

# The saga of the astonishing $^{14}\text{C}$ dates obtained on some “wooden” objects from Grădinile and Măgura sites (Early Neolithic, southern Romania)

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“All of a row,  
Bend the bow,  
Shot at a pigeon,  
And killed a crow”  
(A. Lang 1897, p. 220)

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**Abstract:** Prehistoric wooden objects have a special status amongst archaeological finds mostly due to a low rate of conservation and because they can be directly dated through archaeometric investigations. This contribution is a review of the papers on the radiocarbon dates obtained for some “wooden” objects from two Early Neolithic sites in southern Romania: Grădinile-La Islaz (Olt County) and Măgura-Boldul lui Moș Ivănuș (Teleorman County). This analysis was also focused on the archaeological research and the geo-archaeology of the two sites, the archaeological context of the objects and their morphological traits. The  $^{14}\text{C}$  dates obtained for the respective objects were above 35000 years BP, far in time from the normal Early Neolithic ages in this area. Thus, the archaeologists investigating this problem reached the conclusion that the prehistoric people living at Grădinile and Măgura used fossil wood as a raw material for the objects. The reviewed information has revealed that the astonishing  $^{14}\text{C}$  dates obtained for the supposed wooden objects embodies the saga of overlapping research errors, such as disregarding the unfavourable conditions for wood preservation in the given geological contexts, decontextualisation of the objects and their treatment in an antiquarian manner, unfortunate choosing of the investigation tools for the identification of the raw material. These errors derive from taking for granted the arguments proposed for the preservation of the Grădinile “wooden” objects by the archaeologist describing them some 30 years ago.

**Rezumat:** Obiectele preistorice din lemn au un statut special între descoperirile arheologice, în mare parte datorită ratei scăzute de conservare a acestui material și a faptului că pot fi datate direct prin investigații arheometrice. Această contribuție este o recenzie a unor articole care prezintă rezultatele datării radiocarbon a unor presupuse obiecte din lemn din două situri aparținând Neoliticului timpuriu din sudul României: Grădinile-La Islaz (jud. Olt) și Măgura-Boldul lui Moș Ivănuș (jud. Teleorman). De asemenea, analiza s-a concentrat pe cercetarea arheologică și geo-arheologia celor două situri, contextul arheologic și trăsăturile morfologice ale obiectelor. Vârstele  $^{14}\text{C}$  obținute pentru respectivele obiecte trec de 35000 ani BP, foarte departe în timp față de vârstele normale pentru Neoliticul timpuriu din această zonă. Astfel, arheologii care au investigat problema au concluzionat că oamenii preistorici ce au locuit la Grădinile și Măgura au folosit lemnul fosilizat drept materie primă pentru respectivele obiecte. Informația recenzată a evidențiat faptul că uimitoarele datări  $^{14}\text{C}$  obținute pentru presupusele obiecte de lemn întruchipează povestea unor erori de cercetare suprapuse, precum ignorarea condițiilor nefavorabile pentru conservarea lemnului asociate contextelor geologice ale celor două situri, decontextualizarea obiectelor și tratarea lor într-o manieră anticară, nefericita alegere a tehnicilor de investigație pentru determinarea materiei prime. Aceste erori derivă din preluarea fără critică a argumentelor aduse în favoarea conservării obiectelor din „lemn” de la Grădinile de către arheologul care le-a descoperit acum aproape 30 de ani.

**Keywords:** “wooden” objects, radiocarbon dating, petrified wood, Early Neolithic, Romania.

**Cuvinte cheie:** obiecte din “lemn”, datări radiocarbon, lemn pietrificat, Neolitic timpuriu, România.

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◆ **1. Introduction:** *Verba volant. Scripta manent*

In the spring of 2015 I was giving a presentation regarding the petrographic analysis of the raw materials used in the Upper Palaeolithic site of Lespezi-Lutărie (Bacău County) at the yearly Session of Communications held at Bucharest by the Institute of Archaeology. After the presentations for the Palaeolithic, came the ones for the Neolithic, amongst them also the presentation of Cosmin Ioan Suciu. He was announcing the <sup>14</sup>C dating results for some wooden samples from two Early Neolithic (herein EN) sites in Southern Romania (Grădinile-*La Islaz* and Măgura-*Boldul lui Moș Ivănuș*). These results (<sup>14</sup>C dates) were far back in time from the Starčevo-Criș chronology, the rough dates being above 35000 years BP. What caught my attention, beside the location of the two sites, was the fact that the radiocarbon dating for the Grădinile sample was repeated and that some restricted chemical analyses were indicating that the material used by the prehistoric people at the two sites was actually fossilized wood. At the end of this presentation I had informed Mr. Suciu that a better suited investigation technique, in order to identify the material, would have been the microscopic thin section analysis, thus approaching the research as a raw material study. At that moment no debate took place on the adequacy of the investigation methods used and the geo-archaeological contexts of the supposed wooden objects.

My impression was that a research error has been transformed in an example about how persistence in following the protocols of radiocarbon dating (and other archaeometric investigations) will turn-up unbiased and accurate results event if they were not expected. *Verba volant...*

The subject briefly described in this introduction was recently published by C.I. Suciu and his colleagues (J.K. Kozłowski *et alii* 2015). *Scripta manent*. In this paper I will try to show *in extenso* why the analyses performed by C.I. Suciu and his colleagues on the supposed wooden objects represent a row of research errors and that the results were biased from the beginning (the error wasn't within the radiocarbon dating procedure, but somewhere before it and related to the geo-archaeology of the sites).

◆ **2. Materials and methods**

In order to achieve the above stated goal, I had performed a review of the papers presenting the radiocarbon dating results (S.A. Luca *et alii* 2010, 2011; J.K. Kozłowski *et alii* 2015) of the "wooden" objects from Grădinile-*La Islaz* (Olt County) and Măgura-*Boldul lui Moș Ivănuș* (Teleorman County), but also of the paper signalling the existence of "wooden" objects in the EN of Romania (M. Nica 1983).

This review comprises a qualitative analysis of the texts: the format and the content of the paper (arrangement, presentation of materials and results, evolution of the subjects); writing style, language and terminology used; cross-examination of the arguments sustaining the research approach, the interpretation of the results or some of the topics (corroborated with specific literature published on the subject); cross-examination of the references cited for sustaining different arguments.

I have also reviewed the published information regarding: the archaeological research and the geo-archaeology of the Grădinile and Măgura sites (in order to understand the potential preservation conditions for wooden objects); the archaeological context of the objects and their morphological traits (to understand their typological, technological, functional characteristics, and their contexts).

### ◆ 3. Reviewing the facts. Identifying the errors

#### 3.1. Radiocarbon dating some “wooden” objects: the beginning of the saga

As part of the project *Formation of Europe: Prehistoric population dynamics and the roots of socio-cultural diversity* (FEPRE) has been developed a repository for Starčevo-Criș sites and a database with radiocarbon dates for the EN in Romania (S.A. Luca *et alii* 2010, p. 104-106; 2011, p. 8-9). Within this project some samples were taken for radiocarbon dating (S.A. Luca *et alii* 2010, p. 109; 2011, p. 11), amongst which the special ones on wooden objects from Grădinile-La Islaz (Olt County) (a whole pot) and Măgura-Boldul lui Moș Ivănuș (Teleorman County) (a bracelet fragment): the former gave an age of  $36700\pm 800$  BP, confirmed by the later (for which the results were not yet published). The radiocarbon dates were interpreted to indicate the intentional use of “fossil wood as a raw material for different objects” (S.A. Luca *et alii* 2010, p. 109; 2011, p. 11).

At this moment in time, the archaeometric results were actually suggesting a research error: the misidentification of the pot and bracelet as made of wood, when they were actually from “fossil wood”. In the given research context (lack of radiocarbon dates for the EN in Romania and the need to rapidly close the gap), this is a research error that could have happened almost to any archaeologist. This research error would have remained ignored by most of the archaeological community and eventually be forgotten. Something else followed and goes beyond the sphere of simple and forgivable research mistakes.

#### 3.2. The rerun of the radiocarbon dating: the point of no return

J.K. Kozłowski *et alii* (2015) presents the results of the archaeometric investigation of the “wooden” objects: the second sample from the bowl of Grădinile was analysed in 2014 and gave a  $45000\pm 4000$  BP age (the first sample was analysed in 2008); the sample from the bracelet fragment of Măgura has given an age of  $>48000$  BP. This paper is arranged in the classical format of research articles: the very attractive *Abstract* is announcing that you are about to read a sensational paper with “astonishing results”; the *Introduction* sets the research framework (the FEPRE project) and the reasons for the radiocarbon dating rerun and additional investigations, but also gives a brief summary of wooden objects in different prehistoric contexts; the *Materials and Methods* section is occupied by a full presentation of the analysed objects and their discovery contexts; the *Results* part is giving details regarding the  $^{14}\text{C}$  dates (the handling, preparation and treatment of the samples, carbon content, etc.), with an emphasis on the reliability and the accuracy of the results; the *Discussion* is turning the focus from radiocarbon dating toward raw material provenance; the *Conclusions* projects into the readers’ mind the image of the prehistoric people from Grădinile and Măgura using “woodworking objects from mineralized wood”.

The review of this paper permitted to identify two major overlapping types of errors: 1) inconsistencies, discrepancies, and mistakes related to what was written and cited (tab. 1); 2) background methodological errors passing beyond the frame of the paper (see the rows below; also Section 3. 4.) and going as far back as to the beginning of the study (Section 3. 1.) and partially inherited from M. Nica (Section 3.3). The text related mistakes, one would say not in such a high number or great variety, suggest: a superficial reading of the cited works (positions 1, 6-9, 11 in tab. 1); ignorant equivalence between terms with different meanings (positions 1, 2, 9, 12, 13 in tab. 1; tab. 2); confused use of geography and geology terms (positions 8, 10, 12 in tab. 1); unfair use of the information cited from other works to sustain insufficiently proven suppositions (positions 7, 8, 9, 11 in tab. 1); negligent attitude towards the methodological aspects and the investigation techniques (positions 3-5 in tab. 1).

No.	Text related errors	Comments/Observations
1	Examples of prehistoric wooden artefacts (Introduction, p. 117-118).	Inappropriate or misunderstood references (see tab. 2): the objects in the Palaeolithic and Mesolithic contexts are far beyond any possible comparison with the Romanian artefacts, both in typological terms and preservation conditions; there are some examples (from Cristian III and Gönnersdorf) which denote a deliberate equivalence between wood and fossil/fossilized wood and a confused understanding of their meanings and physical qualities; the Çatalhöyük wooden objects are not true examples for wood preservation in archaeological contexts, because their actual physical state is that equivalent of charcoal/burned remains of wood; the one example of a wooden artefact in a Neolithic context gives similar indications as the Palaeolithic and Mesolithic examples. Wood ≠ fossil wood/fossilized wood ≠ mineralized wood; <i>wood</i> is an organic material from cellulose, hemicellulose, lignin, with a small amount of mineral compounds (ash content) and trace elements (D. Krutul <i>et alii</i> 2010, p. 114; T. Kolar <i>et alii</i> 2014, p. 150); the term <i>fossil</i> refers to "Any specimen that demonstrates physical evidence of occurrence of ancient life" (J.M. Schopf 1975, p. 27); <i>fossilization</i> represents the physico-chemical and biological processes through which an organism is preserved (in <i>fossilized</i> form); fossil wood is preserved through permineralization and coalified compression (J.M. Schopf 1975, p. 27-29, 36-45; D. Fengel 1991, p. 166-173).
2	Interchangeable/equivalent use of terms such as wood/wooden, fossil/fossilized wood, mineralized/mineralized fossil wood (through the paper).	
3	<i>Materials and methods</i> section (p. 118-121) gives a presentation of the analysed objects and their archaeological contexts.	This section should have contained information about the methodological approach and investigation techniques, but also information on the timing of the analyses.
4	"[...] The wood from which the pot was produced was probably <i>Taxus boccata</i> (European yew)." (Materials and methods, p. 118)	There is no information regarding previous work establishing the wood species and any indication to recent determinations. In his paper on the wooden objects from Grădinișle, M. Nica (1983, p. 48) pointed out the necessity to determine the wood specie of the vessel.
5	"[...] Electron Scanning has shown that the original structure is completely destroyed and the species attribution was impossible."	Use of results obtained with investigation tools not mentioned or described in the <i>Materials and methods</i> section, thus with no control on the experimental conditions (i.e. operation parameters). There is no information regarding the timing of these additional tests.
6	"[...] The chemical organic analyses indicate that there is an absence of lignine in the sample. [...] The spectroscopic chemical analysis showed high iron content in the sample." (Results, p. 125)	
6	"[...] Nica's explanation for the wooden artifacts he discovered at Grădinișle, was that the wooden pots were preserved because there was a thin limestone layer present which protected them and because of the water present inside the soil. He mentions on a number of occasions that the fragments were <i>mineralized</i> but this it is possible to refer only to the limestone layer (Nica, 1983: 41-44)." (Discussion, p. 125)	An example of misunderstood information from the cited reference. Actually, M. Nica (1983, p. 44) considered that the "wooden" vessel's preservation was influenced by the existence of the "limestone layer" on the walls (impeding the mineralization process), while its lack on the lower part explained the deterioration of the base (accentuated mineralization and exfoliation) (for a counterargument to Nica's explanations see the next section).

**Tab. 1.** Inconsistencies, discrepancies, and mistakes related to what was written and cited by J.K. Kozłowski *et alii* (2015).  
Inconsistențe, discrepanțe și greșeli legate de ceea ce a fost scris și citat în J.K. Kozłowski *et alii* (2015).

- 7 “[...] The high iron concentration in the Măgura samples also confirms a process of mineralization and, in consequence, indicates the use of fossil wood. Studies show that a high amount of iron inside the wood is a clear indicator of the mineralization process (Krutul *et al.*, 2010).” (Discussion, p. 125)
- 8 “In the OIS3 period, the upper parts of the southern slopes of the Carpathians were covered by relatively compact mixed forests, which were undergoing destruction due to slope erosion. As a result, in some river alluvia on the southern slopes of the Carpathians there are some fossil trees even from Interplenięglacial (Starkel, 1977, L. Starkel pers. comm.)” (Discussion, p. 125-126)
- 9 “[...] The oldest wood sample recovered at a depth of 2 m, yielded a radiocarbon age estimate of ca. 12880 BP (Beta-158852) and suggests that these large gravel-bed channels were active during part, if not all, of the Late-glacial period (Howard *et al.*, 2004).” (Discussion, p. 126)
- 10 “the southern slopes of the Carpathians” (Discussion, p. 125)  
 “South Carpathian slopes” (Abstract, p. 117)  
 “where the mineralized wood was available (e.g., southern Romania)” (Conclusions, p. 126)
- 11 “The fossilization of wood is generally considered an exception in the natural cycle where the bulk of organic matters are disappearing over time (Fengel, 1991:153).” (Conclusions, p. 126)
- 12 “[...] woodworking objects from mineralized wood indicates an intentional search for this kind of raw material because of its characteristics – the objects preserved the characteristics of wood as being lightweight but were more resistant against water, fire, shocks and biological decomposition.” (Conclusions, p. 126)
- 13 “[...] but this does not exclude the use of contemporary wood too. However, objects made from the latter would not have survived in the typical conditions of the Early Neolithic sites.” (Conclusions, p. 126)
- The exact iron content of the Măgura sample is missing, but is considered, together with the Grădinile pot’s “red-brownish” colour (due to iron content), to represent evidence of the mineralization process. Cross-examination of the argument suggest that the iron content is not necessarily a “clear” sign of the mineralization process: 1) nowhere in D. Krutul *et alii* (2010) there is such an affirmation; 2) D. Krutul *et alii* (2010, p. 115-116) show that the iron content is higher in fossil wood, varying between the heartwood and the outer parts, but also depends on the location and the age of the forest; 3) fossil wood has higher values for most of the ash mineral compounds (D. Krutul *et alii* 2010, tab. 2; T. Kolar *et alii* 2014, tab. 3); 4) the iron content may actually be very low or not determinable depending on the diagenetic conditions (T. Kolar *et alii* 2014, tab. 3; H. Akahane *et alii* 2004, tabs. 1 and 2).
- Discrepancy between the cited information and the actual content of the paper. L. Starkel (1977) makes a discussion on the palaeogeography of the Mid- and Eastern Europe; the word *Carpathians* is used 11 times in connection with information from southern Poland, Czechoslovakia, Hungary and the Ukrainian Eastern Carpathians; the word *fossil* is used 8 times not associated with the words *trees*, *forest* or *wood*; their argument is assembled from information in different sections of L. Starkel (1977, p. 356-362).
- For the original text and context see A.J. Howard *et alii* (2004, p. 275). This passage is used to point out that the supply source for the fossilized wood from Măgura might have been the gravel-bed channels of Teleorman river, based on the discovery of wood samples (waterlogged) in these alluviums and the mistaken equivalence of *wood* and *fossilized wood*.
- The meaning of the first term used to indicate the existence of fossil wood somewhere on the southern slopes of the Carpathians has been altered in the abstract (by changing the order of the words) to reflect a location more close to the EN sites and in accordance with the evidence of wood in alluvial gravels of Teleorman river.
- Paraphrase with a slightly altered meaning. The actual idea expressed by D. Fengel (1991, p. 153) is: „The processes of aging and fossilization are generally considered to be exceptions in the natural cycle [...]”
- A lack of elementary knowledge about what mineralized wood is: a rock which has the main characteristics of the predominant mineral phase, and does not retain the wood’s physical properties (T. Kolar *et alii* 2014, p. 156-159, 161-162). Mineralized wood is not subject to biological decomposition, but rather to weathering and dissolution. Water, fire, and shock resistance is given by the mineralogy, texture and fabric of the material.
- This final remark is quite “astonishing” and basically discards the part regarding the examples of prehistoric wooden objects, but also admits (unwittingly) the inefficiency of the archaeometric investigations and that they shouldn’t have been performed in the first place.

Tab. 1. continued  
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Examples of prehistoric wooden artefacts (Introduction, p. 117-118)	Reference	Cross-examination of the examples	
		The archaeological context	Wood preservation conditions
Wooden spears (Hansen 2010, Oakley <i>et al.</i> 1977)	S. Hansen 2010, p. 12; H. Thieme 1997, p. 807-809 K.P. Oakley <i>et alii</i> 1977, p. 13-14	Schöningen spears, brown-coal open-cast mine, Lower Palaeolithic Clacton Spearpoint, Clacton-on-Sea, Lower Palaeolithic	Schöningen II channel (organic mud and peat), waterlogged; Clacton channel (alluvial gravels and sands, marls and peaty seam), waterlogged;
Upper Paleolithic wooden beads (Street <i>et al.</i> 2012)	M. Street <i>et alii</i> 2012, p. 235, 238	beads from Gönnersdorf and Andernach, Late Magdalenian	loess deposits, fossilized (equivalent of jet);
Mesolithic wooden and bark objects (Holst 2010, Menotti 2012: 173-174, Milner <i>et al.</i> 2011, Riede 2010, Rosendahl <i>et al.</i> 2006 Schmölcke <i>et al.</i> 2006)	D. Holst 2010, p. 2872 F. Menotti 2012, p. 173-174 N. Milner <i>et alii</i> 2011, p. 2818-2819, 2826 F. Riede 2010, p. 1-18 G. Rosendahl <i>et alii</i> 2006, p. 372-375 U. Schmölcke <i>et alii</i> 2006, p. 426-427, 431	wooden paddle from a Duvensee site, Early Mesolithic wooden and birch-bark containers in Mesolithic sites from northern Europe birch-bark rolls, a wooden paddle and "brush-wood platform" from Star Carr, Early Mesolithic no wooden objects are discussed or described; bow fragment (pine-wood) from Mannheim, of Early Magdalenian age different wooden objects from submarine and near the ground water level sites (Ertebølle culture)	Duvensee bog (peat formation on a lake shore), waterlogged; wetlands (wetland environments), waterlogged; lake edge deposits (peat), waterlogged; Heckmann gravels (Upper Pleistocene), waterlogged; underwater/bog and peat deposits, waterlogged;
Neolithic wooden objects (Mellaart 1967: 216, Facorellis <i>et al.</i> 2014, Luca <i>et al.</i> 2014)	J. Mellaart 1967, p. 215; 1964, p. 85-86; E. Asouti 2013, p. 153-154, 158, 160 F. Menotti 2012, p. 174 Y. Facorellis <i>et alii</i> 2014, p. 516 S.A. Luca <i>et alii</i> 2014, p. 8-9	wooden vessels and boxes in burials, shrines and building floors of levels VIA and VIB from Çatalhöyük, EN diverse wooden objects from Neolithic sites in the Circum-Alpine region wet cedar wood tablet from Dispilio, Middle Neolithic fossilized wood vessel fragment from Cristian III, Starčevo-Criş culture	occupational deposits, carbonized; wetlands (wetland environments), waterlogged; submerged, mud deposits, waterlogged; complex 583 (yellow-brown gritty loamy soil), fossilized;

**Tab. 2.** Examples of prehistoric wooden artefacts cited by J.K. Kozłowski *et alii* (2015).  
Exemple de artefacte preistorice din lemn citate de J.K. Kozłowski *et alii* (2015).

The examples of prehistoric wooden artefacts (tab. 2, position 1 in tab. 1) highlight a discrepancy between the cited examples and the analysed artefacts and point toward a deficiency in understanding the preservation conditions and their implications for the Romanian cases. So the immediate question that arises from here is: why didn't any of the authors observed the discrepancy between the preservation contexts of the examples and those of the analysed objects? Probably because the *Introduction* was written as an attempt to save the appearances, to create a legitimate research background, i.e. that wooden artefacts

are “special objects” due to their scarcity as archaeological findings but fairly “common” in Prehistory. Thus, their initial assumption that the objects from Grădinile and Măgura were made of wood would be perceived by the readers as plausible and their failure in identifying the true nature of the material as a caveat of this special research context.

The fact that throughout the paper there is no discussion about the conservation conditions of the wooden artefacts from Grădinile and Măgura suggests that the authors have bluntly ignored the examples given in the *Introduction* and the (re-)examination of the discovery contexts. The same ignorance has been extended to M. Nica’s explanations regarding the conservation of the “wooden” objects from Grădinile (for a full cross-examination of Nica’s arguments see Section 3.3). Therefore, the readers have to digest a story about the necessity of repeating the archaeometric investigations because the first results were suggesting the use of fossil wood (J.K. Kozłowski *et alii* 2015, p. 117). This rerun of the radiocarbon dating was “the point of no return”.

A whole suite of additional analyses were carried in order to explain the accuracy of the radiocarbon dates, that there were no contaminations during the burial of the objects, no protocol infringements during the post-excavation handling/conservation of the artefacts or during the preparation of the samples for radiocarbon dating. Thus, the vivid image of a thorough research was fashioned. The “spectroscopic chemical analysis” normally provides information for more than just one element (position 7 in tab. 1): it identifies the major, minor and trace elements, giving a full image on the chemical composition of the material under investigation. Why weren’t the complete results of the analysis presented? The “Electron Scanning” (probably a shorter name for the well-known Scanning Electron Microscopy) would have provided, beside the absence of the wood’s “original structure”, at least information about the mineralogy of the sample! If the aim of the analyses would have been to determine the samples’ nature, these two analytical techniques would have provided more than enough information as to identify the material.

More importantly, why is the discussion turned towards raw material provenance when the material’s composition hasn’t been identified? We are most definitely dealing with a (*per*)*mineralized wood*, i.e. an organic material permeated by minerals during diagenesis and transformed in a rock (*petrified wood*). This is the key word which the paper seems to elude very well and to which the authors seem to be unfamiliar. But what type of *petrified wood*? For some basic information on what *permineralized wood* is and what minerals make-up its composition see P. Buurman (1972, p. 4-6), J.M. Schopf (1975, p. 27-29), C.L. Stein (1982, p. 1277), D. Fengel (1991, p. 166-167), or just google one of the above key words. The iron content proves nothing (that is on the true nature of the permineralized wood) and is not enough to start a discussion about the provenance of the fossilized wood from the two sites. Not to mention that the arguments used to locate the supply sources of the fossilized wood are scant to say the least (positions 8-10 in tab. 1).

The  $^{14}\text{C}$  date obtained for the Măgura sample is beyond the radiocarbon limit, i.e. an “infinite” age (from 50000 to tens/hundreds of million years). The two  $^{14}\text{C}$  dates for the Grădinile sample exhibit a difference of almost 10000 years, thus making them unreliable. Similar Upper Pleistocene  $^{14}\text{C}$  ages (with similar percent modern carbon content) were obtained on petrified wood samples from: the Tertiary basalt flow in the German Creek Coal Measures, Queensland, Australia (A.A. Snelling 2000, p. 12); the Tertiary Buchanan Lake Formation in Axel Heiberg Island, Canada (R. Beukens 1990, p. 337); the Lower Cretaceous Budden Canyon Formation, California, U.S.A. (A.A. Snelling 2008, p. 135-136). This means

that the probable age of the petrified wood from Măgura, and probably Grădinile, is far much older than the obtained radiocarbon ages.

In Southern Romania, petrified wood is known from: the Kliwa Sandstone Formation (Oligocene) in the Eastern Carpathian Bend Area, Prahova county (S. Iamandei *et alii* 2012, p. 69-70); the Middle Miocene deposits in Bala area, Valea Morilor (Mehedinți county), and Vâlcea area (E. Iamandei *et alii* 2011, p. 199, 207); the volcano-sedimentary sequences of Holbav Formation (Liassic, Lower Jurassic) in the Getic Nappe, Braşov county (M.E. Popa 1998, p. 177, 181; 1999, p. 378, 383). These occurrences of petrified wood (and the reworked clasts of petrified wood in Pleistocene gravels) are more probable to represent the supply sources of the materials used by the “starcevia” communities from these two sites than the supposed OIS 3 fossilized wood in rivers from the southern slopes of the Carpathians. A paleoecological study of the archaeological petrified woods would provide a morphotaxonomic determination and a geological age (S. Iamandei *et alii* 2012, p. 69).

Instead of shouting *Mea culpa!*, J.K. Kozłowski *et alii* (2015) wrapped-up the research errors into an example about how persistence in following the protocols of radiocarbon dating and additional analyses will turn-up accurate results even if they were not expected.

### 3.3. The “wooden” objects as special discoveries: and nothing else matters?

As already mentioned, the methodological errors of J.K. Kozłowski *et alii* (2015) are partially inherited from the views expressed by Marin Nica in the 1980’s on the supposed wooden artefacts from Grădinile-*La Islaz* (M. Nica 1983, p. 41-44; M. Nica, A. Mincă 1986, p. 22). Cross-examination of M. Nica’s arguments for the favourable conditions of wood preservation has proven that his claims had no real and sustainable grounds (see tab. 3). Based on this analysis and a small scale review of M. Nica’s works from the same period, the following remarks are in order: he used geological terms (such as capillarity, excessive humidity, strongly leached chernozem, mineralization, limestone crust) without actually knowing their true meanings/definitions, their generating processes and implications (positions 3-6 in tab. 3); he made erroneous descriptions for the geomorphological location of Neolithic sites such as Grădinile (position 1 in tab. 3) or Cârcea (M. Nica 1976, p. 435; 1977, p. 13; 1986, p. 16), denoting a lack of concern for the use of geomorphological information available at his time; he used improper geological rock names (quartzitic schist/ “șist cuarțos” not a current rock name then and now; cherts/ “silicolite” described as a volcano-sedimentary rock) in order to describe raw materials for polished tools (M. Nica 1983, p. 46); he made simplistic descriptions of the geological deposits containing the archaeological layers mainly indicating the colour of the layer/deposit and using colloquial/popular terms such as yellow virgin soil/ “sol viu galben” or calcareous loam/ “humă calcaroasă” (M. Nica 1976, p. 436; 1977, p. 14; 1979, p. 29; 1980, p. 29; 1981, p. 28; 1986, p. 49; M. Nica, A. Mincă 1983, p. 24; 1986, p. 22); he barely or succinctly described archaeological materials other than pottery or exceptional findings (any article of M. Nica would suffice to exemplify this remark).

Going on this trail it is clear that M. Nica had no real knowledge/understanding of the geological notions necessary to explain and argue for the preservation of “wooden” objects, but he had the taste for highlighting special discoveries. The real problem is that some 30 years apart his arguments were taken for granted by J.K. Kozłowski *et alii* (2015) and never verified in any way, like nothing else mattered beside the special status of the objects.



No.	Arguments for wood preservation	Counter-arguments
1	<p>Grădinile-La Islaz is positioned 800 m E of the village, on a very low terrace of Grădinile river near the watercourse, meeting the conditions for preservation of wooden objects – humid environment (peat like) in low alluvial plains (meadows) (M. Nica 1981, p. 27, 38; 1983, p. 40); silvo-steppe and the strongly leached chernozem are characteristic natural conditions of such low alluvial plains (M. Nica, A. Mincă 1983, p. 23)</p>	<p>This site is located on the Jiu-Olt High Plain composed of loess and loessoid deposits (25-30 m thick) underlined by the gravels of Frătești Formation (3-12 m thick) (T. Bandrabur 1971, p. 12, 68-79); all the small river valleys (amongst them Grădinile) are cutting this plain from W to E and have depths from 5 m (in the W) up to 25 m (in the E), but there are no terraces or low alluvial plains (meadows) (T. Bandrabur 1971, p. 12, 90, pl. I). Loess and loessoid deposits are parent materials for chernozem soils; chernozem soil is formed in continental temperate climate, with the evaporation exceeding 2-4 times the quantities of water from precipitations and determining a non-percolating water regime during the summer, while in the winter leaching processes take place resulting in the formation of gley minerals (pyrite or siderite) (G.I. Mihai 1964, p. 270-271, fig. 82). Peat like humid environments would have generated characteristic peaty soils (Histosol), which are organic-rich with thick peaty horizons (G.J. Retallack 2001, p. 73). Such soils and peat bogs are missing in this area (G.I. Mihai 1964, figs. 82, 130, tab. 49).</p> <p>In a peaty soil the decay of organic matter would have been inhibited by waterlogging, thus allowing for growth and accumulation of vegetation faster than it can be decomposed (G.J. Retallack 2001, p. 73).</p>
2	<p>The EN layer (0.40-0.50 m thick) has a grey-black colour due to decayed organic substances in a very humid environment (M. Nica 1983, p. 40; M. Nica, A. Mincă 1983, p. 24)</p>	<p>This is a calcium carbonate accumulation (calcret/ caliche/ hardpan calcaire) within the soil horizon C due to evaporation of porewaters (capillary forces) in temperate, semiarid, and arid climates with sparse rainfall (A. Cailleux 1965, p. 133; E. Protopopescu-Pache <i>et alii</i> 1969, p. 149-153; E. Flügel 2010, p. 11).</p>
3	<p>The existence of a very hard limestone crust separating the Neolithic and the archaeologically sterile layers (greyish-whitish, rich in calcareous clay) due to excessive humidity and capillarity (M. Nica 1983, p. 41).</p>	<p>The Grădinile watercourse is cutting through the gravels of Frătești Formation and is accessing the deep aquifer layer in the mentioned gravels (10-20 m deep), while the phreatic aquifer (in the loessoid deposits) has a depth of 5-10 m (T. Bandrabur 1971, p. 104-105, 122, pl. V). The “limestone crust” is actually a precipitation product (cement) on the surfaces of inorganic (pottery, stone objects) or partially inorganic materials (such as bone) due to infiltrating waters and evaporation (C.S. Nicolăescu-Plopșor <i>et alii</i> 1956, p. 227; E. Protopopescu-Pache, C.N. Mateescu 1959, p. 11; J.M. Cronyn 1990, p. 21-23; 104-105, 146, 276).</p>
4	<p>The existence of a limestone crust on the artefacts, very hard to remove, heavily deteriorating the painted pottery sherds, and conserving wood in excessive humid conditions; the near surface phreatic water (1.50 m deep) allowed the calcium carbonate to be permanently combined with organic substances from the Neolithic level and to form the limestone crust on the objects and dividing the two deposits (M. Nica 1983, p. 41).</p>	<p>The mineralization of wood takes place in terrestrial (lake/river sediments) or marine environments (P. Buurman 1972, p. 38-39; J.M. Schopf 1975, p. 30). In aerated soils wood may be preserved as iron pseudomorphs due to corrosion of metal objects, but it is generally broken down by soil organisms (J.M. Cronyn 1990, p. 244, 249). It would not be possible to determine the degree of mineralization just through a visual examination. The conservation state of the wooden pot and bases is more probably related to the objects' life history and discard than its mineralization and other geological process.</p>
5	<p>The pot bases are strongly mineralized and poorly preserved. The mineralization process has modified the wood's structure up to the point of exfoliation (M. Nica 1983, p. 41).</p>	<p>The mineralization of wood takes place in terrestrial (lake/river sediments) or marine environments (P. Buurman 1972, p. 38-39; J.M. Schopf 1975, p. 30). In aerated soils wood may be preserved as iron pseudomorphs due to corrosion of metal objects, but it is generally broken down by soil organisms (J.M. Cronyn 1990, p. 244, 249). It would not be possible to determine the degree of mineralization just through a visual examination. The conservation state of the wooden pot and bases is more probably related to the objects' life history and discard than its mineralization and other geological process.</p>
6	<p>The walls of the whole vessel were covered with a thin limestone layer impeding the mineralization process, while the lower part (the base) has no limestone layer and presents an accentuated mineralization and exfoliation (M. Nica 1983, p. 44).</p>	<p>The mineralization of wood takes place in terrestrial (lake/river sediments) or marine environments (P. Buurman 1972, p. 38-39; J.M. Schopf 1975, p. 30). In aerated soils wood may be preserved as iron pseudomorphs due to corrosion of metal objects, but it is generally broken down by soil organisms (J.M. Cronyn 1990, p. 244, 249). It would not be possible to determine the degree of mineralization just through a visual examination. The conservation state of the wooden pot and bases is more probably related to the objects' life history and discard than its mineralization and other geological process.</p>

**Tab. 3.** Cross-examination of Nica's arguments for the preservation of the wooden artefacts. Confruntarea argumentelor lui M. Nica cu privire la condițiile de conservare a artefactelor de lemn.

Another part of the “inheritance” is represented by the “wooden” objects from Măgura-Boldul lui Moș Ivănuș, a site excavated in 2006-2008 (by P. Mirea as the archaeologist in charge with the field research and R.-R. Andreescu as the excavation responsible) in extension of the research carried by the Southern Romanian Archaeological Project (SRAP).

A look at the broader context reveals the following facts: the site is positioned in an area with loess and loessoid deposits covered by chernozem soils (R.I. Macphail *et alii* 2008, p. 62; also G.I. Mihai 1964, p. 270-271, fig. 82); peaty sediments have only been discovered in Teleorman’s paleochannels and the alluvial plain of Clănița (A.J. Howard *et alii* 2004, p. 274; R.-R. Andreescu *et alii* 2002, p. 199); the morphological characteristics of the sediments do not suggest any special conditions for wood preservation (R.I. Macphail *et alii* 2008, figs. 5-10; R.-R. Andreescu *et alii* 2008, p. 196).

The geo-archaeology of Grădinile and Măgura sites, as I managed to understand it from the published data and my field experience in the same area, does not support the status of the “special discoveries” and the presumed proper conditions for their conservation. These “special discoveries” also have a restricted distribution if they are related to other sites in the same area, with the same geological and geomorphological settings, for which there are no reported discoveries of wooden objects. In this view, one can say that the geo-archaeology of the sites and the associated environment conditions have been bluntly ignored both by M. Nica (1983) and J.K. Kozłowski *et alii* (2015).

### **3. 4. Eyes wide shut: what do the artefacts say?**

Soon after their discovery (1980-1981), M. Nica (1983) described (and illustrated) the “wooden” objects from Grădinile. More so, if one takes the time to scan through his other papers on this site (jam-packed with extensive and wearing narratives on pottery ornamentation motifs and chrono-cultural assignments) and amasses the scattered information on the context of their discovery, he will be able to reconstruct a meagre picture about them (see tab. 4).

Beside J.K. Kozłowski *et alii* (2015, p. 119-121), the “wooden” findings from Măgura-Boldul lui Moș Ivănuș were published only in the short reports from the Chronicle of Archaeological Researches in Romania (R.-R. Andreescu *et alii* 2007, p. 227; 2008, p. 197) and in a short English paper (R.-R. Andreescu, P. Mirea 2008, p. 60). The “wooden” artefacts are barely mentioned, with no description whatsoever and no account on their discovery contexts, but always pointing out that they are special discoveries. Based on what has been published there is no possibility to assemble even a meagre picture (see tab. 4) in order to make inferences and analogies. The objects are illustrated in a scant manner (J.K. Kozłowski *et alii* 2015, fig. 5): low resolution, terrible angles and poor lighting, no detail regarding the objects’ true shape, two objects or two pictures of the same object without and explanation in the caption.

Thus, the immediate conclusion is that M. Nica has done his job to publish in at least a decent way the claimed special discoveries from the site he excavated (even if the same thing cannot be said for the rest of the discoveries). On the other hand, the archaeologist in charge with the excavations at Măgura rushed to radiocarbon date some alleged wooden objects without a preliminary description and discussion in the public archaeological space (in a written form with at least as much details as for the Grădinile objects).

Artefact	Description	Archaeological context	Associated materials	Cultural context	Site	Reference
half of a circular pot base	medium sized, chocolate colour, inner face wall with traces of polishing (diameter = 7.5 cm; 0.4 cm thick)	above the floor of <b>house no. 2</b> (surface dwelling, 8 x 4 m), <b>level II</b> , extension of SI (squares 15-20, box 7), -0.60 m depth	amass of pottery sherds, stones, adobe fragments, hearth fragments	Early Neolithic, Starčevo-Criș, Starčevo IIA phase	Grădinile-La Islaz	M. Nica 1983, p. 41; 1981, p. 28, 35
pot base	brownish colour (diameter = 8 cm, thickness = 1 cm), very well burnished inner face wall (slightly curved); incised lines on the outer wall surface (like nail impressions)	at the base of the <b>Neolithic layer</b> , -0.60 m depth [probably <b>level I</b> ]	-	Early Neolithic, Starčevo-Criș	Grădinile-La Islaz	M. Nica 1983, p. 41, 44
whole vessel	well burnished surface, brownish colour; low form with strongly curved walls with a short lip (maximum body diameter = 11.5 cm, mouth diameter = 8.5 cm, height = 5.3 cm, rim thickness = 3-4 mm) <sup>b)</sup> ; 4 round knobs, 1.5-1.7 cm in diameter and are 2 mm thick	the northern side of <b>house no. 4</b> (0.2-0.4 m deep, 10 m in diameter), <b>level I</b> , SIV-SV (squares 9-14), -0.65 m depth	well burnished brownish-red monochrome vessels and pottery fragments with white on red painted motifs	Early Neolithic, Starčevo-Criș, Amzabegovo Ic phase	Grădinile-La Islaz	M. Nica 1983, p. 44; M. Nica, A. Mincă 1986, p. 22; 1983, p. 24, 25
bracelet fragments	oval section, diameter = 1.5 cm (one of the fragments)	the bottom of <b>house no. 3</b> (longish-oval, 10 x 4 m, 0.50 m deep), <b>level II</b> , SI, -1.10 m depth	amass of pottery sherds, stones, adobe and hearth fragments	Early Neolithic, Starčevo-Criș, Starčevo IIA phase	Grădinile-La Islaz	M. Nica 1983, p. 44, figs. 1/3-5, 4/2; M. Nica, A. Mincă 1983, p. 24
rim fragment <sup>b)</sup>	open-shaped vessel (a bowl); [small circular perforation]	-	-	Early Neolithic, Starčevo-Criș	Măgura-Boldul lui Moș Ivănuș	R.-R. Andreescu, P. Mirea 2008, p. 60, fig. 9/10
bracelet fragment <sup>c)</sup>	“trapezoidal shape in section with slightly rounded corners”; traces of white paint; 5 cm long	refuse pit (C52, oval shaped, 2.7 x 2 m), -1.10 m depth	animal bones, shells, pottery, flint and bone tools	Early Neolithic, Starčevo-Criș I phase	Măgura-Boldul lui Moș Ivănuș	J.-K. Kozłowski <i>et alii</i> 2015, p. 119, 121

a) The calculated volume of this vessel is approximately 0.8 litres.

b) R.-R. Andreescu *et alii* (2007, p. 227) mention the same bowl fragment, while R.-R. Andreescu *et alii* (2008, p. 197) mention one vessel fragment and 2 bracelet fragments. These materials are presented without any description or the context of discovery, always after a summary account of the features (and their materials) discovered in the respective digging campaigns.

c) According to J.-K. Kozłowski *et alii* (2015, p. 119) a total of 14 “wooden” objects were discovered at Măgura. They only describe the bracelet fragment and illustrate another bracelet fragment, two pendants, and two vessel wall fragments (one of them perforated) and a pot base fragment (J.-K. Kozłowski *et alii* 2015, fig. 5).

**Tab. 4.** The “wooden” artefacts from Grădinile and Măgura. Artefactele din „lemn” de la Grădinile și Măgura.

Because of the small amount of published information there is not much to say other than the obvious things. The “wooden” artefacts from Grădinile and Măgura fall in two main categories: vessels and adornments (see tab. 4). Most of the objects are in a fragmentary state, except the whole pot from Grădinile. It has a broken rim, a crack in the middle and a partially destroyed base (M. Nica 1983, figs. 2, 3; J.K. Kozłowski *et alii* 2015, fig. 2). This kind of damage was not produced by post-depositional processes, but rather by mechanical factors most probably during the object’s use-life and before the moment of discard.

The “wooden” artefacts from Grădinile have archaeological contexts and preservation states which suggest different discard patterns (tab. 4): as broken pieces (the half pot base, the bracelet fragments) or as damaged and unusable objects (the whole bowl), left behind in the abandoned dwellings; the pot base with knapping marks (from the Neolithic layer), showing a failed attempt to transform the fragment in a spindle-whorl, seems to have been randomly abandoned on the ground. The archaeological context of the bracelet fragment (a refuse pit) from Măgura-*Boldul lui Moș Ivănuș* suggests the discard of broken pieces (thus an unusable object at the end of his use-life) outside the daily living area. With the available published information and without a systematic comparative view it is very hard to interpret these contexts as indicating abandonment practices or structured depositions.

The discard of an almost whole bowl may also indicate a raw material which did not allow the object to be mended once damaged, as in the case of pottery serving bowls from Late Neolithic contexts at Makriyalos (D. Urem-Kotsou, K. Kotsakis 2007, p. 228). The recycling of the pot base shows that the raw material was important enough or suitable that some broken pieces of the object to be used for other purposes (as in the case of pottery sherds transformed in spindle-whorls or the exhausted flint cores used as hammers).

Regarding the knobs and the shape of the whole pot from Grădinile, M. Nica has noted the similarity with pottery vessels from the EN period and from the same archaeological feature (M. Nica 1983, p. 44, fig. 6). Based on typology and decoration style, the pottery from *house no. 4* (see tab. 4) was considered similar to that from level I at Cârcea-Hanuri and assigned to the Anzabegovo Ic phase (M. Nica 1983, p. 48; M. Nica, A. Mincă 1986, p. 22) and later to the Cârcea IA phase (M. Nica 1993-1998, p. 35, fig. 4). Two of the objects from Grădinile (see tab. 4) have been found in features of level II, associated with pottery assigned by M. Nica, A. Mincă (1983, p. 24) to a Starčevo IIA phase and later to Cârcea IIA phase (M. Nica 1993-1998, p. 37, fig. 7). The pottery found with the bracelet fragment in *Complex 52* from Măgura-*Boldul lui Moș Ivănuș* is characteristic to the Starčevo-Criș I phase (J.K. Kozłowski *et alii* 2015, p. 121, fig. 6). The chronological interval covered by these cultural assignments is somewhere between 6100 and 5700 cal. BC (S.A. Luca *et alii* 2011, p. 11-13; J.K. Kozłowski *et alii* 2015, p. 119).

From a typological point of view, the whole pot from Grădinile is a simple, closed form, similar to the S-shaped *bowl type IIA* from Măgura-*Buduiasca* (L. Thissen 2012, p. 15) or the collared *bowl type 202* from the Măgura-*Boldul lui Moș Ivănuș* (L. Thissen 2015, p. 19): the height is less or equal to the mouth diameter, while the midway diameter is exceeding the rim diameter; small and medium sizes; diameters between 7 and 25 cm (most of them around 10-20 cm)/ 11 and 18 cm (most of them around 13-14 cm); wall thicknesses between 6 and 8 mm/ 4 and 7 mm; S profile; vertical or slightly bent out rim; ring or disk bases; plain burnished or slipped and burnished surfaces. The function of such bowls is related to consumption of food and storage (D. Urem-Kotsou, K. Kotsakis 2007, p. 228; J.B. Vuković 2011a, p. 208; 2011b, p. 17-18; L. Thissen 2012, p. 16). Compared with this category of bowls, the one from Grădinile has similar dimensions (rim diameter), but a smaller wall thickness, a

smaller ratio of the height to rim diameter (similar to the ratio for hemispherical bowls) and a very small volume (little more than 0.8 litres).

Considering that J.K. Kozłowski *et alii* (2015, p. 125) have identified the raw material of the “wooden” artefacts as fossilized wood (see above, Section 3. 2.), the bowl from Grădinile has the closest similarities in a stone vessel typology with the globular bowls category: convex walls, rim diameter less than the maximum width (K. Wright 1992, p. 76). Also, the rim diameter and the height of this vessel are smaller than 10 cm which allows this to be called a miniature vessel in the same stone vessel typology (K. Wright 1992, p. 76).

The very thin walls, the surface treatment (very well burnished) and the four knobs reflect a rather high degree of technical investment and fine craftsmanship. The very small size and volume indicate that this vessel lacks the capacity to contain anything substantial, while the absence of a spout may suggest that this was not a vessel for consumption of liquids. Similar fine stone vessels are known from different contexts in the Neolithic period from the Fertile Crescent, Anatolia, Levant and up to the Balkans: greyish black sandstone bowls in Pre-Pottery Neolithic A burial contexts from Kortik Tepe (V. Özkaya 2004, p. 587, figs. 4, 6; V. Özkaya *et alii* 2002, p. 754-755, figs. 8-9; V. Özkaya, A. Coşkun 2011, p. 95-96, figs. 15, 18); limestone or marble bowls in different Pre-Pottery Neolithic B contexts from Çayönü (M. Özdoğan 2009, p. 24); fine marble bowls as “building-gifts” in a Pottery Neolithic buried structure at Mezraa Teleilat (M. Özdoğan 2009, p. 24); fragmentary mostly miniature vessels (limestone, white marble, veined red limestone, andesite, steatite) in different contexts of the Pre-Pottery Neolithic B and Late Neolithic levels at Catalhöyük (J. Mellaart 1962, p. 55; 1964, p. 84, pls. 18a, 26b; 1967, p. 215; K. Wright *et alii* 2013, p. 390, figs. 20.4, 20.28a, 20.36a-b, 20.36d, 20.37e); several fragmentary marble and greenstone vessels in EN contexts from Argissa, Achilleion, Nessonis, Nea Makri, Sesklo, and other Greek sites (C. Perlès 2001, p. 78, 221-222). Their rarity in many sites, occurrence in shrines or burials or their abundant predominance in some burial contexts suggest that finely worked stone vessels were prestige goods or luxury objects related to symbolic functions or to status (J. Mellaart 1964, p. 84; C. Perlès 2001, p. 63; K. Wright *et alii* 2013, p. 408; J.J. Shea 2013, p. 270).

The rim bowl fragment from Măgura (R.-R. Andreescu, P. Mirea 2008, fig. 9.10; J.K. Kozłowski *et alii* 2015, fig. 5.5) has a small circular perforation similar to those found on the PPNA stone vessels from Kortik Tepe (V. Özkaya *et alii* 2002, p. fig. 9, 11; V. Özkaya, A. Coşkun 2011, figs. 15, 19, 22). At the scale of the Balkan space, the petrified wood bowl from Grădinile is probably one of the few EN stone vessels preserved in an almost complete state.

The bracelet fragments and pendants from Grădinile and Măgura are too poorly described in order to start a discussion here, but such stone objects, of personal adornment or ritual significance, are known from different Neolithic contexts (J. Mellaart 1962, p. 55, pl. Vb; 1964, p. 95, pl. 25c; 1967, p. 214, figs. 103-104; T.W. Jacobsen 1973, p. 256, pl. 48b-c; J. Cauvin 1989, p. 80; C. Perlès 2001, p. 221; K. Wright *et alii* 2008, p. 138, tabs. 2-3; K. Wright 2012, p. 427, 442, tabs. 21.1, 21.3, 21.4, 21.5 L. Astruc *et alii* 2011, p. 3416-3417, fig. 1; E. Baysal *et alii* 2015, p. 239, tab. 1, figs. 5, 6, 8, 10).

Even without the results of J.K. Kozłowski *et alii* (2015, p. 125), the job of these archaeologists (C. Suciú and P. Mirea) should have been to see the wider picture: to describe and establish the objects’ places in the according typologies and cultural frame, to understand their contexts and to interpret their meanings. They should have done this especially because the objects had a special status (“wooden”) and because these were about to be dated through the radiocarbon method (thus obtaining absolute ages not only for the contexts of the objects but also for the objects themselves).

#### ◆ 4. Final remarks: an ending to the saga?

The reviewed information has revealed that the astonishing <sup>14</sup>C dates obtained for the supposed wooden objects (far in time from the normal EN ages) embodies the saga of overlapping research errors starting some 30 years ago, but the only (ir)responsible persons are the ones which submitted the samples to radiocarbon dating completely ignoring: the geo-archaeology of the two sites; the objects' characteristics and their archaeological context; a critical reappraisal of M. Nica's arguments for the conservation of wooden objects at Grădinile; the discrepancies between the preservation contexts of the prehistoric wooden artefacts given as examples and the preservation conditions of the analysed objects; the lack of coincidence regarding the similarity of the <sup>14</sup>C dates (both so far in time from what was expected) obtained on two objects from two different and far apart sites; the inefficiency of the additional investigation instruments used to explain the accuracy of the radiocarbon dates and to identify the raw material.

The most troublesome aspect of this saga is reflected by the antiquarian manner in which the objects were handled: considered special because of the rarity of preserved wooden artefacts, expediently described and submitted to radiocarbon dating without properly understanding (and explaining) their archaeological contexts, overlooking their use-lives' histories, stripping them of any real contextual meanings and analogies (decontextualized). This resulted in taking an improper course of action, reflected by the unfortunate choosing of the investigation tools and their inefficient use (rerun of the radiocarbon dating, "spectroscopic chemical analysis", "Electron Scanning"), and thus arriving at astonishing results which even caught by surprise the ones conducting the study.

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