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series ***ARCHAEOLOGICA ET ANTHROPOLOGICA***

CARPATHIAN HEARTLANDS
Studies on the prehistory and history of Transsylvania in European contexts, dedicated to Horia Ciugudean on his 60th birthday

NUCLEUL CARPATIC
Studii privind preistoria şi istoria Transilvaniei în context european, dedicate lui Horia Ciugudean la aniversarea a 60 de ani

Edited by /
Volum îngrijit de:

Nikolaus Boroffka
Gabriel Tiberiu Rustoiu
Radu Ota

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Horia Ciugudean

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A CRITICAL VIEW ON THE USE OF SALT IN THE POLITICAL ECONOMY OF ÚNĚTICE SOCIETIES IN THE CIRCUMHARZ REGION IN EASTERN GERMANY

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Abstract. It has long been assumed that there is a connection between the rich graves and hoards in the Únětice Circumharz Region during the Bronze Age and extraction of salt[1]. This is a plausible interpretation as it is well attested that salt was produced with briquetage technique in the area throughout the Bronze Age including Únětice times[2], and that salt has been an important source for wealth in other contexts[3]. But how easily could this resource be exploited to create unequal wealth for a few? This paper discusses some general aspects of social power and control over resources, including a critique of the notion that monopolisation was important for creating wealth and establishing a social power base. This is followed by an analysis of the possible significance of salt within the political economy during the Early Bronze Age in the Circumharz Region in eastern Germany.

Key words: Early Bronze Age, salt, resources, monopolisation, control.
Cuvinte cheie: epoca timpurie a bronzului, sare, resurse, monopolizare, control.

Political economy, control and use of resources.

In studies of political economy, the concept of control is usually associated with dominant actors or groups in society and their access to resources or media from which social power can be fashioned. The typical argument is that in order to use a resource it needs to be controlled. In application, this capacity has been attributed to several interrelated conditions that are associated with different historical situations. To mention a few examples: it is claimed that improved, capital-intensive subsistence techniques created economic conditions that caged populations, which in turn made it possible to impose general social control, sometimes with military coercion, to force people to contribute to the political economy[4]. Once institutionalised,

[1] eg. Montelius 1900, p. 77-78; Vandkilde 2007, p. 111.
[2] Matthias 1961; 1976; Riehm 1954.
[3] Ciugudean 2012; Ciugudean *et alii* 2006; Emons, Walter 1984; Hodson 1990; Stöllner 1999.
[4] Childe 1951, p. 89-90; Gilman 1981, p. 5, 7-8; Kristiansen 1998a, p. 117-121; Price 1995, p. 130, 143-146; Carneiro 1970, p. 734-36.

property rights and land ownership enabled elites to obtain a share of the staples produced by commoners in exchange of use rights[5], while valuables and their use as political currencies[6] could be controlled by financing extraction of raw materials, supporting craft specialists, and by managing exchange[7].

The claims that these and similar strategies were employed to establish leaders and finance political activities in societies with emerging social stratification are convincing. But what was the necessary degree of control needed to use a resource in social power strategies? According to Earle[8], it was not sufficient to have access to resources to exercise power efficiently. Instead it is argued that the ability to establish social hierarchies depended on the capacity of a select few to restrict access, or exclude others from using the same resources. If this could not be achieved it would have been possible for other actors to use the very same media to resist compliance and compete for power. Hence: *The ultimate nature and effectiveness of power within a society derive from the ease with which the multiple sources of power can be monopolized*[9]. Several other authors have used similar notions when discussing social power and stratification in prehistory[10], but despite this the concept remains somewhat undertheorised. While it is true that the ability to restrict access to resources, or to outright monopolise them, would have been a very effective way to gain wealth and power – it was, as we will see very difficult to do so.

Power and resources.

Power is the capacity to achieve objectives whatever these may be. There are several other concepts of power that can be brought to an analysis[11], but of interest here is the capacity to control and organise people, materials and territories. Essentially, the political ability to influence and lead society although others may try to resist[12]. Power is intrinsically linked to resources, which are the media through which power is exercised[13]. This paper mostly discuss physical resources such as raw materials, but resources can be tangible or

[5] Earle 2002, p. 325-28; Fried 1967; Gilman 1991, p. 156-58; Johnson, Earle 2000, p. 257.
[6] Political currency refers to the use of wealth to compensate followers as well as creating bonds and alliances with other actors.
[7] Kristiansen 1998b, p. 88; Helms 1979, p. 76; D'Altroy, Earle 2002, p. 193; Earle, Kristiansen 2010, p. 226-28; Dietler, Herbich 2001, p. 251.
[8] Earle 1991, p. 8; 1997, p. 4.
[9] Earle 1997, p. 4; cf. Mann 1986, p. 22-27.
[10] (e.g. Billman 2001, p. 180-81; Flannery 1972, p. 404; Kristiansen 1993, p. 149-50; Manning 1998, p. 53; Service 1962, p. 171; 1975, p. 154; Shennan 1993, p. 63, 1995, p. 306.
[11] e.g. Lukes 2005; Wolf 1990.
[12] cf. Giddens 1979, p. 69; Weber 1980, p. 28.
[13] Giddens 1979, p. 91.

intangible, and range from material economic means to more ambiguous media, such as belief systems and military force[14].

Against this background, power is normally associated with actors in leading positions in society. But all actors have some amount of power. Following Giddens[15], power relations are always reciprocal relations of autonomy and dependence, which means that no matter how subordinate someone is in a social relationship, the very fact of involvement gives this person a certain amount of power over the others involved. The underlying reason for this is that every actor has an understanding of the workings of the social systems of which they are part, and that their actions contribute to reproduce the same social systems. Hence, even those in subordinate positions in society are normally able to convert whatever resources they possess into a degree of control over how these systems are reproduced, which enable them to exercise an amount of power[16]. That the very nature of social systems means that every actor has a measure of power and control underlines that there is no such thing as absolute domination of society. Power relationships are relative, and the exercise of power entails an element of compromise between actors and interests in society.

Control and monopolisation.

People have different abilities, and when it comes to stratified prehistoric societies it is evident that some had more access and greater control over important resources than the majority. But is it correct to understand this as monopolisation? Strictly defined, a monopoly describes the exclusive control of a service or a commodity in a certain market, and monopolisation as acquiring or exercising a monopoly. This definition relates to modern market economies, and in order to make it relevant for the discussion here it can be modified to describe the exclusive control of tangible and intangible resources in a particular society or political entity.

Resources have different qualities that make them more or less easy to control, but in general it is hard to impose a level of control that can be described as a monopoly. Pre-modern economies were complex, and it was often only possible for aspiring leaders to attempt to control selected parts[17]. Several

[14] cf. Mann 1986, p. 22-28.
[15] Giddens 1979, p. 5-6, 149.
[16] It should be noted that humans for most of the past have lived in societies with little or no social differentiation outside the immediate family. That egalitarian social systems have been so successful is because the majority of people have combined forces in order to reproduce the social system along egalitarian lines, enabling them to resist overt claims to power by aspiring leaders (Boehm 1993; 1999).
[17] cf. Earle 1997, p. 70; 2002, p. 60-64; Feinman, Nicholas 2004; Mann 1986, p. 24-25.

conditions had to be present to acquire staple products[18], and even when these conditions were present it did not follow that part of the surplus could be brought under complete control of a select few. Even in situations where formalised, exclusive rights to collect surplus goods or taxes existed, it was possible for other actors to use racketeering strategies to obtain a part of what was produced. Prestige objects and valuables were also difficult to control as they could be manufactured in unrecognised workshops or imported outside of established networks[19]. Additionally, the use of these materials as political currencies required that they were distributed to other actors[20], which made it virtually impossible to maintain a monopoly even if the distribution was done in a limited social sphere.

In terms of non-material resources, even most historic states have not had a monopoly of military power or the legal use of force[21], and in regard to more ambiguous resources such as belief systems and norms, it is wrong to assume that everyone share or believe in the ideology of the dominant class although these ideologies are commonly understood as making sectional interests of dominant groups appear universal[22]. People can choose to ignore even fundamental norms and beliefs, and a strong case can be made that subordinate groups act in accordance to dominant ideologies simply because they lack available alternatives[23].

These problems are hardly surprising. Sometimes because the resources in question were easily accessible and that their inherent nature therefore made them difficult to control, or since they had to be circulated or distributed when they were used. But more importantly for the reason that many actors sought and competed for leading positions, and when trying to further their agendas they used whatever means they had at their disposal in order to mobilise power. It is impossible to restrain people's ambitions, ingenuity and creativity when trying to realise their goals, and someone will ultimately find a way to compete for control and power.

In theory it is clear that monopolisation would constitute an effective power strategy, because if it could be applied it would prevent other actors from using the same resources to resist compliance and compete for power. But the conditions above raise the question if monopolisation was an important or necessary element to establish leading positions in prehistory. In most situations it was simply too difficult to monopolise resources in a strict sense. To be fair, it

[18] Earle 1997, p. 71-73; Gilman 1981.
[19] Earle 1997, p. 74.
[20] Hansen 2011, p. 168-169; Uhnér 2010, p. 152, n 126.
[21] Carneiro 1981, p. 68; Mann 1986, p. 11; Yoffee 1979, p. 16.
[22] Earle 1997, p. 146; Giddens 1979, p. 72; Abercrombie, Turner 1978.
[23] Giddens 1979, p. 148-150.

is evident from the cited references that some of the proponents of monopolisation acknowledge these problems[24], and from examining how they actually use the concept it is apparent that they are in fact working with various levels of control. But taking into account that monopolisation carries connotations of exclusive control, and the possible misunderstandings that may come from using the term regarding the level of control needed to use resources in strategies to influence society, it is better to use the more neutral term control instead.

This leads us back to the question of what the necessary level of control was to use a resource as a source of power? To recapitulate, all actors, even those in subordinate positions, possess resources that can be used as sources of power. However, this level of control amounts to little more than having access to resources, and this is normally not sufficient to influence society in a fundamental way. A greater amount of control is needed to attain true positions of power. Given the problems of monopolisation, and that stratified social systems have developed despite of this, it is clear that lesser degrees of control than strict monopolisation were sufficient for this to happen. Essential control did and does not imply absolute control. But apart from this statement, it is impossible to assert what constitutes a necessary level of control. Control is relative, and the necessary degree varies between different situations and the nature of the resources in question.

In theory, this can range from what might be called paramount control, to simply having better access to a resource than other people. We have to contend with the assertion that a measure of control over important resources, and the ability to use them as sources of power is sufficient to influence society. This line of reasoning does not preclude that the ability to restrict access to resources was a valuable strategy for creating secure positions of power. But like control, the capacity to restrict is relative and does not imply that it was possible to absolutely restrict access to something.

This leads us to another element of control, which is that it is not exercised in isolation. The use and control of resources is organised as elements in networks of power where control over one resource makes it possible to access and control other media[25]. This organisational component is important because it act as a way to restrict access. Even though an actor may have theoretical access to resources that can be used in social power strategies, it is actually difficult do this. The resources in question may be time consuming or costly to acquire, which puts their effective use beyond the reach of most people

[24] Mann 1986; Earle 1997.
[25] Uhnér 2010, p. 288-291; cf. Mann 1987, p. 12-22.

because they lack the means to obtain them on a large enough scale. But equally important is that when resources are funnelled through an organisational framework it gives actors with leading positions within the organisation an institutionalised, distributive control over them, which at the same time leaves subordinate actors with little or no ability to compete for power as they are organisationally outflanked[26].

How control was exercised and what constitute important resources have to be determined on a case-by-case basis with the understanding that different resources and historical situations offer different opportunities, and that the same resource may be controlled and used in several altogether different ways even in similar historical settings, which has contributed to the multitude ways that human societies has developed.

Salt and salt extraction.

Salt is essential for human existence as we need a few grams per day to survive, and people who live on a diet that mainly consist of cereals and other agricultural products need a supplement of it. Furthermore, salt can be used as a preservative for food, it is important in cattle husbandry, and there are cultural and personal preferences for using it in cooking, which makes it a valuable and sought after commodity, particularly in regions where it is not easily accessible[27].

Salt occurs naturally in seawater, springs, natural surface sources and rock deposits, and it can be obtained from halophyte and halophile plants that grow in salt rich soil. These plants can be dried, ground up and sieved to extract salt[28], but a more effective technique is to burn them. Experiments have demonstrated that the ashes can contain more than 70% NaCl, and mixed with water it forms a much more concentrated saline solution than most naturally occurring brine[29].

With the possible but unlikely exception of the use of halophytes that is difficult to attest archaeologically, it appears that all these sources where exploited in prehistoric Europe[30]. The most abundant source was seawater and it is probable that salt was produced along the European coasts during the Early Bronze Age although conclusive evidence for this is lacking[31]. Salt sources that

[26] cf. Mann 1987, p. 6-7.
[27] Gräslund 1973, p. 284; Riehm 1962, p. 360; Fries-Knoblach 1998, p. 45-46.
[28] Nenquin 1961, p. 116.
[29] Ash from young plants of wild celery contains 36,5 % salt while old plants have ca. 26 %. Burned leafs from sea aster have ca. 71% and the stalks ca. 82%. Ash from seablites leafs contains ca. 71% NaCl and the stalks 76%, while saltwort has ca. 75%. (Matthias 1961, p. 202-204).
[30] Boroffka 2009, p. 128-129; Nenquin 1961, p. 22-106; Emons, Walter 1984, p. 20-21; Matthias 1961, p. 200-207; Barth 1982; Guerra-Doce *et alii* 2011; Oliver, Kovacik 2006.
[31] cf. Nenquin 1961; Jaanusson, Jaanusson 1988, p. 108; Cassen *et alii* 2008.

were exploited in inland Europe during the Bronze Age were unevenly distributed with major sites in central and southern Germany, Austria, north-eastern France, Spain and Transylvania[32].

Salt as a resource during the Early Bronze Age in the Circumharz Region.

There are two general sources of salt in the Únětice Circumharz Region: salt springs and halophyte and halophile plants. From the distribution of briquetage in Únětice contexts it is likely that both were used as implements has been found near salt springs as well as in areas without direct access to known sources of brine, but close to salt resistant plant habitats[33]. According to Matthias[34], there were 54 salt springs that were accessible in the region during prehistory and he lists 181 habitats where at least one of seven species of salt tolerant plants can be found in modern times[35]. This situation may have changed somewhat, but it is evident that several sources were accessible in many different localities throughout the region during the Early Bronze Age.

Extraction of salt from brine is a relatively simple procedure and knowledge of different techniques was widespread in prehistory. In temperate Europe, where energy from the sun is insufficient for evaporation of water on a meaningful scale, the most common way to extract salt appears to have been variations of the briquetage technique where brine was heated in large, normally poorly tempered and porous evaporation pans that were placed on ceramic pedestals above an open fire until crystallised salt formed and sank to the bottom of the vessel[36]. Experiments have shown that this part of the process also works well in normal cooking jars[37]. During the Late Bronze Age, the crystallised salt was then pressed into moulds, oftentimes of standardised sizes, and probably dried around a fire on a moderate temperature of 60° to 70°. The mould was then smashed leaving a salt cake that was easily transported[38]. Finds of evaporations pans and spool-shaped pedestal briquetage in Early Bronze Age settlement contexts makes it evident that variations of this process was used in the Circumharz Region[39]. It should however be noted that these finds are normally not accompanied by finds of goblets or moulds, which makes it likely that the last stage of the production process outlined above was a later invention.

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[32] Boroffka 2009; Nenquin 1961; Guerra-Doce *et alii* 2011; Harding, Kavruk 2011.
[33] Matthias 1961, p. 207; von Brunn, Matthias 1958, p. 241.
[34] 1961, p. 189-190.
[35] Matthias 1961, p. 189, 191-194.
[36] Nenquin 1961, p. 121; Riehm 1961, p. 183.
[37] Matthias 1961, p. 207-208.
[38] Nenquin 1961, p. 121-122; Riehm 1961, p. 183-184; 1962, p. 377.
[39] Matthias 1976, p. 376-385; c.f. 1961, p. 130; Mattheußer 2003, p. 71; Becker *et alii* 2004, p. 194.

Producing salt from brine is expensive in fuel. Experiments has shown that it takes circa 14 kg of fuel-wood to obtain a kilo of salt from a 19% brine solution in a normal ceramic cooking vessel[40]. Although it may have been possible to extract brine with over 15% salinity in Halle during the Middle Ages by shielding the wells from being diluted by ground and surface water[41], the usual salinity of naturally occurring brine in the region is usually less than 5%[42]. This means that much more fuel was needed when this source was used. There is a possibility that the brine was concentrated by adding ashes from halophytes or salt rich soil, or by just using a concentrated solution made from halophyte ash[43]. Nevertheless, very large amounts of fuel were needed to extract salt on a larger scale than for just local consumption. The fuel requirements may be part of the reason that some briquetage material has been found in contexts that are not directly associated with salt springs[44] because it may have been easier to transport the brine to good sources of fuel-wood than vice versa. It should however be noted that most secure Únětice finds of briquetage are associated with settlement contexts[45], which speaks against this interpretation. It is more likely that these finds should be connected to salt extraction from halophytes.

What then were the prospects of controlling salt in the Únětice Circumharz Region? From the outset it must be stated that it was impossible to limit the sphere of people who could extract salt to a few specialists because the production process was simple, easy to understand and did not involve specialised tools other than easily manufactured briquetage implements, making it technically feasible for almost anyone to partake. The combination that salt is essential for human survival, the relative ease that it could be produced, and the many localities it could be found created an overall situation that almost certainly made it impossible to prevent small scale production for individual consumption. This did not mean that it was impossible to assert a level of control over the resource. One possible approach may have been to dominate key places where salt could be extracted. Even a small-scale community without developed power structures could probably assert direct physical control over a few springs and habitats for halophyte plants depending on the locales proximity to each other, and a larger more organised society would certainly have had this ability. But as the sources were distributed over a large area throughout the region, and

[40] To extract one kg salt from a 15% solution using beakers and crucibles was much less effective and required 88 and 108 kg of fuel-wood respectively (Matthias 1961, p. 208). This makes it probable that these implements were used as moulds to make dry cakes of salt in the last stage of the production process.
[41] Emons, Walter 1984, p. 67.
[42] Emons, Walter 1984, p. 5, 71; Kleinmann 1975.
[43] c.f. Nenquin 1961, p. 105-106, 122-123; Fries-Knoblach 2001, p. 4.
[44] Matthias 1961, p. 207; von Brunn, Matthias 1958, p. 241.
[45] Matthias 1976, p. 376-385; c.f. 1961, p. 130.

given that political entities probably consisted of decentralized networks of farm-based people of limited size[46], it was only viable to control a few locations even in a best-case scenario. Therefore, it is by no means certain that this strategy was used or even desirable as there may have been better ways to take advantage of the resource.

As the production process required large amounts of fuel, it may have been possible to control large-scale operations through financial support to the people involved. But it is unlikely that the production had a scale that made this necessary during the Early Bronze Age, and there were certainly no need for elites to organise and assume supervisory positions for the process to work. Extraction could probably take place in times when little agricultural work or other subsistence activities needed to be done, and even though the process was labour intensive, it is likely that small groups of people without any type of formal organisation were able to produce salt in sufficient amounts to be used as an exchange item[47].

This production assessment comes with some caveats. It is difficult to determine the scale of production as well as the sphere of exchange as the movement of salt leaves few archaeological traces[48], and it must be emphasised that the amount of briquetage that is associated with the Únětice culture is actually quite small[49]. The notion that salt was produced for exchange is extrapolated from its subsistence importance, its potential to generate wealth, and that the Circumharz Region was well situated to distribute salt to neighbouring regions in the east where the commodity is scarce[50].

Given the difficulties of controlling salt production it is probable that it was the circumstances surrounding exchange that offered the best opportunities for control and ways to use the resource in strategies to accumulate wealth - which in turn could be employed to establish a social power base by industrious actors. That it is probable that small collective groups carried out the production makes two possible general exchange scenarios possible. The first is that people

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[46] Uhnér in press.

[47] C.f. Nenquin (1961, p. 124-125) for a discussion if small-scale communities could have generated the red hills in England. These mounds consist of waste products from salt production such as briquetage fragments, ash and large amounts of baked and pulverised clay. In the case of Peldon Red Hill in Essex, it is estimated that the site has a volume of 100.000 metric tons. Despite the large volume, Nenquin assumes that a crew of 10 people, working on the site for four months a year, could have produced this amount of waste in only 75 years. Even though this example probably overestimates the amount of waste that was made in a day, and it has some calculation errors, it is clear that fairly large-scale production was well within the possibility of a small community in a relatively short period of time.

[48] Harding 2013, p. 96-97.

[49] Matthias 1976, p. 376-385; 1961, p. 183.

[50] cf. Harding 2013, p. 89, fig. 7.1.

who were involved in the extraction process exchanged what they produced through more or less informal networks made up by low-level actors. Through these kinds of networks it may have been possible to exchange fairly large amounts of salt in a down the line fashion to neighbouring regions.

The second scenario is that the exchange was organised by a small group of people who had the ability and the connections to move salt directly in larger quantities over greater distances, or though more formalised and far reaching down the line networks. Naturally, this required that these actors were in a position where they could acquire a portion of the salt that was produced. One way to achieve this may have been to compensate the producers for the salt they provided, and since it is likely that more profits could be funnelled back through a far reaching and well established exchange network than was possible through individual small-scale exchange, it is quite possible that this may have been an economically viable option for everyone involved. Another, self-serving alternative was to extort the producers to relinquish part of the salt they extracted. But it is unlikely that this strategy could be used successfully. As was the case in the decentralised farm based subsistence economy[51], there were very little that prevented people from leaving and establishing their livelihood elsewhere if the living conditions were unfavourable[52]. In general, the circumstances surrounding salt production made it difficult to enforce control over the resource; and it is likely that it had to be attained through means of rudimentary economic transactions.

The importance of salt in the political economy should, however, not be exaggerated. Although the second scenario above could have generated and concentrated wealth to a few actors, salt was one resource of many. The settlement structure with hamlets and single longhouse farmsteads with stables underlines the importance of livestock, and it is likely that agricultural production was the most significant resource within the political economy (Uhnér in press). But a local advantage in staple surplus could be used to leverage a degree of control over trade in salt and other resources such as metal. Once this situation was established, it may have been the foundation of an organisational framework that could generate more wealth than one resource alone, and at the same time it could act as a way to increase the level of control over the political economy overall, as other actors were organisationally outflanked.

[51] Uhnér in press.
[52] cf. Gilman 1981.

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