FINAL PALAEOLITHIC SOCIETIES' MOBILITY IN POLAND AS SEEN FROM THE DISTRIBUTION OF FLINTS

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Abstract

Local and exotic flint use and distribution are considered as markers of group mobility. The Arch Backed Pieces and the Mazovian societies organised logistics expeditions in various directions, south-north, west-east, using natural routes as river valleys, but also crossing mountains. Their motives seem to be different and not only connected with economic necessity and subsistence strategy. Group mobility, observed rarely on distances more than tens of hundreds of kilometres, was probably a seasonal event, but sometimes may be a reflection of a permanent exodus.

Key words: Final Palaeolithic, societies' mobility, flint distribution, Poland.

Introduction

Poland consists of diverse landscapes: plain, uplands and the Sudety and Carpathian mountains (above 500m). Source material contains inventories of hundreds of open sites located mainly in sandy areas. Most of them repeat a similar pattern: surfaces of hundreds and sometimes thousands of square metres covered by lithics presenting the full processing from nodules to tools, dispersed or clustered in several concentrations.

Lithic use and distribution are considered here as markers of group mobility. As a rule, local lithics were used within "raw materials provinces" discussed by K. Cyrek (1981) and K. Szymczak (1992). The distribution within such provinces was limited to tens of hundreds of kilometres from outcrops characterising probably the distance of seasonal mobility of human groups and their social territories.

The use of the nearest lithic depends also on the vicinity of other lithic outcrops, when several good-quality flint sources are located in the uplands. Such nearness could stimulate "rivalry" between close lithics (Schild 1976). The following flints, easy to recognise macroscopically and with limited source areas, will be considered: Jurassic, Turonian=Świeciechów, Upper Oxfordian so-called chocolate flint (Fig. 1).

Imports of non-local lithics occurred in different ways: as the whole inventory, a significant or only a small, less than 5%, part of the kit. These diverse situations are regarded here as the result of direct supply, when lithics were transported in the form of nodules or cores and then processed on the spot by mobile human groups. More typical is the situation of indirect supply, when only carefully chosen artefacts circulated. Direct supply is observed very rarely at a distance exceeding seasonal mobility, more than hundreds of kilometres.

In this article, I shall analyse the available data from sites with a direct supply of the flints mentioned, because radiolarite and obsidian, which were observed as imports in several assemblages, were, as a rule, distributed indirectly by inter-group contacts (Sulgostowska 2004).

The intention of this work is to analyse the mobility of Final Palaeolithic societies, and such questions as was the mobility of Arch Backed Pieces or Tanged Points groups only a result of behaviour connected with hunting and limited to a distance of the seasonal wandering of animal herds? And how great were these distances?

In spite of the hundreds of Final Palaeolithic sites, only a few are useful to solve these questions.

Source material

An assumption concerning the high mobility of human groups is based generally on indirect data suggested by the scarcity of more stable dwelling structures with hearths or storage pits. Such a situation is probably the result of the investigation method and the specific character of open sandy sites with poor preservation conditions, than the lack of such structures. Such elements can be observed only on properly excavated sites, when most of the sites were recorded mainly during the early stage of prehistoric investigations when the artefacts were collected from the surface. Dwelling structures are known at Całowanie, level 4 and 6 (Schild 1975: 229–230; Fiedorczuk 2001), Witów (Chmielewska 1978: 79–81), Rydno IV/57 (Schild 1967; Fiedorczuk 2001), Kochlew (Cyrek 1986),

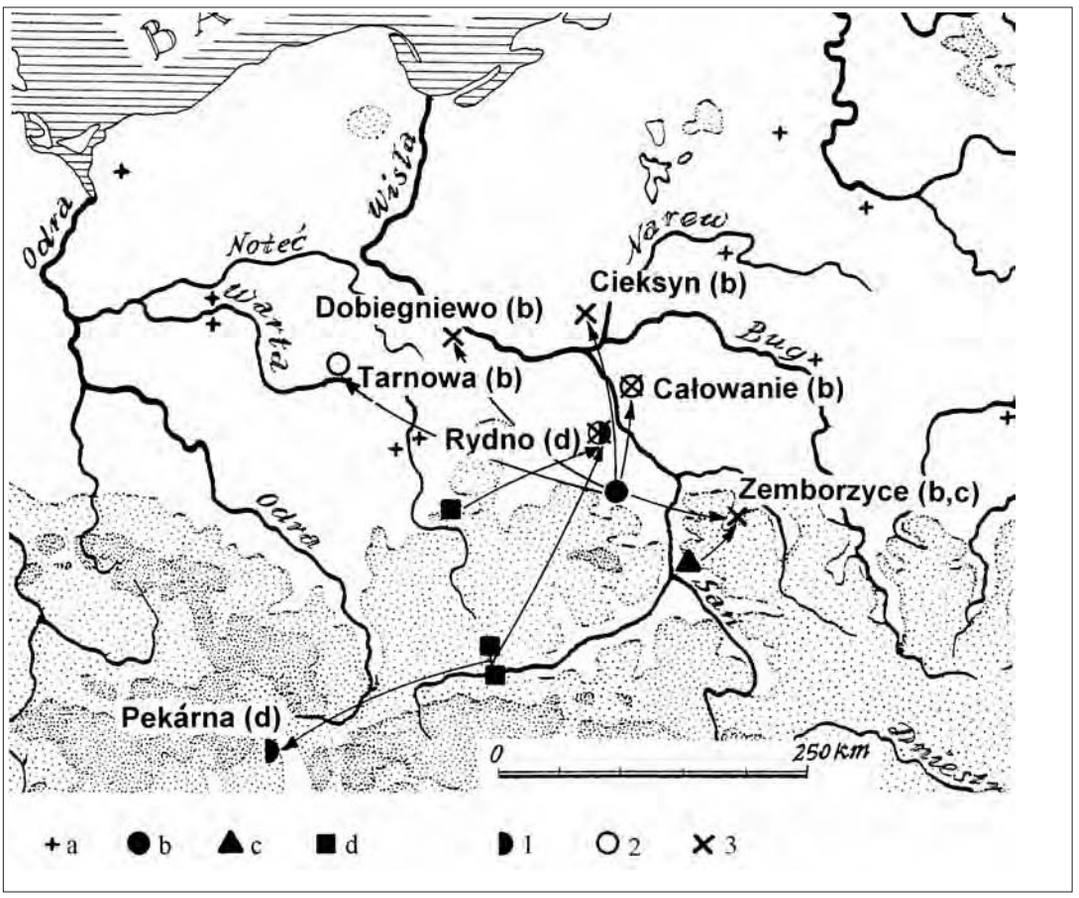

Fig 1. Location of the flint outcrops: a Cretaceous; b Upper Oxfordian, so-called chocolate flint; c Świeciechów; d Jurassic flint. Location of the discussed sites: 1 Magdalenian; 2 Arch Backed Pieces; 3 Mazovian and the direction of the flint imports from the outcrops

Obrachcice (Burdukiewicz 1987). Hearths are also not numerous because of the bad preservation of charcoal, while hearth stones are sporadic, as was observed at Augustów Wójtowskie Włóki (Sulgostowska 1978). I believe, however, that in future research the situation will improve, as was presented in the outstanding PhD thesis by the late Jan Fiedorczuk (2001). Possibilities exist for the reconstruction of such structures owing to site-spatial analysis using flint refittings and the dispersion of burnt flints. The scarcity of dwelling structures can also be explained by their multiple resettlement during seasonal visits, as was proved by the Całowanie site level 6, cut I/63 (Fiedorczuk 2001: 101). So, spatial analysis can be an efficient instrument, but such procedures are extremely time-consuming and need a gifted specialist.

Another approach is to record the presence of non local=exotic raw materials, confirming mobility or inter-group contacts.

The use and distribution of the different, mentioned flints creates diverse opportunities to demonstrate the efficient analysis of a group's mobility. Usually among the lithics of the rich, multi-concentration sites (I use the term "agglomerations") numerous artefacts made of raw materials imported significant distances are not recorded. Multi-concentration sites usually show resettlement events, and the distribution of exotic lithics is a repeated action, as is shown by the dispersal of imports in concentrations located sometimes far, from several to tens of metres, from each other.

The spectacular Turonian grey white dotted flint, with outcrops in the vicinity of Świeciechów, was used as the main lithic within a distance of up to 100 kilometres (Libera 1995: 21, Fig. 3) in the Final Palaeolithic. The Zemborzyce and Zemborzyce-Prawiedniki Mazovian living sites (Fig. 1), where more than ten flint concentrations were located on the River Bystrzyca valley dunes (Sulgostowska 1989: 126), are spectacular examples of the mentioned "rivalry" between Świeciechów and chocolate flint. The local flints are Świeciechów, at a distance from the sites of up to 60 kilometres, and Cretaceous, erratic flint. In spite of their easy access and good quality, artefacts made of chocolate flint, of which the outcrops are more than 100 kilometres away and, additionally, on the other side of the River Vistula, consist of up to 50% of the inventory.

The sporadic artefacts made of Świeciechów flint were recorded in an area with a scarcity of flint at a distance

of up to 400 kilometres to the southwest in the Pekarna and Kulna caves Magdalenian Moravian sites (Bednarz 1998), and in the Kulna Arch Backed Pieces technocomplex. Among the Mazovian sites, a tanged point made of this flint was found in Cieksyn-Popielżyn, located more than 200 kilometres to the north (Sulgostowska 1989).

The Jurassic flint outcrop location in two regions at a distance of up to 150 kilometres near Cracow and in the Upper Warta region is demonstrated in Fig. 1. Cracow flint was mostly mined and used by Magdalenian and Arch Backed Pieces societies, and the Warta sources by Mazovian groups. The direct supply of not numerous artefacts to the south was recorded to a distance of up to 250 kilometres during the Magdalenian: Kulna and Pekarna caves (Bednarz 1998), and the Svit/Lucivna Mazovian site in Slovakia (Sojak 2002).

A different situation was observed at the Rydno site, located in the vicinity of chocolate flint and hematite outcrops at a distance of up to 150 kilometres from both Jurassic outcrops. At Rydno a significant use of this flint (11.8% to 79%) was recorded among excavated, rich assemblages from Magdalenian, Arch Backed Pieces societies and the Mazovian concentrations.

Table 1. Jurassic flint (C – Cracow outcrops; W – Warta outcrops) in the Rydno site assemblages. Taxons: M = Magdalenian; ABP = Arch Backed Pieces technocomplex; MAZ = Mazovian Tanged Point technocomplex. According to R. Schild, H. Królik 2002

Taxon, outcrops, site	Frequency
M – Cracow outcrops R II/59	58%: 38.8% cores and blank 19.2% tools
ABP – Cracow outcrops R XI/59 S	79%: 23% cores and blank 56% tools
ABP – Cracow outcrops R XI/59 N	26.7%: 1.9% cores and blank 24.8% tools
MAZ – Warta outcrops R I/57	15.8%: 0.2% cores and blank 15.6% tools
MAZ – Warta outcrops R I/45 concentration II "Na Osach"	11.8%: 0.7% cores and blank 11.1% tools

When we consider the proportion of the artefacts connected with core processing and tool production, it is evident that the Magdalenian and the Arch Backed Pieces groups (except RXI/59N) visited Rydno with a supply of cores, blanks and tools. The Mazovian groups had arrived generally almost only with the ready tools.

When we compare the presence of chocolate flint on the Jurassic flint territory, the example of the Trzebca site located in the Warta valley can be used (Ginter 1974). In the inventory of the Mazovian workshop Trzebca II/64, concentration V, where the cores were processed for "export" blades, only 4.2% of tools made of chocolate flint were found (Błaszczyk 1971; Ginter 1999).

What was the motive for the mobility from Jurassic flint territory to the Rydno site, which was a "prehistoric trade centre", according to Stefan Krukowski (1961), located in the vicinity of the chocolate flint outcrops or the hematite outcrops? The dye, in the form of luminescent hematite grains, was exploited: it was mined and processed and used by the societies mentioned (Schild, Królik 1981, 2002).

Upper Oxfordian chocolate flint was willingly used and distributed in all directions (Fig. 1). The intensity of its direct supply depends on the taxon, but in the Arch Backed Pieces and the Mazovian assemblages it was recorded up to 100 kilometres as the main lithic at Całowanie in the Vistula valley near Warsaw (Schild 1976). I shall focus on two cases of direct supply to distant sites: Tarnowa and Dobiegniewo, representing two different taxons.

A unique example, the Tarnowa, voi. Wielkopolskie, western Poland site is located in the Warta river valley. This inventory of Arch Backed Pieces technocomplex site was collected by Józef Kostrzewski in the year 1925 from the surface, where the artefacts were clustered in three concentrations. Almost all the artefacts were made of chocolate flint (Krukowski 1939–48) which was imported from outcrops at a distance of approximately 350 kilometres to the southeast.

The structure of the inventory is the following. Among 1,529 artefacts are (Fig. 2): 3 cores; 22 core preparation and rejuvenation pieces; 733 blanks (477 flakes, 166 blades minimum); 281 tools (238 end-scrapers, 30 burins, 78 burin spalls, nine arch backed pieces, one point, three undetermined); 413 chips; 11 undetermined pieces.

The presence of cortex flakes and chips indicates that chocolate nodules were brought to the site, together with blanks and tools. The sporadic number of rejuvenation flakes suggests a low number of cores, or their later transport, even extremely used ones, to other sites, or making almost all of them into tools. The number of blanks and tools suggests that not more than dozens of cores were used, but only three are in a form possible to identify. The structure of the inventory shows a situation typical for a "living site" where the brought flint was economised, and this idea is also supported by the

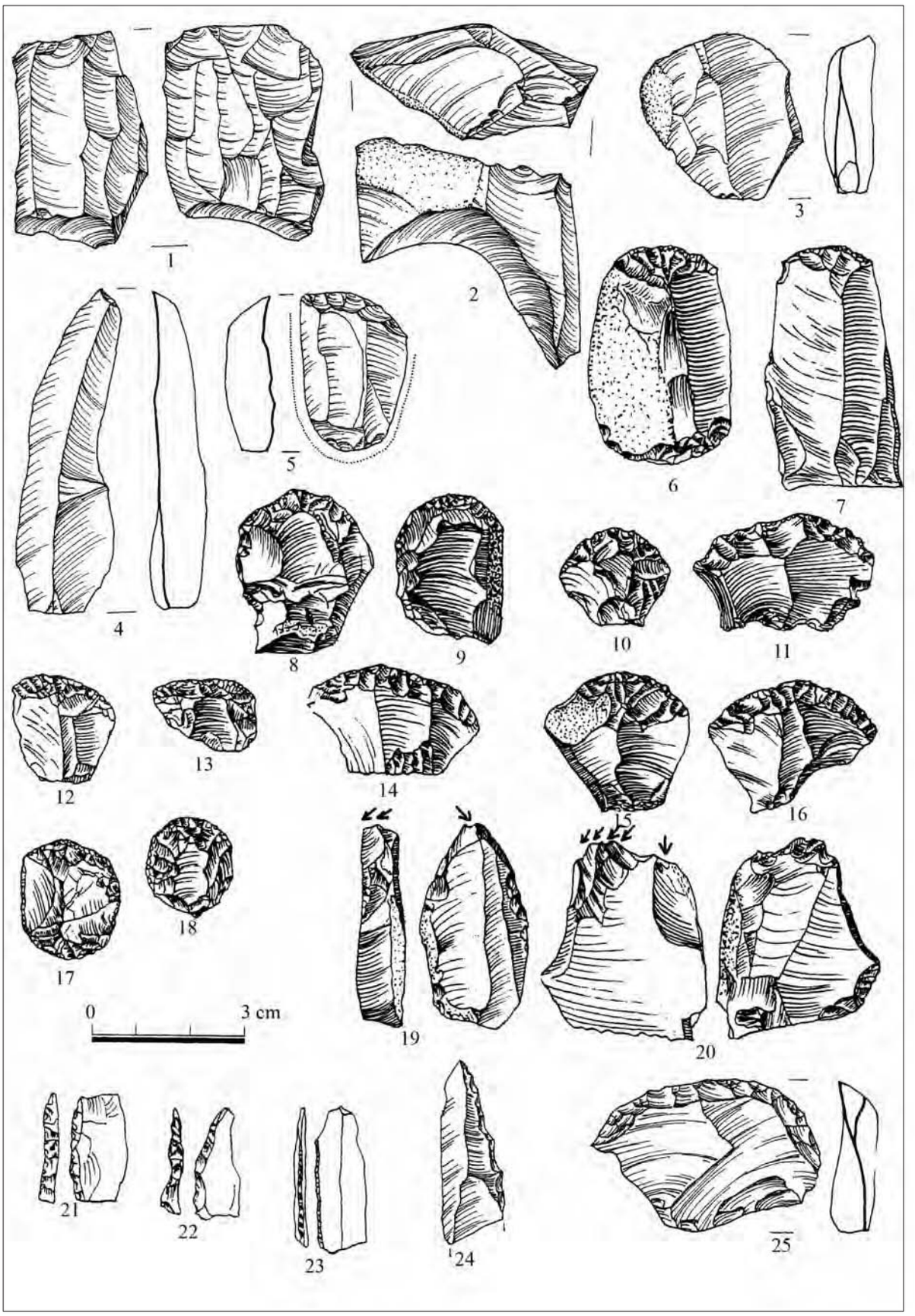

Fig. 2. Tarnowa, voi. Wielkopolskie, western Poland. Selected artefacts of the Arch Backed Pieces technocomplex: 1, 2 core, fragment of core; 3, 4 blanks; 5–18 end-scrapers (5 with macroscopical use wear); 19, 20 burins; 21–24 arch backed pieces. Artefacts 6–25 according to Krukowski 1939–48

heavy use and rejuvenation of the tools (the presence of 78 burin spalls, and, among 30 burins, 25% were multiplied).

Another example is the Dobiegniewo Mazovian site located in the Vistula valley almost 200 kilometres southeast of the outcrops. Only one flint concentration (six metres in diameter) was recorded during excavations. The imported flint, the blades and the tools with probably three nodules, makes up almost 100% of the assemblage, though it was supplemented by local Cretaceous flint which was the raw material for 11 tools. The assemblage presents a structure typical for a "living site". It is worth mentioning that single chocolate nodules were also processed at Cieksyn, 250 kilometres northeast of the outcrops. The inhabitants of this Mazovian camp with six workshop concentrations used as the basic raw material the local Cretaceous flint (Sulgostowska 1989).

The Dobiegniewo site is compared here with the assemblage from the Całowanie site, located far closer than Dobiegniewo, 85 kilometres away from the outcrops.

Table 2. Mazovian sites with a predominance of chocolate flint (up to 90%) from distant outcrops: Całowanie 85km, Dobiegniewo 180km. According to Schild 1975; Fiedorczuk 2001

Dobiegniewo	Całowanie, l. 6, cut I/63
1 flint concentration Flint inventory – 416 pieces, app. < 1 kg -70% core exploitation (3 nodules) -18% tools, 12% tool production waste Sporadic camp/ Multiple camp?	*Dwelling structure + hearth + workshop* Flint inventory – 4357 app. < 4 kg -70.5% core exploitation (16 nodules) -5.4% tools, 24.1% tool production waste Multiple resettlement by the same group.

The differences in their settlement pattern and the mass of the imported flint (Dobiegniewo 1 kg, and Całowanie 4 kg) can be explained by the various characters of the living sites: a sporadic, hunting camp at Dobiegniewo and a camp resettled several times with dwelling structures, hearth and flint workshop.

Discussion

The analysed sites are the basis for the following interpretations of mobility motives:

I. Economic necessity. The supply of basic commodities, good-quality flints, in a situation when the local raw materials were not sufficient. This was the case with the Magdalenian, the Arch Backed Pieces Moravian sites and the Mazovian Slovakian sites using Jurassic and Świeciechów flints from distant outcrops (up to 400km).

II. Foresight. A situation where groups provided with a supply had moved to hunting places on the routes of seasonally wandering animal herds, but with worse-quality flint. Examples are sites located in the area of the Warsaw, Płock and Toruń basins in the Vistula river valley, where tens of concentrations of Mazovian sites were recorded (Schild 1975). These expeditions had crossed distances from tens to more than hundreds of kilometres. The *fall-off effect* (Renfew 1969) can be observed among this region: in the Warsaw basin, chocolate flint consists of up to 80% of the inventories; in the Płock basin up to 200 kilometres, up to 50% of inventories; when the Toruń basin, at a distance of up to 300 kilometres, shows only a sporadic presence of imports.

But there is also the unique example of the Dobiegniewo site 180 kilometres from outcrops. I shall try to reconstruct the effect of this task group expedition following a reindeer herd along the Vistula valley to the north. The hunters were equipped with less than one kilogram of flint supply: several nodules, ready blades and tools. According to a use wear analysis (Korobkova 1999), they achieved their hunting purpose. The artefacts were used for working with meat (36.5%), leather (21.5%) bone, antler and wood (22.5%), and undetermined others (24%). The possibility, however, cannot be excluded that the Dobiegniewo task group was part of the society that settled the Całowanie site and had started their expedition from the Warsaw basin area, not from the Holly Cross mountain region.

The rarity of sites such as Cieksyn and Dobiegniewo among the Mazovian complex of sites shows that 200-kilometre mobility distances were exceptional, while average mobility distances were shorter.

III. The situation of mobility from good-quality flint territory to another good-quality flint area. The example of "Jurassic groups" representing Magdalenian, Arch Backed Pieces and Mazovian societies suggests that they had been attracted to the Rydno by the presence of hematite, a commodity which was commonly used as a dye during rituals, and during everyday activities (leather processing) as well.

IV. An exceptional situation is the expedition of the Arch Backed Pieces group from chocolate flint territory outcrops to a site situated 350 kilometres away at

Tarnowa. When we agree about the western genesis of the taxon, the possibility of the "coming back wave" cannot be ignored. But the reason for the "exodus", taken by several families, suggested by three concentration presence, remains obscure.

Conclusions

Assuming that the predominant use of local raw materials by human groups expresses their social territories and distant sites with a direct supply of lithics reflects their mobility, it seems that mobility is observed rarely at distances more than tens of hundreds of kilometres. The predominance of extra-local raw materials in the distant inventories reflects the mobility of groups from the area located in the vicinity of imported flint outcrops, or groups approaching from the outside of diverse outcrops and coming back to their social areas.

The Final Palaeolithic societies, Magdalenian, Arch Backed Pieces and Mazovian, organised logistics expeditions in various directions: south-north, west-east, using natural routes such as river valleys, but also crossing mountains. Their motives seem to be different, and not only connected with economic necessity and subsistence strategy.

Mobility in diverse directions was probably a seasonal event, but sometimes it may be a reflection of a permanent exodus. Almost all sites where mobility was recorded lack organic material remains, which limits our considerations about the relations of mobility with seasonal expeditions.

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FINALINIO PALEOLITO VISUOMENĖS MOBILUMO NUSTATYMAS LENKIJOS TERITORIJOJE PAGAL TITNAGĄ

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Santrauka

Vietinės titnago žaliavos rūšių naudojimas parodo žmonių grupių socialines teritorijas, o nutolusios stovyklavietės su titnago žaliava iš specifinio šaltinio rodo jų mobilumą. Atrodo, kad Finalinio paleolito visuomenių grupių mobilumas retai siekė atstumus, didesnius nei dešimtys – šimtas kilometrų. Nevietinės titnago žaliavos dominavimas stovyklavietėse, nutolusiose nuo atsivežtinės žaliavos gavybos centrų, rodo žmonių, įsivežančių žaliavą, keliones iki žaliavos šaltinio ir atgal į savo teritorijas.

Finaliniame paleolite Madleno, ABP, Svidrų bendruomenės organizuodavo logistines ekspedicijas įvairiomis kryptimis: šiaurės-pietų, vakarų-rytų, kurių maršrutai ėjo upių slėniais, jie taip pat nevengdavo kirsti kalnagūbrius. Bendravimo motyvacija buvo įvairi, ne tik žaliavos įsigijimas, bet, matyt, ir įprasta ekonominė strategija.

Atsekamas gyventojų judėjimas skirtingomis kryptimis vyko sezoniškai, tačiau tai galėjo būti ir ilgalaikis gyventojų persikėlimas į kitas teritorijas. Beveik visose stovyklavietėse, kuriose buvo atsektas gyventojų judėjimas, organinės medžiagos nebuvo išlikusios, o tai labai riboja mūsų žinias apie gyventojų grupių judėjimo pobūdį ir jo santykį su sezoninėmis (paskui elnius) migracijomis.