

What the lion is keeping quiet about: The battle of Vel'ké Vozokany (1652) from the perspective of the KOCOA analysis

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Abstract: *The presented paper is dealing with the problem of research into a military clash that took place on 26th–27th August 1652 near the village of Vel'ké Vozokany (SW Slovakia). The present spectrum of sources related to this conflict is not wide. The research thus offers more space to approaches which can bring new knowledge about the given problem. Since recently, the research on historical battlefields and military clashes implements KOCOA analysis with increasing intensity. The employment of this method enables to identify individual phases of the conflict and to define the impact of surrounding environment on the course of the military event. An important role in this form of spatial analysis is played by spatial attributes of the landscape (divided into five categories), in which the studied conflict has taken place. These attributes can be now reconstructed to a smaller or larger extent, also with the help of other historical sources (period reports, maps...). The aim of the contribution is to exemplify how this method is applied to the terrain of a supposed battlefield at Vel'ké Vozokany, which is remembered to this day by a magnificent bronze statue of a lion.*

Key words: 17th century – Ottoman wars – archaeology of conflict – terrain – KOCOA

Introduction

The grandiose bronze statue of roaring lion, located directly on the battlefield near Vel'ké Vozokany, was until recently the only sculptural monument in today Slovakia commemorating the long history of Hungarian-Ottoman confrontation. But not only for this reason is the battle of Vel'ké Vozokany (1652) regarded as one of the most well-known conflicts that are related to the territory of modern-day Slovakia. Being a part of Ottoman wars in 17th century, it holds a special place in Slovak history. Its popularity dwells in several aspects, which are deeply rooted in folklore for decades, if not centuries.

Foremost, said battle is presented as the first victorious military clash between Hungarian and Ottoman forces, which turned the tide of the war in favour of Hungarians and provided a much-needed encouragement for soldiers and common people alike. It is seen as a beginning of Ottoman power decline. Unsurprisingly, the battle itself has thus become a subject of interest for many authors (e.g., Berényi 2001; Berényi 2002; Újváry 2006; Höbelt 2012; Martí 2013; Bátora/Drozd 2019; Drozd 2019; Eliáš 2019; Szabados 2019; Trubíni 2019; Drozd/Neumann/Bátora 2020).

Naturally, event such as this one is veiled by many myths, which obviously lack the much-needed support in historical sources. As a result, these subjective claims can have negative effects on the real meaning of the conflict and distort its real significance and historical value.

The research project dedicated to the battle of Vel'ké Vozokany began in 2019 and since then, we try to provide facts about the conflict, backed by scientific sources, and shed a light upon some of the questionable points. What we aim to achieve, is to bring a more objective perspective.

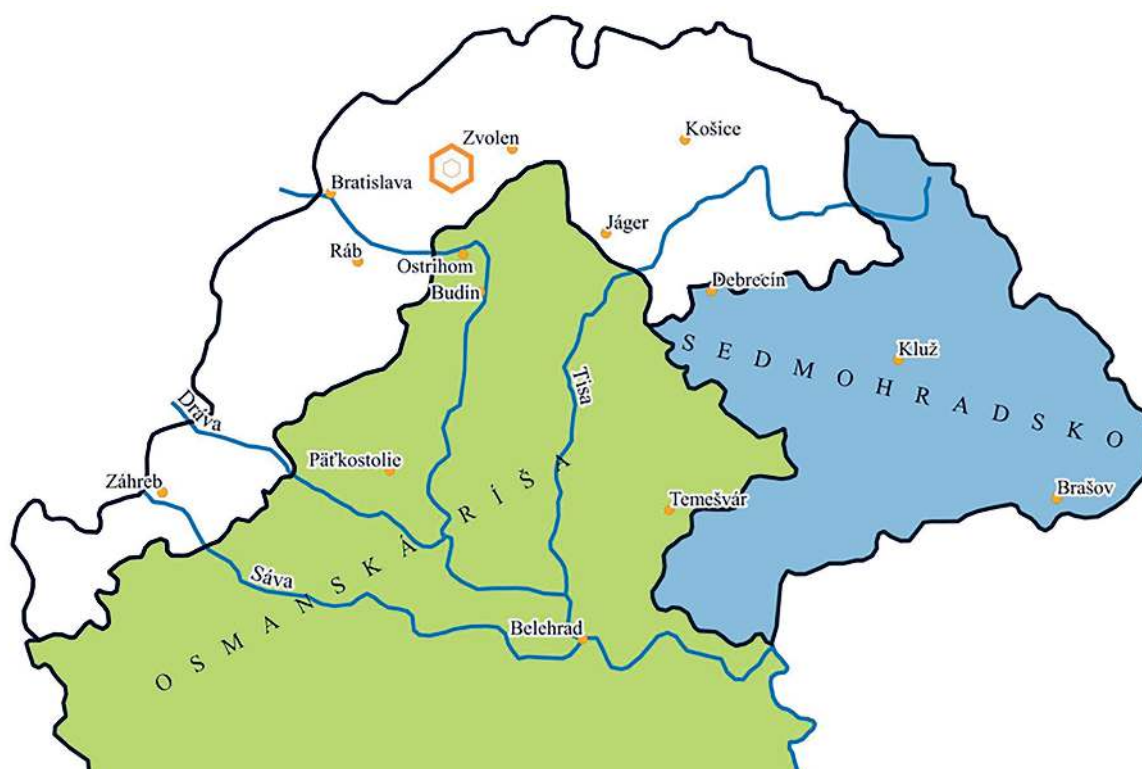


Fig 1. Map of the Hungarian kingdom in 17th century. The central part of Hungarian kingdom was occupied by Ottoman Empire (green area), while Transylvania became a vassal state of Ottomans (blue area). The orange hexagon denotes the battlefield near Velké Vozokany. (author: M. Neumann)

This article continues in our endeavour, by introducing a specific method of terrain reconnaissance – the KOCO analysis. We provide basic theoretic background of the analysis as well as demonstration of its possibilities in a case study of an early modern battlefield near Velké Vozokany.

Historical background

To better understand the cultural and historical significance of the battle, it is of great importance to view the conflict from a wider perspective, especially considering political situation in the kingdom of Hungary during 16th and 17th century (fig. 1).

After the fateful battle of Mohács in 1526, which was decisively won by the Ottomans, the Hungarian army was decimated and the kingdom left to the mercy of the enemy. Moreover, in 1541 the Ottomans successfully conquered the capital of Buda and permanently occupied the central part of Hungarian kingdom.

The effort to push Ottomans back, led to so-called Fifteen Years war at the turn of the 16th–17th century (1593–1606). Ceasefire was called in 1606 by signing the Peace of Žitava. Truce was prolonged several times but even this didn't stop the Ottomans from repeatedly invading the country and pillaging defenceless villages.¹ The area of southern Slovakia became a buffer zone and constantly suffered from such aggressive acts.

¹ The Peace of Žitava was prolonged in Vienna (1615), Komárno (1618), Kamenný Most (1625), Szőny (1627 and 1642) and Constantinople (1649). For more information see *Treaties 1855*.

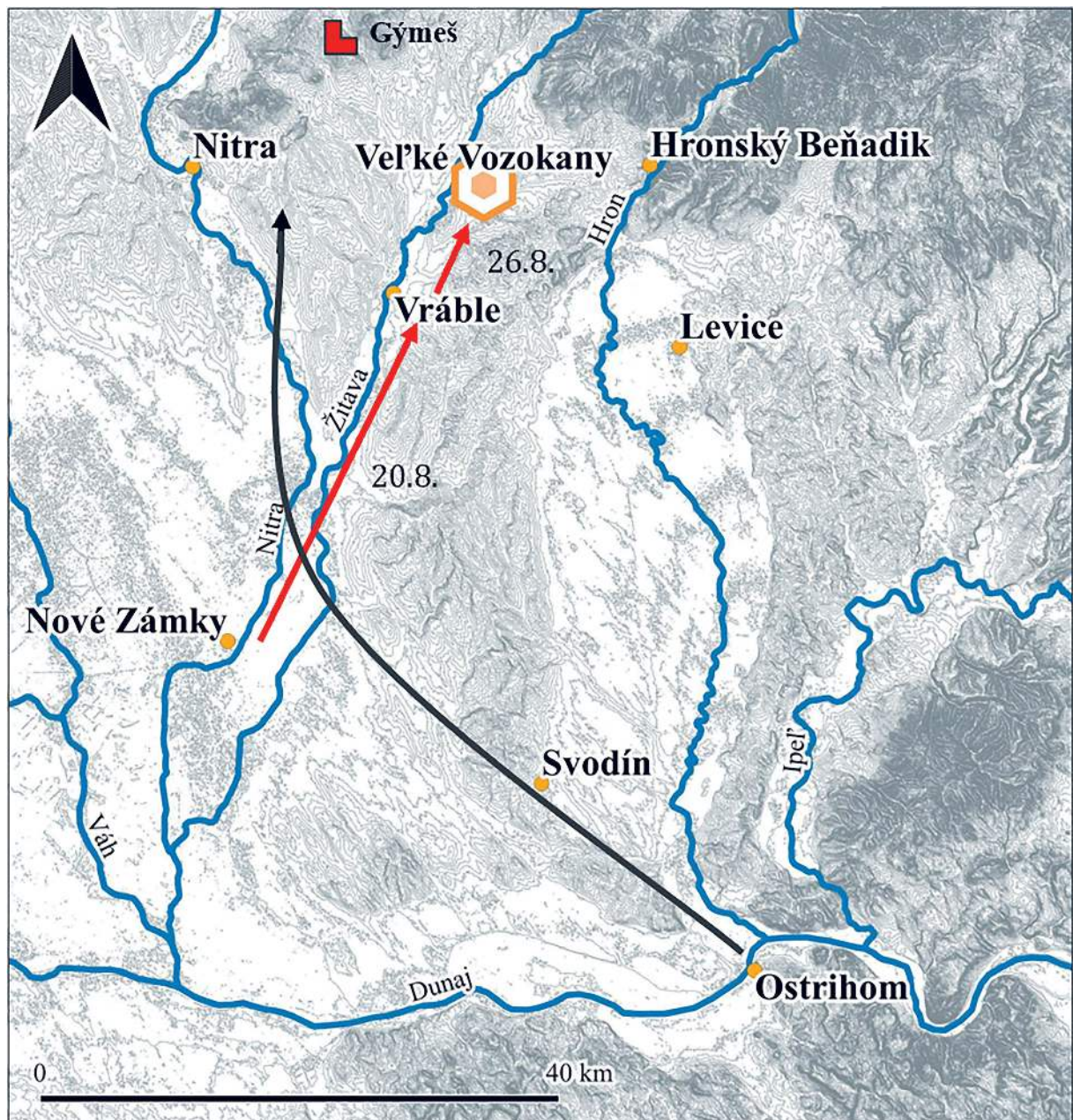


Fig 2. Direction of the Ottoman invasion to Nitra and Žitava area in august 1652 (black arrow) and the movement of Hungarian forces towards Veľké Vozokany (red arrow). (author: M. Neumann)

Even though the Hungarian forces were strictly forbidden to react to such provocations in any way, the battle of Veľké Vozokany was a direct result of a military response to an Ottoman invasion of Nitra and Žitava area (fig. 2). The main reason for such an action was proposed by Hungarian author László Berényi. He considers that the motivation behind it was an unusually high number of captives taken by the Ottomans (Berényi 2002, 99).

The first one to react was the commander of Nové Zámky fortress, Adam Forgáč, who decided to call upon reinforcements, among which were eight members of the Esterházy family (Ladislav, František, Tomáš, Gašpar, Ján, Žigmund, Mikuláš and Alexander). From this moment on, the events took a rapid turn. On 20th August, the Hungarian forces reached Vrábľe and awaited information about movement of the Ottomans. On 26th August, Forgáč received report about Ottoman pillaging near Gymeš castle. He then decided to relocate his forces near the village of Veľké Vozokany not far from Starý Háj forest.

Battle of Veľké Vozokany

Despite several discrepancies, with which we will deal later, there is one widely accepted version of events which occurred on 26th of August near village of Veľké Vozokany. This version is drawn mainly from the so-called Strategic leaflet by anonymous author, created in the second half of the 17th century (fig. 3). This source labelled as *“True depiction of a harsh clash with Ottomans, which took part on 26th of August 1652”* is currently deposited in the map collection of Bernhard Paul Moll in Moravská zemská knihovna (MZK), Brno. It is also freely available in digital form on MZK website. Strategic leaflet is a popular source of information and is also one of the most cited sources related to the battle of Veľké Vozokany. Known for its rich portrayal of the battle and its surroundings and capturing various important moments (e.g. death of Ladislav Esterházy, pillaged villages etc.) it is considered to be a valuable source for researchers. For the sake of the basic reconstruction, we will be predominantly using the Strategic leaflet, even though we are well aware of its shortcomings. We will address these in the next chapter dealing with the interpretation of the battle and sources related to it.

Besides Strategic leaflet, there are other significant sources, both iconographic and written, which need to be mentioned here.

The earliest depiction of the battle is an engraving by a German engraver known as Melchior Küsel (1626–1684). Created only two years after the battle, in 1654, it shows the main clash between Hungarian and Ottoman forces. This scene is accompanied by portraits of individual members of the Esterházy family, who met their demise in the battle, at its sides. The engraving is currently deposited in Xántus János Múzeum in Győr and is also available in digital format (Mikó/Sinkó 2000).

Other portrayals of the battle are provided by three paintings. First one is a low-quality oil painting which was repainted by a painter known as Gallo Gallina (1778–1837) in 1837. It primarily shows the

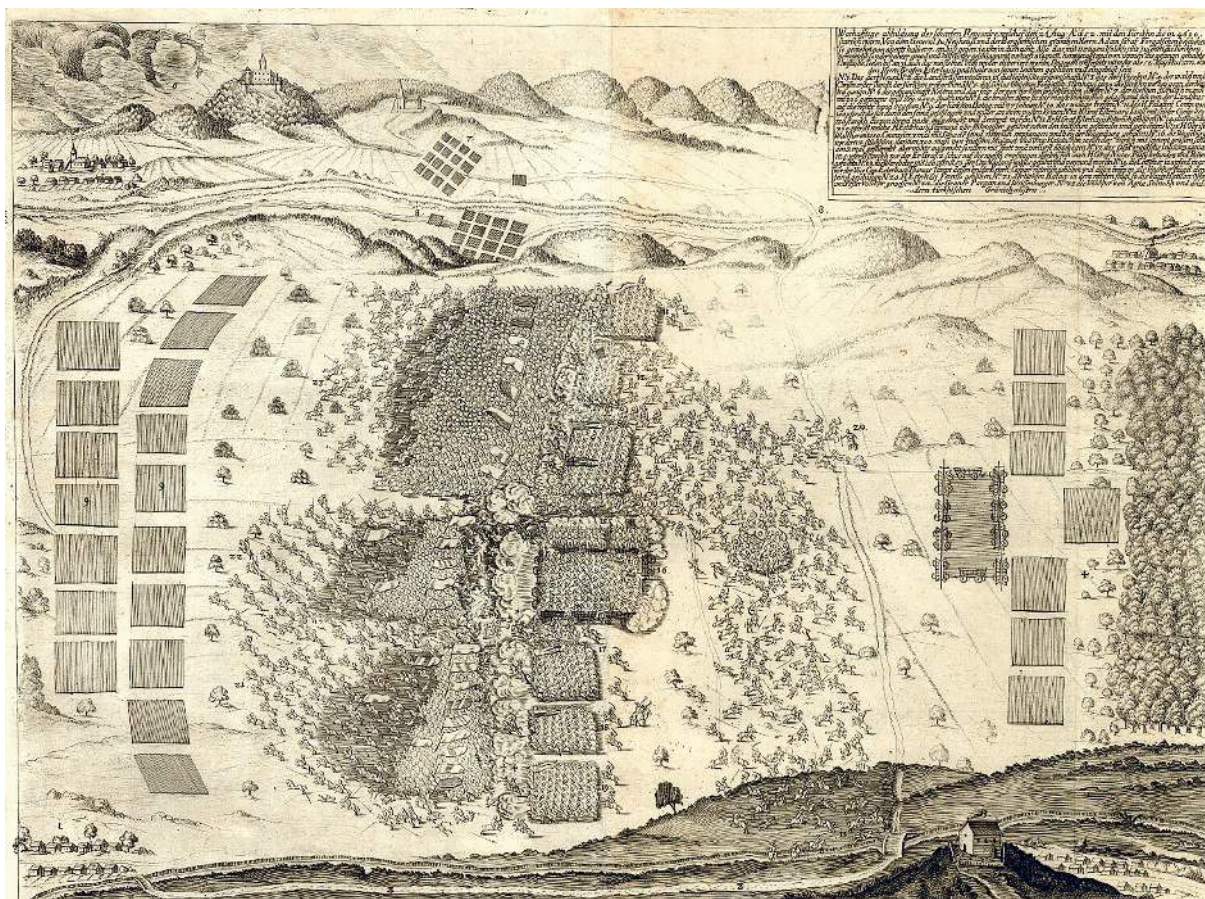


Fig 3. Strategic leaflet (source: mapy.mzk.cz/mzk03/001/052/355/2619316547/)



Fig 4. Battle of Veľké Vozokany; 1 – Hungarian initial position; 2 – Ottoman temporary camp and encounter near Tesárs; 3 – Ottoman movement after the encounter near Tesárs; 4 – Ottoman position near Nevidzany; 5 – Main clash of both armies. (author: D. Drozd)

main clash but is unfortunately barely readable. Nowadays, it can be seen in Mestské múzeum Zlaté Moravce, Slovakia.

Second painting is located at castle Forchtenstein (Fraknó) in Burgenland, Austria (Galavics 1986, appendix; Batora/Drozd 2019, fig. 6). The last painting by Dutch painter Philips Wouvermann (1619–1668) titled *Battle on forest trail*, created in 17th century, is deposited in Slovenské národné múzeum, Bratislava, Slovakia (Héjjné Détári 1969, 40).

Among historical written sources, most important are battle reports authored by several prominent individuals such as A. Forgáč, P. Esterházy, A. Batthyány, Kara Mustafa (beg of Ostrihom), the emissary of Venice or the captain of Svodín.

With help of aforementioned sources, it is possible to reconstruct the events of 26th of August (fig. 4). After the relocation of units to the vicinity of Veľké Vozokany, Hungarian forces were waiting for the arrival of Ottoman army. Stationed near Starý Háj forest, just northwest of the village, they built up a wagon fort (corral). The Ottomans, on the other hand, pitched a temporary camp near the village of Tesárs (today Tesárske Mlyňany).

Knowing that the Ottomans hold captive a high number of Christians and cattle, Ladislav Esterházy planned out a surprise attack on the encampment. Even though some prisoners are indeed rescued and allowed to join Hungarian forces, whole encounter eventually leads to demise of Ladislav Esterházy who died in a muddy stream of Žitava River.

Ottomans reacted quickly and tried to avoid the Hungarian positions, reaching presumably as far as the village of Nevidzany. Survivors of the encounter retreated into the wagon fort (corral) and started to bombard the Ottomans with howitzers. The main clash of the battle began.

Sometime in the evening, after a fierce battle, the Ottomans are leaving the battlefield. The main reason for the retreat was (supposedly) the injury of Kara Mustafa's horse (Šutka 2012, 26). Despite the proclaimed victory, it was a sad day for the Esterházy family. During the battle, four members of the family died in various encounters: František, Ladislav, Tomáš and Gašpar. The funeral ceremony took place on 26th November in Trnava.

Interpretation of the conflict

There are several issues which arise when it comes to interpretation of events based on iconographic and written sources. There are two main theories of what actually happened near Veľké Vozokany on that day, both differing in the actual winner of the battle.

The first one, which was widely accepted until recent years, tells the story of decisive Hungarian victory. Relying heavily upon available sources, in particular the Strategic leaflet, it claims very low losses for significantly outnumbered Hungarians. Nowadays, this theory, proposed by several Hungarian and Slovak authors (e.g., Gyula Ethey, László Berényi, Gabriel Šutka or Miroslav Eliáš) is being rightfully questioned (see Ethey 1936, 85–87; Berényi 2001; Šutka 2012; Eliáš 2019, 138–142).

The Strategic leaflet was for a long time regarded as one of the best sources for the reconstruction of the battle. G. Šutka wrote an entire book where he fully reconstructs the battle by using the leaflet (Šutka 2012). However, after careful study it is possible to notice many flaws that were overlooked in the past. Besides geographical inaccuracies (wrong positioning of Veľké Vozokany and Nevidzany, location of Ladislav Esterházy's death), there is a serious concern about the informational value of presented data. This fact was already challenged by Zsuzsana Újváry in her article dealing with the battle of Veľké Vozokany and death of Ladislav Esterházy (Újváry 2006). Backed by historical written sources, Zs. Újváry claims that the real size of both armies and subsequent losses on both sides were manipulated by A. Forgáč. As a commander in charge, Forgáč took blame for deaths of Esterházy family members, a thing which can be de facto acknowledged as a political defeat.

Presumably, to make things look in favour of himself, Forgáč decided to personally intervene in the creation of the so-called Levoča calendar to modify the numbers and make it look a lot more heroic than it probably really was (Dukkon 2003; Újváry 2006, 955). This theory directly contradicts the former one, which described the battle as a large conflict, with a glorious victory over the Ottomans. As it looks now, both of these statements are at least problematic if not completely false.

These findings, obviously, make the overall interpretation complicated. What makes it harder, is the fact, that if we can't trust the official records – we are unable to make any statements about the battle itself. All the important aspect of the battle are unknown – we don't know the real size of armies, number of captives and fallen soldiers. The only thing that is sure is that the battle itself occurred. How large it was? How many soldiers really participated? Did it happen the way the sources claim? The answers for these questions need to be found elsewhere.

In 2019, we started our project focused on the archaeological research of the battlefield. Its main aim was to verify the knowledge we had, concerning the battle and the battlefield. In the beginning, four chronologically related finds discovered in close proximity to the area of battle in a nearby village of Nevidzany were published. These finds (found in 1965) were represented by two incomplete clay pipes and two horseshoes. Based on several analogies from the Balkans and present-day Hungary, the finds from Nevidzany point to Ottoman presence in the area (Bátora/Drozd 2019).

Nevertheless, from the point of interpretation, there are still blank spots. If these finds really could be associated with the battle, it will mean that the Ottomans reached Nevidzany at some point, just like the Strategic leaflet informs us. On the other hand, clay pipes and horseshoes could have been brought here any time before, during one of many invasions to this area.

In October 2019, we successfully managed to conduct the first season of field survey of Veľké Vozokany battlefield. Because of large extent of the area, we have focused our attention on three smaller parts (stratum). These strata were subsequently randomly sampled. As a sampling unit a 20 × 20 m square was used. Individual units were surveyed with metal detectors while every single find was carefully recorded with GPS. In total, 48 units were placed and 19 200 m² out of whole research area were surveyed.

Statistically speaking, out of 269 recorded finds, only 4 were deemed as positive (1,49%), three of which were represented by lead bullets and a fragment of decorated silver bowl. As expected, low percentage was also noted in positivity of sampling units. Out of 48, only 3 could be marked as positive (6,25%) (Drozd/Neumann/Bátora 2020).

In terms of interpretation of the battle, the field survey didn't provide much evidence for us to consider. Despite our effort to effectively cover the key parts of the battlefield, the results are unconvincing. Very low number of finds does not suggest a large-scale conflict as described in historical sources. To verify our findings, another survey is needed, which will address a number of issues encountered, such as i) improving the intensity of the survey, ii) designing a more systematic approach to field survey (not randomly based) and iii) tackling the question of metal detecting by choosing less known parts of the battlefield.

KOCO A model

To put the research a little further, it was decided to apply new spatial analytical method called KOCO A. The KOCO A analysis provides a useful tool to evaluate military aspects of the battlefield terrain and to define its influence on the military operation (U.S. Army 1994, 2–10). By creating the KOCO A model it is possible to understand the actions and strategies of individuals based on terrain features which might have direct or indirect influence on the progress and outcome of the battle.

The term KOCO A is an acronym where each letter describes a certain defining feature of terrain. Respectively, the individual letters stand for *key terrain* (**K**), *observation and fields of fire* (**O**), *concealment and cover* (**C**), *obstacles* (**O**) and *avenues of approach (or retreat)* (**A**) (Brown 2012). These features can be analysed in various order, whereas it is of most importance to focus one's attention on those which have the potential to yield the most relevant results.

Archaeological use of KOCO A analysis is sparse and can be predominantly found in Anglo-American literature (e.g., Brown 2012, Mastone/Brown/Maio 2015, Sivilich/Sivilich 2015, Brown et al. 2017). From the perspective of Slovak archaeology, the very first, pioneering example of KOCO A application can be found in an article dealing with relics of WWII military activities in south-western Slovakia (Neumann 2021).

The reason for applying the KOCO A analysis in case of Veľké Vozokany battlefield is, as mentioned above, the uneven quality of available sources and rather subjective view of the battle provided by them. Created KOCO A model should serve as an objective analysis of the battlefield, contrary to making any claims about the progress or outcome of the battle just by exploring iconographic and written sources. Through application of KOCO A features we aim to spatially analyse specific terrain traits of the battlefield and their impact on the battle tactics. We believe that objective spatial analysis of the researched area can lead to confirmation or rejection of theories which arise from depiction of the battle in the past.

KOCO A analysis should answer questions concerning positioning and movement of the Hungarian and Ottoman units on the battlefield which heavily depends on available terrain features. The results of such analysis would be an important contribution to the current state of research regarding not only the battlefield near Veľké Vozokany but also the newly forming field of battlefield archaeology in Slovakia as a whole.

Analysis

As mentioned above, KOCO analysis consists of several features. The first feature to discuss here is the key terrain. It can be defined as any portion of the battlefield, possession of which gives an advantage to its possessor (Spennemann 2020, 754). There are several indications pointing to fact that Forgáč chose an appropriate place for the impending encounter. Written sources, in accordance with the Strategic leaflet, report the looting of villages in Upper Nitra region caused by Ottoman marauders (Újváry 2006, 950; Trubíni 2019, 94, 102). However, it still remains uncertain, how (and where) Ottoman units crossed the ridge of Tribeč and invaded the Upper Žitava valley, where the clash of Hungarian and Ottoman units would have taken place. Of great help is the Forgáč's report addressed to his military commander Ottavio Piccolomini where he enumerates the burnt villages in Nitra valley. Yet it is possible to come across another interpretation claiming that Ottomans advanced up to Oslany and from there they pulled back towards Zlaté Moravce (fig. 5; Trubíni 2019, 94). Be it as it will, one thing is certain – Ottomans intended to retreat back to Ostrihom where they had started their campaign few days earlier (there was the only bridge across the Danube River – thence this route was regularly used by Ottomans during their campaigns when pillaging the region north of the Danube). Forgáč surely knew this and decided to cross their route. At first, he left Nové Zámky fortress and set out for Vrábľe where he invited the military commanders of the neighbouring fortresses. Waiting here for a few days he learned that Ottoman units were marauding in the vicinity of Gymeš castle (Esterházy 1989, 317; Trubíni 2019, 97). Forgáč could be sure that Ottomans would retreat to the south towards Ostrihom. At this moment two routes were at hand for Ottomans – the first one leading along Žitava River towards Vrábľe and Nové Zámky, the second one leading eastwards to Hron valley, which is till this day the most direct way to Ostrihom. Choosing either the first or the second option, Kara Mustafa had to

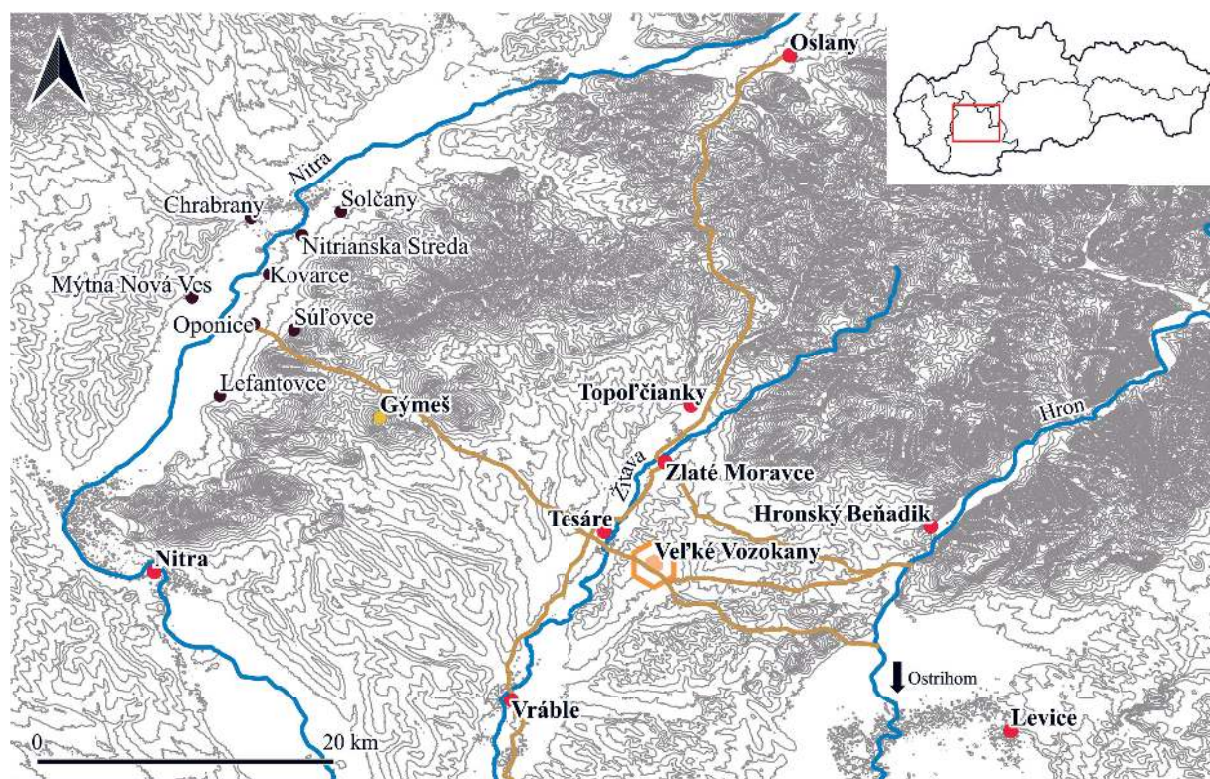


Fig 5. Map of Upper Nitra and Žitava valley. The main routes (based on Hungarian First Military Survey) are depicted in brown. The group of villages in Nitra valley (Lefantovce, Súľovce, Oponice, Kovarce, Nitrianska Streda, Solčany, Mýtna Nová Ves, Chrabrany) are claimed to be burnt by Ottomans during their campaign in August 1652. (author: M. Neumann)

approach Žitava valley where he could cross the river. The most suitable place was at Tesáre, where he could use the bridge and from here on he could follow one of the aforementioned routes. It is highly probable that Forgáč was well aware of the strategic value of this place. Nevertheless, he did not take his post on this crossroad, but he pitched his camp few kilometres eastwards from Tesáre on a broad flatland more suitable for manoeuvring. It was here where Forgáč was awaiting the enemy.

Forgáč's choice of key terrain could be also influenced by the landscape morphology which could as a certain form of obstacle hinder the movement of Ottoman units or get it to more disadvantageous position (Spennemann 2020, 754). The first retarding factor which is in this case necessary to take into account is Žitava River itself. It could be crossed in Tesáre by a fort or using a bridge (the First Military Survey from 1782–1784 depicts here a bridge as well as in the near village Mlyňany; Jankó/Porubská 2013, 35). A favourable bridge or fort was for Ottomans essential for one reason – they were driving a huge herd of cattle along with a number of Christian captives. For such a huge mass of livestock and human captives was required most suitable terrain to cross the river with not much harm.

After crossing the river, a new obstacle would rise in front of advancing Ottoman army – a relatively steep slope ascending onto the flatland between Tesáre and Veľké Vozokany. After passing it there would follow a broader flatland with mildly undulated terrain which is slightly descending eastwards and in the cadastre of Veľké Vozokany it falls directly into Širočina valley. If the First Hungarian Military Survey should be taken into account, it was just this area which had for centuries been used as connection between Žitava and Hron valley. From Hungarian point of view there was another not negligible landscape advantage – forests. They almost continually covered the aforementioned slope along the eastern bank of Žitava River (fig. 6). Only few woodless clearances offered connection between Žitava valley and the flatland where Forgáč was waiting for Ottomans. As a result these woods forced Ottomans to use narrow deforested corridors to enter the flatland near Veľké Vozokany.

Very important feature in military tactical thinking is considering the way how to provide protection from gunfire and how to hide troop positions from observation (Spennemann 2020, 754). In this case Forgáč could operate only with limited possibilities for cover and concealment. Woods constituted



Fig 6. 3D model of the battlefield near Veľké Vozokany (based on Hungarian First Military Survey and DMR 3.5 provided by GKÚ Bratislava). Forests are depicted in green, black lines represent the main routes connecting Žitava and Hron valley. Camps are depicted as triangles (Hungarian – red; Ottoman – green). (author: M. Neumann)

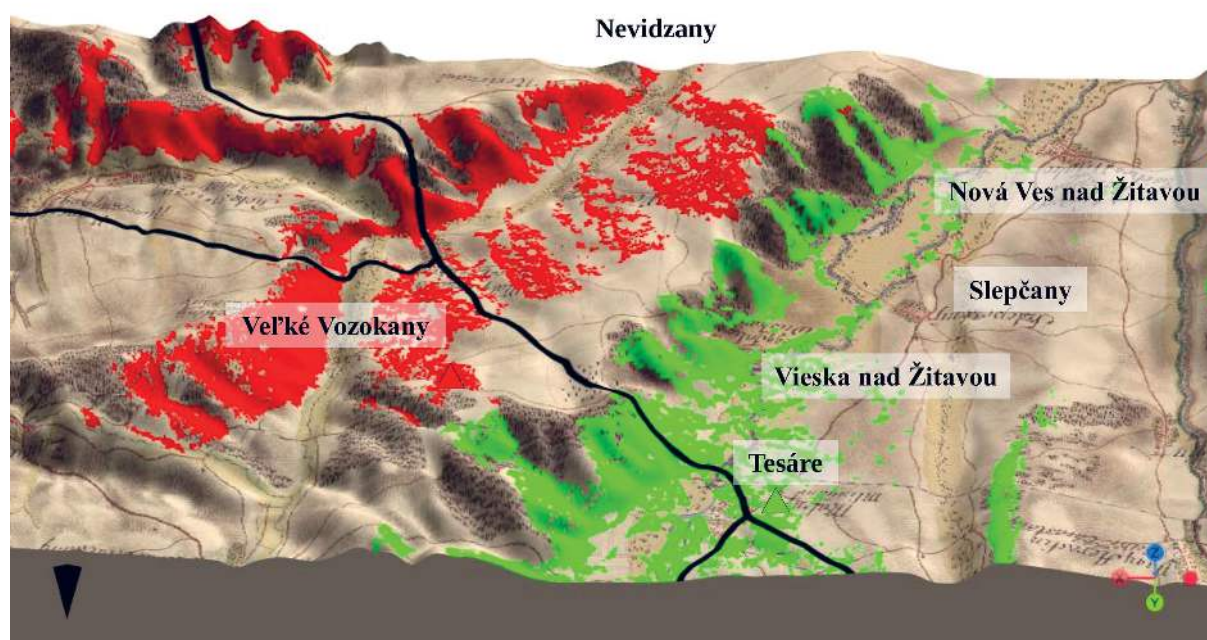


Fig 7. 3D model of the battlefield near Veľké Vozokany (based on Hungarian First Military Survey and DMR 3.5 provided by GKÚ Bratislava) and visibility analysis from both camps (red area – area visible from the Hungarian camp; green area – area visible from Ottoman camp). Camps are depicted as triangles (Hungarian – red; Ottoman – green). (author: M. Neumann)

a natural protection from gunfire and observation. The main reason why he pitched his camp in the vicinity of Starý Háj forest could be an attempt to cover his rear. One would argue that a woody strip covering the slope could yield Forgáč some protection from gunfire or observation. More light can be put here by the next feature of KOCO analysis – observation and fields of fire. This feature serves for identification of spots which allow observation of movements, deployments and activities of enemy and offer opportunity to see and acquire targets (Spennemann 2020, 754). If calculated from both supposed camps it is clear that Hungarians as well as Ottomans had only restricted observation possibilities (fig. 7). Ottoman army, camping at Tesáre, visually controlled only the nearest surroundings of its camp and forested slope on the left bank of Žitava River. On the other hand, Forgáč could visually control a great part of vast flatland in front of his camp as well as the left bank of Širočina valley. However, he had no direct visual connection to Ottoman camp, too. Generally speaking, both sides were in the initial phase of battle out of control of their enemy's position and movement. However, it could change in the very moment when one side entered visually controlled area of another one.

Avenues of approach are the last key feature of KOCO analysis. Considering the battle near Veľké Vozokany, the possibilities of approach were substantially limited on both sides by aforementioned obstacles, landscape morphology and vegetation. As the main corridor of approach could serve a widely used communication corridor between Tesáre and Veľké Vozokany (or in larger sense between Žitava valley a Hron valley). We cannot also forget the clearings on the slope between Tesáre and Nová Ves nad Žitavou – at least one of them was used as a corridor for a regional route (fig. 7).

Discussion

Summarising all features of KOCO analysis can yield a new view of the battle near Veľké Vozokany and new insights into decision making of both combatant parties. From the key terrain analysis follows

that Forgáč's choice of place for the encounter with Ottomans was not randomly made. He probably counted on Ottoman retreat towards Ostrihom where they had crossed the Danube few days earlier. Knowing the approximate location of marauding units of Ottomans (in the vicinity of Gýmeš castle) he pitched his camp near the crossroad of two regional roads – the first one leading from Zlaté Moravce to Vráble and the second one connecting Žitava valley and Hron valley. Both of them could be used by Ottomans to reach Ostrihom. Choosing this position, he could be sure he would sooner or later encounter the retreating Ottomans. From the strategic point of view Forgáč made a right decision which could be underpinned by a variety of natural obstacles. To reach the place where Hungarians were camping, Ottomans needed to cross Žitava River and, following the road leading through the narrow, deforested corridor, climb the slope ascending onto the flatland between Tesáre and Vel'ké Vozokany. Undoubtedly Forgáč had to be well aware of these natural obstacles and could have used them to his advantage. It seems, however, he didn't fully embrace them – as results from the visibility analysis Forgáč couldn't see Ottoman units ascending the slope and entering the flatland (thus turning the advantage of obstacles to naught). He would notice Ottomans already on the flatland thus allowing them to unfold their units. Maybe this was what Forgáč hoped for. According to Strategic leaflet, Ottomans truly set out for ascending the slope using the narrow, deforested clearings. Cattle and captives, probably with small patrol unit, were left in the camp at Tesáre. It was this moment when the course of battle took another direction.

Instead of letting Ottomans fully reach the flatland and start the battle, small Hungarian cavalry unit led by Ladislav Esterházy rushed forth towards Tesáre to liberate the captives (watched only by small patrol unit). While doing so he as well as his retinue got out of Forgáč's visual control (as is shown by the visibility analysis). From this moment on Forgáč could not see them and act in accord with him. Ladislav indeed succeeded in his effort to liberate captives but ultimately got under Ottoman military superiority. Ladislav got bucked off a horse and along with the major part of his retinue was killed in muddy stream of Žitava River. Unaware of situation at Tesáre, Forgáč could not know if Ladislav's cavalry needs any help. This very fact was never taken into account in the contemporary reports and therefore led to blaming Forgáč for the death of Ladislav Esterházy. However, what still remains open is who made a decision to liberate the captives. It can be speculated if it was Forgáč's decision or the sole initiative of Ladislav Esterházy.² One way or another, it was a fatal one and led to death of the prominent member of Esterházy family.

At last, the main Ottoman unit reached the flatland and was preparing for attack. Now both sides – Hungarians as well as Ottomans – were in mutual visual control and no natural or artificial obstacle was hindering the encounter. In a meanwhile the small rests of Ladislav's retinue returned to Hungarian camp and informed Forgáč what happened at Tesáre. Forgáč decided to stick to his former plan – to encounter Ottomans frontally. According to written sources Hungarians got under multiple Ottoman attacks. Forgáč formed wagon fort (corral) where he was able to resist. At last, after more or less unsuccessful assaults Ottomans left the battlefield.

Conclusion

The application of KOCO analysis has proved that even without much relying on often biased historical sources it can be still possible to put forth new and important information concerning the battle itself and its background. It can be done primarily by exploitation of unbiased (or objective) spatial data. In this particular case KOCO analysis was able to bring new perspective on the course of

² L. Berényi suggests that the attempt to liberate Christian captives at Tesáre had to be approved by Forgáč himself (*Berényi 2002, 102*). On the other hand, we must consider anti-Forgáč propaganda which spread quickly after the battle (see *Szabados 2019, 794–795*).

the battle as well as the decision making of the respective combatant parties. In terms of key terrain, we can conclude that Forgáč acted as much strategic as possible. In advance he took position near the intersection of the main regional roads where he could surely await the arrival of Ottomans. The landscape between Tesáre and Veľké Vozokany offered a variety of natural obstacles as well. Most suitable were Žitava River, the slope on its eastern bank and the forests. Forgáč could easily use and incorporate them into his tactical plan. However, in this case Hungarians should have taken their stand directly at the place where the road from Tesáre climbed the slope and reached the flatland (doing so they could attack Ottomans just after leaving the narrow, deforested corridor). Nevertheless, relying on the results of visibility analysis Forgáč did not do that. He instead pitched a camp on the open field – allowing Ottoman units to climb the slope, unfold and encounter them vis-a-vis. The fact that Forgáč completely refused to use the natural obstacles complies with the results of the visibility analysis – Hungarians visually controlled only the open field but not the slope towards Tesáre or even its entry on the flatland. Ottomans, leaving Christian captives and cattle in Tesáre, could without any resistance enter the flatland. It undoubtedly suggests that Forgáč was longing for the direct battle. Shortly before (or maybe already during) the battle a group of Hungarian cavalymen led by Ladislav Esterházy separated from the core of Forgáč's army and descended to Žitava valley in hope for liberating the Christian captives. It still remains questionable whether Ladislav's rally was his own initiative or not. One way or another this decision was the fatal one. Getting out of Forgáč's visual control Ladislav and his retinue were killed by Ottoman cavalry. After that the rest of Hungarian army suffered from manifold Ottoman assaults. Hungarians protected by their ultimate protection – wagon fort (corral) – faced them successfully and at last Ottomans left the battlefield.

As could be seen KOCO analysis offered a new form of insight into Forgáč's pre-battle decision making. He probably preferred an open field battle and all his pre-battle preparation led to this point. He chose an appropriate place for the battle. However, the course of the battle went another way. Ladislav Esterházy rallied beyond Forgáč's visual control, a decision which led to his death. Whether it was Ladislav's own initiative or Forgáč's command, it proved terribly wrong in the end. The death of Ladislav was thus caused by not sticking to the former tactical plan. In this way KOCO proved it can address issues which are a subject of long-lasting scientific discussion. To its advantage belongs the fact that it can be performed relatively easy (using geographic information systems) and at little cost. Moreover, KOCO analysis can have an ambition not only to solve problems, but to pose new question which can direct the further research. We hope this will also prove valid in the further research of the battle near Veľké Vozokany.

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