

Magnetic survey of the abandoned medieval town of Nieszawa

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New Nieszawa was a 15th century medieval urban settlement, covering approximately 22 hectares on the Polish–Teutonic border. The exact location of the town was forgotten until its discovery through aerial prospection in 2006. In just 40 years the town grew into an important economic entity, competing for trade on the Vistula river until its relocation (1460–1462) during the Thirteen Years' War. The site is unique in that it has not been overbuilt by later structures as is common with medieval foundations. It is located in a flood plain approximately 2 km from the urban center of Toruń. Regular non-invasive surveys have revealed the spatial organization of the town in its untouched state from 550 years ago. The Łódź branch of the Scientific Society of Polish Archaeologists carried out three consecutive projects of non-invasive prospection in 2012–2014, using a Bartington Grad 601-2 instrument (0.5 m x 0.25 m sampling) to cover an area of almost 40 ha stretching for more than 1.6 km. The magnetic survey revealed anomalies located on the spot of observed crop marks, and extending far beyond the area open to aerial observation. It verified the existence of subsurface magnetically susceptible deposits indicative of a typical medieval town plan in Poland.

KEY-WORDS: medieval town, aerial photography, magnetic method, heritage protection

INTRODUCTION

Nieszawa is a settlement that changed its location many times during the course of history (Tęgowski 1983). It is currently a small, relatively little known town on the western bank of the Vistula in its middle run (Fig. 1: A), but many times in the past it was witness to, as well as key player in Poland's tumultuous Middle Ages. It was founded as a medieval stronghold in what is now Mała Nieszawka, west of Toruń (Fig. 1: B). In 1230, Duke Konrad I of Mazovia gave it together with the surrounding land to the Teutonic Order, for which it became a strategic command, being the southernmost outpost controlling two crossings across the Vistula (Domagała and Franczuk 1983). It is still not clear whether the brick castle that was built then stood on the older fortifications or in an entirely new location.

In the early 1400s, relations between the Kingdom of Poland and the Teutonic Order soured again. This period of conflict culminated with one of the largest medieval battles

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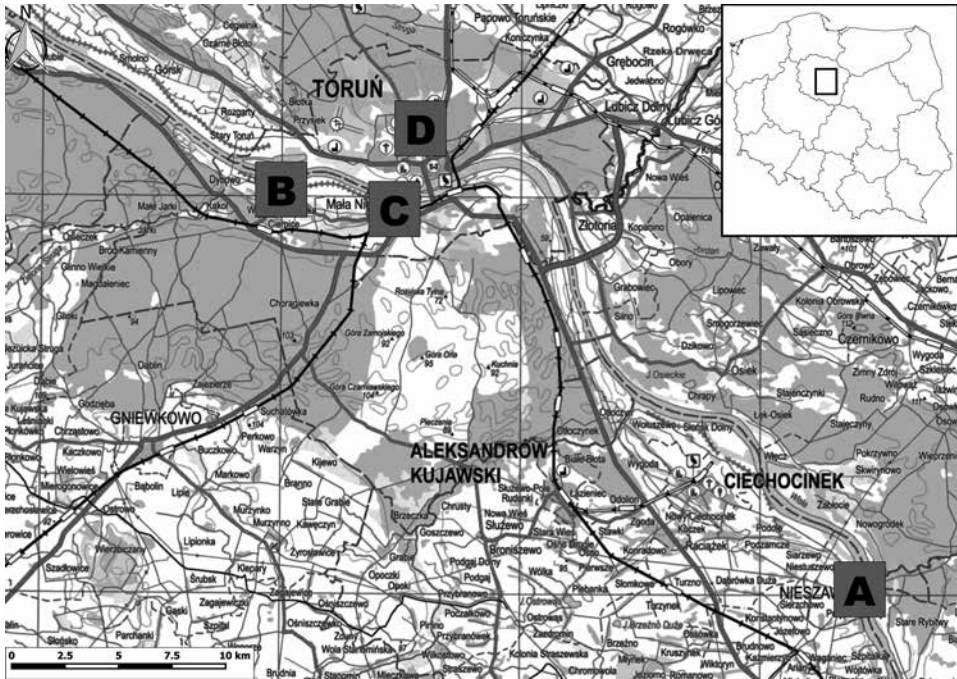


Fig. 1. Map showing the known locations of the Nieszawa settlement within a broader geographic context. A – modern Nieszawa; B – presumed medieval stronghold and ruins of a Teutonic castle, currently Mała Nieszawka; C – location of New Nieszawa, currently in Toruń; D – Toruń historical centre

in Europe that took place near the village of Grunwald/Tannenberg (currently northern Poland). In consequence of these events (Nieszawa's commander was among the prominent Teutonic leaders slain in battle), the armistice treaty between the two warring states was signed at Nieszawa. The Polish kingdom demanded the return of the Nieszawa territory to the Polish state and the issue became another source of armed conflict. In 1422, after another period of warfare, a peace treaty was signed, in the wake of which the Order finally lost its possessions in Kuyavia, including among others the Nieszawa commandry and its estates (Domagała and Franczuk 1992). The stronghold and its fortifications were disassembled by mid 1423, but this did not mark the end of conflicts in the region.

During this period of turmoil, Toruń (Fig. 1: D), a prosperous Teutonic city and a member of the Hanseatic League, dominated the region, profiting from the Vistula trade (timber, wheat, salt, lead). To weaken Toruń's position, in 1425, the Polish king Władysław II Jagiełło located a settlement on the opposite bank (Jóźwiak 2002a; 2002b), only 2 km from Toruń's main square. This new site became known as New Nieszawa/Nowa Nieszawa (Fig. 1: C) and its rise in the immediate neighbourhood of Toruń was the source of economic rivalry between

the two states. Although the newly founded settlement was protected by Dybów Castle (erected after 1427, Józwiak 2002a), it was raided and destroyed by the joint forces of the Toruń merchants and the Teutonic Knights in 1431 (Domagała 2002). The territory returned to the Polish state in 1436 (Tęgowski 1983). New Nieszawa was also where the Statutes of Nieszawa were signed in 1454 by Władysław's son, Kazimierz IV the Jagiellonian (Józwiak 2002b), an event that was crucial in the formation of the post-medieval Polish socio-political system.

New Nieszawa became a thriving urban organism, utilising the potential of its location to the fullest. By 1440, it was already exporting more wheat than Toruń, whose merchants started losing their river trade monopoly in the region. Over the course of years Teutonic commander of Toruń repeatedly fell in debt (Janosz-Biskupowa 1954; Józwiak 2002b) and historical documents record loans to the Order from New Nieszawa's Jewish community (Józwiak 2002b). In 1440, merchants from Toruń and other Teutonic cities formed the Prussian Confederation, a resistance movement aimed against the Teutonic State, which led to open revolt in 1454 and the surrender of Toruń and its commercial potential to the Polish Kingdom. This in turn prompted the events of the Thirteen Years' War (1454–1466). In 1460, Kazimierz IV issued documents relocating New Nieszawa more than 30 km upstream, away from Toruń's mercantile activities (Janosz-Biskupowa 1954; Uziembło 2002). New Nieszawa was relocated between 1460–1462 and as time passed, memory of its location sank into oblivion.

PRESENT TOPOGRAPHY AND PREVIOUS RESEARCH

The development of flood protection infrastructure in the vicinity of Toruń in the 19th century led to the construction of a flood embankment that separated a strip of land along the west bank of the Vistula. This narrow strip, unsuitable for settlement, was turned into farmland (Fig. 2). On the southern side of the embankment, driven by Toruń's expansion

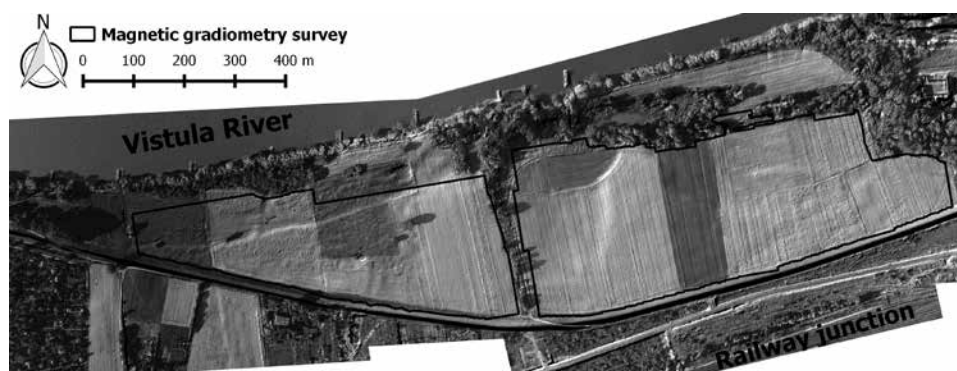


Fig. 2. Current topography of the New Nieszawa site

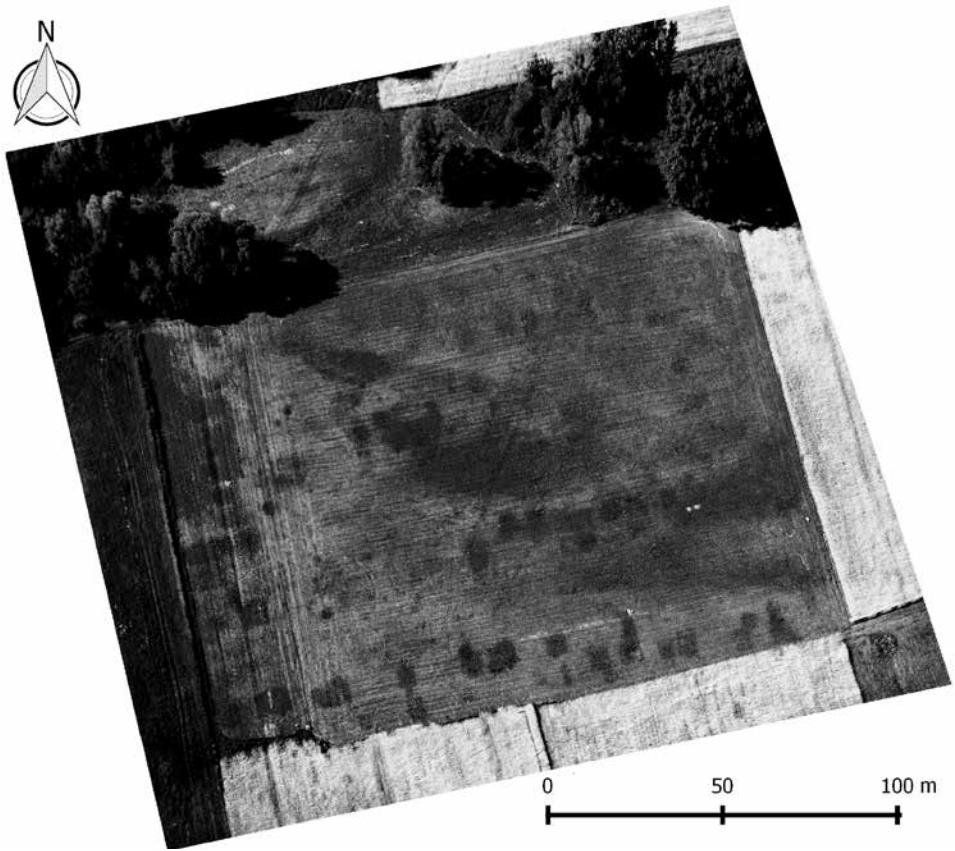


Fig. 3. Rectified aerial image revealing rectangular cropmarks from 2006 (photo W. Stępień)

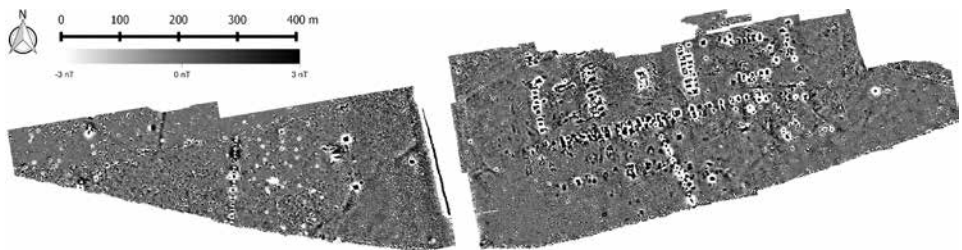


Fig. 4. Grayscale visualisation of magnetic data

and incorporation of the former Podgórz town in 1934 as one of its districts, urban and industrial development followed. Presently an important railroad junction exists south of the embankment, making any archaeological surveying in this area impossible.

Beginning in 2001, aerial prospection paired with systematic monitoring of the area was conducted by Wiesław Stępień. The aerial survey paralleled a research project carried out by archaeologist Lidia Grzeszkiewicz-Kotłowska, who tested the fields between the Vistula River and the embankments in 1999–2001, searching for traces of the medieval city. Multiple trenches were explored, some over 100 m long, recording interesting artifacts and traces of architectural structures from the Middle Ages, but no direct indications of a once prospering city (Grzeszkiewicz-Kotłowska 1999a; 1999b). In 2006, the aerial survey revealed a series of crop marks of various sizes, forming a system of rectangular outlines that called to mind the layout of a town square surrounded by buildings (Fig. 3). Further geophysical work proved that this was not in fact the central main square, but a part of the town.

Interestingly, at about the same time another abandoned medieval town, Stare Szamotuły, was discovered in similar circumstances, that is, aerial discovery followed by non-invasive prospection (Dernoga *et al.* 2007: 131–133). That work was in fact a model for the Nieszawa non-invasive project.

MAGNETIC PROSPECTION

Starting in 2012, three projects for non-invasive prospection of medieval Nieszawa were granted to the Łódź branch of the Scientific Society of Polish Archaeologists by the Ministry of Culture and National Heritage. In the course of three years, an area of almost 40 ha stretching more than 1.6 km was subject to magnetic prospection conducted with a Bartington Grad601-2 gradiometer at a sampling rate of 0.5 m x 0.25 m (Fig. 4).

The studied area was relatively clear of modern interference, except for two pipes associated with field usage and a strong signal stemming from a sewage pipe. Magnetic surveys revealed anomalies located on the spot of the observed crop marks as well as stretching far beyond the area open to aerial observation. Anomalies revealed the existence of subsurface magnetic deposits that formed a pattern indicative of a typical medieval town plan in Poland (Fig. 5). Numerous point anomalies suggested the presence of debris and artifacts (bricks, ferrous items) with high magnetic properties, traces of past and present (including destructive ploughing) anthropic activity.

The most common rectangular anomalies, approximately 6 m by 15 m, have their source probably in the burnt fill (daub, wood, waste from higher levels and in some places perhaps bricks) of house cellars, possible half-timber structures to judge by earlier archaeological work (Grzeszkiewicz-Kotłowska 1999a; 1999b).

Linear anomalies may trace a moat and palisade, perhaps even a town gate (Fig. 6: A), but, interestingly, they do not encircle the town. Either it was not fully enclosed or these features

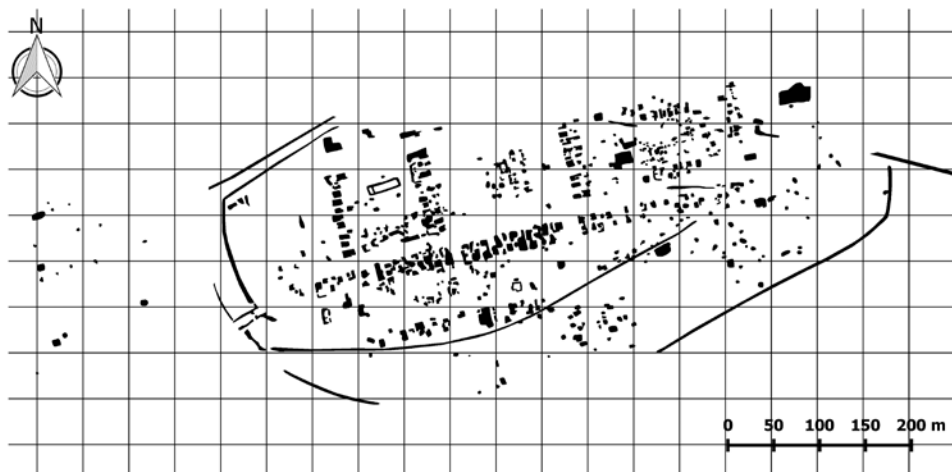


Fig. 5. Interpretation of magnetic and aerial data

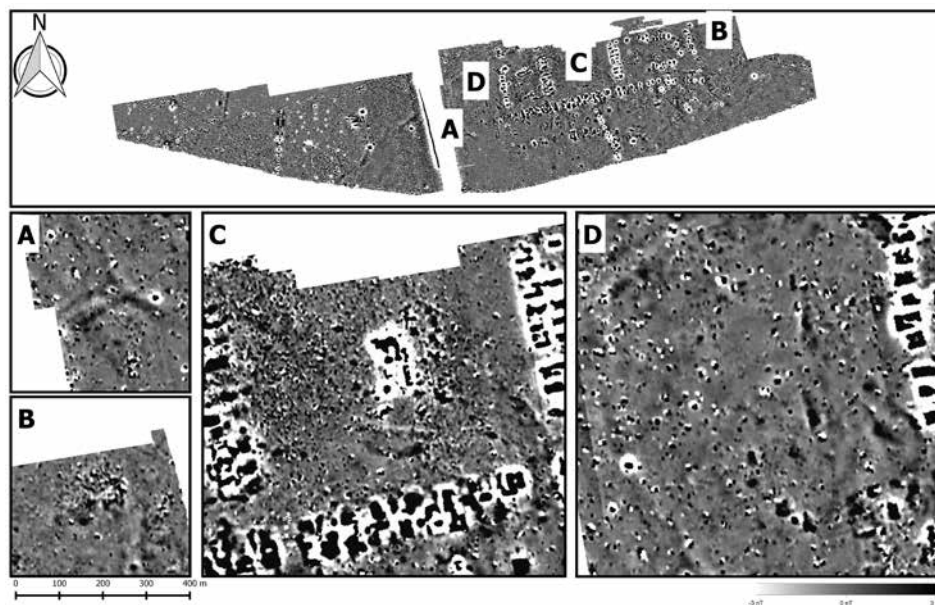


Fig. 6. Selected anomalies: A – possible town limits with bridge/town gate; B – church identified in earlier excavations; C – main town market square; D – possible secondary market area

were destroyed when the anti-flood infrastructure was constructed. More work is needed, especially as features of this kind seldom survive into modern times.

Some of the anomalies can be identified as buildings examined earlier in the 1999–2001 excavations by Grzeszkiewicz-Kotłowska, i.e., the brick church of St. Nicolaus (which was disassembled in the 19th century) with its graveyard (Fig. 6: B).

The central point of medieval Nieszawa was its main square with accompanying buildings, presumably town hall, market stalls and municipal building (Fig. 6: C). The area interpreted as the square (measuring approximately 140 m by 140 m) is surrounded on all sides by magnetic anomalies interpreted as architecture fronts (except for the northern side where the presence of trees prevented the area from being surveyed). A northern frontage may be presupposed based on a few registered anomalies and historical analogies. This area is also heavily contaminated with point dipolar anomalies, which are often associated with modern debris. In this case, the spatial arrangement of these anomalies within the main square suggests that they may be relics of intensive past occupation of this area. Taking into account that town squares functioned as meeting and trade hubs, they may be either remnants of trade and production activities or perhaps destructs of pavements or higher class architecture that most likely existed in the area. This part of the site is currently not ploughed and surface observation could not yield any further clues as to the provenance of the anomalies.

There are many areas within the town limits, which are characterised by stable magnetic values. One such area between the presumed town gate and main square may be identified as a probable secondary market place (Fig. 6: D). This area was probably just outside the denser urban district. The location of other buildings known from historical sources, such as, for example, church structures and the church of St. Hedwig (moved to modern Nieszawa in the end of the 15th century), is still unknown and remains an open matter.

The urban layout of the town was highly organised. Streets running parallel to one another led to the south, west and east (to Dybów Castle), starting at the corners of the main square and creating the main communication arteries of the town. Urban plots with structural remains were located between them. They were rectangular in shape, and their arrangement was probably compact in order to maximise the utilisation of available space. The results of the magnetic survey allowed for an initial reconstruction of plot size at 11 m by 40 m. The further away from the main square, the less intensely overbuilt and organised the plots seem to be. The features within the plots located in the main square generate much stronger anomalies and are in general larger than those further away, perhaps owing to higher social standing, of the residents, their prosperity and hence the size of the homesteads.

SUMMARY

New Nieszawa was a thriving medieval urban organism, covering approximately 22 hectares on the restless border between the Kingdom of Poland and the Teutonic

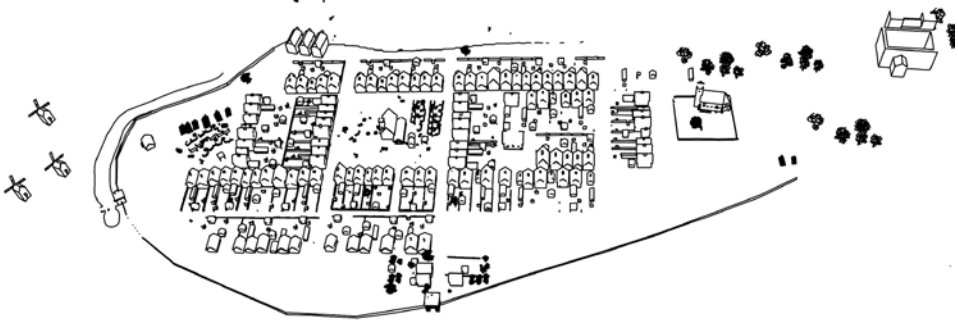


Fig. 7. Artist's reconstruction of New Nieszawa based on non-invasive data (image J. Zakrzewski)

Order (Fig. 7). It was a place where real estate was at a premium, acquired by, among others, bishop Stanisław Ciołek (1382–1437), Royal Secretary and Vice-Chancellor to Władysław II Jagiełło (Janosz-Biskupowa 1954). In just 40 years, the town grew into an important economic entity, successfully competing in trade on the Vistula until its relocation during the Thirteen Years' War.

The uniqueness of this site is indisputable as earlier foundations of other medieval towns are often overbuilt by later structures. In this case, the site is located on a flood plain and has historically been unattractive for investment and settlement. The circumstances of its conservation were fortunate at the very least. Located approximately 2 km from the centre of Toruń, the site exists separated from the ongoing development and urban sprawl, ironically at the same time protected and endangered by the floods of the Vistula for over half a millennium. The situation is changing however. New Nieszawa has yet to be written into the national monument registry and endangered by modern development. One such threat is the ever-growing number of people using metal detectors as a hobbyist free-time activity, looking for artifacts in various places, including archaeological sites. Located within the boundaries of Toruń, the Nieszawa site presents a convenient opportunity for such activities. Furthermore, the location of magnetic anomalies corresponding to a presumed medieval town gate directly next to a newly built sewage pipeline highlights the threat of irreversible destruction of cultural heritage wherever archaeological supervision is lacking; it also shows the threat to non-invasive prospection in the future (due to the strong magnetic field of the installation and disturbance of subsurface strata). In this case, again by chance, the sewage pipeline missed the supposed town limits by just a few meters. This is an alarming example of how once non-endangered archaeological sites such as New Nieszawa are currently becoming liable to destruction and require a re-evaluation of heritage resources and their protection strategies.

Regular non-invasive surveys also reveal the effort that was put into the spatial organization of the town, showing this large state investment in a nearly ideally petrified state

from 550 years ago. These rare circumstances, extremely beneficial from the point of view of archaeological prospection, provide a means of understanding Nieszawa in the grander scheme of things. It was not just another failed local investment, but part of a larger political gamble initiated by the Kingdom of Poland in the centuries-old conflict with the Teutonic State, both states vying for dominance in the region.

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