For lack of a wise old man? Late Neanderthal land use patterns in the Altmühl River Valley, Southern Germany

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CHAPTER 10

FOR LACK OF A WISE OLD MAN? LATE NEANDERTHAL LAND-USE PATTERNS IN THE ALTMÜHL RIVER VALLEY, BAVARIA

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Abstract. *A late Middle Paleolithic sequence of thirteen assemblages from Sesselfelsgrotte, in southern Germany, argues for differential land-use patterns among Neanderthals between 48,000 and 37,000 BP. The repeated observation of cycles of decreasing stone artifact raw material diversity within the sequence forms the principal basis for the reconstruction of changing land-use patterns. The summer season saw collective, circulating mobility with ephemeral campsites. Special task groups were sent out for raw material procurement. During the autumn human groups established a radiating mobility pattern with base camps in the center. The activity of special task groups for raw material procurement increased in the autumn relative to the summer. On the whole, the system resembles Upper Paleolithic land-use patterns.*

Résumé. *La séquence de treize assemblages paléolithiques moyen tardif de Sesselfelsgrotte en Allemagne de la sud indique que les modèles d'utilisation de la terre se différentiaient entre les Néandertaliens entre 48 000 et 37 000 BP. On a observé dans les couches des cycles réitérés d'une diversité décroissante des matières première lithiques. Ces observations forment la base pour reconstruire des modèles d'utilisation de la terre changeables. Dans la saison estivale on voit une mobilité collective circulante avec des camps transitoires. Les groupes spéciaux de devoir (task groups?) ont procuré les matières première lithiques. En automne les groupes humains ont établi un modèle de la mobilité radiale avec des camps de base centralisé. Les fonctions des groupes spéciaux de devoir se croit en automne auprès de l'été. En somme, le système ressemble aux exemples d'utilisation de la terre du Paléolithique supérieur.*

SETTING: "ANCIENTS" AND "MODERNS"

Habitation and land-use patterns have played an important role in the discussion of Neanderthal mental and social capacity (Wolpoff 1996: 144). A major difference is seen between self-sufficient local group areas among the "Ancients," before 40,000 BP, and a system of storage based on social ties and alliances among the "Moderns,"

after 40,000 BP. As Clive Gamble puts it, "The scales of social memory and geographical exploration during migration were exaptively linked" (Gamble 1994: 170). Thus, as he argues, changing land-use patterns became a major impetus for global colonization 40,000 years ago.

Land use among the "Moderns," such as the Aurignacians, is characterized by exchange networks, regular migration patterns, systems of seasonal campsites, and differential use of occupation space. By contrast, knowledge about late Middle Paleolithic land-use patterns is still somewhat scant. Concise models are set forth, for example, for the Central Negev Desert by A.E. Marks (1988) and, more recently, for the Latium region in Italy by S. Kuhn (1995).

Recent research at the Sesselfelsgrotte Rockshelter in the Altmühl River Valley, Bavaria, presents a case study of differential land use among late Neanderthals.

THE CASE OF SESSELFELSGROTTE

The Paleolithic cave site of Sesselfelsgrotte is situated in the valley of the lower Altmühl River (Bavaria), a tributary of the Danube (fig. 1). The site is important because of its unique sequence of 22 Middle Paleolithic occupations and several Upper Paleolithic occupations (fig. 2). Field campaigns at the site were carried out from 1964 to 1977, and again in 1981, under direction of G. Freund and collaborators (University of Erlangen; Freund 1975).

About seven meters of sedimentary deposit were excavated. The layers consist mainly of limestone debris from the roof of the shelter and from the slope above the cave. Eight occupation units were uncovered from the lower part of the sequence (Weißmüller 1995). Analysis by W. Weißmüller suggests an early Weichselian date for these assemblages, which are typologically and technologically similar to contemporaneous Western European Mousterian industries. These occupations took place during interstadial conditions (Oxygen Isotope Substages 5c and 5a) marked by forest and open landscape. Hunting of horses was an important subsistence activity. Only in the uppermost part of the lower layers (layers 3-West to M1), and quite close to the interface with the first glacial maximum of the Weichselian glaciation (Oxygen Isotope Stage 4), does glacial fauna like mammoth occur for the first time.

A series of layers follows upward, containing no archaeological material, but abundant rodent remains (layers L, K, I). They are dated to the first glacial maximum of the Weichselian glaciation (Oxygen Isotope Stage 4). The rodent bones (remnants of owl pellets) suggest several subsequent stages of environmental change from a steppe landscape towards an arctic tundra landscape.

The overlying "G-Komplex" (layers H, G5, G4a, G3, G2, G1) yielded thirteen Mousterian and Micoquian assemblages (Richter 1997). Some of them were recovered from virtual living floors (in particular layers G4 and G2, with several fireplaces). From the "G-Komplex," 85,000 stone artifacts accompany abundant prey remains, mainly from mammoth, reindeer, and horse. Humans lived in a steppe landscape with some arctic elements, which increase towards the top of the stratigraph-

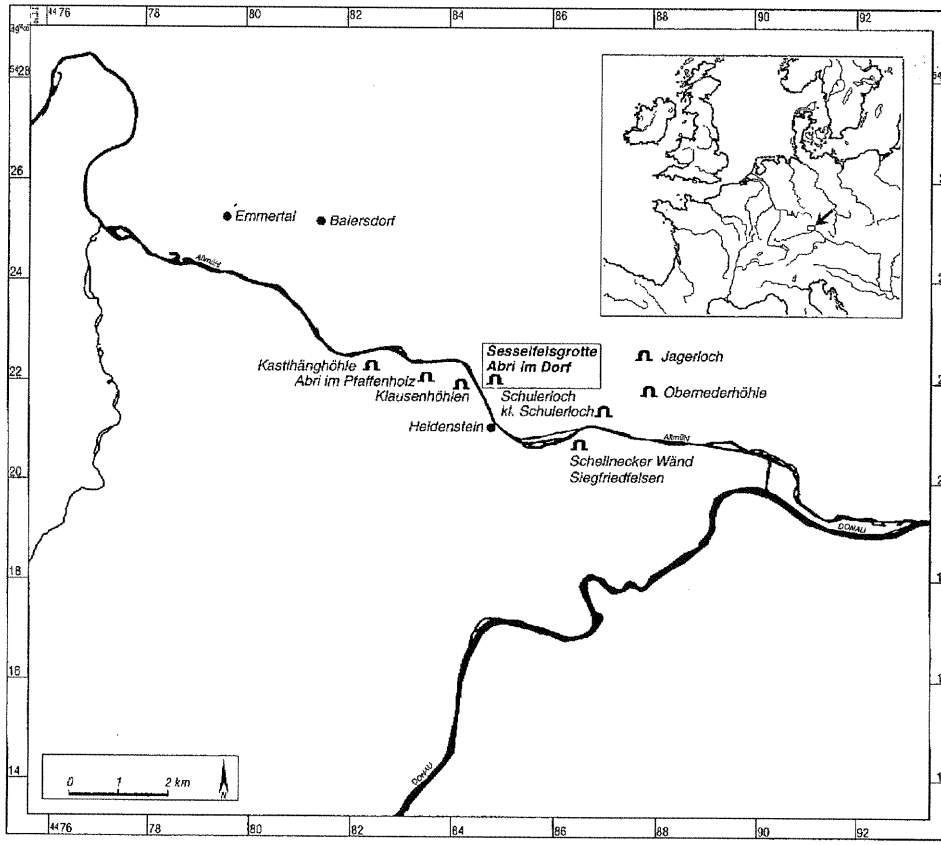

Fig. 1. Sesselfelsgrotte and other Paleolithic sites in the lower Altmühl Valley, Bavaria, southern Germany.

ic series. The "G-Komplex" is presumed to be part of an evolved stage within the Oerel-Glinde interstadial complex. Humans were present here between 48,000 and 37,000 BP, based on preliminary radiocarbon dates.

Separated by an archaeologically sterile layer (Layer F), the "G-Komplex" is overlain by another late Middle Paleolithic horizon (Layer E3). On top are loessic deposits of the second glacial maximum of the Weichselian and another two archaeological horizons with several late Upper Paleolithic and Late Paleolithic assemblages.

THE "G-KOMPLEX"

The "G-Komplex" contains thirteen archaeological units ("occupations"), characterized by different raw material spectra (fig. 3). In some cases, two or three archaeo-

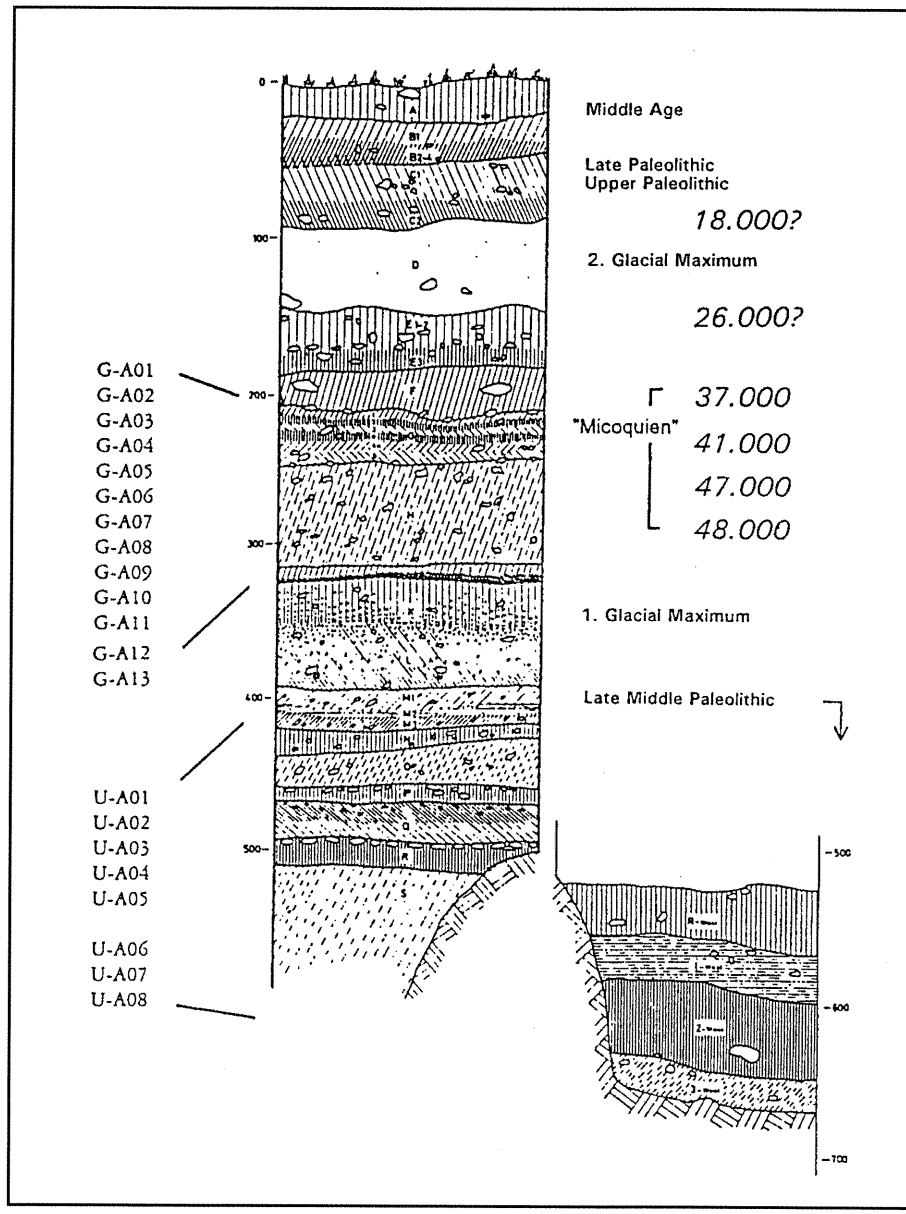

Fig. 2. The Sesselfelsgrotte sequence (schematic section) covers the last glacial cycle. The lower layers are dated to the Early Weichselian before the first glacial maximum; the "G-Komplex" and the late Middle Paleolithic Layer E3 are dated to the period between the first and the second glacial maximum.

logical units were distinguished on a single occupation surface. Microstratigraphic observation helped put the units into chronological sequence. Some archaeological units are connected with fireplaces.

Several lithic inventories of the "G-Komplex" can be classified as Central European Micoquian by abundant bifacial tools, such as the "Keilmesser" (Pradniks). Generally, the inventories contained four principal components (fig. 4):

1. Bifacial tools
2. "Microlithic" tools
3. "Upper Paleolithic" tools
4. Standard Mousterian tools

Different ratios of these four components would allow for conventional classification of some assemblages as "Moustérien...denticulés," Mousterian "Kartstein type," or Central European Micoquian "Bockstein type," "Klausennische type," or "Königsaue type" (cf. Bosinski 1986). On the other hand, the majority of data argues for more or less continuous development throughout the whole "G-Komplex" and for slow change rather than for rapid replacement by different cultural units or populations.

In terms of technology, for example, the lithic assemblages can be grouped into three subsequent stages: a first stage with predominant Quina flake production, a second stage with Levallois and Quina flake production, and a third stage with exclusively Levallois flake production. As a rule, technological tradition survived typological variability within the three stages.

Surprisingly, the analysis of raw material procurement yields a pattern of four regular cycles superimposed on the typological classifications. This pattern can be identified as a function of differential land use.

RAW MATERIAL PROCUREMENT

Sixty-one raw material groups have been identified from the "G-Komplex" assemblages. The diversity of the two principal classes, Jurassic cherts and Cretaceous cherts, was measured. Simpson's diversity index was used, with "1" for maximal diversity and "0" for minimal diversity (fig. 5). The analysis of raw material diversity revealed four subsequent cycles, which are also coherent in terms of technology. The cycles start with small assemblages of broad spectrum raw material procurement (*Initialinventare*). The cycles end with mostly larger assemblages (*Konsekutivinventare*) of more specialized raw material procurement confined to fewer resources.

What explication is possible for the regular pattern observed? At first, I considered mainly two possibilities:

1. "No-wise-old-man" explanation: Initialinventare might originate from the initial reconnaissance and exploitation of a region (the Altmühl Valley). A group arrived which had never been there before. No expert, no wise old man, was with them to give hints on the best raw material resource. Dispersed and heteroge-

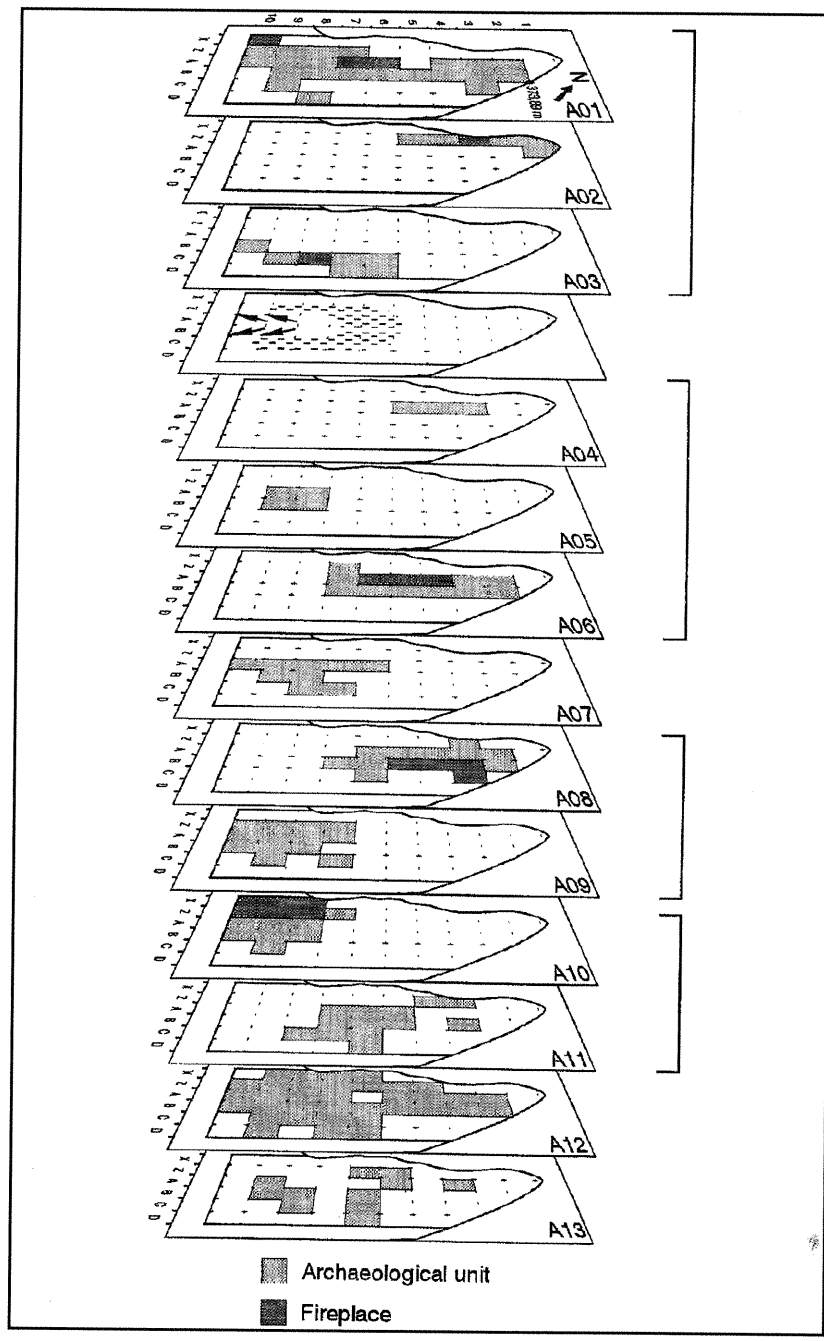

Fig. 3. *The "G-Komplex" comprises of thirteen archaeological assemblages, characterized by different raw material spectra. Some have been uncovered on the same occupation floor (seebrackets).*

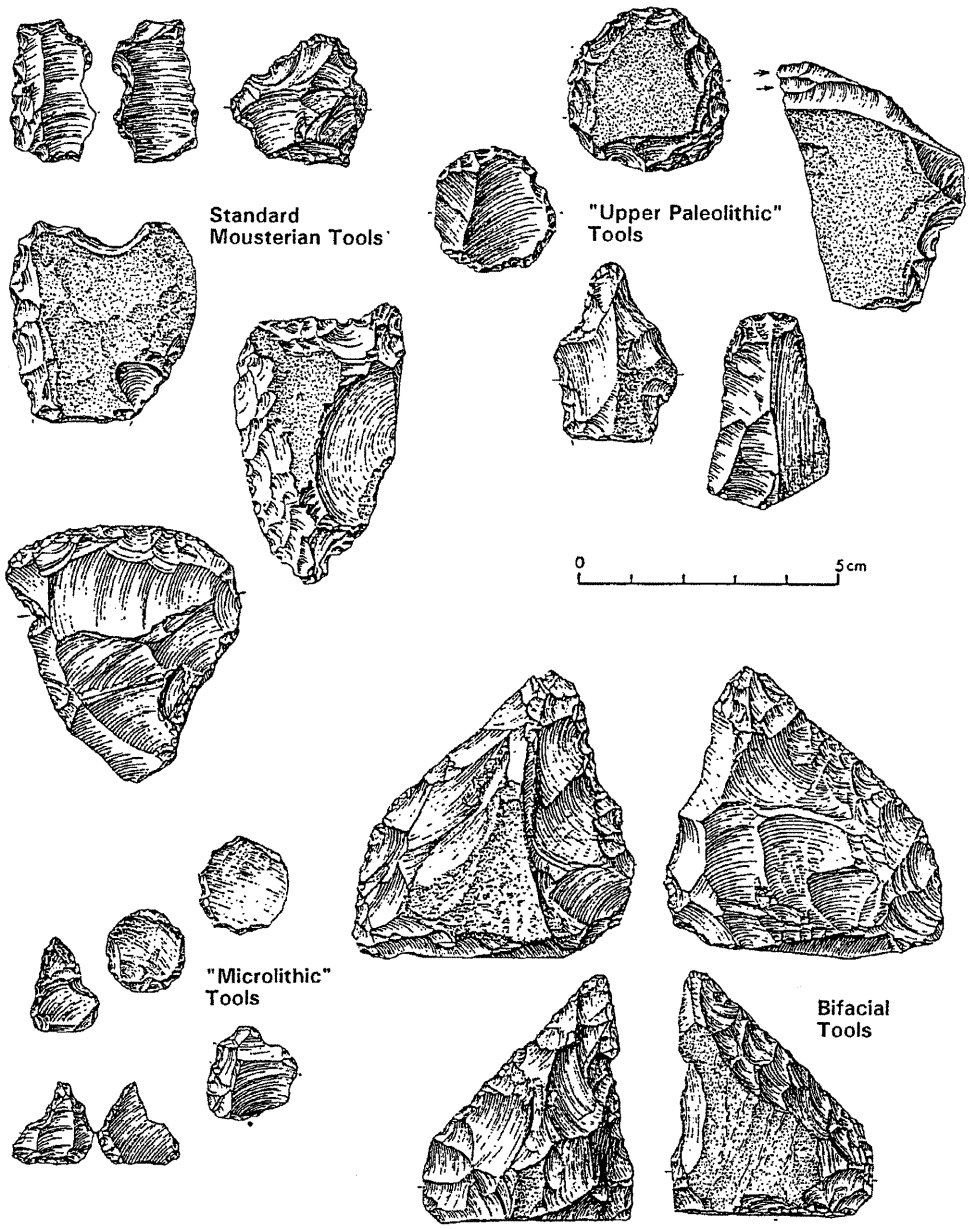

Fig. 4. *The stone artifact assemblages of the "G-Komplex" are characterized by four components: a general "Mousterian" component, a component with Upper Paleolithic types, a "microlithic" component, and a bifacial component.*

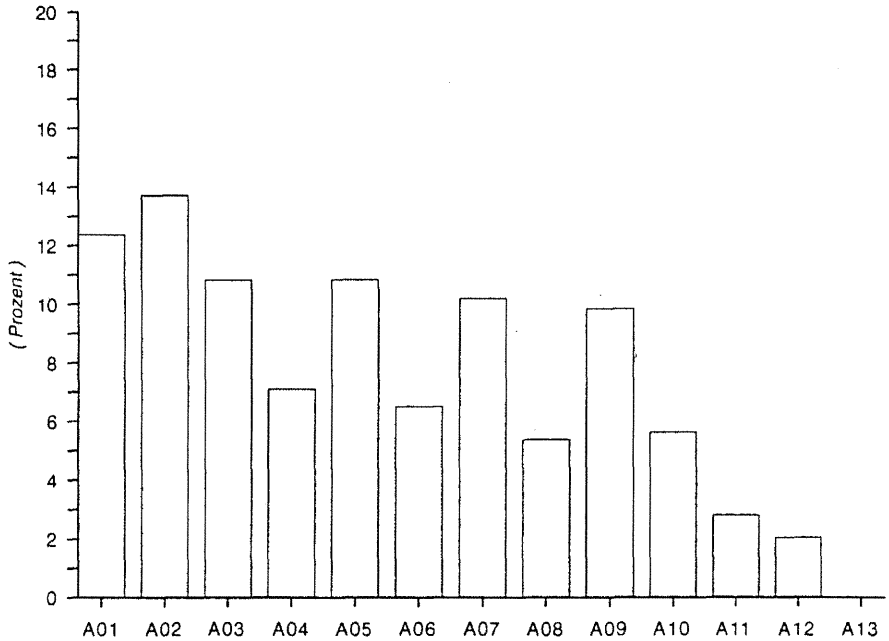

Fig. 5. *Artifacts made of hornfels slabs from Baiersdorf/Keilsdorf (percentage of flakes and blades) in the "G-Komplex."*

neous flints were tested. Konsekutivinventare document a deeper knowledge of resources and might arise from a time when people had already been present in the region for weeks or months. Now they concentrated on a few optimal resources. The cyclic pattern reflects the growth of information about optimal resources within a local group.

2. "Snow-and-ice" explanation: Initialinventare were collected during the winter season when optimal resources were hidden by snow and the soil was frozen. High quality flints were thus not accessible and opportunistic procurement prevailed. During the summer season optimal resources were more easily exploited, particularly if digging was necessary. The cyclic pattern reflects seasonal accessibility of optimal flint resources.

Both explanations, "no-wise-old-man" and "snow-and-ice," consider those resources that are specialized and finally exploited as optimal resources. Are they really? Obviously, it is fairly difficult to divide all 61 observed raw material units into those of optimal and those of non-optimal resources. Fortunately, there is one outstanding raw material source in the region, Baiersdorf, where hornfels slabs occur. They were preferred for bifacial production and were exploited throughout the whole Stone Age. Thus, the use of Baiersdorf flint can be taken as a test case for the

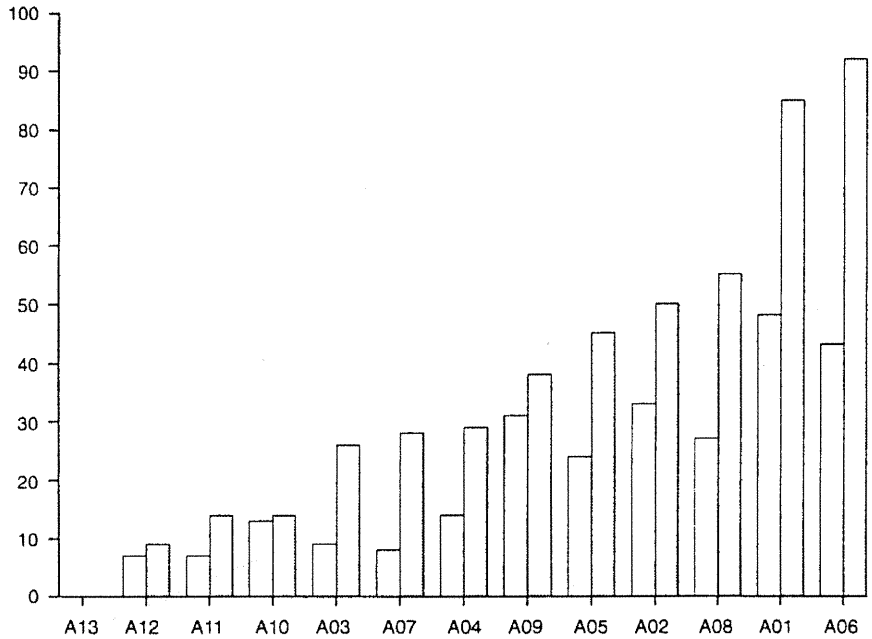

Fig. 6. *Denticulated tools (right column) and multiple scrapers (left), tool counts. The X-axis reflects probably "time of activity."*

use of an optimal raw material resource through time, represented by the sequence of occupation units. As a result (fig. 6), Baiersdorf flint occurs within all units, usually at six to twelve percent of total artifacts of all materials involved.

Obviously, optimal resources were known to the "G-Komplex" humans right from the beginning of their presence in the region and, moreover, there was even a tendency to maintain a minimum level of availability of high-quality flints.

DIFFERENTIAL LAND USE AMONG THE "MICOQUIANS"

As a consequence, another explanation deserves more consideration: raw material procurement was embedded in a differential mobility pattern. Initial inventories reflect higher group mobility than consecutive inventories. Initial inventories indicate short-term occupations, subsequent inventories indicate long-term occupations. Comparison of a diversity graph versus denticulate abundance within the "G-Komplex" confirms this hypothesis. N. Rolland argues that denticulates form the integral part of Mousterian inventories (Rolland 1988). Denticulates were basic tools of regular use (Dibble and Rolland 1992: 13). Their number reflects, in a linear mode, increasing occupation time. This is most probably the case for the "G-Komplex" inventories as well.

Among the assemblages with Levallois flake production, it turns out that small assemblages with few denticulates tend to have broad spectrum raw material procurement, and large assemblages with many denticulates tend to have specialized raw material procurement (fig. 7; cf. fig. 8).

Thus, initial mobility covered greater distances than subsequent mobility. As this can be observed four times in the "G-Komplex" (if the Quina inventories are included), a regular change of the underlying land-use pattern may be concluded. A regular change between circulating land use at the beginning and radiating land use at the end of an occupation cycle explains our data. Whereas Marks (1988) observed such patterns as stages on a chronological scale, the Sesselfelsgrotte data indicate changing land use within the same cultural system.

Some details deserve additional attention (fig. 9). During the initial stage of land use, humans migrated between ephemeral campsites. At that stage, the Sesselfelsgrotte served as one of such ephemeral campsites. Task groups were sent to the optimal raw material resource to maintain a minimum amount of high quality cherts. The initial stage might represent the summer season when big game like reindeer and horse were dispersed in the mountainous region around the Altmühl Valley.

During the subsequent stage of land use (fig. 10) the Sesselfelsgrotte became a base camp. The humans stayed here for longer periods. Task groups were sent out for hunting, collecting, and raw material procurement. Special task sites were established around the base camp. Weißmüller attests to a number of such sites in the region (cf. Weißmüller 1995: 54, fig. 15). Small assemblages from hunting sites of the same age contain bifacial tools. They were curated tools, sometimes modified as frequently as 35 times (Richter 1997: 197-206).

A task group was identified that used mainly microlithic tools. More than 95% of these tools are made of local cherts, and these tools are made exclusively from curated cores without any cortex. Transformation analysis developed by Geneste (1985: 442) includes the following stages of reduction: 0) *aquisition* 1) *mise en forme* 2) *production des supports* 3) *transformation des supports* (multiple scrapers, notched and denticulated). Following this system, microlithic tools from Sesselfelsgrotte were never made on flakes from the initial stages of core exploitation (table 1).

The data for stages 0 and 1 in table 1 for "microliths" (see fig. 4) compare well with data for multiple scrapers which, by contrast, are made of exotic raw materials (ca. 35%). Microwear analysis of "microliths" argues for use on plant material (Richter 1997: 182-5). As a result, "microliths" represent a plant-related task group that acted exclusively in the neighborhood of the base camp and that produced specific tools from decorticated cores outside the base camp. If one postulates that women conducted these activities, one could conclude that Neanderthal women used "microliths" to collect plants near the base camps.

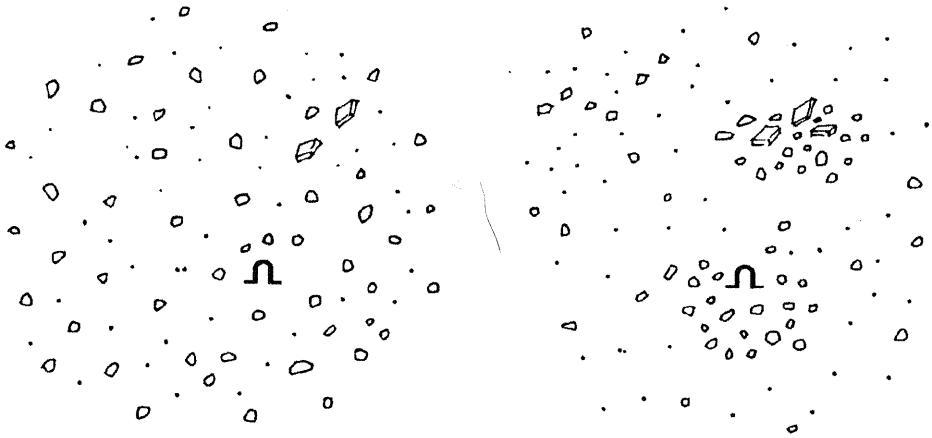

Fig. 7. Extensive raw material procurement at the beginning of a regional land-use cycle (left); intensive raw material procurement at the end of a regional land-use cycle (right).

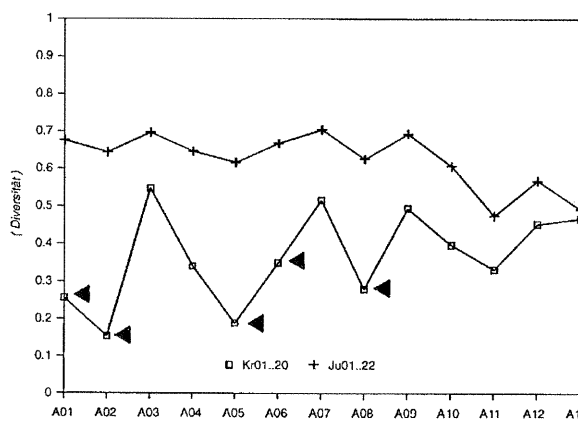

Fig. 8. Raw material diversity of Cretaceous (Kr) and Jurassic (Ju) cherts in the "G-Komplex." A comparison with figure 6 assemblages with more than 45 denticulates is indicated by black arrows.

The subsequent stage of land use probably occurred during autumn when big game herds came down from the mountains and passed the Altmühl Valley on their way down to their winter habitat near the Danube River.

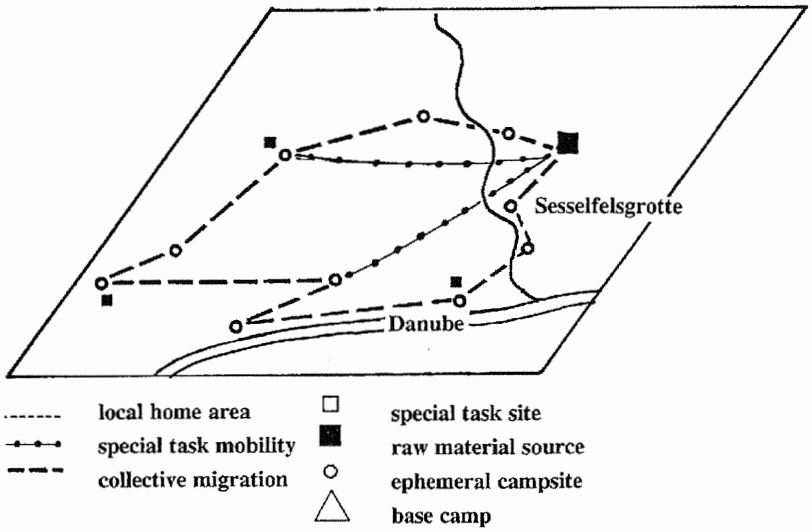

Fig. 9. *Altmühl Valley: Circulating land-use pattern during summer.*

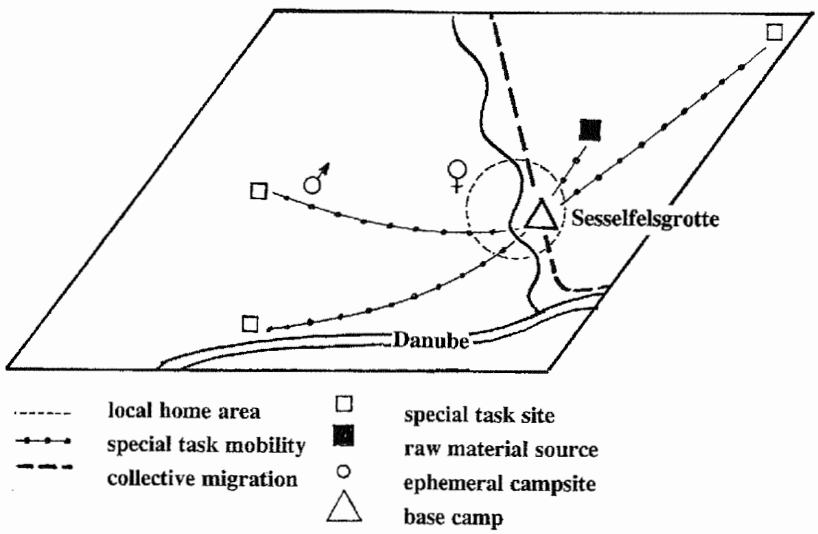

Fig. 10. *Altmühl Valley: Radiating land-use pattern during autumn.*

Table 1. *Transformation analysis developed by Geneste (1985: 442) applied to finds from Sesselfelsgrotte*

STAGE	0	1	2A	2B	2C	3	OTHERS	N
microliths		9.4	36.6	1.0	47.6	2.0	3.2	499
mult. scrapers	4.5	9.1	43.7	9.7	17.1	-	2.7	286
notched	2.8	19.2	42.0	4.5	24.5	0.5	6.2	354
denticulated	3.1	18.9	48.1	1.8	25.3	-	2.5	158

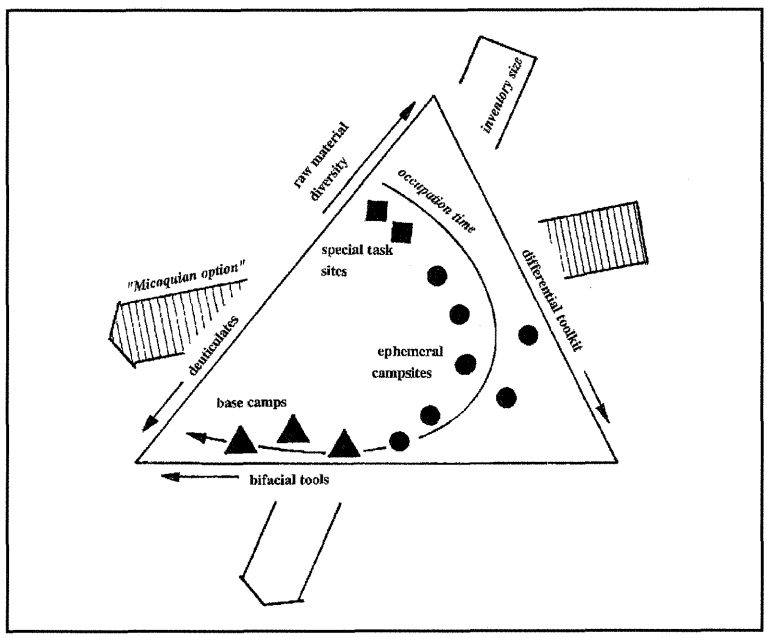

Fig. 11. *A model of assemblage variability in the "Micoquian."*

The differential land-use system reconstructed for the "G-Komplex" humans resembles Upper Paleolithic land-use systems. In his recent thesis, T. Uthmeier compared Middle and Upper Paleolithic land-use systems in southern Germany (Uthmeier 1998). He argues for continuous land-use strategies between 50,000 and 30,000 years ago characterized by increasing band territories. With the ideas of Clive Gamble in mind, a continuous process of "exaptation" is realized here, which began as early as the time of the "Micoquians" and became fully evolved in the time of the "Gravettians" in southern Germany.

A KEY TO ASSEMBLAGE VARIABILITY

In closing, I must emphasize that differential land-use patterns are a principal to assemblage variability in the "G-Komplex" (fig. 11). A model is put forward here which covers all types of assemblages mentioned in the first part of this paper. Occupation time and site function influence the numbers of integral (denticulated), differential (multiple scrapers, etc.), and bifacial tools. Inventories from ephemeral campsites tend to be more "Mousterian." The "Micoquian option" (bifacial component) increases in base camps and in some specific special task sites, both occurring during the subsequent land-use stage.

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