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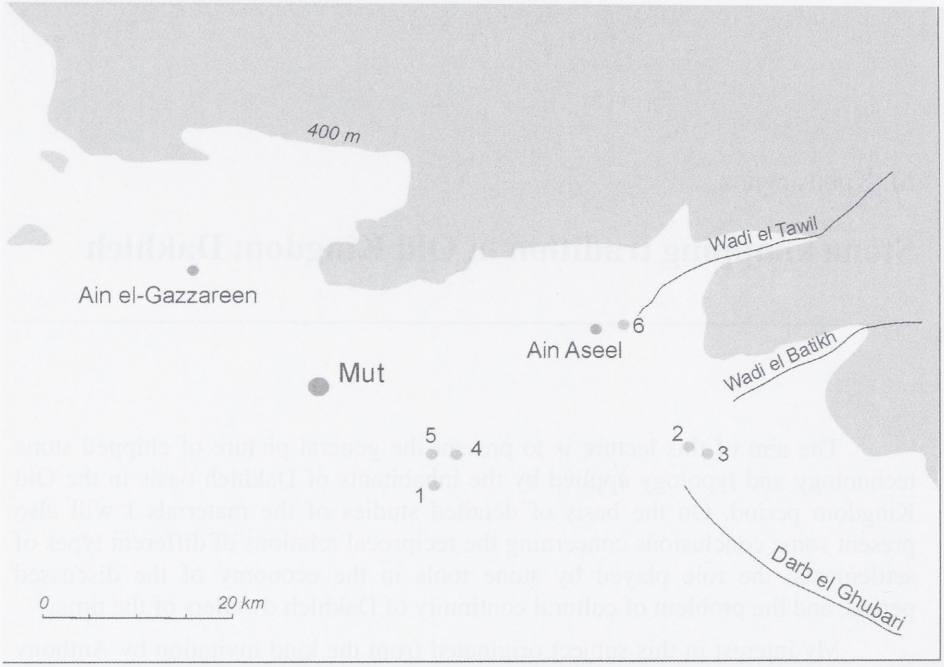
Stone knapping tradition in Old Kingdom Dakhleh

The aim of this lecture is to present the general picture of chipped stone technology and typology applied by the inhabitants of Dakhleh oasis in the Old Kingdom period. On the basis of detailed studies of the materials I will also present some conclusions concerning the reciprocal relations of different types of settlements, the role played by stone tools in the economy of the discussed period, and the problem of cultural continuity of Dakhleh dwellers of the time.

My interest in this subject originated from the kind invitation by Anthony Mills, the director of Dakhleh Oasis Project to come and work on the chipped stone assemblage derived from the ancient Egyptian village Ain el Gazzareen investigated by him in the western part of the oasis (Mills, Kaper 2003). Here I would like to express my gratitude for a chance to carry out this investigation. My thanks go also to Olaf Kaper and Colin Hope for the possibility to study collections from some watch posts (Kaper & Willems 2002) and from the temple El Kharab in Mut.

The fourth type of site taken by me into account is a rich chipped stone assemblage from a large town settlement Ain Aseel situated in the centre of the oasis near Balat, described in details by Midant-Reines (1983, 1985, 1998).

The study of these four different types of settlements (Fig. 1), from the same time period but with different functions, led me to an attempt to suggest a review of the problems related to the role of chipped stone in the life of Old Kingdom Dakhleh dwellers. It may also throw some light on the following question: was the aboriginal population expelled by the colonizers coming from the Nile valley or did they become the subject of the acculturation, slow absorption by the dominant Egyptian civilization ? Most of the sites mentioned above are dated to the Vth and VIth Dynasties. The only exception maybe the temple El Kharab from Mut dated by C. Hope to the IV Dynasty.



Dakhleh Oasis. Old Kingdom sites mentioned in the text
1-6 watch posts

Fig. 1.

To approach the problem I applied the method of the dynamic technology proposed by R. Schild (1980) similar to the French so called chaîne operatoire.

Since the known type lists of the chipped stone are not suitable for the analysis and interpretation of the Dakhleh Old Kingdom assemblages, the new list was created for retouched tools. This list, containing 25 types, was based on the richest assemblage excavated in Ain el Gazzareen until the year 2000. The characterization of cores and debitage is based on the special collection from the square O16. Materials from this square were carefully and precisely collected, including small flakes, chips and all kind of debitage waste. The excavator's intention was to achieve a full representation of chipped stone industry necessary to understand the intentions of stone knappers and the way they worked.

All completely preserved cores and pieces of debitage originating from the square O16 were precisely measured, raw materials as well as types of blanks, striking platforms, angles of striking surfaces, degrees of core preparation and

utilization etc. were defined. Analysis of these data made it possible to reconstruct the intentions and methods applied by stone knappers to attain the planned results. Conclusions concerning the above issues formulated on the materials obtained from Ain el Gazzareen can be successfully applied to the remaining Old Kingdom stone assemblages from Dakhleh oasis.

Raw materials

Two kinds of raw materials played the main role in the chipped stone assemblages from Dakhleh. The first one is the so-called nodular chert It occurs in relatively small nodules ca. 6 -10 cm in diameter of more or less spherical shape and covered by thick coarse cortex. According to Munsell Color Card its colour is brown, pale brown or dark brown. Nodules of this chert eroded from Palaeocene lime stones occur in great number at the foot of the scarp bordering the oasis from the north.

The second important raw material is tabular chert. It occurs in the shape of flat tablets often covered by smooth whitish cortex. The most common colour of tabular chert is reddish yellow, but also strong brown and rarely reddish brown. The last colour, according to some scholars, could be the result of heat treating (McDonald 1993). Sources of this material are not known to me. Considering its frequency we may assume that the sources of tabular chert should be not far away.

Chalcedony is found only on the watch posts. In Bee's Lookout numerous products made of this material were derived from one large, partially exhausted spherical nodule, covered by grey, fine grained cortex, which has many small cracks on its surface. The colour of chalcedony is white bluish grey or pinkish grey. Close to the surface it changes for cherry red. I can not identify the sources of chalcedony. Infrequently some pieces of quartzite could be found. They were eroded, like nodular chert, from the upper cretaceous sediments of the northern scarp.

Chipped stone technology

This study gives a clear picture of the chipped stone typology and technology from four different types of the Old Kingdom settlements from Dakhleh: a local village (Ain el Gazzareen), fortified town – the dominant site for the Dakhlech Egyptian community (Ain Aseel), the temple (Mut el Kharab) and finally the row of the watch posts surrounding the oasis (Seth Hill, Bee's Lookout, Nephtys Hill and several others). All these settlements played different roles in the economical, social and political life of Dakhleh in the Old Kingdom.

Let's try to compare these different units. From a technological point of view all of them are clearly similar. Four technological approaches were applied.

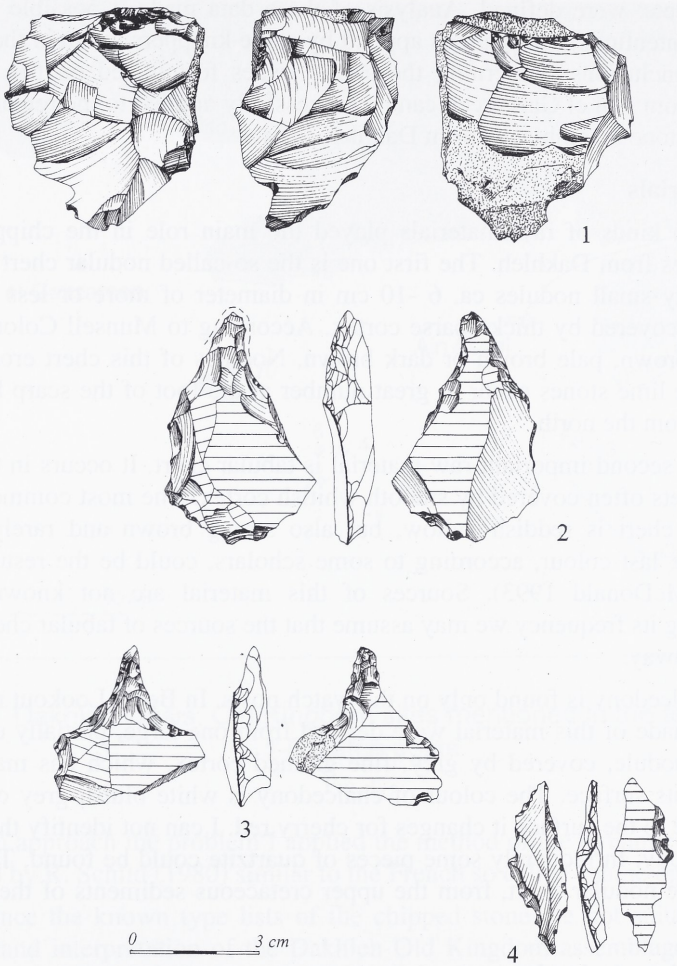


Fig. 2. Ain el Gazzareen. Dakhlech Oasis. 1- multiplatform core for flakes; 2- groover; 3 – perforator; 4- double backed perforator.

For the nodular chert flake technology was absolutely predominant. Single platform, or in farther stages of processing, the multiplatform cores were used for exploiting nodules of this raw material (Fig. 2:1). Core preparation – that is the steps necessary for obtaining the more sophisticated forms of blanks – was very rarely applied. The final products were flakes used for production of different types of rather small retouched tools, such as perforators (Fig. 2:3-4), groovers

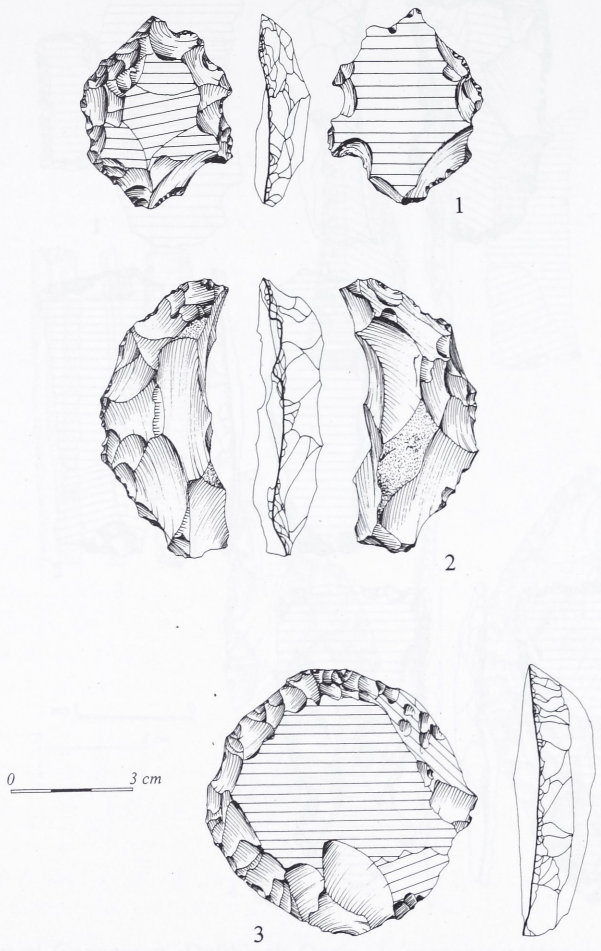


Fig. 3. Ain el Gazzareen. Dakhlech Oasis. 1- denticulate; 2- crescent; 3-heavy duty scraper.

(Fig. 2:2), denticulates (Fig. 3:1), crescents (Fig. 3:2) and retouched flakes. In the initial stage of processing the hard hammer was used more often, but later the soft hammer made of bone or hard wood.The second, completely different technological approach was applied for the elaboration of the tabular chert.

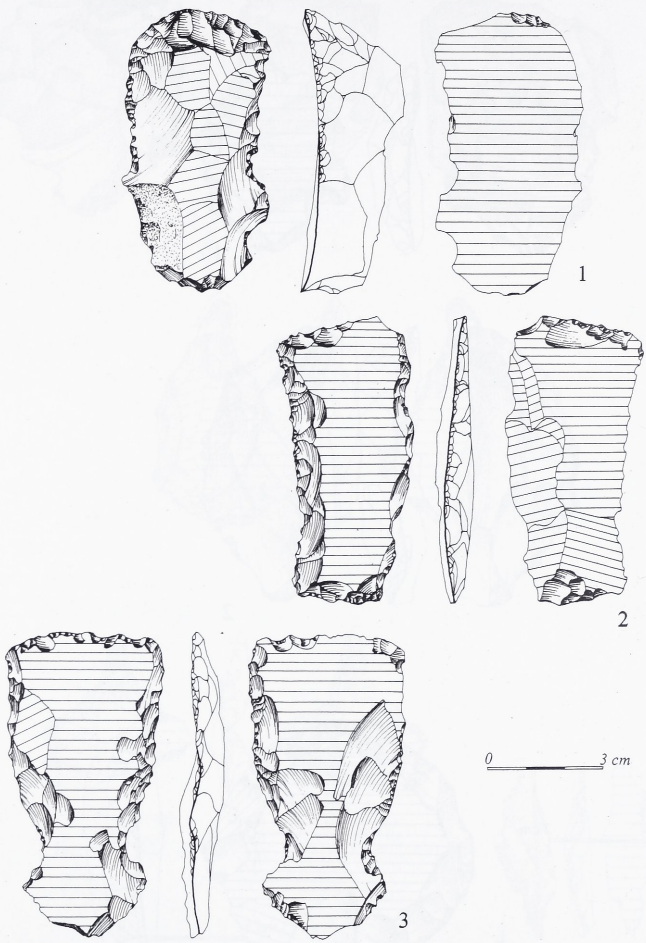


Fig. 4. Ain el Gazzareen. Dakhlech Oasis. 1- end-scraper; 2- chisel; 3- double notch.

The cores were never made of this kind of raw material. The tools were produced by flaking a chosen piece of chert tablet to achieve a desired shape. In this way larger tools were obtained, such as different scrapers (Fig. 3:3; 4:1), chisels (Fig. 4:2) , double notches (Fig. 4:3) and massive rectangular (Fig. 5:1) or triangular (Fig. 5:2) sickle inserts.

The third technology was a bifacial retouching for making different types of bifacial knives (Fig. 5:4). Midant-Reines (1998) writes that, in the case of Ain

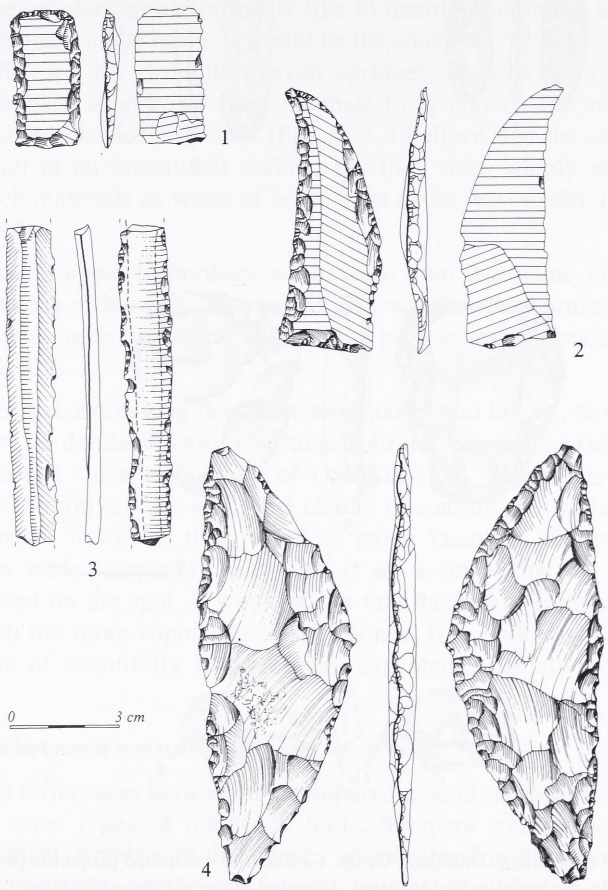


Fig. 5. Ain el Gazzareen. Dakhlech Oasis. 1- massive rectangular sickle insert; 2- massive triangular sickle insert; 3- lamellar sickle insert; 4- bifacial knife.

Aseel, such knives were imported. But, considering the large number of characteristic biface trimming flakes (Fig. 6:4) known from Ain el Gazzareen, less numerous from Ain Aseel and abundant in Mut el Kharab, we can state that the bifacial knives were locally made and repaired. The projectile points known from Ain el Gazzareen and from the watch posts were also carefully bifacially retouched (Fig. 6:1).

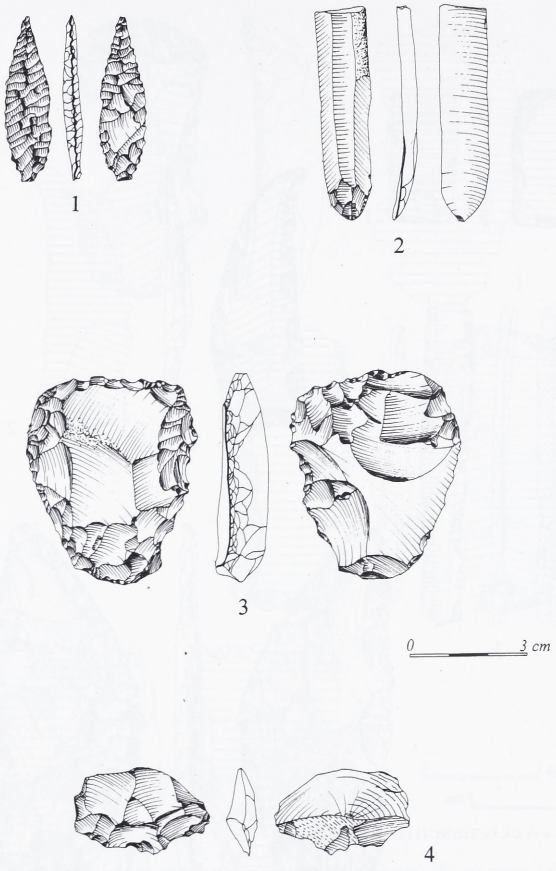


Fig. 6. Ain el Gazzareen. Dakhlech Oasis. 1-bifacially retouched projectile point; 2- half-product for lamellar sickle insert; 3- scaled piece; 4-biface trimming flake.

The fourth technological variant is the exploitation of the discoidal core struck all around for obtaining flakes. We have only one such example – a large discoidal core of chalcedony found at the watch post Bee's Lookout.

In Ain el Gazzareen, as well as in Ain Aseel, the high quality, elongated, straight and regular blades occur obtained from single platform core by means of a special, very precise, so-called pressure technique. These blades were semi-finished, half-products for lamellar sickle inserts (Fig. 6:2). They were found, but not produced there. All of them derived from a high quality Egyptian flint of which no cores or any debitage pieces were found. It means that these blades

were imported from somewhere and we can not say that the pressure technique was practiced in Dakhleh.

Some scholars would probably like to mention one more technology used by stone knappers in the oasis. It would be the so called "scaling", supposedly for obtaining flakes with strongly weaved surfaces, by striking a piece of stone placed on a hard support by hard hammer from above. The remnants of this procedure should be scaled pieces (Fig. 6:3). I believe that the scaled pieces are not the result of an intentional scaling, but they were simply wedges used for splitting such materials as wood or bone. That is the reason why I classify scaled pieces as tools.

Speaking about technology we have to note that some pieces of tabular chert bear traces of burning. The question is whether the burning was an intentional heat treating to facilitate the knapping process, or just traces of occasional contact with fire.

In general, estimating the character of cores and blanks, as well as the lack of characteristic debitage waste resulting from the succeeding stages of processing, the chipped stone technology of Old Kingdom settlements from Dakhleh seems to us primitive. The so called chaîne operatoire was rather short. But it does not mean, however, that for these stone knappers the more developed technologies were completely unknown. If we assume, that the bifacial knives were produced on the spot, it would mean that the Dakhleh knappers were also familial with the more sophisticated techniques. It is additionally confirmed by the presence of beautifully and precisely executed, bifacially retouched arrow heads.

Differences between assemblages

Some differences between the compared assemblages appear mainly in the number of some types of retouched tools. Scrapers and retouched flakes are always abundant. Significant differences are observed in the amount of denticulated tools, numerous on the watch posts but less abundant in the villages. By contrast, the bifacial knives and sickle inserts found in the large numbers in the village settlements are absent on the watch posts. The absence of sickle inserts on the watch posts is not surprising, considering the function of this sites which had nothing in common with the activities demanding sickles, whereas the striking abundance of denticulates is difficult to explain.

The most obvious differences between the assemblages under discussion are visible in the amount and the kind of used raw materials. It is clearly visible that the watching crews, as opposed to the village dwellers, rarely used tabular chert abundant elsewhere, but probably for them it was hard to get.

Both village-type settlements were well provided with raw materials. The situation was not exactly the same with the watch posts. Here, apart from the lack of tabular chert mentioned earlier, the scarcity of raw material is proved by the presence of more exhausted cores of nodular chert and more differentiated set of types of raw materials. This scarcity is also supported by the reutilization of old, intensively weathered Middle Palaeolithic blanks, and some times also Levallois cores, often present on the surface in many places of the oasis, and originating from the settlements several dozens of thousands of years old. The Middle Palaeolithic blanks were found in quite a large numbers in watch posts Nephtys Hill and Seth Hill. The repeated use of the old Middle Palaeolithic blanks on the watch posts is not surprising, considering that the watch-men could probably not leave theirs posts to search for raw material and they had to use whatever was close at hand.

Activities performed with a help of chipped stone tools

When analyzing the chipped stone materials it is possible to some extent to define the activities performed by means of this objects. First let's see what we know about the organization of stone tools production.

Judging from a small number of primary flakes we can assume that the earliest stage of chert nodules elaboration took place outside the settlement, probably simply on the spot where the nodules were found. Here the first useless surface flakes covered by cortex were struck off. Then the roughly cleaned pre-cores were brought to the village. The next stages of knapping process took place in the individual homesteads. The chipped stone occurs everywhere and, up to now, no single room or structure was found containing chipped stone assemblage significantly different from the others. The hypothesis of individual home-made production is additionally supported by the two discoveries of stone-knapper sets in the pots found in ordinary houses in Ain Aseel (Midant-Reines 1998).

It seems that the inhabitants of the Old Kingdom villages in Dakhleh were self-sufficient as concerns chipped stone products with one exception of imported high quality blades of Egyptian flint serving as sickle inserts. These imported blades were most probably retouched and inserted into wooden handles at home as it was needed.

As it was mentioned above the watch-men had to manage with the raw materials brought or found in the close vicinity of theirs watch posts. Judging from the location of chipped stone concentrations known from Seth Hill and Nephtys Hill we can assume that most of the activities connected to stone knapping, such as tool production and storing took place in hut-like stone constructions protecting from wind and probably covered by a kind of roof.

What kind of functions were served by stone tools in every day life of the Old Kingdom Dakhleh dwellers?

In the case of Ain Aseel and Ain el Gazzareen Midant-Reines is right to say that the tools played an important role in agriculture (sickle inserts) and possibly also, to some extent in rituals (bifacial knives). In the case of the knifes we could discuss if all of them had only the ritual function. After all metal was not common in Dakhleh at the time and it was still about one thousand years before the introduction of iron. Knives of some sort were indispensable for housekeeping, so, at least some of them must have been used in the every day life. It is hard to say if the rare projectile points found in the villages were elements of weapons or hunting gear.

Chipped stones from the watch posts had different functions. The sickle inserts connected with agriculture are practically absent in the watch posts. Also absent are also bifacial knifes or even biface trimming flakes derived from shaping or repairing this type of tools. The remaining types of retouched tools are banal forms ready to perform all sorts of functions, for example grooving petroglyphs in soft sandstone, sings and notches often found on the watch posts. The large number of scaled pieces, to my mind – wedges, used for splitting some unknown materials, is strange. The relatively numerous arrow heads were elements of weapon in this case. The few retouched tools from the poor but interesting chipped stone assemblage from Mut el Kharab do not tell us much, but the large number of biface trimming flakes derived from producing or repairing bifacial knives is striking. Could it be to some cult activities involving such tools?

The origin of the Old Kingdom chipped stone tradition

So much about the problem of chipped stone assemblages of the late Dynasties of the Old Kingdom Period in Dakhleh. No doubt that, in spite of slight differences between the discussed sites arising from theirs different roles, the choice of raw materials, the technological approach and the tool typology, create a coherent picture.

Let's us return to the question: does the stone knapping tradition of Old Kingdom Dakhleh originate from the culture of the local Neolithic or Post-Neolithic populations dominated by the Egyptians invading the oasis from the Nile Valley, or, was the old tradition suddenly and violently interrupted, as the result of the expulsion of the native inhabitants instead of their acculturation ?

According to my previous observations the chipped stone assemblages from Dakhleh seem to differ from these known from the Delta region of the same time. It is not clear as yet how it looked like in other regions of the ancient Egypt. This problem shall be the subject of further investigations. So far it is difficult to propose any final answer to the above question.

For the present the first hypothesis that the Old Kingdom flint knapping tradition is local, seems more likely. The Final Neolithic assemblages known from the oasis and its closest vicinity, called by M. McDonald Sheikh Muftah Cultural Unit (here I wish to express my gratitude to Mary for permission to study these materials) represent the features which prove cultural continuum in the later Old Kingdom assemblages. It is manifested in Sheikh Muftah collections by the presence of numerous artefacts made of tabular chert, such as scrapers, sometime large in size, denticulates, perforators, massive rectangular sickle inserts, bifacial knifes and also tanged, bifacially retouched arrow heads (McDonald 1993, 2001, in print). These tools are also popular in the Old Kingdom assemblages, but the number of their variants increases. The wares seem to be more precisely manufactured and more standardized then in the case of Sheikh Muftah.

The uninterrupted continuation of the stone knapping tradition seems to indicate that the ancient inhabitants of the oasis, overpowered by the representatives of a highly organized Egyptian state remained in their place, becoming the subject of slow acculturation. The stone knapping tradition always shows a strong durability and it takes some violent events to break it. In Dakhleh chipped stone assemblages we do not find traces of such events .

The connections of Dakhleh to the Egyptian State

Here the question of imported sickle blades appears again. As it was mentioned above these blades represent an alien element, because they were imported. It is hard to say weather from the Nile Valley or Delta where such artefacts are found in large numbers, or, maybe from some specialized workshops waiting to be discovered in Dakhleh itself or in the neighbouring oasis. Any way the presence of these highly standardized wares seems to indicate the ties to the centralized Egyptian state. A similar phenomenon was observed on the Old Kingdom town Kom el Hisn in the western Delta dated to the V Dynasty (Wenke et al.).

We have to agree that the import of these standardized sickle blades means the beginning of the process of assimilation of Dakhleh population, still preserving old stone knapping tradition, with the realm of the highly organized Egyptian Civilization.

References

KAPER O.E. and WILLEMS H. 2002. Policing the Desert: Old Kingdom Activities around the Dakhlech Oasis. In: Rene Friedman (ed.), *Egypt and Nubia. Gifts of the Desert*. The British Museum Press: 79-94.

Mc DONALD M. 1993. Cultural Adaptations in Dakhlech Oasis, Egypt, in the Early to Mid-Holocene. In: L. Krzyżaniak, M. Kobusiewicz, J. Aleksander (eds.) *Environmental Change and Human Culture in the Nile Basin and Northern Africa* until *the Second Millennium* B.C. Poznań: 199-209.

..... 2001. The Late Prehistoric Radiocarbon Chronology for Dakhlech Oasis within the Wider Environmental and Cultural Setting of the Egyptian Western Desert. The Oasis Papers. Proceedings of the First International Symposium of the Dakhlech Oasis Project. Monograph 6. C. A. Marlow and A.J. Mills (eds.) Oxbow Books: 26-42.

..... In print. Dakhlech Oasis in Predynastic and Early Dynastic Times: Beshendi B and the Sheikh Muftah Cultural Units. *Archéo Nil* 12.

MIDANT-REYNES B. 1983. Le débitage de lames de silex par pression: les éléments de faucilles de 'Ain-Asil (Oasis de Dakhla). *Bulletin de l'Institut Français d'Archéologie Orientale* 83:257-262.

..... 1985. L'industrie lithique en Ēgypte: A propos des fouilles de 'Ain-Asil (Oasis de Dakhla). *Bulletin de la Société Française d'Ēgyptologie* 102:27-43.

..... 1998. *Le silex de 'Ain-Asil Oasis de Dakhla, Balat*. Institut Français d'Archéologie Orientale. La Caire.

MILLS A. and KAPER O.E. 2003. 'Ain-el-Gazzareen: Developments in the Old Kingdom Settlement. Dakhleh Oasis Project. Monograph 14. The Oasis Papers 3. Proceedings of the Third International Conference of the Dakhlech Oasis Project G.E Bowen and C. A. Hope (eds.). Oxbow Books, Oxford 123:129.

SCHILD R. 1980. Introduction to Dynamic Technological Analysis of Chipped Stone Assamblages. In: R. Schild (ed.). *Unconventional Archaeology. New Approaches and Goals in Polish Archaeology*. Instytut Historii Kultury Materialnej PAN: 57-85.

WENKE J.R., BUCK P.E., HAMROUSH H.A., KOBUSIEWICZ M., KROEPER K., READING R.W. 1988. Kom El Hisn: Excavations of an Old Kingdom Settlement in the Egyptian Delta. *Journal of the American Research Center in Egypt*, vol. XXV: 5-34.