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GYÁNT, A DESERTED MEDIEVAL SETTLEMENT. TOPOGRAPHICAL RESEARCH ON THE OUTSKIRTS OF TOLNANÉMEDI

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The site known as Gyánt, located on the outskirts of Tolnanémedi, has been known to Hungarian archaeological research for about 120 years. The results achieved so far in the research of the deserted medieval settlement (Fig. 1) using non-destructive methods contribute significantly to our understanding of the structure of the settlement and the archaeological phenomena found in the area. This article aims to present the various methods used in topographical research and compares them with earlier archaeological observations and data known from written sources. In addition to learning about a medieval village, methodological conclusions can also be drawn for the complex investigation of deserted medieval settlements.

Keywords: archaeological site prospection, Middle Ages, archaeological geophysics, village, church

ARCHAEOLOGICAL RESEARCH BACKGROUND

The medieval remains at the site were first researched by Mór Wosinsky, who was notified in 1902 by the tenant of the land about bricks found during plowing (Tolnavármegye 1902, 4). The church, whose "sanc-

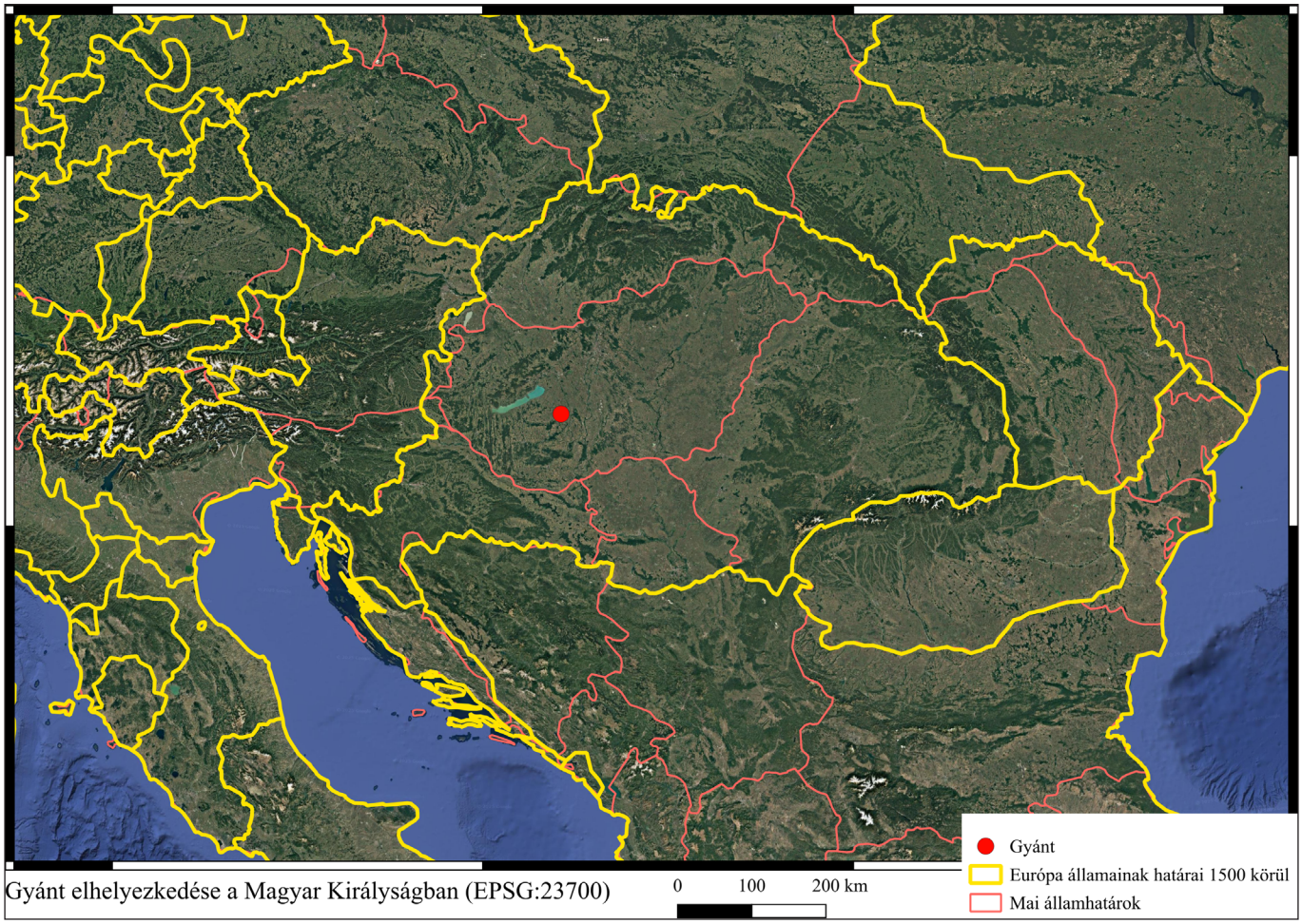

Fig. 1. The position of Gánt in the medieval Kingdom of Hungary

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tuaries, sanctuary pillars, nave, and tower foundation walls" are only mentioned in the newspaper article providing information about the excavation, was dated by Wosinsky to the 13th century based on the bricks. Nine individuals buried in the sanctuary were excavated, and scattered bones indicating a cemetery were found around the church. Based on the text, it appears that Wosinsky limited the excavation to the church and its immediate surroundings, in accordance with the customs of the time. The findings were brought to light by mechanical deep ploughing, probably carried out for the first time (Szilágyi 1982, 421). Later, local historian István Kiss mentions the excavation in his work (Kiss 1938, 53).

Research continued around the turn of the millennium, when Gábor Bertók and András K. Németh conducted several field surveys at the site, during which they observed a scattered distribution of Árpád Age and late medieval pottery fragments scattered over a length of about 400 meters, as well as a 5-meter-long section of a destroyed stone wall (K. Németh 2001, 62–63; RKM 2000, 219; RKM 2003, 305). Gábor Bertók and Zsuzsa Miklós also conducted aerial reconnaissance at the site, where they observed a linear feature and objects that could not be identified more closely (RKM 2000, 219; RKM 2003, 138). András K. Németh identified the site with the estate of the Knights Hospitaller and the medieval settlement of Gyánt (K. Németh 2015, 173–174).

WRITTEN SOURCES

In addition to archaeological fieldwork, numerous conclusions drawing on written sources mentioning the medieval settlement of Gyánt have been made over the past 25 years. In order to gain insight into the role of Gyánt in the settlement network of the region, two researchers used András Kubinyi's point system for assessing central places (Kubinyi 2000, 7–16). András K. Németh was the first to perform such a calculation (K. Németh 2013a, 229), followed by Katalin Éder (Éder 2022, 149). Without going into detail about the two researchers' point calculations, in the table below (*Table 1*).

Table 1: Comparison of centrality point calculations

Category	Points by K. Németh	Points by Éder
I. Category: the prior's officialis	1 pt	1 pt
I. Category: Estate centre	0 pt	1 pt
II. Category: place of auth.	2 pt	0 pt
V. Category: Hospitallers' domus	1 pt	0 pt
VIII. Category: Road network	3 pt	5 pt
X. Category: oppidum	1 pt	1 pt
Total:	***8 pt***	***8 pt***

Katalin Éder's work differs from András Kubinyi's system in several respects, while András K. Németh follows it strictly. One aspect of the otherwise well-functioning Kubinyi-system that is definitely worth reconsidering is the calculation of road network points. According to the original concept, roads known from documentary and traditional archaeological data can be included in the calculation. However, a recent thesis (Ódor 2024, 16–19) on Tolna County uses GIS to model the county's medieval roads. On the basis of this work it cannot be ruled out that virtually any settlement in the county could be reached directly from another. Therefore, Gyánt can be realistically assessed with a centrality score of 8, even if this number is somewhat flexible due to the road network points. This does not elevate the settlement from the group of average *oppida* and *oppidum*-like villages (6–10 points), but places it in the mid-range of the category.

THE METHOD OF SITE PROSPECTION

In this article, I briefly present the results of the archaeological topographical, remote sensing, and geophysical research conducted at the site in 2024. For spatial reasons, the overview is limited to the archae-

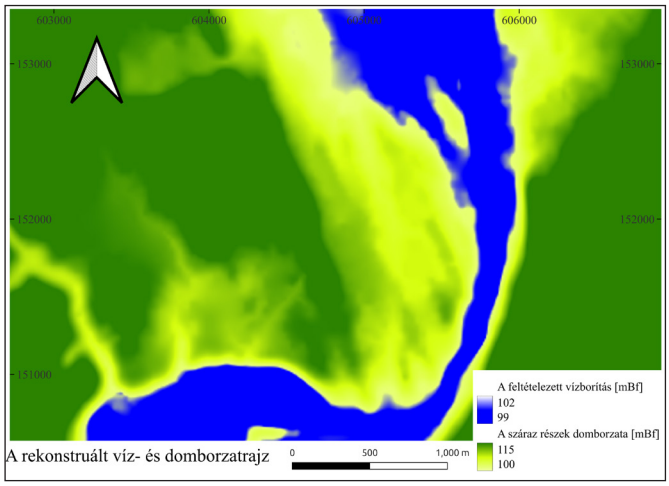

Fig. 2. Reconstructed topographic relations and hydrological conditions of the area

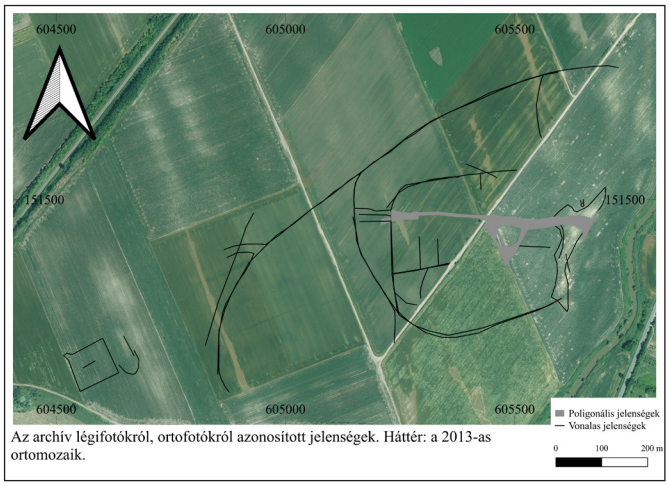

Fig. 3. Archaeological features identified on archival aerial photographs

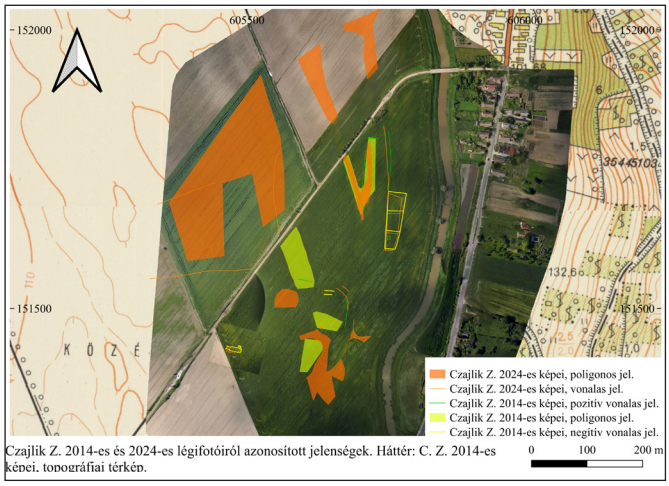

Fig. 4. Archaeological features identified on aerial photographs taken by Zoltán Czajlik in 2014 and 2024

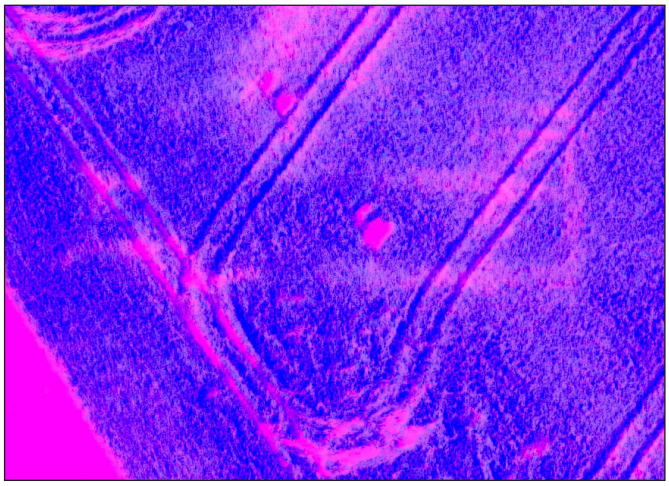

Fig. 5. The church on a photo taken by Zoltán Czajlik in 2014 (altered)

ological results; a more detailed discussion of the methodology is not provided but only briefly described, especially in cases where it directly affects archaeological interpretation.

Data were obtained from various layers of information about the site, systematised, analysed, and evaluated in a GIS environment. Analysis was carried out in accordance with the literature and fundamentals of Hungarian medieval archaeology. First, I wanted to learn about the geographical and environmental characteristics of the site, so I projected old manuscript maps and sketches (MNL OL S 16 No. 407; MNL OL S 16 No. 1081, and the First Habsburg Military Survey) onto a modern DEM, thus reconstructing the hydrographic conditions of the area before the regulation of the Kapos River (*Fig. 2*). Results were also validated using a surface geological map (https://map.hugeo.hu/fdt100/, downloaded on 20 July 2025). This was followed by the identification of archaeological features. First, open-access online aerial photographs and orthophotos were analysed (https://geoshop.hu/, downloaded on 10 January 2025). These allowed me to familiarize myself with the main structure of the settlement (*Fig. 3*). Next, aerial photographs taken by Zoltán Czajlik for archaeological purposes were interpreted. Photographs were taken in 2014 and 2024, and these could be used to specify certain settlement features (*Fig. 4*). The aerial photographs revealed the layout of the settlement's church, presented by András K. Németh in a previous study (K. Németh 2022, 44). The discovery of a three-part waterfront structure was also important (*Fig. 5*). The magnetometer survey of the inner area of the settlement, conducted in July 2024, was also interpreted. This survey, in addition to providing supplementary information on the layout of the settlement, shed light on the floor plan of the other church (*Fig. 6*). The characteristic

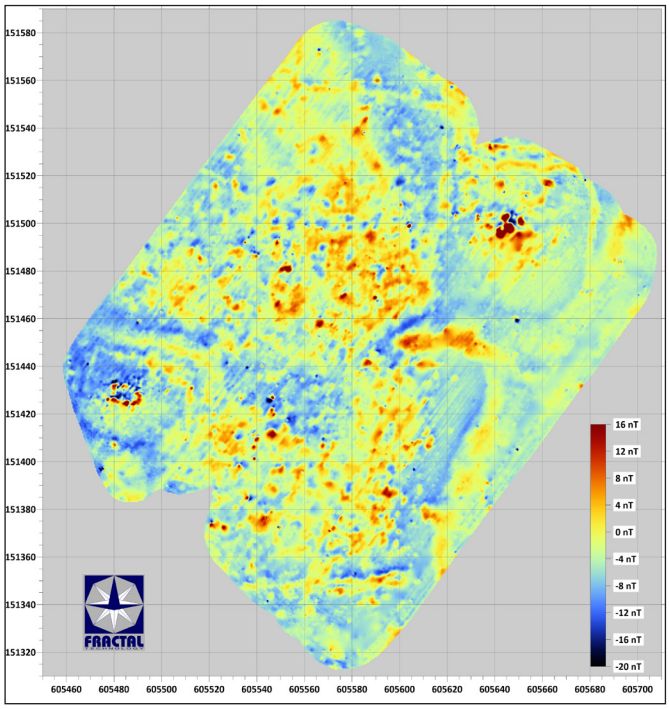

Fig. 6. Magnetometer survey map (by Sándor Puszta, Fractal Bt)

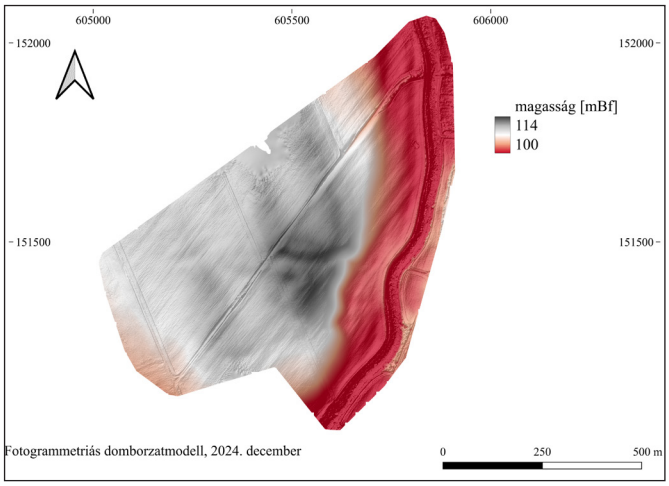

Fig. 7. Three-dimensional photogrammetry DEM

rock of the environment, loess, provides a sufficiently homogeneous background, which facilitated the survey (Neubauer 2001, 16–17). Finally, in December 2024, we conducted drone photogrammetry of the area, thus learning about its precise topographical and micro-topographical conditions (*Fig. 7*).

Next, the information from the different layers were overlaid and combined (*Fig. 8*) and the settlement was reconstructed (*Fig. 9*). Few-metre differences were observed between the manually georeferenced materials. Wherever possible, I adhered to the principle that machine data is more accurate than manually aligned overlays. Where sufficient images were available (2014 series), it was possible to use photogrammetry to georeference the data more accurately. This resulted in the following order: 1– orthophoto, 2 – magnetometer survey, 3 – 2014 aerial photos, 4 – 2024 aerial photos. In most cases, these ca. 3-metre deviations did not cause any problems. However, in one place, around the church, this caused serious uncertainty, which is discussed separately. The width and exact line of the ditches were easiest to determine from the 2013 orthophoto.

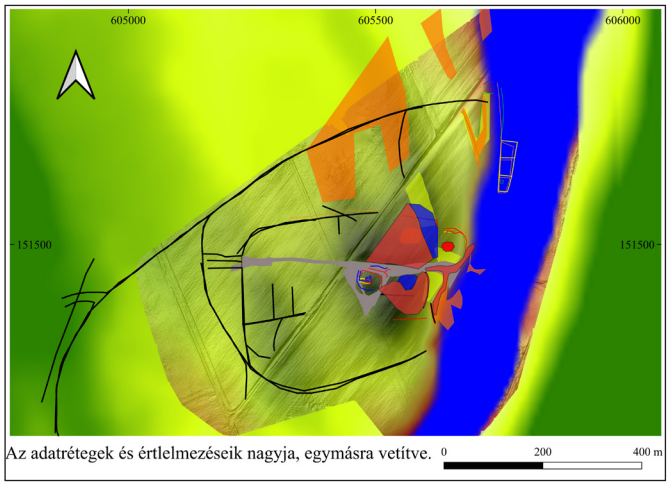

Fig. 8. Overlaid data and interpretation layers

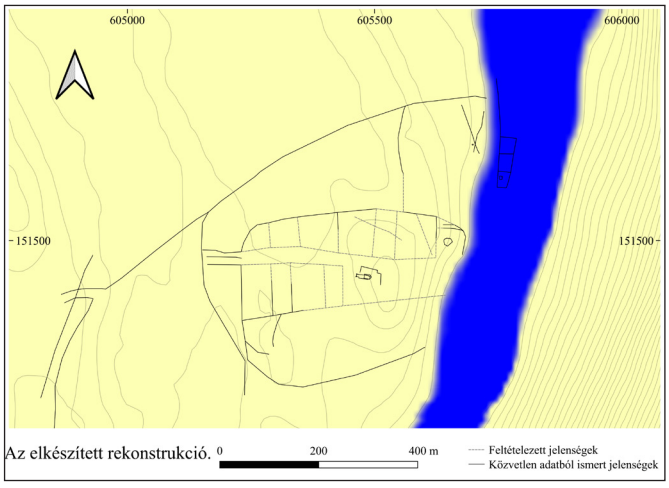

Fig. 9. Reconstruction of the settlement

OVERVIEW OF RESULTS

The system of ditches is clearly visible on the orthophotos. A large outer ditch surrounds a 25-hectare area on the riverbank. Inside this, there is an inner ditch with a similar orientation, with the main street running through the middle. The line of the main street and the two southern ditches are known. The one connected

to the northern one has ditches running perpendicular to the main street, so this was accepted as the southern plot boundary. Two ditches perpendicular to the main street are clearly visible at the eastern and western ends of the inner area. On the basis of this, a single-street village with 35–70 meter wide and 100–120 meter long plots could be reconstructed. According to Ferenc Maksay's classic model, in the case of villages with strip-like inner plots of lands, the standard plot is approximately 36 m wide and more than 200 m long (12 and 72 royal cubits) (Maksay 1971, 115). Thus, the inner plots in Gyánt were wider and shorter than that.

It is acceptable that the average size of a serf's plot was 1 royal acre, i.e. 864 square yards. One yard was approximately 3 m, based on which the area of a one-acre plot was around 7,800 m^2 (Bogdán 1978, 35; Maksay 1971 114–115; Pálóczi 2006, 366). Based on the reconstructed plot sizes, the area could accommodate a maximum of 10–12 whole plots or 20–24 half plots. This number is surprisingly small. According to István Pánya, the length of the village's only street (the 'main street'), is around 440 m, which classifies it as a medium-sized village rather than a large one (Pánya 2022, 105). We have data on the population of Gyánt in the Middle Ages and the Early Modern period. A wine tax register from 1516 lists 20 serfs in Gyánt, meaning that this was the number of people who produced grape at the settlement (K. Németh 2001, 86; DL 38647). Géza Dávid provides data from Ottoman tax records from the second half of the 16th century. Based on this, the population of Gyánt – taking into account the number of people to be added to the census – was approximately 185–260. This calculation is based on the fact that 16th-century censuses generally mention 40–60 family members. Applying Géza Dávid's calculation method and taking 50 registered family members as a basis, the population could have been around 220 (Dávid 1982, 37; 56).

The number of people paying gate tax stabilized at around 20–25 in the second half of the century, which is roughly in line with the number of half-plots that could theoretically be accommodated in the settlement (Dávid 1982, 37; 51–57; 110–111). Although these data refer to the second half of the 16th century, there is no reason to assume that they differ significantly from the figures for the late Middle Ages. As early as the 13th century, it can be observed that the size of serf plots decreased with population growth, and by this period, half-plots had become common (Maksay 1971, 117–118; Zatykó 1997, 477). This process took place more rapidly in market towns, so we can conclude that the number of plots observed in Gyánt is consistent with the written sources (Maksay 1971, 117–118).

Our research also shed light on the remains – floor plans – of two churches. Today, only a ca. 2-m-high elevation marks the place of the one-time church. The relative height of this elevation was also increased by a 2–5-meter-wide ditch, which makes the situation similar to that of the Árpád Age churches surrounded by circular ditches, discussed by Szabolcs Rosta and István Pánya in 2022. Based on the angular, thin structure visible in the magnetometer survey, it cannot be ruled out that some kind of fence (stone or possibly hedge) was erected around the cemetery in the Late Middle Ages (Rosta & Pánya 2022, 315). One of the church ground plans became known from an aerial photograph, the other from a magnetometer survey (see above). The semicircular apse was probably built of brick, while the foundation walls of the building with a straight sanctuary closure were probably constructed of limestone. The magnetic susceptibility of the latter material is similar or somewhat less than that of the surrounding environment, while that of fired clay is much higher (*Fig. 10*) (Verő 1981, 191; Aspinall 2008, 21–23). The smaller, semicircular apse, which was probably built earlier, may have been demolished, but even so, brick debris in the foundation trenches causes a strong magnetic anomaly, although insufficient to create a crop mark. The later building with a rectangular sanctuary did not cause a magnetic anomaly, but presumably caused a crop mark as it was some kind of positive structure. This assumption was confirmed by our ground penetrating radar results at the end of 2025, the analysis of which is not included in this paper. The church can be compared to Periods 1–3 of the church in Decs-Ete (Miklós & Vizi 1999, 212–215; 242).

It is worth mentioning the three-part structure located northeast of the settlement centre. The three 40 × 40-meter squares stood on the former waterfront; their size and location suggests that they were mills (K. Németh 2013b, 125–126). This assumption is supported by the fact that a fragment of the upper part of a millstone was found at this location (K. Németh 2016, 70—71), as well as by that a document from the early 15th century clearly mentions four renovated mills in Gyánt (Ribi 2021, 276–277). The strong positive anomaly identified in the middle of the plot at the northeastern corner of the village, located on the water-

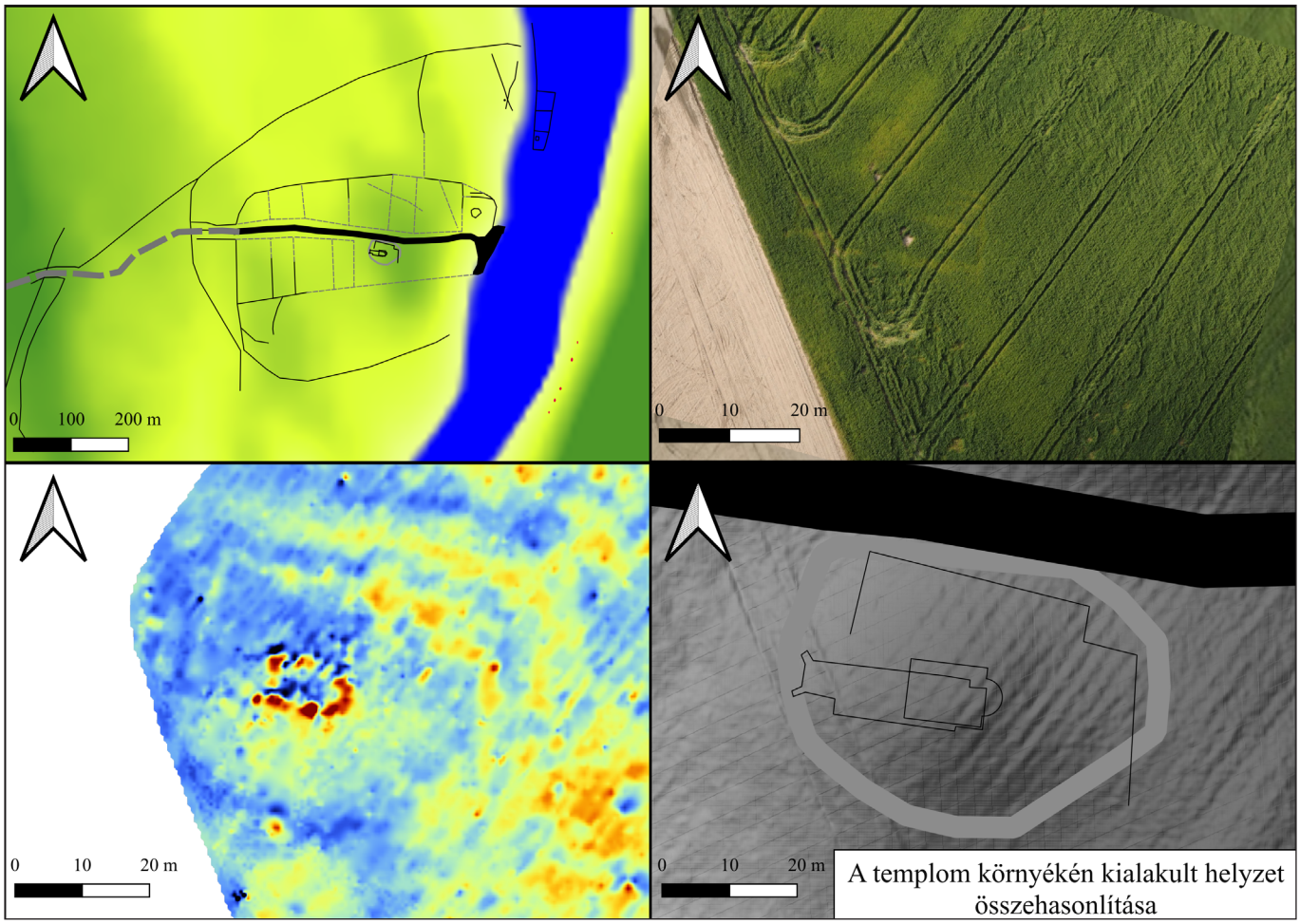

Fig. 10. Comparative image of the interpretation of the church's surroundings

front, also indicates the presence of industrial activity in the settlement. This is the location where András K. Németh collected metal slag during several field surveys.

We do not know much about the agricultural conditions in Gyánt. However, it can be assumed that the largest ditch, covering an area of 25 hectares, is related to the use of the outer areas, probably the boundary between the infield and outfield. We know from written sources that vineyards were on the opposite hill, and we also have information about the use of the islands of the Kapos River (Ribi 2021, 276–277).

CONCLUSIONS

Using non-destructive survey methods, we were able to refine the layout, floor plan, and functions of the medieval settlement of Gyánt, previously only known from historical and field-walking data. The research methods used here revealed different aspects of the settlement to varying degrees, so these methods need to be used in combination to gain a better understanding of the internal structure of a deserted medieval village. Not only the settlement, but especially its church(es) deserve special attention and further research. However, only archaeological excavations can provide a complete picture of the latter and of certain objects located within the village (mills, workshops). Surface collection of finds or the processing of material from metal detector surveys already carried out would make it possible to refine the results of the present topographical research and would also facilitate dating.

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