

# **Archaeological, Cultural and Linguistic Heritage**

**Festschrift for Erzsébet Jerem  
in Honour of her 70<sup>th</sup> Birthday**

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Stamp decorated Early La Tène flask from Hidegség  
Eisenstadt, Burgenländisches Landesmuseum

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# A New Late Copper Age Wagon Model from the Carpathian Basin

MÁRIA BONDÁR

This study offers a brief overview of the main directions in the research of prehistoric wagon models and presents a new Late Copper Age model.

The invention of the wheel and of wheeled vehicles was at least as important an innovation as the discovery of fire. The use of wheels brought an immense change in cultivation: the utilisation of wheeled ploughs drawn by oxen meant that larger fields could be worked more easily and more quickly, resulting in higher productivity and a higher carrying capacity.

The invention of the wheel was of crucial importance to the appearance of wagons. The early Y and A frame carts (still used today in an unchanged form owing to their practicality and the relative easiness with which they can be manufactured),<sup>1</sup> and the boxes placed on them eventually led to the appearance of heavy wagons with solid wheels. True chariots, light vehicles with two or three spoked wheels, and the coaches of the modern age are different forms of animal-drawn wheeled vehicles, calling for diverse manufacturing techniques, harnessing and other accoutrements. The draught animals harnessed to vehicles too differ: heavy wagons were drawn by one or two oxen or donkeys, while lighter vehicles were drawn by one or more horses. In some mythologies, the heavenly chariot is borne into the sacral sphere by waterfowl.

Wagons played a crucial role in travel, transport, communication and contact between distant communities, in economic and cultural interaction, and in the adoption of customs, material goods and exotic commodities. It is hardly surprising that a symbolic meaning was often attached to vehicles and their wheels, and that both were accorded a prominent role in mythologies around the world. These symbols are encountered not only in myths and legends, but also as part of various depictions. The earliest representations of wheels and rudimentary vehicles in Europe appear among the rock engravings in Switzerland, Germany and Italy. The archaeological finds include miniature figurines in clay or metal of the harnessed oxen and clay wheels. Clay wagon models make their appearance in the Late Copper Age: found both on settlements and in burials, their ritual dimension is undeniable. The wagon models of the Early and Middle Bronze Age cultures were not all vested with a ritual meaning; some were simple everyday artefacts (toys). One new element is the appearance of the bird-human-vehicle metaphor. Depictions earlier restricted to the portrayal of the wagon and the draught animals now also included birds which bore the vehicle and the living or deceased person up into the skies and the sacral sphere.<sup>2</sup> The range of meanings associated with vehicles changed again in the Late Bronze Age: wagons became mass products and their ritual importance was reflected not in the creation of their miniature counterparts, but in the genuine wagon and chariot burials of the elite. This custom survived into the Iron Age, from which vessels decorated with vehicle depictions and vehicles modelled in the shape of urns placed on wheels are both known, alongside the renowned sun chariots.

The impact of vehicles on daily life across the centuries is incontestable. Following their initial mystification, wheeled vehicles became widely used utilitarian, commercial and military crafts.

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<sup>1</sup> NADLER 2002. In Summer 1991, Martin Nadler photographed the use of two-wheeled, A-framed carts drawn by oxen, used for the transportation of hay in eastern Turkey, as well as the successive phases of how these vehicles were made.

<sup>2</sup> The bird cult appearing in the Early Bronze Age is reflected not only in the countless bird shaped askoi and rattles brought to light on settlements and in cemeteries, but also in the later depictions of bird-drawn chariots of the Middle Bronze Age.

However, it must be borne in mind that finds of unusual, remarkable artefacts such as wagon models fashioned from clay or metal and the animal figures appearing as protomes, as well as the wooden wheels of genuine vehicles, genuine wagons, wagon burials, wheel-ruts, paved road remains and the like are often chance finds, discovered through pure archaeological luck, and thus our knowledge is patchy to say the least: often we are dealing with no more than a blurred imprint of the past, from which we try to deduce the main tendencies.

This major and continually improved innovation left many traces in the archaeological record, and there is a voluminous literature on various aspects of wheeled vehicles ranging from descriptions and categorisations of the artefactual material and surviving depictions to studies on their role in trade and transport. Countless studies focus on the archaeozoological aspects and the social dimension of vehicles, on their relevance to interaction between various communities, their role in contact between nomads and urban communities, as well their origins, their significance for linguistic and mythological research, their function in funerary rites, and their uses in warfare and public entertainment.

Many studies have been devoted to the date of the invention and first appearance of four-wheeled wagons, their spread and their significance in prehistoric life. Early writings focused on the ritual dimensions and the distribution of wheeled vehicles; in the later decades of the 20<sup>th</sup> century, the emphasis has shifted to the role of vehicles in trade, animal husbandry and subsistence. These themes have been explored at various conferences and in collections of thematic studies (SHERRATT 1983; ACHSE, RAD UND WAGEN 1986; GREENFIELD *et al.* 1988; WOYTOWICH 1995; ANTHONY – VINOGRADOV 1995; SHERRATT 2003; WEGZEITEN 2004; RAD UND WAGEN 2004; PREMIERS CHARIOTS, PREMIERS ARAIRES 2006; RAHMSTORF 2006; BETWEEN THE AEGEAN AND BALTIC SEAS ... 2007; ANTHONY 2007; PRIMAS 2007; BAKELS 2009). The concept of the “secondary products revolution” led to inquiries into how the meat, milk and hide of domestic animals were exploited and into their use as traction animals (SHERRATT 1983; GREENFIELD *et al.* 1988; DUERR 2007). The concept itself has come under critical fire more recently.<sup>3</sup> The appearance and spread of wheeled vehicles has become an important facet of linguistic studies focusing on the origins of the Indo-Europeans (ANTHONY 1990, 1995; RAULWING 2000; ANTHONY 2007; KUZ’MINA 2007).

Research during the past decades has sought an answer to several questions. The different wagon depictions, the discovery of genuine wagon remains and the radiocarbon dating of the finds have significantly modified earlier chronologies and have raised a spate of new problems. It is still unclear whether wagons spread from a single centre or whether we should assume a polygenetic development. It is still an open issue whether four-wheeled heavy wagons spread to Europe from the Ancient Near East or the Pontic or, conversely, whether these vehicles spread southward from Europe in connection with raw materials exchange networks and the secondary products revolution. It has recently been suggested that the wagon was an innovation inspired by economic necessity and that its extensive use can only be noted in regions where there was a socio-economic need for wheeled vehicles (RAHMSTORF 2006, 76; RUOFF 2006, 139–140). Wagons were probably prestige items or parts of ritual paraphernalia in the 4<sup>th</sup> millennium BC, becoming an indispensable means of transportation in the trade stimulated by the process of urbanisation in the Ancient Near East from the mid-3<sup>rd</sup> millennium.

The distribution of heavy wagons with solid wheels outlines three major, roughly contemporaneous centres: the Ancient Near East, the Eurasian steppe, and Central Europe (principally the Carpathian Basin). Other evidence for the use of wagons leads to the North Sea and suggest that the invention of the wheel and the wagon can be dated earlier. There is increasing evidence from the Late Neolithic (solid wooden wheels, wheel-ruts and remains of wooden roads) that two- and four-wheeled carts and wagons had been used across the European continent from the mid-4<sup>th</sup> millennium BC.

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<sup>3</sup> For an excellent overview, cp. VOSTEEN 1996.



\* \* \*

There is ample proof for the early use of wheeled vehicles in Europe. Representations data such as the wheeled vehicles appearing among the rock engravings from Switzerland, Germany and Italy, the wooden wheels found in Denmark, Germany and Croatia, the wheel-ruts recently discovered at Flintbek in Germany, a road paved with tree trunks excavated in Holland, the clay wheel and wagon models, and the small figurines portraying the animals yoked to the wagon conclusively prove the early use and diffusion of this major innovation across Europe.

The first comprehensive overview of Copper Age wheel models was published by Marin Dinu in his discussion of the wheel finds of the Cucuteni, Gumelnița and Petrești cultures, all dated to before the 4<sup>th</sup> millennium (DINU 1981). Dinu pointed out that the use of wheeled vehicles could thus be dated much earlier than previously assumed, but his opinion was not widely accepted. However, the radiocarbon dates for the miniature wheels from Aruda in Syria and Arslantepe in Turkey confirmed Dinu's views because these wheel models were roughly contemporaneous with the wheels incised on the renowned Bronocice vessel, and thus they predated the earliest wagon models (BAKKER *et al.* 1999, 781). Wheel models have also been found in Late Copper Age contexts in the Carpathian Basin, for example at Ózd–Kőaljatető (first published by János Banner), Tebea (Coțofeni culture) and Vučedol–Várhegy (BAKKER *et al.* 1999, 781; BONDÁR 2004, 15).

In 2001, Gábor Ilon published a fragmentary clay wheel model brought to light at Szombathely on a settlement of the late Lengyel–Balaton–Lasinja culture, yet another find predating the generally accepted first appearance of wagons (ILON 2001, 476, Pl. I). Remains of a wooden wheel and an axle were discovered in the Ljubljana area in 2002. The finds were dated to the 4<sup>th</sup> millennium BC, to the period between the Retz–Gajary and the Baden cultures. Unfortunately, radiocarbon and dendrochronological dates were not available at the time the finds were published (VELUŠČEK 2002). The associated pottery suggested a date in the early Baden period (VELUŠČEK 2006, 44).

A recent find too confirmed the familiarity with wheeled vehicles before the Boleráz period: a stylised cattle figurine set on wheels, a curious combination of a wagon rolling on four solid wheels and the oxen yoked to the wagon, shown at the exhibition “Cucuteni–Tripolye: A Great Civilisation of Old Europe” in the Vatican in 2008.<sup>4</sup>

\* \* \*

Presented here is a new wagon model found recently during the investigation of an extensive site near Kaposvár (County Somogy). The model found in a settlement pit is one of the earliest of its kind from the Carpathian Basin, dated to the Boleráz period in view of the associated pottery.<sup>5</sup>

A salvage excavation was conducted by Edith Bárdos and Zsolt Gallina in 1999–2000 on Site 61/2 at the Toponár junction of the Road 61 bypass near Kaposvár. The site was earlier known as Toponár–Lovaspálya. A total of 3300 features were uncovered over the 53,000 m<sup>2</sup> large investigated area, dating from the Lengyel culture, the Balaton–Lasinja culture, the Baden culture, the Early Bronze Age, the Encrusted Pottery culture, the Celtic period and the Árpadian Age.<sup>6</sup> The site lies on the eastern slope of a north to south oriented ridge, some 300–400 m east of the Deseda Stream in the south-western quarter

<sup>4</sup> <http://scribalterror.blogspot.com/2008/09/a-cucuteni-tryp.html>

<sup>5</sup> Although the clay wheel model from Szombathely predates the wagon models, there is no way of establishing whether it was part of a wagon model or a wheeled plough.

<sup>6</sup> Edith Bárdos's kind personal communication. A brief description of the site by Zsolt Gallina is all that has appeared in print so far (GALLINA 2000, 251). I am greatly indebted to Szilvia Honti for providing additional information on the site and for her help in locating the finds and their documentation.

of the junction and roughly 100–150 m south–south-west of the PATE riding school on the western side of the road leading from Kaposvár to Szántód. The wagon model was discovered in Feature 597 of the site.<sup>7</sup> A colour photo of the restored and reconstructed wagon model published in the centennial jubilee volume of the Kaposvár museum erroneously specifies the findspot as Balatonőszöd.<sup>8</sup>

#### Description of the wagon model (*Fig. 1*)

Reddish-brown in colour. The rectangular wagon box was reconstructed by the conservators of the Kaposvár museum from four fragments. The fragments from the lower part of the wagon box enabled the reconstruction of the four corners, the height and the knobs on the underside. The peaked rim and the stump of an appliqué ornament on the front side of the wagon box were preserved on one corner fragment. The sides are trapezoidal, the floor is rectangular. The restoration of the knobs on the underside of the wagon box was based on similar wagon models, as well as on the curve of the surviving stumps and the fragmentary knob on the corner fragment with the appliqué ornament.

The surface of the wagon model is rough and it was fired imperfectly. Three sides were decorated with a pattern of vertical incisions arranged into three rows, and it seems likely that the fourth side too bore some decorative pattern. The underside of the wagon box is plain.

Dimensions: L. of the long side 9.5 cm (top), 8.3 cm (bottom), L. of the short side 8.5 cm (top), 7 cm (bottom), H. (without the knobs) 5 cm. Identification number: 98/102.597.264.

#### Associated finds (*Figs 2–3*)

Feature 597 and Feature 1020 which it intersected yielded finds of the Lengyel culture and the Boleráz group. Feature 597, dating from the Late Copper Age, had been dug into Feature 1020, a pit of the Lengyel culture. Feature 597 measured 293 cm by 220 cm on top and 267 cm by 210 cm at the bottom. It had a depth of 130 cm. The finds were separated according to spade spits. Because the two features were dug into each other, the finds are mixed, comprising both Lengyel and Boleráz pottery.

The typical pottery fragments of the Boleráz group can be assigned to the following types:

Bowls. One type is represented by conical bowls with flaring neck. The surface under the neck is smoothed, the belly is roughened, the inner side of the rim is decorated with oblique or wide bands of fluting (*Fig. 2.7, 9*). The plain variant of this bowl type is also represented (*Fig. 3.1–2*). Another type is made up of semi-spherical bowls with polished surface, decorated with vertical rows of punctates on the rim (*Fig. 2.8*).

Pots. Vessels with roughened belly, decorated with a double notched cordon under the rim (*Fig. 2.5*). One fragment comes from a handled pot, decorated with notching on the rim on either side of the handle and with punctates underneath (*Fig. 3.6*).

Storage jars. Vessels decorated with a double impressed cordon around the shoulder.

Amphoras. Dark brown, thin-walled, barrel shaped vessel with low neck, decorated with a double notched cordon under the rim and an incised herringbone pattern on the body (*Fig. 2.1–2, 4*). One variant has a notched cordon encircling the shoulder (*Fig. 2.3*).

Cups, jugs, pitchers. The ceramic material from the pit included few fragments of these vessel types (*Fig. 3.5*). A handful of thin-walled, plain fragments and wide strap handles from jugs (*Fig. 3.3–4*) indicate the presence of these vessel types among the finds from the pit.

Miniature vessel. Small conical bowl with notched decoration around the shoulder (*Fig. 2.6*).

<sup>7</sup> I would like here to thank Edith Bárdos for kindly allowing the publication of the wagon model.

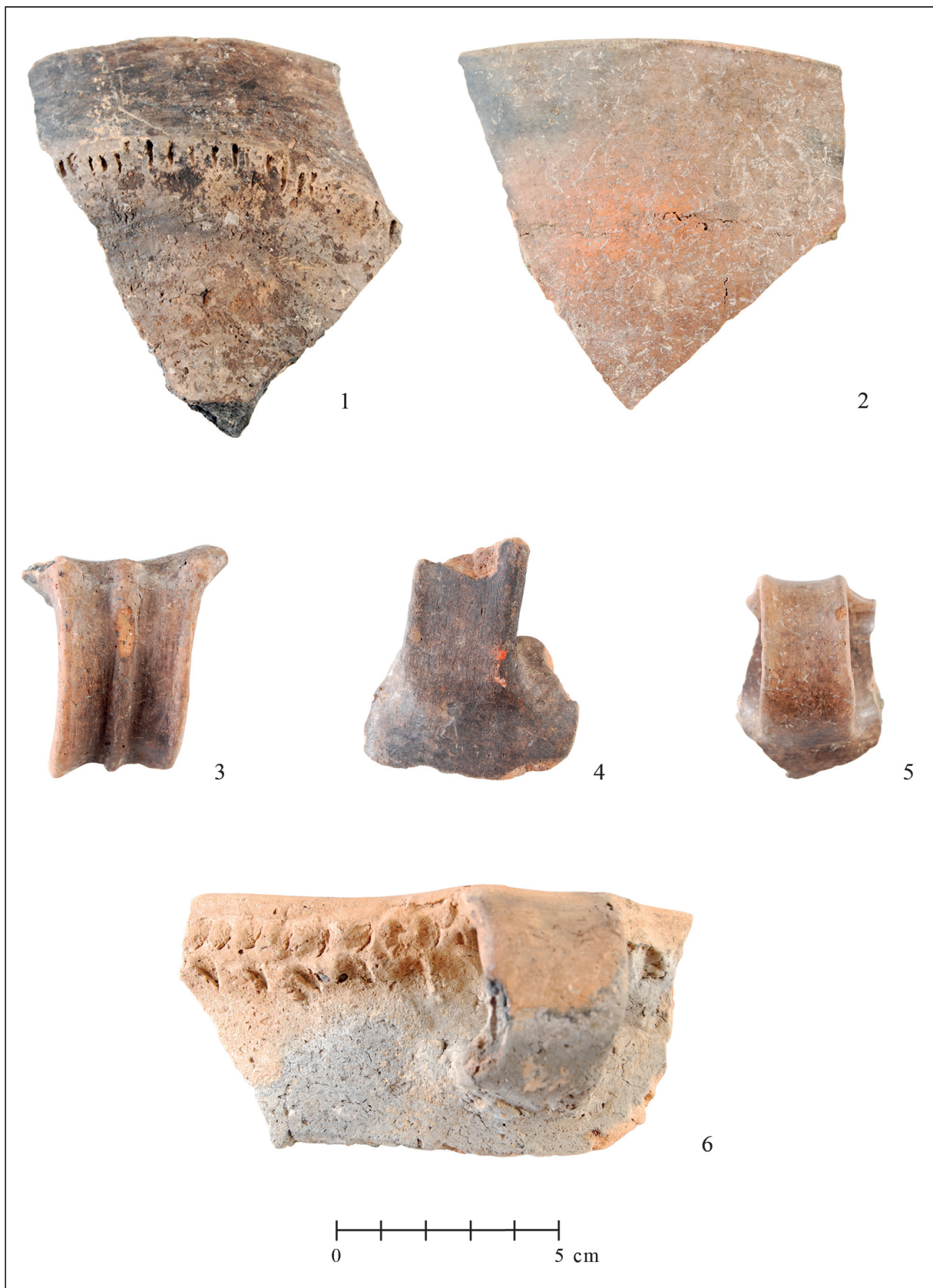
<sup>8</sup> *Jubileumi kötet. 1909–2009. 100 éves a Múzeum* [Jubilee volume 1909–2009. The hundred years old museum], published as volume 19 of SMK in 2010. A colour photo of the wagon model discussed and published here appears on p. 59, together with the pieces from Boglárlelle (with the findspot erroneously specified as Balatonlelle) and Balatonberény (specified as coming from Balatonendrőd).



*Fig. 1. The wagon model from Kaposvár.*



Fig. 2. The typical pottery fragments (Feature 597).



*Fig. 3. The typical pottery fragments (feature 597).*

\* \* \*

I have discussed the wagon models of the Late Copper Age and the Early Bronze Age in several studies (BONDÁR 1990, 1992, 2004, 2006), with a broader overview of the wagon models of the Late Copper Age in the publication of a find from Balatonberény (County Somogy).<sup>9</sup> Recent finds of wagon models include a Late Copper Age piece dating from the Boleráz period published by Tibor Kovács,<sup>10</sup> and the fragments of three wagon models and a wheel from Esztergom–Szentkirály dating from the classical Baden period published by Etelka Kövecses-Varga.<sup>11</sup>

The wagon model from Kaposvár can be dated to the Boleráz period, to the type on which wheels do not appear, although the draught animals yoked to wagon are symbolically portrayed on the front side. Unfortunately, the animal heads broke off and have not survived.

The distribution of the known Late Copper Age wagon models shows a concentration in the central regions of the Carpathian Basin (BONDÁR 2004, Fig. 15). Several pieces are known from Counties Pest, Komárom–Esztergom and Somogy, while not one single piece has yet been published from the Hungarian Plain or northern Hungary. Most of the clay wagon models can be assigned to the Boleráz period (BONDÁR 2004, 15). Eight of the fourteen currently known models date from the Boleráz period: Balatonberény (BONDÁR 2004, Fig. 5. 1, Fig. 6), Balatonlelle [earlier Boglárlelle] (ECSÉDY 1982, Fig. 8), Kaposvár (*Fig. 1*), Moha (KOVÁCS 2006, Abb. 1), Mödling (RUTTKAY 1995, Abb. 7. 3), Pilismarót (BONDÁR 1990, Abb. 7. 3), Plessing (RUTTKAY 2000, Taf. 5. 63), Radošina (NĚMEJCOVÁ-PAVÚKOVÁ – BÁRTA 1977, Abb. 7), six from the classical Baden period: Budakalász (two pieces, one from Grave 158: SOPRONI 1954, Pl. 6. 5, and another one from Grave 177: SOPRONI 1954, Pl. 6. 1, Pl. 7. 1–2), Szigetszentmárton (KALICZ 1976, Fig. 3), Esztergom (three pieces: KÖVECSES VARGA 2010, Figs 14–15).

The Late Copper Age wagon models have a rectangular wagon box with trapezoidal sides (the top being longer than the bottom) and an open top. The differences in their ornamentation and their rim form suggest that genuine wagons too were made from different materials using diverse techniques. At first, the clay models and practical considerations both aided the reconstruction of the materials and techniques used for making real wagons. The many wooden finds discovered in the meantime have furnished incontestable proof that the various components such as the wagon box, the axles and the wheels had been made from wood. While the axle and the wheels rotating with the axle had been made from planks, a much wider range of materials were probably employed for the wagon box such as wood (planks of varying length), wickerwork reinforced by rods, or a combination of the two. It is also possible that the sides of the wagon box had been assembled from smaller mud bricks and a combination of wood and wickerwork.

Most wagon models of the Boleráz period have a wagon box with a straight floor without any indication of axles or wheels (Boglárlelle, Mödling, Pilismarót, Plessing, Radošina). The structural elements holding the axles are marked on two pieces (Balatonberény, Moha). It seems likely that the Kaposvár model can be assigned to this type too, judging from the broken knobs on the underside. The wagon models from the classical Baden period all have the axles and the wheels marked in some manner. The handled wagon model from Grave 177 of the Budakalász cemetery (BONDÁR 2004, Fig. 1. 1c) depicts a wagon whose lower part had been constructed from planks, indicated by the incised lines. The axles for the wheels are marked by incised lines. The pieces from Esztergom are similar

<sup>9</sup> BONDÁR 2004 (with an overview of previous research and the most important studies in this field).

<sup>10</sup> A richly decorated wagon model was found at Moha, currently part of a private collection. KOVÁCS 2006, Abb. 1.

<sup>11</sup> KÖVECSES VARGA 2010. (Only a single copy of the volume has been published to date. An electronic copy of the article was kindly provided by Edit Tari, who edited the volume.)

(KÖVECSES VARGA 2010, Fig. 14. 1–2), the only difference being that the axles are represented by a small rib (KÖVECSES VARGA 2010, offprint, p. 4). The wagon model from Grave 158 of the Budakalász cemetery is set on four small knobs (BONDÁR 2004, Fig. 1. 2), perhaps a symbolic indication of the axles. One of the wagon models from Esztergom can be assigned to this type too (KÖVECSES VARGA 2010, Fig. 15). The axles are represented by two small cylinders with separately applied wheels on the Szigetszentmárton model (BONDÁR 2004, Fig. 1. 3b). Evidence for how the axles and the wheels were fitted to genuine wagons is provided by the wooden wheel and axle discovered near Ljubljana (VELUŠČEK 2006, Fig. 3, Fig. 5).

The decoration of the wagon boxes on the models from the Boleráz period varies. Most bear an incised zig-zag pattern arranged in several rows: Boglárlelle (BONDÁR 2004, Fig. 3), Mödling (BONDÁR 2004, Fig. 4. 1), Pleissing (BONDÁR 2004, Fig. 4. 2), Balatonberény (BONDÁR 2006, Fig. 6). The piece from Kaposvár (*Fig. 1*) has short lines arranged in three rows, while the wagon model from Moha is adorned with an elaborate design made up of incised lines filling square, triangular and trapezoidal fields (KOVÁCS 2006, Abb. 1). The protome from Radošina is decorated with three rows of punctates under the rim (BONDÁR 2004, Fig. 2. 1a–b). The wagon model from Pilismarót–Basaharc is plain (BONDÁR 2004, Fig. 2. 3a–c). The wagon models of the classical Baden period too are decorated in the most diverse manner, the single plain piece being the wagon model set on four knobs from Grave 158 of the Budakalász cemetery (BONDÁR 2004, Fig. 1. 2). An incised zig-zag pattern adorns the piece from Grave 177 (BONDÁR 2004, Fig. 1. 1c) and the model from Szigetszentmárton under its rim (BONDÁR 2004, Fig. 1. 3a). The latter has a zig-zag pattern and incised ladder motifs at the junction of the sides (BONDÁR 2004, Fig. 2. 3b), and a similar pattern can be seen on one of the pieces from Esztergom (KÖVECSES VARGA 2010, Fig. 12). The other two wagon models from Esztergom bear an incised zig-zag pattern (KÖVECSES VARGA 2010, Figs 9–10, 15).

The rim of the wagon boxes on the models of the Boleráz period varies significantly. The front side of the Radošina model is curved; it seems likely that the piece from Pilismarót had a similar form (BONDÁR 2004, Fig. 2. 3c). The wagon models from Boglárlelle, Mödling, Pleissing and Moha have peaked rims, resembling the one from Kaposvár, while the wagon box of the model from Balatonberény has a straight rim. The wagon models of the classical Baden period have curved sides and peaked corners.

The draught animals yoked to the wagon appear as appliqué ornaments on four wagons of the Boleráz period: Radošina (BONDÁR 2004, Fig. 2. 1a–b), Boglárlelle (BONDÁR 2004, Fig. 3), Moha (KOVÁCS 2006, Abb. 1) and Kaposvár (*Fig. 1*). The front side on this model differs from the other three and resembles the high front breastwork on later war chariots. Unfortunately, the fragments from Mödling, Pleissing, Balatonberény and Pilismarót are unsuitable for establishing whether their front side had protomes.

One shared trait of the wagon models of the classical Baden period is the large handle rising above the rim set on the short side, which perhaps symbolises the way in which the draught animals were yoked to the wagon (LITTAUER – CROUWEL 1996, Fig. 2).<sup>12</sup>

The ritual role of the Late Copper Age wagon models from the Carpathian Basin can hardly be challenged.<sup>13</sup> The distribution of wagon models and of other ritual artefacts such as figurines and vessels modelled in the shape of a stylised female body indicates that these rare finds show a concentration

<sup>12</sup> This interpretation is based on a chariot depiction from Kültepe in central Anatolia, dating from the early 2<sup>nd</sup> millennium BC. The cylinder seal bears a depiction of a rectangular chariot with two spoked wheels and its driver. Two horses were harnessed to the draught pole attached to the base of the box; the halters attached to the horses' mouth curves back into the hands of the charioteer. The handled vessels are perhaps a stylised rendering of this mode of harnessing.

<sup>13</sup> A function as toys can perhaps be ascribed to some of the small Bronze Age wagon models (BONDÁR 1990; OLEXA 1983).

in certain regions, suggesting that these regions played an important role in the Baden world, and that there was a hierarchy and a difference in status between the culture's settlements. It is possible that the concentration of ritual finds reflects administrative, economic or ritual centres with larger communities, where trade was conducted or where the ceremonies and rituals expressing the community's cohesion were enacted (BONDÁR 2007). The current evidence is insufficient for proving the existence of settlements resembling the highly-developed city states of the Ancient Near East in the Carpathian Basin, even if it seems likely that the concentration of these rare, unusual ritual or prestige items was not mere chance (BONDÁR 2008, 180). The verification of this assumption calls for further studies. The analysis of settlement patterns and burials, the study of subsistence patterns determined by the potentials of the environment, the determination of the proportion of crop cultivation and animal husbandry in the economy, demographic analyses, and the identification of other prestige elements can contribute valuable insights into the hierarchy and status of Late Copper Age communities relative to each other, while the fortuitous discovery of assemblages from well-documented contexts permit us to fit yet another small mosaic of religious beliefs and the cognitive sphere into its proper place in the broader picture. The assessment of the finds from large-scale excavations will no doubt provide an answer to the question of whether the receptiveness of the communities of the Carpathian Basin was governed by genuine socio-economic needs, or whether the innovations were born among the communities living here and then diffused to more distant regions whose economy was receptive to their integration.

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