

# Roasting Pits as Social Space

## The Organisation of Outdoor Activities on an Early Mesolithic Settlement Site in Northern Sweden

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The interior of northern Sweden was the last area in Europe to become ice-free and pioneer settlers arrived soon after deglaciation. Early Mesolithic settlement sites in the Arjeplog area, Sweden, provide evidence of rapid colonization. This paper highlights the significance of the overall site arena as an interpretative unit for analyses of social life among the pioneer settlers in interior Northern Sweden. Results from the excavation of the Dumpokjauratj site dating to c. 8,600 BP (9,600 cal BP) are presented. The distinct spatial outline implies conformity in cultural codes during the initial phase of occupation reflecting an underlying principle of duality.

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The interior of northern Sweden was the last area in Europe to become ice-free and pioneer settlers arrived soon after deglaciation. Early Mesolithic settlement sites, dating to 8,000-8,600 BP in the Arjeplog area, provide evidence of rapid colonization. The pioneers faced a highly dynamic landscape with marked seasonal variations and alterations of watercourses, forest fires, earthquakes, landslides and floods (Bergman *et al.* 2004). To cope with this variable environment would have required a strong social and ideological framework, for both immigration initiatives and the enculturation of unfamiliar areas.

As the principal locus for the objectification of cultural practice (Bourdieu 1977; Giddens 1984), inhabited spaces – particularly dwellings – are convenient objects of study of cosmologies and social structure. Accordingly, studies of social relations and gender of Mesolithic societies in Fennoscandia have focused on sites with dwelling remains, especially those in the form of sunken floors or tent rings with stones, where possible (Bang-Andersen 1990, 2003; Engelstad 1991; Grøn 1989, 1995, 2003a, 2003b; Loeffler 2003; Olsen 1984; Renouf 1989; Schanche 1988). Since most Early Mesolithic sites lack visible remains of dwelling structures there has generally been an emphasis on studies of technological, rather

than social aspects. However, social relations were not confined to indoor spaces. Settlement sites included a number of areas used for outdoor activities structured by behavioural standards, religious beliefs and ethical concerns. This paper highlights the significance of the overall site arena as an interpretative unit for analyses of social life. Results from the excavation of the Dumpokjauratj site dating to c. 8,600 BP (9,600 cal BP) are presented (Fig.1). Distribution patterns are analysed and discussed, based on the assumption that socio-economic relations are reflected in the overall organisation of material. The function of the Dumpokjauratj site is discussed with reference to procurement strategies and settlement patterns. All radiocarbon dates referred to in the text are AMS (Accelerator Mass Spectrometry) datings and, unless otherwise stated, given in uncalibrated radiocarbon years BP. The term “indigenous” is used in accordance with the definition provided by the ILO convention (see Lane 2006:72).

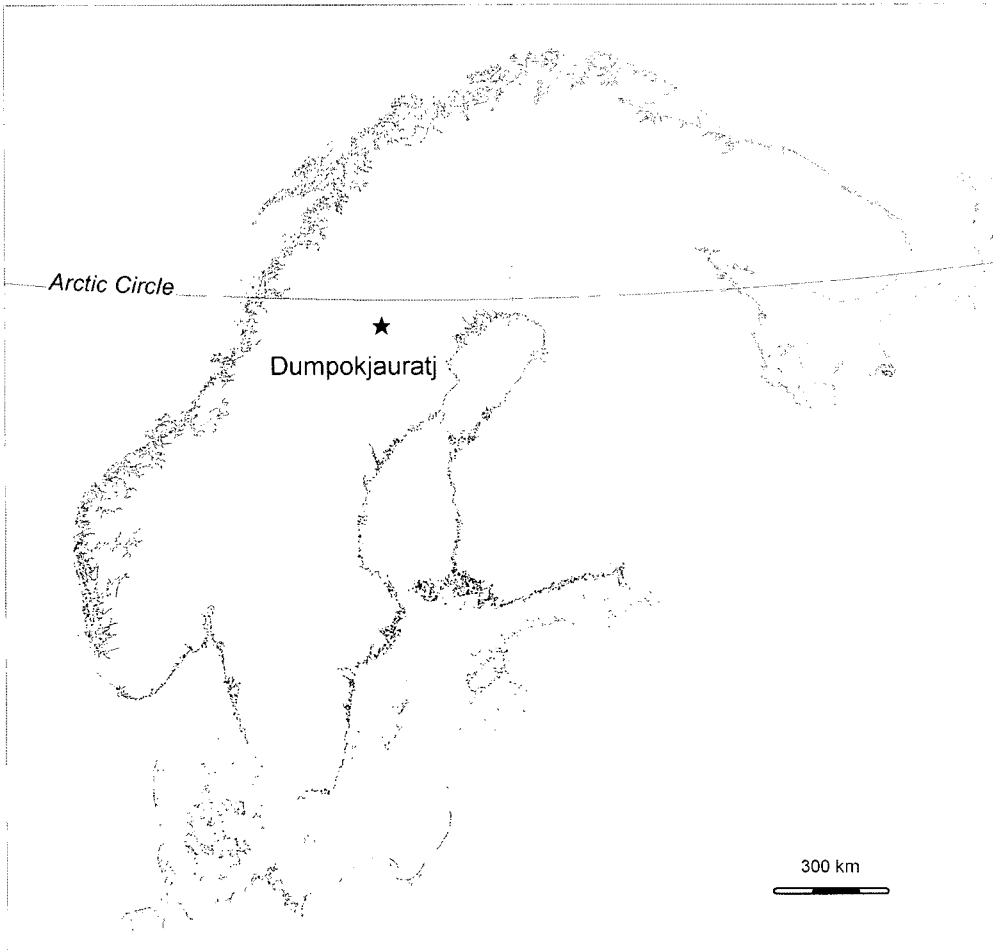


Fig. 1. Map showing Fennoscandia and location of the Dumpokjauratj site (\*).

## THE ARCHAEOLOGICAL CONTEXT

Prior to 1999 there were only a very limited number of sites (~5) dating to the Early Mesolithic in interior northern Sweden. Previous archaeological surveys focused on present-day shorelines and had only occasionally included areas with Mesolithic settlements. They were widely spread over a vast area thus obstructing every attempt to interpret sites in terms of routes of colonization, settlement patterns or social organization. However, upon taking into consideration the non-uniform isostatic land uplift, resulting in a tilting effect and the displacement of lakes and shorelines, we conducted targeted surveys along reconstructed ancient shorelines (Bergman *et al.* 2003, 2004b). Surveys resulted in the discovery of more than 50 sites within the selected areas of investigation (comprising five main water systems in Arjeplog municipality). Out of 17 radiocarbon dated sites, 12 proved to belong to the Mesolithic. Four sites were found in connection to the ancient shorelines of Lake Dumpokjauratj located to small ridges surrounded by peatland. Features were identified by using an auger and to some extent by test pits. One of the sites proved rich in archaeological material and was subject of further investigations. Excavations in the crest area were conducted in 2000- 2002.

## SITE LOCATION AND TOPOGRAPHY

The site is situated on a low ridge surrounded by peatlands in a paludificated area north of Lake Dumpokjauratj in the Arjeplog area, Lapland, Sweden (66 04 N, 18 22 E) (Fig. 2). By the time of occupation Dumpokjauratj formed an inlet of a large lake and the ridge was one of many islets in the shallow northern part of the lake. Due to isostatic land uplift and tilting Lake Dumpokjauratj developed into an isolated basin, the shores of which were successively displaced (Bergman *et al.* 2003). The ridge and former islet are comprised of fine-grained glacio-fluvial sediments lacking stones and boulders, extending to an area of c. 90 x 60 m with a maximum height of c. 4 m above surrounding peatlands. The upper parts form a flat surface, c. 40 x 20 m, gently sloping to a lower terrace of out-washed sandy material, c. 10 m wide. The lower terrace, which is slightly more than 1 m high, developed as a beach ridge during an early stage of the ancient lake's history, and clearly demarks a previous shoreline. Today, the ridge is covered by ground vegetation consisting of ericaceous dwarf shrubs and feather mosses, with a young stand of Scots pine trees. However, during the time of occupation the vegetation was quite different from today with deciduous trees, sea buckthorn and hops. In the field layer grasses and ferns dominated (Hörnberg *et al.* 2005).

## METHODS OF EXCAVATION

A grid was established, and a number of 1 m<sup>2</sup> test pits were dug at selected locations, mostly in the southern parts, in an initial excavation. A coherent excavation area measuring 10 x 2 m was located in the lower brim in the southern parts of the ridge. Further excavations focussed on the flat surface on the crest comprising a coherent area of 88 m<sup>2</sup> divided into three large 5 x 5 m squares, two of

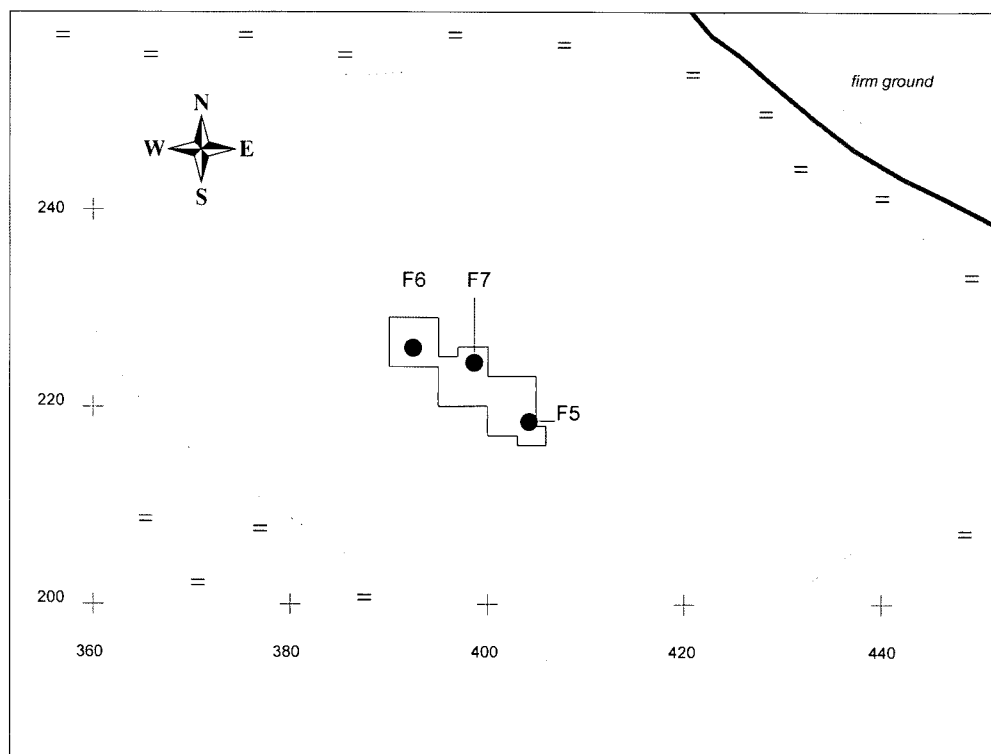


Fig. 2. Excavated areas and features 1-7 at the Dumpokjauratj site, Arjeplog, Lapland, Sweden.

which were extended (one by 3 m<sup>2</sup> and the other by 10 m<sup>2</sup>) during the final phase of excavation (Fig. 2). Excavations were carried out in artificial layers, each 0.05 m thick. All material was carefully dry-sieved (mesh width 3 mm), and finds were systematically registered at high resolution, i.e. every flake, however small, every artefact, nodule of red ochre and fragment of burned bone found *in situ* was recorded together with its vertical and horizontal position. In addition, both the number and total weight per square metre of fire-cracked stones with a maximum length exceeding 0.02 m were recorded.

## DATING AND CHRONOLOGY

In contrast to shore-bound sites dating to the Neolithic, Bronze and Early Iron Ages (4,200 BC – 400 AD), which are generally heavily mixed, most Early Mesolithic sites seem to represent limited sequences of occupation. This may be strongly related to shoreline displacement caused by isostatic uplift (Bergman *et al.* 2003). As land upheaval proceeded, the sites successively lost their strategic value and were abandoned. This was evidently the case at the Dumpokjauratj site. There are no visible remains of dwelling structures on the site, however roasting pits and other features, including areas dense in find material, exhibit well defined spatial patterns. Radiocarbon dates from the two pit-hearths range from 8,630±85 BP to 8,120±80 BP (n=11) representing two main time horizons: one around

8,500 BP (mean value,  $n=5$ ) and the other around 8,220 BP (mean value,  $n=6$ ). Both horizons are present at each roasting pit. Radiocarbon dates of charred wood from a nearby waste pit (F7) are somewhat younger, dating to 8,010 BP (mean value,  $n=3$ ). Four features on the lower terrace show dates ranging between  $8,020\pm80$  BP and  $6,475\pm55$  BP.

## FIND MATERIAL

Slightly more than 93% of all lithic artefacts, comprising 4,650 pieces, were found in the crest area, 44% of which were found *in situ* (Fig. 3-6). Finds occurred in the top layer just below the soil surface and continued down through the stratigraphy, exhibiting consistent distribution patterns. The bulk of the finds were found within the top two layers. Artefacts were dominated by flake material, but also included cores, retouched flakes, scrapers, backed pieces/oblique points and a few microblades. A sample of 915 artefacts (including material from the brim area), comprising 869 flakes and 46 cores, tools and retouched flakes, has been subjected to detailed analysis (Olofsson 2003:1-96). There is a predominance of platform reduction compared to bipolar reduction in the flake material, but there are almost equal proportions of platform and bipolar cores (Olofsson 2003:1-96). Raw materials are of local origin. In the total assemblage, quartz accounts for 44% of the lithic materials, igneous rock 33%, dark quartzite 15% and light quartzite 8%. Bone material found in the crest area amounts to 13,677 fragments with a total weight of 1.13 kg; 19% identified to species level. 84% of the bones were found *in situ*, or in 0.2 m squares, which account for 76% of the total weight of the bone material. Bones from reindeer (*Rangifer tarandus*) predominate and only a few fragments of beaver (*Castor fiber*), fish (*Esox lucius*) and bird (unspecified) were identified, in addition to two fragments that may have originated from red fox (*Vulpes vulpes*).

## ACTIVITIES AND OUTDOOR SPACE

The excavated area exhibits three distinct clusters of find material coinciding with the features. In the areas between them fire-cracked stones and burned bones are virtually absent, and lithic material is sparsely scattered. Furthermore, although phosphorus levels were generally low, citric acid analysis of the phosphorus distribution in the illuvial B1 horizon showed that values were relatively high in the crest area, emphasising its significance as an

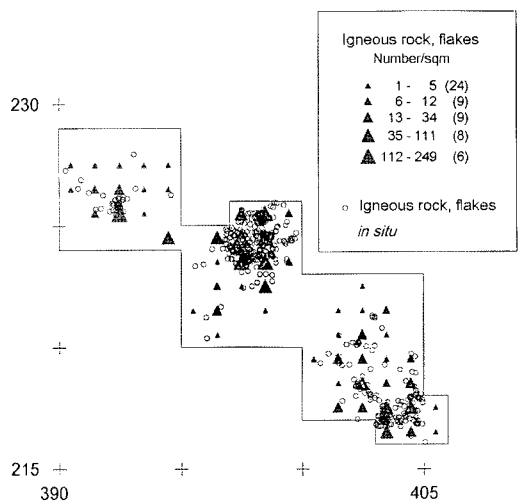


Fig. 3. Spatial distribution of flakes of igneous rocks.

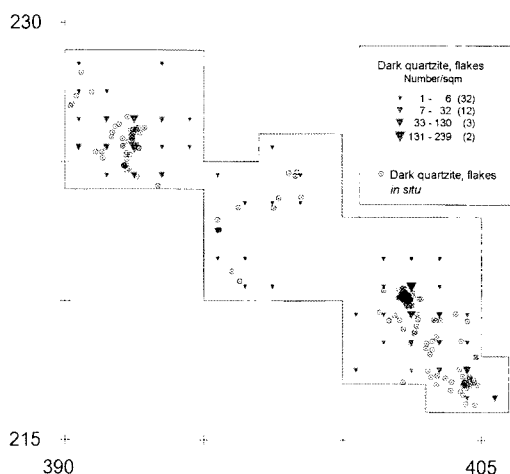


Fig. 4. Spatial distribution of dark quartzite flakes.

activity area. The analysis of spatial patterning is based on visual inspection, assuming that the material is non-randomly distributed and deposited in accordance with behavioural rules structuring the disposition of space. A distinction is made between two broad categories: primary and secondary refuse. Primary refuse denotes material deposited on the spot in connection with specific activities (Schiffer 1976:30).

Consequently, areas with primary refuse are synonymous with activity areas. This is not to say that the use of artefacts was exclusively confined to the area of deposition. However, activities immediately preceding primary deposition represent the terminal point in the life cycle of each specific artefact.

The two pit-hearths (F5 and F6, Fig. 2), interpreted as roasting pits (Bergman 2005), are separated by a distance of 14 m. They have a similar, c. 1.5 - 2 x 1 m rectangular outline and are 0.5 - 1 m deep. They both contained charcoal, including some large pieces, heat-fractured stones (F5: 125 kg and F6: 88 kg) (Fig. 7) and small amounts of lithic debris and burned bones. The mixture of material in the pit fillings and surrounding banks indicates that the pits were repeatedly used. A set of pieces of charred wood examined to identify the sources of wood used in the fires all originated from *Betula* and *Salix/Populus* trees.

Examination of *in situ* finds revealed micro-level clusters within the overall roasting pit assemblages (Figs. 3-6), all located within a two-meter radius of the pit centres. These clusters were dominated by lithic waste, but also included burned bones. A number of cores and formal tools were associated with the assemblages and clusters. Artefact clusters are regarded as primary refuse and interpreted as representing activity loci related to the pit hearths (see Binford 1983:165-172). Judging

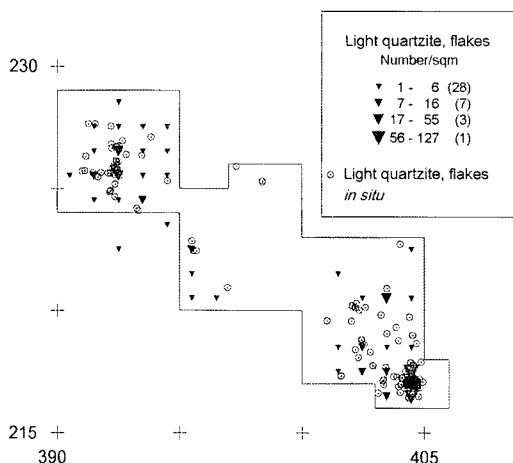


Fig. 5. Spatial distribution of light quartzite flakes.

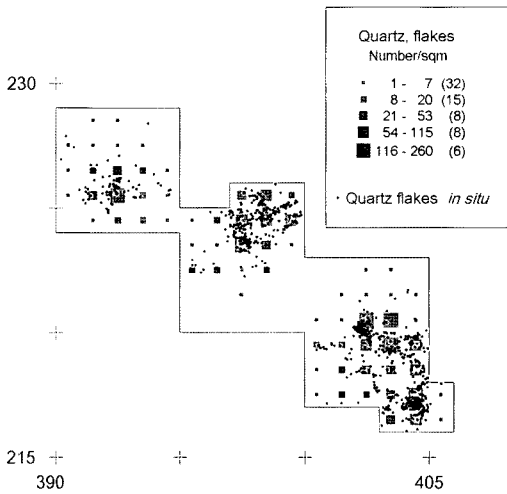


Fig. 6. Spatial distribution of quartz flakes.

from the composition and spatial distribution of finds within the F5 assemblage (Fig. 3-6), activities included heat production, the preparation of food, lithic reduction and probably tool manufacture, curation and repair. Two distinct clusters of flakes on opposite sides of the pit both exhibited spatial overlap of different materials, mainly quartz and quartzite, suggesting that reduction took place either at one and the same instance or as

subsequent events. The clusters were of similar size, shape and density and may represent the fixed working places of two individuals. In contrast to the various activities indicated by the F5 assemblage, the overall character of the F6 assemblage suggests that activities were mainly focused on knapping and the manufacture of tools.

An oval waste pit (F7) with long and short axes of 0.4 and 0.3 m, respectively, 0.4 m deep and filled with charred wood, lithic debris, nodules of red ochre (< 5 mm in diameter), and burned bones was located midway between the two roasting pits (Fig. 8). Only small amounts of fire-cracked stones (8 kg in total) were found in the vicinity of the pit, and none in the pit itself. The mixture of various materials lacking any stratigraphical context indicates that waste was deposited in the pit at one single occasion. Furthermore, the amorphous appearance of find material and colourings in the area immediately surrounding the waste pit strongly give the impression of material having been swept away during clearing. The almost

total lack of finds south of the pit assemblage suggests that this surface had been cleared as part of site maintenance (Binford 1983: 189) (Fig. 3-8).

## ANALOGIES AND INTERPRETATIONS

Large amounts of heat-fractured stones are characteristic features of roasting pits described in numerous

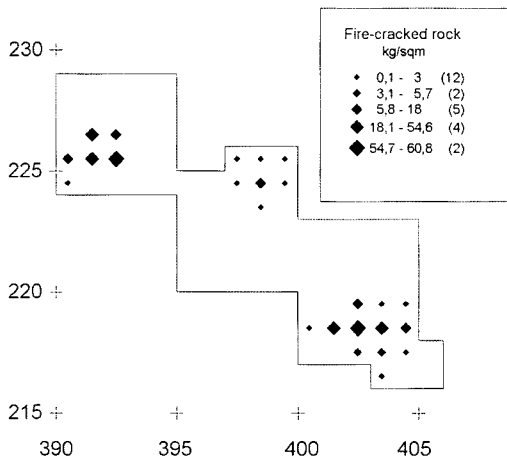


Fig. 7. Spatial distribution of fire-cracked rock.

ethnographic accounts (cf. Hunn *et al.* 1998:527; Palmer 1975:38-40; Peacock 2002; Smith & Martin 2001:169-183; Turner & Kuhnlein 1983:212-214; Turner *et al.* 2000:1283-1284, Wandsnider 1997). The size and shape of the Dumpokjauratj roasting pits are also consistent with ethnographic data (Bergman 2005). Roasting techniques have been applied to both animal and plant tissues to make them digestible and/or more durable for storage (Bergman 2005; Wandsnider 1997). The Sami use of Scots pine (*Pinus sylvestris*) inner bark for food involved roasting bark in pits (Bergman *et al.* 2004a; Zackrisson *et al.* 2000). Historical records and ethnographic data suggest that pit roasting was exclusively performed as an outdoor activity (Peacock 2002; Turner & Kuhnlein 1983: 212-214; Turner *et al.* 2000:1283-1284; Wandsnider 1997) and thus the roasting pits at Dumpokjauratj are interpreted as signifying outdoor activities. The pits represent areas where activities connected to the preparation and roasting of food tissues repeatedly took place. The articulated spatial affinity between the roasting pits and surrounding artefact clusters corresponds to Binford's (1983:149-158) hearth-centred drop and toss zone model and indicates they have a functional relationship. Pit roasting is a procedure that generally takes hours (Bergman 2005) and various tasks could have been conveniently performed while attending to it.

As the only area with red ochre fragments the F7 complex has a special status. Red ochre in small nodules occasionally appears at prehistoric sites in Northern Sweden dating to the Stone and Bronze Ages, but with no obvious association with specific features or sets of tools (Lindqvist 2002; Färjare 1996, see also Boaz 1998 regarding Stone Age sites in eastern Norway). However, two stone-settings with inhumations, both dating to the Late Mesolithic, provide firm contexts for the prehistoric use of red ochre (Liedgren 1994, 1997). In one case the body had been placed on a layer of pulverised ochre mixed with sand, while in the other red ochre had been powdered over the head (Liedgren 1994, 1997). Furthermore, Neolithic rock paintings in Northern Sweden were painted with red ochre mixed with fat, blood, urine and/or saliva (Lindgren 2002:61). Elk motifs predominate in these paintings, followed by images of bears, reindeer, snakes, fish and sometimes humans (Lindgren 2002:59; Ramqvist 2002). In conclusion, red

ochre may be associated with concepts of life, death and hunting.

The F7 assemblage includes a large amount of burned bones, predominantly of reindeer, which accounts for 93% of the total weight of the bone material found on the site. All body parts of reindeer were present, from head to hoof.

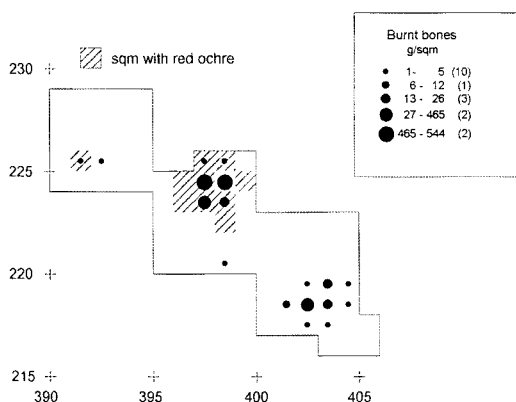


Fig. 8. Distribution of red ochre and burnt bones.



Osteological analyses show that bones predominantly originated from mature individuals and a few infant calves (Vretemark 2003). The proportion and content of reindeer bones confirm that prey were brought to the site and subsequently slaughtered.

A number of variables, including the natural setting of the site, season, weather conditions, group size and length of occupation influenced the process of site formation (Binford 1978; Boaz 1998:79). The function of the individual site as part of the overall procurement and settlement system also strongly influenced the intra-site structure. The Dumpokjauratj site represents one of many sites included in a seasonal and logistic subsistence-settlement pattern. Lithic materials were brought there for further preparation and hunters returned to the site with prey to be butchered, prepared and consumed. The spatial outline of activity-areas, the richness and diversity of find material, and the repeated use of pit-hearth features suggest that the Dumpokjauratj site served as a "residential base" (see Binford, 1980). Contemporaneous sites in the surroundings show a quite different layout, with a single hearth or pit-hearth and no artefact material, typifying sites used in short visits of special-task character. A number of features indicate that the Dumpokjauratj site was inhabited during the summer season. The presence of bones from very young reindeer calves indicates that hunting and butchering occurred during the early summer since calves are born in May. Furthermore, the roasting pits are indicative of outdoor activities during summer (Bergman *et al.* 2003; Bergman 2005).

The Dumpokjauratj site is interpreted as a sphere of spatially structured outdoor activities related to habitation during the summer season. Concepts of the structuring of space were certainly applied in the disposition of the crest area, as shown by the well-defined activity and deposition areas. Roasting pits and related assemblages reflect an underlying principle of duality. In terms of social dimensions this may reflect two households with separate domestic areas. In a corresponding way, the individual working places, as exemplified by clusters of debris may signify the presence of two skilled knappers, probably of adult age, within each household. If so, each household may have comprised an extended family. Finally, the cleared area between the roasting pit assemblages could have served as communal space where household members participated in common concerns such as butchering prey and ritual activities.

## ENCULTURATION OF UNFAMILIAR AREAS

The mere option of moving into previously uninhabited areas does not necessarily imply that colonization actually occurred. In order to take advantage of the opportunities offered, pioneer colonizers had to be equipped with a relevant technology to exploit resources, a social organisation allowing relocation and, not least, a mental readiness to encounter the unfamiliar. Although a certain degree of advance knowledge about the environmental conditions existed, e.g. seasonal variations and behavioural patterns of prey, the detailed insights crucial to the

survival lacked. Mental maps of settlement sites, migration routes of prey, fishing grounds and rock deposits had to be established. Also, places had to be named and ranged in common frameworks of reference and social networks had to be rooted in the landscape. In short, the physical environment had to be assigned meaning, i. e. enculturated, and thus landscape acquisition was part of the colonization process.

During the early postglacial period the northern parts of Sweden formed a highly dynamic setting. Geological processes like earth quakes and land slides posed considerable threats to the pioneer colonisers. Judging by the early settlement traces, the pioneers seem to have settled in interior northern Sweden shortly after deglaciation and thus not to have been intimidated by a threatening environment. The speed by which colonization took place is indicative of the conceptualization of the world. If embracing an animistic concept, like the indigenous Saami of historical time, the world would have been perceived as spiritual and giving and the relationship between humans and their natural environment would have been characterised by mutuality and communion rather than opposition. Also, the past was ever present, and the dead were accompanying the living (see Bergman 2007). In this all embracing world, there were no uninhabited areas and thus no opposition between the familiar and unfamiliar. Consequently, there would have been no social or ideological obstacles against the colonization of new areas.

## DISCUSSION

Pioneer colonisers certainly had to adapt to the physical environment. However, the process of enculturating landscapes also included 'symbolic adaptation' (Jordan 2003:31). Ideology, cosmology and social organisation provided the cultural predisposition needed to cope with unfamiliar environments (cf. Fuglestad 2001; Tolan-Smith 2003:55). Landscapes were assigned meaning, not only as an object of exploitation, but as an arena where ideology, cosmology, values and norms were played out (Bergman 2006). Landscape acquisition was part of the colonization process and thus pioneer colonization was not only an ecological process, but a social event (Fuglestad 2001; Rockman & Steele 2003; Tolan-Smith 2003:55).

The distinct spatial outline at the Dumpokjauratj site implies conformity in cultural codes during the initial phase of occupation. In terms of social structure, the dyadic division of space practised by the pioneer settlers at the Dumpokjauratj site may signify a local band comprising two extended families (cf. Slobodin 1962:73; Helm 1969:213; Leacock 1974; Service 1971:47). Within the variable world encountered by the pioneers, social structures would have formed the all-pervading theme defining and expressing human existence. As such, social relations manifested in space as representations and agents of *habitus* (see Bourdieu 1977). If this is true, the tacit dimension of social order would have been consistent within the cultural sphere to which the Dumpokjauratj settlers belonged and other residential sites, contemporary with Dumpokjauratj, should exhibit similar spatial patterns. However, there are only a very limited number of

Early Mesolithic sites in Northern Fennoscandia sites and the artefact material is generally either sparse or heavily mixed with more recent material (cf. Damm *et al.* 1993, Hauglid 1993; Thommesen 1996; Blankholm 2004; Halinen 2005), thus hindering spatial analyses. However, the Garaselet site, situated 150 km SE from Dumpokjauratj and dating to c. 8000 BP (Knutsson 1993), seems to reveal an underlying dichotomy (comprising two pit features) similar to that of the Dumpokjauratj site. During the Late Mesolithic, there are several sites with dyadic distribution patterns (Loeffler 2003:244). The most conspicuous case is the Vuollerim site, situated c. 200 km NE from Dumpokjauratj, which includes semi-subterranean houses dating to c. 6,000 BP, one of which has a very distinct spatial distribution of artefact material exhibiting an internal dichotomy (Loeffler 2003). A number of dwellings on contemporaneous sites may also exhibit dyadic structures with hearths occurring in pairs (Färjare 2000). An open air site at Döudden, Arjeplog, dating to c. 6,000 BP and situated less than 20 km from Dumpokjauratj, included two roasting pits with associated artefact assemblages (Bergman 1995: 110).

So far, the concentration of red ochre in connection with the F7 complex is unparalleled and there is no other site in northern Fennoscandia with reported findings of red ochre in a firmly dated Early Mesolithic context. However, red ochre is far from unique in archaeological contexts of later date (above) and is generally interpreted in terms of rituals associated with concepts of life and death. This would apply to the Dumpokjauratj site as well. The use of red ochre as a symbolic representation of blood, expressing the essence of life and death, is concordant with an animistic conception of the world. Also, the spatial association between reindeer bones and red ochre is fully consistent with the animistic concept of communion and reciprocity between human and nature, hunter and prey. By returning blood, in the symbolic form of red ochre, to the prey that had been killed and drained from its own blood, balance was restored. Interpretations of the religious concepts of the Dumpokjauratj settlers may balance on the verge of speculations. Nevertheless, being a locus of cultural practise, the settlement site at Dumpokjauratj offers an insight into the basic principles of social space and conceptions of the world among the pioneer colonisers in interior Northern Sweden.

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