



The first meeting of what was to become the Worked Bone Research Group (WBRG) was organized by Dr. Ian Riddler in the British Museum, London in 1997. The enthusiasm of that first workshop has inspired to hold next meetings to afford discussions and co-operation of researchers dealing with these problems. The 2nd meeting of the WBRG was held in 1999 in Budapest, Hungary, and the 3rd meeting in 2001 in Basel, Switzerland. Since 2000 Worked Bone Research Group is the official working group of the International Council for Archaeozoology (ICAZ). The aim of the working group is to bring together archaeozoologists and archaeologists, both prehistorians and proto-historians, the researchers from different regions and with different research traditions.

The 4th meeting of the WBRG was held at the Institute of History in Tallinn, Estonia, 26th–31st of August 2003. Twenty-four lectures and thirteen posters were presented on the conference. The contributors were mostly from European countries: United Kingdom, France, Switzerland, Germany, Austria, Hungary, Italy, Greece, Bulgaria, Romania, Latvia, Finland and Estonia, but also from Israel and United States of America. The lecture sessions were held on three days, and excursions were organized to Estonian archaeological sites and museums.

The subject of the session of the first day was the Stone Age. After the speeches of welcome the session began with a presentation by Ilga Zagorska (Riga) who talked about the Late Palaeolithic antler and bone hunting equipment from the East Baltic. Yolaine Maigrot (Paris) gave a lecture about bone and antler tool production systems at the Late Neolithic site of Chalain 4 (Jura, France). The next lecture by Rozalia Christidou (Athens) considered technical and functional variability in the Neolithic bone tool assemblages of Eastern Macedonia (Northern Greece). Alexandra Legrand (Paris) talked about new evidence on bone reduction methods from a Neolithic site Khirokitia (Cyprus). Isabelle Sidéra (Paris) presented a new classification of European Neolithic bone tools, based on techniques. Ulla Saluäär (Pärnu) discussed Stone Age bone and antler stray finds from lower reaches of the Pärnu River (SW Estonia) from a new aspect, comparing them with the material of recently discovered Mesolithic and Neolithic settlement sites in the vicinity. On the poster session two posters were discussed. Kristiina Mannermaa's (Helsinki) poster gave an account of bird bone artefacts from Finnish Mesolithic and Neolithic, Rozalia Christidou and Alexandra Legrand presented some experimental research about the use of bone tools in hide working according to Neolithic sites of Greece, Turkey and Cyprus. The poster session was followed by the excursion to the Museum of Archaeology of the Institute of History. At first the exhibition "Estonian fauna through the time" was guided by archaeozoologist Lembi Lõugas (Tallinn), the composer of the exhibition. Eva David (Paris), who has studied the bone artefacts from the oldest Estonian Mesolithic site of Pulli in recent years, talked about the results of her research in the museum beside the showcase with the finds from the Pulli site. The archaeologist Gurly Vedru (Tallinn) guided the excursion to the Museum of Archaeology. In addition to the permanent exhibition a small special temporary exhibition of Estonian bone and antler artefacts was composed for the conference.

The subjects of the session of the second day were the Bronze Age and the Iron Age; some contributions were also about experimental work and about some special skeletal material. The presentation of Mikko Hietala, Janne P. Ikäheimo and Juha-Pekka Joona (Oulu) dealt with Bronze and Iron Age bone arrowheads from Finland and experiments carried out with replicas of such arrowheads. Erika Gál (Budapest) gave an account of worked bird bones from the Carpathian Basin (especially from Hungary and Romania), from the period from the Palaeolithic to the Middle Ages. It was followed by the presentation of László Bartosiewicz (Budapest) about worked pieces of elk antler from Central Europe, where such finds are comparatively rare. Cornelia Becker (Berlin) gave a lecture about bone processing at the Bronze Age *castelliere* of Monkodonja (Croatia) with special reference to spindle whorls. By her opinion the use of perforated femur-heads of cattle as spindle whorls is doubtful on this site, and she offered some other possible interpretations for these finds. Alice Choyke (Budapest) talked about the exploitation of red deer and bone working at the Bronze Age tell site of Jászdózsza (Hungary), where a shift from cattle keeping to red deer hunting, discernible in the faunal assemblage, can also

be traced in the worked bone material. Tina Tuohy (Plymouth) discussed bone and antler combs as an indicator of site phasing and function at the Iron Age Lake villages of Meare East and West (Somerset, Britain). Barbara Stopp (Basel) and Günther Karl Kunst (Vienna) presented a paper about cattle mandibles with polished areas on the lower margin of the jaws. Such bones are found both in Switzerland and Austria and by the opinion of the authors of the paper these mandibles were used as sledge runners. Mária Biró (Budapest) talked about bone pins used in Roman women's dress in Pannonia. Sabine Deschler-Erb (Basel) gave an account of the production of a Late Roman antler workshop in the *castellum* of Pfyn in eastern Switzerland. The session was followed by the excursion to the Niguliste Museum-Concert Hall (the St. Nicholas church), guided by Anu Mänd (Tallinn), who talked about the history and art collections of the church.

On the third day the chapel of Saha, the Bronze Age grave field and museum in Jõelähtme, the 11th–13th century hill-fort in Varbola, and the Open Air Museum in Rocca al Mare, featuring the rural architecture of Estonia in the 17th–19th centuries, were visited during the excursion.

The subjects of the session of the fourth day were the Iron Age and the Middle Ages. The session began with two speeches about Caesarea Maritima, the important administrative, financial and commercial centre in the Land of Israel from the 1st to the 13th centuries. Etan Ayalon (Tel Aviv) gave an account of the assemblages of bone and ivory artefacts from Caesarea, Yehoshua Dray (Binyamina) talked about the technology of bone and ivory artefacts production. Edit Czeglédi (Budapest) presented a paper about the Avar period bone manufacturing in Hungary. The studied bone details were probably used as purse closures; experimentally, a reconstruction was made of such a purse. The presentation of Steven Ashby (York) was about the new possibilities in the study of bone and antler combs. The aim of his study was to find a methodology for the understanding of trade and identity in Early Medieval England and Scotland. Heidi Luik and Liina Maldre (Tallinn) talked about bone and antler artefacts from the settlement site and cemetery of Pada, North Estonia. Since the participation of István Kovács (Budapest) appeared impossible at the last moment, his paper was presented by László Bartosiewicz. The paper gave an account of bone artefacts from the medieval Royal Palace of Visegrád (Hungary). Hans Christian Küchelmann (Bremen) and Petar Zidarov (Sofia) considered the use of bone skates. The authors reproduced three pairs of bone skates, based on archaeological finds, and tested them with the aim to have a personal experience with bone skates. They presented also a short video about their "first steps" on ice. Colleen Batey (Glasgow) talked about worked fish bone in Iceland from the Viking Age to the Modern Times.

Altogether thirteen posters were presented on the conference. On the poster session it was possible to discuss only two of them, the authors of which were participating in the meeting. The possibility to send posters to the conference was planned because the participation in the conference, taking place at a long distance, is expensive and all researches interested in the meeting could not participate. Sending the poster to the meeting made it possible for them to present the new results of their research, and later to publish these results in the conference volume and make them available for the international audience. Jack Frazier's (Front Royal) poster gave an account about exploiting marine turtles' shell and bones in different coastal societies. Two posters dealt with the Palaeolithic Period. Emanuela Cristiani (Rome), Cristina Lemorini (Rome), F. Martini (Firenze) and L. Sarti (Siena) presented the results of a techno-functional analysis carried out on *Callista* shell tools from the Middle Palaeolithic site of Grotta del Cavallo (Southern Italy). Corneliu Beldiman (Bucharest) gave an account of bone and antler industry in the Upper Palaeolithic of Romania, with special analysis of projectile points. The second poster of Corneliu Beldiman was about palaeotechnology of antler working in the Mesolithic of the Iron Gates (Romania). Emanuela Cristiani's and Francesca Alhaique's (Rome) poster proposed the results of a technological analysis carried out on osseous tools from the Eneolithic site Conelle di Arcevia (Central Italy). The poster of Kordula Gostenčnik (Lavamünd) was about bone working in the Roman town Virunum (Austria). Two posters of Adam Vescey (Budapest) proposed the reconstructions of two artefacts – the Roman doll made of ivory and the Gepid comb made of antler. Three posters dealt with the finds from medieval context. Patricia Bonnaud (Paris) sought for a possible function for a set of *Caprinae* long bones with unusual cuts, found from Autun's Cathedral (Burgundy, France). Lyuba Smirnova Holden (Munich) presented an analysis of a specific category of objects deriving from the Viking Age and medieval contexts of Old Rus. These objects are usually referred to as bludgeons, but the author suggested that these objects were steelyard weights. The subject of the poster of Milena Stancheva Petrova (Veliko Turnovo) was a group of bone spindle whorls or buttons with two holes, one of which is closed by a built-in bone plug.

The conference dinner was held in the *Olde Hansa*, a restaurant with a medieval atmosphere and medieval-like meals.

The 5th meeting of WBRG will be held at the end of August 2005 in Veliko Trnovo, Bulgaria. The organizer of the next conference is Milena Stancheva Petrova (Panajot Tipografov 25, 5000 Veliko Trnovo, Bulgaria).

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Fig. 1. The participants of the 4th meeting of WBRG at the Estonian Open Air Museum in Rocca al Mare (photo by Erki Russow). Front row, from left: Erika Gál, Heidi Luik, Kristiina Mannermaa, Cornelia Becker, Lembi Lõugas, Etan Ayalon, Yolaine Maigrot, Mária Biró, Alexandra Legrand, Rozalia Christidou. Second row, standing, from left: Liina Maldre, Alice Choyke, László Bartosiewicz, Tina Tuohy, Juha-Pekka Joona, Mikko Hietala, Anna Wickholm, Steven Ashby, Ilga Zagorska, Hans Christian Küchelmann, Barbara Stopp, Günther Karl Kunst, Colleen Batey, Sabine Deschler-Erb, Isabelle Sidéra, Edith Czeplédi, Yehoshua Dray.



Fig. 2. Eva David's presentation about bone artefacts of the Estonian Mesolithic site of Pulli at the exhibition of the Institute of History (photo by Aivar Kriiska).



Fig. 3. A moment from the excursion: at a cup-marked cult stone near the chapel of Saha (photo by Anna Wickholm).