

Ethnoarchaeological projects on salt in Romania

Marius Alexianu - *University of Iași Alexandru Ioan Cuza*

Prehistoric Archaeology of Salt. The research on the links between the prehistoric communities and the salt springs began as late as the 1960s. The first study in the Romanian literature concerned the archaeological discoveries from Solca (Suceava county), dating from the Neolithic (Starčevo-Criș culture) to the Middle Ages (Ursulescu 1977). The discovery of a Chalcolithic tell at Poduri (Bacău county) in an area rich in salt springs convinced a group of archaeologists to initiate research on the possible relations between these natural springs and the complex dwellings of the tell (Monah et al. 1980; 1991). The importance of the saliferous Moldavian sub-Carpathian area for the multiple development of the famous Cucuteni-Trypillia Chalcolithic complex was recognized by Linda Ellis (1984, 205). In a memorable statement she said: “It is also no accident that the longest area of occupation for the Cucuteni-Trypillia culture (i.e., the Eastern Carpathians and sub-Carpathians) happens to be a region noted for one of the largest salt formations in Eastern Europe. Exploitation of, control over, and trading of this essential resource no doubt contributed to the stability of Cucuteni-Trypillia village life in the face of cultural contact with Eastern steppe pastoralists, as well as enhancing the quality of food, storage, food consumption, and animal and human health.” Notable is that the problematics of salt is also found in an ethnoarchaeological study: “One of the most interesting developments recently in Moldavian archaeology has been the emergence of evidence for sites functionally specialised in the exploitation of salt as far back as the early Neolithic; and a corresponding realisation of the importance of salt in the organisation of Cucuteni society” (Nandris 1987, 209). This hypothesis was reconfirmed by subsequent discoveries in an impressive site of exploitation at the Poiana Slatinei-Lunca salt spring (Neamt county), where the prehistoric exploitation stratum, starting with the Starčevo-Criș culture, is up to 2.65 m thick (Dumitroaia 1987). The rate of such discoveries was intensified by subsequent finds, which led to the first synthetic archaeological studies about the exploitation of salt springs (Monah 1991; Ursulescu 1995; Weller 2000). Taking into account the fact that the archaeological data looked promising, mainly in regard to their antiquity, researchers in international programs came to study the problems of salt exploitation in Romania. Romania’s ethnoarchaeological potential for salt was highlighted in the last decade of the last century by a pioneering study (Alexianu et al. 1992). In many mountain and hill micro-areas, Romania meets the ideal conditions for undertaking ethnoarchaeological research focused on investigating the role of salt in the evolution of prehistoric communities. This is because this country: (a) Is very rich in salt deposits and various saline manifestations; (b) Shows a remarkable density of archaeological sites, close to some salt springs, the oldest evidence for salt production in Europe, and probably worldwide (Weller and Dumitroaia 2005). Here is the so-called trough technique, first investigated in Transylvania (Harding 2013, 63–66; Harding and Kavruk 2013, 47–94). traditional salt production, distribution, and rituals in rural, and sometimes even urban, areas continue to this day at an unexpected degree of intensity for an EU member country (from 2007).

The ethnoarchaeological studies on this topic were additionally strengthened, thanks to three large research grants from the Romanian government through the National Research Council (CNCS), in particular, the projects *The salt springs of Moldavia: ethnoarchaeology of a polyvalent natural resource* (2007–2010), *The ethnoarchaeology of salt springs and salt mountains from the extra-Carpathian area of Romania* (2011–2016), and *The ethnoarchaeology of salt in the inner Carpathian areas of Romania* (2017–2019) directed by M. Alexianu.

The main objectives of the Ethnoarchaeology of Salt projects are:

1. To record the different human behaviors from the historical present concerning the salt resources;
2. To identify on the ground the salt springs with archaeological evidence for the production of recrystallized salt in their proximity;
3. To determine the non-industrial use of salt originating from salt springs and salt outcrops in the historical present (i.e., the past century);
4. To determine the distribution area of non industrially exploited salt springs and salt outcrops;
5. To model the distribution network of salt water (spatial information concerning the distribution of salt arising from salt springs and salt outcrops);
6. To critically apply an ethnographic analogy in order to explain the archaeological situations and phenomena related to salt.

The projects benefited from a particularly useful tool, in the form of an original questionnaire (authors: O. Weller, M. Alexianu, L. Nuninger) that combined the traditional ethnographic approach with the archaeological perspective.

Pragmatic Uses of Salt. Ethnographic research has produced important insights regarding the use of natural brine and salt in general. There are more uses than has been generally considered by archaeologists. Firstly, we would like to emphasize the fact that **salt water is still used in large proportions by adding it directly into different dishes and foods**. Salt water is used both for family and collective (in some restaurants, monasteries, etc.) consumption. For human consumption, salt water is generally used mostly for the conservation of bacon and pork, of various types of cheeses, and of various vegetables or greens. Important quantities (500–3000 l) are used by microenterprises, mostly by cheese factories which produce feta-type cheese (Rmn. telemea). The salt boulders are licked by sheep and cattle. Salt water has a generalized use in different mixtures of food, particularly for pig fodder. Forage given to cattle is sprinkled with salt water.

Some surprising results have been the use of salt water and salt as a remedy in various diseases. Peasants in the Moldavian sub-Carpathians use a wide variety of procedures using brine (e.g., mouth rinsing, inhalation of vapors, rubbing, etc.), some of which are rather singular in the European space (such as heating stones for salt water in the case of treatment of rheumatism in large wooden baths). Recent research has shown that a considerable part of halotherapeutic practices identified by ethnographic inquiries carried out in Moldavia are to be found in the Greek and Latin world. The common clinical specter of ancient and modern (but traditional) therapies includes gum and dental diseases, skin burns, headaches, angina, tonsillitis, boils, inflammations of the skin and dermatosis, kidney and stomach pains, lumbar and leg pains, joint pains, dog or cat bites, frostbite, mouth and ear diseases, and bleeding (Curcă 2007; Sandu et al. 2010).

Salt Boulders and the Control of Sheep Mobility. When the flocks go grazing in spring to the area found suitable by the shepherd, namely, to the *târlă* (an unenclosed and open area where the sheep rest and sleep over night), the shepherd first places 6–7 rock-salt boulders in a semicircle at 10 m intervals. The sheep ascend to the area to freely lick the boulders, making a *târlă*. They are then left in free stabulation, roaming the pastures, and after grazing they return on their own to the place with the boulders. When the shepherd wants to change the location of the *târlă*, he moves the boulders to the new selected place. I have first recorded this grazing system in the summer of 2018 from the shepherds around Pata, near Cluj-Napoca (Transylvania), where recently there was discovered an archaeological site with wooden structures specific to the mining exploitation of salt deposits since the Bronze Age. This is a textbook example of control, of manipulating the behavior of the sheep using salt. The ethnographic situation from Pata allows advancing the hypothesis that one of the ways by which sheep were domesticated involved the controlled consumption of salt in places specially selected by humans.

Hunting at Salt Springs. The salt springs and the proximate areas exert stable attraction for wild animals (particularly roe deer, red deer, and boars) and birds (doves, cranes, storks). The deer lick the dry and damp salted microzones. Boars bathe in the mud to protect against skin parasites. Similarly, storks are attracted to the area not by the salt, but by the micro-fauna living in the salt-mud

microzones. Often, the frequent visits to the salt spring areas by some animals and birds raised the attention of hunters, who then improvise shelters for facilitating stalking there.

Salt Springs and Settlements. One of the important accomplishments of the first two projects was the achievement of an original classification of settlements according to salt springs (Alexianu et al. 2012). They vary according to the main forms of exploitation:

1. Collection, transport, and uses of salt water as such;
2. Collection, transport, and thermal treatment of salt water to obtain crystallized salt and uses;
3. Collection, transport, and use of naturally crystallized salt around the salt spring.

Saltwater Supply. We distinguished:

1. Saltwater supply point which practically corresponds with the area in direct proximity of a salt spring:
2. Dwellings/settlements which are supplied directly from a salt spring:
 - 2.a. Seasonal dwellings of the sheepfold type;
 - 2.b. The settlements as such; ethnographic inquiries have noted that all villages around a spring use salt water;
3. Settlements supplied indirectly with salt water, located between 40 to 50 and approximately 100 km from a salt spring. The distribution direction is from direct users to settlements located in remote areas.

Production and Supply of Ignigenous (Direct Heat-Evaporated) Salt. The practice used for recrystallization of salt by boiling natural brine, which usually ceased around the middle of the 1990s, involved the following three main strategies:

- (1) production of recrystallized salt (popularly known as *husca*) in the proximity of the salt spring;
- (2) production of *husca* in seasonal habitats such as isolated sheepfold in the mountains;
- (3) production of *husca* in villages (in the courtyard or more rarely inside the houses). A cauldron on a support, sometimes suspended, was used for the brine evaporation.

Classification:

1. Salt spring – point of saltwater supply;
2. Point of production of recrystallized salt by boiling natural brine, located near a salt spring, generally upstream, with a seasonal character.
3. Point of recrystallized salt production by a seasonal settlement sheepfold type: the salt is used exclusively for the local needs, mostly for sheep.
4. Point of production of recrystallized salt in a settlement, as follows: (a) the salt is destined exclusively for the household needs; (b) the salt is destined for partial household needs; and (c) the salt is destined partially for barter or sale in localities situated within up to 20–30 km or localities at a distance of 70–200 km. Generally, we can conclude that the distribution territories of recrystallized salt are considerably larger than those of saltwater distribution, as a rule, up to 80–100 km; but inquiries conducted in 2009 have shown longer routes of approximately 300 km (e.g., Suceava-Galati).

Use of Naturally Recrystallized Salt. During the last period of ethnographic inquiries, another salt exploitation technique was brought to light: the “harvesting” of naturally recrystallized salt around and downstream salt springs and its use as such in human and animal food, conservation, etc. Even though the last century has not been in any way significant, this type of exploitation is extremely suggestive for the understanding of prehistoric situations. Our hypothesis is that prehistoric man first exploited salt water, and only later naturally recrystallized salt, in the proximity of salt springs. Naturally recrystallized salt offered a model for obtaining large quantities of salt by natural (solar) or artificial evaporation, by boiling. In other words, the ignigenous process of obtaining salt results from the natural process of evaporation without any human intervention.

Archaeological Experiments. The experiments, initiated and conducted by project member dr. Felix-Adrian Tencariu, allowed some valuable observations on the distinct aspects of this *chaîne opératoire*: modelling and firing the briquetage vessels; exposure to fire of the recipients filled with brine or a salt slurry of varied concentrations; the amount of time needed for crystallization and hardening of the salt, dependent on the fuels used and temperatures reached; ways of extracting the salt cakes from the ceramic coat; and assessment of the effort (i.e., labor and raw materials) involved by the whole process.

What is notable is that this was the first such experiment to successfully obtain unfragmented salt cakes after breaking the briquetage. Previous attempts failed foremost because the recrystallized salt adhered to the ceramic walls. This was mitigated by covering the walls with burdock leaves, thus separating the wet salt paste from the pot (Tencariu et al. 2015).

The Radial Model of Salt Supply. Based on the over 500 ethnological investigations carried out so far within the framework of two extensive projects on the salt springs and salt deposits from Romania, we were able to build a radial supply model for brine from salt springs, ignigenous salt obtained from salt spring brine, and salt boulders from salt outcrops (Alexianu 2015). The complete radial model is available when all around the salt spring or the salt deposit, there are human settlements. We can speak of an incomplete radial model where human settlements (permanent and seasonal) are located only in certain areas compared to a salt spring or a salt deposit. Thus, it is thus entirely appropriate to define the salt springs as salt attractors for human communities. This capacity as attractors seen in the archaeological time is a substantive argument for their role as key factors in the process of sedentarization. The problem of meeting the nutritional requirements for the human groups engaged in mobile hunting throughout the year – and critically in wintertime – was alleviated by using brine for preserving the meat.

Conclusions

The resilient areas of Romania have the highest potential in Europe for ethnoarchaeological research on the preindustrial civilization of salt. The area harbors some of the most representative European archaeological sites related to the continuous exploitation of salt spring brine and rock salt from 6050 BC until present. Of major ethnoarchaeological relevance is that villagers and even some city-dwellers maintain to this day traditional behaviors related to the exploitation of salt springs and salt outcrops. The EthnosolRo project series has produced a complete ethnoarchaeological referential on salt, which meets the exigencies of a saturated model (Alexianu 2013). In terms both of the consistent methodology and of the area with salt resources present and covered, this project constitutes a one-of-a-kind ethnoarchaeological research endeavor. The results of the research open unexpected opportunities to capitalize the ethnoarchaeological potential of other resilient areas in emergent or even developed countries. The complete ethnoarchaeological referential provided by these projects can challenge the paradigms in the fields of world archaeology and ethnoarchaeology of salt. From among the concrete results, notable is that the systematic ethnographic and surface archaeological research carried out in the proximity and vicinity of the salt springs from the eastern extra-Carpathian area of Romania since 2004 has increased twofold the number of prehistoric sites with evidence of brine exploitation, to a total of 21 sites (Brigand and Weller 2018). The research of this type conducted in 2019 has revealed the oldest (Neolithic) exploitation of salt spring brine in Transylvania (Kavruk et al. 2019). The series of ethnoarchaeological projects developed in Romania between 2007 and 2019 has fundamentally changed the strict archaeological perceptions of the exploitation of salt resources primarily in Europe. The resulting image is highly complex, impossible to be imagined by archaeologists before this work. It turned out that besides the human and animal food and food preservation purpose, there is a whole series of other uses of salt, among which a very important role is played by medical practices. Completely surprising was the use of brine from salt springs directly in human and animal nutrition, without any other intervention. It follows that the exploitation of salt springs does not involve as a rule the presence of specific archaeological remains. A salt spring can even be exploited

intensively without any archaeological trace, if the brine transportation vessels were made of wood or they were ceramic but did not break. This stunning situation has nothing to do with inferior social status or poverty, it being explained by the special flavor given to the various dishes or the bacon or the preserved vegetables and herbs. Ethnographic research has led to the construction of original models. We highlight here the radial model of brine distribution from salt springs and salt boulders from exploiting salt outcrops, as well as a classification of human settlements according to salt exploitation points. The first applications of these models to the archaeological past have proven their validity, contributing to a better understanding of the complex role played by salt in the evolution of human communities from anywhere and anytime. Obviously, the relevance of the ethnographic analogies for reconstituting archaeological situations is a crucial problem for ethnoarchaeology. The analogies must not be applied mechanically, *tel quel* and in details, to the archaeological past. My conviction is that these investigations have revealed dimensions of a general nature (e.g., the use of brine directly for human and animal alimentation, without any intervention, spatial distribution, uses, religion, superstitions, symbolism), which were generally overlooked by archaeologists. Strictly for Romania, the relevance of ethnoarchaeological research of this type is enhanced by the fact that they were carried out under the conditions of the unity of place and the continuity of the exploitation of the salt resources.