M. Otte (dir.), *La Spiritualité*.
Actes du colloque de la commission 8 de l'UISPP (Paléolithique supérieur), Liège, 10-12 décembre 2003.
Liège, ERAUL 106, 2004, p. 81 à 85.

# TECHNOLOGICAL COMPLEXITY AND SYMBOLISM OF RISK-AVOIDANCE HUNTING STRATEGIES AND OF BONE ORNAMENTATION IN THE UPPER PALAEOLITHIC IN THE BALKANS

**Tsoni TSONEV***

***Abstract***

*The paper considers archaeological peculiarities in the evolution of the Gravettian and Epi-gravettian sequences in Temnata cave, northern Bulgaria. These include the constant prey spectrum, raw material supply strategies and the associated increase in the thinness of the blades, the appearance of typical artefact forms, and a wide variety of ornaments made of 'exotic' raw materials. An explanatory model is proposed that considers the association of subsistence strategies with symbolic constitution of the Temnata Gravettian and Epi-Gravettian human groups and their identification practices along the line of the social and symbolic continuum: danger - prestige - social benefits.*

## Strange artefacts, raw materials, ornaments in upper Palaeolithic contexts

In most Upper Palaeolithic sites we often find artefacts, raw materials and ornaments that seem to be out of the usual contexts. They have never been given due attention nor were sufficient explanations sought out. Rational models in terms of economic necessities or functional suitability do not offer convincing answers. These include exotic raw materials, particular techniques and morphologically defined tools, bone ornaments, exotic shells. Yet, each site seems to be unique, because of the different proportions of such artefacts, and different subsistence strategies. On the other hand, sites tend to be grouped into regional clusters with similar and complementary behaviour that corresponds to a particular cultural tradition. Onsite spatial structures rarely give additional insight into the nature and the variety of activities carried out at a site and the function of the site as a whole in a wider context.

The approach I follow includes assessment of the relative importance of a site within local and regional contexts. The aim is to look for complex social structures built up within a given region that maintain particular human behaviour that differs from the neighbouring regions. Though the harsh realities of the second Pleniglacial and the consequent cold phases seem to determine human conduct as strictly following economic necessities and acquiring the maximum benefit from subsistence practices, we find artefacts that strongly suggest a symbolic constitution of complex human relations. I propose two criteria that would reveal such behaviour: the relative importance of a given site within a wider regional context and the evaluation of risk-avoidance strategies. In the first case we can assess a given site in terms of its geographical position related to the availability of particular game and other resources. The second one permits calculation of the overall chances of success of the hunting strategies of Palaeolithic groups at a given site/locality and the ways human groups reduced the risk. Our expectations are that each site has its relative importance within the wider regional network of settlements. The more important the site the more exotic artefacts would occur on it. The second criterion suggests and we expect that Palaeolithic people would avoid hunting dangerous animals - a small human group of 30-40 members cannot afford dead casualties during a single hunting season; in few years the group will face physical extinction. Contrary to the common sense of our rational expectations, the data clearly show that humans hunted dangerous animals such as horses, cattle, cave bears, mammoths. For the latter two species, mammoths and cave bears, the evidence is not so clear (the hunt was rather casual and reliable subsistence strategies were difficult to establish). Horses, cattle, red deer, constituted their high-risk hunting practices. Yet, people never targeted only dangerous animals - they always compensated the risk with low-risk game such as *Capra ibex*, chamois, fish, roe-deer. Quite contrary to this there are sites spe-

(*) Institute of Archaeology and Museum, 2 Saborna 2, 1000 Sofia, Bulgaria, tsts@bas.bg

cialized in hunting only low-risk hunting animals such as *Capra ibex*/chamois - Skandalna cave - 2 km away from Temnata cave in the Iskar gorge, northern Bulgaria and the Klithi rockshelter in Epirus, northwestern Greece. The risk of hunting horses and cattle is not only associated with danger. These are long-distance migratory animals and the risk is associated with missing the herds during their migratory movements. We can suppose that Palaeolithic groups effectively communicated over long distances and used to exchange information about the movement of large herds of animals over considerable distances - 2-300 km.

## Environment, geography and prey-spectrum of the Iskar gorge

Temnata, Scandalna, Samuilitsa I and II, and Pesht caves are situated along the northern part of the Iskar gorge. On its middle and southern part, few Middle and Upper Palaeolithic artefacts have been found in the Svinskata dupka cave near the village of Lakatnik. These data suggest that during the Middle and Upper Palaeolithic the Iskar gorge was intensely occupied by human groups. The Iskar river is the only river that crosses the Balkan range from south to the north. It is the biggest right bank tributary to the Danube within the Lower Danube region. General climatic interpretations based on big mammals are only possible for layers 3c, 3d, and 3g, which cover most of the Gravettian and Epi-Gravettian sequence of Temnata cave (Deplech & Guadelli 1992:206-207). These include steppe, mountainous area and forests. This also reflects the topography of the region near Temnata cave: a karst region colonized by *Capra ibex* and chamois. It is cut by long forested valleys - a habitat for red-deer. Not far to the north it opens up to the large Danube plain which is a typical habitat for steppe species such as *Equidae* and *Bovinae*. This interpretation is indirectly supported by the prey-spectrum within layers 3c, 3d, 3f, trench I, and in layers 3a, 3d, 3g, $3^{a}$, $3/4^{b}$ (Deplech & Guadelli 1992:143-144, tabl. I, tabl. II). The ratio 3:1 (*Equidae* + *Bovinae* to *Capra ibex* + chamois). There are other identified species that are better represented in trench V (inside the cave next to trench I): remains of 6 *Ursus speleus, Megacerus giganteus* - 4. *Cervus elaphus* is most numerous in layer 3d in both trenches, somewhat less present at the bottom layers of the sequence, while remains are in negligible quantities at the upper part - layers 3a and 3c.

On one hand, the distribution of *Cervus elaphus* may reflect the gradual 'continalization' of the region registered by the micro fauna in layer 3c (Popov 1994:48). On the other hand, the still present *Cervus elaphus* in the upper part of the sequence may represent the shifted focus on subsistence of Late Palaeolithic hunters mainly on horses, cattle and *Capra ibex*, chamois. These four species constitute the major subsistence pattern of the Gravettian and Epi-Gravettian sequence of Temnata. In another small cave (Scandalna cave) situated 2 km away from Temnata, there were found and identified only remains of *Rupicapra rupicapra, Capra ibex and Bos* sp./*Bison* sp. The cave seems to have been used as a fleeting site of *Rupicapra rupicapra, Capra ibex* hunters with lithic industries from the Middle and Upper Palaeolithic (Ivanova *et al*. 2000:12).

## The model of risk-avoidance strategies

The major subsistence pattern of Temnata Palaeolithic groups consisted of two elements: hunting dangerous animals such as horse and cattle (also long-range migratory animals) and non-dangerous animals: *Capra ibex* and chamois. To a much lesser degree they hunted *Cervus elaphus* and sporadic encounters with *Ursus speleus* and *Megacerus giganteus*. The risk itself includes two components: (i) the risk of missing herds of migrating horses and cattle (ii) the high risk of getting serious injuries, permanent handicaps and even deaths of hunters during expeditions.

The strategic position of Temnata - meeting the fan-shaped grass-land (the Danube plain) entering into the Iskar gorge from the north reduced the risk of missing the large herds of migrating animals to practically zero. Temnata Palaeolithic groups were able to condition their high-risk hunting strategies because of the strategic position of the cave and because of the advantages of the broken terrain. Approximately we can model their behaviour by using the Bayes expression: the chances of success would be equal to the chances of success of meeting the herds, the chances of success of hunting down enough animals provided they can always switch their hunt to less dangerous and more available animals (*Capra ibex* and chamois).

Temnata Palaeolithic groups had at their disposition another risk-reducing tool - the information of herd movements over long distances. At Temnata, there is a consistent pattern of supply with high-quality meso-local (up to 100 km away sources) and high-quality extra-local (up to 3-4-500 km away sources) flints (Pawlikowski 1992:286). These flints not only improved the technique of blade production (Tsonev in press), but also show that the Palaeolithic groups in Temnata maintained short- and long-distance contacts with other groups. Probably they had enough information about the movements of the large herds of migratory animals before meeting them at the area of the Iskar gorge. As for the meso-local flints, they smoothly increase, while the local flints smoothly decrease (fig. 2). The covariation between the high-quality imported and medium quality local flints throughout the 10 Gravettian levels of Temnata show that the technique of blade production improved with the improvement of the quality of flints. In the upper levels, blades become thinner; their length increased, while preserving the same width (Tsonev in press).

More interesting is the behaviour of the extra-local flints. They increase too, but remain (with one exception) in negligible quantities. Their quantities do not fluctuate considerably and the directions of the raw material supply change constantly from level to level. The widest network of supply with extra-local flints is observed in level VI (Drobniewicz *et al*. 1992:389).

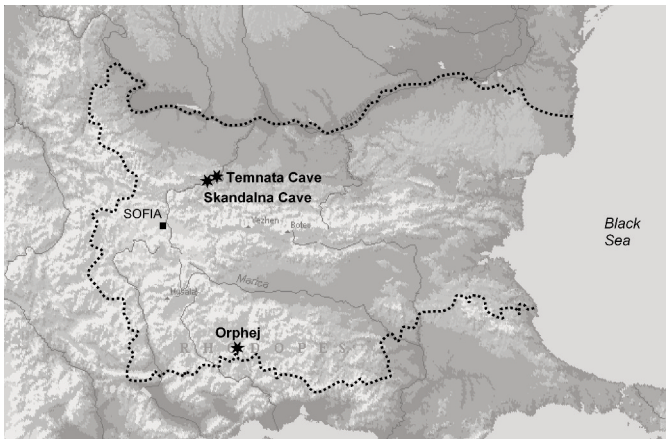


***Figure 1***. Map of Bulgaria.

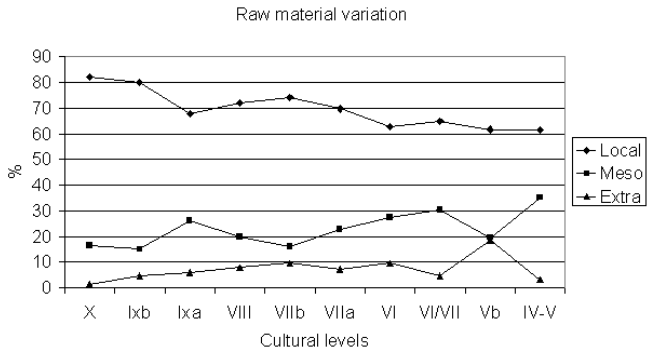


***Figure 2***. Distribution of flint raw materials within the Gravettian sequence of Temnata cave.

From a regional point of view, there are consistent morphological differences in the lithic styles and the production of characteristic tools. If we have overlapping of the prey spectrum in different sites, we would have expected the same or overlapping styles of morphologically diagnostic tools: the points. Moreover, we know that there existed contacts between the Epi-Gravettian groups in Temnata and the Orphei site (a high mountain Late Upper Palaeolithic settlement, probably workshop for shouldered points, in the Middle Rhodopes Mountains (fig. 1) (Ivanova 1987, 1994), but shouldered points (with only one exception at the uppermost level of Temnata Epi-Gravettian) are not found north of the Balkan range. For example, red-deer was the hunted animal in Kastritsa cave, Greece (Bailey 1997:667) and partly in Temnata, but the inhabitants of Temnata and of other sites north of the Balkan rage used few or no shouldered points. Instead they made their own characteristic tools (mostly projectile points). For example, we find particular points called the Temnata point (Sirakov 1994:177; fig. 2) and the Kozarnika point (Tsenka 2003). They are specific variants of *pointe à face plane*. Thus we have at one and the same site the complex picture of the wide spectrum of hunted animals with balanced risk on a regional scale, a build-up of a wide network of high-quality raw material and information supply, and uniqueness in cultural preferences visible in the lithic styles and in the presence of bone ornamentation, etc.

## Symbolism in particular stone and bone artefacts

First I would like to stress the importance of the regional approach in studying the past human behaviour from the point of view of landscape settings, palaeoclimatic reconstruction, faunal spectrum and vegetation cover, but in relation to their contributions into the dimensions of the human world. My approach is strictly bounded to the matrix of the regional geography within which particular similarities and differences can be revealed. They help better understand past human behaviour. Thus, from the regional settings we can assess the relative importance of a site. In Temnata the geographical position and the environmental conditions provide easy and balanced access to various resources: fish, pigs, *Capra ibex*, *Rupicapra, Cervidae*, horses, cattle. People were likely to have a wide range of choices that conditioned and varied their hunting and other subsistence practices. Our expectations would be that throughout the Gravettian/Epi-Gravettian sequence there would have been an extremely varied prey spectrum. Contrary to our suppositions, the Palaeolithic people made their own choices and focused their hunting exclusively on horses, cattle (bison), red deer and other *Cervidae, Capra ibex* and chamois. There are very few remains of *Megaceros giganteus*. Wild boars and pigs were found in negligible quantities (Guadelli pers. com.) – probably their population was not stable and large enough to provoke hunting, or people concentrated their efforts on hunting the above mentioned species.

There are several questions that demand further consideration:

1. Why is there such a stable pattern of prey-spectrum for more than 15 000 years?
2. Why were the Palaeolithic groups constantly improving the standardization of blade production through an increasing import of high-quality flints?
3. Why there is a clear cultural preference in lithic styles – no shouldered points (one exception) and production of unique points (the so-called Temnata points, Sirakov *et al*. 1994:177)?
4. Why is there an extreme variety of materials that are exotic and rare from which ornaments were made?

These questions point to two categorizations: identification practices and symbolic constitution of human groups. It is likely that points played an important role in identification of human groups. Probably this underpins the uniqueness of the Temnata points (Sirakov *et al*. 1994) and Kozarnika points (Tsenka 2003). This fact is supported by the consistent denial of accepting other points typical for the neighbouring regions. There is evidence that Temnata groups had contacts with the Middle Danube region and with the Middle Rhodopes Mountains to the south. But pointed blades com-

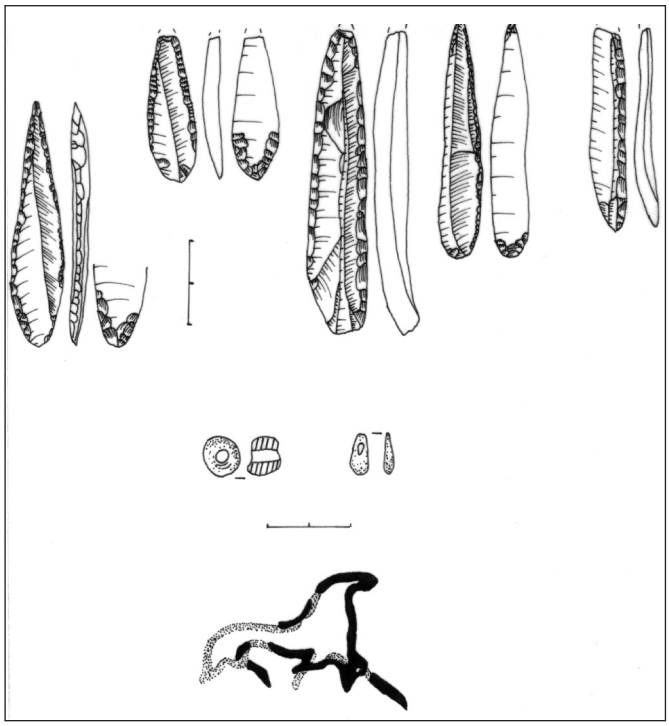

***Figure 3***. Flint artefacts (above). A clay bead (left); a bone bead. Gravettian sequence of Temnata cave. (After Drobniewicz *et al*. 1992, pl. 56). Painting of a horse in Magura cave, Bulgaria. Probably from the late Pleistocene. (After Stytchev 1994:209-214, fig. 5).

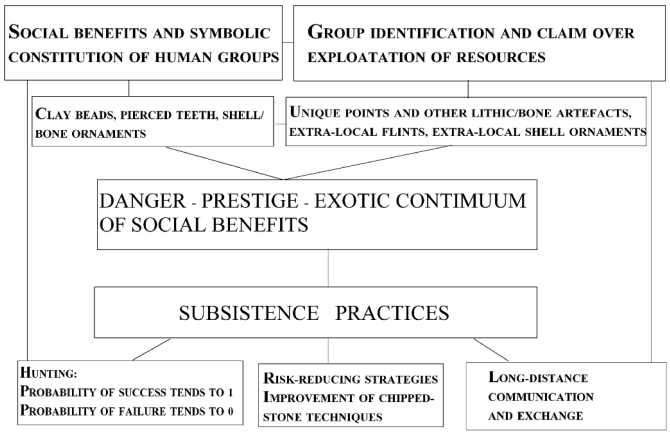


***Figure 4***. Scheme of the social dimensions of late Pleistocene hunting of large herd animals.

mon for the Willendorf II Gravettian sequence (Tsonev 1996, 1998) and shouldered points typical for the Rhodopes and northern Greece are not found in northern Bulgaria (with one exception).

Yet, the symbolic constitution of Temnata communities means to explore their lifestyle beyond the boundaries imposed by economic and biological necessities. The constant prey-spectrum throughout the whole sequence means that it is constituted and maintained by cultural and social practices and does not depend uniquely on climatic and environmental conditions. As a general frame of an explanatory model I propose what A. Giddens (1984:317) calls 'perverse consequences' of a social action. It is established that in hunter-gathering societies the nutritional payoff of gathering nuts, fruits, small game, fish, etc. is approximately two times more productive than hunting large animals. Yet, the social benefit and prestige acquired through sharing meet of large animals outweighs several times the social benefit and prestige (if any) in gathering food (Hawkes 1993:341-351).

Another possible line of explanation for the appearance of symbolic objects and artefacts can be considering the risk-avoidance strategies. They caused an increasing standardization of blade production and use through the gradual decrease of local medium-quality flints and the gradual increase of high-quality meso-local flints (fig. 2). The high-quality extra-local flints that are likely to be associated with prestige remain in negligible quantities (with one exception) but remain constant through time and change frequently the directions they come from: south, east, northwest.

The symbolic objects are made of an extreme variety of exotic, rare materials. There are two tube-like shells of *Dentalium* sp. and *Galeodea echinophora* (coming either from the Mediterranean or from some Miocene deposits in Middle Europe: Slovakia, Transylvania, Austria) (Drobniewicz *et al*. 1992: fig. 4). An incisor of *Megaceros giganteus* is found. This is the only pierced tooth in the sequence. This fact suggests that certain animals, because of their large dimensions, beauty, or stories connected with them, symbolized the prestige and social benefits that these animals bring in to some members of these hunting groups. Generally speaking, incisors and canines of *Cervidae* and bison, *Ursus* and some big cats were used as ornaments. On the other hand, there are almost no or very few pierced teeth of *Capra ibex*, chamois, pigs, and horses.

## Conclusions

Taking together the above arguments, we conclude that if Palaeolithic groups sought consumption benefits, they will target low-risk and high-nutritional payoff resources; if they sought social benefits, they will target collective goods. The stable prey-spectrum in Temnata and Skandalna caves suggests that Temnata groups achieved greater social benefits through hunting large herd animals. The basic feature of their hunting practices was balancing the risk, where the probability of success in the overall hunting practices tends to 1, while the probability of failure tends to 0. The risk reducing practices caused improvement of blade production techniques by import of high-quality flints and blanks. This also includes increased communication and exchange with close and distant communities. At the social level the three subsistence practices: hunting – risk-reducing – long-distance communication and exchange transfer into Danger – Prestige – Exotic continuum of social benefits (fig. 4). They are expressed

through an extreme variety of materials and objects that occur in different sites and in different proportions. This social continuum defines two lines of symbolic expressions of Palaeolithic groups. The first one is the group identification. It is likely to be maintained through specific points and other lithic/bone/antler artefatcts, and through ornaments made of extra-local (rare) raw materials such as shells of *Dentalium* sp. and *Galeodea echinophora*. The second one expresses the social benefits and symbolic constitution of human groups. It involves clay/bone beads, pierced teeth, shell/bone ornaments, stone/bone/antler sculptures, etc. The general feedback of the symbolic constitution of Palaeolithic groups refers back to the subsistence practices and maintains stable the hunting, risk-reducing and communication practices through long periods of time. This evidence shows the complex and direct dependence of Palaeolithic groups on their inner social and symbolic constitution rather than on environmental changes and the available faunal spectrum.

## References


Bailey G., (1997) - Klithi: a Synthesis. *In*: G. Bailey (ed.), *Klithi: Palaeolithic Settlement and Quaternary landscapes in northwest Greeece*. Cambridge: McDonald Institute Monographs, Oxbow, vol 2, p. 655-681.

Delpech F. & Guadelli J.-L., (1992) - Les grand Mammifères Gravettiens et Aurignaciens de la grotte de Temnata. *In*: J.K. Kozlowski, H. Laville & B. Ginter (eds.), *Temnata Cave. Excavations in Karlukovo Karst Area Bulgaria*. Krakow: Jagellonian University Press, vol. 1(1), p. 141-217.

Drobniewicz B., Ginter B., Kozlowski J.K., (1992) - The Gravettian sequence. *In*: J.K. Kozlowski, H. Laville & B. Ginter (eds.), *Temnata Cave. Excavations in Karlukovo Karst Area Bulgaria*. Krakow: Jagellonian University Press, vol. 1(1), p. 295-501.

Giddens A., (1984) - *The Constitution of Society*. Cambridge: Polity Press.

Hawkes K., (1993) - Why Hunter-Gatherers Work. *Current Anthropology* 34(4):341-360.

Ivanova S., Sirakov N., Laville H., Popov V., Atanasova E., Tsanova T., (2000) - Novi danni za srednija I kasnija paleolit v Karlukovskija karst – peshtera Skandalna. *Annuary of Department of Archaeology - New Bulgarian University* IV-V:7-29.

Ivanova S., (1987) - Le Paléolithique supérieur de Tchoutchoura dans les monts Rhodopes (Bulgarie). *L'Anthropologie* 91(1):241-254.

Ivanova S., (1994) - Palaeolithic Sites and Raw Material Sources in the Western Rhodopes (Bulgaria). *Preistoria Alpina* 28:149-163.

Pawlikowski, (1992) - The origin of lithic raw materials. *In*: J.K. Kozlowski, H. Laville & B. Ginter (eds.), *Temnata Cave. Excavations in Karlukovo Karst Area Bulgaria*. Krakow: Jagellonian University Press, vol. 1(1), p. 241-289.

Popov V., (1994) - Quaternary small mammals from deposits in Temnata-Prohodna Cave system. *In*: B. Ginter, J.K. Kozlowski & H. Laville (eds.), *Temnata Cave. Excavations in Karlukovo Karst Area, Bulgaria.* Krakow: Jagellonian University Press, vol. 1(2), p. 11-55.

Sirakov N., Sirakova S., Ivanova S., Gatsov I., Tsonev T., (1994) - The Epigravettian Sequence. *In*: B. Ginter, J.K. Kozlowski & H. Laville (eds.), *Temnata Cave. Excavations in Karlukovo Karst Area, Bulgaria.* Krakow: Jagellonian University Press, vol. 1(2), p. 169-315.

Stytchev T., (1994) - Horse painting from Magura cave. *Annuary of Department of Archaeology - New Bulgarian University* 1:209-214.

Tsanova T., (2003) - Le Gravettie en Bulgarie du nord: le niveau IV b de la grotte Kozarnika. *In*: T. Tsonev & E. Montagnari-Kokelj (eds.), *The Humanized Mineral World: towards social and symbolic evaluation of prehistoric technologies in southeastern Europe*. ESF Exploratory Workshop in Sofia 2003, Liège: ERAUL 103, p. 33-39.

Tsonev T., (1996) - Willendorf II, levels 5, 6, 7. *Annuary of Department of Archaeology - New Bulgarian University* II-III:50-87.

Tsonev T., (1998) - Typology, style and relative taxonomic distance of the evolved Gravettian from the Willendorf II site (Lower Austria) and the Temnata cave (Northern Bulgaria). *Arch. Bulgarica* II:1-28.

Tsonev T., (forthcoming) - Adaptation Strategies and Raw Material Supply Networks of the Evolved Gravettian in Central and South-Eastern Europe on the Example of Temnata Cave (Bulgaria), Willendorf II (Austria) and La Cala (Italy). *In*: J. Svoboda (ed.), *The Gravettian along the Danube.* November 2002. Institute of Archaeology, Brno, Academy of Sciences of the Czech Republic.