INTRODUCTION

The two graves found near today’s Beremend in Baranya County are of pivotal importance when discussing the communities of the late 6th and 5th centuries BC in southern Transdanubia ever since they were discovered. They were the first cornerstones of the notion that after the 6th century BC upheaval, the communities in southern Transdanubia had integrated into the complex of the southern Pannonian late Hallstatt group, at least as far as the burial customs and characteristic funerary representation is concerned.1 At the same time, they provide evidence for the re-emerging contacts between the communities in southern Transdanubia and the Dolenjska region in the late 6th and 5th centuries BC,2 as well as for the new elite which is supposed to have forged and maintained these contacts.3 With the help of basic network models, in the followings I investigate how contacts and interactions might have been forged and what motivated the creation of such ties between the communities.

THE FORMATION OF A NEW ELITE

It is widely accepted that the first half of the 6th century BC saw a fundamental cultural and social transformation in the western part of the Carpathian Basin.4 Although the exact causes

2 Jerem 1974, 238; Dular–Tecco Hval a 2007, 232.
3 Babić–Palavestra 1999; Liuština 2010, 66.
for this process are still debated, its signs in the archaeologi-
cal record are clear. The custom of building large funerary
mounds and most fortified hilltop settlements seems to have
been abandoned.9 All of this suggest that the “crisis” affected
primarily the former elite.4 Their assumed downfall also
brought with it either the disintegration or weakening of the
interregional communicational ties between the communiti-
es in Transdanubia and the adjacent areas7 and hence it also
led to the disintegration of the loosely defined and heteroge-
nous cultural milieu of the Eastern Hallstatt zone.4

However, after the so-called crisis of the Eastern Hallstatt
zone, especially from the late 6th century BC onward, simi-
larly to the Dolenjska region in today’s Slovenia, the western
half of the Carpathian Basin also saw a period of consolida-
tion.9 Evidence for this is provided by several settlements
such as Sopron-Krautacker,10 Sé-Doberdó,11 Zbelava12 and
Szajk,13 just to name a few. In addition, the funerary data
available in southern Transdanubia, eastern Slavonia and the
Srem region strongly suggests that in this period, a new elite
emerged.14

The most outstanding and unequivocal evidence for this
new elite comes from the area surrounding today’s Sremska
Mitrovica. In 1901 several items allegedly belonging to a bu-
rial came to light during construction works at the so-called
Fabrica tanina site.15 Among the objects, we find the most
characteristic elements of late Hallstatt-period attires in
the southern Pannonian region, i.e., an astragal belt and Certosa
fibulae. Based on the brooches, the assemblage dates to the
late 6th and early 5th century BC.16 Although the aforemen-
tioned items have been of great importance in defining the cul-
tural framework of the Srem district and the surrounding
regions during the latest stage of the Early Iron Age, the most
notable item among the finds is a necklace made of gold be-
ads with filigree decoration and tubes of gold wire.17 Its sig-
nificance stems from the fact that necklaces comprising si-
ilar beads made of precious metal are frequently present
among the items found in princely graves of the Central and
Southern Balkans.14 One can argue that the necklace links
the Sremska Mitrovica burial to the most opulent late Early
Iron Age assemblages of the Central and Southern Balkans
to a certain extent,18 and thus, to the upheaval of the elite’s
appreciation of precious metals in the 6th century BC.19

The existence of this new elite around today’s Sremska
Mitrovica is reflected in further finds. In 1960 fragments of
an Illyrian helmet of the III A2-a type came to light from
the river Sava near the Šećerana site along the riverbank.20
Unfortunately, due to lacking information about the exact
context and possible associated finds, it cannot be decided
whether it was part of a grave assemblage or it, say, was de-
posited as a votive offering. Neither can be its chronological
position easily defined, but dating it to the late 6th and the 5th
century BC seems feasible.21 Since Illyrian-type helmets were
essential elements of the warrior representation in the west-
ern Balkans in the late 6th and 5th centuries BC and signalled
a certain status,22 it is also fair to assume that in the case of
the Sremska Mitrovica example this prestigious item could
have also been associated with a local elite.

In addition, in 1978 a bronze situla came to light by
chance, possibly in the area of the cellulose plant southeast of
the town along the banks of the Sava,23 possible near the su-
gar refinery where the helmet is supposed to have been
found. As it was pointed out by P. Medović, it is highly pro-
bable that the situla originates from the Dolenjska region,25
and based on M. Jereb’s recent assessment of the bronze ves-
sels in Slovenia the situla from Sremska Mitrovica can easily
be assigned to variant 3.B1a. Since most such vessels came to
light from graves dated to the Negova horizon in terms of
the relative chronological framework of the Dolenjska
group,26 it is reasonable to date the situla accordingly, i.e.
to the second half of the 5th and the beginning of the subse-
quint century. Thus, it is somewhat younger than the golden
necklace and the Illyrian-type helmet, however, this speci-
men is still worth taking into account here.

These items display a certain dichotomy. The Illyrian-
type helmet and the golden necklace along with several other
pieces of jewellery made of precious metal from the region
indicate the significant role of southern influences in shaping
the forms of representation of the newly emerging elite.27
Contacts of this prominent group, nevertheless, do not confi-
to ties with regions lying to the south of the Srem region.
As already mentioned, searching the origin of the bronze
situla from Sremska Mitrovica in the Dolenjska region of
today’s Slovenia is more than reasonable. Similarly, there is
hardly any doubt that the Certosa fibulae should also be

5The picture of the abandonement of hilltop settlements, howe-
ver, is far from clear. For instance, based on the preliminary
results of their excavation, E. Marton and J. Regenye suggested
that Tihany-Óvár had been occupied during the Ha D3/La

6Egg 2010, 63; Egg 2013.


10Jereb 1981.


15Brunšmid 1902, 75.


17Potrebica–Dizdar 2014a, 153.

directly or indirectly of western origin. As a result, one can see these items as evidence for the long-ranging contacts the elite (re-)established and maintained in the late 6th and the 5th century BC.

Evidence for this new prominent stratum in the southern part of the Carpathian Basin and for its aspiration to be involved in an interregional contact network, however, does not confine to the Sremska Mitrovica finds, i.e. that items of both western and southern origin appeared in the representational sets of the newly emerging elite. In 1962 near Beremend workers found the remains of what is now believed to be two distinct inhumation graves in a sand quarry. Both yielded spectacular assemblages containing various types of jewellery and elements of attire (Fig. 1), including items that are indicative of both western and southern contacts of the late 6th- and early 5th-century communities who lived near today’s Beremend. Besides the numerous Certosa fibulae which adorned the attire of both interred individuals, a so-called sceptre (Fig. 1, 5) made of a thin bronze sheet suggests that members of the community burying their dead in the burial ground near Beremend were connected to the Iron Age groups of southeastern Slovenia through a web of interactions and exchange.

On the other hand, the graves yielded items that link them to a certain extent to the central Balkans. Such items are the Novi Pazar type silver fibulae from Grave 2 and the silver foil bead decorated with granulation technique found among the grave goods of Grave 1 (Fig. 1, 9). Now, the belt plates made of a bronze sheet with openwork decoration (Fig. 1, 1–2), being among the latest ones of their kind, support the second observation insofar as the main distribution area of such items lies between the rivers Velika Morava and Isker.

The sites near Sremska Mitrovica and Beremend are tied together by the directions of the contacts their assemblages suggest, and even by some of the finds. However, another similarity deserves attention. Although the exact contexts and provenience of the finds from Sremska Mitrovica are largely unknown, the information at hand indicates that they have been found along the banks of the Sava River. Nowadays, the river Drava flows some 8.2 kilometres away from the Iron Age burial ground of Beremend and the site is currently surrounded by vast crop fields, however, the situation used to be radically different before the major river regulations in the 19th century. Based on the accounts of the 1827 flood, the river Drava breached the dyke system at several points that had only recently been installed causing one of the largest floodings in its recorded history. The river inundated its entire floodplain even reaching the environs of the modern village Beremend. Now, if we look at the maps of the Josephinian Land Survey of the Habsburg Empire (1763–1787), it is apparent that the areas lying to the south of Beremend were regularly inundated before the river regulations (Fig. 2). The Iron Age cemetery, however, given its position along the edge of a slight elevation must have been spared even in the cases of the most formidable floods, for instance, the one in 1827. Understandably, the burials near Beremend are hardly the most convincing let alone obvious evidence for the intimate relation between waterways and cemeteries of the late Hallstatt period in southern Pannonia. Indeed, I shall address this topic somewhat later, but suffice to say, the site near Beremend fits the pattern.

THE NETWORK OF THE SAVA CORRIDOR

It is a long-established notion that the river Sava played an essential role in providing a communication route for interaction and exchange between Early Iron Age communities of the southern part of the Carpathian Basin, the southeastern Alpine regions as well as the northwestern Balkans. It has also been established several times, that the river served as an essential route over which local elites were able to maintain contacts, exchange or trade relations and possibly political alliances during the Early Iron Age. The example of the Sremska Mitrovica finds indicates that this could have been the case with the newly emerging elite in the late 6th century BC.
Fig. 1. Selection of the finds recovered from the Beremend burials. A: Grave 2; B: Grave 1. (No. 9: after Jerem 1973, Abb. 5,5)

1. kép. Válogatott tárgyak a beremendi sírok mellékletei közül. A: 2. sír; B: 1. sír. (No. 9: Jerem 1973, Abb. 5,5 után)
could have been in the distribution of Certosa V type fibulae. At the same time, through the geographical patterns of their distribution, these fibulae allow a slight glimpse into what the network of relations and interactions in which the elites of the communities in southern Pannonia maintained and participated in could have looked like.

Geographical distance could have been a severe constraint of interaction, and hence it is reasonable to assume that the distribution of products or ideas over large distances took place through interactions and exchanges between local intermediaries, in other words, through actors in close geographical proximity to one another. By applying proximal point analysis to the sites mapped, it is possible to construct with this baseline assumption a hypothetical route network through which the fibulae could have spread. In this model, the vertices are the sites of Certosa V brooches and every node is connected to its nearest neighbour (Fig. 3). I have chosen the smallest k such that a network emerges that includes all sites (k = 4).

The significance of the vertices in a network is usually expressed with various centrality measures, among which betweenness centrality stands out as a way of quantifying the importance of the nodes in the communication between other pairs of nodes. As the table in the above figure suggests, among the nodes of the network, the vertex corresponding to the Sisak site has the largest betweenness centrality value, but this is certainly not the only site situated along the river Sava. Four of the ten largest betweenness centrality scores are associated with sites located along this waterway. Furthermore, two happen to be linked to sites between the Sava and the Danube.

Both of the latter are located in the vicinity of today's Vinkovci. Unfortunately, the late Hallstatt-period items from these sites are without documented context and have to be considered stray finds, which might indicate certain weaknesses of this model. However, the area and the surroundings of Vinkovci have proven to be essential in understanding the cultural processes of the southern Pannonian region in the period between the late 6th century and the beginning of the 4th century BC. The burial with a rich set of dress elements found at the Vinkovci-Silos site, a similar assemblage near Novi Jankovci along with the grave finds near Vučedol made it clear that the eastern part of Slavonia shows strong cultural ties towards the Srem region as well as towards southern Transdanubia. It seems that these ties remained intact during the 5th century BC, indicated by the Vinkovci-Nama and Szentlőrinc cemeteries. The relatively large betweenness centrality value of the Vinkovci-Dren site,

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45Newman 2010, 185; Estrada–Knight 2015, 152.
46Dizdar 2019.
49Majnarić-Pandžić 2003, 500.
or in other words, the significance of the surroundings of Vinkovci in this network, derives partly from the fact that the sites in eastern Slavonia constitute a bridge towards Transdanubia, as far as the network discussed here is considered.50

SIMILARITY NETWORKS OF LATE HALLSTATT-PERIOD COMMUNITIES

It must be acknowledged that the model discussed so far does not provide much more information than a simple distribution map. Although it can be seen that the most likely route for the eastern spread of Certosa V fibulae – and Certosa fibulae in general – followed the river Sava, the relationships depicted in the model presumably have a rather heterogeneous cultural and social background, as well as cultural, social, and probably transactional subject matter. The reason for this is that the model does not take the archaeological record into account apart from one group of objects and its geographical distribution. For example, it ignores the fact that Certosa V-type fibulae, like other Certosa types, have become defining elements of a characteristic, well-recognized, hybrid dress combination in the southern Pannonian region at the end of the 6th century BC.51 That is, in parallel with the emergence of Certosa-type fibulae, a characteristic dress combination appears in southern Pannonia, the prevalence of which is presumably related to the emergence of a new elite in the area during the same period. The latter assumption is proved by the artefacts from Grave 1 in Beremend, which include elements of the characteristic combination: astragal belt, Certosa fibulae (types Ib and 13), glass paste and amber beads (Fig. 1, B).52

50 The sites of eastern Slavonia and those of the Srem district seem to be hubs of East–West contacts not only in the latest stages of the Hallstatt period, but even earlier, in the Early Iron Age. This is clearly shown by the node concentration of the characteristic motifs of the Basarabi style in named regions (Eibner 2001).

51 Dizdar 2020, 205–206.
52 Jerem 1973, 66–68.
One of the two above-mentioned burials found south of Beremend (Grave 2) contained grave goods that, taking into account the representative patterns of the Dolenjska group in Slovenia and the Central Balkans, suggest an outstanding social status of the deceased.\(^{53}\) The two burials in Beremend were located close to each other, with a strictly parallel orientation,\(^{54}\) implying that there may have been a close, yet difficult-to-determine social connection between the buried persons. More importantly, however, a silver bead with a granulated decoration has been found among the funerary equipment of Grave 1, the parallels of which can be recognized mainly among objects from the Balkan princely graves.\(^{55}\) An important example of a similar assumption is the Sremska Mitrovica burial, in which the combination of an astragal belt and Certosa V type fibulae was complemented by a necklace composed of gold wire coils and gold beads.\(^{56}\) Another example is an assemblage recently found during an illegal excavation, probably also from the Szérmégség region.\(^{57}\) According to the published photo, the ensemble of fibulae, beads and astragal belt segments was complemented by a chain with cylindrical elements made of silver wire, coiled in a characteristic pattern, the analogues of which are present among the objects of the Kruševica assemblage, considered a princely find in the Balkans.\(^{58}\)

While these examples may give the opposite impression, precious metal jewellery should not be considered a standard element of a characteristic costume or "Beremend-type" burials.\(^{59}\) The data listed in the table below confirm the previous statement that the essential elements of this costume are: Certosa fibulae, astragal belt, and glass paste beads. The sites listed in the table represent both the regions to the South and North of Beremend (Tab. 1).

The data listed in the table suggest that the recognized characteristics of the dress combination stem in part from the homogeneity of the cases. The composition of the grave goods containing the costume elements in question shows a high degree of similarity, almost a kind of standardized pattern in the region between the rivers Kapos and Sava, especially if we disregard the typological differences of the Certosa fibulae.\(^{60}\) The similarity of the assemblages found in the graves can be quantified using several similarity measures. In the present case, the composition of the funerary equipment is determined with the help of the so-called Jaccard Index, which is the quotient of the intersection and union of the sets of types found in the two graves.

Based on the sites presented, the characteristic “Beremend-type” dress combination appears at the end of the 6th century BC, in parallel with, and presumably not independently of, the emergence of the supposed elite behind the finds from Beremend and Sremska Mitrovica. It is uncertain, however, to speak of elites in cases when these easily identifiable, high-prestige objects are missing from the characteristic dress elements. Another question is how to identify the elite that organizes long-distance relations north of Beremend. Going further, can we tie to the prominent strata of local communities the individuals who were buried with this characteristic costume, and especially the astragal belts?

Regarding these issues, M. Dizdar and A. Tonc caution against individuals buried with astragal belts necessarily being counted among the elites of communities.\(^{61}\) Answers to these questions are also difficult to formulate because only a handful of grave finds came to light from the 6th–4th centuries BC in the area between Lake Balaton and the Sava, and most of them are known from a highly restricted context. No example can be mentioned in which it could reasonably be assumed that the entire cemetery was excavated.\(^{62}\)

Currently, the second largest excavated late Hallstatt-period cemetery north of the Drava is located at the Alsónyék site.\(^{63}\) Among the late Hallstatt burials identified in 2008 and 2009, two contained essential elements of the characteristic costume, giving an exceptional opportunity to examine the question raised in the context of a – partially excavated – cemetery, taking several factors into account (Fig. 5).

In the diagram showing the extent of the burials\(^{64}\) and the number of grave goods\(^{65}\) in the Alsónyék cemetery, two groups are distinguished based on the latter. In one group the number of objects does not exceed three, in contrast, there is a group of burials to which more than six objects appear.

\(^{53}\) Evidence for this assumption is provided by the silver fibulae of the Novi Pazar type, usually associated with high status as far as the Iron Age communities of the Balkans are considered (Blačić Kavur–Miličević-Capek 2011, 42); as well as by the so-called sceptre made of a bronze sheet which resembles those of which tend to be associated with burials of high-status individuals in the Dolenjska group (Schumann 2015, 228; Tecco Hvala 2012, 341).

\(^{54}\) Jerem 1973, Abb. 2.

\(^{55}\) Папавестра 1984, 67; Потребица–Диздар 2014a, 156.

\(^{56}\) According to J. Brunšmid, it cannot be ruled out that the dress was complemented by some amber beads found somewhat later than the above listed items (Brunšmid 1902, 75).

\(^{57}\) Filipović–Васић 2017, 339.

\(^{58}\) Срењевић–Букадин 1988, Sl. 2.

\(^{59}\) Соос 2020, 417.

\(^{60}\) Based on well-documented graves with the characteristic attire, Certosa fibulae, even of different types, tend to be worn in similar numbers and in similar arrangement. Hence, it cannot be ruled out that the clothes they held together might have been fashioned similarly.

\(^{61}\) Dizdar–Tonc 2018, 58.

\(^{62}\) Currently, there is one entirely excavated cemetery in the region and period under consideration, in Szentlőrinc, Baranya County, Hungary. However, not one burial there contained the characteristic dress elements (Jerem 1968).

\(^{63}\) Соос 2021.

\(^{64}\) In addition to the grave goods, the dimensions, even the area of the graves, are also worth taking into account when dealing with the question of inequality based on funerary data (Yu et al. 2019).

\(^{65}\) The components of the belts and necklaces were recorded in the database on a case-by-case basis. In the case of urn burials, I also included the vessel containing the ashes among the grave goods.
<table>
<thead>
<tr>
<th>Tab. 1. Data about &quot;Beremend-type&quot; burials</th>
<th>1. táblázat. A “Beremend-típusú” temetkezések adatai</th>
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<tr>
<td><strong>ID</strong></td>
<td><strong>Site</strong></td>
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<tr>
<td>1</td>
<td>Beremend</td>
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<tr>
<td>2</td>
<td>Pápa Gyápa</td>
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<td>3</td>
<td>Szabadk</td>
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<td>Abaújvölgy</td>
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<td>5</td>
<td>Balatonföldvár</td>
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<td>6</td>
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<td>7</td>
<td>Vinkovci-Silos</td>
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<td>8</td>
<td>Sremska Mitrovica</td>
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<td>9</td>
<td>Brezjak Tumulus XV</td>
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<td>10</td>
<td>Kuzmin</td>
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<td>11</td>
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<td>12</td>
<td>Voćkalo</td>
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<td>Adalacici</td>
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<tr>
<td>14</td>
<td>Beljik</td>
</tr>
</tbody>
</table>

**Notes:**

- Disturbance: N/A
- Age: N/A
- Sex: N/A
- Reference: N/A
- Platter: N/A
- Spindle-whorl: N/A
- Glass paste beads: N/A
- Beads made of precious metal: N/A
- Pottery: N/A
- Bronze ring: N/A
- Iron knife: N/A
- Spears: N/A
- Iron arrowheads: N/A
- Walls of houses: N/A

**References:**

- Jerem 1973
- Szabó 2012
- Józsa 1977
- Soós 2021
- Gaál 2001
- Majnarić - Pandžić 1973
- Brunšmid 1902; Dizdar – Tonč 2018
- Hoernes 1901
- Brunšmid et al. 2017, 132-134.
An example of the characteristic dress combination of an astragal belt, beaded necklace and Certosa fibulae in the Alsónyék cemetery is the assemblage of the Grave 2. The largest amount of metal objects in this cemetery has been found interred with this person, deceased at the age between 35 and 50. However, the largest number of grave goods is attributed to another burial, Grave 8. The maturus / senium individual in Grave 8 was buried with a remarkable number of jewels, including three Certosa V type fibulae, six penannular rings of thin bronze wire, and amber and glass paste beads, the latter in large quantities (Fig. 6). It is worth briefly mentioning the penannular rings with a decoration imitating twisting (Fig. 6, 6–7). Similar objects were found in Transdanubia from Grave 2 in Beremend, but bent from a twisted silver wire and a similar jewel also came to light in one of the burials in the Szentlőrinc cemetery. However, in large quantities, this jewellery is known south of the Drava and the Sava, especially in what is now Bosnia and Herzegovina.

Even disregarding the small size of the sample, we face the question of whether the separation of the two groups signals social inequalities alone, i.e., whether more equipped burials belonged to the elite members of the Alsónyék community or communities. The symbols in the lower-left corner of the diagram above indicate the burials of young children in several cases, thus the number of grave goods may correlate to some extent with the age of the deceased. The position of Alsónyék Graves 4 and 11 on the diagram, with adultus / maturus individuals, only seemingly contradicts this suggestion, because these interments were subjected to disturbance that could have led to the removal of a significant portion of the finds. The brightest example of this is Grave 11 (Fig. 7), where the entire upper body of the deceased was missing, only a glass bead and two Certosa V type fibulae remained, implying the original wealth of the burial. The graves of the adult population in Alsónyék justify Babić’s and Palavestra’s proposal that burials of the late Hallstatt communities in southern Pannonia are to some extent characterized by general affluence, except children’s graves and cremation burials, but the adverse effects of disturbances need to be reiterated.

Returning to the example of Grave 2 in Alsónyék, if we look for the most easily identifiable examples of the southern Pannonian elite based on burial data, Grave 2 with the characteristic costume attests only one way that a prominent member of the community could have been identified in their burial. Graves 1 and 2 in Beremend suggest the same heterogeneity of display. Thus, merely defining the southern Pannonian elite along individuals buried with astragal belt, Certosa fibulae, and strings of beads would be an erroneous approach.

Nevertheless, the examples from Beremend and Sremska Mitrovica still indicate a connection between members of the newly formed elite and individuals buried in characteristic costumes. A more recent example is Grave 58 in Tolna-Mőzs, containing four golden beads in addition to the usual costume elements, although these are lacking either granulation or other types of decoration, which presupposes connections with the Balkans. Therefore, if the network generated from the proximal point analysis of the distribution of Certosa V fibulae is thought to be somewhat suitable for depicting interactions between communities in the late 6th century and the first half of the 5th century BC, individuals buried with the characteristic costume can provide insight into the nature of the interactions that make up this network.

The spatial characteristics of the phenomenon of graves with the characteristic costume and their relation to the network based on the distribution of Certosa type V fibulae can be effectively represented by an (archaeological or general) similarity network. According to this approach, the degree of similarity found between specific attributes of archaeological contexts indicates the frequency and intensity of interactions between individuals and communities

67Jerem 1968, Fig. 20, 9/5.
68Gavranović 2011, 217.
70Grave 6 of the Alsónyék cemetery came to light noticeably disturbed. It appears that the burial contained an astragal belt of which only three segments remained. Similarly, a mere 13 glass paste beads of a necklace survived (Soós 2021, 56). Interestingly, as far as the area is concerned, this is the largest grave hitherto unearthed at Alsónyék.
73Östborn–Gerding 2014.
assumed by these contexts. This approach provides not binary but weighted networks, i.e., instead of presence/absence of relationships between archaeological contexts, the edges (links) between them are characterized by a similarity value calculated from the finds. The higher the similarity value, the greater the probability of real interactions between the communities associated with the archaeological contexts connected by a given edge. Filtering out edges with a lower weight, i.e. similarity value, from the network reduces the number of false positive edges, but not all of these can be eliminated. Thus, in an examination of these graphs, instead of individual edges, general trends in the system should be monitored and evaluated.

In recent research, archaeological similarity networks are usually based on the ceramic75 and lithic finds76 of settlement sites but there are also examples of smaller spatial units forming the nodes of the investigated networks.77

In the case of the late Hallstatt group in southern Pannonia, settlement sites provide little assistance in studying interactions between communities, as they are known only in negligible numbers and the intensity of their research varies. Thus, for the time being, we rely on the mortuary record, a source with great potential in the study of systems containing large-scale spatial connections, especially those related to the elite.78 A valuable basis for interpreting the phenomenon of burials with the characteristic dress combination is the archaeological similarity network (Fig. 8) created from assemblage data, in which similarity values calculated using the Jaccard Index presented above weigh the edges of the network.

In the figure above, only edges with a similarity value higher than 0.4 are shown, however, the density of the network, i.e. the ratio of the actual edges to the possible edges, is 44% even when using this relatively high threshold. This value indicates a remarkable homogeneity of the burials, even in cases where they are separated by a large geographical distance.

The homogeneity of the costume and the conservative and standardized design79 of its visually dominant element,80 the astragal belt (Osijek variant), suggest that this dress had a meaning that could be decoded by socially and also geographically distant communities, which contributed to the success of inter-community interactions, even in the long-term.81 If my conclusion above is correct about the strong association between the characteristic costume and the contemporary elite, then the design and use of the visual code represented by this costume was primarily related to those

74Hart 2012, 133; Mills et al. 2013, 185; Östborn–Gerding 2014.
77Giomi–Peeples 2019; Mazzucato 2019.
78Deicke 2020.
79Filipović–Mladenović 2017, 160.
80As Table 1 suggests, astragal belts tended to comprise more than one hundred segments. As a result, their length should have commonly measured well above 1 meter.
81Arnold 2008, 380–381.
Fig. 6. Grave 8 of the Alsónyék cemetery, with selected finds associated with the burial

6. kép. Az alsónyéki temetői 8. sírja, válogatás az előkerült leletekből
who had been explicitly interested in maintaining a relationship beyond everyday interactions and signalled their participation in the system with material signs. Given that the Szerémség region and eastern Slavonia where this characteristic “hybrid” costume probably had developed,\(^82\) we assume that the consolidating communities of southern Transdanubia increased their attempts to establish relations with the communities of these regions at the end of the 6th century BC. The individuals buried in the costume in question probably took part in this process, expressing a group identity or membership with their dress. Communities in the region between Kapos and Sava and their prominent members have been able to use this identity to signal and express their connectedness, especially on occasions of community reorganization,\(^83\) such as funerals. However, this approach is not entirely new.\(^84\)

According to Marko Dizdar and Asja Tonc, astragal belts were worn primarily by adult women indicating their married status.\(^85\) Available physical anthropological studies are exceedingly rare, although they do not refute this proposal. Nor should my results necessarily contradict the views of these authors, insofar as marriages played an important role in regional and interregional relations,\(^86\) which is indicated in the archaeological record of the Central European Hallstatt period.\(^87\)

The material of the Alsónyék cemetery in particular, but also the Beremend site,\(^88\) indicate that the graves with the characteristic dress combination were associated with relatively large, formal cemeteries, the use of which can be traced from the late 6th to the 4th century BC. Thus, we consider these communities to be stable groups for whom it may have been worthwhile to represent regional networks at the event of the funeral.

The similarity between Beremend-type burials applies not only to the composition of the finds but also to the ele-

\(^{82}\)DIZDAR 2020, 206.  
\(^{83}\)EARLE 2018, 163.  
\(^{84}\)MAINARIĆ-PANDŽIĆ 2009, 237.  
\(^{85}\)DIZDAR–TONC 2018, 57–58.  
\(^{86}\)EARLE 2018, 165.  
\(^{87}\)TÉRZÁN 1995, 100; METZNER-NEBELSICK 2019, 369.  
\(^{88}\)JEREM 1973, 74.
ments of the funerary rite, as well as the design and location of the graves. Especially among the find-spots with a validated location in southern Transdanubia, the burials with the characteristic costume were placed along the region's larger rivers, at the edge of their floodplains. The assemblages found near Sremska Mitrovica were also linked to sites near the banks of the Sava. This observation is supported by the burials of Vučedol and Vinkovci, and perhaps Kuzmin as well, which was found between Kuzmin and Bosut, 2–5 km from the present-day river Sava. The Adaševci burial and the 1st burial of the 15th mound in Brezjak appear to be exceptions.

The spatial distribution of Beremend-type burials and their similarity connections suggest that the main axis of the social interactions to which the investigated phenomenon refers is designated by the rivers and, north of the Srem region, mainly the Danube. Since human communities have also been able to use constructed markers to highlight waterways.

According to the information provided by M. Hoernes, the burial has been found between Šid and Adaševci, thus at least some 18 km from the present banks of the river Sava, and some 5 km from today’s course the river Bosut (Hoernes 1901). However, the geomorphological boundary between the floodplains of the Sava and its tributary, the Bosut runs between the two modern settlements. In addition, flood events are recorded to have reached the northern environs of Adaševci (SavaGIS Geoportal, http://www.savagis.org/map#, Access: May 1th 2021). In this way, the situation is quite similar to the case of the Beremend site.

This grave is dissimilar to the Beremend-type burials due to a number of other reasons. First, it proved to be a secondary burial in a Bronze Age tumulus. Second, it contained two massive bronze bracelets and two spindle whorls, items that do not appear among the grave goods of any other Beremend-type burials. In addition, the assemblage lacks any fibulae let alone of the Certosa type (Bulatović et al. 2017, 71–73).
that are important to them,\textsuperscript{95} the location of cemeteries probably emphasizes the importance of rivers in these cases.

Besides Beremend-type burials with the characteristic costume, their similarity network, and Certosa V fibulae, the special significance of the Danube, presumably distorting the interactions between communities towards the north, and also the lower course of the Sava can be assumed based on a broader source base, the distribution of finds related to the Osijek-variant astragal belts (Fig. 9).

Here it is worth mentioning the weak points of Marko Dizdar’s and Asja Tonč’s assumption regarding the significance of wearing astragal belts. The burial rite and finds of the Stubarlija cemetery excavated on the Titel plateau fit well with burials from the 5th century BC in the region between the Kapos and Sava streams.\textsuperscript{96} It was the first cemetery in the region to contain graves dating back to the 5th century BC with Certosa V type fibulae under documented conditions. Among the individuals buried in the five recovered graves, physical anthropological studies identified three adult women, however, their grave assemblages lacked astragal belt elements, but not other jewellery of the characteristic costume (Certosa type V fibulae, various glass paste beads).\textsuperscript{97} In addition, the Stubarlija cemetery is closely linked to the burial sites in eastern Slavonia and southern Transdanubia by the burial rite and other types of grave goods (such as the so-called kantharoi and cowrie shells). Consequently, it is reasonable to assume that in some respects they are part of the same system, which can be called either the Srem group\textsuperscript{98} or, rather, the late Hallstatt group in southern Pannonia.\textsuperscript{99} However, only a very small part of this system of parallel, overlapping and subordinate networks is currently detected (Fig. 10).

**SPHERES OF INTERACTION IN LATE HALLSTATT-PERIOD SOUTHERN PANNONIA**

However, based on the available information, it can be assumed that the interaction and integration of the southern Transdanubian communities and their prominent members have been unequally influenced by the rivers in the late 6th and early 5th centuries BC, because waterways allow for fast traffic and transportation.\textsuperscript{100} An important recognition in this respect is that the amount of bronze placed in the graves of different cemeteries in the eastern half of the Bronze Age Carpathian Basin correlates with how important or central a given cemetery had been located in the Tisza drainage system. Thus, different locations offered different opportunities for the communities to access bronze raw materials through the waterways.\textsuperscript{101} For the communities in southern Transdanubia at the end of the 6th and the beginning of the 5th century BC, the proximity of the Danube may have been a distorting factor to the advantage of the communities in southern Transdanubia seeking contacts with the elite consolidating in the area between Beremend and Sremska Mitrovica.

Beremend deserves special attention in this case, where a close but difficult-to-determine relationship between the two excavated graves is assumed. The interpretation of the two burials points to different directions regarding the social networks of the region. Grave 1 yielded the characteristic costume (Fig. 1, B), which, according to my proposal, is a visual repertoire that fits into a regional system of relations between the communities that inhabited the area between the rivers Kapos and Sava. The presence of the costume can signal the integration of the Beremend community into that network, perhaps through the individual buried in Grave 1. This possibility is primarily reflected in the more spectacular elements of the costume. At the same time, the silver bead among the details that are difficult for socially distant observers to discern identifies the deceased as a member of a broader system.

The spectacular elements of the costume in Grave 2 can also be interpreted along the latter aspect (Fig. 1, A). Instead of an astragal belt, the deceased wore a composite belt of openwork plates and bronze spirals, presumably one of the latest pieces of its type.\textsuperscript{102} These belts spread mainly in the area between the rivers Velika Morava and Isker,\textsuperscript{103} but the nearest parallel of the specimen found in the Beremend burial is known from Donja Dolina.\textsuperscript{104} Another highlight of the tomb is a bent bronze plate wand or sceptre, a type primarily known from the elite graves of the Dolenjska group in Slovenia.\textsuperscript{105} In addition to these artefacts, Novi Pazar-type fibulae and twisted silver penannular rings also appear as part of the funerary attire. This distinctly unique, non-canonized composition indicates a system of relationships broader than the phenomenon indicated by the distribution of the graves with the characteristic costume. This funerary costume as a social diacritic, displaying seemingly archaic (composite belt) and specifically new elements (Certosa type V fibula)\textsuperscript{106} and both precious metal and bronze objects, is presumably intended to support uniqueness and social distinction.\textsuperscript{107} Thus, in the similarity network created based on burials

\textsuperscript{95}O’Shea 2011, 162.
\textsuperscript{96}Medović 2007; Dizdar 2015, 53.
\textsuperscript{97}Medović 2007.
\textsuperscript{99}Guštin–Teržan 1977, 80; Teržan 1977b, 20; Dizdar 2010, 299; Kemenczei 2012, Abb. 2; Potrebica–Dizdar 2014b, 135; Dizdar 2015.
\textsuperscript{100}O’Shea 2011, 162.
\textsuperscript{101}Duffy 2020.
\textsuperscript{102}Dizdar 2020, 197.
\textsuperscript{103}Vasić 1971, 1.
\textsuperscript{104}Truhelka 1904, Taf. 40.
\textsuperscript{105}Schumann 2015, 228; Tecco Hvala 2012, 341.
\textsuperscript{106}Currently, Grave 2 is dated to the late 6th and early 5th centuries BC (Teržan 1990, 159; Metzner-Nebelsick 2002, 418; Potrebica–Dizdar 2014a), hence it is supposed to be among the earliest appearances of Certosa fibulae in the southern Pannonian region.
\textsuperscript{107}Schortman–Urban 1987, 71.
Fig. 9. The distribution of specimens of the Osijek variant of the astragal belts (after FiliPoVić–MladenoVić 2017, with supplements)

containing Certosa type V fibulae (threshold = 0.4), the marker of Beremend Grave 2 remains without edges (Fig. 11). This burial helps to capture the extent to which the elites of southern Pannonia were integrated into a Prestige Good Network in the late 6th and early 5th centuries BC. A similar assumption is supported by the stray finds from the vicinity of Sremska Mitrovica. Based on the evidence, it can also be recognized that the dominant organizing axes of the relationship system based on the exchange of prestige objects have been the river Sava as a pivotal channel of communication in the era, and other north-south-oriented river valleys of the Balkans.

However, based on the graves examined, astragal belts, Certosa fibulae, and necklaces made of glass and amber beads appear to be elements of a canonized costume, implying that the Danube had been an important axis of a system based on more intense and presumably more frequent interactions in the period under discussion. The appearance of this costume from the lower reaches of the Sava up to the line of the Kapos stream indicates the development of a visually easily identifiable (well-noticeable) stylistic similarity in the clothing of certain members of the communities, which, due to its high visibility, underlines the importance of inter-community interaction, and implies the existence of

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108 The grave begins to have linkages when the treshold value is lowered, naturally, because all vertices have at least one common attribute, i.e., the Certosa fibulae of Type 5.


110 Potrebica 2008.

111 References to a similar phenomenon in the literature can be found in connection with the Late Bronze Age and the early Hallstatt period, due to the similarities in the find material of the sites in the area between Dunaföldvár and Dalj (Patek 1968, 24; Ložniak Dizdar 2015, 38).
Although there are currently relatively few find types associated with this phenomenon, the limits of its distribution can be seen. As an example, both Certosa fibulae and bronze pegs belonging to astragal belts have been found during the excavations of the Donja Dolina cemetery in the early 20th century, but not together, in the same grave assemblages. The discussed phenomenon can be identified according to the model of Ch. Chase-Dunn and T. Hall as an archaeological residue of a Political / Military Network, which is of smaller scale than the aforementioned Prestige Goods Network, restricted mainly to the area along the Danube, bordered by the Kapos and Sava from the North and South, respectively.

CONCLUSIONS

The archaeological record of the 6th–5th centuries BC in southern Transdanubia, eastern Slavonia and the Szeremség regions is limited and mostly originates in excavations from the late 19th and early 20th centuries. Therefore, the applicability of network models used in this paper is also restricted. With the currently available find material, the network approach can be used to represent the spatial relationships of certain multidimensional phenomena of the finds rather than to analyze the phenomena. The most important obstacle is the small number of excavated settlements, especially in southern Transdanubia. For the time being, settlement material

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113 Chase-Dunn–Hall 1997, 52–53.
114 Östborn–Gerding 2014.
from the site Szajk cannot be compared with other settlement remains in this region. Thus, among other things, the question has yet to be answered whether the communities along the Danube were more likely to be integrated into the system of relationships gravitating towards the Szerémség region, as the burial record suggests. Possibly, the question itself is flawed, as the identities represented in the mortuary context may have been different from those that were relevant in the interactions within and between the settlements.

The finds of the Szajk settlement, about 10 km from the present-day Danube riverbed, especially the oinochoe-type jugs found there, suggest that the community had connections to the South beyond the Drava-Sava area in the late 6th and early 5th centuries BC, similar to the situation assumed by the finds from the Beremend burials.115

The two burials discovered on the outskirts of Beremend in the early 1960s yielded material from the same period.116 The graves were found close to each other, presumably well separated from the rest of the cemetery,117 which suggest a close association between the two buried individuals. However, the grave goods still show significant differences, which, in a broader sense, leads to the recognition of two systems of relations among the consolidating communities of southern Pannonia, based on different mechanisms and interactions.

The astragal belt, various types of Certosa fibulae, glass paste and amber beads found in Grave 1 form a characteristic dress combination, which is well documented along the right bank of the Danube, from the Kapos stream in the North down to the lower Sava in the South. The similar appearance of this costume and its visually dominant element, the astragal belt throughout this relatively large area is striking. Based on the information exchange theory, this costume probably did not play an important role in interactions within a community, but in establishing and maintaining contact between socially distant participants. As burials with such costumes have been unearthed in close connection with the larger rivers of the southern Pannonian region, there is a possibility that proximity to waterways and especially the Danube in the north may have affected the ability of communities to integrate into this system differently.

In contrast, the attire from Grave 2 which blends high-prestige objects of archaic appearance and also specifically new, renders the Beremend community in a more encom- passing but looser network of connections. One of the major organizing axes of this system may have been the river Sava, as seems to be emphasized by the spread of different Certosa types and the outstanding importance of the settlement and cemetery of Donja Dolina.118

Conversely to the network connecting the communities in the area between the Kapos and the Sava, the distribution of high and medium prestige objects is well attested in the latter system, but these objects appear in different social contexts from region to region. Due to the scarcity of settle-

117Jerem 1973, 72.

ment finds, these contexts can be identified mainly in the similarities and differences in the burial record, the composition of funerary costumes and grave goods. In the regions of eastern Slavonia and the Szerémség, these objects fit into a new concept, a “new, hybrid costume.”119Remarkably, however, this concept was able to spread successfully without reinterpretations in the approximately 200 km long strip of land between the Kapos and Sava streams at the end of the 6th and the first half of the 5th century BC, indicating a system of relations based on intensive interactions. The rivers, especially the Danube, which the contemporary communities highlighted by the location of their cemeteries and making them part of their social landscape, certainly played an important role in this system.

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DIZDAR 2020, 205–206.
Folyók mentén?
Csoportidentitás, interakciók és a folyók szerepe
a késő Hallstatt-kori dél-pannoniai régióban

Soós Bence

Nehezen vitatható, hogy a vaskori Észak-Balkánon a Száva völgye kiemelkedő jelentőségű kereskedelmi és kommunikációs útvonalat jelentett. A Kr. e. 6. század végének és Kr. e. 5. század elejének összefüggésében a Certosa fibulák elterjedése alapján alkothatunk képet arról, hogy a délkelet-alpi területek és az észak-balkáni vidékek közösségei milyen módon alakítottak ki és tartottak fenn nagy távolságokat átívelő kapcsolatokat. Az utóbbi évtizedekben látványosan bővülő dél-dunántúli forrásanyagnak köszönhetően lehetőség mutatkozik annak felderítésére, hogy a vélhetőleg hasonlóan fontos szereppel bíró Duna milyen szerepet játszhatott ugyanebben az időszakban. Jelen tanulmány célja annak vizsgálata, hogy a Kárpát-medence déli területeinek Kr. e. 6. század végéi és Kr. e. 5. század eleji temetkezései alapján a térség közösségei között milyen kapcsolatok és interakciós hálózatot rajzolhatók fel.