

ABSOLUTE CHRONOLOGY OF NEOLITHIC CULTURES IN ROMANIA AND RELATIONS WITH THE AEGEO-ANATOLIAN WORLD

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Besides the archaeological discoveries themselves, a number of radiocarbon dates for Romania have helped us to sketch the evolution of the absolute chronology of Neolithic cultures in this area (Fig. 1a-c).

Unfortunately, the radiocarbon dates for the Neolithic period are unsatisfactory as they are not equally distributed from a geographical or cultural point of view. In some provinces, such as Transylvania, Wallachia or Dobrudja, this kind of information is completely absent. The radiocarbon dates for the Neolithic period in Romania (Table 1) have been obtained by analyzing different materials, in several laboratories, over the course of many decades; these facts, related to others, may have affected some of the results.

In this stage of research, taking into account the relative and absolute information, we should take notice of the following facts. The Mesolithic period in Romania is represented by two cultures: the Tardenoisian, for which we have only one radiocarbon date (from Erbiceni, between 7060-6450 CAL BC) and the Schela Cladovei culture, whose radiocarbon dates are situated in the interval between 6610-6420 CAL BC. To a local evolution of the Tardenoisian culture, we could add two other radiocarbon dates from Sorocea, Republic of Moldavia (Bessarabia) (Păunescu 1984, 254), belonging to the interval 6300-6200 CAL BC.

Neither of these Mesolithic cultures, which may have continued to exist for a long time in isolated "islands", contributed to the neolithization of the region. This process is associated with a cultural migration phenomenon, of southern origin, which assimilated part of the autochthonous communities.

The earliest Neolithic sites in Romania are attributed to the Pre-Criș phase (Paul 1989:25), early Criș (Lazarovici 1993:247), or to Proto-Starčevo (Nica 1995:19), and we have in mind the discoveries from Cârcea I, Gura Baciului I and Ocna Sibiului I. The oldest seems to be Cârcea I, which is part of a special group; the Gura Baciului and Ocna Sibiului I discoveries are a bit later, forming another group (Paul 1989, 5; 1995:68, Table 1; Lazarovici and Maxim 1995:5). For these early settlements, we do not have radiocarbon information, but, for instance, Gh. Lazarovici and Z. Maxim believe that they evolved between 6400-6000 BC (Lazarovici and Maxim, 1995:5).

The next radiocarbon information we have is for the Starčevo-Criș culture, phase III. Two dates from Trestiana settlement, Moldavia, are attributed to the III B level, and they are between 5500-5250 CAL BC. Another date from Bessarabia, from Sacarovca I, level Starčevo-Criș III B has quite the same value. In my opinion, the radiocarbon date from Sorocea II (6830 ± 150 BP, Markevici 1974:60-63, 128; Păunescu 1984:254; Larina 1994:43), also

marks a Starčevo-Criș III level, with Bugo-nistean cultural influences, as those from Sacarovca I. From Gura Baciului (grave 6), level Starčevo-Criș III B we have another date, with a value between 5474-5240 CAL BC. The last date we present concerns the Starčevo-Criș III level from Oltenia, Copăcelu /Valea Răii and has a close value to the others: 5485-5334 CAL BC.

From Oltenia, Cârcea "Viaduct", level Cârcea III/Starčevo-Criș IV (with Vinča elements, Nica 1995:22), there are three radiocarbon dates. One of them is impossible to use, and the other two belong to the period 5500-5250 CAL BC. So, these data for Cârcea III/Starčevo-Criș IV are superposed to the Starčevo-Criș III B time interval. At the same time, with the end of Starčevo-Criș III, in the Romanian territory the first elements of a new culture (Vinča) appear, also of southern origin, which covers a very large area. The interpretations of the last radiocarbon dates, combined with stratigraphical and typological data, establish the beginning of Vinča A 2 phase for the Vinča-Belo Brdo settlement, around 5400 CAL BC (Schier 1996:150), or Vinča A generally, between 5300/5200 CAL BC (Gläser 1996:177).

The issue of Vinča and Starčevo-Criș cultural evolution and their interpenetration has led to a very complicated evolving process in some Romanian provinces. Here are some short references. In Oltenia of that time, except the south part of the evolving Cârcea group, (from Cârcea I- Proto-Starčevo, until Cârcea IV- Dudești-Vinča) we have also the Starčevo-Criș and Vinča settlements (west of the Jiu river) and by the issue of a new southern group, Dudești settlements (Usoe and Samovodene type) and also mixed ones, Dudești-Vinča (Nica 1995:19; 1996:105; Comșa 1995:152).

In Transylvania, besides Starčevo-Criș settlements there are also Vinča ones (Tărtăria), the Cluj Cheile Turzii-Lumea Nouă cultural complex and then several cultural groups with Vinča elements, Tăulaș, Turdaș and Iclod (Lazarovici and Maxim 1995:3-10).

In Banat province, besides Starčevo-Criș settlements (the oldest are from the Starčevo-Criș II phase), we find the Vinča type, Banat culture (phase I and II), the Bucovăț group (a sub-group of the Banat culture), and later the Tisza culture (Lazarovici 1993:255).

In Wallachia, the situation is a little different and we find here Starčevo-Criș settlements (phases III-IV), Dudești ones and, at the same time, some Linear pottery culture ones (phases III-IV), followed by the Boian occupation.

The next radiocarbon dates refer to the Banat culture, phase I and phase II, from Parța (Gilot, Mantu, Lazarovici, mss.). The dates for the Banat culture, phase I (= Vinča A 3- B 1) are grouped in the interval 5500-5250 CAL BC and those for phase II (=Vinča B1-B2 and B2) between 5300-4950 CAL BC. Another date, from Liubcova, from a Vinča B2 level, is between 5240-5000 CAL BC. We should again note that the radiocarbon dates for the Romanian territory concerning Vinča A, B, and C are in good relation with the new estimations of the Vinča phases established by W. Schier (Vinča A2-B2, 5400-4850 CAL BC) and R. Gläser (Vinča A, 5300-5200 CAL BC; Vinča B, 5200-4850 CAL BC; Vinča C, 4980-4840 and 4775-4715 CAL BC), (Schier 1996:150 ; Gläser 1996:177).

The Dudești-Vinča B data from Cârcea "Viaduct", Oltenia, are situated in the same interval 5500-5000 CAL BC. The values of four other dates from Dudești-Vinča C in the

same settlement are situated in the interval 4940-4700 CAL BC and agree perfectly with those obtained from the Vinča C level from Hodoni, in Banat, 4890-4720 CAL BC, or with those already mentioned for Vinča C in ex-Yugoslavia, 4870-4715 CAL B.C (Gläser 1996:177).

The level Dudești II-III from Fărcașu de Sus, Oltenia, is dated between 5200-4900 CAL BC, being consequently closer to those of Dudești-Vinča B.

In Wallachia, there are no radiocarbon dates for Starčevo-Criș, Dudești or Linear pottery cultural levels. Our first information here is connected to the Boian culture (issuing from Dudești traditions with Vinča elements; Comșa 1996:215) and especially with its phase IV, Spanțov (or transitional to the Gumelnița culture). The values of these dates are between 4900-4500 CAL BC (overlapping those for Gumelnița A1 or for the beginning of Gumelnița A 2).

The first Neolithic culture in Dobrudja is Hamangia and it is also very strongly connected to the Anatolian world (Berciu 1966:8-13). The dates we have for this culture are from phase Hamangia III and are grouped in the interval 4890-4720 CAL BC. We should remember that Boian IV tribes invaded Dobrudja and stopped the evolution of Hamangia IV settlements (maybe after 4720 CAL BC, at ca 4650 CAL BC).

In Moldavia, at the end of Starčevo-Criș IV, tribes of the Linear pottery culture (musical notes phase) come from the northeast (Poland). We have two radiocarbon dates for this period, coming from Târpești, which are in the interval 5300-4950 CAL BC, at the same chronological level as Vinča B, Banat culture II and Dudești-Vinča B. From Moldavia, the Linear pottery culture tribes moved to Wallachia. In Moldavia, after the Linear pottery culture, the Precucuteni culture, part of the Ariușd-Cucuteni-Tripolie cultural complex followed. We do not have absolute chronological information for the beginning of the Precucuteni culture (phase I), which was established according to the data for the Linear pottery culture. For Precucuteni II, we have one date, and for Precucuteni III, there are more dates. On the basis of all of these dates, we believe for the moment that Precucuteni I and II evolved possibly between 5050-4750 CAL BC.

The radiocarbon dates for the Neolithic and Eneolithic period (not discussed in this paper, but see Mantu 1995:213-235), and those offered by the relative chronology help us to construct Fig. 1.

Next we will attempt to see the relations between the chronological reference points of Romania with those from Bulgaria and Greece, and the connection with Anatolia.

The first moment that we want to elucidate is the connection with the group of communities of the Cârcea I-Gura Baciului I-Ocna Sibiului I type. This is now possible because there are more radiocarbon dates for two other groups of Proto-Starčevo from Bulgaria: Gălăbnik and Sofia Slatina. According to J. Pavuk, these two groups present pottery characteristics similar to the Gura Baciului I-Lepenski Vir III A-Donja Branjevina-Grivac I group, or the Cârcea I-Ocna Sibiului-Gradešnica A group. The Gălăbnik dates indicate the interval 6000-5700 CAL BC and those from Sofia Slatina 5730-5600 CAL BC (Pavuk 1993:29; Górsdorf/Boiadjev 1996:122-123) and are in good relation with those from Anzabegovo I, concentrated between 6075-5560 CAL BC (Erich and Bankoff 1992, I:379).

The Early Neolithic in Greece, Protosesklo type (Thessaly and Macedonia-Servia VI), having shapes and decorative elements in common with the above-mentioned discoveries in Romania, to which archaeologists frequently refer, is situated by almost all archaeologists between 6500/6400- 5800/5700 CAL BC (Coleman 1992, II:206, ca 6400-5700 BC ; Demouille 1993: Table 1, ca 6500-5700 BC; Gallis 1996:30, ca 6500-5850 BC). Radiocarbon dates from Sesklo, for the early-middle Neolithic indicate 6800-5000 BC, and those obtained by TL analysis, 6500-4000 BC (Liritzis, Orphanidis-Georgiadis, and Efstratiou 1991:308).

At this time in Anatolia, the evolution of two cultural groups is ascertained, one of them is central Anatolian, with painted pottery, Hacilar-Çatal Höyük type, and the other one with monochrome pottery, Fikirtepe type (north-western Anatolia and Turkish Thrace). The painted pottery group is older, and evolved between ca 6300-5800 /5600 CAL BC (Çatal Höyük IX-XIII, ca 6300-6000 BC; Çatal Höyük VI, ca 6000-5800 BC; Hacilar IX-VI could reach 5600 BC, Mellink 1992, I:210). According to the radiocarbon dates for levels X-IX from Ilipinar, the beginning of the Fikirtepe culture started around 5950 /5900 BC (Ilipinar X-XI, 5950/5900-5700 CAL BC Roodenberg 1993:256, 259) and J. Roodenberg considers, based on the archaeological evidence, that the Fikirtepe culture is contemporary with Proto-Starčevo (Roodenberg 1993:259). The discoveries from east Thrace, from Hoca Çeşme level III dated between 6000-5880 B.C (characterized especially by fine pottery, red matte painted, polished, only less polychrome fragments, geometrical decorations, red/black or black/red) show a contemporaneity with the early Neolithic from Greece and even some analogies with the Protosesklo assemblages (Özdoğan 1993:185-186). In the next level, Hoca Çeşme II, dated between ca 5700-5400 BC, is correlated to Late Karanovo I/Early Karanovo II and even with Proto-Vinča (Özdoğan 1993:185-186).

The dates we have presented up to now show that archaeological analogies for the discoveries of Cârcea I-Gura Baciului-Ocna Sibiului type are also supported by an absolute chronology, and we propose the beginning of Cârcea I horizon at around 6000 /5900 BC.

Unfortunately, subsequent archaeological evidence in Romania, until Starčevo-Criş III, are not accompanied by radiocarbon dates. For the moment it seems that the evolution of Starčevo-Criş III and IV is quite at the same chronological level the Banat culture I and with Dudeşti-Vinča B aspect, 5500-5000 CAL B.C, all of them being affected by Vinča evolution. The penetration of Vinča communities produced many cultural groups in Romania, especially in Banat, Transylvania and Oltenia, and less in other provinces, further away from the Vinča core, for which we do not have radiocarbon dates. We will try now to see what happened at the same time in the South Danube area and also in Anatolia.

For Bulgaria, J. Boiadjev considers that the beginning of Karanovo III is at about 5450 CAL BC and could be synchronized with those of the Vinča culture (Boiadjev 1995:165). In the prehistoric terms of Bulgaria, the molding of Vinča complex represents the late Neolithic, while besides this complex, there are also a number of related peripheral cultures as Kurilo, Kalojanovec, Hotnica, Usoe and, connected with them by Vinča influences, Akropotamos-Topolnica culture (Boiadjev, Dimov, and Todorova 1992:68), whose development was between ca 5300-4900 CAL BC (Görsdor and Boiadjev 1996:107, fig. 1). The above-mentioned period corresponds, according to J.Boiadjev, to the radiocarbon dates for Vinča B (Medveniak, Staro Selo, Selevac, Vinča) and they are also sustained by similarities in the archaeological material (Boiadjev 1995:166-167; Boiadjev, Dimov, and Todorova 1992:68,

71). In this respect, we also mention the recent radiocarbon dates for Vinča B (Schier 1996:150; Gläser 1996:177).

The recent publication in Berlin of the entire corpus of radiocarbon dates for Bulgarian prehistory offers to us the possibility of some other illustrations. The Hotnica levels from Kačica site (northern Bulgaria) - the Hotnica culture is the counterpart of the Dudești culture - are around ca 5210-5000 CAL BC (Görsdorf and Boiadjev 1998:142), a fact suggesting that the Dudești II-III level, from Fărcașu de Sus, Romania, is a little bit later.

We will also present shortly the dates concerning the early Eneolithic sites from Struma valley, Strumsko and Slatino. Level 3 from Strumsko (post Akropotamos) with typically Vinča B 2-C 1 elements and others older, Akropotamos, or newer, with analogies in Sitagroi III and in Arapi phase in Thessaly (Perniceva 1995:129) are dated between 4940-4780 CAL BC (Görsdorf and Boiadjev 1996:142). The Slatina settlement also contains some common elements with Vinča: signs on pottery or on some rectangular clay objects (Chokadjiev 1995:145) which we met in Vinča at level B in Tărtăria (clay tablets, Vlassa 1963:485-486; Dumitrescu and Vulpe 1988:31) and from Vinča C in the other parts of the area (Makkay 1970:10; Winn 1981; Masson 1984:2).

For Greece, the chronological estimations for Middle and Late Neolithic are still different, if we refer to the most recent publications.

J. P. Demouille believes that the Middle Neolithic (in balcanic minning, Vinča, Dimini, Boian) developed between 6500-6000 BP (Demouille 1993:7), which corresponds to ca 5400-4900 CAL BC. For Greece, at this chronological level he indicates more evolutions: in Greek Thrace, Paradimini, level I-II; in Greek, Oriental Macedonia, Sitagroi I-II, connected with southwest Bulgaria; in Thessaly, old Dimini (Tsangli-Larissa and Arapi phases), (Demouille 1993:7). All these evolutions are parallel to Vinča A and B in Serbia, Karanovo III-IV in Bulgaria and Yarımburgaz 1-3 from Turkish Thrace and northwest Anatolia (Demouille 1993, Table 1).

Demouille also believes that the next horizon, recent Neolithic, evolved between 6000-5700 BP (Demouille 1993, Table 1), ca 4900-4600 CAL BC. At this time, in eastern Greece (Oriental Macedonia), there was a variant of the Boian/Marica complex, Dikili Tash (II A-II B-II C), besides recent Dimini in western Macedonia (Aya Sophia, Otzaki, classical Dimini in Thessaly, Vassilika III-IV/Olynthe 1-3 in central Macedonia), which Demouille equalizes with the evolution of Vinča C, Precucuteni, Karanovo V in Bulgaria and Hoca Çeşme in Turkish Thrace and north western Anatolia (Demouille 1993:8, Table 1). At the same cultural level for Turkey, he indicates some settlements, such as Hoca Çeşme, that illustrate the existence of a local variant of the Marica/Karanovo V culture, with connections to Greek Macedonia (Dikili Tash) and in the Black Sea shore, Sava culture (Demouille 1993:8).

K. Gallis considers that the Middle Neolithic in Greece was shorter than previously imagined and indicates the period between 5850-5350 BC (Gallis 1996:30). In the Middle Neolithic (Sesklo I-III and Zarko in Thessaly; Chaironea, Urfirnis in the center and south Macedonia; Servia, Middle Neolithic in western Macedonia), similarities are observable between pottery shapes and decorations from Thessaly and west and central Greek Macedonia with evolution in Balcani-Karanovo II, Starčevo, Anza I-III, Porodin I (Gallis 1996:30, fig.

3). In Turkey, for the same period, Gallis indicates the evolution of levels Hacilar I-V, Yarımburgaz 4-5 and Ilipinar VIII-X (Gallis 1996, fig. 3).

The same author divides the Late Neolithic of Greece in two stages: LN I (or Predimini Phases) and LN II (Dimini Phases), (Gallis 1996:30).

In LN I, which is considered to evolve between 5350-4850 CAL BC, the few radiocarbon dates, the black polished and matte painted ware, and the archaeological observations allow, in Gallis's opinion, the correlation of different cultures in Greece (Paradimini III, Vassilika I-II, Servia, Tsangli-Larissa, Saliagos), (Gallis 1996:36). According to the same author, the pottery type Larissa, black polished ware, prove the connections with contemporary cultures from northern Greece, Dunavec I, Vinča A /B 1 and Karanovo III-IV (Gallis 1996:36).

Gallis's opinion is that the black polished ware, equally present in the Aegean area and on the Asia Minor shore, and obsidian artifacts prove the connections of mainland Greece, Aegean islands and Minor Asia (Gallis 1996:36). In Turkey for that period correspond Yarımburgaz 2-3 levels and Ilipinar VI-VIII levels (Gallis 1996, fig. 3).

LN II (Dimini Phases), which evolves between ca 4850-4550 CAL BC, northeastern Greece (East Macedonia and Thrace), is linked through graphite-decorated pottery with Bulgaria, Karanovo V Marica/Boian, while Central Macedonia is connected with Vinča C 1, and Thessalian Classical Dimini extend to Albania (Maliq I-Kamnik), both the last also having a strikingly similar pottery (Gallis 1996:30). At this time, Ilipinar V evolves (Gallis 1996, fig. 3).

We will also try to refer to some radiocarbon dates of some Greek sites, taking from Coleman (Coleman 1992, II:210-211). The Middle Neolithic from Servia are between 5800-5400 BC, and those from "Late Neolithic" between ca 5645-5220 BC.

A more complete series of dates are offered by east Macedonia sites, Sitagroi and Dikili Tash. Coleman believes that the older by some centuries is level I from Dikili Tash (Coleman 1992, I:260). The Sitagroi I level is ascertained around 5400 BC, Sitagroi II at ca 4900 BC and Sitagroi III around 4400 BC (Coleman 1992, I:261). The dates for Dikili Tash are in the interval 5000-4000 BC (Coleman 1992, I:261).

Recent researchers in central and western Anatolia, as well as in Eastern Thrace, showed the presence of several settlements with archaeological materials of Vinča type, a fact in addition to comparative material, that leads to the conclusion that this phenomenon was probably contemporary both in the Balkans and central and western Anatolia (Özdoğan 1993:180).

The issue of Vinča type elements in Turkey are interpreted by Turan Efe as a natural evolution of the final stages of the Fikirtepe and Porsuk cultures (Efe 1996:51-52).

Only a few Anatolian or eastern Turkish Thracian settlements with Vinča elements have absolute chronological information. We note that the Hoca Çeşme level II, dated between 5700-5400 CAL BC, was interpreted also as a Proto-Vinča one, and level Ia (without

radiocarbon dates, but probably post-5400 CAL BC) contains Vinča elements, similar to Tsangli/Vinča A/B, Toptepe I, Kum Tepe Ia and partially to Ilipinar V (Özdoğan 1993:185-186). Level 5 from Toptepe (East Thrace), with similar pottery to the Tisza culture and Vinča B/C, also has two radiocarbon dates, around 4100 BC (Özdoğan, Miyake, and Ozboroşan Dede 1991:84), or ca 4950 CAL BC.

The Ilipinar V level, with Vinča and Karanovo III sherds, has two radiocarbon dates, which are situated around 5500/5400 BC (6610 ± 45 BP and 6650 ± 40 BP, Roodenberg, Gérard 1996:39), being close to those of Ilipinar VI, 5600-5450 CAL BC. It is possible that the Ilipinar V level evolved until 5000/4900 BC, as the archaeological evidence permitting the above-mentioned analogies shows.

From the short presentation made here, absolute chronological data as well as those of relative chronology show a contemporary issue of the Vinča phenomenon, in the Balcani area and in Anatolia.

New radiocarbon data, especially for Romania, Turkey and Greece will help to construct a more complete view of developments which took place in Neolithic and Eneolithic periods.

Abbreviations

Atlas du néolithique européen - Atlas du néolithique européen, vol.1. L'Europe Orientale, ERAUL 45, Liege, ed. J. Kozłowski, 1993.

Ceramica neolitică - Ceramica neolitică. Meşteşug, artă, tradiţie. Trei milenii de spiritualitate preistorică. Piatra Neamţ, 1996.

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Table 1. Radiocarbon dates for the Romanian Neolithic.

Nr.	Site	Culture Phase	Lab ID	Age BP	Calib 1s	Calib 2s
1	Ostrovul Banului	Schela Cladovei, level III	Bln-1080	8040 ± 160	6680-6390	6990-6160
2	Ostrovul Banului	"	Bln-1079	7656 ± 100	6594-6420	6690-6230
3	Ostrovul Corbului	Schela Cladovei, level I	Bln-2135 A	7695 ± 80	6603-6442	6690-6400
4	Ostrovul Corbului	"	Bln-2135	7710 ± 80	6611-6447	6700-6410
5	Ogradena "Răzvrata"	Schela Cladovei, level II	Bln-1057	7690 ± 70	6597-6443	6680-6410
6	Pescari, "Alibeg"	Schela Cladovei, last phase	Bln-1193	7195 ± 100	6120-5970	6221-5820
7	Erbiceni	Tardenoisian	GX-9417	7850 ± 215	7060-6450	-
8	Soroca I, level 2	"	Bln-587	7420 ± 80	6400-6139	6440-6090
9	Soroca II, level 3	"	Bln-588	7515 ± 120	6460-6180	6600-6090
10	Ogradena, "Icoana"	Starčevo-Criș ?	Bln-1056	7445 ± 80	6417-6173	6450-6100
11	Gura Baciului	Starčevo-Criș III	Lv-2157	6400 ± 90	5474-5240	5490-5210
12	Trestiana	Starčevo-Criș III B	GrN-17003	6665 ± 45	5630-5494	5640-5480
13	Trestiana	"	Lv-2155	6390 ± 100	5474-5240	5500-5148
14	Sacarovca I	Starčevo-Criș III	Berlin ?	6650 ± 100	5640-5480	5730-5360
15	Soroca II	"	Bln-586	6825 ± 150	5830-5560	5990-5480
16	Valea Răii, "Copăcelu"	Starčevo-Criș II! IV ?	KN-I. 102	6480 ± 75	5485-5334	5550-5240
17	Cârcea, "Viaduct"	Cârcea III/Starčevo-Criș IV	Bln-1981	6540 ± 60	5506-5413	5615-5330
18	Cârcea, "Viaduct"	"	Bln-1982	6430 ± 60	5474-5248	5490-5200
19	Cârcea, "Viaduct"	"	Bln-2354	5860 ± 60	4835-4715	4900-4586
20	Cârcea, "Viaduct"	"	Bln-1983	6395 ± 60	5454-5243	5480-5230
21	Pața	Banat culture I	Lv-2145	6560 ± 160	5630-5340	5740-5230
22	Pața	"	Lv-2146	6470 ± 150	5530-5242	5640-5087
23	Pața	"	Lv-2142	6240 ± 80	5310-5080	5350-4945
24	Pața	"	Lv-2151	6240 ± 70	5303-5087	5340-4948
25	Pața	Banat culture II	Lv-2147	6500 ± 130	5540-5249	5640-5230
26	Pața	"	Lv-2139	6330 ± 140	5466-5210	5530-4940
27	Pața	"	Lv-2143	6340 ± 100	5380-5230	5480-5060
28	Pața	"	Lv-2141	6290 ± 80	5330-5214	5460-5060
29	Pața	"	Lv-2148	6240 ± 70	5303-5087	5340-4948
30	Pața	"	Lv-2138	6160 ± 100	5230-4945	5232-4847
31	Pața	"	Lv-2149	6160 ± 90	5233-4947	5315-4861
32	Pața	"	Lv-2140	6140 ± 80	5226-4945	5240-4860
33	Pața	"	Lv-2144	6100 ± 80	5208-4906	5230-4807
34	Pața	"	Lv-2150	6070 ± 90	5203-4864	5230-4780
35	Liubcova	Vinča B2	Bln-2133	6175 ± 85	5235-5003	5317-4903
36	Cârcea, "Viaduct"	Dudești-Vinča B	Bln-1978	6585 ± 65	5556-5428	5630-5350
37	Cârcea, "Viaduct"	"	Bln-2292	6350 ± 60	5338-5233	5463-5210
38	Cârcea "Viaduct"	Dudești-Vinča B	Bln-2008	6250 ± 40	5293-5210	5325-5067
39	Cârcea, "Viaduct"	"	Bln-1980	6100 ± 60	5204-4941	5230-4859
40	Cârcea, "Viaduct"	Dudești-Vinča C	Bln-2287	6300 ± 55	5325-5229	5370-5088
41	Cârcea, "Viaduct"	"	Bln-2291	5990 ± 55	4943-4804	5060-4780
42	Cârcea, "Viaduct"	"	Bln-2289	5910 ± 50	4896-4775	4937-4720
43	Cârcea, "Viaduct"	"	Bln-22904	5865 ± 95	4896-4621	4993-4510
44	Fărcașu de Sus	Dudești II-III	Bln-2285	6080 ± 60	5198-4906	5220-4847

Table 1. Radiocarbon dates for the Romanian Neolithic, continued.

45	Târpești	Linear pottery culture	Bln-801	6245 ± 100	5319-5070	5410-4908
46	Târpești	"	Bln-800	6170 ± 100	5240-4947	5330-4853
47	Hodoni	Vinča C1	Deb-1963	5880 ± 60	4892-4721	4935-4604
48	Hodoni	Vinča C1	Deb-2018	5870 ± 60	4891-4718	4933-4591
49	?	Hamangia, phase III	GrN-1986	5880 ± 70	4894-4718	4939-4586
50	Baia Hamangia	"	GrN-1980	5880 ± 70	4894-4718	4939-4586
51	Căscioarele	Boian, phase IV/Spațov	Bln-335	5985 ± 120	5060-4780	5230-4590
52	Căscioarele	"	Bln-798	5980 ± 100	5039-4780	5210-4680
53	Căscioarele	"	Bln-336	5895 ± 120	4937-4627	5197-4500
54	Căscioarele	"	Bln-598	5855 ± 80	4891-4626	4937-4530
55	Căscioarele	"	Bln-799	5765 ± 100	4780-4510	4897-4368
56	Căscioarele	"	Bln-333	5740 ± 120	4780-4470	4900-4350
57	Căscioarele	"	Bln-334	5750 ± 80	4726-4509	4831-4406
58	Căscioarele	"	KN-I.149	5750 ± 65	4722-4520	4780-4460
59	Căscioarele	"	Bln-602	5705 ± 80	4713-4466	4780-4360
60	Căscioarele	"	Bln-599	5670 ± 100	4675-4369	4780-4340
61	Căscioarele	"	Bln-796	5570 ± 100	4510-4340	4676-4240
62	Radovanu	"	Bln- ?	5850 ± 70	4834-4670	4932-4539
63	Radovanu	"	Bln-1233	5770 ± 100	4780-4510	4898-4369
64	Poduri, D.Ghindaru	Precucuteni culture, phase II	Bln-2804	5820 ± 50	4780-4619	4836-4548
65	Poduri, D.Ghindaru	Precucuteni culture, phase III	Bln-2803	5880 ± 150	4940-4584	5210-4401
66	Poduri, D.Ghindaru	"	Bln-2782	5780 ± 50	4726-4583	4780-4510
67	Târpești	"	GrN-4424	5530 ± 85	4465-4339	4574-4230
68	Târgu Frumos	"	Lv-2152	5830 ± 100	4838-4584	4940-4470

Reimer and Reimer 1992, version 2.0.

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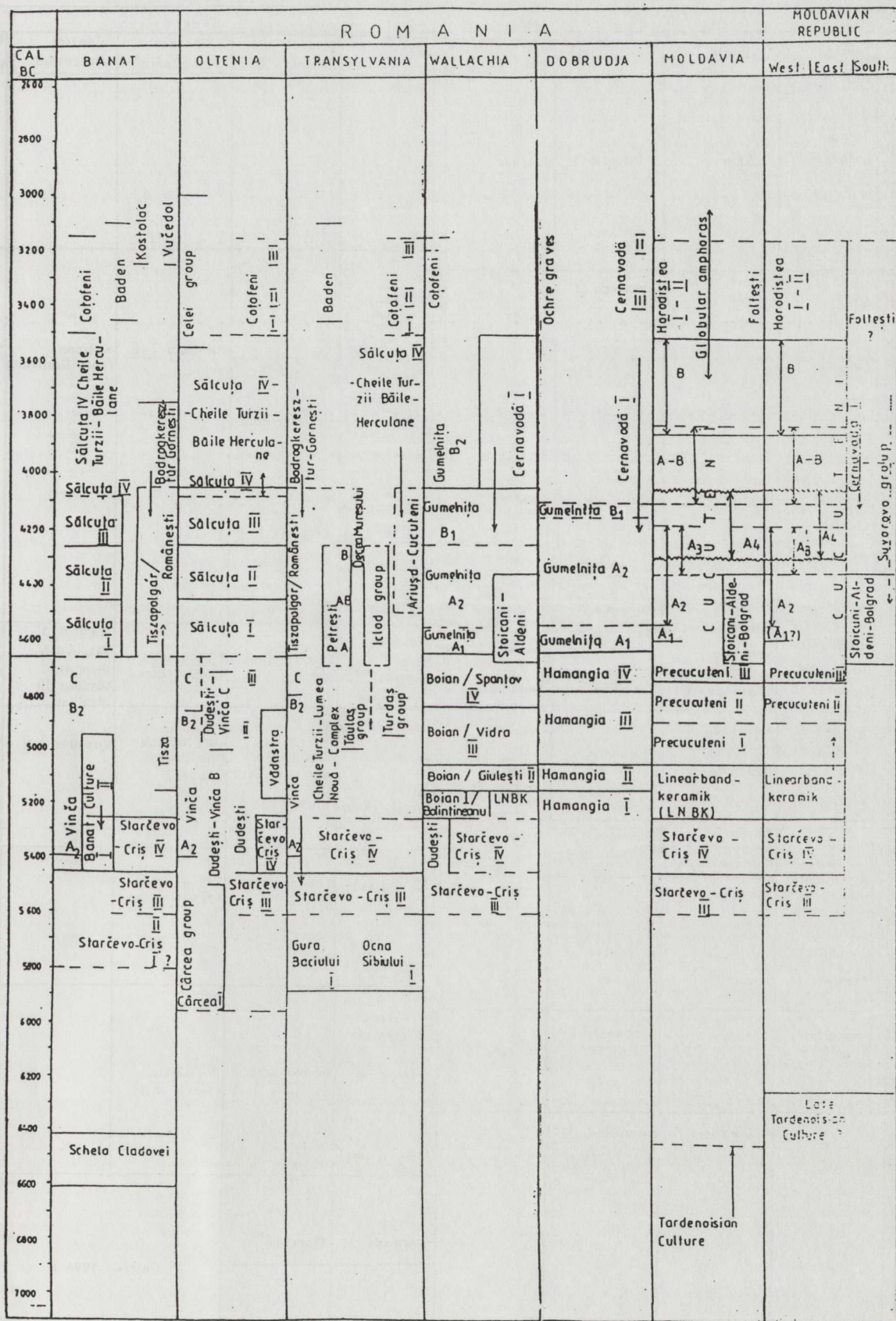


Fig. 1a. Regional chronology - Romania, Moldavian Republic.

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CAL BC	Bulgaria				Greece				
	Western	South	North - East	Western - Black Sea - Area	Thessaly	Central and Southern G.	Western Macedonia	Central Macedonia	Eastern Macedonia Western Thrace
2800	B R O N Z E	Magura Cotofeni	Ezero	Jamnaja	Ezerovo				
3000									
3200									
3400	T R A N S I T I O N	Galatin / Telis	?	Cernavoda III				Mandalo I-II	Kritsana [Late Neolithic]
3600									
3800									
4000	C H A L C O L I T H	Krivodol (KSBh)	Karanovo VI	KGK VI	Varna				
4200									
4400									
4600	I C	Gradešnica Dikili Tash - Slatino	Marica (Phase 4)	Poljanica (Phase 4)	Sava (4) / Hamangia (4)	Pachmani	Altica - Kephala Doros		
4800									
5000									
5200	N E	Kurilo / Akropolamos Topolnica	Karaňovo IV (Kalojano vec)	Holnica	Usoe II / Hamangia (2)	Classical Dimini Otzaki Ayia Sophia	Gonia Corycian Cave Doros	Late Neolithic [Dimini phases]	Olynthos 3 Vassilika IV Olynthos 2 Vassilika III Olynthos I
5400									
5600									
5800	T H I C	West Bulgaria painted pottery (Čavdar - Kremkovci)	Karanovo III Vesclinovo Karanovo II/III	Samovodenc	Usoe I Hamangia (I)	Arapi	Matt-painted, ware Kilos Cave, Elateia	Late Neolithic [Pre-Dimini phases]	Vassilika I-II
6000									
6200									
6400	E A R L Y N E O L I T H	Monochrom pottery	Karanovo I	Ovčarovo	Tsonevo	Tsangli-Lonisa			Paradimni III Sitagroi II Dikili Tash I Sitagroi I Paradimni I-II
6600									
6800									
7000	A C E R A M I C	Monochrom pottery	Monochrom pottery	Monochrom pottery	Monochrom pottery	Zarko [Protogrey ware]	Chaironeia Urfirnis	Servia Middle Neolithic	
7200									
7400									
7600	A C E R A M I C	Monochrom pottery	Monochrom pottery	Monochrom pottery	Monochrom pottery	Sesklo I-II			
7800									
8000									
8200	A C E R A M I C	Monochrom pottery	Monochrom pottery	Monochrom pottery	Monochrom pottery	Pre-sesklo Protosesklo	Rainbow ware, Franchthi	Protosesklo [Servia V]	
8400									
8600									
8800	A C E R A M I C	Monochrom pottery	Monochrom pottery	Monochrom pottery	Monochrom pottery	Early Pottery			
9000									
9200									
9400	A C E R A M I C	Monochrom pottery	Monochrom pottery	Monochrom pottery	Monochrom pottery	Argissa	Franchthi		
9600									
9800									
10000	A C E R A M I C	Monochrom pottery	Monochrom pottery	Monochrom pottery	Monochrom pottery			(Gallis 1996)	
10200									
10400									

Fig. 1b. Regional chronology - Bulgaria, Greece.

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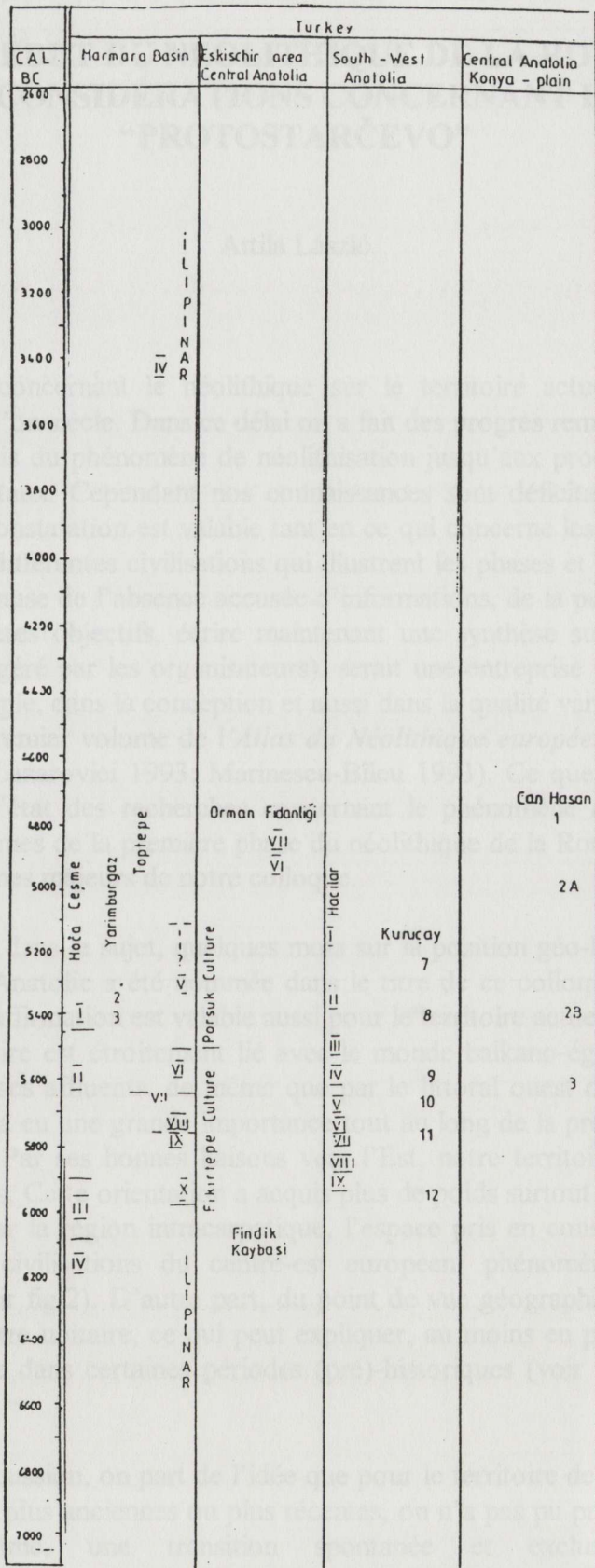


Fig. 1c. Regional chronology - Turkey.