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Helmut Kroll • Kelly Reed

Die Archäobotanik

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Feudvar III

Ausgrabungen und Forschungen in einer Mikroregion am Zusammenfluss von Donau und Theiß

herausgegeben von Frank Falkenstein

Helmut Johannes Kroll · Kelly Reed

Die Archäobotanik

mit Beiträgen von
Frank Falkenstein, Bernhard Hänsel, Aleksandar Medović und Predrag Medović

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Vorwort

Vor drei Jahrzehnten – im Jahr 1986 – begann ein hoffnungsvolles archäologisches Großprojekt an der prähistorischen Burgsiedlung Feudvar bei Mošorin im ehemaligen Jugoslawien. Initiiert und geleitet wurde das von der Deutschen Forschungsgemeinschaft geförderte Kooperationsvorhaben von Bernhard Hänsel, Ordinarius am Seminar für Ur- und Frühgeschichte der Freien Universität Berlin und Predrag Medović vom Museum der Vojvodina in Novi Sad. Die Unternehmung hatte sich zur Aufgabe gesetzt, die mehrschichtige bronze- und eisenzeitliche Ansiedlung Feudvar sowie den umgebenden Kleinraum in dem verkehrs- und kulturgeographisch bedeutsamen Mündungswinkel der Ströme Donau und Theiß mit interdisziplinären Methoden zu erforschen. Von 1986 bis 1993 wurden insgesamt vier jeweils mehrmonatige Feldforschungskampagnen und vier Fundbearbeitungskampagenen realisiert. Hierbei wurden bis zu 2,5 m mächtige Siedlungsschichten der bronzezeitlichen Vatin-Kultur und früheisenzeitlichen Bosut-Kultur auf insgesamt etwa 1.900 m^2 Fläche in einer zur damaligen Zeit vorbildlichen Weise ausgegraben und dokumentiert.

Seit den späten 1980er Jahren überschattete der sich anbahnende Balkankonflikt zunehmend die internationalen Forschungen vor Ort. Mit den militärischen Eskalationen im ehemaligen Jugoslawien zu Beginn der 1990er Jahre mussten die Projektarbeiten in der Vojvodina eingestellt werden und fanden bis heute keine vergleichbare Fortsetzung.

Dem vorzeitigen Abbruch der Ausgrabungsarbeiten ist es geschuldet, dass ein guter Teil der frühbronzezeitlichen Siedlungsschichten bis heute einer archäologischen Erforschung harrt. Auf der anderen Seite ist es gelungen, die Ausgrabungen in Feudvar und das umfangreiche Fundmaterial so weit zu dokumentieren, dass eine substanzielle wissenschaftliche Auswertung erfolgen kann. Die Dissertationen von Manfred Röder zur früheisenzeitlichen Besiedlung (1995) und von Christian Ihde zur früh- und mittelbronzezeitlichen Keramik (2001) von Feudvar sind ein beredtes Beispiel hierfür.

Von Anfang bis Ende intensiv begleitet wurden die Ausgrabungen von bioarchäologischen Untersuchungen. Zu nennen sind hier archäozoologische Forschungen zu den Tierknochenfunden durch Cornelia Becker und archäobotanische Untersuchungen durch Helmut Kroll. Bei den Grabungen wurden insgesamt 2.173 botanische Proben aus sämtlichen Siedlungsschichten entnommen und bearbeitet. Mit über einer Million bestimmter Makroreste bietet Feudvar bis heute den größten Pool an bronze- und früheisenzeitlichen Pflanzenfunden in Südosteuropa. Ein Fundus mit großem Erkenntnispotenzial, so dass eine zweifache wissenschaftliche Bearbeitung lohnenswert erschien. Die hier präsentierten Studien von Helmut Kroll und Kelly Reed bieten verschiedene methodische Herangehensweisen und Fragestellungen zum selben Probenmaterial. Das facettenreiche Gesamtergebnis macht den botanischen Fundbestand von Feudvar wohl zum bestuntersuchten seiner Art in Südosteuropa.

Ergänzt werden die Studien durch einen Überblick über die neuen metallzeitlichen Pflanzenfunde in Serbien von Aleksandar Medović. Er ist heute am Museum der Vojvodina in Novi Sad tätig und hat über das Studium der landwirtschaftlichen Pflanzenproduktion in Novi Sad und Kiel und durch die Mitarbeit an den Pflanzenfunden von Feudvar zur Archäobotanik gefunden.

Den botanischen Beiträgen vorangestellt ist ein Resümee zu den langjährigen Forschungen in Feudvar und dem Theißmündungsgebiet, die auch in Zukunft weiter geführt werden sollen.

In der von Bernhard Hänsel und Predrag Medović begründeten Editionsreihe „*Feudvar – Ausgrabungen und Forschungen in einer Mikroregion am Zusammenfluss von Donau und Theiß*“ sind bereits 1998 zwei Bände erschienen unter dem Dach der Berliner Reihe „*Prähistorische Archäologie in Südosteuropa*“. Die Feudvar-Reihe konnte durch widrige Umstände seitdem leider nicht fortgeführt werden. Der vorliegende Sammelband zur Archäobotanik soll als dritter Band diese Reihe weiterführen. Nach der Übereignung der Ausgrabungsdokumentation an den Würzburger Lehrstuhl für Vor- und Frühgeschichtliche Archäologie erscheint das vorliegende Werk nun als erster Band der neu gegründeten Open-Access-Reihe „*Würzburger Studien zur Vor- und Frühgeschichtlichen Archäologie*“.

Als vor dreißig Jahren die Forschungen in Feudvar begannen, hat wohl kaum einer der beteiligten Wissenschaftler, Studenten und Grabungsarbeiter geahnt, dass der Vielvölkerstaat Jugoslawien nur wenige Jahre später in blutigen Kriegen zerbrechen würde. Die Lebenswege der jugoslawischen Kolleginnen und Kollegen waren seitdem geprägt von Kriegswirren, Wirtschaftskrisen und Emigration, und die Wunden dieser Zeit sind noch nicht verheilt.

Frank Falkenstein und Helmut Kroll

Bemerkungen der Ausgräber zur Publikation der Grabung

Mehr als 20 Jahre sind vergangen, seit ein grausamer Krieg zum endgültigen Zerfall Jugoslawiens geführt hatte. Er erzwang ein ungewolltes und auch schmerzhaftes Ende der hoffnungsvoll begonnenen Grabungstätigkeiten in Feudvar bei Mošorin in der Vojvodina, bevor das angestrebte Ziel, eine große, zusammenhängende, vielschichtig bebaute Fläche einer topographisch herausragenden Siedlung der Bronze- und Eisenzeit zu untersuchen, erreicht worden war. In vertrauensvoller Zusammenarbeit zwischen serbischen und deutschen Archäologen unter der Leitung von Predrag (Mika) Medović und mir war es bis zum Kriegsausbruch gelungen, ein gutes Stück auf dem Weg zum Ziel der Geländearbeiten voranzukommen, so dass auch trotz des vorzeitigen Endes der Geländearbeiten ausführliche Publikationen verschiedener Teilbereiche der Untersuchungen gerechtfertigt sind.

Begonnen hatten diese mit der Vorlage eines einführenden Bandes und einem weiteren zu den umfänglichen, von Frank Falkenstein getragenen Forschungen zur Besiedlungsgeschichte in der gesamten Siedlungskammer um Feudvar, genannt Titeler Plateau, das zwischen siedlungsfeindlichen Flussniederungen liegt. Eine dritte Veröffentlichung, eine als Dissertation verfasste Studie zur Keramik durch Christian Ihde ist über das Internet zugänglich. Alles andere ist liegen geblieben, weil zunächst die Hoffnung bestand, dass die Ausgrabungen bald fortgesetzt werden könnten.

Beide Grabungsleiter waren jedoch inzwischen durch andere Arbeiten gebunden, die Bearbeitung der bisherigen Ergebnisse blieb unveröffentlicht. Je länger der Abstand zwischen Grabung und Publikation wuchs, desto mehr lastete die unerfüllte Bringschuld auf dem Gewissen der Ausgräber. Glücklicherweise war jedoch der an den Kampagnen und darüber hinaus beteiligte Frank Falkenstein bereit, das Projekt zusammen mit Mitarbeitern des von ihm geleiteten Lehrstuhls zum Abschluss zu bringen. Er hat sämtliche existierende Unterlagen aus Berlin nach Würzburg geholt und deren Aufarbeitung in die Hände genommen. Eines der abschließenden Ergebnisse seiner Tätigkeit führte zur Drucklegung des hier vorgelegten Bandes zu den umfänglich geborgenen Pflanzenresten durch Helmut Kroll und Kelly Reed. Jeder aufmerksame Leser wird sehr schnell erfahren, wie wichtig dieses Buch zum Verständnis von Vegetationsgeschichte und Landwirtschaft der Bronzezeit weit über den Ausgrabungsort hinaus ist.

Alle bisherigen Endpublikationen sind durch Förderung der Deutschen Forschungsgemeinschaft und der Freien Universität als Bände der Berliner Reihe „*Prähistorische Archäologie in Südosteuropa*“ herausgegeben worden. Verständlich ist es, dass die nun folgenden Veröffentlichungen in der neu gegründeten Reihe der Universität zu Würzburg vorgelegt werden.

Predrag Medović und ich haben gleichsam durch die Vererbung ihrer Aufarbeitungstätigkeit an Frank Falkenstein ihre Pflichten vertrauensvoll weiter gegeben. Beide wünschen ihm Erfolg, eine glückliche Hand und den Erhalt seiner Schaffensenergie bei der Aufarbeitung der Grabungen von Feudvar. Die ausgezeichneten paläobotanischen Arbeiten von Helmut Kroll und Kelly Reed mit dem allgemeiner verständlichen Einleitungskapitel und dem Abschlusskapitel von Aleksandar Medović sind als neuer erfolgreicher Schritt, die Ergebnisse der Grabungen durch Publikation der Fachwelt zu erhalten, zu werten. Die beiden Ausgräber sind dem Herausgeber, wie auch Helmut Kroll, zu Dank verpflichtet.

Berlin im März 2016 Bernhard Hänsel und Predrag Medović

H. Kroll/K. Reed, Die Archäobotanik. Feudvar III. Würzburger Studien zur Vor- und Frühgeschichtlichen Archäologie 1 (Würzburg 2016) 5–35.

Feudvar near Mošorin (Serbia) – Excavations and Research in a Micro-region at the Confluence of the Danube and Tisza: a recapitulation after thirty years *

by Frank Falkenstein, Bernhard Hänsel and Predrag Medović

1. Introduction

Being located in the historical landscape of Vojvodina (Republic of Serbia), the Tisza estuary combines the natural and cultural landscapes of the Great Hungarian Plain and the Serbo-Croatian Danube region. Fertile loess plains and a temperate continental climate, rich wildlife, floodplains, fish-rich waters and excellent transport connections along the rivers Danube and Tisza made the micro-region especially favourable to colonisation in prehistoric times.

The 82 km^2 loess plateau of Titel with its adjacent high and low terraces rises to a height of 40 m (125 m a.s.l.) and forms a barrier in the area where the Tisza joins the Danube, thus connecting the shorelines of Bačka and Banat. On the steep northern edge of the Titel plateau where it slopes towards the Tisza floodplain lays the multilayered Bronze and Iron Age settlement of "Feudvar" near the village of Mošorin, municipality of Titel (Fig. 1). The settlement mound of up to 3.5 m thick cultural deposits, levelled ditches, a rampart and gate area dominates over the loess plateau, which is shaped by crests and rounded shallow depressions, by about 5 m. The multilayered fortified settlement today occupies an area of 0.6 ha. Yet more than half of the original settlement area was probably lost through lateral abrasion due to meandering of the Tisza in early historic times. The resulting erosion of the plateau edge continues up to the present day and the destruction of the settlement mound thus progresses.

First excavations at Feudvar and other sites on the Titel plateau took place from 1951–1952 and in 1960. Through large-scale field surveys in the Tisza estuary area in 1965 and 1969 a rich prehistoric landscape already became manifest.

With the joint German-Yugoslav research project Feudvar supported by the German Research Foundation (Deutsche Forschungsgemeinschaft) and led by Bernhard Hänsel (Freie Universität Berlin) and Predrag Medović (Vojvodjanski Muzej Novi Sad), a new chapter of the archaeological exploration of the Tisza estuary area was opened in the 1980s and early 1990s. In four field seasons (1986, 1987, 1988, 1990) four parallel excavation areas of 10 m width and between 40 and 72 m long (trenches W, A, D, E) were opened on the mound of Feudvar, each trench cutting through the entire settlement (Fig. 2). In an excavation area of altogether 1.900 m^2 settlement remains of the Early to Middle Bronze Age Vatin culture and the Early Iron Age Bosut group were investigated to a substantial extent. Especially in excavation trenches W and E a sequence of Early Bronze Age building phases could be detected at a depth of 2.50 m and 1.80 m respectively, without however reaching the underlying loess. During four study seasons (1988, 1989, 1991 and 1993) the Bronze and Iron Age archaeological material has been documented and made accessible to further processing. In addition, extensive field surveys, geophysical prospecting of settlement sites and several test soundings took place in the years 1988–1991 on the Titel plateau and in its surroundings, with the goal to explore the archaeological potential of the remote territory in the midst of the Tisza estuary area.

* This is a complemented version of the article Falkenstein / Hänsel / Medovic 2014, translated into English by Gabriele Albers.

Fig. 1. Aerial view of the prehistoric multilayer settlement of Feudvar near Mošorin on the northern edge of the Titel Plateau, Serbia, in 1988.

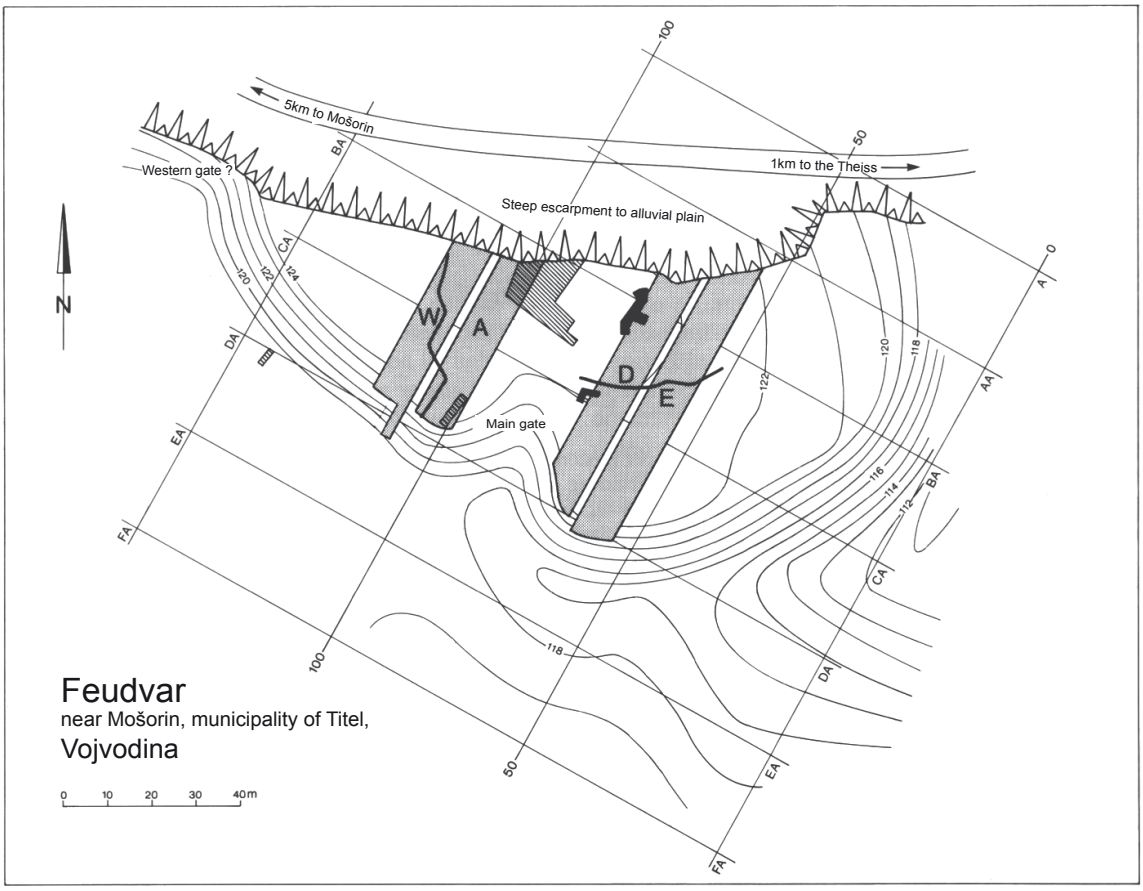

Fig. 2. Map of the mound of Feudvar near Mošorin. Excavation trenches A, D, E and W, 1986–1990; shaded: trench 1951 / 52; black: trench from military manoeuvre.

Since the late 1980s the fieldwork and documentation campaigns that had begun so promisingly were increasingly overshadowed by the escalating political developments in the former Yugoslavia. With the outbreak of war in Yugoslavia, research in the country had to be interrupted in 1991 and the excavations could not be continued until today. Only in 2006 a geoelectrical survey was carried out by Vojvodjanski Musej in a section of excavation trench. Through this measure archaeological structures like pits and house floors could be detected at a depth of ca. 0.75 m beneath the lowermost planum of the earlier excavations[1].

2. State of Research

During the excavations, the first partial results were published by the archaeologists in brief preliminary reports in a timely manner, and some of the preliminary results thus needed to be reconsidered at a later stage[2].

After the completion of five research campaigns (1986–1990), the previous results of the field work and processing of the finds were published in a comprehensive article edited by the excavators B. Hänsel and P. Medović[3]. Aspects of the stratigraphy and findings in the settlement of Feudvar and finds from the Bronze and Iron Ages were discussed in numerous individual contributions[4]. Also, the first summary results of archaeozoological and palaeobotanical analyses[5] as well as prospectings of the suburbium of Feudvar and of further sites on the Titel plateau were presented[6].

In addition, H. Kroll and K. Borojević provided a number of detailed archaeobotanical studies on the herbs and grains detected in Feudvar[7]. An archaeozoological article by C. Becker focussed on the importance of the horse for the Bronze Age subsistence in Feudvar[8].

To M. Röder and Th. Urban we owe a detailed and concise summary of the results of archaeological and other scientific research in Feudvar in the early 1990s[9].

The total series of 94 radiocarbon dates from the excavations at Feudvar were analysed in a number of contributions. Thus, the excavators analysed the calibrated ^{14}C dates from three building phases (phases A–C according to Hänsel / Medović 1991) from house contexts of the Vatin culture in excavation trench W. Even if the data proved to be less suited for detailed chronological interpretation of the stratigraphy they can, however, reliably be linked with the absolute chronology of the Early Bronze Age in Central Europe. Thus, the calibrated ^{14}C dates for the Early Bronze Age Vatin culture with their mean one standard deviation fit into the time frame of the 19th to 16th century BC[10]. Additional information is provided by the detailed studies by M. Röder and J. Görsdorf on three building phases of house 24 in trench E (phases I–III after Urban), which is stratigraphically positioned at the transition from the Early to Middle Bronze Age Vatin culture. Despite some methodological uncertainties, the series of 11 radiocarbon dates allows to set the Middle Bronze Age settlement of the late Vatin culture in Feudvar around the 16th / 15th century BC[11].

In further contributions the excavators address key aspects of the archaeological record, such as the pottery with incrusted decoration from the settlement of Feudvar and the finding of a bronze workshop of the

1 Stankovič-Pešterac 2010.
2 Medović / Hänsel 1988 / 89; id. 1989 / 90; Medović 1992.
3 Hänsel / Medović (eds.) 1991.
4 Hänsel / Medović 1991; Hänsel 1991; Urban 1991; Grčki-Stanimirov 1991; Trajković 1991; Röder 1991; Bukvić 1991; Gačić 1991; Medović 1991; Kull 1991.
5 Becker 1991; Blažić 1991; Kroll 1991a; Borojević 1991.
6 Falkenstein 1991.
7 Borojević 1991; Kroll 1990a; id. 1990b; id. 1991a; id. 1991b; id. 1992; id. 1995; id. 1997; Kroll / Borojević 1988; id. 1988 / 89.
8 Becker 1994.
9 Röder / Urban 1995.
10 Hänsel / Medović 1992, 252 figs. 2–3; Becker et al. 1989, 430.
11 Röder 1992; Görsdorf 1992; Palinkas 1999.

Early Bronze Age[12]. The proto-urban culture concept outlined by B. Hänsel with regard to the Early Bronze Age settlement patterns in South Eastern Europe is largely based also on his excavation results at Feudvar[13].

The first volume of the Feudvar series was published in 1998 and is an edited book entitled "Das Plateau von Titel und die Šajkaška – Archäologische und naturwissenschaftliche Beiträge zu einer Kulturlandschaft", with the intention to offer a profound and multifaceted introduction to the cultural and natural environment of the Tisza estuary area[14]. After a detailed presentation by B. Hänsel[15] of the excavation activities which ended prematurely in 1990, further archaeological fieldwork carried out in the study area in the second half of the 20th century and mostly unpublished is thoroughly discussed[16], and also soundings in the multilayered prehistoric hilltop settlement of Titel-Kalvarija[17] and in the Bronze Age cemetery at Pod Gracom near Lok, municipality of Titel[18]. Important results regarding the settlement history of the Tisza estuary also come from extensive field surveys that were carried out in the 1960s on the Titel plateau and adjacent river terraces of the Šajkaška micro-region by P. Medović and O. Brukner[19]. A number of scientific contributions deal with the geology, geomorphology and soil science of the Tisza estuary area[20]. On the basis of the zoological and botanical finds retrieved from Feudvar itself, the prehistoric natural environment of the terraced and river landscape as well as the Bronze and Iron Age food supply is reconstructed to the extent allowed at this preliminary stage[21]. The archaeobiological investigations are complemented by papers on the extant flora and fauna of the Tisza estuary area[22].

The typo-chronological analysis of the Early to Middle Bronze Age pottery from the settlement of Feudvar was the subject of a meticulous and extensive study by Ch. Ihde[23]. The database-driven analysis included a total of 15,770 ceramic units from all excavation trenches. However, the stratigraphic analysis of the pottery was based solely on trench W which has provided the longest sequence of Bronze Age settlement layers. The ceramic wares, decors and shapes were initially classified separately in order then to correlate these parameters with each other. The analysis of the pottery decoration distinguished a total of 14 decorative styles on the basis of the typological categories decorative technique, motif and pattern. Among these the local decor style A with three variants accounts for about 68 % of the total amount of the pottery. In a similarly meticulous way the shapes have been classified into 22 types of vessels. Finally, ceramic wares, decorative styles and shapes are examined in terms of their vertical distribution in the stratigraphic sequence and their horizontal distribution in the individual house contexts. Ch. Ihde thus defines five stratigraphically-based pottery phases (Feudvar IIa, IIb, IIIa, IIIb, IV) which he reliably integrates into the relative chronology of the Bronze Age in the Tisza-Danube-Balkan region (Fig. 3).

A study by M. Röder deals with aspects of the settlement and pottery development in Feudvar during the Early Iron Age on the basis of the finds and archaeological materials from the eastern trenches D and E[24]. The analysis of the Iron Age strata focuses on the stratigraphical sequence which includes building phases P, Q and R and is followed by the latest settlement phase S (Fig. 3). A total of six house units of the earlier and middle Bosut group (Kalakača, Basarabi period) are reconstructed in terms of their architecture, stratigraphic position and usage. Further, based on the findings in sealed house contexts the

12 Hänsel / Medović 1994; id. 2004.
13 Hänsel 1996; 2002.
14 Hänsel / Medović (eds.) 1998.
15 Hänsel 1998.
16 Medović 1998a; id. 1998b; id. 1998c; id. 1998d; id. 1998e; id. 1998f; Borić 1998; Dautova-Ruševljan 1998; Stanojev 1998a; 1998b. This includes earlier smaller-scale excavations in Feudvar itself (Medović 1998d; Borić 1998).
17 Medović 1998f.
18 Medović 1998e.
19 Medović 1998a; id. 1998b.
20 Kukin 1998; Hadžić / Kukin / Nešić 1998; Ćurčić 1998.
21 Kroll 1998; Becker 1998.
22 Butorac 1998; Mikes 1998; Garovnikov 1998; Budakov 1998.
23 Ihde 2001.
24 Röder 1995.

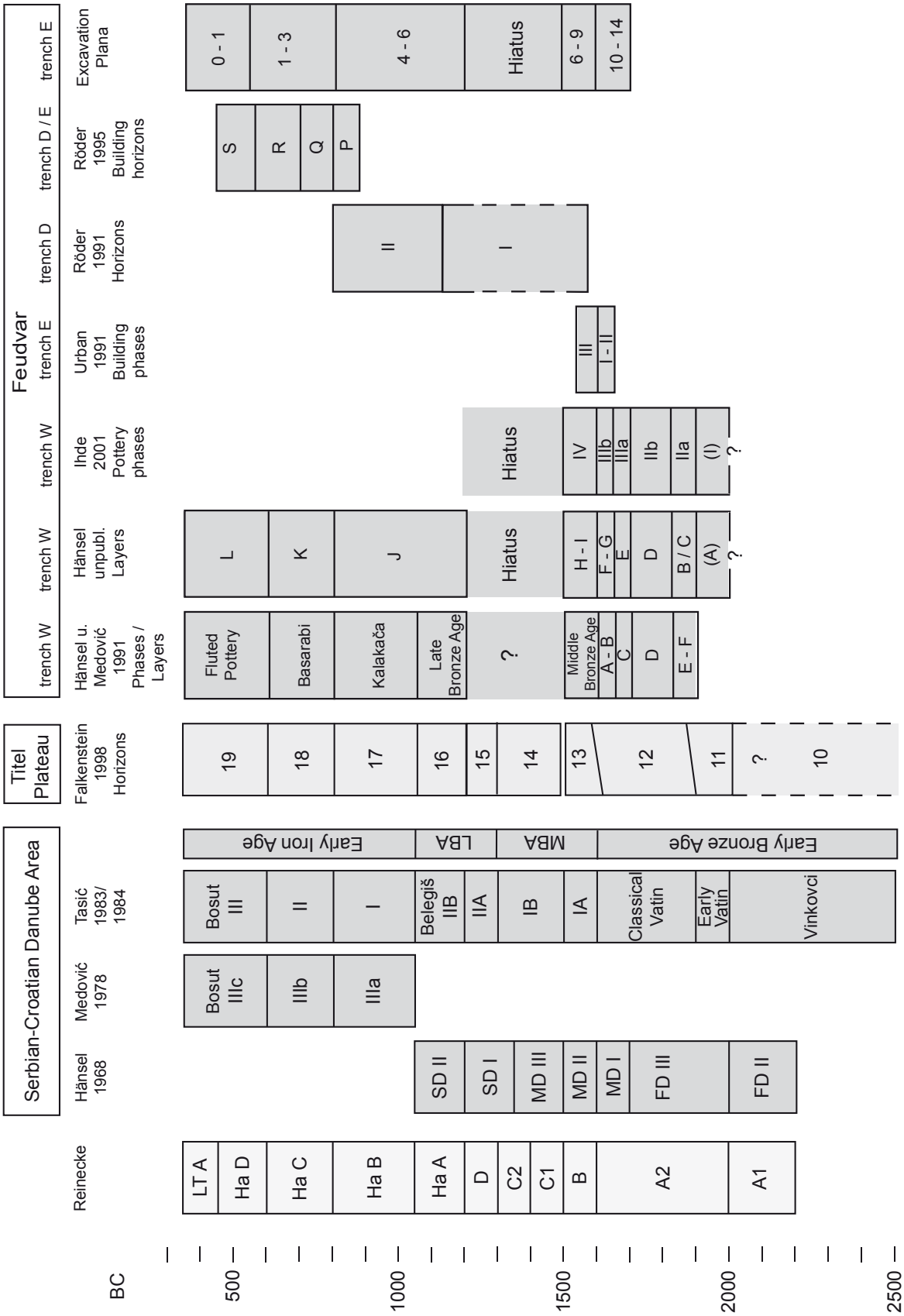

Fig 3. Chronological chart of the Bronze and Early Iron Age at Feudvar, the Titel Plateau and in the Serbian-Croatian Danube area.

pottery development of the Bosut group at Feudvar is analysed using a data-processing system. To this end a complex coding system is used that takes into account the decorative techniques, individual motifs and types of motifs and shapes of the vessels. Röder thus succeeds differentiating the repertoire of shapes and motifs especially of the middle stage of the Bosut group.

In the years 1988–1992 F. Falkenstein conducted a survey in the micro-region of the Titel plateau and adjacent river terraces, in an area of about 120 km^2. The results were presented in detail in 1998 as Volume II of the Feudvar series[25]. The goal of the field surveying and prospecting of settlement sites was to reconstruct the prehistoric and early historical settlement processes as completely as possible. For this purpose cursory field surveys in the potential settlement areas, intensive grid surveying of an area of 140 ha and 967 drillings were realized. The evaluation of the surface finds of more than 3 tons gross weight allowed to reconstruct the settlement processes from the Early Neolithic period to the modern era on the basis of 28 archaeological horizons. Thereby a settlement history of the Bronze and Iron Ages in the Tisza estuary area could be established which covered a time span of 10 settlement phases from the earlier Early Bronze Age to the beginning of the Latène period. During two long periods the occupation of the settlement mound of Feudvar is also contemporaneous to the settlement sequence in the micro-region (Fig. 3). Based on the report about the survey results, another study by Falkenstein discusses the influences of Eurasian nomadic steppe cultures on the Early Iron Age and Medieval settlement history in the Tisza estuary area[26].

After many years, further important studies on the findings from Feudvar follow in this volume. Helmut Kroll's final analysis of his archaeobotanical research at the site was complicated by not having a binding synchronous stratigraphy of the settlement layers in the four excavation trenches. Therefore the analysis is on one hand based on the stratigraphical sequence of trench W established by B. Hänsel, and on the other hand on the excavation plana of trench E. Whilst being considered separately, trenches W and E feature the same diachronic developmental trends in crop production, nutrition and collecting of plants.

Parallel to Kroll's analysis, K. Reed has used the same data basis from Feudvar in a wider archaeobotanical study from the Late Neolithic to the Late Bronze Age in the Carpathian basin[27], parts of which are also presented here. Unlike Kroll, Reed uses multivariate analysis methods, but the results of the two studies are comparable. Feudvar therefore has not only provided one of the largest archaeobotanical data sets the Carpathian basin but may also be considered one of the most thoroughly researched settlements of the Bronze and Iron Ages in terms of archaeobotanical investigations. This research is complemented by important results offered by the compilation of plant remains of the Bronze and Iron Ages in Serbia by A. Medović in this volume.

3. Comments on the Stratigraphy of Feudvar

By drillings and observations on the fringe of the multilayer settlement of Feudvar a total thickness of about 3.5 m of the deposit of cultural strata can be assessed. In the main excavation trenches W and E a sequence of Bronze Age and Iron Age layers could be investigated until a depth of 2.50 m and 1.80 m respectively. This means that approximately 0.75 m (trench W) and 1.7 m (trench E) of the lowermost Early Bronze Age strata remained unexcavated (Fig. 4). A reliable archaeological stratification of the settlement mound is so far available only for trench W (Westburg) (Fig. 3).

Based on the Westburg (trench W) B. Hänsel and P. Medović after the disruption of the excavations in 1990 undertook an initial subdivision of the Bronze Age package of layers, thus discerning the Early Bronze Age occupation layers F to A[28]. Later, Hänsel revised this terminology and replaced it by a new designation of layers A to L which included also the Middle Bronze Age and Iron Age strata but which remained unpublished. The new nomenclature of the strata served as basis for Ch. Ihde's work on the Early and Middle Bronze Age

25 Falkenstein 1991; id. 1997; id. 1998.
26 Falkenstein 1999.
27 Reed 2012.
28 Hänsel / Medović 1991.

Fig. 4. Feudvar 1990, trench W, section of the western profile with Bronze Age and Early Iron Age layers and planum 12 in the foreground.

pottery from trench W[29]. Occupation layer A labels the lowermost and still unexcavated section of the Early Bronze Age Vatin settlement. Layers B / C (pottery phase IIa) and D (phase IIb after Ihde) mark the three excavated building phases of the developed Early Bronze Age (classical) Vatin culture which correlates with the Bronze A2 (after Reinecke) respectively the Early Danubian III period (after Hänsel) (Fig. 3). Layers E (phase IIIa) and F / G (phase IIIb) correspond to three building phases at the end of the Early Bronze Age Vatin culture (Bronze A3; Middle Danubian I) and mark already the transition to the pottery style of the Middle Bronze Age. Layers H and I (pottery phase IV) finally label the Middle Bronze Age strata of the late Vatin culture. The settlement deposits of the early Middle Bronze Age Vatin culture are separated from the more recent layers by a *hiatus* lasting several centuries during the developed Middle Bronze Age and early Late Bronze Age (MD III–SD I after Hänsel, Bz C1–D after Reinecke). The uppermost layers J, K and L designate phases of occupation and pottery development of the Early Iron Age Bosut group (Bosut I–III, corresponding with Gradina on Bosut IIIa–IIIc / IVa–IVc). Layer J includes also settlement features of the developed Late Bronze Age (Belegiš IIb) which could so far not be differentiated from the deposits of the lowermost Early Iron Age (Bosut I, Kalakača horizon) Generally layer K can be equated with the cultural phase Bosut II (Basarabi) and layer L with Bosut III (Fluted Pottery).

The 1.8 m vertical stratigraphy of trench E (Ostburg) comprises 14 recorded plana but has as yet been examined only partially (Fig. 3). Whilst some subdivisions of sections of the Bronze Age and Iron Age layer package have been made, a reliable complete stratigraphy is still a desideratum[30]. In the uppermost part of the Bronze Age deposits Th. Urban differentiated the materials of a farmstead into building phases I to III with subphases. Building phase I with an overlaying burnt layer correlates with plana 13 and 12, building phase II correlates with plana 12 to 10 and the uppermost phase III with plana 8 and 9[31]. In his

29 Ihde 2001.
30 Röder 1991; id. 1995; Urban 1991.
31 Urban 1991.

study of the pottery Ch. Ihde succeeded to synchronise, on a typological basis, the Bronze Age building phases in trench E after Urban with his phases of the Westburg (trench W). Thus, building phases I / II (after Urban) are contemporary with pottery phase IIIb (after Ihde, layers F / G), and building phase II correlates with the Middle Bronze Age pottery phase IV[32]. In addition it should be noted that, according to the excavation records and finds, in the 70 m long excavation trench E Bronze Age building structures and pottery appear already in the northern part of planum 6, whereas in the southern part of trench E Iron Age structures still predominate. Planum 6 thus designates the interface between the Bronze Age and Iron Age cultural deposits. The Middle Bronze Age occupation layers of the late Vatin culture (contemporary with layer H / I in the Westburg) seem to extend from planum 9 to 6 in the Ostburg.

As already mentioned, in excavation trenches D and E three building horizons P, Q and R with six stratigraphically fixed houses have been reconstructed by M. Röder (Fig. 3). The Early Iron Age building phase P (house 5) has been identified by Röder in planum 5 of trench E and dated to the end of the Bosut I (Kalakača) phase. Building phases Q and R in trench E which include the houses 1 to 4 (Bosut II, Basarabi) range from planum 1 to 3. The most recent Iron Age horizon S (Bosut III, Fluted Pottery) is, however, concealed within the deposits between planum 0 and 1[33]. Another detailed stratigraphical study by Röder deals with the post-Vatin cultural deposits in excavation trench D which is adjacent to trench E (Fig. 3). His horizon I as it is seen today includes the stratigraphic interface from the Middle Bronze Age layer to the Early Iron Age deposits, but the *hiatus* in the occupational sequence remains unrecognised. The upper horizon II labels the lowermost section of the Early Iron Age layer package (Bosut I) which apparently sets in already at the close of the Late Bronze Age (Belegiš IIb)[34].

4. Cultural Development, Settlement and Economy

In the following a synthesis of the main results achieved on Feudvar and the Tisza estuary area is presented. In the current state of research, the focus is especially on the structural changes in settlement and development of the pottery of the Bronze and Iron Ages, including results on the subsistence and environment.

4.1 The Early Bronze Age

4.1.1 Pre-Vatin Period and Early Vatin Culture

The settlement history of the Bronze and Early Iron Ages in the Tisza estuary area is preceded by the Late Copper Age Pit Grave culture in the first half of the 3rd millennium BC. Of this culture of nomadic steppe character some kurgans, which are situated on Pleistocene sand banks of the alluvial plane, and stray finds are known, there is however no evidence of permanent settlements[35].

Only in the second half of the 3rd millennium BC permanent settlements are again attested on the Tisza side of the Titel plateau. Given the long period of time, the evidence of settlements remains however sporadic. The earliest archaeological material of the Bronze Age (level 10) shows only a few culture-specific features but can be associated chronologically with the Somogyvár-Vinkovci culture[36]. Noteworthy is the location of two settlement sites of the pre-Vatin period on both sides of the Šocin surduk, a dry valley cutting into the edge of the plateau and providing easy access to the alluvial plain only a few hundred meters west of the settlement mound of Feudvar[37]. Perhaps these settlements formed the nucleus of the Early Bronze Age settlement complex, whereas Feudvar developed into the central settlement site only at the turn of the 2nd millennium BC.

32 Ihde 2001, 337.
33 Röder 1995, 1–67.
34 Röder 1991.
35 Falkenstein 1998, 262–264.
36 Falkenstein 1998, 77–78 fig. 54; 264 fig. 233.
37 Falkenstein 1998, 152–158.

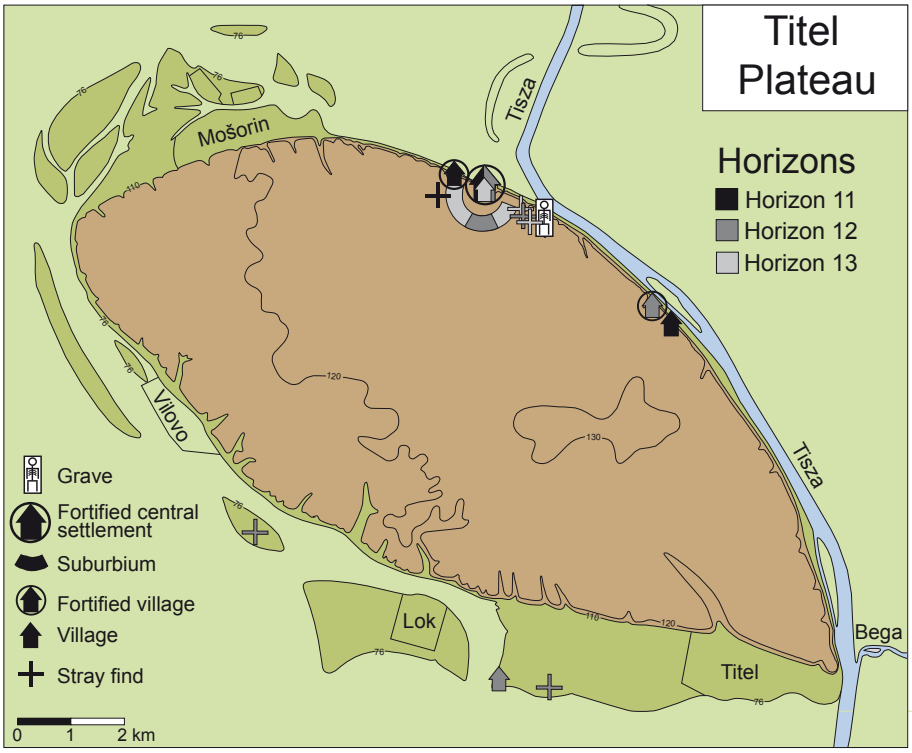

Fig. 5. The Titel Plateau in the Tisza estuary area. Sites of the Early (horizons 11–12) and Middle Bronze Age Vatin culture (horizon 13) (after Falkenstein 1998, Fig. 234-236).

The subsequent settlement phase must already be assigned to the early Vatin culture (level 11) and probably dates to the first quarter of the 2nd millennium BC. Settlement activity of the Vatin culture unfolded in a section of the plateau edge that is just about 5 km long and directed towards the Tisza (Fig. 5). As in the later stages of its development the Vatin settlement, presumably including field and garden areas, took up only a small part of the potentially usable space. In this period, which probably corresponds to the earliest settlement layers of the Vatin culture detected in Feudvar (Feudvar I(?)–II), Feudvar and a settlement near the Šocin surduk constituted two separate settlement areas in close proximity to each other, namely in only about 400 m distance. Whether the settlement at the Šocin surduk preceded the earliest Vatin settlement in Feudvar or the two sites coexisted for some time is not known as the lowest settlement deposits in Feudvar have not yet been excavated. However, the early Vatin settlement on a spur of the Šocin surduk with a surface area of about 2.6 ha and a ditch 300 m long, at least 10 m wide and 3 m deep, was likely little or not inferior to the neighbouring settlement at Feudvar. Finally, the settlement at the Šocin surduk was abandoned after a devastating conflagration, whilst Feudvar continued to exist as the main settlement[38].

At Feudvar in the oldest, not yet extensively excavated settlement phase of the Early Bronze Age a fortification is also attested, however of a very different kind. A narrow trench opened on the slope in extension of excavation trench W yielded the remains of a rampart or dissolved earthen wall. The exact structure of this fortification remains unknown, however due to its viscous consistency alluvial silt from the Tisza basin was probably carried to the plateau for its construction. An associated ditch of the fortification would be expected but was likely destroyed by later trenching of the Bronze and Iron Ages. More recent fortifications at the fringe of the settled area were not detected in this area, but all observed settlement

38 Falkenstein 1998, 152–155 fig. 55; 264–267 fig. 234.

Fig. 6. Feudvar 1990, central section of trench W, planum 12. Features of Early Bronze Age houses (layer E).

strata run more or less horizontally over the top of the early rampart. If further palisades or walls had existed, they likely fell victim to erosion of the slope of the settlement mound[39].

As far as dating the oldest layer-forming settlement activities of the Early Bronze Age Vatin culture on the Titel plateau is possible, these may be assigned to the fourth Tellhorizont in the Carpathian basin according to F. Gogâltan[40]. In this period multilayered and highly organised settlements existed in the core zone of the Tisza river system, including the Moriš region, for several centuries[41]. Feudvar is therefore one of a number of tell settlements established quite late in the Early Bronze Age that were located at the periphery of the distribution area of the tells.

4.1.2 Classical Vatin Culture

The period of the developed Early Bronze Age Vatin culture which likely extended over a longer period of time in the first half of the 2nd millennium BC represents the settlement phase of the Bronze Age with the richest finds (layers D–G, Feudvar IIb–IIIb). Ever since settlement layer B at Feudvar (Feudvar IIa), the residential buildings followed a regular system of parceled house lots which was continuously maintained until the period of the Middle Bronze Age Vatin culture (Fig. 8). For at least six building phases during which the houses were completely rebuilt after fires, a dense rectangular settlement layout with uniform houses, wide alleys and small squares persisted, thus inducing the project leaders to conceive of a prototypical urban settlement organisation[42]. The 10–12 m long and 5–6 wide residential dwellings are constructed of posts with wattle-and-daub walls mainly of insulating reed bundles and mud-plaster (Fig. 6). Mud was

39 Hänsel 1998, 31–33 fig. 12–13.
40 Gogâltan 2005, 168–170 Abb. 7.
41 Gogâltan 2005, 161–168.
42 Hänsel 1991, 76–78.; id. 1996, 247–249; id. 2002, 80–82.

Fig. 7. Feudvar. Pottery assemblage of the Early Bronze Age (classical) Vatin culture.

also used for the construction of floors and hearths, as well as for decorated plastic paneling of posts, walls and doors. A wide range of small finds attest to a variety of domestic activities such as storage, food preparation, spinning, weaving and pottery production. The evidence of hearths, wall shelves and looms as well as sets of vessels found in situ convey a vivid impression of the organisation of the households[43].

On the basis of the numerous, though fragmentary pottery finds from the burned house complexes at Feudvar (Fig. 7) Ch. Ihde reconstructed an ideal inventory of vessel types of the Early Bronze Age household (Fig. 9). Jars, bins, amphoras and other large vessels were used for storage. Food was prepared in portable hearths (pyraunoi), cooking pots, scoops and fish butts. Vessels of fine ceramic types such as dishes, bowls, jugs and cups (kantharoi) were used as tableware for food and drink and occurred in large quantities in the households. The inventory is supplemented by further functional ceramic types such as boxes, lids, baking trays, strainers and embers containers (Glutstülpen). Twin vessels and miniature tables that were also found in the houses are, instead, considered as ritual objects by Ihde[44].

Through spatial analysis, Ihde[45] in his study of the pottery finds was able to prove that in trench W different local decorative styles (styles A1–A3) coexisted in the contemporary house contexts, as each style was handed down over several generations of the respective house (Fig. 8). On the basis of the ceramic evidence the agglomeration of settlements around Feudvar can presently be assigned to the Syrmian-Slavonic group of the Vatin culture. The distribution of this cultural group in the area at the confluence of the Danube and Sava is sharply defined by the rivers, whereas only in the Tisza estuary area it extends beyond the Danube to the north[46]. Vessels of the type (decorative styles B–K) of neighbouring or more distant cultural groups (Pančevo-Omoljica, Cornesti-Crvenka, Moriš, Verbicoara, Szeremle, Vatya, Füzesabony) were found in comparatively small numbers and probably came to Feudvar as imports, perhaps in the frame of social contacts. Interestingly ceramic vessels of foreign cultural origin, such as jugs and cups of the Pančevo-Omoljica style (decorative style D), appear not infrequently over several building

43 Hänsel 1991, 72–76. figs. 8–11.
44 Ihde 2001, 233–242; 323–334 fig. 268.
45 Ihde 2001, 323–334 figs. 275–279.
46 Ihde 2001, 348–352 fig. 282.

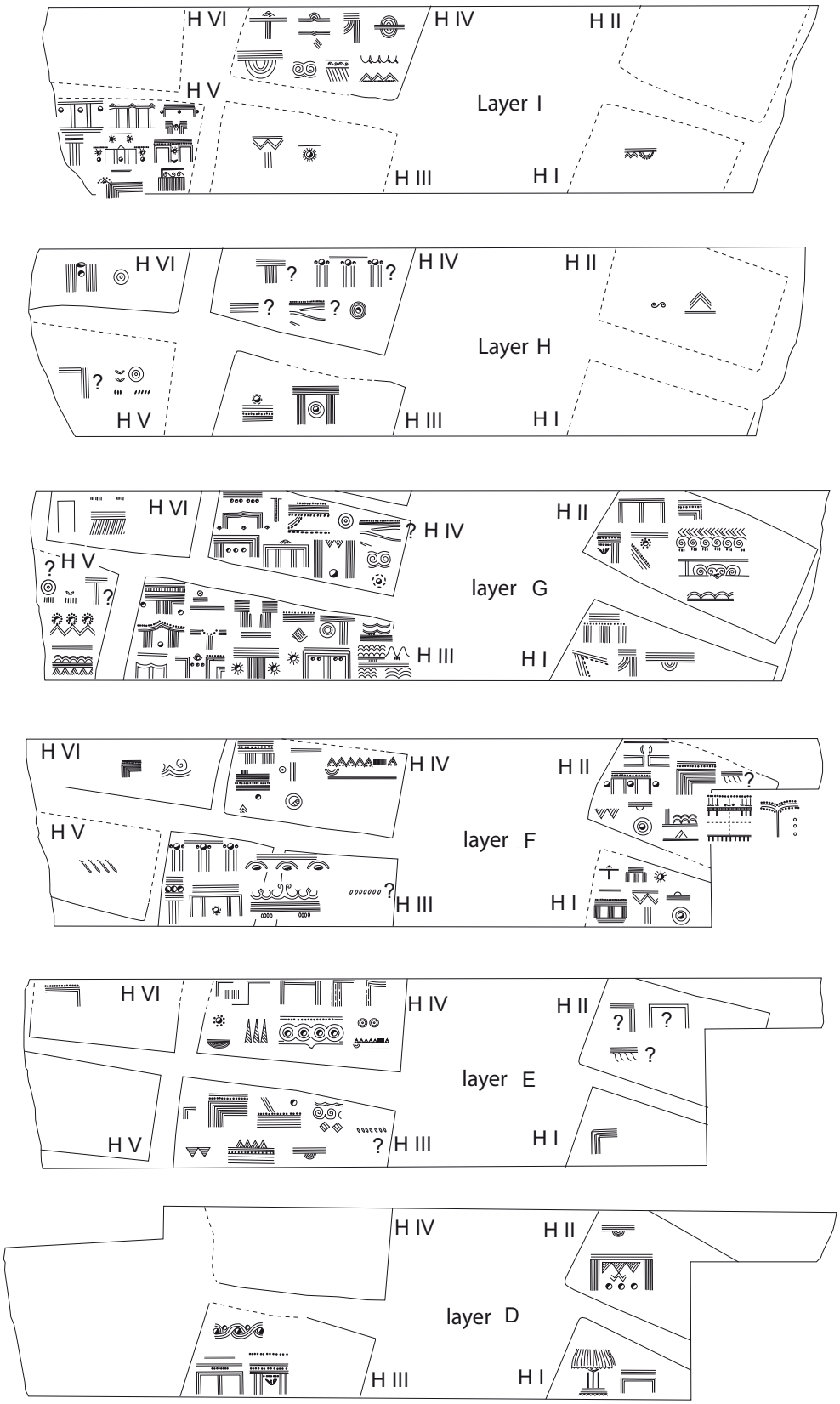

Fig. 8. Feudvar, trench W. Schematic plan of the Bronze Age residential buildings in layers D–I of the Vatin culture. Mapped are the pottery stiles A-K in house contexts I–VI (after Ihde 2001, Fig. 278, 279).

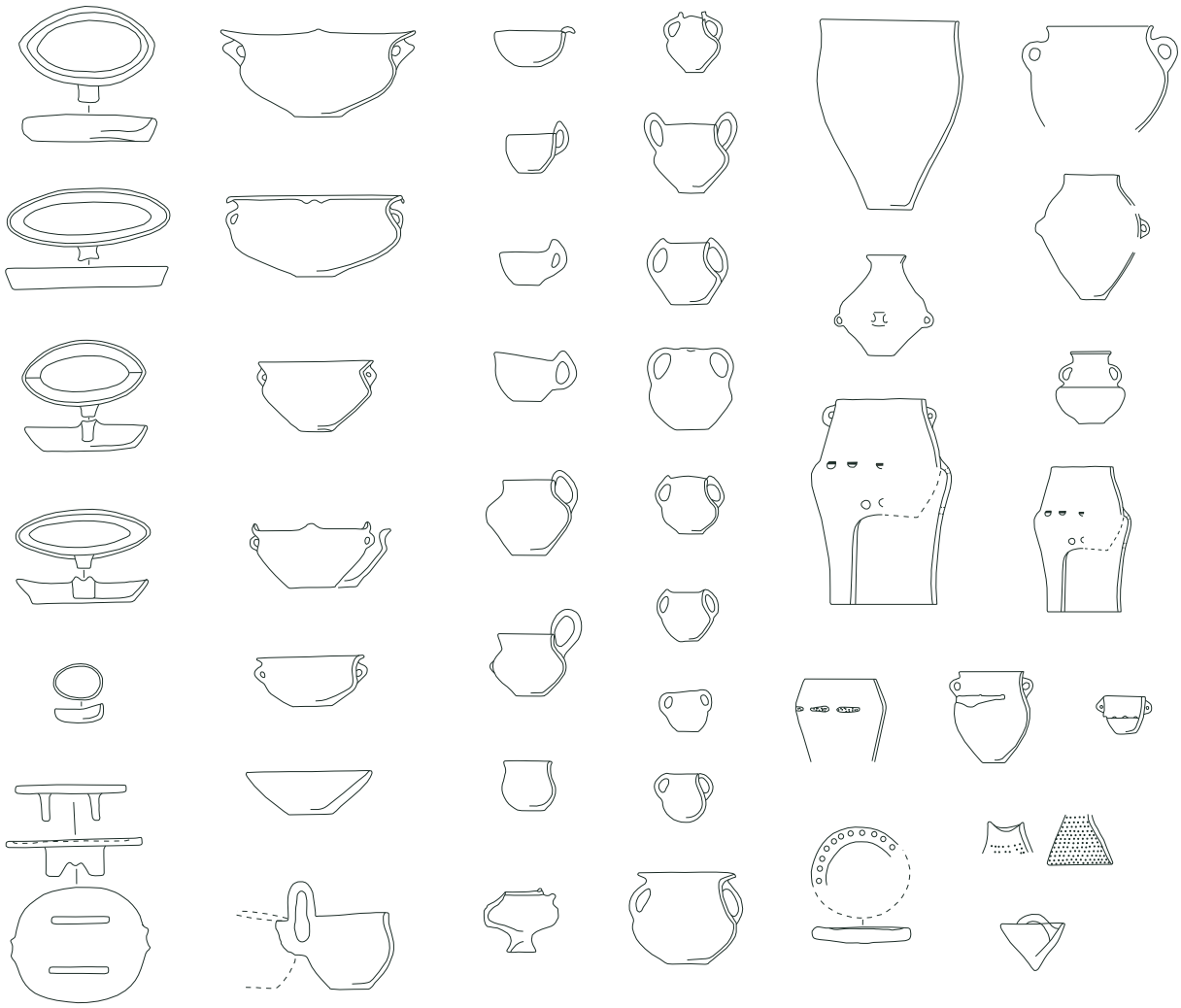

Fig. 9. Feudvar. Ideal pottery inventory of the Vatin culture in the Bronze Age houses of trench W (after Ihde 2001, Fig. 268).

phases in the same house contexts (Fig. 8). This observation could be interpreted to the effect that certain groups residing in Feudvar for several generations maintained individual contacts to settlements in neighbouring cultural areas[47].

A remarkable finding is a bronze workshop in the midst of the Early Bronze Age residential buildings at Feudvar. The workshop building, which is attested only in one building phase, on one hand fits into the rectangular layout of the settlement. On the other hand it is architecturally distinguished as a special building by its smaller size and particular internal structure (Fig. 10). It can thus be concluded that when the settlement was newly constructed the building was planned as a workshop and used for this purpose until its destruction. In the open front part of the building the workplace of a craftsman was indicated by numerous production residues. These include casting moulds, core supports, crucibles and a fragment of a male mould, but also grinding plates for the finishing of the castings. The fragments of moulds represent a wide range of bronze items including weapons, tools and jewellery (Fig. 11). It is therefore likely that the craftsman working in the shop was able to cover the entire demand for high-quality bronze products of the inhabitants of Feudvar[48].

47 Hänsel / Medović, 1989 / 90, 120; id. 1994, 191–193; Ihde 2001, 267–281; 323–325 figs. 275–279; 353–357; 370.
48 Hänsel / Medović 1991, 82–83; id. 2004, 83–86; Kienlin 1997, 2–4; 13–15; id. 2009, 140–142.

Fig. 10. Feudvar. Section of trench E with ground plan of the workshop of a bronze founder. Metallurgical finds: 1. Core support; 2. Fragments of multi-part clay moulds; 3. Fragments of broken clay moulds; 4. Stone plates; 5. Crucibles; 6. Fragment of male mould; 7. Pottery (after Hänsel / Medović 2004, Abb. 2).

Fig. 11. Feudvar, trench E, workshop of a bronze founder. Fragment of a two-part clay mould for casting a socketed spearhead.

Based on the results of the large-scale excavations, the number of inhabitants of the fortified settlement has been estimated and extrapolated by the excavators. The preserved area of the settlement mound allows to reconstruct about 80 houses. The estimated size of the groups inhabiting the fairly uniform residential buildings is based on an average of four adults and four children. This results in a population of 640 people. Further, larger open spaces are on one hand to be expected in the unexcavated areas of the settlement and, on the other hand, it is likely that at least half of the settlement fell victim to soil erosion of the slopes caused by the Tisza. In all, the excavators thus assume an average population of around 1000 people[49].

Drillings and geomagnetic prospecting in the area at the edge of the mound have demonstrated that a monumental defensive ditch up to 30 m wide and more than 5 m deep marked off the core of the multilayered settlement towards the plateau, however the ditch is dated not more precisely than to the Early Bronze Age (Fig. 12). At this time, a suburbium which extended over 1 ha existed immediately outside the eastern section of the ditch and the area of the gate. The remnants of an up to 1 m thick cultural layer prove that this was a permanent settlement[50].

A few hundred meters eastwards from the mound of Feudvar the settlement area is limited by the V-shaped valley of the Dukatar surduk. Just beyond this surduk an inhumation grave of the classical Vatin culture was uncovered which relates without doubt to the settlement[51].This until now unique evidence of a grave of an inhabitant of Feudvar proves a conservative adherence to the traditional inhumation custom in the developed Early Bronze Age.

In the residential area of Feudvar neither buildings nor work zones have been encountered that were demonstrably used for agrarian production, as also farming equipment is conspicuously underrepresented

49 Hänsel 1996, 247; Hänsel / Medović 2004, 87.

50 Hänsel 1998, 29; id. 2002, 80; Falkenstein 1998, 139–40, 151–152 figs. 31; 33; Gomme 1981, 92–94.

51 Medović 2007, 12–13; 78–79 fig. 7. The grave containing a Vatin kantharos and a jar of the Southern Transdanubian Incrusted Pottery can be dated to the pre-Szeremle horizon of Incrusted Pottery culture (after Reich 2006, 237–239 fig. 112,K-Ra).

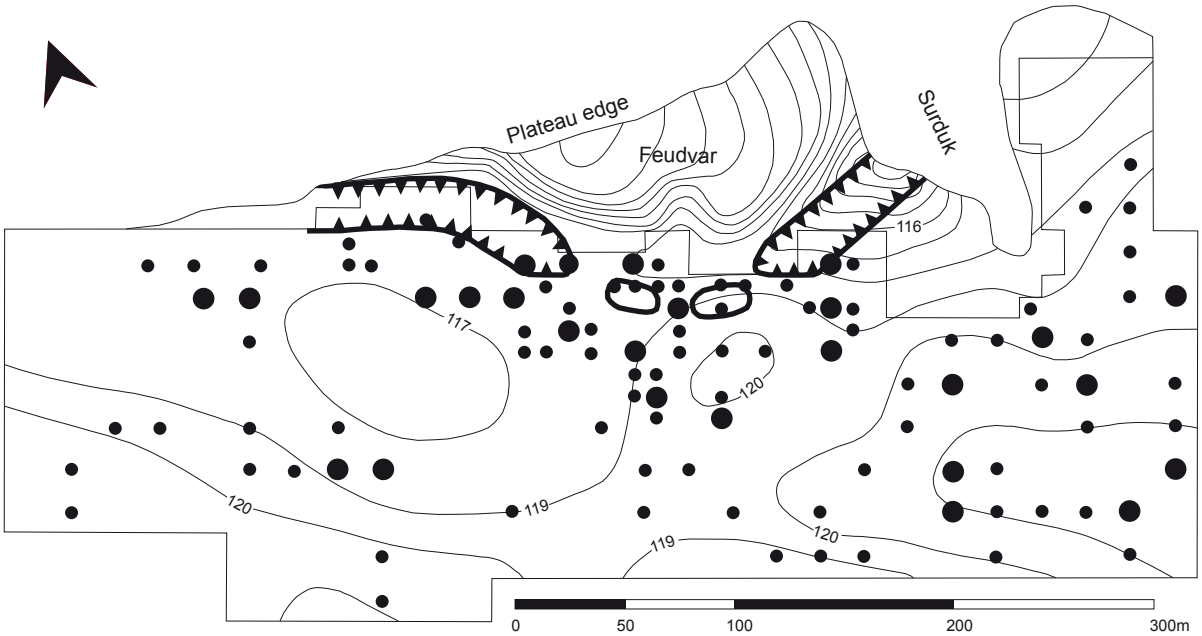

Fig. 12. Feudvar Suburbium – Survey. The course of the Bronze Age ditch is detected by drillings and geomagnetic prospection. Intensive surface collection in the suburbium, black dots signify the distribution of pottery fragments, respectively the expansion of the settlement area of the Middle Bronze Age Vatin culture (horizon 13) (after Falkenstein 1998, Fig. 37).

among the finds[52]. For this reason it can be assumed that the Early Bronze Age settlement complex of Feudvar was characterised by a hierarchical division of labour between the core settlement area and the suburbium. Accordingly, two sites that were located on spurs of the northeastern edge of the plateau in 4–5 km distance from and just within sight of Feudvar could have functioned as subsidiary satellite settlements (Fig. 5)[53].

The concept of a hierarchical division of labour is also supported by the archaeobotanical findings. Thus, einkorn wheat was cultivated as the main crop among the winter cereal crops at the time of the Vatin culture. Therefore it can be concluded that einkorn wheat was extensively cultivated, and this implies a great demand for agricultural land. The range of crop weeds suggest that the cultivation of cereal crops did not take place in the humid floodplain, but on the fertile and comparatively dry loess of the plateau. Besides einkorn wheat, barley, emmer wheat and broomcorn millet were of economic importance, i. e. cereals which are suitable mainly for consumption as mushes and flat cakes but not for baking real bread. In addition, several mass findings of brewer's grain (malt) that had germinated in a controlled manner make the production of beer in the Early Bronze Age very likely[54].

The large quantities of animal bones found in Feudvar also allow to reconstruct the basic nutrition strategies of the Early Bronze Age. Due to an inexhaustible abundance of game in the vast floodplain forests of the Tisza and Danube river basins, the proportion of hunted animals in meat consumption is unusually high. Thus, notably intensive hunting for deer (26.5 %) was practised in the floodplains, whereas wild boar and aurochs (4–5 %) were hunted more rarely. Fish, often of considerable size, were caught with fishing rods, harpoons, nets or fish traps and provided a welcome supplement to the diet[55]. With regard to the meat consumption in the settlement, the proportion of cattle, pig and horse (15–18 %) is approximately balanced, and sheep / goat (12 %) were consumed less frequently. Overall, an unspecialised animal hus-

52 Gačić 1991.
53 Falkenstein 1998, 227–234 fig. 199; 206; 267 fig. 235.
54 Kroll / Borojević 1988; Kroll 1991a; id. 1997, 195–197.
55 Blažić 1991.

bandry seeking to ensure the optimal utilization of all resources of the natural habitat is assumed[56]. In addition to the role of domestic animals as meat suppliers, an intense and varied use of their secondary products such as milk, wool and labour is presupposed already for the Early Bronze Age. The unusually high proportion of the domestic horse (15.2 %), also in comparison with other Early Bronze Age settlements in this cultural area, suggests a frequent use of horses for riding and as draught and pack animals in the settlement. The analysis of the bones testifies that the horses were brought into the fortified settlement for slaughter, then consumed and their remains disposed of on site[57].

On the basis of recent climatic conditions, it is expected that the prevailing vegetation in the climate zone and on the black earth-covered loess plains of the Tisza estuary was the forest-steppe. Up to the present day remnants of the early Holocene steppe vegetation of a Pontic-Pannonian type have survived in niches in the landscape. The botanical macro-remains of Feudvar indicate that an open thermophilic mixed forest probably existed on the Titel plateau at the time of the Early Bronze Age. In the vicinity of the settlements this natural vegetation disappeared due to the demand for arable land, pasturages and firewood, however the forest resources on the plateau were not exhausted. The clearing of forests and grazing resulted in the appearance of secondary bush vegetation which offered a wide range of fruit. However, for this period there is no evidence for an emerging anthropogenic steppe as is characteristic of the landscape of historical times[58].

4.2 The Middle Bronze Age

4.2.1 Late Vatin Culture

Although the settlement mound of Feudvar remained continuously occupied, the transition to the Middle Bronze Age around 1600 BC (layers H–I, Feudvar IV, horizon 13) brought about gradual changes in the cultural and settlement history. Notably, the Early Bronze Age settlements in the wider area were apparently abandoned and the settlement activities concentrated in the fortified settlement of Feudvar and its immediate surroundings (Fig. 5). The suburbium was now considerably expanded to an area of about 6 ha, and this could well indicate an increasing population due to immigration (Fig. 12). The apparently unfortified settlement extended as far as 200 m from the ditch and gate as well as from the Feudvar surduk which provided vital access from the lowland[59].

The Middle Bronze Age settlement phase of Feudvar (layers H–I; Feudvar IV) initially saw a continuation in the layout of residential areas. However, the archaeological evidence of the latest settlement stratum I is extremely patchy and largely obscure, so that no reliable conclusions can be drawn regarding the structure and density of the buildings. The reason for this is that habitation was discontinued in the fortified settlement and the suburbium around the middle of the 2nd millennium BC. A hiatus of several centuries followed during which the surface level of the Middle Bronze Age settlement was exposed to weather conditions and bioturbation, and this resulted in severe damage to near-surface archaeological features[60].

Already in the pottery phase Feudvar IIIb, before the end of the Early Bronze Age, significant influences of the Moriš culture can be traced in the pottery, with a growing tendency in the following period (Fig. 13). Notwithstanding a continuous development of the local pottery styles, in the Middle Bronze Age phase Feudvar IV the ceramic elements of the Moriš culture eventually dominate in relation to the still strong Vatin tradition. Thus, in the settlement layer I a house context (house V 5) can be singled out which adhered to the ‚antique' decor of the Vatin culture (styles A1, A2), whilst adjacent contemporary house contexts readily picked up impulses for a syncretic decor (style A3) (Fig. 8)[61].

56 Becker 1998, 322–324.
57 Becker 1994, 33–35; id. 1998, 328–330.
58 Kroll 1998, 308–309; Butorac 1998.
59 Falkenstein 1998, 150; 152 fig. 37; 368–369 fig. 236.
60 Hänsel 2002, fig. 2; Ihde 2001, 369–371; Falkenstein 1998, 137–138.
61 Ihde 2001, 325; 367.

Fig. 13. Feudvar. Pottery assemblage of the Middle Bronze Age Vatin culture.

At the same time, immediately south of the Danube the Middle Bronze Age Belegiš group (Belegiš Ia) emerged without a cultural break, but as a distinct phenomenon, from the cultural substratum of the Syrmian-Slavonic group of the Vatin culture, the ceramic characteristics of the Belegiš group differing clearly from those of the settlement of Feudvar. The conspicuous absence of imported vessels of the early Belegiš group in Feudvar indicates that relations across the Danube with the Syrmian cultural area were interrupted[62].

At the beginning of the Middle Bronze Age we therefore observe a socio-cultural separation of the Tisza estuary area from the Syrmian-Slavonic group of the Vatin culture, and at the same time an incorporation of the settlement complex of Feudvar with its important transport connections into the cultural area of the Tisza-Moriš region[63].

The handing down of ceramic styles from the Early Bronze Age, and the continuity of the building structure indicate a conservative attitude of the inhabitants of Feudvar in the early Middle Bronze Age. Whilst neighbouring regions saw processes of cultural transformation that were partly brought about by severe changes, such as the abandonment of a number of multilayered settlements and the introduction of the canonical urn grave custom, the Tisza estuary area, similarly to the Moriš region, adhered to the Early Bronze Age cultural system of central settlements scattered like islands in the landscape. However, also in Feudvar a profound structural change is testified by the concentration of the population in the fortified settlement and suburbium, as well as by the cultural separation from the early Belegiš group south of the Danube and the integration into the Moriš cultural area. Finally, after about half a millennium of continuous habitation the settlement of Feudvar is abandoned around 1500 BC. This decline of settlement activities falls in a period of regional crisis around the middle of the second millennium BC, when all multilayered settlements in the Carpathian basin were abandoned. The causes of that crisis were without doubt complex, as can be seen from the fact that the settlements collapsed at different times, as well as from the varying local scenarios. In general terms, it would be expected that the decline of the Early Bronze Age tell cultures in the Carpathian basin was effected by an interplay of social, economic and climatic factors[64].

4.2.2 Early Belegiš Group

The further cultural development of the Tisza estuary area in the Middle Bronze Age is marked by a structural break that could hardly be more dramatic (Fig. 14). At about 1500 BC, i. e. approximately at the same time when the settlement of Feudvar was abandoned, for the first time in the settlement history

62 Ihde 2001, 351.

63 Ihde 2001, 367; Falkenstein 1998, 81–83.

64 David 1995, 248–260; David 2009, 573–575; Gogâltan 2005, 171–173; Fischl et al. 2013.

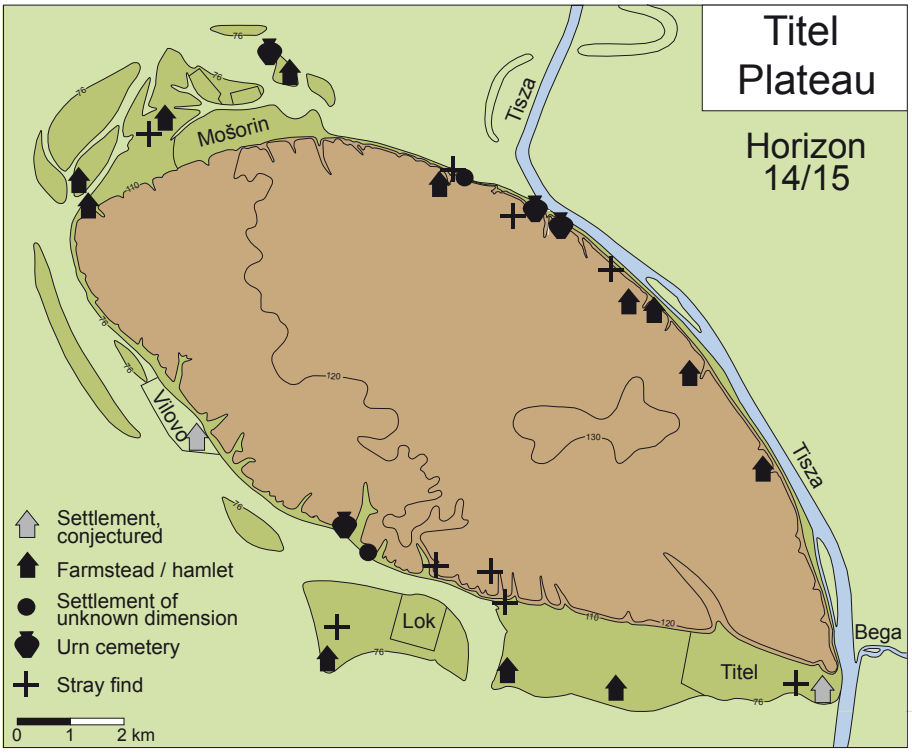

Fig. 14. Titel Plateau. Sites of the Middle and Late Bronze Age Belegiš group (Belegiš Ib–IIa) (after Falkenstein 1998, Fig. 237, 238).

the entire area of the Titel plateau that was favourable for human occupation was inhabited (horizon 14). Thus, a system of unfortified farmsteads and hamlets now emerged at distances of an hour's walk (3–5 km) along the riverside edges of the plateau and terraces[65]. Furthermore, numerous sites with Belegiš pottery and incrusted late Szeremle pottery on the opposite river terraces of the Bačka (Šajkaška) testify that this decentralised settlement pattern of the Middle Bronze Age probably extended over the entire area of the Tisza estuary[66]. Since a small settlement of the kind existed also on the southern flanks of the Šocin surduk at a short distance from Feudvar, the deserted settlement mound by that time apparently no longer had any effect on the settlement activity[67]. Only in the cemetery at Stubarlija surduk east of Feudvar burials possibly continued on a local scale. There, next to the above mentioned single inhumation of the Vatin culture, a vast Middle Bronze Age cemetery with urn graves of the Belegiš and Szeremle group has been recorded[68].

The ceramic finds from the settlements and cemeteries of the Titel Plateau and the adjacent part of Šajkaška show characteristics of two different pottery stiles. Thus, ornamented ceramic shapes of the developed early Belegiš group (Belegiš Ib) and the late Szeremle group appear side by side. The incrusted late Szeremle pottery according to the studies of Ch. Reich represents the most recent occurrence of Middle Bronze Age Incrusted Pottery along the Danube. Besides the Drava estuary and the Iron Gates region, a micro-regional agglomeration of settlements and cemeteries with Incrusted Pottery is evident also in the area at the confluence of the Tisza and Danube[69]. In addition, anthropomorphic clay figurines with incrusted ornamentations that are also characteristic of the Late Szeremle group were frequently

65 Falkenstein 1998, 269–270 fig. 237.
66 Medović 1998b, 151–153; 163 map 3.
67 Falkenstein 1998, 156–157 fig. 56–57; fig. 237.
68 Medović 1996, 163–165; id. 2007, 79–85; Falkenstein 1998, 158–160 fig. 59.
69 Reich 2006, 315–326; 332–334 fig. 177; 181.

encountered[70]. Thus, a discontinuity of the Vatin-Moriš culture of the early Middle Bronze Age at Feudvar can be observed both in the settlement pattern and in the development of the pottery, and on this basis it is possible to postulate a population change in the micro-region at about 1500 BC[71].

4.3 The Late Bronze Age

4.3.1 Late Belegiš Group

The settlement pattern that was installed in a short time and perhaps in the course of systematic colonisation by population groups from the Danube-Sava region (Belegiš group) and from the confluence of the Danube and Drava (Szeremle group) remains virtually unchanged from the Middle to the Late Bronze Age (15th–13th century BC) (horizon 14–15). Only at local level can be observed that individual buildings were moved from one place to another, whereby the built-up areas of the open hamlet-like sites tended to increase[72].

The time of the greatest possible continuity of settlement is however characterised by a drastic change in pottery decoration from the incised, stamped and incrusted pottery of Middle Bronze Age type (Belegiš Ib, Late Szeremle) to a black-polished and fluted ware of the Late Bronze Age Belegiš group (Belegiš IIa), whilst the shapes of the vessels continued without a break[73].

The subsequent settlement phase (horizon 16) of the latest Belegiš group (Belegiš IIb) of the 12th–11th century BC is a transitional phase that shows signs of disintegration of the traditional settlement structure. Thus, at the beginning of the phase all earlier sites were abandoned, and new settlements were built at distances of a few hundred meters to two kilometers. Also, in the urn grave cemetery of Stubarlija which is unfortunately only partly excavated the burial activities seem to cease at the beginning of Belegiš IIb phase.

As the area of exploited agricultural land and the settlement density remained virtually the same, it would be expected that the restructuring was caused by socio-political rather than economic or demographic factors. However, the former even distribution of hamlets in the landscape was replaced by a less regular settlement pattern comprising sites of very different sizes. Thus, farmsteads and hamlets now alternated with large settlements of village-like character[74].

Whilst the shapes of the pottery gradually changed, the black polished surfaces and the fluted decoration of the later Belegiš group continued. In addition, coarsely made vessels with incised and stamped decoration appear in a still small, but already regular proportion and thus mark the beginnings of the Early Iron Age Bosut group[75].

From the characteristic finds in Feudvar it appears that, in the course of the reorganisation of the settlement pattern on the Titel plateau in the 12th / 11th century BC, also the Bronze Age settlement mound of Feudvar was occupied again. The transition from the Middle Bronze Age settlement to the Late Bronze Age habitation, with the intervening hiatus, seems to correspond stratigraphically with level I after Röder in excavation trenches D and E[76]. The apparent decline in the settlement structure and in the pottery production support the view of a period of cultural transition and reorientation between the Late Bronze and Early Iron Age in the middle Danube region[77].

70 Hänsel / Medović 1988 / 89, 36 pl. 9,4; Falkenstein1998, 83–87; 106 pl. 57,7–9; 58,1–4; Medović 1998a, pl. 16,1; 36,2; id. 1998b, 153–154; id. 2007, 59–61.

71 Falkenstein 1998, 83–87; 106.

72 Falkenstein 1998, 271 fig. 238.

73 Falkenstein 1998, 87–89.

74 Falkenstein 1998, 271; 274 fig. 239.

75 Falkenstein 1998, 89–91.

76 Röder 1991, 129–131. See also Falkenstein 1998, 134; 136–137; Ihde 2001, 338–339.

77 Medović 1988 / 89, 45–47.

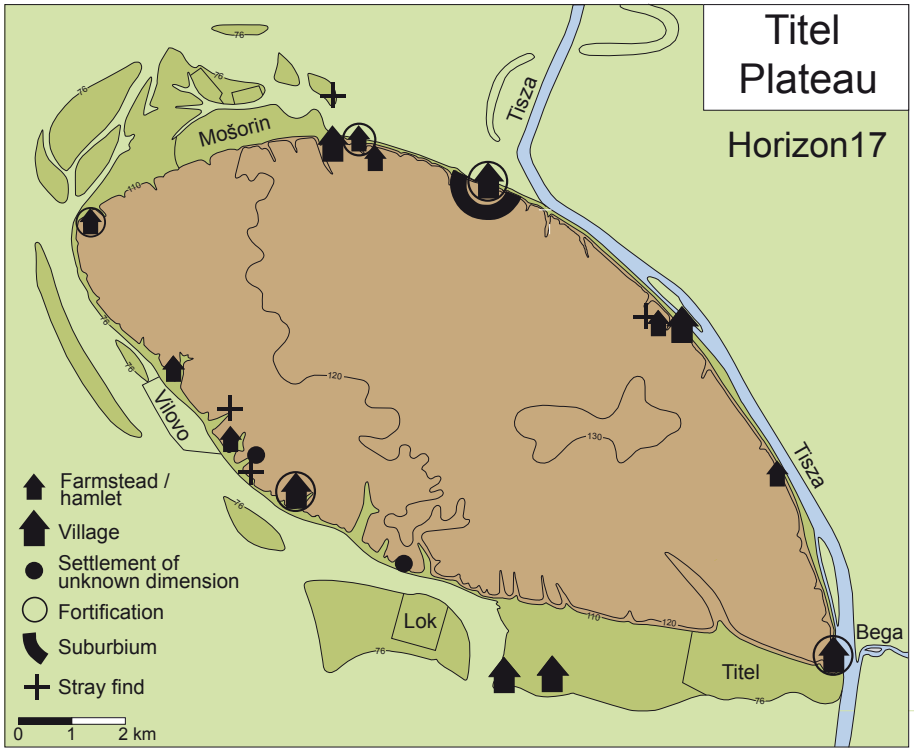

Fig. 15. Titel Plateau. Sites of the Early Iron Age Bosut group (Kalakača phase) (after Falkenstein 1998, Fig. 240).

4.4 The Early Iron Age

4.4.1 Early Bosut Group

The beginning of the Early Iron Age in the Tisza estuary area and throughout the Serbian Danube region is characterised by the appearance of the early Bosut group (Kalakača horizon). Compared with the black-polished fine ware of the Late Bronze Age there is now a prevalent trend towards coarser ceramic wares, as well as a sharp decline of fluted decorations in favour of incised, stitched and stamped ornaments[78].

In the settlement phase of the early Bosut group (horizon 17) either a significant increase nor a reduction of settled area can be observed in relation to the immediately preceding period, thus the population size in the micro-region of the Titel plateau was presumably fairly stable. However, the settlement pattern had been radically regulated through resettlement measures that affected about two thirds of the existing sites (Fig. 15). Along the edge of the plateau towards the Tisza the mostly village-like sites were situated at regular distances of 2.5–4 km and within sight of each other. Especially striking is the complete depopulation of the lower terraces, for all settlements originally located at the foot of the plateau or in the plain were moved to the shelter of a nearby spur of the plateau. In addition, the settlements on the promontories at the natural access routes to the micro-region were protected by earthworks[79].

The earliest Iron Age settlement of Feudvar on the central northern edge of the plateau was likewise fortified by a ditch approximately 10 m wide and up to 4.5 m deep (Fig. 16). Two passageways flanked by the inwardly receding ditch give reason to expect pincer gates. The excavated earth from the ditch was used to level the area in front of the fortified settlement, and therefore the remains of the Bronze Age

78 Medović 1991, 147; Falkenstein 1998, 91–93.
79 Falkenstein 1998, 274–275 fig. 240; id. 1999, 114–115 fig. 5.

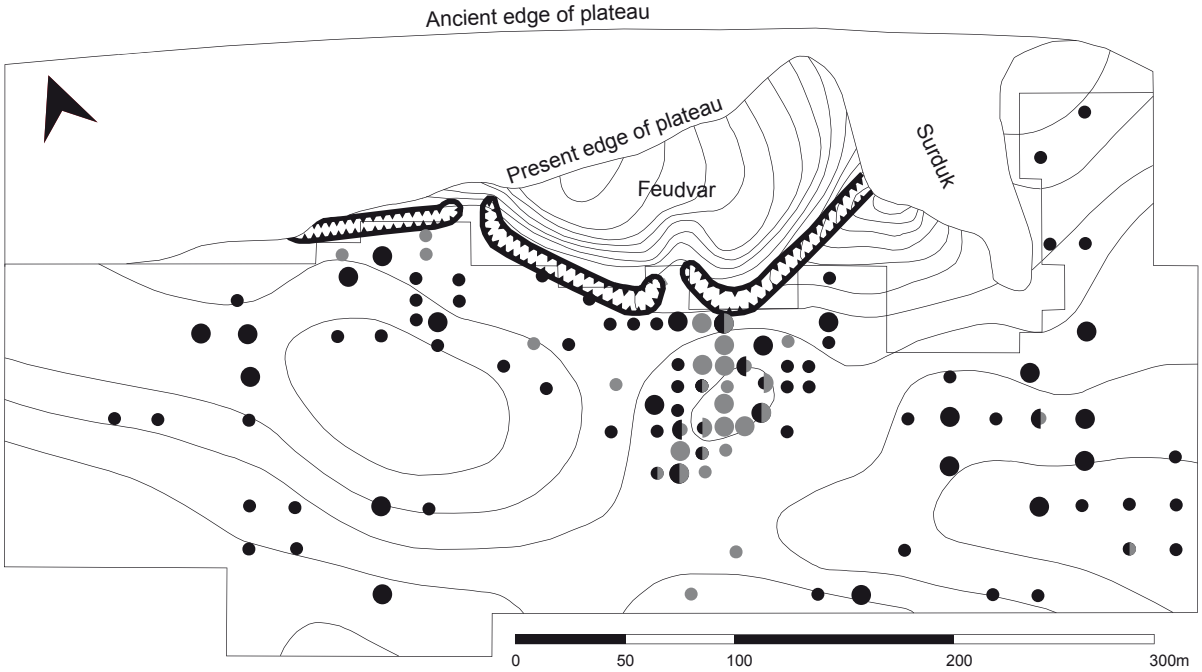

Fig. 16. Feudvar Suburbium – Survey. The course of the Early Iron Age ditch is detected by drillings and geomagnetic prospection. Intensive surface collection in the suburbium, dots signify the distribution of pottery fragments, respectively the expansion of the Early Iron Age settlement areas (Bosut group). Black dots: pottery of the Kalakača phase (horizon 17); grey dots: pottery of the Basarabi phase (horizon 18) (after Falkenstein 1998, Fig. 38, 39).

ditch were also completely levelled. Immediately on this levelled loess layer the suburbium of the Kalakača period was built, which extended over an area of approximately 6 ha (Fig. 16)[80].

The beginnings of the Bosut group are therefore marked by strategic measures that were carried out with considerable effort. As a result, the settlement activities were shifted from the lower terraces to naturally protected locations on the Titel plateau and the settlement area was safeguarded at the neuralgic points against military attacks from the outside.

The resettlement and reinforcement measures take place at a time when a complex cultural change can be discerned in the Carpathian basin. In the zone of the Great Hungarian plain, the cultural break has especially dramatic effects. Thus, the settlements and urnfields of the Csorva, Kyjatice and Gáva groups in the middle and upper Tisza basin were in the course of 10th–9th century BC replaced by the burial sites of the Füzesabony-Mezőcsát group. The metal finds from the graves and depots represent a repertoire of forms of Pontic-Caucasian origin. At the same time it can be assumed, especially due to the lack of settlement remains, that the population groups in the Alföld were of nomadic steppe character[81]. The presence of a nomadic steppe population in the geographically adjacent lowlands is in perfect agreement with the resettlement and reinforcement activities of the early Bosut group, for such measures would be expected in the case of threat from steppe nomadic attacks.

By the time of the Kalakača period at the latest, the settlement complex of Feudvar due to its heavily fortified settlement and large suburbium could once more have functioned as a political centre in the micro-region of the Titel plateau. However, another large settlement in a strategic position now existed on the southeastern tip of the Titel plateau in the Titel-Kalvarija area[82].

80 Falkenstein 1998, 129–152 fig. 32; 38; Gomme 1991, 92–93.

81 Kemenczei 1984, 94– 96; Patek 1993, 19–21; Metzner-Nebelsick 1998, 360–362; 398–400.

82 Falkenstein 1998, 194–196.

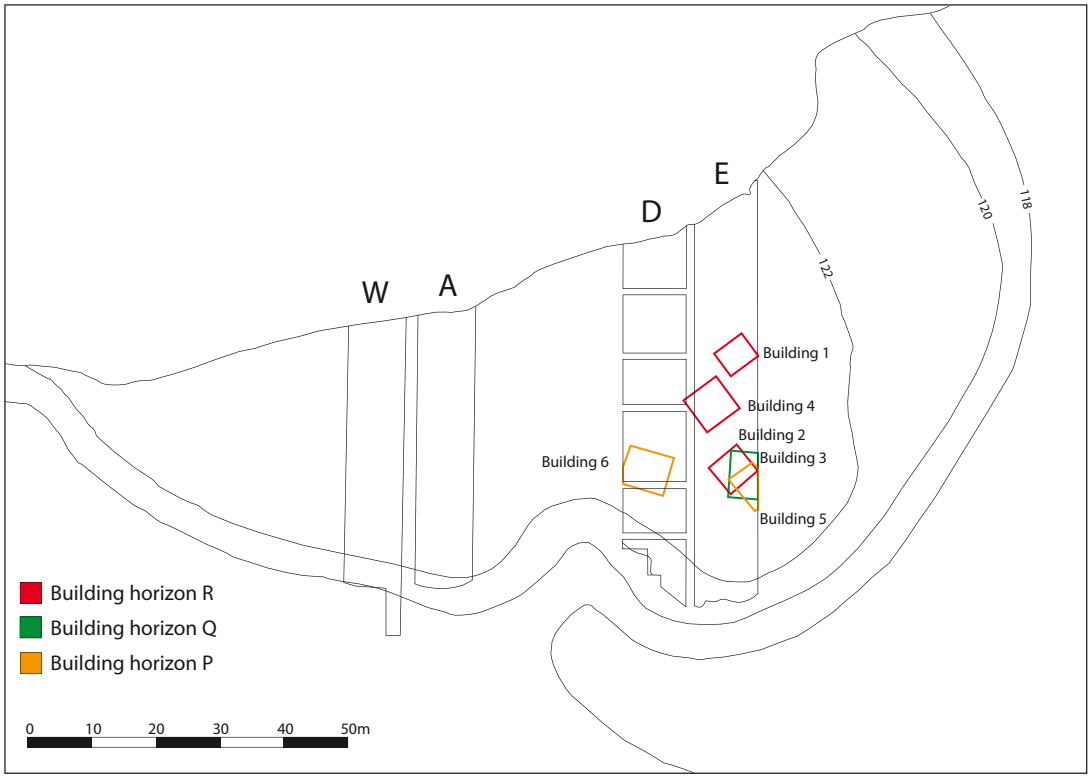

Fig. 17. Feudvar, trenches D and E. Schemes and horizons of Early Iron Age buildings (Kalakača and Basarabi phases) (after Röder 1995, Abb. 1, 12, 20, 29, 37, 43, 59).

The settlement stratum of the early Bosut group in Feudvar was identified stratigraphically as layer II by M. Röder and described by P. Medović. The characteristic layout at this time is defined by loosely arranged irregular groups of freestanding small buildings that were used only for a short time and are surrounded by alleys and open spaces (Fig. 17). The preserved parts of the buildings are often clay floors, hearths, post holes and burnt clay of the walls that were constructed of wattle and daub. The construction and dimensions of the houses remained the same throughout the Early Iron Age building phases (Fig. 18). The residential areas include storage facilities consisting of clay-lined pits, the pits being accessible, roofed over and arranged individually or in groups beside the residential buildings[83].

Building level P (houses 5 and 6) in excavation areas D and E corresponds to two stratigraphically earliest house contexts that were analysed by M. Röder and according to the ceramic finds date back to the very end of the Kalakača phase. Here, the first occurrence of incrusted stamped S-motifs marks the beginning of the Basarabi decorative style[84].

The range of species represented by the Early Iron Age animal bones from Feudvar points to gradual changes in subsistence strategies in comparison to the Early Bronze Age. As before, the floodplain forests of the Tisza lowland yielded large quantities of wild game, so that in the Early Iron Age the proportion of game meat could still rise. Regarding the role of the river as food resource there is, however, a shift in that the fish consumption declined noticeably, whilst the consumption of mussels doubled[85]. In the case of domestic animals, a change in food selection towards specialised meat consumption with a preference for horse meat can be determined. Whilst beef retained its importance, pig and sheep / goat was eaten significantly less. Of special importance is the doubling of the proportion of horse meat

83 Medović 1991, 144–146 fig. 27; Röder 1991, fig. 222.
84 Röder 1995, 33–35; 115–117; 124–126 fig. 64.
85 Becker 1998, 322–324; 327.

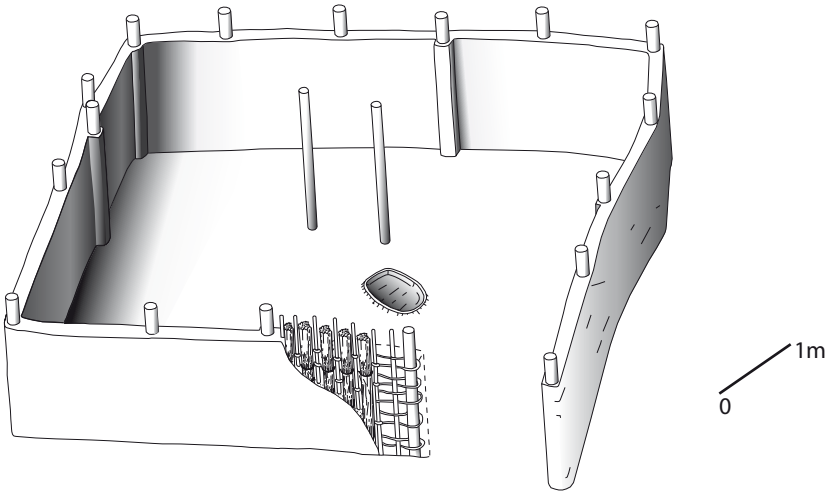

Fig. 18. Feudvar, trench E. Isometric reconstruction of house 1 (Building horizon R, Basarabi phase) (after Röder 1995, Abb. 7).

(31.6 %) compared to the Early Bronze Age. Half of the consumed horses were slaughtered already at juvenile to subadult age, before they could be of use as riding and work horses. This is remarkable because horse keeping for the purpose of meat production is, for species-specific reasons, extremely unprofitable and can only be imagined when the economy generates a surplus[86]. The preference of the population of Feudvar for horse meat must therefore be seen in the context of the cultural fabric of the lowlands of the Carpathian basin at the time of the Early Iron Age, which is characterised by steppe nomadic traits. Thus, it would be conceivable that goods were exchanged between sedentary farmers and pastoral horse breeders, for example at the occasion of regularly held livestock markets. Another possible explanation could be the adaptation of horse keeping in large transhumant herds, because on the plateau or on the sandy islands of the alluvial lowland herds of horses would have found ideal grazing grounds. Also, the botanical macro remains demonstrate a trend towards anthropogenic desertification of the hinterland by the time of the Iron Age at Feudvar, and this could have been another favourable factor for specialised horse keeping[87].

4.4.2 Middle to Late Bosut Group

The settlement phase of the early Bosut group (Kalakača horizon) on the Titel plateau, in the area of tension between farmers and nomadic horsemen, thus saw a well-organised settlement pattern with the highest population density ever reached in prehistoric times (Fig. 15). However, the prospering settlement region came to an abrupt end. Notwithstanding the earlier reinforcement measures, almost all settlements were abandoned at the transition to the middle Bosut group (horizon 18), and the landscape was depopulated. This resulted in a decreased number of settlement sites on the Titel plateau of about one-tenth[88].

On the basis of the pottery, the far-reaching events that caused the irreparable breakdown of the Early Iron Age settlement pattern can be assigned quite precisely to the transition from an early Basarabi style marked by stamped S-motifs to a developed Basarabi style characterised by incised and incrusted

86 Becker 1991, 188–189 Abb. 46; id. 1994, 29; id. 1998, 329–330.
87 Kroll 1998, 308–309.
88 Falkenstein 1998, 276–277 fig. 241.

Fig. 19. Feudvar. Pottery assemblage of the Early Iron Age Bosut group (horizon of Fluted Pottery).

two-dimensional ornaments. In terms of absolute chronology, we are thus likely near the transition from the 9th to 8th century BC[89].

Depopulation phenomena with such dramatic effects are noticeable throughout almost the entire area of the Bosut group at the end of the Kalakača period, and they are probably the reflection of a crisis period which finds visible expression in, among other aspects, the mass grave II in the settlement of the Kalakača period of Gomolava in Srem[90].

After the depopulation of the hinterland at the beginning of the 8th century BC only the fortified central settlement of Feudvar continued to be inhabited (horizon 18). The rapid shrinking of the population to probably less than one-tenth of the original population size is, at that point, observable not only on the small-scale regional but also at the local level, as a drastic reduction in built-up area is visible also in the suburbium. Thus the extensive suburbium of the Kalakača period (approximately 6 ha) was followed by a settlement of the middle and late Bosut group (horizons 18 and 19) with a very confined area of only about 0.5 ha (Fig. 16). In the characteristic settlement zones immediately outside the gate complex a row of buildings can be discerned that are aligned with the axis of the gateway. This ‚gateway settlement' provides indirect proof that the Iron Age earthwork was still functioning[91].

On the basis of the pottery, P. Medović has recognised a clear stratigraphic sequence of the Kalakača, Basarabi and Fluted Pottery periods (Bosut IIIa–IIIc / IVa–IVc) in Feudvar and defined it with reference to the settlement of Gradina on Bosut[92] (Fig. 19). M. Röder in his stratigraphic assessment of the house phases Q to S however places a different emphasis. Thus he stresses that high-quality wares and the associated surface polishing and fluted decoration were already revived at the transition to the Bosut II (resp. Bosut IIIb / IVb) period, without any sharp differentiation from the ceramic repertoire of the subsequent Bosut III (resp. Bosut IIIc / IVc) period. The ceremonial bowls of Basarabi style that occur irregularly among the pottery finds in houses he considers as no defining element of the Bosut pottery (Fig. 20)[93].

Due to the patchy nature of the settlement findings of the middle to late Bosut group in Feudvar, no reliable statements can be made with regard to continuities or breaks in the settlement sequence. The loose

89 Röder 1995, 132–133; Falkenstein 1998, 91–93; 276.
90 Farkas 1972 / 73; Falkenstein 1998, 276–277; id. 1999, 118–121.
91 Falkenstein 1998, 152 fig. 39–40; 276–277.
92 Medović 1978; Medović / Medović 2011.
93 Medović 1991, 148–151; Röder 1995, 137–139; 144–146; 160–161.

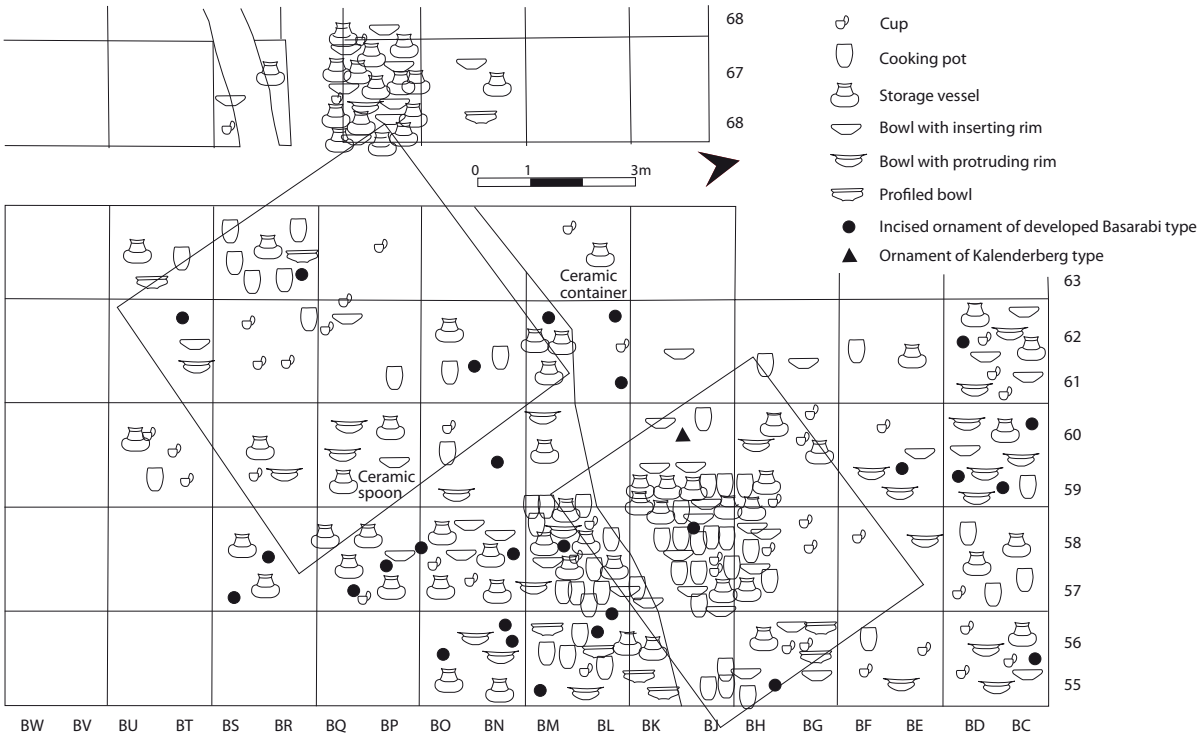

Fig 20. Feudvar, trench E. Schemes of the Early Iron Age houses 1 and 4 (Building horizon R) with selected types of pottery (after Röder 1995, Abb. 68).

arrangement of groups of freestanding rectangular buildings was retained, whereas in excavation trenches D and E the houses of the individual levels seem to have been uniformly aligned (Fig. 17). Between phases P, Q and R the orientation of the houses shifts by approximately 45° respectively, without however implying further-reaching conclusions. As layers of burnt debris show clearly, house fires continued to occur frequently throughout all Iron Age settlement phases[94]. Due to the presence of large numbers of storage vessels, cooking pots and animal bones in the area of house 1 of the Basarabi period and further, the find of a spiral decorated hearth nearby (Fig. 21), Röder identifies this finding as the remains of a special building to which he assigns a sacred character[95].

The uppermost Iron Age settlement deposits of the late Bosut group (Fluted Pottery period) are heavily weathered due to the millennia-long root activity of the surface vegetation, and we consequently know very little about the latest settlement phase of Feudvar. However, a striking number of *in situ* inventories of intact vessels were found in buildings that had collapsed in the fire and only a few decimeters below the recent surface. They are interpreted by the excavators in that the latest settlement was suddenly abandoned in a catastrophe and with the belongings of the inhabitants being left behind[96]. The time when Feudvar was abandoned has so far been only vaguely determined. Whereas M. Röder, though with certain reservations, assigns the finds from the most recent level S to the Ha D period P. Medović, on the basis of the single find of a small three-nozzled oil lamp, associates the end of the settlement in Feudvar with the so-called Syrmian group of the Western Balkan Complex of the 5th / 4th century BC[97]. Medović also

94 see Röder 1995, fig. 1–38.
95 Röder 1995, 1–3 fig. 7; 157–159 fig. 68; id. 1997, 53 fig. 2.
96 Hänsel / Medović 1991, 70; Medović 1991, 150.
97 Röder 1995, 160–161; Medović 1991, 150–151; Medović / Hänsel 2006, 494–495.

Fig. 21. Feudvar, Trench E. Early Iron Age Building horizon R (after Röder). Clay hearth with spiral ornamentation.

connects five graves of the Syrmian group in the cemetery area of Stubarlija surduk with the occupation level of the late Bosut group in Feudvar[98].

After the fortified settlement of Feudvar, which formed an isolated island in the steppe landscape, was finally destroyed around the 5th / 4th century BC the micro-region of the Titel plateau remained abandoned for several centuries. A grave find on the bottom of Feudvar surduk however attests the presence of Celts already in the early La Tène period (Lt B)[99]. When the settlement area was extensively reoccupied in the 2nd century BC, in the course of colonisation of the Tisza estuary area by population groups of the Celtic Scordisci, the focus of settlement had shifted to the southern tip of the plateau. Thus, at that time a large Celtic fortified settlement existed at the important geostrategic location of Titel-Kalvarija on the mouth of the river Tisza[100]. Thereafter, the prehistoric settlement mound of Feudvar has remained unaffected by the settlement activities of historical times on the Titel plateau.

98 Medović 2007, 86–91.
99 Kull 1991.
100 Falkenstein 1998, 277–279.

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