

EPHEMERIS NAPOCENSIS

XXIII

2013

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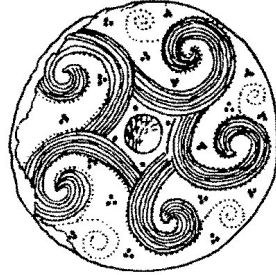
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NEW GEOPHYSICAL SURVEYS AND ARCHAEOLOGICAL RESEARCH AT LAZURI (SATU MARE COUNTY, ROMANIA)*

Ioan Stanciu¹, Coriolan Horațiu Opreanu², Vlad-Andrei Lăzărescu³,
Dan Ștefan⁴

Abstract: *The settlement at Lazuri–Nagy Béla-rét (Satu Mare County) developed on a flat land, till today partially marshy situated on the right side of the road Lazuri-Peșul Mare, extending till in, the present gardens, maybe till to the last houses of Lazuri (as shards found at surface shows). At a distance of 500–600 m to North-West, on the same side of the above mentioned road it was placed the settlement Lazuri–Lubi-tag. Here the research carried on for many years identified habitats from late Bronze Age till to the 8th–9th centuries AD, being of interest in this context the Roman Imperial Age settlement, starting at the Marcomannic wars. The chronology of the Roman imperial age settlement was between 2nd–4th centuries AD, 3rd–4th centuries AD, or even beginning of the 5th century AD. The North-Western side of the settlement was partially investigated, more interesting being the 10 (or 13?) pottery kilns of the type with middle separation wall inside the burning chamber, everyone having an oval-shaped filling pit. Following an initial presumption of the author of the research, the pottery workshops from Lazuri–Nagy Béla rét’ have been several times dated to the end of the 4th-early 5th centuries AD. Recent geophysical surveys in this part of the settlement, covering the archaeological researched part as well provide new information and offer future research direction. Of course, before all it shows the very probable existence of some pottery workshops, based on the identification of kilns. Beside the 10 (13) already investigated pottery kilns, the new identified ones would fill the image of a real production centre. It is almost sure the existence of a group of „rectangular pits with burnt walls” at the junction of the squares 2C-D and 3C-D and possible smaller group in squares 3A and 4A. These pits, irrespective of their function (very disputed in the last period) emerge in all the settlements from the Upper Tisa River known in a way. Based on sizes, orientation and other details they seem to be a constant indicator of the Przeworsk culture background, at least along the Late Roman imperial period, starting with the last third of the 2nd century AD.*

Keywords: *rural settlement, geophysical surveys, pottery kilns, Roman Imperial Age, Early Migration Period, Barbaricum*

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The settlement at Lazuri–Nagy Béla-rét⁵ (Satu Mare County) developed on a flat land, till today partially marshy situated on the right side of the road Lazuri–Peleşul Mare, extending till in, the present gardens, maybe till to the last houses of Lazuri (as shards found at surface shows). At a distance of 500–600 m to North-West, on the same side of the above mentioned road it was placed the settlement Lazuri–Lubi-tag (Pl. I). Here the research carried on for many years identified habitats from late Bronze Age till to the 8th–9th centuries AD, being of interest in this context the Roman Imperial Age settlement, starting at the Marcomannic wars⁶, maybe even earlier⁷.

The neighbouring settlement (place „Nagy–Béla-rét”) has been identified and partially researched by Gheorghe Lazin (Satu Mare County’s Museum) between 1974–1977 and 1979–1981, short reports being published several times⁸. That time were recorded all the chronological sequences known from the adjacent settlement at „Lubi-tag”. The above-mentioned author considered the chronology of the Roman imperial age settlement was between 2nd–4th centuries AD, 3rd–4th centuries AD, or even beginning of the 5th century AD⁹. The North-Western side of the settlement was partially investigated, more interesting being the 10 (or 13?) pottery kilns of the type with middle separation wall inside the burning chamber, everyone having an oval-shaped filling pit¹⁰. The many surface research suggest the concentration of the settlement on a higher part of the place, to the South-East, occupied today by houses and gardens. In return, on North-West direction between this settlement and place „Lubi-tag”, on a strip of land of 500–600 m wide were not found in the plough soil any shards, or other artefacts, which means in our opinion there are separate settlements, as the chronology of the known finds indicates (Pl. I).

Following an initial presumption of the author of the research, the pottery workshops from Lazuri–Nagy Béla-rét have been several times dated to the end of the 4th–early 5th centuries AD, being identified some characteristics which in this region belong to chronological stages C3/D1, or D1 in Central European chronological system. For that time the pottery shows influences of the late Chernjachov culture and others coming from the North Carpathian region¹¹.

It was advanced the hypothesis that the area of the workshops from „Nagy Béla-rét” could represent nothing else but a periphery of the adjacent settlement „Lubi-tag”¹², but, as we already have shown the surface research and the excavations at „Lubi-tag” do not support it, an empty space between the two settlements being more probable¹³. We can presume that the

⁵ Taken from Hungarian (*rét*), as a regional word into Romania, the word „*rât*” has in this area the meaning of “place with grass for mowing and grazing” situated usually near a water stream (cf. *Dicționarul explicativ al limbii române*, Ed. Academiei RSR, București, 1984, p. 811). *Nagy Béla* was the name of one of the former land owners.

⁶ For instance STANCIU 1995, 145–150, 162–166, 172; MATEI/STANCIU 2000, 53–60, 152–160 figs. 19–26, 265–302 pls. 84–121, 517 pl. 336/2–6, 8–10, 520 pl. 339/3, 8, 522 pl. 341/3, 4, 14–16 and Annexes 3–5.

⁷ For instance GINDELE 2010, 37, 128–131 and GINDELE 2010/2011, 210–212.

⁸ STOIA 1977, 36 no. 68; STOIA 1978, 356 no. 73.a; BADER/LAZIN 1980, 15; LAZIN 1980, 136 n. 6; LAZIN 1981–1982a, 77 no. 86; LAZIN 1981–1982B, 127 NO. 8; LAZIN 1981–1982C, 137 notes 1 and 2; LAZIN/HEP 1990, 81, no. 19.B; LAZIN 2011.

⁹ See BADER/LAZIN 1980, 15.

¹⁰ With the exception of some photographs, the entire archaeological documentation was lost and cannot be found at the moment. See GINDELE 2010, 62 fig. 30/1–3, 238; LAZIN 2011, 179 fig. 1–2 and 180 fig. 3–4. In a hand written manuscript published recently, a number of 13 pottery kilns is mentioned (see LAZIN 2011), 177. The one being recorded using the no. 9 was preserved *in situ* but unfortunately destroyed by the local community in 1990.

¹¹ For instance STANCIU 1995, 166, 170; GINDELE/NÉMÉTI 2001, 293–296; STANCIU 2008; GINDELE 2010, 42–63, 139–142. For a complete list of the artefacts recovered from the pottery workshops at Lazuri–Nagy Béla-rét (almost exclusively being composed of pottery) see GINDELE 2010, 238–266 and 338–374 pls. 62–98.

¹² GINDELE/NÉMÉTI 2001, 294.

¹³ Having in mind the identification of the extent of the different habitations identified in the area, the excavations were extended from “Lubi-tag” towards „Nagy Béla-rét” – Trench no. V (see Pl. I). Towards the south-

economic part destined to the pottery production was situated at the edge of a settlement whose structures were concentrated on the strip of land which gradually rises to the South-East, in the gardens of today village Lazuri (Pl. I)¹⁴.

Recent geophysical surveys in this part of the settlement¹⁵, covering the archaeological researched part as well provide new information and offer future research direction. Of course, before all it shows the very probable existence of some pottery workshops, based on the identification of kilns. Beside the 10 (13) already investigated pottery kilns, the new identified ones would fill the image of a real production centre, remarkable for that period (after actual knowledge is impossible to establish the duration of its function)¹⁶.

It is almost sure the existence of a group of „rectangular pits with burnt walls”¹⁷ at the junction of the squares 2C-D and 3C-D and possible smaller group in squares 3A and 4A (Pls. II, VI–VIII). The first group has 26 complexes, aligned on at least three rows, the surveys indicating their rectangular shape and even dimensions (having axes of approximately 150 cm long), very close to the ones archaeologically recorded¹⁸. These pits, irrespective of their function (very disputed in the last period) emerge in all the settlements from the Upper Tisa River known in a way. Based on sizes, orientation and other details they seem to be a constant indicator of the Przeworsk culture background, at least along the Late Roman imperial period, starting with the last third of the 2nd century AD¹⁹.

Similar to the situation at Lazuri–Nagy Béla-rét, frequently they belong to larger groups with a linear structure at the periphery of the settlements, usually on flat lands, in the vicinity of water sources. From all points of view the situation from this settlement is similar with that from settlement at Csengersima-Petea, even by the position of the main group of pits to the North-Western edge of the habitation area (Pl. VIII)²⁰. Almost always such pits were dug also inside the settlements through the dwellings or other structures.

Known starting with the 2nd century AD at least, these pits, as the habitation at Lazuri–Nagy Béla-rét indicates, continue to exist in some settlements till to the beginning or the first half of the 5th century AD²¹. Beside their function, maybe even a symbolic one, their long time

eastern edge of this trench, the archaeological features identified, regardless of their dating, decreased significantly in number, those being dated during the Roman time lacking completely. The edge of the Roman period settlement was established in this area based also on the identification of several wells see STANCIU/MARTA ET AL. 2004.

¹⁴ In the same micro-region, a similar situation in which the latest pottery workshops are situated towards the western edge of the settlement was recorded for the site at Csengersima-Petea (GINDELE/ISTVÁNOVITS 2009, 12; GINDELE/ISTVÁNOVITS 2011, 138 fig. 110, 140–141 figs. 11–112). See Pl. VIII.

¹⁵ Geophysical investigations were conducted by Dan Ștefan. The other members in the geophysical team were Vlad-Andrei Lăzărescu and Constantin Ștefan. Processing and interpretation of the geophysical and topographical data-sets were performed by Dan Ștefan and Maria-Magdalena Ștefan.

¹⁶ At approximately 2.5 km SSE of Nagy Béla-rét the excavated pottery kilns from Lazuri – Fermele 2 and 8 were positioned, being very similar judging from a typological point of view (dated during the 3rd–4th centuries) see LAZIN 1980. At 7–8 km towards the west we now know the pottery workshops from Csengersima-Petea having the same chronology see GINDELE/ISTVÁNOVITS 2011.

¹⁷ In connection with the discoveries documented at Lazuri-Lubi tag, such archaeological features are known in the Romanian archaeological milieu as “burnt pits of a rectangular shape” trying as much as possible not to approach the discussion regarding the function of such contexts see STANCIU 1994.

¹⁸ For example GINDELE/ISTVÁNOVITS 2009, 15.

¹⁹ For an archaeological catalogue of such discoveries documented for the Upper Tisa region mentioning the entire discussion regarding this type of features see ARDELEANU 2013, 285–308.

²⁰ GINDELE/ISTVÁNOVITS 2009, 15 and GINDELE/ISTVÁNOVITS 2011, 138 fig. 110.

²¹ Similar discoveries can be found in the settlement at Urziceni-Vamă situated quite near the site at Lazuri–Nagy Béla-rét, where a „burnt pit having a rectangular shape” was positioned close to a dwelling dated with an bilateral antler comb in the second half of the 4th century AD or even slightly later (GINDELE 2010, 141, 272, 389 pl. 113, 395 pl. 119/1). The same situation was documented in the site at Archiud-Hânsuri, for the north-eastern

use shows the continuity of some community tradition, even they do not necessary have any ethnical significance.

The advantages of some intensive archaeological research performed at a micro-regional level are obvious based also on the image which can be structured in connection with the area of the Lower Someș River basin and its evolution along the Roman period. This territory, part of the Central European *Barbaricum*, having better records starting with the last third of the 2nd century AD seems to have a continuous evolution till the first half of the 5th century AD. Certainly, periodically the settlements changed their places, but in the same natural background. The pattern of the better known settlements, as those mentioned above, beside the continuity of the local pottery production support such an image²².

The strategy of the geophysical survey at Lazuri was elaborated according to some main questions regarding the nature and spreading of the archaeological site having in mind as a first step, the on-site assessment of the magnetic response. One of the main goals of this campaign was to try and establish, if possible, the limits of the settlement as well as to check the validity of an older hypothesis which presumed the existence in this area of a space dedicated especially for pottery production. The nature of the archaeological features along with the elaboration of a plan for further geophysical analyses and the identification of key points which could be afterwards trenched by archaeological excavation was another aspect of the research in itself.

The geophysical surveys performed at Lazuri involved only magnetic methods of investigation, namely the measuring of the vertical gradient of the Earth's magnetic field and of the magnetic susceptibility. Of great importance when we decided that we should use such methods of investigation was the fact that we were facing a site with no stone constructions and with numerous possible archaeological contexts with a thermo remnant type of magnetisation such as ovens, fire installations or burnt dwellings/pits. All these presumed targets can be better detected characterized and understood using the magnetometric analysis of the site. The gridding system was established using some information regarding the existence of a pottery kiln already excavated back in the 80's, the place of which we used as the north-eastern margin (Pl. II). The Bartington GRAD 601–2 dual sensor Gradiometer with 2 fixed measuring units, each containing 2 separate fluxgate type sensors at a distance of 1 m on the vertical scale, allowed for a quicker survey by eliminating the need of a remote sensor for the measuring of the earth's magnetic field variations caused by the time and temperature variations during the day. On the other hand, using such equipment, diminished the exterior lateral perturbations of the measurements, recording only the vertical component of the magnetic field and thus identifying and mapping with high precision only the influences caused to the earth's magnetic field by the buried archaeological features. For the magnetic susceptibility analysis a K-meter ZH Instruments SM30 was used, the local magnetic susceptibility differences of the soil being responsible for the magnetic contrasts and anomalies detected by the magnetometers. The direct measurement of the magnetic susceptibility is also possible either at the soils surface using a resonant K-meter or at a certain distance employing electromagnetic induction equipment. Despite their relatively scarce applications in archaeology, the surveys based on the magnetic susceptibility method, proved to be in most of the cases a very useful tool offering to the archaeologists very good results. The utility of such a method refers to the identification of the site's extension and the differentiation between the intensity of the habitation in different parts of the site, but unfortunately this method is not suitable for the precise location of the archaeological features making it a unreliable by its own, but a flawless tool when used in conjunction with the magnetometric survey.

part of Transylvania but this time with a dating during the D1 chronological stage (OPREANU 2003, 98). Also for the central south-eastern part of Transylvania we can note the case from the settlement at Sighișoara – Dealul viilor (HARHOIU/BALTAG 2006, 39–40, 498).

²² STANCIU 2008; GINDELE 2010; STANCIU 2011, 29–38, 68–77.

The geophysical measurements were accompanied by topographic surveys using a Thales ProMark 3 GPS system, which enabled us to georeference the geophysical maps using the national Stereo 70 projection system (Pl. III). The magnetometric surveys covered an area of about 2.7 hectares, were processed using specially designed algorithms the results being afterwards georeferenced and integrated into a GIS platform for a better understanding of the archaeological situation recorded during the survey.

The gridding system elaborated covered 27 200 m² and was divided into 17 different grids each having 40 × 40 meters. Out of the entire investigated area, a total of 108 800 vertical magnetic gradient measurements were performed and collected. The equipment was programmed to record the values of 4 measurements per meter on 40 m profile. Unfortunately, due to the local plantation, an entire row of 5 grids was unexplored. The gridding system was positioned on a parallel line with the irrigation canal situated on the southern side of the site and perpendicular to the agricultural lots and the entire surface was covered in a zigzag manner on a SSW-NNE axis. The gradiometric measurements performed in parallel rows but with different orientation generated on the magnetic map a series of stripes in oriented in the direction in which the traverses were performed because of the calibration differences, position and orientation of the sensors, but after a series of filtering processes as part of the post-processing of the data, all these issues were resolved.

The method of collecting data in the field followed a well-established plan described below:

- a. The on-site assessment of the main characteristics of the terrain such as surface, vegetation, elevation patterns and the identification of the areas with the highest archaeological potential for such an analysis;
- b. Defining the data acquisition strategy;
- c. Establishing the position and pattern of the gridding system;
- d. The on-site cleaning of the area to be investigated (collecting all the metallic wastes that could interfere with the survey);
- e. The calibration of the gradiometer;
- f. Random surveying of the area for a better assessment of the local magnetic response;
- g. Creating the gridding system;
- h. Georeferencing the magnetometric gridding system by GPS means;
- i. Magnetometric survey.

The magnetic datasets were processed by means of mathematical algorithms and digital filtering in order to highlight archaeological structures underneath and diminish useless details and unwanted background noise²³. In this way the differences between the zigzag traverses resulted as part of the acquisition process were eliminated using the de-stripe filter (zero mean traverse algorithm), the unwanted offset between the traverses was corrected through the application of the de-stagger filter while the equalization of the acquisition density of the data on the x-y axis was obtained using the mathematical interpolation of the measured values. The magnetic anomalies were highlighted employing different manipulation techniques of the dynamic range of the geophysical signal. Thus, the most extreme values were clipped between a 2SD (standard deviation) interval. During the process of analysis and interpretation of the collected data, the variation of the recorded values was modified for each case that needed it either by logarithmic compression or different Locally Adaptive Contrast Enhancement techniques.

Due to the strategy of acquiring the information regarding the magnetic susceptibility of the investigated area which was collected in an unsystematic manner, for the interpretation of the dataset a series of mathematical interpolation techniques were employed in order to obtain a general map (Pls. IV–VIII).

²³ SCOLLAR 1986; ŞTEFAN 2012.

Regarding the possible interpretation of the geophysical survey, a series of anomalies can be identified after the processing of the data, having both archaeological significance or being of recent origin (Pl. VII). The anthropic anomalies of recent origin were suggested using green circles and correspond to numbers 3 and 4 representing anomalies caused by the local electrical infrastructure and affecting a circular area of about 20 m in diameter around them. The magnetic map also illustrates two major areas marked with numbers 1 and 2, area 2 being less organized, its magnetic signature being affected by the signal coming from the electrical cables and from the already excavated pottery kiln already mentioned. The magnetic anomalies which can possibly be interpreted as pottery kilns are marked with blue circles. It is also possible that area 1A and 2 to represent in fact groups of destroyed pottery kilns, the magnetic susceptibility map also arguing in favour of such an interpretation (Pl. VII). In violet are marked 3 zones (anomalies 7, 8 and 9) out of which area 7 can almost for sure be interpreted as an agglomeration of burnt pits – a type of archaeological features that are typical for this type of settlement and cultural milieu as well. As a curiosity, we mention the fact that anomalies 5 and 6 seem to have some correspondences in the satellite imagery.

A good correspondence between the results of the magnetometric and the magnetic susceptibility surveys can be easily observed. The areas showing high values for the magnetic susceptibility method produced numerous magnetic anomalies which in reality can be interpreted either as places that point to zones with intensive domestic activities during ancient times, or as probably is the situation here, areas where several economic activities involving different thermic processes (pottery workshops). This combined method, destined to highlight different human activities in the investigated site, provided lots of information useful for a better research strategy in the future. It is quite obvious that these new data must be correlated and with the archaeological excavation in order to provide relevant evidence for the identification of the intensity and nature of the pottery production activities that occurred at Lazuri during the Roman time.

BIBLIOGRAPHY

ARDELEANU 2013

M. ARDELEANU, *Dacii din zona Tisei Superioare (sec. I a.Chr. – sec. II p.Chr.)*, vol. I [PhD diss., „Babeș-Bolyai” University Cluj-Napoca, 2013].

BADER/LAZIN 1980

T. BADER/GH. LAZIN, *Mărturii arheologice din județul Satu Mare (Satu Mare 1980)*.

GINDELE 2010

R. GINDELE, *Die Entwicklung der kaiserzeitlichen Siedlungen im Barbaricum im nordwestlichen Gebiet Rumäniens (Satu Mare 2010)*.

GINDELE 2010/2011

R. GINDELE, *A császárkori és kora népvándorláskori anyagi kultúra fejlődésének aspektusai Északnyugat-Románia területén*. In: *Körösfői Zs. (ed.). Erdély és kapcsolatai a kora népvándorlás korában/Transylvania and its connections in the Early Migration Period*. Molnár István múzeum kiadványai 3 (Székelykeresztúr 2010/2011), 205–248.

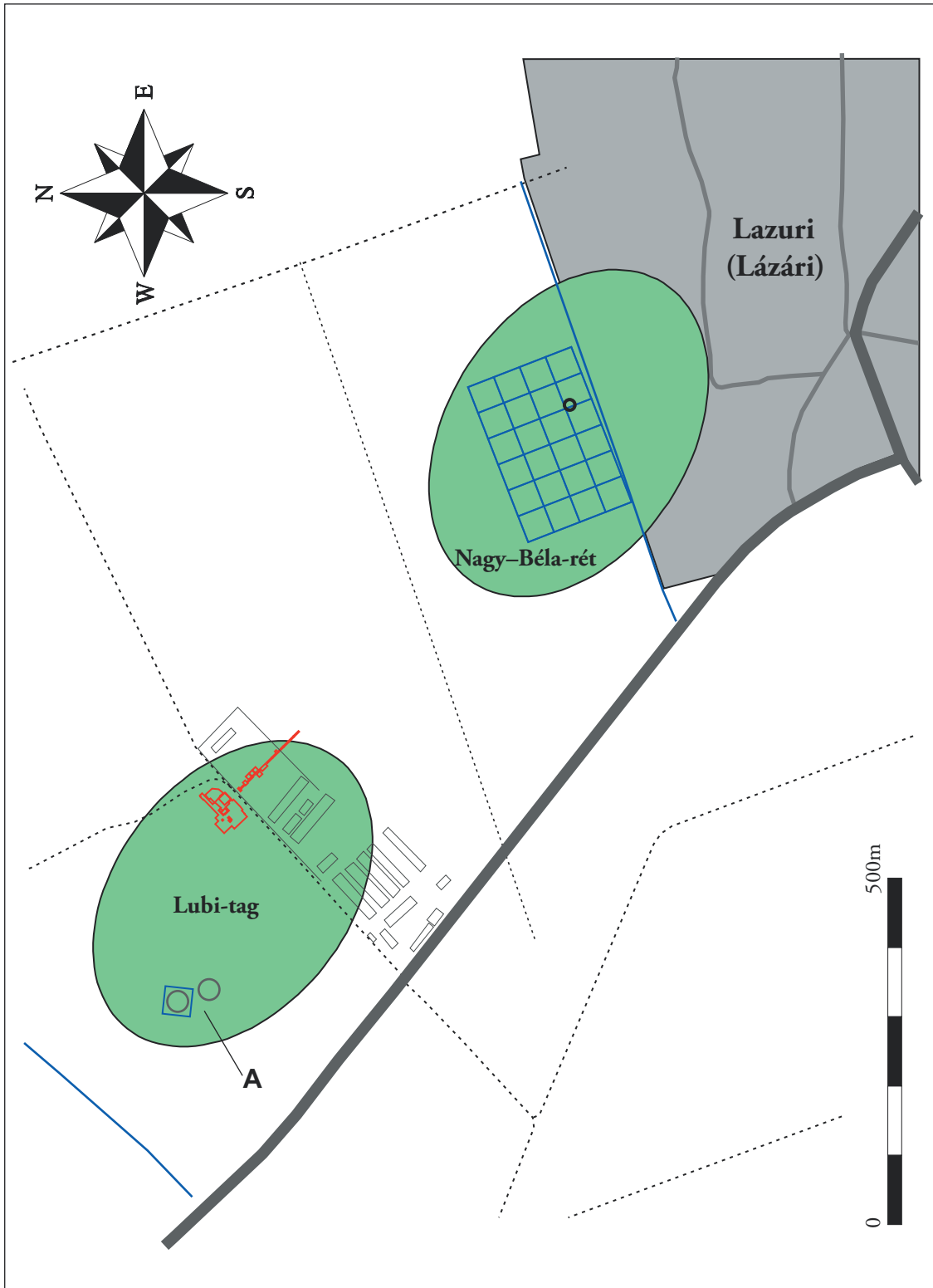
GINDELE/NÉMETHI 2001

R. GINDELE/J. NÉMETHI, *Probleme der Erforschung der frühen Völkerwanderungszeit im Nordwesten Rumäniens*. In: E. Istvánovics/V. Kulcsár (eds.), *Internat. Connections of the Barbarians of the Carpathian Basin in the 1st–5th centuries A.D. Proceedings of the internat. conference held in Aszód and Nyíregyháza (Aszód/Nyíregyháza 2001)*, 285–298.

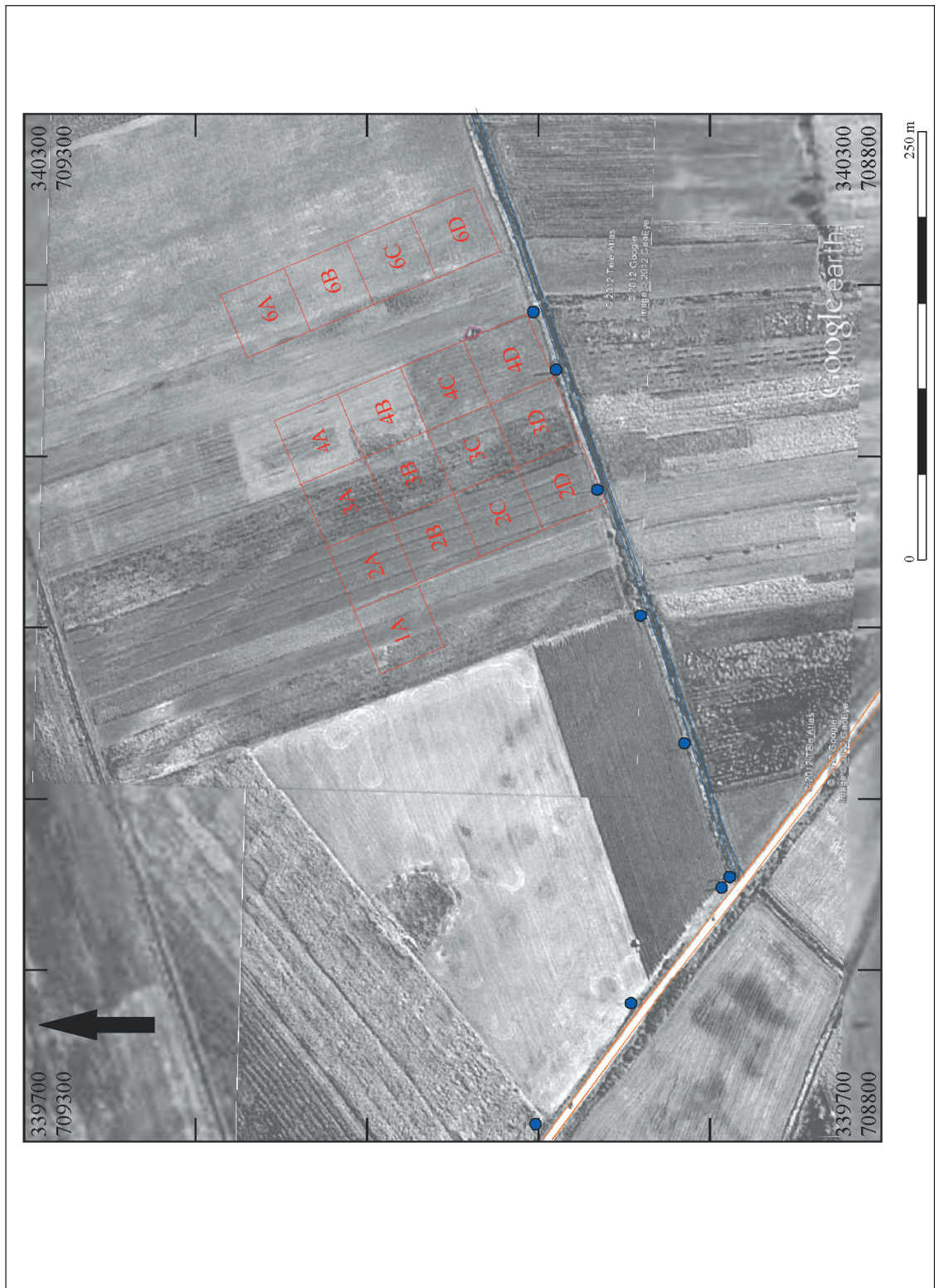
LAZIN 1980

GH. LAZIN, *Cuptoare dacice de ars ceramică din sec. II–IV e.n. descoperite la Satu Mare*. Stud. și Comun. (Satu Mare) 4, 1980, 133–142.

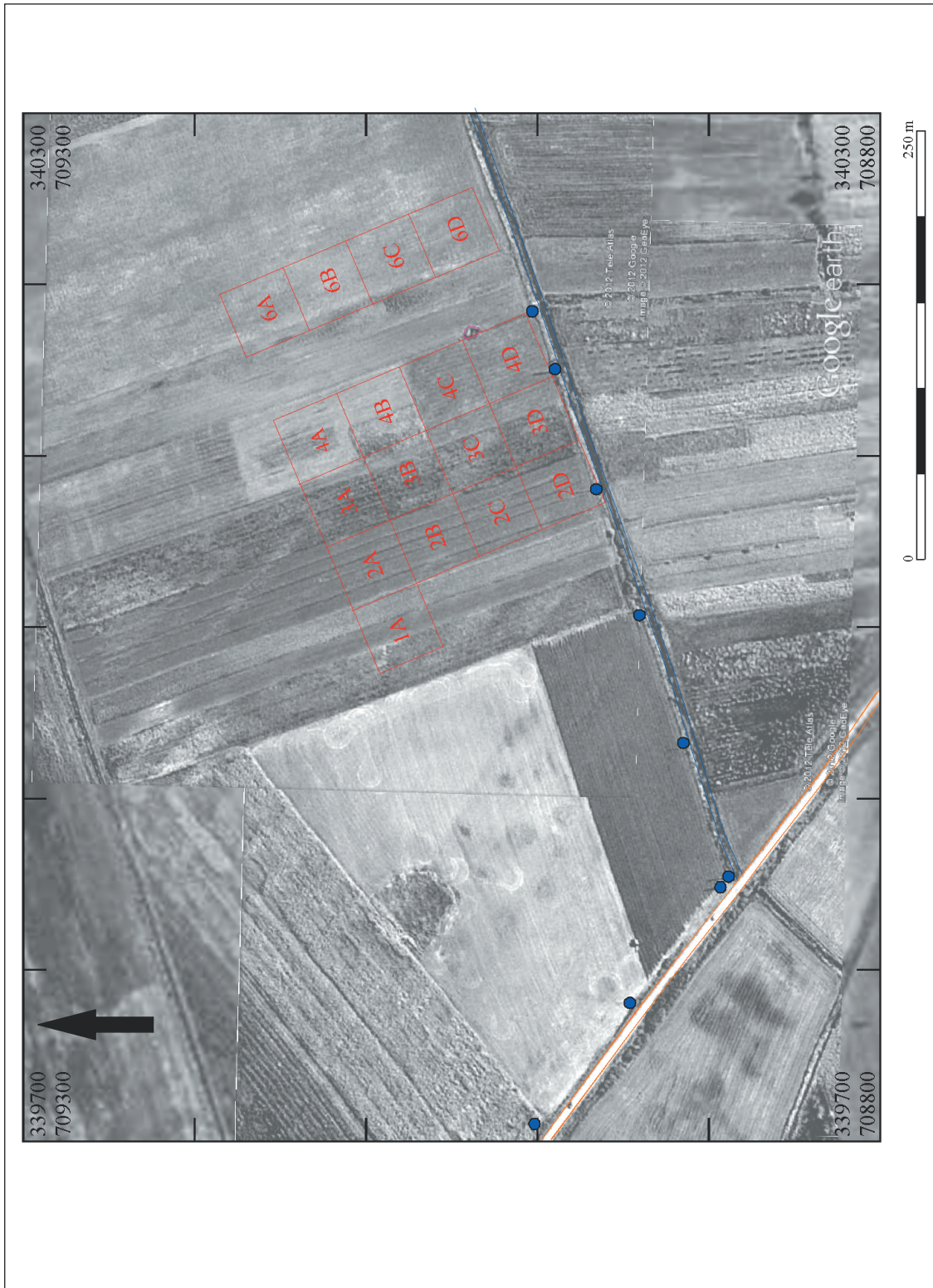
- LAZIN 1981–1982a
GH. LAZIN, Descoperiri dacice din sec. III î.e.n. – I e.n. în județul Satu Mare. Catalog. Stud. și Comun. (Satu Mare) 5–6, 1981–1982, 69–81.
- LAZIN 1981–1982b
GH. LAZIN, Ceramica ștampilată din sec. III–IV e.n. descoperită în nord-vestul României. Stud. și Comun. (Satu Mare) 5–6, 1981–1982, 123–134.
- LAZIN 1981–1982c
GH. LAZIN, Două piese de metal din sec. VIII–IX descoperite în localitatea Lazuri, jud. Satu Mare. Stud. și Comun. (Satu Mare) 5–6, 1981–1982, 137–141.
- LAZIN/HEP 1990
FH. LAZIN/M. HEP, Așezări și descoperiri arheologice din secolele V–IX în județul Satu Mare. Symposia Thracologica 8, 1990, 79–86.
- LAZIN 2011
GH. LAZIN, Grupul de cuptoare pentru ceramică aparținând dacilor liberi descoperit în localitatea Lazuri (jud. Satu Mare). Stud. și Comun. (Satu Mare) 27/I, 2011, 177–180.
- MATEI/STANCIU 2000
Al. V. MATEI/I. STANCIU, Vestigii din epoca romană (sec. II–IV p.Chr.) în spațiul nord-vestic al României. Bibl. Mus. Porolissensis 2 (Zalău/Cluj-Napoca 2000).
- OPREANU 2003
C. H. OPREANU (with collaboration of Corneliu Gaiu), Transilvania la sfârșitul antichității și în perioada migrațiilor. Schiță de istorie culturală (Cluj-Napoca 2003).
- SCOLLAR 1986
I. SCOLLAR, Display of archaeological magnetic data. Geophysics 51, 3, 1986, 623.
- STANCIU 1994
I. STANCIU, Lazuri, jud. Satu Mare. In: CCA. Campania 1993, 36 no. 73.
- STANCIU 1995
I. STANCIU, Contribuții la cunoașterea epocii romane în bazinul mijlociu și inferior al râului Someș. Ephemeris Napocensis 5, 1995, 139–226.
- STANCIU 2008
I. STANCIU, Etapa finală a epocii romane imperiale și începutul epocii migrațiilor în Barbaricum-ul din nord-vestul României. Ephemeris Napocensis 18, 2008, 147–169.
- STANCIU 2011
I. STANCIU, Locuirea teritoriului nord-vestic al României între antichitatea târzie și perioada de început a epocii medievale timpurii (mijlocul sec. V – sec. VII timpuriu/The habitation of the north-western territory of Romania between the Late Antiquity and the beginning period of the Early Middle Ages (the middle of the 5th century – early 7th century). Patrimonium Arch. Transylvanicum 4 (Cluj-Napoca 2011).
- STANCIU/MARTA ET AL. 2004
I. STANCIU/L. MARTA/V. VIZAUER/FL. CURTA/I. STAMATI ET AL. 2004, Lazuri, com. Lazuri, jud. Satu Mare. Punct: Lubi tag. In: CCA. Campania 2003, 173–176 no. 100.
- ȘTEFAN 2012
D. ȘTEFAN, ArheMAG. Application of magnetic method in Archaeology. A Guide of Good Practices (Brăila 2012).
- STOIA 1977
A. STOIA, Les fouilles archéologiques en Roumanie (1976). Dacia 21, 1977, 357–373.
- STOIA 1978
A. STOIA, Les fouilles archéologiques en Roumanie (1977). Dacia 22, 1978, 348–362.



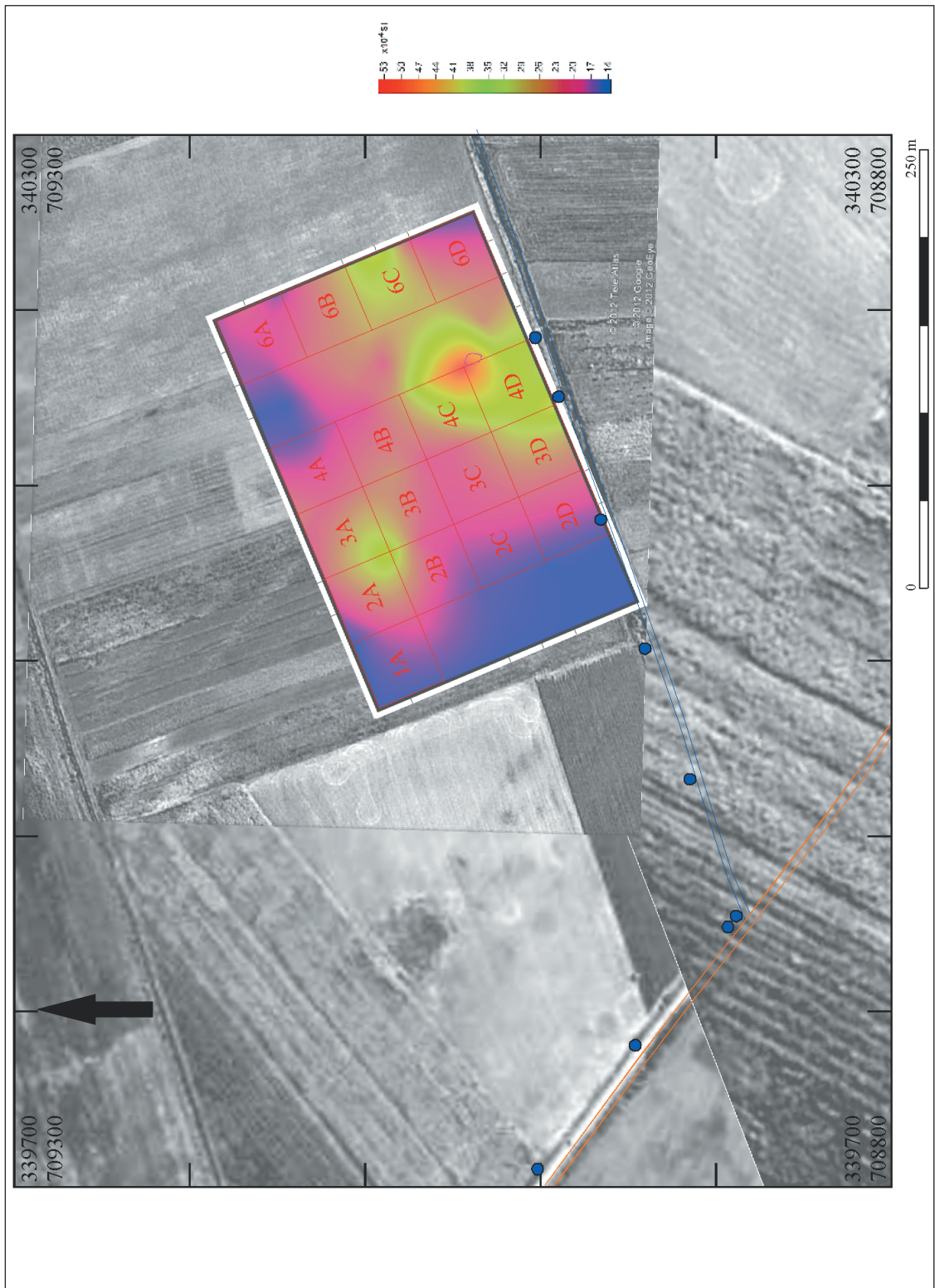
Pl. I. The position of the two settlements at Lazuri. A – tumuli from the Roman time.



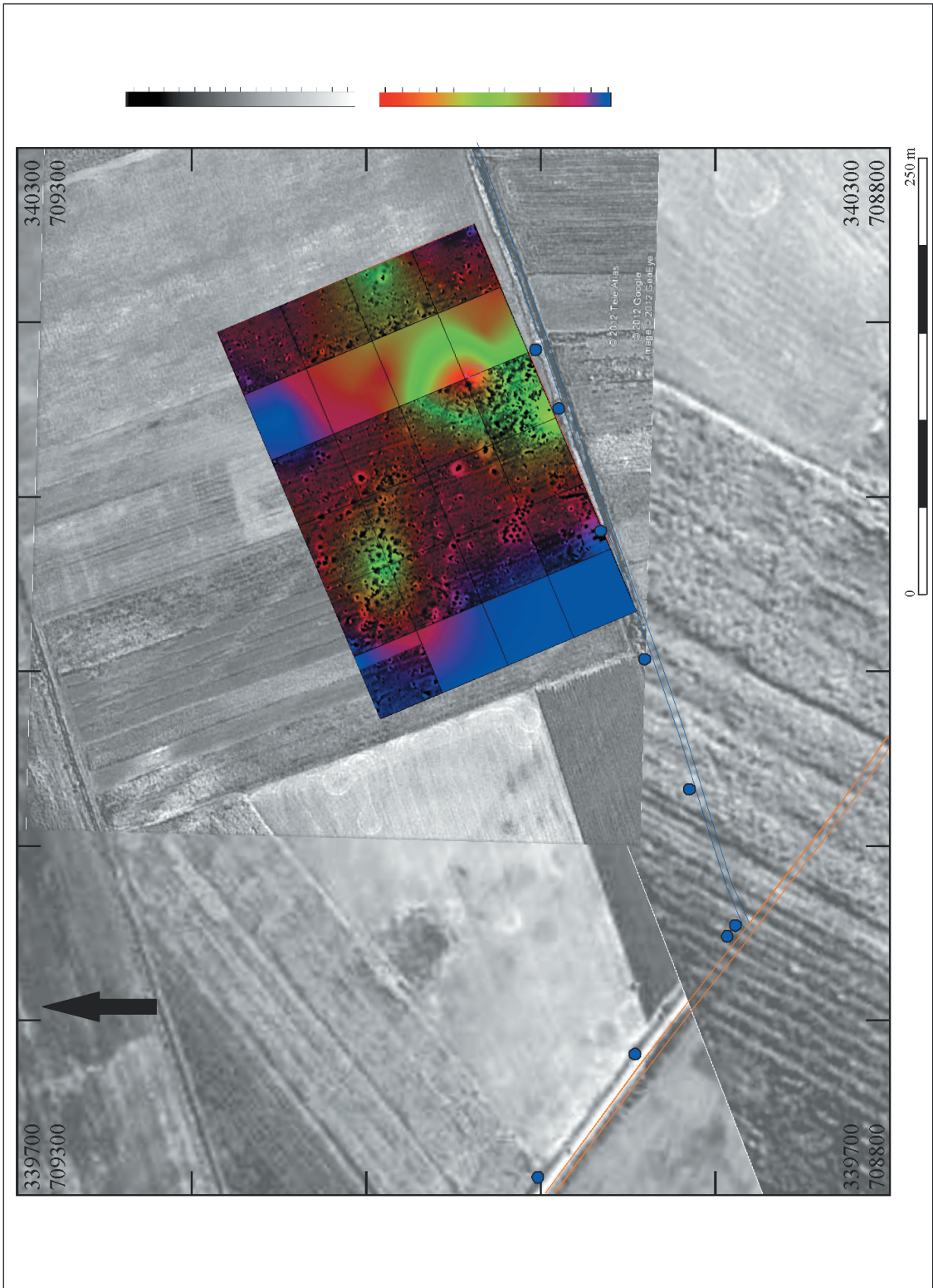
Pl. II. The grid system used for the geophysical surveys.



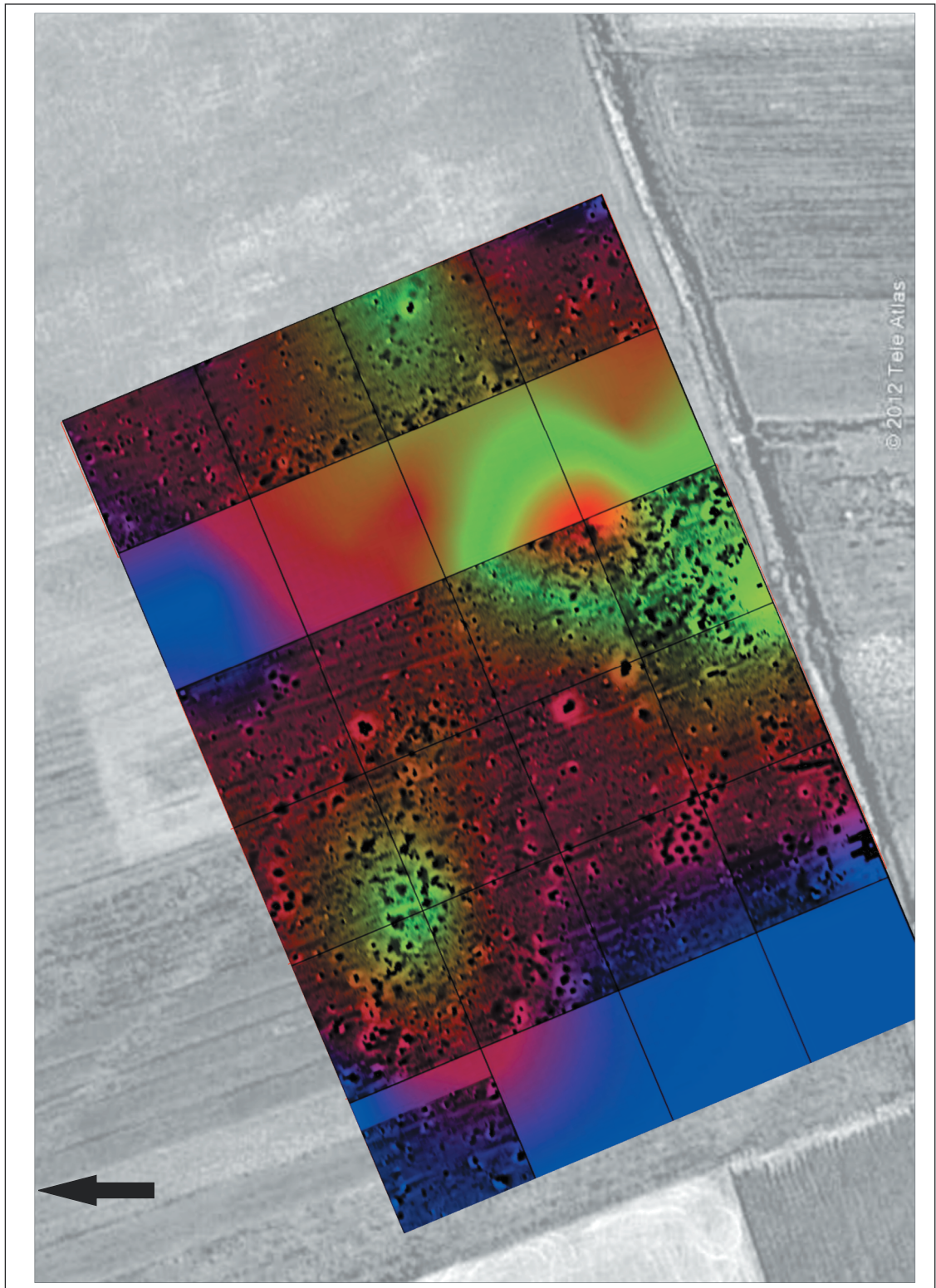
Pl. III. The magnetic map of the site at Lazuri overlapping the topographic map.



Pl. IV. The results of the magnetic susceptibility analysis performed at Lazuri



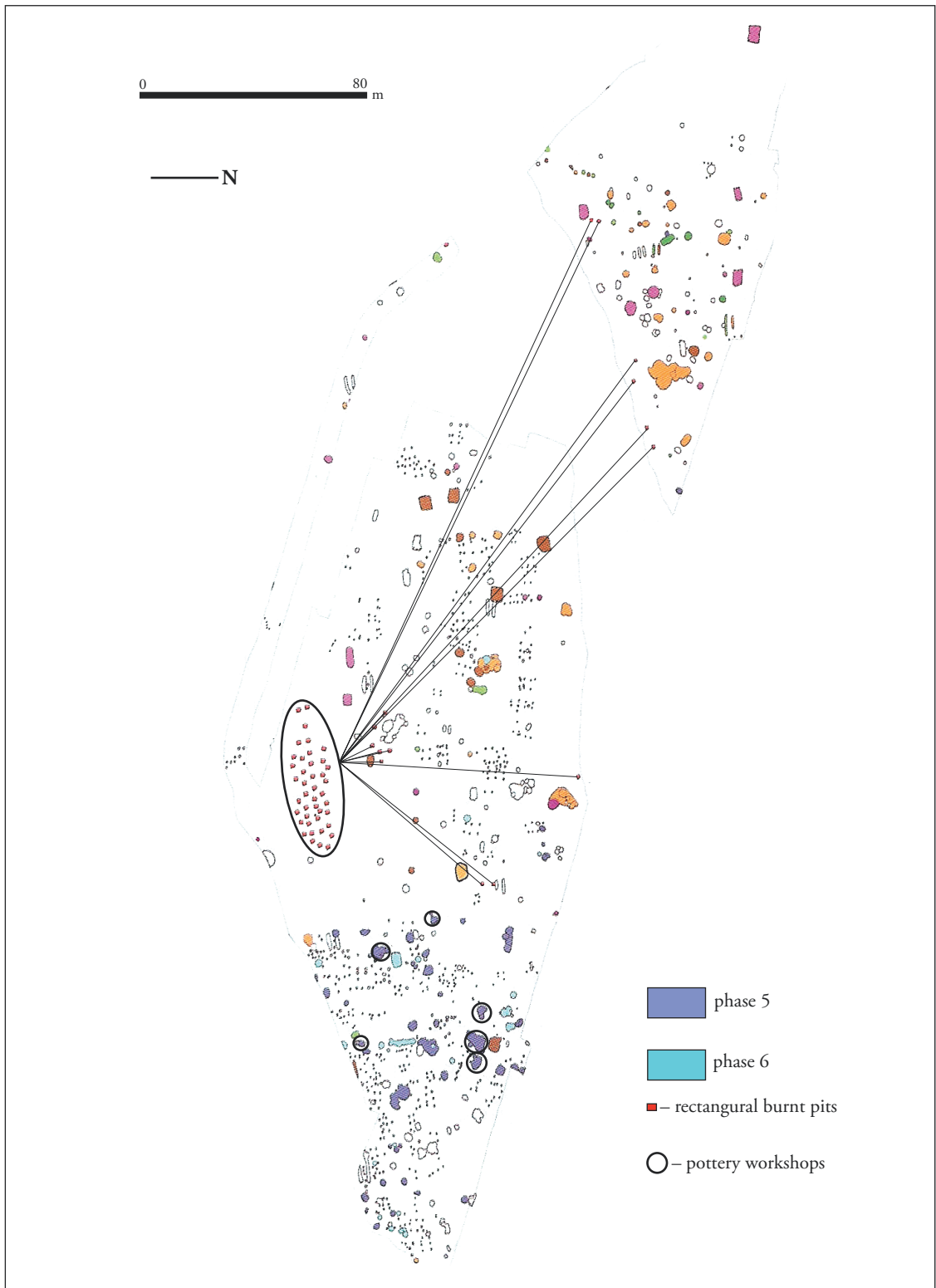
Pl. V. The combined results of the magnetometric and magnetic susceptibility surveys performed at Lazuri.



Pl. VI. Detailed map showing the combined results of the magnetometric and magnetic susceptibility surveys performed at Lazuri.



Pl. VII. The interpretation of the geophysical surveys performed at Lazuri.



Pl. VIII. The Roman period settlement at Csengersima – Petea (Hungary and Romania). Phases 5 and 6 represent the latest chronological stages of the site (after GINDELE/ISTVÁNOVITS 2011).