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THE MAMMOTH BONE DWELLINGS OF THE UPPER PALAEOLITHIC SETTLEMENT OF GINTSY (Ukraine: a First Synthesis)



The excavations of the upper Palaeolithic site with mammoth bone dwellings of Gontsy (Ukraine) have revealed six mammoth bone huts. The first dwelling (nr. 1) was discovered by Scherbakivski in 1915. The other five dwellings (nr. 2 to nr. 6) have been discovered during the French-Ukrainian excavations in progress since 1993. The huts nr. 3, 4, 5, 6 are conserved in situ under a large hangar for protection. This paper delivers a first synthesis informing the location of the dwellings in the settlement, their size and architecture, and provides a provisional inventory of their components.

Key words: Upper Palaeolithic, mammoth, settlement, dwellings.

Introduction

25 campaigns of excavations have been made at the site of Gontsy (Gintsy in Ukrainian transcription) (Ukraine, Poltava region), without interruption since 1993, conducted by a team from the Institute of Archaeology of the National Academy of Sciences of Ukraine and the CNRS UMR 7041 ArScAn laboratory, under the direction of Lioudmila Iakovleva and François Djindjian. All the spatial components of a late Upper Palaeolithic hunter-gatherer campsite have been recognized. For the first time, it may be given a comprehensive reconstruction of a campsite and all the activities made by hunters during their occupation. The six mammoth bone dwellings of various dimensions are described here for the first time, for a preliminary synthesis.

The Gontsy Site

The late Upper Palaeolithic site of Gontsy is located one hundred eighty kilometers to the southeast

from Kyiv, near Lubny, in the Valley of the Udai, a tributary of the Soula who joined the Dnieper. The site, in its current geomorphology, is located on the northern slope of the Udai valley, on a promontory cut by the convergent beds of an ancient system of gullies that descend from the plain, on a fossil terrace located twenty meters above the present river bed (fig. 1). The eastern gully yielded an accumulation of mammoth bones, whose origin is the natural death of a whole mammoth herd, unique event that occurred during the winter. The discovery of the mammoths by a human group during the snow melting in early spring, allowed them to install long-time campsite on the promontory in the immediate vicinity of gullies, to operate their carcasses and build dwellings by selecting the largest bones (Iakovleva, Djindjian, Maschenko, Konik, 2010; Djindjian, 2015).

The History Of Excavations on the Gontsy Site

The Gontsy site was the first Palaeolithic site known in Eastern Europe, whose discovery returned to G.S. Kyriakov in 1871. The first excavations by narrow trenches were carried out in 1873 by F.I. Kaminski, and presented with the help of geologist K.M. Feofilactov in 1878 at the 3rd Congress of Archaeology in Kyiv (Kaminski, 1878). From 1914 to 1916, V.M. Scherbakivskiy, curator of the Museum in Poltava, undertook the first large excavations and view of the first cluster of bones (dwelling nr. 1) he decided to keep in place, protected by a wood protection (Scherbakivskiy, 1919, 1926; Gorodtsov, 1926).

In 1935, a Ukrainian-Russian team, directed by I.F. Levyskiy and A.I. Brusov, has excavated an important area of 380 m² since the archaeological level of mammoth bones accumulation in the fossil gullies up to the settlement of the promontory, where several pits located at the south of the 1915 hut were found (Levyskiy, 1947; Brusov, 1940).

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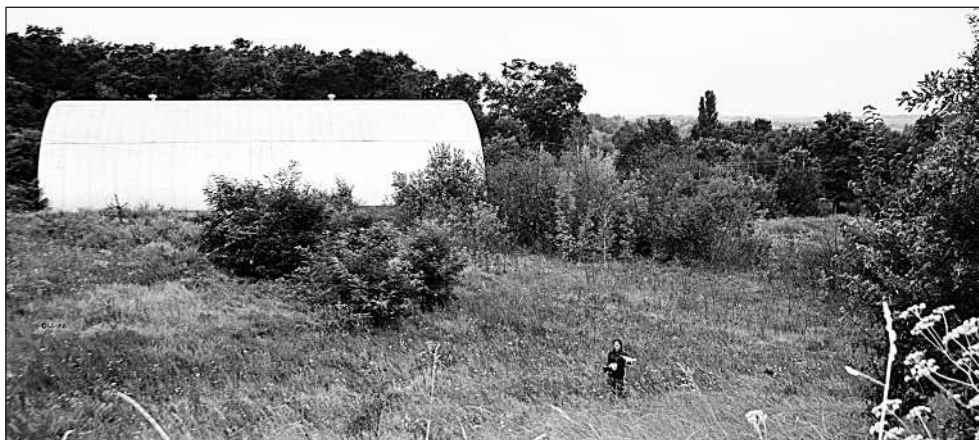


Fig. 1. General view of the site of Gontsy under protection. Photo by L. Iakovleva, F. Djindjian

Between 1977 and 1981, V.I. Sergin, of the Institute of Archaeology of Moscow, launched limited excavations devoted exclusively to rediscovering and to dismantling the 1915 hut and its proximity (Sergin, 1981, 1983). In 1993, an international collaborative project of the Institute of Archaeology of the Academy of Sciences of Ukraine and the CNRS (UMR 7041 ArScAn, «Archaeology of Central Asia»), creates a new team, under the direction of L. Iakovleva and F. Djindjian, to restart the excavations of the site, held without interruption until this day (fig. 2).

The first years have concerned the localization of the old excavations and of the intact part of the settlement. The first step has concerned the excavations of the mammoth bone bed (1995-2000) and the stratigraphic connections with the dwelling area. The excavations of the dwelling area has started in 1998 with the working areas of the western part of the dwelling nr. 1 and the discovery of the small dwelling nr. 2. The first hangars have been erected in 2001 (in the area of the dwellings) and 2003 (above the southern part of the mammoth bone bed). The 2001-2009 period has concerned the working areas (lower and upper levels) under the hangar 1 until the discovery of the dwelling nr. 3 and the mammoth bone bed under the hangar 2. In 2009, the hangar 1 has then been extended twice for the excavations of the dwellings: nr. 3 (2009), nr. 4 (2011), nr. 5 (2012), and nr. 6 (2015). 2018 is the twenty-six campaign of excavations (Iakovleva & Djindjian, 2001, 2004, 2014, 2015; Iakovleva & al., 2010, 2012).

The Spatial Organisation of the Settlement

The campsite presents a spatial organization with a central area of mammoth bone dwellings. Each dwelling generally has an inside hearth and is

surrounded by a variable number of pits. Various working areas occupy the central area between the dwellings, where there are also outdoor fireplaces and long bone poles. On the periphery, are located dumping areas and garbage, then areas for butchering the animals carried back into the settlement. And at the bottom of the Eastern fossil gully, there are spatially distributed accumulations of mammoth carcasses, which has largely been exploited by the occupants of the settlement.

The area of the dwellings. The area of the dwellings is located on the promontory, according to a general North-South line. Several mammoth bone structures have been found since 1871:

- The large dwelling nr. 1, discovered by Scherbakivskiy in 1915. This hut was surrounded by 9 pits. It was dismantled by V. Sergin in 1981.

- The small dwelling nr. 2 discovery and dismantled in 1998, to the West of the previous.

- Further to the North, under the large hangar of protection, a structure discovered in 2002, probably a large pit, have not been fully excavated yet.

The other structures were discovered, pickled and preserved under the large hangar of protection of the site. These are:

- The large dwelling nr. 3, discovered in 2009 and excavated in 2010, 2014 and 2015,

- The dwelling nr. 4, excavated in 2011, is a medium sized oval hut,

- The large dwelling nr. 5, discovered in 2011, and excavated in 2012 and 2013. A pit was discovered northeast of this hut.

- The large dwelling nr. 6, discovered in 2015 and excavated in 2016. A pit was discovered to the north from this hut.

Three pits discovered to the south from the settlement by Levytskyi and Brusov convincing them to propose the hypothesis of an another dwelling

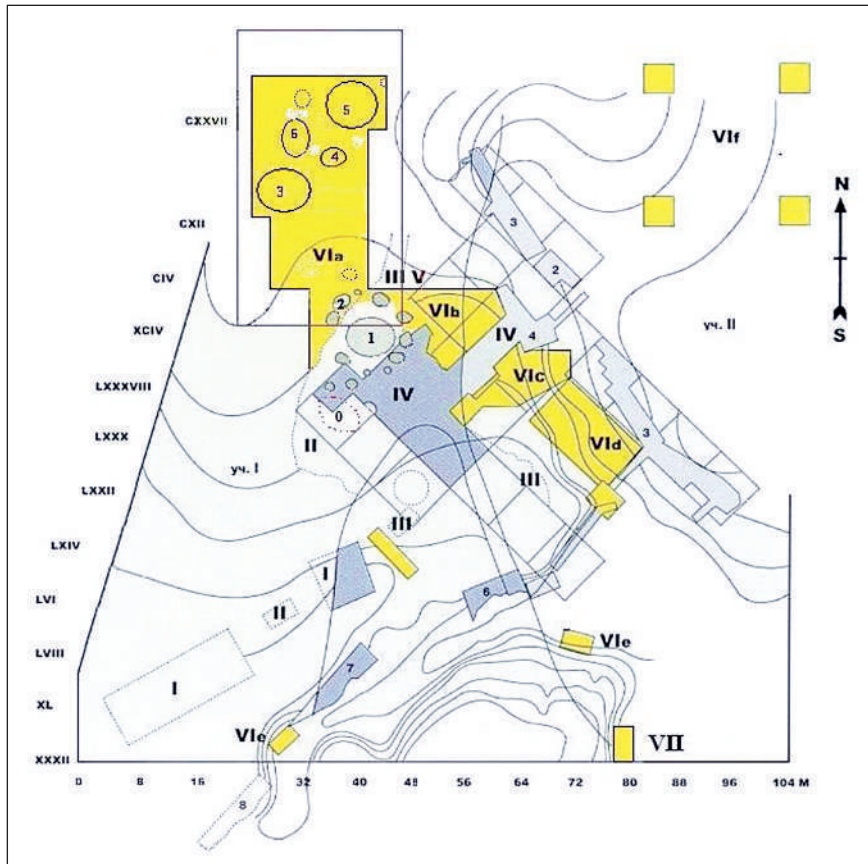


Fig. 2. General map of the of Gontsy site: the history of the excavations, the settlement and its dwellings, the mammoth bone bed. Drawing by L. Iakovleva, F. Djindjian



Fig. 4. The small dwelling nr. 2. Photo by L. Iakovleva, F. Djindjian



Fig. 5. The dwelling nr. 3. Photo by L. Iakovleva, F. Djindjian



Fig. 6. The dwelling nr. 4. Photo by L. Iakovleva, F. Djindjian

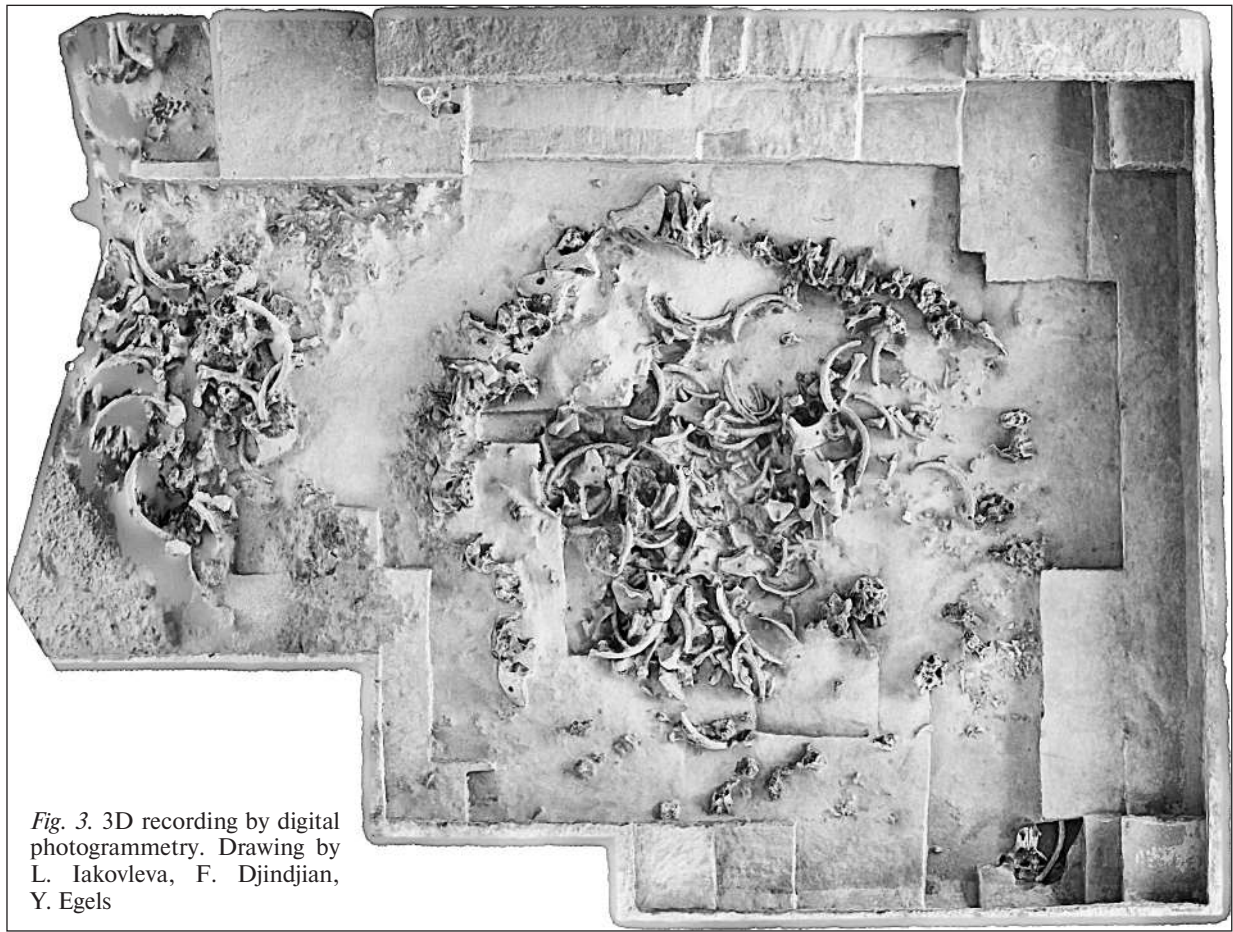


Fig. 3. 3D recording by digital photogrammetry. Drawing by L. Iakovleva, F. Djindjian, Y. Egels

(nr. 0), to the south of dwelling nr. 1, discovered and dismantled by an amateur, doctor Guelvig who made excavations on the site in 1905. But the three pits could be also a part of the dwelling nr. 1.

The presence of many pits surrounding the mammoth bone dwellings is also one of the characteristic features of the settlement. They were used for the extraction of the loess to fill the walls of huts, for the summer storage of food on permafrost in the bottom of the pit, for the storage of bone materials and as dumps.

The working areas. Various working areas are located between the dwellings and pits and beyond the circle of pits. They are particularly easy to decipher. We know well two of these activity areas: one excavated in 1998 to the West from the dwelling nr. 1 and those located more to the North from the the dwelling nr. 1, currently preserved under the large hangar for protection. A new one has been discovered in 2017 North of the dwelling nr. 6 and probably also nr. 5. The excavated layers provide a spatial distribution of flint blades, bladelets and tools, tools made of reindeer antlers and ivory, blocks of dyes, marks of ochre of different colors, tests of shells, abandoned objects of adornment, which, thanks to the flint usewear analysis, reveal activities

of flint knapping, working of bone-material and wood, tanning skins, preparation of dyes and production of tools (G. Sapozhnikova).

Several large outdoor fireplaces have been found: North of the dwelling nr. 2, on a top of a large pit; between the dwellings nr. 2 and nr. 3; between the dwellings nr. 3, 4 and 6; between the dwellings nr. 4 and nr. 5 and at the North of dwelling nr. 6. A hearth for the preparation of the dye was also found to the north from dwellings nr. 1 and 2. Several sets of bone poles, carried out through sunken vertically long bones were also found, located between the dwellings: between the dwelling nr. 3 and 4 and between the dwellings nr. 3 and 6.

The areas of dumps and garbage. Beyond the working areas, and in the immediate vicinity, are dumping areas and garbage. To the East of the dwelling nr. 1, were discovered and excavated in 1996 and 1997, several aligned deposits of ash dumps and flint knapping garbage. Symmetrically, to the West of the dwelling nr. 1 (1998 excavations) and the dwelling nr. 3 (2014 excavations), beyond the working areas, there is also an alignment of dumping accumulations from hearths.

The butchering areas. Beyond the dumping areas, an area of animal butchering is located where

the entire hunted animals are carried back to the site and butchered there: reindeer and fur animals (carnivores, hare and marmot). Bone remains of reindeer and marmot were also found inside the pits. The reindeer were hunted in the spring (conclusions of N. Belan), marmots in summer and carnivores in winter, indicating a long occupation of the site from the spring to the end of the winter. The scattered bones reveal the existence of hunting large mammals: mammoth, bison, horse, more exceptionally rhinoceros and musk ox whose importance is biased by a butchering on the hunting and killing place and the usage of fresh bones as combustion material, leading to a systematic bias of the anatomical parts and individuals. Some of these bones were thrown into the mammoth bone accumulation at the bottom of the fossil gully, giving another argument about the contemporaneous function of the settlement and the mammoth bone bed.

The mammoth bone bed in the fossil gully. On the settlement of Gontsy, the mammoth bone bed is located in the Eastern fossil gully, a few meters from the promontory, where the settlement is installed in stratigraphic, taphonomic and functional direct relationship, with the mammoth bone dwellings. The bone bed corresponds to the one event of a natural herd composed of variable age female individuals, adolescents, juveniles and babies, died during the winter at the bottom of a dry and shallow gully. Their carcasses have been widely exploited by the human group which has left only entire bones and in good state of preservation: legs, ribs, vertebrae and hyoid bones often still layered in quasi-anatomic position mixed with flint, bone and ivory tools, and with many hearths, vestiges of the exploitation of the bone bed (Iakovleva & Djindjian, 2001, Djindjian, 2015).

The Mammoth Bone Dwellings

An adapted method of excavations. A mammoth bone dwelling is a collapsed structure that has a significant thickness (up to 1 meter between the bones of the top and the base of the foundations). The bones are found tangled (up to five or six overlays). The bones have been systematically modified to be able to be attached to each other in the construction. Thus, long bones have been dug or appointed, so that the long bones and tusks can be imbedded into alveoli, long bones or tusks. Shovels and basins are pierced to be attached by tendons. At the time of the collapse of the hut, sometime after its abandonment, the bones of the walls fall inward or outward following weaknesses of clips that break. The bones, tusks and reindeer antlers of the roof

(regardless of the different proposed hypotheses for the reconstitution: bone and tusk vaulted ceiling, corbelled roof or ballasted skin cover) are falling down in the center of the dwelling.

At the time of the dwelling collapse, dry bones broke, often at the place of their perforation, due to the downfall of skull walls of scapulae and pelvis. During the excavation then there were revealed so many small fragments of skull bones, molar bladelets, scapula, alveoli or pelvis that it was necessary to remove them and try to connect them to the large fragments in place.

The walls were sealed by loess extracted from the pits dug around the hut, to protect it from the wind and cold. Once the dwelling is abandoned, the loess flows under the effect of rain and covers the working areas outside the dwelling, and the loess is in turn covered with fragments of bones broken at the time of the dwelling collapse. When excavation arrived at this level of small bone fragments, the chosen method was to remove them, and then to remove a thin layer of loess to find and leave *in situ* the working areas or outdoor fireplaces of the occupation layer.

In the ancient soviet time the excavations of dwellings was applied until the base of the foundations of skulls, because all the dwellings were removed at the end of excavation campaign. In the current excavations at Gontsy, digging inside the dwelling is carried out until the discovery of the inside soil hut and its hearth, through the tangle of collapsed bone, which is a particularly delicate task that can be performed only by an experienced team.

In addition, it is necessary to maintain a path to access the structure during the stripping. As a result, the hut is had rarely been excavated completely. Unfortunately, small bones, tools, shells, statuettes and objects of adornment (Iakovleva, 2006, 2009a, 2012), often abandoned inside the dwelling or even hidden into the skulls cannot be detected and therefore are left in place. As a result, inventories as accurate they can be are incomplete and provide an estimate limited to the general architecture of the dwelling (tab. 1). Thus, in table 1, the small fragments of scapulae, pelvis, alveoli, skulls, molars and undetermined bone fragments were not counted, to avoid a difficult reading.

A specific method for studying mammoth bone dwellings. After excavation, the study of a dwelling starts by a data acquisition phase with a precise map per square meter with the most accurate possible archaeozoological determination of each bone (species, sex and age range, accidental breakage, voluntary modifications of bones for their integration or their clip in the construction, weathering

and traces of ochre or engravings). A 3D recording by digital photogrammetry complete the manual record (fig. 3). The altitudes of the top and bottom of each bone are recorded too. A Harris diagram is built by recording bone overlays, which indicate their relative position in the collapse. Results that are obtained provide information on the collapsing process of the hut. They complete the stratigraphic distribution maps obtained from the altitudes (up and back of each bone).

Maps of spatial distribution for each category of bones are then drawn, revealing the choices of bone materials made for the construction: foundations, wall, roofing, entry of the hut or inside posts, skin fixing, etc.

The skulls are used as foundation and wall components. Reindeer antlers are used in relation to the roof. The tusks are used as wall component, imbedded in the alveoli of the wall skulls, roofing components and entry components. The scapulae, pelvis, long bones and jaws are mainly components of walls.

Once understanding the collapse of the hut process, it is then possible to reconstitute one or more scenarios for construction of the dwelling. These studies should not underestimate the fact that a dwelling could be partially removed and its bones were reused to build or expand another one.

Building materials. The bones used in the construction of a mammoth bone dwelling consist of large bones and tusks of mammoths, as well as reindeer antlers and stones (slabs, pebbles). The shape of the bones will play an important role in the choice and location of these materials: long bone (straight linear form), tusk (curved linear shape), scapula, pelvis, alveoli (flat shape), skull (volume shape), jaw (angular shape), sacrum, sternum (parallelepiped shape).

The selected mammoth bones are skulls, jaws, alveoli, long bones (femur, humerus, radius, ulna, tibia, fibula), scapula, pelvis, sternum, rib nr. 1 and of course tusks.

These bones are recovered in the immediate vicinity of the settlement from the carcasses of the mammoth bone bed located in the gully (in fact the settlement has been installed in the immediate vicinity of the gully for the exploitation of the mammoth bone bed). So, these are bones of mammoths from adult female, adolescents, children and new born individuals. The human group has left in the mammoth bone bed of the gully not useful bones for building the dwelling: ribs, vertebrae, bones of feet (phalanges, metapodes, carpal and tarsal bones, patella) and hyoid bone. They show no weathering. They procured both the bones of adults than the

bones of young individuals, according to the needs. Examples of two bones from the same individual located near one another in the construction are numerous (for example two pelvis, two scapulae, two tusks, two long bones of an easily recognizable young individual).

The bones of adult male mammoths are also present in the construction. They are the result of outside procurement nearby the settlement and they show traces of weathering.

The walls of the huts are all different in their associations of bone materials and their geometry (stacks in direct or reverse V of jaws, overlays of scapulae or pelvis, vertical parallel sets of long bones, etc.) seems to be both the result of a process of individualization and supply constraints.

General architecture of dwellings. Six mammoth bone dwellings have been found at the settlement. Except the small dwelling nr. 2, they have the same architecture (Iakovleva, 2013, 2015).

The huts are oval or quasi-circular. They are of variable size, approximately from four to eight meters in diameter. They are built on foundations of skulls imbedded into the ground by their alveoli, according to an oval or circular plan. Then, the walls are built with the large bones of the mammoth skeleton: the skulls, alveoli upwards to introduce tusks or long bones, the V shape jaws overlaid each other, the vertically lined up long bones, the scapulae and pelvis pressed against the wall. The bones are generally modified in order to be fixed each other. The long bones which are appointed or dug in the epiphysis part, the tusks, the alveolae of the skulls are pushed into each other to constitute long poles. The scapulae and the pelvis are perforated and tied together probably by tendons.

The bone walls are then sealed inside the hut with the loess extracted from pits, to ensure sealing and solidity. The elevation of the walls can reach until 1.5 meters in height.

Several scenarios have been proposed in the literature for the elevation of the hut. These scenarios are being studied for the dwellings of the Gontsy site.

The first scenario, known in reconstructions of museums (including the Museum of Zoology in Kyiv) proposed the reconstitution of a vault made with bones and tusks of mammoths and a wide entry. The critics insist on the heaviness of a bone vault, which could not hold only by sticks and insertion of bones and tusks, and on the lack of realism of a wide and high entry at the time of a glacial climate.

A second scenario supposes a cover by reindeer skins which rely on nested defenses and would be weighted down by reindeer antlers.

A third scenario proposes the construction of a horizontal ceiling of corbelled tusks on the top of the walls regularized and hardened by the sealing loess, covered with reindeer skins weighted down by reindeer antlers. The last two scenarios are supported by the large number of tusks and reindeer antlers often found in the center of the collapsed huts.

Whatever the reconstitution, the role of the loess fulfilling the mammoth bone walls is fundamental to make the dwelling more solid and more protected against the cold temperature and the wind. It is the reason why pits are dug in the vicinity of the dwelling to procure the loess and after used for other functions. The loess fulfilling allows keeping visible the outdoor architecture of the bone walls.

The dwelling nr. 1. The dwelling nr. 1 is a circular hut, 5.5 meters in diameter, with foundations and walls of mammoth bones. It has been reconstituted to approximately 80%, from archives (V.M. Scherbakivskyi, I.F. Levytskyi, V.I. Sergin) and the results of our own excavations (Iakovleva and Djindjian, 2014). The hut was built on a circular foundation of twenty-eight skulls of mammoths and the walls were raised with large mammoth bones, mainly with scapulae and pelvis, but also a few jaws. An important role has been played by the approximately 30 tusks of mammoths. The hut was surrounded by nine pits and the small dwelling nr. 2.

The dwelling nr. 2. The dwelling nr. 2, located to the West of the previous dwelling, was discovered in 1998. It is exceptional by its small size and clarity of its structure. It's a small cup-shaped oval of dimensions $3.0 \times 1.8 \text{ m}^2$, with its mammoth bone materials: a fragment of skull in a central position, a femur, a humerus, two large tusks of an adult male mammoth with a length of 1.70 meters and alveoli of skulls. Inside the dwelling, on the soil, have been discovered a large hammer made of a reindeer male antler, a pick of a carved young mammoth tusk, a pelvis of a young mammoth bearing traces of ochre, two tools on a mammoth rib and some flint tools. The remains of consumption of marmot bones indicate summer seasonality for the occupation. It is the first small dwelling of this type discovered in a Mezinian site of the Dnieper basin (fig. 4). A reconstitution has been proposed for the dwelling.

Another structure, perhaps a top of a pit, discovered in 2002, under the large hangar of protection, is located five meters north of the structure nr. 1. Excavated only partially, it is still too early to recognize the area. It consists, for the emerged part, of a skull, three pelvises, a femur, a humerus, a scapula and three tusks of mammoths.

The dwelling nr. 3. The dwelling nr. 3, excavated from 2009 to 2015, is a large nearly circular hut of dimensions $8.0 \times 7.0 \text{ m}^2$ (fig. 5). It is characterized by a large number of tusks (69) and scapulae (48 and 14 large fragments), and a reduced number of pelvis (8), long bones (8) and skulls (11 and 8 large fragments). Four stones including a large pink granite round pebble, a large black schist slab and two other smaller slabs were found in the dwelling, but no reindeer antlers.

The skulls (11 and 8 large fragments of which some fragments of the same skull from a dozen of individuals), are abnormally few in this dwelling. They have been used as foundation skull (four of them) and wall skulls. The jaws, molars and molars bladelets are associated with their skull. Many scapulae (48) were found flat, often overlapping each other (up to 4). Four were found placed on the edge and one quilted. The south, southwest and west walls seem to have been built with an accumulation of scapulae that have switched to the inside of the dwelling. The 8 pelvis have played the same architectural role as the scapulae.

The very many tusks (65) are varied, adult, adolescent and child age. Six adult male tusks are present and show an aspect of weathering. Four places of the dwelling are showing concentrations of superposed tusks, in the center of the dwelling but also in the outer edge, having switched inside from walls. In the squares P6/O6, three isolated tusks could mark the entrance of the hut.

The dwelling nr. 4. The dwelling nr. 4, excavated in 2011, is a medium-sized oval hut, of dimensions $2.6 \times 4.0 \text{ m}^2$, with a long-axis East-West. It consists of 15 skulls, 3 long bones including femur showing the engraving of a female nested chevron, 9 pelvis, 14 scapulae and 24 tusks (fig. 6). The hut collapsed inward. The most remarkable feature of this medium-sized hut is that lacks foundation skulls, alveoli imbedded in the ground. Skulls were raised alveoli upwards and they have switched or slipped at the time of the collapse of the hut. A second remarkable feature is that the bones have rarely been modified. Tusks are mostly at the top of the entanglement, but there are also fragments of pelvis, scapulae and flat bones at the top. Skulls are pretty much all at the same upper altitude while the scapulae are at a lower altitude, often beneath the skulls.

The 15 skulls form an oval wall, being posed on the ground, alveoli facing upwards. Eight scapulae, four basins and two long bones were placed on the sides of the walls. The tusks were located on the top of the walls either corbelling over the skulls, probably to keep the skins as roof, or inserted in the alveoli as lateral arches to raise the hut and put on



Fig. 7. The dwellings nr. 4, 5 and 6. Photo by L. Iakovleva, F. Djindjian

the reindeer skins. 7 fragments of pelvis, scapulae, and flat bones probably had a role of ballasting the skin. Two tusks appeared to have been planted vertically, or in both skulls hypothetically marking the entrance of the hut.

The dwelling nr. 5. The dwelling nr. 5, excavated from 2011 to 2013, is a large circular hut of 8 meters in diameter (fig. 3 and 7). 46 skulls and 21 large fragments of skulls, almost all of them are located in the periphery as foundation skulls and wall skulls having tipped inward. Most of foundation skulls of the northern and eastern walls are made of skulls of young and adolescent mammoths. A characteristic feature of the dwelling architecture is the presence of two large adult mammoth skulls and several fragments of mammoth skulls showing a concentration in the centre of the hut, as to make the foundations of a central pillar.

The south and west walls are well preserved: in addition to the skulls, they were built with 7 jaws (including 5 grouped), 11 long bones, 4 pelvis and 4 scapulae. The northern and eastern walls are however little supplied: only 1 long bone and 9 alveoli, owned at least in part to the skulls have been found there.

Most scapulae, pelvis, long bones and tusks were discovered inside the dwelling.

Several accumulations are remarkable:

- In the centre of the dwelling, at about 5 meters (four squares K/L/15/14), the accumulation

of previously mentioned skulls, is associated with all of the 14 reindeer antlers and 10 whole or quite complete ribs, 5 long bones and very many tusks,

- Further to the north (in square L13), an accumulation of seven basins and five long bones,

- The scapulae are concentrated, more than forty of them, on eight square meters, inside the hut, in the south, southeast and east inner quadrant,

- The 62 tusks (plus 6 half-tusks and 10 fragments of tusks) are almost all of them (except 10 located in or near the walls), located inside the hut in the circular central area of four meters in diameter,

- 5 grouped jaws form a figure of chevron-zigzag in a part of the south wall of the dwelling. A remarkable feature of this composition is the position of a jaw upon the skull of a newborn mammoth,

- 10 stones (granite pebbles and schist slabs) have been found inside the dwelling, but are not showing any particular concentration,

- Several large ochre balls were found outside the hut, two against the east wall (square H16) and another against the west wall (square O1),

A pit is located in the North-East of the dwelling (G10/G11). The inventory is constituted by a skull (female adult), a tusk (female adult), two tusks (from a single very young mammoth) and one scapula.

The dwelling nr. 6. The dwelling nr. 6 was discovered in 2015 and excavated 2015-2016. It is lo-

cated to the north from the dwelling nr. 3 and to the west from the dwelling nr. 4 (fig. 7). It is an oval structure, with a north-south large axis and dimensions 4.0×2.6 m². The inventory includes 7 skulls (and 14 fragments), 31 tusks, 10 scapulae, 8 pelvis, 4 long bones, 2 reindeer antlers and 2 scapulae of bison. Two outdoor hearths are located to the North and to the South-East from the dwelling.

A large pit in the North (containing 30 bones of mammoths and several bison bone) complement the periphery of this dwelling.

In the northern area of the dwelling 5 and the dwelling 6 (and its associated pit), is located a large working area with probably outdoor hearths, which seems to be the area symmetric to one in the southern part of the settlement.

Conclusions

The mammoth bone dwellings of the Gontsy site have the characteristic architecture of the dwellings of the other known Mezinian sites in Mezine, Ioudinovo, Mejiriche, Dobranichivka and Suponevo (Iakovleva, 2009b, 2015; Djindjian, 2014). The dwelling nr. 5 of the Gontsy site has similarities (by its large dimension and parts of building) with the dwellings of Kostienki 11. All the dwellings, however, show great variability in their dimensions, supplying of the bones, location in the walls and in the solutions of closing of the roof. Such variability has several origins: the different technical solutions of construction of the walls and the roof, the availability of bones supply from nearby accumulation, aesthetic differentiation of the walls for means of identification, and also, in some cases, reuse, rearrangements or modifications of the buildings. The detailed study, hut by hut, which is ongoing, will allow for each of them, to reconstitute the collapsing process and the construction process, including its elevation.

For the first time, in the history of the excavations of mammoth bone dwellings, with the method of conservation *in situ* under large hangars for protection, all the archaeological layers and dwelling structures: mammoth bone dwellings (nr. 3, 4, 5 and 6), pits, hearths, working areas, dumping areas, butchering areas, are preserved for the preparation of a future site museum in Gontsy, open to the public. The dwelling nr. 2 will be reconstituted in its exact location. They also provide a unique opportunity of in-depth, additional and repeated studies, and reconstitutions by acquisition and restitution 3D programs as well as the conservation *in situ* of exceptional and unique hunter-gatherer campsite architecture of the humanity heritage!

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THE MAMMOTH BONE DWELLINGS OF THE UPPER PALAEOLITHIC SETTLEMENT OF GONTSY (Ukraine: a First Synthesis)

The article is devoted to the first synthesis informing the location of the dwellings in the Upper Palaeolithic site Gontsy, their size and architecture, and provides a provisional inventory of their components. There were discovered six mammoth bone huts, five of which were revealed during the French-Ukrainian excavations in progress since 1993. For the first time, it may be given a comprehensive reconstruction of a campsite and all the activities made by hunters during their occupation at the site. The six mammoth bone dwellings of various dimensions are described here for the first time, for a preliminary synthesis.

The history of the Gontsy site excavations is given. The first excavations by narrow trenches were carried out in 1873. The first step has concerned the excavations of the mammoth bone bed (1995-2000) and the stratigraphic connections with the dwelling area.

The description of all the dwellings is also given by the author, as well as the notes about a specific method for studying mammoth bone dwellings. As to the author, after excavation, the study of a dwelling starts by a data acquisition phase with a precise map per square meter with the most accurate possible archaeozoological determination of each bone. A 3D recording by digital photogrammetry complete the manual record.

For the first time, in the history of the excavations of mammoth bone dwellings, with the method of conservation *in situ* under large hangars for protection, all the archaeological layers and dwelling structures: mammoth bone dwellings, pits, hearths, working areas, dumping areas, butchering areas, are preserved for the preparation of a future site museum in Gontsy, open to the public.

Key words: Upper Palaeolithic, mammoth, settlement, dwellings.