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*Archaeothanatology: An Interdisciplinary Approach on Death
from Prehistory to the Middle Ages*

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The cover image illustrates a human skull and the articulated limbs from
Alba Iulia-*Lumea Nouă*, Trench I/2011, square D (Poz-47402: 5690±40 BP)

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RADIOCARBON DATA OF FUNERARY DISCOVERIES FROM MIDDLE
BRONZE AGE SETTLEMENT AT MICEȘTI-*CIGAȘ*
(ALBA COUNTY, ROMANIA)

GABRIEL BĂLAN AND COLIN P. QUINN*

In the autumn of 2013 fragments of human bone were selected to date the burials in C.7/2009 and C.11/2012 at Micești-*Cigaș*¹ (fig. 1). The dating of bone collagen provides an accurate means of dating the death of the individual. Radiocarbon dates from bone collagen also are unaffected by the ‘old wood’ phenomenon that can affect conventional charcoal dates. A long bone fragment was selected from C.11/2012 and a rib fragment was selected from C.7/2009.²

Context	Sample Number	Date	Calibrated Date	
			1-sigma (68.1%)	2-sigma (95.4%)
C.7/2009	OS-108311	3460±25 BP	1872-1700 BC	1880-1693 BC
C.11/2012	OS-108811	3390±25 BP	1736-1645 BC	1745-1627 BC

Fig. 1. Radiocarbon dates from Micești-*Cigaș* site.

The radiocarbon dates from Micești are the first ones made for the Wietenberg IV phase. Also, there are very few dates for the other phases of the Wietenberg culture. There are currently only eight radiocarbon dates published on samples taken from Wietenberg sites, including those from Micești. Three dates were published this year from the site at Rotbav-*La pârâuț*. Prior to these dates, only three radiocarbon dates were known: two from Oarța de Sus and one from Sighișoara-*Cartierul viilor*. One of the dates (Ly – 9190) from Oarța de Sus (sample from a burned seed discovered in pit 22, in which there were potsherds specific to the IInd phase and a bronze shaft-hole axe) was dated between „1610-1445 BC, with maximum probability between 1589-1518-1469

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¹ For the archaeological contexts and discussion see in this volume Gabriel Bălan, “Deviant Burials of Wietenberg Culture at Micești-*Cigaș* (Alba County, Romania).”

² The samples were submitted to the National Ocean Sciences Accelerator Mass Spectrometry (NOSAMS) Laboratory at the Woods Hole Oceanographic Institution, Massachusetts, U.S.A. Bone collagen extraction was conducted by Noreen Tuross, with the final sample processing conducted by staff at NOSAMS Laboratory. Funding for the radiocarbon analysis was provided by the Wenner-Gren Foundation (Dissertation Fieldwork Grant 8655).

BC.”³ Also from Oarța de Sus was the published date Bln 5626: 3507±37 BP.⁴ The 2 sigma calibration of the date places the deposit between 1931-1701 BC (fig. 2). The radiocarbon sample from Sighișoara-*Cartierul viilor* – a settlement attributed to the IIIrd phase, „probably with Noua traits” – was dated to between 1685-1524 BC.⁵

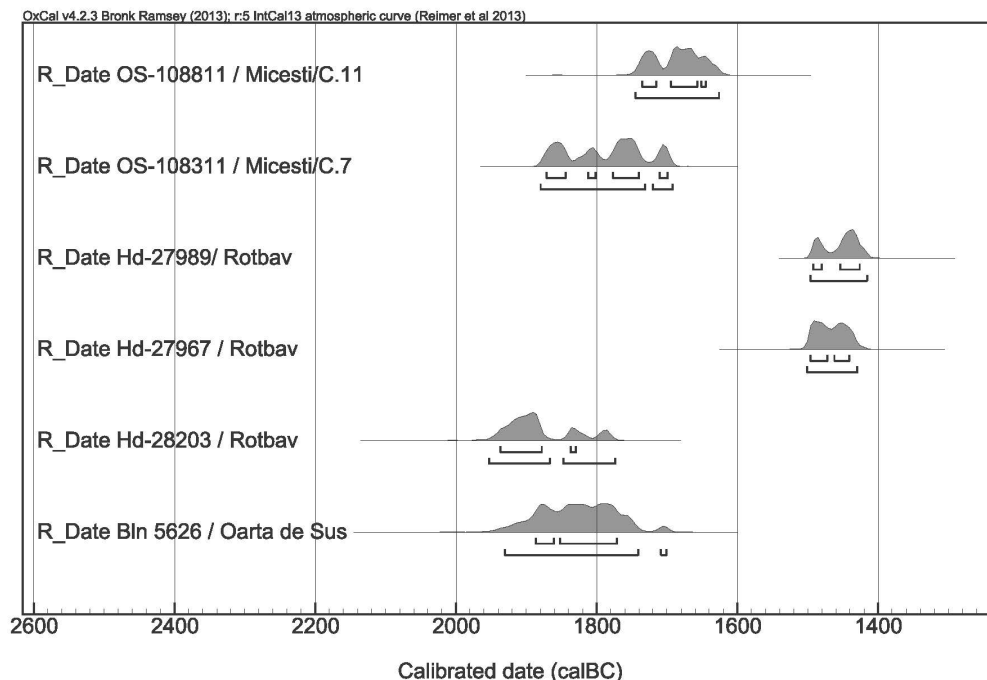


Fig. 2. Radiocarbon dates of Wietenberg culture with known BP dates.

From the Middle Bronze Age settlement at Rotbav there were three dates published (fig. 2): Hd-28203 (3547±24 BP, 1954-1774 BC calibrated 2 sigma); Hd-27967 (3195±19 BP, 1501-1430 BC calibrated 2 sigma) and Hd-27989 (3174±16 BP, 1497-1416 BC calibrated 2 sigma).⁶

The two dates from Oarța de Sus do not overlap and seemingly contradict each other. The sample Bln 5626 (3507±37 BP: 1931-1701 BC

³ Carol Kacsó, *Mărturii arheologice* [Archaeological Evidence] (Cluj-Napoca: Nereamia Napocensis, 2004) [Baia Mare: Colecții Muzeale 1], 60.

⁴ Jochen Görzdorf, “Datierungsergebnisse des Berliner 14C-Labors,” *Eurasia Antiqua* 11 (2005): 68.

⁵ Dumitru Popa and Nikolaus Boroffka, “Considerații privind cultura Noua. Așezarea de la Țichindeal, jud. Sibiu” [Considerations on the Noua Culture. The Settlement of Țichindeal, Sibiu County], *SCIVA* 47, 1 (1996): 56, n. 40.

⁶ Laura Dietrich, “Datele radiocarbon din așezarea aparținând epocii bronzului de la Rotbav (jud. Brașov, România)” [The Radiocarbon Dates from the Bronze Age Settlement at Rotbav (Brașov County, Romania)], *SCIVA* 65, 1-2 (2014): 60-61.

calibrated 2 sigma) seems to match expectations for dating, at least partially, the IInd phase (fig. 2). However, the interpretation is more complicated, as the depositional context included both Wietenberg III materials with ceramics belonging to the Noua culture. Alexandru Vulpe cast doubt on the two archaeological contexts, from Sighișoara and Țichindeal, which were presented as an argument for a partially synchronization of the Wietenberg III phase with the beginning of Noua culture in Transylvania.⁷ In the settlement at Rotbav, the dates from the samples Hd-27967 and Hd-27989 are similar to the dates from the stratigraphic contexts associated with the Noua culture in this site (fig. 3). However, sample Hd-28203 (3547±24 BP: 1954-1774 BC calibrated 2 sigma) is contemporaneous with other dated Wietenberg culture contexts.

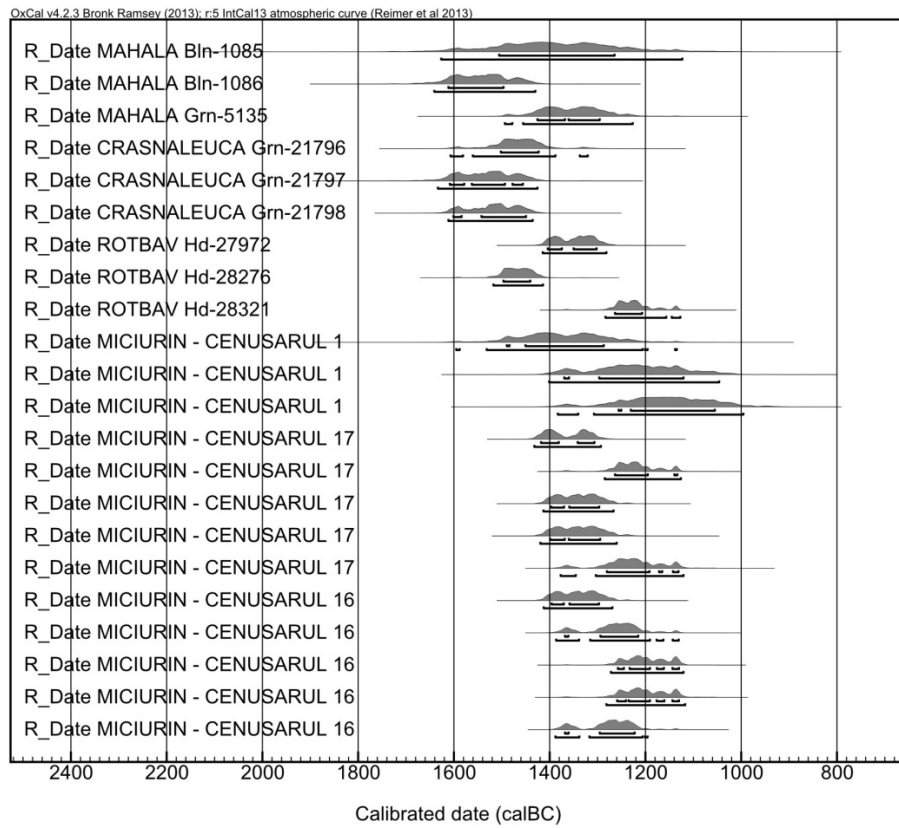


Fig. 3. Radiocarbon dates from Noua sites.

⁷ Alexandru Vulpe, "The Aegean-Anatolian and South-Eastern Europe in the Light of a Revision of the Bronze Age Chronology," in *Der Nordkarpatische Raum in der Bronzezeit, Symposium Baia Mare 7.-10. Oktober 1998*, ed. Carol Kacsó (Baia Mare: Muzeul Județean Maramureș, 2001) [Bibliotheca Marmatia I], 18, n. 46.

At Micești, the 19-18th centuries BC date from sample OS-108311 is difficult to accept as the last Wietenberg phase based on the current chronology (fig. 1). Sample OS-108811 is closer to the expected date (fig. 1). The 2 sigma calibration of the radiocarbon date in feature C.7/2009 (OS-108311) suggests the possibility of dating the death of the individual buried in the pit at the beginning of the 17th century BC. Together, it is clear that the Wietenberg IV settlement at Micești was founded by the 17th century BC. This is supported by the radiocarbon dates presented here, as well as overlap with other published radiocarbon dates from the earlier phases of the Wietenberg culture from Oarta de Sus (Bln 5626) and Rotbav (Hd-28203) (fig. 2). This could be considered the beginning of this phase, as we have attested at Micești-*Cigaș* the last two phases of the culture (III and IV). A partially chronological synchronization between the Wietenberg IV phase and Noua culture has been observed by several scholars.⁸ Radiocarbon dates from the Noua culture are important to test this model. The radiocarbon dates from Mahala,⁹ Crasnaleuca,¹⁰ Miciurin-*Odaia*¹¹ and Rotbav-*La pârauț*¹² are important. These radiocarbon dates definitively

⁸ Nicolae Chidioșan, *Contribuții la istoria tracilor din nord-vestul României. Așezarea Wietenberg de la Derșida* [Contributions to Thracian History from Northwestern Romania. The Wietenberg Settlement from Derșida] (Oradea: Muzeul Țării Crișurilor, 1980), 82; Ioan Andrițoiu, "Civilizația tracilor din sud-vestul Transilvaniei în epoca bronzului" [Bronze Age Thracian Civilization from Southwestern Transylvania], *BT 2* (1992): 53; Ioan Andrițoiu and Valentin Vasiliev, "Quelques considérations concernant la culture Noua en Transylvanie," *Cultură și Civilizație la Dunărea de Jos* 10 (1993): 104; Horia Ciugudean, *Cercetări privind epoca bronzului și prima vârstă a fierului în Transilvania* [Studies on the Bronze and First Iron Age in Transylvania] (Alba Iulia: Muzeul Național al Unirii Alba Iulia, 1997) [Bibliotheca Musei Apulensis VII], 79; Florin Gogâltan, "The Settlement of Cășeu and Some Problems Concerning the Late Bronze Age in the Center and Northern Transylvania," in *Der Nordkarpatische Raum in der Bronzezeit*, 196; Mihai Rotea et al., "Florești – Polus Center. Arheologie și termoluminescență [Florești – Polus Center. Archaeology and Thermoluminescence]," in *Vârste absolute prin metode nucleare de datare* [Absolute Ages by Nuclear Dating Methods], eds. C. Cosma, S. Varvara, and M. Gligor (Cluj-Napoca: Quantum, 2008), 163.

⁹ Ion Motzoi-Chicideanu, *Obiceiuri funerare în epoca bronzului la Dunărea Mijlocie și Inferioară* [Bronze Age Burials Customs in the Middle and Lower Danube Basin] (București: Editura Academiei Române, 2011), 565, n. 36: Bln-1085 (3135±100BP, 1700-1110 calibrated 2 sigma); Bln-1086 (3260±50BP, 1900-1250 BC calibrated 2 sigma); GrN-5135 (3100±50BP, 1460-1250 calibrated 2 sigma).

¹⁰ *Ibid.*, 565, n. 38: Crasnaleuca: GrN-21796, 3190±45BP, 2 sigma 1530-1380 BC; GrN-21797, 3250±50BP, 2 sigma 1640-1410 BC; GrN-21798, 3240±40BP, 2 sigma 1620-1410 BC.

¹¹ Elke Kaiser and Eugen Sava, "Die absolute Datierung der neuzeitlichen Fundstelle Miciurin-Odaia, Nordmoldawien," in *Der Schwarzmeerraum vom Äneolithikum bis in der Früheisenzeit (5000-500 v. Chr.): Kommunikationsebenen zwischen Kaukasus und Karpaten* [München: Prähistorische Archäologie in Südosteuropa 25], ed. Joni Apakidze et al. (Rahden/Westf.: Leidorf, 2009), 147-159.

¹² Dietrich, "Datele radiocarbon," 62, fig. 3-4: Hd-27972 (3085±23, 1415-1282 BC calibrated 2 sigma); Hd-28276 (3196±30, 1518-1415 BC calibrated 2 sigma); Hd-28321 (2994±19, 1284-1128 BC calibrated 2 sigma).

place the Noua culture between 1500-1200 BC. There are also some other dates which suggest the beginning of Noua culture could have been in the 16th century BC (fig. 3).

The Wietenberg culture represents the main cultural manifestation of the communities that lived in Transylvania during Middle Bronze Age. Ion Nestor gave the name of Wietenberg culture after a hill near Sighișoara.¹³ Prior to the archaeological excavations at Derșida,¹⁴ distinct phases of the culture were not recognised. Based on stratigraphy of the settlement recorded during fieldwork in the 1960s, the culture was divided into three phases.¹⁵ The existence of the fourth phase was noticed later by Nicolae Chidioșan, who presented the features of the ceramics that belong to it.¹⁶ The periodization in four phases was adopted by several Romanian Bronze Age scholars.¹⁷ In the 1990's, Mihai Rotea, according to the observations made on artefacts discovered in some Wietenberg sites, introduced a group named Bădeni III-Deva,¹⁸ which replaced the Wietenberg IV phase. The Otomani characteristics were not treated separately, as before.¹⁹ Rather, the Otomani characteristics were accepted as the main features of the new group. The same situation was recorded in the north-western part of the country, where the Otomani IV phase

¹³ Ion Nestor, "Der Stand der Vorgeschichtsforschung in Rumänien," *BerRGK* 22, 1932 (1933): 11-181, 92-94.

¹⁴ Ibid., 92-94; Kurt Horedt, "Donauländische Einwirkungen auf die bronzezeitliche Keramik Siebenbürgens," *Wiener Prähistorische Zeitschrift* 28 (1941): 83-95; Kurt Horedt, "Die Wietenbergkultur," *Dacia N.S.* 4 (1960): 107-137.

¹⁵ Kurt Horedt, "Problemele ceramicii din perioada Bronzului evoluat în Transilvania [Problems Concerning the Late Bronze Age Ceramics in Transylvania]," *StCom Sibiu* 13 (1967): 137-156, 138-141; Nicolae Chidioșan, "Beiträge zur Kenntnis der Wietenbergkultur im Lichte der neuen Funde von Derșida," *Dacia N.S.* 12 (1968): 155-175; Nicolae Chidioșan, "La périodisation interne de la civilisation Wietenberg sur le fondement des fouilles de Derșida," in *Actes du VIIe Congrès International des Sciences Préhistoriques et Protohistoriques, Pragues, 1966* (Praga: Academia, 1970), 622-624.

¹⁶ Nicolae Chidioșan, "Sincronisme ale apusene ale culturii Wietenberg stabilite pe baza importurilor ceramice" [Western Synchronism of Wietenberg Culture Based on Pottery Imports], *Crisia* 4 (1974): 167-168; Chidioșan, *Contribuții la istoria tracilor*, 81-84.

¹⁷ Tudor Soroceanu et al., "Cimitirul de incinerare de la Aiton" [Cremation Cemetery at Aiton], *FI* 4 (1976): 63, n. 37; Tudor Soroceanu and Mircea Istrate, "Faza finală a culturii Wietenberg" [The Final Phase of Wietenberg Culture], *StCom Sibiu* 19 (1975): 24-26; Ioan Andrițoiu, "Cimitirul de incinerare din epoca bronzului de la Deva" [Bronze Age Cremation Cemetery from Deva], *SCIVA* 29, 2 (1978): 254; Idem, "Contribuții la cunoașterea culturii Wietenberg în sud-vestul Transilvaniei (I)" [Contributions to Knowledge of Wietenberg Culture in South-Western Transylvania (I)], *Sargetia* 20 (1986-1987): 45-63; Andrițoiu, "Civilizația tracilor," 53-54; Mihai Rotea, "Penetrația culturii Otomani în Transilvania. Între realitate și himeră" [Penetration of Otomani Culture in Transylvania. Between Reality and Negation], *Apulum* 31 (1994): 39-57.

¹⁸ Rotea, "Penetrația culturii Otomani."

¹⁹ Andrițoiu, "Civilizația tracilor," 56: artefacts discovered in a pit at Deva – *Cimitirul ceangăilor* were analysed different, some in Wietenberg culture chapter (pl. 34) and others in Otomani culture chapter (pl. 47/1).

was renamed as Cehăluț group,²⁰ which has correspondent in Hungary the Hajdúbágos group.²¹ Few years later, Horia Ciugudean published new ceramic materials from several sites, including some from archaeological contexts. These sites were included by him in Wietenberg IV phase.²² He continues to use the name of Wietenberg culture for this kind of materials, but he also accepts the existence of Bădeni III-Deva group.²³ Nikolaus Boroffka, in parallel with Rotea and Ciugudean, proposed a new periodization of the culture – also in four phases – but named A, B, C and D. This chronology differs from the older periodization in the structure of the first phases: phase A was divided in two and includes materials which were previously attributed to the IInd phase (e.g. the spiral motif). Additionally, the B phase includes elements that were previously specific for the IInd phase, but also for the IIIrd one (e.g. stippling technique/*Zahnstempelung*). The phases C and D remain similar to the IIIrd and IVth phases, only that there were attributed more elements to B phase,²⁴ which were previously specific to the IIIrd phase. We have chosen to use in this study the old periodization, as a result of the confusion created through the attribution of the stippled decoration to the B phase. Chidioșan mentioned the fact that in the settlement at Derșida there was no stippled decoration technique in the levels attributed to the IInd phase.²⁵ Other sites belonging to the IInd phase (Păuleni,²⁶ Boiu,²⁷ Sebeș-*Podul Pripocului*,²⁸ Turia,²⁹ Oarța de Sus³⁰) have ceramic materials that do not present this technique.

²⁰ Carol Kacsó, “Beiträge zur Kenntnis des Verbreitungsgebietes und der Chronologie der Suci de Sus-Kultur,” *Dacia N.S.* 31 (1987): 72; Carol Kacsó, “Faza finală a culturii Otomani și evoluția culturală ulterioară acesteia în nord-vestul României” [The Final Phase of Otomani Culture and Its Subsequent Cultural Evolution in Northwestern Romania], *StCom Satu Mare* 14 (1997): 85-110.

²¹ Tibor Kovács, “A hajdubagosi bronzkori temető - Bronze Age Cemetery at Hajdubagos,” *Folia Archaeologica* 21 (1970): 27-47; János Németh, “The Hajdúbágos / Pișcolt-Cehăluț Group,” in *Bronze Age Communities in the Carpathian Basin. Proceedings of the International Colloquium from Târgu Mureș (24-26 October 2008)*, eds. S. Berecki, R. Németh, and B. Rezi (Cluj-Napoca: Mega, 2009), 205-211, fig. 1.

²² Ciugudean, *Cercetări privind epoca bronzului*, 65-97; Horia Ciugudean, “Betrachtungen zum Ende der Wietenberg-Kultur,” in *Transsilvanica. Archäologische Untersuchungen zur Älteren Geschichte des Südöstlichen Mitteleuropa*, ed. N. Boroffka and T. Soroceanu (Rahden/Westf.: Leidorf, 1999) [Internationale Archäologie 7], 107-131.

²³ Ciugudean, *Cercetări privind epoca bronzului*, 81.

²⁴ Nikolaus Boroffka, *Die Wietenberg-Kultur. Ein Beitrag zur Erforschung der Bronzezeit in Südosteuropa* (Bonn: Habelt, 1994) [Universitätsforschungen zur prähistorischen Archäologie 19], 246-254.

²⁵ Chidioșan, *Derșida*, 79.

²⁶ Mihai Rotea, “Beiträge zur Kenntnis der Phase I der Kultur Wietenberg. Die Bewohnung von Păuleni (Ciomortan), Kreis Harghita,” *AMN* 37, 1 (2000): 21-41.

²⁷ Andrișoiu, “Civilizația tracilor,” 50, pl. 27/9; 28/8; 29/2, 6, 9; 30/1-2; 31/1, 4, 9, 13, 15; 32/2, 13; 35/4, 9, 20, 28.

Until the 1990's the Wietenberg IV phase was chronologically placed at the end of the Bronze Age, in the 13th century BC.³¹ This dating – making the period contemporary with the central European Reinecke Br. D – was not based on *in situ* archaeological data. A series of bronze artefacts specific to Br. D, but without archaeological context, were attributed to Wietenberg IV phase: a rhombic-head pin from Simonești,³² where, according to the description, the ceramics belong to Wietenberg II phase;³³ two pins with four prominences from Cluj-Napoca,³⁴ where there are mentioned mixed Noua and Wietenberg materials without context;³⁵ a pin with four prominences from Teaca,³⁶ discovered at 0.50 m depth, where there was attested a medieval level at 0.60 m depth, with no mention of Wietenberg ceramics;³⁷ the bronze hoard from Miercurea Ciuc³⁸ was not discovered in a Wietenberg settlement as Chidioșan mentioned;³⁹ the bronze hoard from Perișor was used for dating the cemetery at Dumbrăvița, situated at 3 km away;⁴⁰ the pins from Bădeni and Palatca

²⁸ Horedt, "Problemele ceramicii," 139; Cristian Ioan Popa, "Modificări culturale la finalul Bronzului Timpuriu și începutul Bronzului Mijlociu în Transilvania" [Cultural Changes at the End of the Early Bronze Age and the Beginning of the Middle Bronze Age in Transylvania], in *Aspecte ale epocii bronzului în Transilvania (între vechile și noile cercetări)* [Features of the Bronze Age in Transylvania. Between Old and New Research], ed. Cristian Ioan Popa, Radu Totoianu (Alba Iulia: Altip, 2010) [Bibliotheca Musei Sabesiensis I], 151-152, pl. 42/3; 43-44.

²⁹ Zsolt Székely, "Necropola de incinerare în urne de la Turia, județul Covasna" [The Urn Burial Cremation Cemetery from Turia, Covasna County], in *Cercetări arheologice în aria nord-tracă I* [Archaeological Research in North-Thracian Area I] (București: Institutul Român de Tracologie, 1995), 127-146; Roxana Munteanu, *Începutul bronzului mijlociu în depresiunile marginale ale Carpaților Orientali* [The Beginning of the Middle Bronze Age into the Marginal Depressions of the Eastern Carpathians] (Piatra Neamț: *Bibliotheca Memoriae Antiquitatis*, Constantin Matasa, 2010), 111.

³⁰ Kacsó, *Mărturii arheologice*, 58-62, pl. XVI-XXXVI; Carol Kacsó, "Contribuții la cunoașterea ceramicii epocii bronzului de la Oarța de Sus-Ghiile Botii (I)" [Contributions to the Knowledge of the Bronze Age Pottery from Oarța de Sus-Ghiile Botii (I)], *TS5* (2013): 111-139.

³¹ Chidioșan, *Derșida*, 81-84; Soroceanu and Istrate, "Faza finală," 25; Andrițoiu, "Civilizația tracilor," 54, pl. 76; Boroffka, *Die Wietenberg-Kultur*, 288, table 14.

³² Chidioșan, *Derșida*, 83.

³³ Zoltan Székely, "Contributions à la connaissance du développement de la civilisation Wietenberg," *Dacia N.S.* 15 (1971), 397.

³⁴ Chidioșan, *Derșida*, 83.

³⁵ Kurt Horedt, "Cercetări arheologice în regiunea Hoghiz-Ugra și Teiuș" [Archaeological Researches at Hoghiz-Ugra and Teiuș Regions], *MCA* 1 (1953): 807-808.

³⁶ Chidioșan, *Derșida*, 83.

³⁷ Ștefan Dănilă, "O așezare din epoca bronzului descoperită la Livezile (jud. Bistrița-Năsăud)" [A Bronze Age Settlement Discovered at Livezile (Bistrița-Năsăud County)], *MCA* 7 (1960): 437-438, fig. 10/10.

³⁸ Zoltan Székely, "Depozitul de obiecte de bronz de la Miercurea Ciuc" [The Bronze Hoard from Miercurea Ciuc], *SCIVA* 21, 3 (1970): 473.

³⁹ Chidioșan, *Derșida*, 83.

⁴⁰ Tudor Soroceanu, Alexandru Retegan, "Neue spätbronzezeitliche Funde im Norden Rumäniens," *Dacia N.S.* 25 (1981): 195-229.

represented the main point for dating the Bădeni III-Deva group at the beginning of Bronz D.⁴¹

Later, the Wietenberg IV phase was included by Florin Gogâltan in Late Bronze Age I (BT I), which corresponds to Br. B2 and C phases from Central Europe, which starts before 1500 BC.⁴² Ciugudean proposed a similar dating for sites as Măhăceni, Geoagiu de Sus, Straja, Alba Iulia-*Maieri* and Alba Iulia-*Ijac* (Micești-*Cigaș*).⁴³

On the basis of the radiocarbon dates belonging to Wietenberg and Noua cultures mentioned above, we consider that the Wietenberg IV phase is part of the Middle Bronze Age, while the beginning of the Late Bronze Age is marked through the presence of Noua culture in Transylvania. If we are to take into account the dates from Micești, the first manifestations of the last Wietenberg phase can be placed by the beginning of the 17th century BC. The final part of Wietenberg culture is likely marked by the emergence of Noua culture before 1500 BC, when, for a short period of time, the two pottery styles coexist. A partial synchronisation of Wietenberg and Noua supported based on discoveries at Măhăceni,⁴⁴ but also the incineration burials at Band, where a Wietenberg IV bowl was deposited together with Noua vessels,⁴⁵ as well as Băcăiniți, where the Wietenberg urn has Noua buttons on handles.⁴⁶ Some scholars consider that the mixture between the two cultures gave birth to a new cultural group (Gligorești) in central and south-eastern Transylvania, which follows after Wietenberg IV and Noua manifestations.⁴⁷

We hope that future radiocarbon dates collected from the Wietenberg sites will bring new chronological insights and expand the understanding of the Wietenberg chronology discussed in this article.

⁴¹ Rotea, "Penetrația culturii Otomani," 54.

⁴² Gogâltan, "The Settlement of Cășeu," 196-197.

⁴³ Ciugudean, *Cercetări privind epoca bronzului*, 81.

⁴⁴ Ciugudean, "Betrachtungen," 129, fig. 5/3.

⁴⁵ Eugen Sava, *Die Bestattungen der Noua-Kultur. Ein Beitrag zur spätbronzezeitlicher Bestattungsriten zwischen Dneestr und Westkarpaten* (Kiel: Oetger/Voges, 2002) [Prähistorische Archäologie in Südosteuropa 19], 100, pl. 136/3-5.

⁴⁶ Andrițoiu, "Civilizația tracilor," 33, pl. 28/2, 4.

⁴⁷ Gogâltan, "The Settlement of Cășeu," 196-198; Florin Gogâltan et al., "Raport preliminar asupra investigațiilor arheologice de la Gligorești-'Holoame,' com. Luna, jud. Cluj (1994-1996)" [Preliminary Report Concerning the Archaeological Excavations from Gligorești-'Holoame,' Luna Town, Cluj County (1994-1996)], *Apulum* 41 (2004): 73-74; Cristian Ioan Popa, Radu Totoianu, "Noi opinii privitoare la evoluția culturală a bronzului târziu în zona centrală și sud-vest transilvăneană" [New Perspectives on the Cultural Evolution of the Late Bronze Age in the Central and South-Western Transylvania], in *Aspecte ale epocii bronzului*, 187-195, table 1.

LIST OF ABBREVIATIONS

<i>AAC</i>	<i>Acta Archaeologica Carpathica</i> . Institut of Archaeology and Ethnology, Krakow
<i>AB</i>	<i>Analele Banatului</i> . Muzeul Banatului, Timișoara
<i>ActaArchHung</i>	<i>Acta Archaeologica Academiae Scientiarum Hungaricae</i> , Budapest
<i>AJPA</i>	<i>American Journal of Physical Anthropology</i> . Harvard University, Boston
<i>AK</i>	<i>Archäologisches Korrespondenzblatt</i> . Römisch-Germanisches Zentralmuseum, Mainz
<i>Aluta</i>	<i>Aluta</i> . Muzeul Județean Covasna. Sfântu Gheorghe
<i>AM</i>	<i>Arheologia Moldovei</i> . Institutul de Arheologie Iași
<i>AMN</i>	<i>Acta Musei Napocensis</i> . Muzeul Național de Istorie a Transilvaniei, Cluj-Napoca
<i>Apulum</i>	<i>Apulum. Acta Musei Apulensis</i> . Muzeul Național al Unirii, Alba Iulia
<i>Apulum AA</i>	<i>Apulum. Acta Musei Apulensis. Series Archaeologica & Anthropologica</i> . Muzeul Național al Unirii, Alba Iulia
<i>ArchAustr</i>	<i>Archaeologia Austriaca</i> . Austrian Academy of Sciences Press, Vienna
<i>ArhS</i>	<i>Arhiva Someșană</i> . Năsăud
<i>AS</i>	<i>Acta Siculica</i> . Muzeul Național Secuiesc, Sfântu Gheorghe.
<i>AUA hist.</i>	<i>Annales Universitatis Apulensis. Series Historica</i> . Universitatea „1 Decembrie 1918”, Alba Iulia
<i>AUV</i>	<i>Anales d'Université "Valahia". Section d'Archéologie et d'Histoire</i> . Universitatea "Valahia", Târgoviște
<i>BerRGK</i>	<i>Bericht der Römisch-Germanischen Kommission</i> . Deutsche Archäologische Institut
<i>BT</i>	<i>Bibliotheca Thracologica</i> . București
<i>CA</i>	<i>Cercetări Arheologice</i> . Muzeul Național de Istorie a României, București
<i>CCA</i>	<i>Cronica Cercetărilor Arheologice</i> . Institutul Național al Patrimoniului, București
<i>Crisia</i>	<i>Crisia</i> . Muzeul Țării Crișurilor, Oradea
<i>Dacia N.S.</i>	<i>Dacia. Revue d'archéologie et d'histoire ancienne. Nouvelle série</i> . Institutul de Arheologie "Vasile Pârvan", București
<i>EJST</i>	<i>European Journal of Science and Theology</i> , Iași
<i>FI</i>	<i>File de Istorie</i> . Muzeul de Istorie Bistrița
<i>MCA</i>	<i>Materiale și Cercetări Arheologice</i> . Institutul de Arheologie "Vasile Pârvan", București
<i>OJA</i>	<i>Oxford Journal of Archaeology</i> . University of Oxford
<i>PA</i>	<i>Probleme de antropologie</i> . Institutul de Antropologie „Francisc I. Rainer”, Academia Română, București
<i>PM</i>	<i>Probleme de muzeografie</i> , Cluj

LIST OF ABBREVIATIONS

<i>RGA</i>	<i>Reallexikon der Germanischen Altertumskunde</i>
<i>RJLM</i>	<i>Romanian Journal of Legal Medicine</i> . Romanian Society of Legal Medicine, Bucharest
<i>SAA</i>	<i>Studia Antiqua et Archaeologica</i> . “Alexandru Ioan Cuza” University of Iași
<i>Sargetia</i>	<i>Sargetia</i> . Muzeul Civilizației Dacice și Romane, Deva
<i>SCIV(A)</i>	<i>SCIVA. Studii și Cercetări de Istorie Veche și Arheologie</i> , Institutul de Arheologie "Vasile Pârvan" , București
<i>StCom Satu Mare</i>	<i>Studii și Comunicări</i> . Muzeul Județean Satu Mare
<i>StCom Sibiu</i>	<i>Studii și Comunicări</i> . Muzeul Bruckenthal, Sibiu
<i>Trans R</i>	<i>Transylvanian Review</i> . Centrul de Studii Transilvane, Academia Română, Cluj-Napoca
<i>TS</i>	<i>Terra Sebus. Acta Musei Sabesiensis</i> . Muzeul Municipal “Ioan Raica”, Sebeș

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