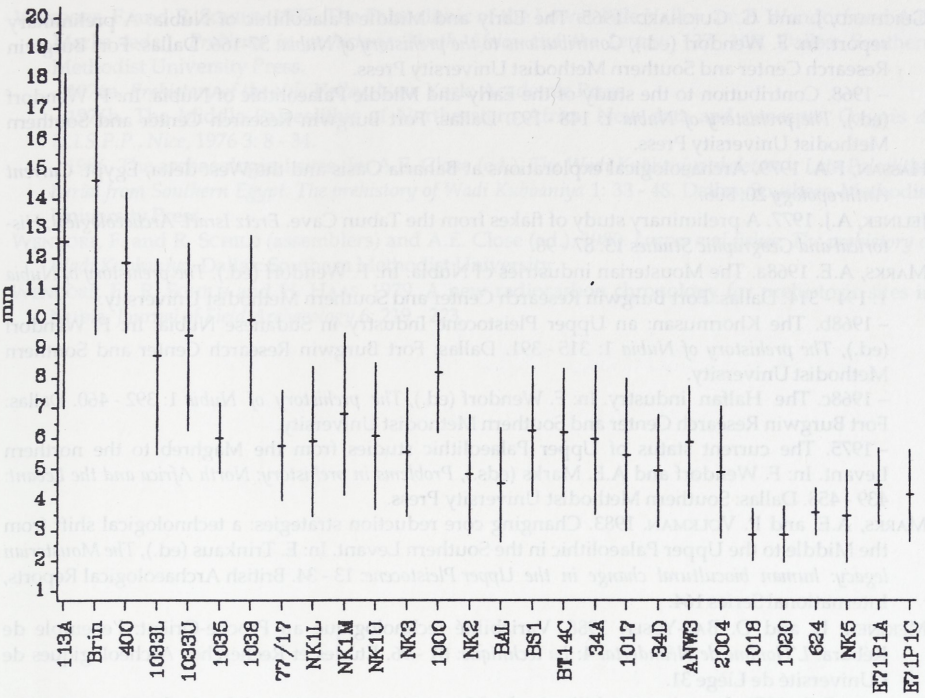

Fig. 9. Mean thickness of classical Levallois flakes. Lines represent one standard deviation.

Acknowledgment

I would like to thank Dr. J. Guichard, Prof. F.A. Hassan, Prof. A.E. Marks and Prof. F. Wendorf for giving me the opportunity to study the lithic materials from many of the sites mentioned in this article. I thank Prof. P.M. Vermeersch for his critical comments on earlier drafts of this paper. My research was funded by the Belgisch Nationaal Fonds voor Wetenschappelijk Onderzoek.

References

BOËDA, E. 1988. Le concept Levallois et évaluation de son champ d'application. *L'Homme de Néandertal* 4: 13 - 26. Etudes et Recherches Archéologiques de l'Université de Liège 31.

BOUTIÉ, P. 1981. *L'industrie moustérienne de la grotte du Kébara, Mont Carmel, Israël.* Muséum National d'Histoire Naturelle, Musée de l'Homme Mémoire 10.

CLOSE, A.E. 1987. Overview. In: A.E. Close (ed.), *Prehistory of arid North Africa. Essays in honour of Fred Wendorf*: 317 - 324. Dallas: Southern Methodist University Press.

CREW, H.L. 1972. A statistical analysis of Levallois preparatory flaking. In: J.D. Clark and G. Isaak (eds.), *Bulletin of the Commission on Nomenclature of the Pan-African Congress of Prehistory*: 27 - 36.

– 1975. *An evaluation of the variability of the Levalloisian method: its implications for the internal and external relationships of the Levantine Mousterian.* Ph.D. dissertation. Davis: University of California.

GUICHARD, J. and G. GUICHARD. 1965. The Early and Middle Palaeolithic of Nubia: A preliminary report. In: F. Wendorf (ed.), *Contributions to the prehistory of Nubia*: 57-166. Dallas: Fort Burgwin Research Center and Southern Methodist University Press.

– 1968. Contribution to the study of the Early and Middle Palaeolithic of Nubia. In: F. Wendorf (ed.), *The prehistory of Nubia* 1: 148 - 193. Dallas: Fort Burgwin Research Center and Southern Methodist University Press.

HASSAN, F.A. 1979. Archaeological explorations at Baharia Oasis and the West delta, Egypt. *Current Anthropology* 20: 806.

JELINEK, A.J. 1977. A preliminary study of flakes from the Tabun Cave. *Eretz Israël. Archaeological, Historical and Geographic Studies* 13: 87 - 96.

MARKS, A.E. 1968a. The Mousterian industries of Nubia. In: F. Wendorf (ed.), *The prehistory of Nubia* 1: 194 - 314. Dallas: Fort Burgwin Research Center and Southern Methodist University.

– 1968b. The Khormusan: an Upper Pleistocene Industry in Sudanese Nubia. In: F. Wendorf (ed.), *The prehistory of Nubia* 1: 315 - 391. Dallas: Fort Burgwin Research Center and Southern Methodist University.

– 1968c. The Halfan industry. In: F. Wendorf (ed.), *The prehistory of Nubia* 1: 392 - 460. Dallas: Fort Burgwin Research Center and Southern Methodist University.

– 1975. The current status of Upper Palaeolithic studies from the Maghreb to the northern Levant. In: F. Wendorf and A.E. Marks (eds.), *Problems in prehistory: North Africa and the Levant*: 439 - 458. Dallas: Southern Methodist University Press.

MARKS, A.E. and P. VOLKMAN. 1983. Changing core reduction strategies: a technological shift from the Middle to the Upper Palaeolithic in the Southern Levant. In: E. Trinkaus (ed.), *The Mousterian legacy: human biocultural change in the Upper Pleistocene*: 13 - 34. British Archaeological Reports, International Series 164.

MEIGNEN, L. and O. BAR-YOSEF. 1988. Variabilité technologique au Proche-Oriënt: l'exemple de Kébara. *L'Homme de Néandertal* 4: *La technique*: 81 - 96. Etudes et Recherches Archéologiques de l'Université de Liège 31.

MUNDAY, F.C.. 1976. Intersite variability in the Mousterian occupation of the Avdat/Aqev area. In: A.E. Marks (ed.), *Prehistory and paleoenvironments in the central Negev Israel* 1: *The Avdat/Aqev area* (1): 113 - 140. Dallas: Southern Methodist University Press.

PAULISSEN, E. and P.M. VERMEERSCH. 1987. Man, earth and climate in the Egyptian Nile Valley during the Pleistocene. In: A.E. Close (ed.), *Prehistory of arid North Africa. Essays in honour of Fred Wendorf*: 29 - 68. Dallas: Southern Methodist University Press.

PEER, P. VAN and P.M. VERMEERSCH. 1980. Middle to Upper Palaeolithic transition: the evidence from the Nile Valley. In: P. Mellars (ed.) *The emergence of modern humans: an archaeological perspective*: 139 - 154. Edinburgh: Edinburgh University Press.

SCHILD, R. 1987. Unchanging contrast? The late Pleistocene Nile and eastern Sahara. In: A.E. Close (ed.), *Prehistory of arid North Africa. Essays in honour of Fred Wendorf*: 13 - 28. Dallas: Southern Methodist University Press.

VERMEERSCH, P.M., E. PAULISSEN, G. GIJSELINGS and J. JANSSEN. 1986. Middle Palaeolithic chert exploitation pits near Qena (Upper Egypt), *Paléorient* 12: 61 - 65.

VERMEERSCH, P.M., E. PAULISSEN, M. OTTE, G. GIJSELINGS and D. DRAPPIER. 1978. Middle Palaeolithic in the Egyptian Nile Valley. *Paléorient* 4: 245 - 252.

– 1979. Prehistoric and geomorphologic research in Middle Egypt. *Palaeoecology of Africa* 11: 111 - 115.

VERMEERSCH, P.M., E. PAULISSEN, M. OTTE, G. GIJSELINGS, D. DRAPPIER and P. VAN PEER. 1980. Excavations at Nazlet Khater (Middle Egypt). *Bulletin de l'Association Internationale pour l'Etude de la Préhistoire Egyptienne* 2: 73 - 76.

VERMEERSCH, P.M., E. PAULISSEN and P. VAN PEER. 1990. Le Paléolithique dans la Vallée du Nil égyptien. *L'Anthropologie*: 435 - 458.

WATANABE, H. 1968. Flake production in a transitional industry from Amud Cave, Israel: a statistical approach to Palaeolithic techno-typology. In: F. Bordes (ed.), *La préhistoire: problèmes et tendences*: 499 - 509. Paris: Centre National de la Recherche Scientifique.

WENDORF, F., A. CLOSE and R. SCHILD. 1987. Recent work on the Middle Palaeolithic of the Eastern Sahara. *The African Archaeological Review* 5: 49 - 63.

WENDORF, F. and R. SCHILD. 1975. The Palaeolithic of the Lower Nile Valley. In: F. Wendorf and A.E. Marks (eds.), *Problems in prehistory: North Africa and the Levant*: 127 - 169. Dallas: Southern Methodist University Press.

– 1976a. *Prehistory of the Nile Valley*. New York: Academic Press.

– 1976b. The Middle Palaeolithic of Northeastern Africa. New data and concepts. *Congrès de U.I.S.P.P., Nice*, 1976 3: 8 - 34.

– 1986. The archaeological sites. In: A.E. Close (ed.), *The Wadi Kubbaniya skeleton: a Late Paleolithic burial from Southern Egypt. The prehistory of Wadi Kubbaniya* 1: 33 - 48. Dallas: Southern Methodist University Press.

WENDORF, F. and R. SCHILD (assemblers) and A.E. Close (ed.), 1980. *Loaves and fishes. The prehistory of Wadi Kubbaniya*. Dallas: Southern Methodist University.

WENDORF, F., R. SCHILD and H. HAAS. 1979. A new radiocarbon chronology for prehistoric sites in Nubia. *Journal of Field Archaeology* 6: 219 - 223.