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A new exploratory project: The ethnoarchaeology of salt in the Inner Carpathian area of Romania

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Abstract. *This new ethnoarchaeological research project focuses on the inner-Carpathian area of Romania. The archaeological and ethnographic vestiges of salt exploitation in this area are among the most consistent in Europe. They are closely interconnected and reveal the continuity of salt exploitation in the same locations from prehistory to the present. From the methodological point of view, the project avail itself of the experience gained and validated by the projects carried out under the aegis of the "Al. I. Cuza" University of Iași and of the National Museum of the Eastern Carpathians in collaboration with prominent research centres from France, UK, US, and Germany. The new project will tackle a number of new issues, including the reconstruction of the prehistoric salt-exploitation techniques that employed wooden installations such as those unearthed in a number of archaeological sites from northern Transylvania and Maramureș, the transport of salt along streams with limited discharges, and others. New research methods will also be tested, such as the virtual simulation of certain salt-exploitation technological processes.*

Rezumat. *Noul proiect de cercetare etnoarheologică a sării vizează spațiul intracarpatic al României. Vestigiile arheologice și etnografice din acest areal sunt printre cele mai consistente din Europa, sunt strâns interconectate între ele și relevă continuitatea exploatării sării în aceleași spații începând din preistorie până în zilele noastre. Din punct de vedere metodologic, proiectul beneficiază de experiența acumulată și validată în cadrul proiectelor anterioare realizare sub egida Universității „Alexandru Ioan Cuza" și Muzeului Național al Carpaților Răsăriteni în colaborare cu centre de cercetare de prestigiu internațional din Franța, Marea Britanie, SUA și Germania. Totodată, în cadrul noului proiect vor fi abordate o serie de teme noi, printre care menționăm reconstituirea tehnologiilor de exploatare a sării cu ajutorul instalațiilor preistorice de lemn descoperite în situri arheologice din nordul Transilvaniei și în Maramureș, transportul sării pe pâraie cu debit mic și altele. Vor fi experimentate și unele metode noi de cercetare, printre care menționăm simularea virtuală a unor procese tehnologice de exploatare a sării.*

Keywords: salt, ethnoarchaeology, experimental archaeology, Romania.

Romania is now rich both in archaeological and ethnographical evidence for preindustrial salt production, processing and use. In this situation, the ethnoarchaeology of salt in Romania provides a unique advantage, that of **spatial unity and temporal continuity**.

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This unique situation in Europe was valued ever since the beginning of the last decade of the past century by a study that emphasized the enormous potential of salt ethno-archaeology in Romania[3]. The embodiment of the research was carried out within the project *Ethnosal*[4] (2007–2010), which mainly concerned the Subcarpathian area of Moldavia. The impressive results obtained within this project and the finding of the many new situations in almost every research microzone led to its extension to the entire extra-Carpathian area of Romania, through the project *EthnosalRo*[5] (2011–2016). On this occasion there were also a lot of situations which were not reported in the research of the first project (Figure 1).

It is worth mentioning that the ethnoarchaeological potential of Romania[6] has increased even more after the country joined in 2007 the EU, when, as an unforeseen effect of an increase in the number of private enterprises, some resilient areas witnessed the reactivation of traditional economical behaviours of valorising natural resources, including salt, at an unexpected intensity.

In 2016, at the suggestion of the archaeologist Valerii Kavruk, a new project was drown up, *EthnosalRo3 — The Ethnoarchaeology of Salt in the Inner Carpathian area of Romania*[7], a winner of the 2016 UEFISCDI competition, focused on the inner-Carpathian area of Romania (Figure 2). This project is the result of the collaboration between the manager of the two aforementioned projects (M. Alexianu), and Valerii Kavruk, the manager of the Museum of the Eastern Carpathians from Sfântu-Gheorghe, who led several archaeological projects focused on the archaeology of salt in Transylvania.

The inner-Carpathian area of Romania has **the highest potential** in Europe for ethnoarchaeological research on the preindustrial civilisation of salt. Foremost, this area harbours and are currently in research some of the most representative and well preserved archaeological sites related to the *continuous exploitation of rock salt and brine* from ca. 3500 BC until the present day. Due to the publication of the results of the archaeological researches carried out in Transylvania and Maramureș in 2000–2013 in the framework of Romanian-British projects the ancient salt production evidence from this region has become well known in the scholarly world. Among others, the recent archaeological investigations revealed a technology of salt exploitation unique in the world — the so-called "trough technique"[8].

[3] ALEXIANU, DUMITROAIA, MONAH 1992.

[4] CNCS-UEFISCDI project 414/2007, no 167/2007, *The salt springs of Moldova. The ethno-archaeology of a polyvalent natural resource — Ethnosal*. Online: ethnosal.uaic.ro. For a presentation of the project, see ALEXIANU, WELLER 2009.

[5] CNCS-UEFISCDI project PN-II-ID-PCE-2011-3-0825, no 219/5.10.2011, *The ethnoarchaeology of salt springs and salt mountains from the extra-Carpathian areas of Romania — EthnosalRo*. For a presentation of the project, see ALEXIANU, WELLER, BRIGAND 2012. Online: ethnosalro.uaic.ro/ethnosalro

[6] NANDRIS 1985.

[7] CNCS-UEFISCDI project PN-III-P4-ID-PCE-2016-0759, no 151/2017, *The Ethnoarchaeology of Salt in the Inner Carpathian area of Romania — EthnosalRo3*. Online: ethnosalro.uaic.ro/ethnosalro3

[8] HARDING 2013, 63–66.

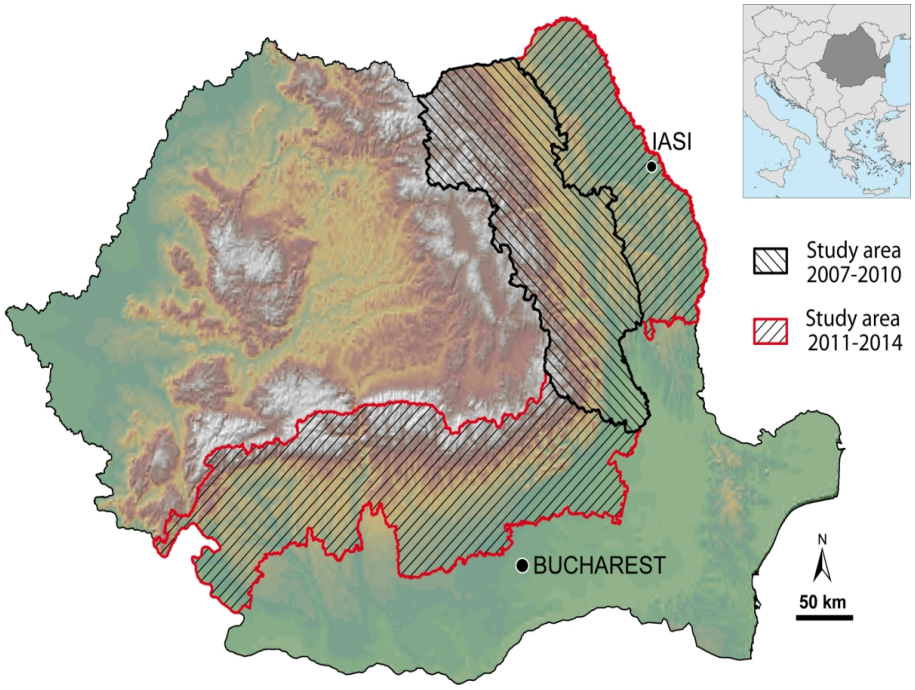

Figure 1. Study area of the *Ethnosal* (2007–2010) and *EthnosalRo* (2011–2016) projects (map by R. Brigand).

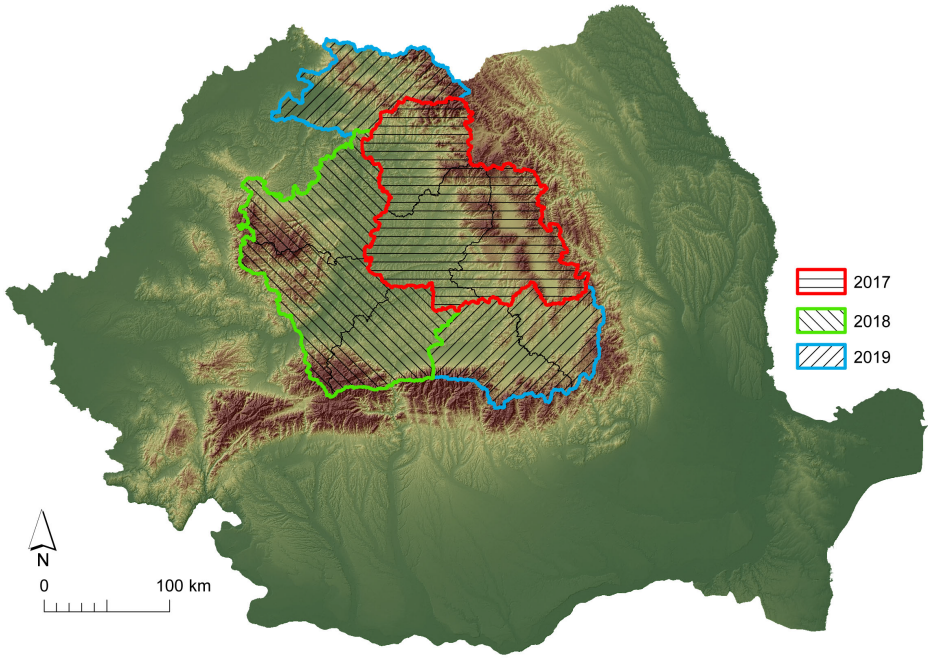

Figure 2. Study area of the *EthnosalRo3* (2017–2019) project (map by R. Brigand).

Figure 3. The brine well from Caila (Bistrița-Năsăud County),
located at the centre of a salt-exploitation site (ca. 1300–900 BC and ca. 1600–1800 AD).

Figure 4. Băile Figa 2016: well and trough from ca. 1000 BC.

If Romania is the only country in Europe in which preindustrial exploitation of salt is still being carried out on a wide scale, *Transylvania and Maramureș are at the forefront in Romania in this regard.* Furthermore, in the inner-Carpathian area there are known practices and customs that are unknown in the rest of Romania, from which we mention the supply from the salt wells with house, ritual consumption of salt, preindustrial mining, etc.

The ethnographic researches on the traditional exploitation of salt carried out in Transylvania in 2005–2012 have revealed a particularly rich heritage that constitutes an important starting point for an ethnoarchaeological research.

Thus, the possibility was given to contribute in a substantial manner to the development and articulation in the ethnoarchaeological sense of the results of the researches in the inner-Carpathian area.

The inner-Carpathian area of Romania presents a huge potential for conducting ethnoarchaeological research, on the one hand on account of the density of archaeological sites in saliferous areas, and on the other, the practice even today in some resilient areas of traditional behaviours of exploiting brine springs and rock salt shallow deposits and outcrops. Ten archaeological salt production sites are known in the Inner Carpathian space of Romania. All of them are exploited nowadays in the frame of the traditional and resilient economy. Notable archaeological sites related to the exploitation of salt, dated to various time periods—ca. 3500–2000 BC, 1600–800 BC, 400–200 BC, 500–700 AD, 1400–1800 AD—are found in Băile Figa, Săsarm, Caila (Bistrița-Năsăud County; Figure 3), Orșova (Mureș County), Sânpaul (Harghita County), Turda-Salina (Cluj County), and Ocnișoara (Alba County). Special mention should be made of the archaeological site from Băile Figa, where researches have revealed a novel technique of exploiting the salt outcrops in prehistory, namely the so-called "trough technique"[9] (Figure 4). From the archaeological point of view, the relations between the human settlements and the salt resources in the inner-Carpathian area of Romania have been treated exhaustively in an interdisciplinary holistic vision[10].

The recent ethnographical field research has shown that in the inner-Carpathian area the most relevant are the activities developed around the so-called "salt wells with houses" (Figures 5 and 6). They are concentrated mainly in the Subcarpathian areas of Transylvania, along the western range of the Eastern Carpathians and in Maramureș: the Homoroadelor Depression, the Odorheiu-Secuiesc–Praid–Corund–Sovata area, the Upper Mureș Valley (Reghin–Ideciu de Jos–Brâncovenești), the Șomeșul Mare basin (most of Bistrița-Năsăud County and the eastern part of Cluj County, up to Ocna Dej), and the Maramureș Depression. We mention that Eastern Transylvania benefits from an ample ethnographic research[11], but

[9] HARDING, CAVRUC 2012; HARDING 2013, 63–66.

[10] HARDING, KAVRUK 2013.

[11] CHIRICESCU 2013.

research should be recommenced, considering the fact that ethnoarchaeology considers other parameters besides those specific to classical ethnography.

Like in the two previous projects, this project aims to apply the spatial method in the field of ethnoarchaeological researches on brine springs, rock salt shallow deposits and outcrops. This top orientation in the field of ethnoarchaeology will be extended systematically to the entire inner-Carpathian area. Thus, this pattern of scientific behaviour will establish itself decisively in international academia.

Carrying out archaeological experiments, some of which the first of their kind in the entire world, constitutes another novel objective of this project. Establishing from the ethnoarchaeological point of view the different parameters of salt transport on a multiscalar level represents an innovative objective in relation to previous research in Romania.

Compared to the two previous projects, this project has a number of new objectives, most notably concerned with reconstructing the prehistoric and proto-historic exploitation of salt, in the inner-Carpathian area, by means of experimental archaeology). These experiments will focus on: (a) producing on site structures, installations and tools related to the exploitation of salt, similar to those discovered in archaeological deposits; (b) testing their functionality for extracting rock salt, increasing the salinity of brine, evaporating brine; (c) the transport of salt along creeks using the damming system (raising successive dams in order to raise the level of water on short distances and their successive breaking for ensuring a discharge sufficient for the movement of rafts/ships; (d) manufacturing pottery with brushed surfaces (known in salt production sites in Transylvania as well as in Asia and the Americas) involved in the exploitation of salt, in order to establish their functionality. Another novel objective aims to establish the practical ways in which small-distance transportation of rock salt on land or waterways could have been connected to the major salt routes, by land or water. Yet another novel objective involves conducting interdisciplinary researches concerning the

Figure 4. The “salt well with house” from Cepari (Bistrița-Năsăud County).

Figure 5. The “salt well with house” from Bunești (Cluj County).

supplying with salt of areas in eastern Transylvania lacking salt, from the saliferous areas of Moldavia and Wallachia. Finally, another new objective aims to ascertain the human behavioural constants on the diachronic level in selecting the points of exploitation of salt, on the backdrop of an abundance of salt in certain microzones.

The present project presents some elements of originality in relation to the previous two projects: (a) reconstructing the pre- and proto-historical methods of salt exploitation by means of archaeological experiments; (b) applying the original models resulted from the *EthnosalRo* project to the inner-Carpathian area of Romania; (c) approaching from the ethnoarchaeological perspective of the problematics of transportation of salt and of salt roads in the study area; (d) establishing the human behavioural constants in selecting the locations of salt exploitation; (e) using computer simulations in the case of archaeological experiments related to the exploitation of salt.

From a methodological point of view, just like the previous projects (*Ethnosal* and *EthnosalRo*), this project proposes a multiscalar approach: (1) Multiproxy approach: distribution area of the salt coming from a salt spring or a salt outcrops; (2) Distribution area of the salt for the entire Romanian inner-Carpathian area.

The project aims to extend the field researches until reaching the parameters of a saturated model[12]. The research methodology valorises the methods specific to each discipline involved within the project. Specific methods: complex ethnographic inquiries (on the basis of original questionnaires[13]) and of new questionnaires centred on rock salt deposits and outcrops, at the seasonal animal breeding settlements, and at exploiting localities; the questionnaires approach a complex themes: localization of the exploitable salt sources, identification of the exploiting localities, transport, utilizations, frequency, (re)distribution network, trade, barter transactions, gift, hunting, extracting methods, symbolism, ethno-science, behaviours, salt-related toponymy and anthroponomy; geo-referential localization of the salt springs and salt outcrops through GPS; spatial analysis method applied to the salt springs and salt outcrops – habitat implementation relationship; archaeological surveys in the surrounding areas of the salt springs and on a range of 500 m around; employment of the chorographic method related to the concentration of the human habitation areas around the salt springs and salt outcrops in the archaeological and ethnographical time; first-ever testing for the Inner Carpathian area of Romania of the validity of the radial salt supplying model created on the basis of ethnoarchaeological researches in the extra-Carpathian area of Romania[14].

We stress that by employing this holistic methodology used for the extra-Carpathian area in the case of the inner Carpathian area will undoubtedly enhance the systematic character,

[12] ALEXIANU 2013.

[13] Cf. ALEXIANU, WELLER, BRIGAND 2007, 41–57.

[14] ALEXIANU 2015.

coherence, solidity and also credibility of our undertaking. The methodology novelty refers to consolidating the non-mechanic application of certain current models to prehistoric archaeological situations, starting from observing the continuity over the last half millennium of the non-industrial economic patterns and social contexts generated by the existence of salt springs and salt outcrops, despite the great changes in the social, political, administrative organization of the communities within the Romanian Outer and Inner Carpathian space, including the moment when Romania joined the EU.

The research team is composed of members of the *Ethnosal* and *EthnosalRo* projects, to which specialists from the intra-Carpathian area of Romania were added. We also mention that the *EthnosalRo3* project team includes reputed specialists from Europe (A. Harding, O. Weller). The multi- and inter-disciplinary character of the project is provided by the represented (sub)disciplines: ethnoarchaeology, archaeology, experimental archaeology, geospatial archaeology, geophysical research, archaeometry, history, philology, ethnography, cultural anthropology, chemistry, geology, hydrology.

The research undertaken within the project creates the premises to fully substantiate interpretative models impossible to achieve anywhere else in Europe. It is obvious that the modelling based on such a consistent database maximizes the credibility of using the ethnographical analogy to understand the various contexts on the archaeological time. Therefore, the different sub-models provided by this project will undoubtedly be used as reference for the areas—anywhere in the world—with evidences of salt exploitation in the archaeological, but not in the ethnographic time. We also mention that the tendency to build potentially universal models will not exclude the emphasis on the idiographic aspects illustrating the intelligence of human behaviours in particular situations.

The central scope of the project is to produce a complete ethnoarchaeological referential based on complex researches in areas with salt resources from the inner-Carpathian area of Romania. By corroborating the previous results obtained for the extra-Carpathian area of Romania, it will be possible to produce the world's first ethnoarchaeological research, unitary from all points of view, of a major saliferous region of the world.

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