

DISCUSSION – DISKUZE

**Great Moravian agglomerations:
Central places with agricultural hinterlands,
local marketplaces, or autarkic settlements
oriented towards agricultural primary production?
A review and discussion**

**Velkomoravské aglomerace: Centrální místa s vlastním
zemědělským zázemím, lokální tržiště, nebo autarkní sídliště
orientovaná na zemědělskou prvovýrobu?**

Přehled a diskuze

Jiří Macháček

The paper compares various models of the relationship between the Great Moravian central agglomerations (e.g. Mikulčice, Pohansko near Břeclav, Staré Město) and their agricultural hinterland. The first is the traditional model, according to which the centres and the surrounding agricultural settlements were interconnected by a complex hierarchical network, within which the movement of food from the rural hinterland to the centre and the movement of craft products and services from the centre to the countryside took place. There was debate only about the degree of dependence of the agglomerations on the supply of agricultural products and the economic and social principles underlying this transfer. It was primarily a question of whether there was a functional local market in Great Moravia, situated in or around the centres, and whether the relations between rural settlements and centres were primarily based on free market principles. In addition, a group of scholars argues that the Great Moravian agglomerations were essentially autarkic in terms of their subsistence and did not need any agricultural hinterland, or even argued that such a hinterland did not exist at all. The paper reflects on the genesis of these interpretive models and tries to assess their plausibility.

Early Middle Ages – agglomerations – Great Moravia – subsistence – hinterland – market – agriculture

V příspěvku jsou porovnávány a diskutovány různé interpretační modely vztahu mezi velkomoravskými centrálními aglomeracemi (např. Mikulčice, Pohansko u Břeclavi, Staré Město) a jejich zemědělským zázemím. Prvním je tradiční model, podle něhož byla velkomoravská centra a okolní zemědělské osady provázány komplexní hierarchickou sítí, v jejímž rámci probíhal pohyb potravin z venkovského zázemí do centra a pohyb řemeslnických výrobků a služeb z centra na venkov. Diskuse se vedly pouze o míře závislosti centrálních aglomerací na zásobování zemědělskými produkty a o ekonomicko-sociálních principech, na nichž byl tento transfer založen. Šlo především o tom, zda na Velké Moravě existoval funkční lokální trh, situovaný v centrech či v jejich okolí, a zda vztahy mezi venkovskými osadami a centry byly primárně založeny na tržních principech. Vedle toho se vyčlenila skupina badatelů, která zastává názor, že velkomoravské aglomerace byly z hlediska své subsistence v zásadě autarkní a žádné zemědělské zázemí nepotřebovaly, resp. žádné jejich zázemí ani neexistovalo. Příspěvek se zamýšlí nad genezí těchto interpretačních modelů a snaží se posoudit i jejich plauzibilitu.

raný středověk – aglomerace – Velká Morava – subsistence – zázemí – trh – zemědělství

Introduction

Studying the settlement structure in the core of Great Moravia and gaining insight into the economic hinterlands of its central agglomerations was and remains an important pursuit of Czech archaeology; this issue has been researched from various perspectives over the past few decades. Researchers addressed the relationship between early medieval settlement and the natural environment in the floodplains of Moravian rivers, where settlement was concentrated (Poláček 1999; Petřík *et al.* 2019). New sites were actively searched for applying micro test-pitting in river floodplains (Poláček *et al.* 2005; Dresler 2016) and surface collections on the surrounding terraces (Dresler – Macháček 2013). Economic hinterlands were investigated not only in Mikulčice, where Lumír Poláček (Hladík *et al.* 2008; Poláček 2008a) and more recently Marek Hladík (Hladík 2020) have been devoted to this issue for years, but also at neighbouring Great Moravian agglomerations – Pohansko near Břeclav (Dresler – Macháček 2008a) and Staré Město (Galuška 2008). The relationship between the centre and the hinterland was also addressed in an interdisciplinary manner, e.g. from the perspective of archaeobotany (Látková 2017) or by means of analyses of stable isotopes of carbon and nitrogen and the diet (Kaupová *et al.* 2018). The economic hinterland of early medieval centres in the broader Central European context has been discussed at international conferences (Poláček 2008b).

However, the latest research in this field has brought, in addition to undisputed progress related to the application of modern prospecting and analytical methods (Dresler – Macháček 2013; Hladík 2014; 2020) and more complex interpretative models (Hlavica 2023), also a certain rift in the previous understanding of the relationship between early medieval agglomerations and their economic hinterlands. Most researchers followed and elaborated on the traditional model – model 1 (Dresler – Macháček 2008a; 2008b; 2013; Poláček 2008a), according to which the Great Moravian centres and surrounding agricultural settlements were linked by a complex hierarchical network, with food moving from the rural hinterland to the centre and craft products and services moving from the centre to the countryside (Hladík 2020). Discussions were held only on the degree of dependence of central agglomerations on the supply of agricultural products and the economic and social principles on which this transfer was based (Hladík *et al.* 2022). The main issue was whether there was a functional local market in Great Moravia located in or around the centres, and whether the relationships between rural settlements and centres were based primarily on market principles, as some researchers believe – model 3 (Hlavica – Procházka 2020c; Hladík *et al.* 2022). In addition, an alternative view was formulated – model 2 –, according to which the Great Moravian agglomerations were essentially self-sufficient in terms of their subsistence and did not need an agricultural hinterland (Látková 2017), or that no hinterlands even existed (Dresler 2016). We must seriously consider all perspectives on the functioning of early medieval agglomerations in the socio-economic system of the time, especially if the traditional model is to be tested, falsified and replaced by a new theory, which some researchers have recently tried to do or at least considered doing (Danielisová – Mařík 2012; Dresler – Beran 2019; Štefan 2024, 107).

In the following text, I would like to compare the aforementioned interpretative models, reflect on their genesis and assess their plausibility with the aim of initiating a new phase of discussion on the economic and social principles of the functioning of early medieval society in the broader Central European context. I believe that such a discussion will be as

factual as possible and based on empirical observations, because any opinion, *pro* or *contra*, that is not based on concrete facts and verifiable by findings is worthless for learning about and understanding the real world (which applies not only to the field of science). However, this does not mean that some facts cannot be interpreted in different ways, which is a methodological problem that even some of our colleagues have recently correctly pointed out (*Hlavica – Procházka 2020b*).

Great Moravian agglomerations: definition, population and social structure

The definition of Great Moravian agglomerations is of primary importance for our discussion. Most archaeologists dealing with this issue understand them as centres of power with an inhabited area of up to several dozen hectares (e.g. Mikulčice 30–50 ha, Pohansko near Břeclav 51.33 ha) and divided into several settlement areas with different functions (*Poláček 1996, 233–235; 2014; Dresler 2016, 49*). Their existence dates mainly to the 9th century; they are usually fortified and, in addition to their residential parts, we also find production components and burial grounds with churches (*Galuška 2014*). These vast settlement areas formed the pinnacle of the settlement hierarchy and were much more than merely fortified settlements with limited military functions. They can be understood as genuine complex centres of a proto-urban nature with a number of specific functions (*Gringmuth-Dallmer 1999*), for which Latin terms such as *civitates* and *urbes* (*Macháček 2013*) have been used in contemporary written sources.

We define Great Moravian agglomerations as settlement areas that meet the following criteria:

- Most can be dated to the 9th century.
- Their settlement area was up to several dozen hectares.
- They are divided into multiple components with various functions, e.g. residential, production, burial, ritual or religious.
- They were the pinnacle of the settlement hierarchy and became supracommunity areas (*Neustupný 1993, 29; Kuna et al. 2015, 63*).
- As complex centres, they fulfilled all important central functions in the settlement structure (economic, administrative, political, military, commercial, cult, etc.).
- They were typically fortified, at least in a certain phase of their existence.

Discussing subsistence strategies also requires knowledge of agglomeration populations and the share of people who were not involved in primary food production or were only marginally involved in agriculture. The size of the population in the agglomerations under discussion is relatively complicated to determine, because the resulting equation includes many unknowns, such as the number of simultaneously existing dwellings, the exact duration of the existence of these settlements and possible fluctuations in their population. Petr Dresler attempted the most recent estimate based on relevant data for Pohansko near Břeclav, comparing calculations based on different methodologies (using the number of graves, the inhabited area, or on the basis of identified settlement units). The most likely and fully acceptable result is in the range of 1800–2400 inhabitants, while it is clear that the population of Pohansko changed over time and reached its peak sometime in the high

Great Moravian phase in the last third of the 9th century. Dresler's conclusions broadly correspond to data on the population of other early historical agglomerations in various parts of Central Europe (Dresler 2016, 41–52).

Even more complicated is a description of the social structure of agglomerations, especially the quantification of the part of the population that was not at all or only marginally involved in subsistence activities, i.e. especially in primary agricultural production, and thus became pure or predominant consumers of food produced by others. Here, we rely on a hypothetical model based on our general knowledge of medieval societies and the intensity of various non-agrarian activities documented by archaeological sources in early medieval agglomerations.

Along with young children in the *infans* category, who nevertheless constituted a significant part of the population (Drozdová 2005; Sládek – Macháček 2017), residents of agglomerations who fully devoted their working capacity and energy to various central functions that are by definition important for the emergence and existence of these supra-community areas (see above) were also excluded from basic subsistence activities. In addition to the ruling political and official class ('princes' and their relatives, administrators of strongholds and princely estates, scribes, etc.), there must also have been professional warriors, members of the prince's retinue or the retinues of other nobles, who were settled in individual centres, as shown by the example from Přemyslid Budeč (Štefan *et al.* 2016) or written sources related to the nearby Eastern March, where these retinues are called *homines* (Zehetmayer 2019, 50–55). And we should also not forget the clergy – priests, chaplains, and members of monastic communities, who could also participate in production activities in the spirit of the motto *ora et labora*. Perhaps the largest part of society that systematically engaged in non-agricultural activities were craftsmen. Their presence is documented by numerous finds of production tools, semi-finished products, production waste, and even entire workshop complexes discovered at the Great Moravian agglomerations (Dostál 1993; Macháček *et al.* 2007; Macháček 2010; Galuška 2013, 99–174; Poláček 2021, 189–197). A cardinal question is the extent to which these specialists were narrowly focused on their profession and therefore necessarily supported by the agricultural population from the hinterlands of the centres, and the extent to which they operated in a self-sufficient mode, as is assumed for craftsmen from the early days of high medieval cities (Hoffmann 1992; 2002). To address this issue, it is important to estimate the ratio between home-based and specialised production. An example is pottery, which in the high Great Moravian period was already produced in centres in a professional or semi-professional manner, as evidenced by the high degree of production standardisation apparent in morphology, dimensions, and decoration. The share of this advanced pottery in the Great Moravian agglomeration could have been in the 60–100% range in the last third of the 9th century (Macháček 2001a, 166, 209). Its production must have been highly organised, at least at the level of Peacock's 'Individual Workshop' ethnoarchaeological model (Peacock 1982, 9, 31–38), according to which pottery is operated seasonally, but represents the main activity of the producers, with agriculture playing only a secondary role (Macháček 2001a, 220).

Another relatively large group that did not have its own source of subsistence in the form of land involved people with slave status (*mancipia*), who received everything, including food, from their masters. These were typically female textile specialists concentrated in *gynecea*. They appeared relatively commonly in early medieval written sources

of Czech origin from the 11th to 12th century, where they are referred to as *curiales servi* or *puellae operatrices* (Petráček 2003, 139–143). In Pohansko near Břeclav, large sunken structures are associated with intensive forms of textile production, and therefore with *gynoeceae* and their enslaved workers, in which tools and implements associated with the textile industry are conspicuously concentrated (Dostál 1993; Macháček 2010, 300–301). Poorly furnished graves with various burial anomalies, which we associate with the lowest social class, are scattered throughout the entire inhabited area in Pohansko in small groups or on their own (Dostál 1982; Přichystalová 2011). The servants, who performed various jobs in their master's house, were probably also part of the household (*familia*) of the Great Moravian nobles, whose cemetery was discovered, for example, in the vicinity of the 2nd church in Pohansko (Macháček 2019a, 195–196). The existence of slaves and the trade in them is a much-discussed phenomenon in the context of Great Moravia, which may have been of profound importance to the local economy (Macháček 2021). The need to feed slaves, who either worked in the centres or involuntarily waited there for the arrival of foreign buyers and their caravans, placed great subsistence pressure on the agricultural hinterland.

Despite the inability to clearly quantify the number of people who had to be supported by villagers and fed within the Great Moravian agglomerations, their share in the local population must have been relatively large, as can be seen from the list above. In my opinion, there must have been at least several hundred people, sometimes even more.

Model 1: Great Moravian agglomerations as central places with their own agricultural hinterland

The traditional idea of the hinterland of Great Moravian agglomerations was already formulated by Bořivoj Dostál. Based on his concept, each agglomeration or Great Moravian fortified settlement had its own economic hinterland consisting of a network of settlements with an agricultural, livestock, and craft focus. Their agricultural production provided a livelihood not only for the inhabitants of these rural settlements, but also became a fundamental part of the subsistence of that part of the population of the Great Moravian agglomerations that did not directly participate in agricultural production. Surplus agricultural production was to reach the centres in the form of payments to the prince and the church or through the internal market in exchange for handicrafts produced by the inhabitants of the agglomerations (Dostál 1987, 19–20).

According to Zdeněk Měřínský, rural settlements and burial grounds are concentrated in the vicinity of the Great Moravian agglomerations in Pohansko and Mikulčice, forming their natural hinterland. A massive population explosion in the 9th century caused a three- to four-fold increase in the population density in the core of Great Moravia (Měřínský 1980, 195–200; 1985, 87–88). The agricultural hinterland of each of the Great Moravian agglomerations could cover an area of 100–200 km² and they did not overlap (Dostál 1987, 24).

Lumír Poláček, who followed the work of Zdeněk Klanica (Klanica 1987), considers the Mikulčice hinterland to be the area of an annulus defined by an inner circle starting at a distance of c. 700 m from the centre of the agglomeration and an outer circle with a radius of 10 km, which formed the border of the idealised hinterland. However, Poláček

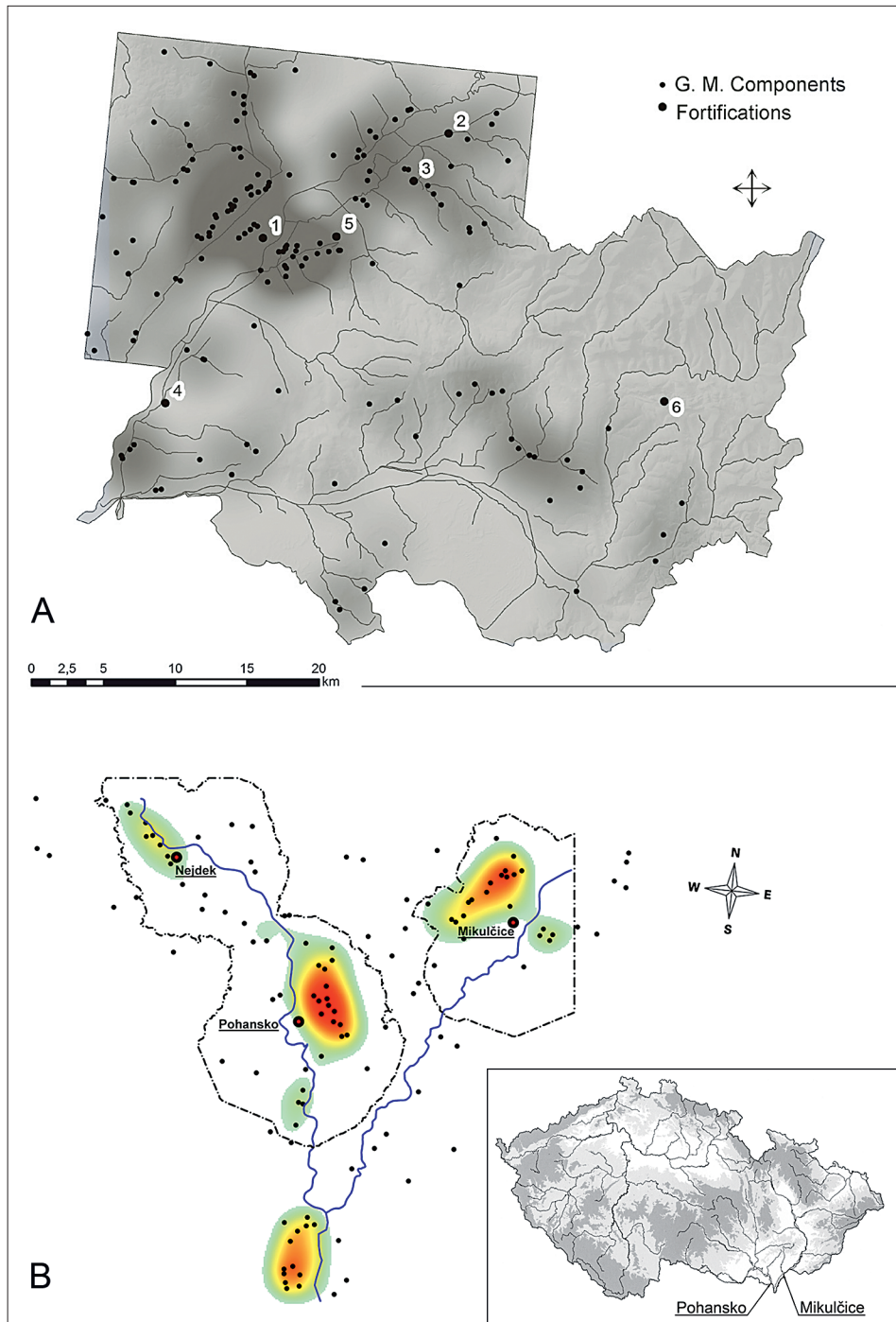


Fig. 1. Settlement structure in the agricultural hinterland: A – Mikulčice (1 – Mikulčice agglomeration); B – Pohansko near Břeclav (according to Dresler – Macháček 2008b and Hladík 2020, 183).

points out that this is only a hypothetical assumption. The hinterland is further mechanically divided into three zones according to the distance to the centre of the agglomeration. And yet, these zones do not show any differences in terms of social structures. The main task of the hinterland, especially the second zone, was to supply the centre with cereals and possibly animals for meat. In addition, there is also local evidence of craft production such as blacksmithing and non-ferrous metallurgy (e.g. in the Mikulčice–Podbřežníky settlement). The greatest increase in population density here was to have occurred in the late Great Moravian horizon (second half of the 9th to the first half of the 10th century). Nevertheless, Poláček also considers that the observable concentration of rural settlement near the centres could have arisen only by chance and is possibly related to general geographical conditions, e.g. natural fords across the river (*Poláček 2008a*).

A study by Petr Dresler and Jiří Macháček based on analytical surface collections in the hinterland of the Great Moravian agglomeration in Pohansko attempted to verify this hypothesis (*Dresler – Macháček 2008a; 2008b*). For the needs of analytical surface collections, the entire area of interest, i.e. an area of 532.5 km² demarcated in the south by the confluence of the Morava and Thaya rivers and in the north by the Hodonín–Dolní Dunajovice line, was divided into square polygons measuring 50 × 50 m. With the help of GIS tools, those suitable for archaeological surface collections were selected, i.e. mainly ploughed areas. The available polygons were then sampled to minimise cognitive bias. Control analytical collections took place in different landscape zones with distinct socio-environmental parameters. They were evenly distributed throughout the studied area (*Dresler – Macháček 2008a, 318*).

Analytical collections confirmed the validity of the initial hypothesis (*Dresler – Macháček 2008a; 2008b*), according to which the settlement structure in the studied area, in addition to standard environmental variables, was significantly influenced by the existence of central agglomerations, which largely determined the location of other settlements. The edge of the floodplain also had a significant influence on the distribution of settlements in the landscape, as it formed a significant divide between two ecosystems – the river floodplain and the surrounding terraces. The model was tested by comparing the numbers of polygons with finds from prehistoric times, protohistory, the Early Middle Ages, the High Middle Ages and polygons without finds to the expected random distribution in the landscape. The result showed that the spatial distribution of archaeological finds (mainly potsherds) dated to different eras differed from each other to a statistically significant degree. The finds from prehistoric times, protohistory, the Early Middle Ages, the High Middle Ages and polygons without finds have different spatial patterns in the landscape. Finds from the Early Middle Ages are significantly accumulated near central agglomerations (*Fig. 1: B*). The observable concentrations of rural settlement in the vicinity of the Great Moravian agglomerations could not be a random phenomenon, as Lumír Poláček had considered (see above).

This result was also repeated and confirmed by Marek Hladík in several studies on the Mikulčice hinterland (*Hladík 2020*). According to his research, the density of settlement increased during the 9th century, especially within a radius of 7 km from the fortified centre (*Fig. 1: A*). It is noteworthy that many of the Great Moravian settlements and cemeteries were visible and thus controllable from the Mikulčice agglomeration, even though its location in the middle of a flat valley floodplain was in no way dominant. According to Hladík, the existence of the supracommunity centre in Mikulčice was accompanied by a planned



Fig. 2. Břeclav-Líbivá. Great Moravian grain silo with the burial of a dog and the discoverers of the site, Pavel and Petr Čáp. Archaeological excavation from 1995–1998 (photo Jiří Macháček; Macháček 2001b).

colonisation of the hinterland, the settlement structure of which was subordinated to the needs of the central location. Still, local settlement respected the natural conditions and perhaps even older settlement patterns in the landscape (Hladík 2012, 128). The immediate surroundings supplied the centres primarily with agricultural products, especially cereals. Hladík bases his conclusion on a comparison of a nearby agricultural settlement at Mikulčice-Podbřežníky, where very deep (up to 2 m) underground grain silos were found in a ratio of 4:1 to residential dwellings (pithouses), while at more distant rural settlements (e.g. Mutěnice-Zbrod), which lack such a strong connection to the central agglomeration, smaller silos were found in a balanced ratio (1:1) to dwellings. This finding shows that food, especially grain, necessary for the sustenance of central agglomerations, was stored for a long time in underground silos at unfortified agricultural settlements in the vicinity of central agglomerations. Another example is the settlement in Břeclav-Líbivá (Macháček 2001b; Fig. 2; Fig. 3), where an enormous number of underground grain silos were discovered using geophysical prospecting (Macháček et al. 2024; Fig. 4). Grain that was moved from the agricultural hinterland to the centres must have been stored in a different way before consumption, since we are not aware of any underground grain silos from Mikulčice and Pohansko from the Great Moravian period (Biermann et al. 2015, 293; Hladík – Látková 2020). One can consider various chests or above-ground granaries (Dresler 2016, 222–228), or even vessels (Hajnalová 2012). At more distant agricultural settlements (e.g. Mutěnice-Zbrod), an agricultural surplus was not produced and therefore not stored, which is why there is not a larger number of grain silos.

Based on the traditional interpretative model, it can be summarised that the development of Great Moravian agglomerations led to the emergence of their economic hinter-



Fig. 3. Břeclav-Libivá. Half-section of Great Moravian grain silo excavated in 2022–2023 (photo by Petr Dresler).

lands manifested in the concentration of agricultural settlements focused on grain production in their immediate vicinity (Hladík 2020, 281). Hence, the agglomerations and their immediate hinterlands formed one interconnected economic and social system.

Model 2: Great Moravian agglomerations as self-sufficient settlements oriented towards primary agricultural production

An alternative view first emerged in the 1980s that at least some of the Great Moravian agglomerations were not consumer settlements to which surpluses from the countryside were sent; instead, these were self-sufficient production settlements or sites where agriculture formed a key component of their economy. This model was formulated by Čeněk Staňa in his study of 9th-century Moravian stongholds, in which he singled out a group of locations that he designated as *‘Landwirtschaftliche Zentren mit jeweils einem Herrenhof’*, i.e. agricultural centres with a noble manor, among which he included Pohansko near Břeclav, Pohansko near Nejdek, Strachotín–Petrova louka, and Rajhrad. According to Staňa, these settlements were not only the cores of large early medieval estates to which taxes from surrounding agricultural settlements were paid, but also places of primary agricultural production, or places for raising domestic animals, especially horses. They were directly dependent on princely power and on central castle towns (*Burgwallstädte*), where members of the ruling dynasty resided. This is what Pohansko near Břeclav, for example, was supposed to be like, which Staňa classified as an agricultural centre dependent on Mikulčice as a central agglomeration (Staňa 1985, 173–177, 183).

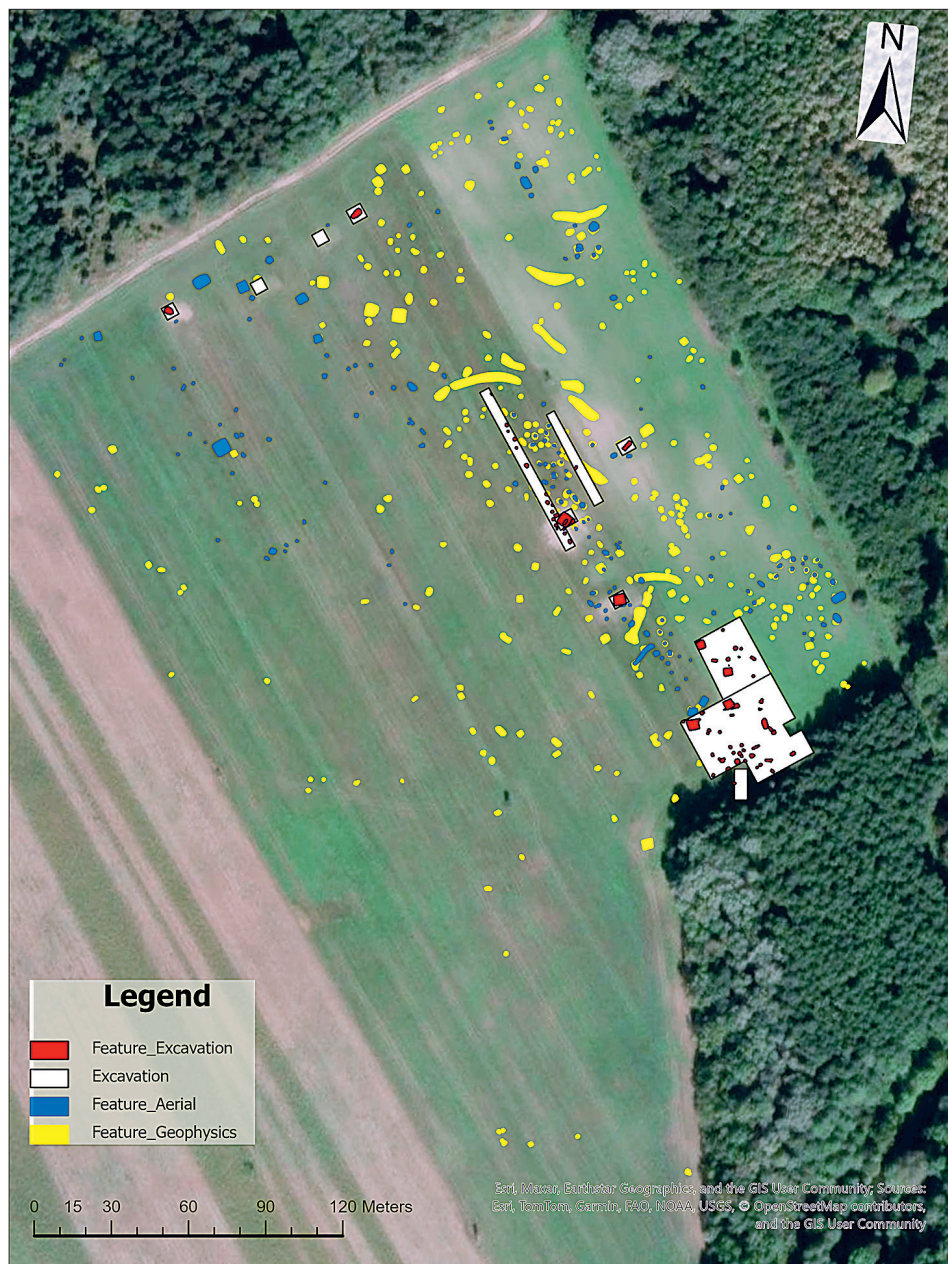


Fig. 4. Břeclav-Libivá. Archaeological features in the settlement area according to geophysical measurements, remote sensing, and archaeological excavation (graphics Petr Dresler, Michaela Prišťáková, Tomáš Tencer, Peter Milo, and Jiří Macháček).

Although Staňa's definition can still be considered a serious attempt at a functional division of Great Moravian strongholds, it nevertheless pointed to an uneven state of knowledge of individual sites (Procházka 2009, 94). Staňa even ignored some of the then-current knowledge that did not fit neatly into his schematic categories. One example is the intensively researched Pohansko near Břeclav, which Staňa characterised as sparsely populated and focused on agriculture, although he recorded craft workshops and non-agricultural production activities at the site (Staňa 1985, 173–174). Staňa's views on the function of Pohansko as an agricultural production location resurfaced 30 years later, but in a different context, when Petr Dresler published his work on the economic hinterland of Pohansko (Dresler 2016). Dresler did not accept Staňa's views *en bloc*, but modified them in the sense that the settlements and burial grounds that were discovered in the vicinity of Pohansko probably arose after the demise of this agglomeration, and therefore could not have been part of an early medieval economic and social structure (e.g. a manor), as postulated by Staňa. Without the appropriate rural hinterland, all the inhabitants of Pohansko had to be engaged in agriculture during the Great Moravian period, or, as Petr Dresler states, 'at least a significant number of them' (Dresler 2016, 248). His argument is based on challenging the original dating of the finds from our own analytical surface collections (Dresler – Macháček 2008a; 2008b). Dresler believes that the settlement of Pohansko and rural settlements cannot be synchronised. According to him, the previous dating was based only on ceramics, subjective feelings and perhaps even a certain attempt to manipulate the results of the research work ('to try to support the given project with relevant data sets'; Dresler 2016, 180). At that time, he did not consider the finds from regular excavations of rural settlements (e.g. Kostice – Zadní hrúd) to be sufficiently representative (well-processed and evaluated) to enable their use in refining the dating (Dresler 2016, 177). For Dresler, not even the absence of underground grain silos in central agglomerations is an argument against the agricultural character of the agglomeration at Pohansko, as grain could also be stored here in above-ground granaries (Dresler 2016, 228).

Archaeobotanist Michaela Látková also expresses a very similar view of the relationship between the Great Moravian agglomeration in Mikulčice and the rural settlements in the broader vicinity of the centre. In her opinion, the archaeological assumption that food (grain) for the central location was produced exclusively by smaller rural settlements in the hinterland has not been confirmed. According to Látková, it is likely that the basic crops (or a significant share of them) were grown locally by the inhabitants of the central settlements themselves, especially with the massive engagement of women in agricultural production (Látková 2017, 135). However, it is not clear from the texts published to date what she specifically bases her claims on. The author speculates that there were not enough people living in rural settlements to be able to grow enough food for central agglomerations. However, taphonomic analyses reveal a somewhat different picture. As a central agglomeration, Mikulčice differs from other settlements based on archaeobotanical finds. The samples from Mikulčice contain only a small share of crops from the initial stages of their processing. In other assemblages, especially from rural settlements or lower-level centres, such samples are relatively common. There is also a difference in the distribution of the final product, i.e. fully cleaned grain, which was found both in Mikulčice and in other central agglomerations, such as Nitra and Devín-Hrad (Hajnalová – Hajnalová 2008, 366–367; Látková 2017, 96–100). However, cleaned grain is mostly absent at rural settlements. Látková's observations suggest that from an agricultural perspective, central

agglomerations were more consumer than production settlements. However, this conclusion still needs to be confirmed with larger series of archaeobotanical samples from rural settlements in the hinterland of central agglomerations.

In agreement with Petr Dresler, Michaela Látková questions the traditional interpretation of underground silos of a pear-shaped section as primary storage facilities for grain, especially seeds, and instead assumes above-ground storage facilities (Látková 2017, 105). This conclusion was probably influenced by Mária Hajnalová, who has long been sceptical of the stated functional interpretation of these specific settlement pits in other historical contexts (Hajnalová 2012). The influence of Hajnalová's work is also evident in the way she addresses the relationship between central settlements and their hinterland. Using the example of La Tène oppida, she tried to prove that central locations did not need their own agricultural infrastructure and could be self-sufficient (Danielisová – Hajnalová 2014, 422). Alžběta Danielisová and Jan Mařík tried to apply the same model to early medieval agglomerations, which share numerous parameters with Celtic oppida (Danielisová – Mařík 2012). Michaela Látková followed this line of interpretation in the case of Mikulčice, though without support in empirical data; she lacked a sufficient number of samples from rural settlements to refute the traditional hypothesis, and those that were available tended to support the traditional interpretive model of a centre that relied on its agricultural hinterland for food supplies.

Model 3: Great Moravian agglomerations as local markets with agricultural commodities

The latest phase in the discussion on the relationship between Great Moravian agglomerations and rural settlements was marked by the question of whether there was an internal local market in Great Moravia (Macháček 2015, 468–469) that would supply food to the centres on the principle of market relationships. The existence of a local market was already assumed by historian Dušan Třeštík, who in his study commented on the mention of the Moravian market in the Raffelstetten Customs Code from 903–904. This historically-known market with an unknown location but which is assumed to have existed in one of the Great Moravian agglomerations (e.g. Třeštík believed it was Mikulčice) undoubtedly became part of the European long-distance trade system. According to Třeštík, however, the 'Moravian market' did not primarily serve foreign buyers trading with the Moravians, but mostly the needs of exchange within Moravia itself – between its inhabitants. Using the words of the Arab author of the so-called Anonymous Relation, he argues that it is primarily Moravians who 'search for and sell all things' here (Třeštík 1973, 890).

Some more recent archaeological works that address this issue formulate only very general conclusions to the effect that in Great Moravia there existed 'economic relations between the agglomeration and the settlement network in its surroundings' and also the 'local exchange of goods (primarily foodstuffs)'. But while it is accepted that this exchange took place through the 'local market', specific evidence that would prove the existence of market relations in Great Moravia and the massive transfer of food to populated centres through the market has not been presented (Hladík et al. 2022, 137, 141, 145). However, studies have recently emerged that are much more specific. Although Rudolf Procházka and Michal Hlavica state that 'we are not sure about the nature and intensity of economic

interactions between the Great Moravian central places, or between the central places and their hinterlands’, they attempt, despite this uncertainty, to identify the local market based on the distribution of everyday goods, especially ceramics. The greatest obstacle to formulating plausible conclusions is the problem of equifinality, which makes it difficult to compare and verify various archaeological hypotheses about the (re)distribution of goods within Great Moravian society (Hlavica – Procházka 2020b). Using the mapping of individual ceramic groups in the area of south Moravia (Macháček 2001a, 250), the authors of these studies document the existence of ‘market zones, i.e. areas serviced by the same market centre(s) within which communities had access to the same array of goods’ (Hlavica – Procházka 2020c, 79). In the absence of coins in Great Moravia, iron axe-shaped ingots, or archaeologically unprovable ‘commodity money’ (Hlavica – Procházka 2020a, 82), were to have served as a universal medium of exchange in trade transactions within these zones. According to this model, the Great Moravian centres were to have functioned primarily as regional marketplaces (Hlavica – Procházka 2020c, 79).

Working with cultural-anthropological theories, Michal Hlavica created highly detailed economic-political and economic-geographical models of Great Moravian society, which he tested against empirical data. Specifically, he worked with ceramic types, or groups, identical pottery marks on the bottoms of vessels, and the archeometric analysis of ceramic material (XRF, petrography) (Hlavica 2023; Hlavica et al. 2024). Hlavica considers that some of the ceramics for their needs were procured by the inhabitants of South Moravia, including farmers and cattle breeders, in the marketplaces located within the Great Moravian centres, e.g. Pohansko (Hlavica 2023, 55), as early as the 9th century. However, this conclusion could be premature or even erroneous. At rural sites in the hinterland of the Great Moravian agglomerations, Hlavica records only a minimum of marks identical to ceramics from the centres. Only two identical marks are known from the hinterlands of Pohansko and Mikulčice, i.e. from the cemeteries in Prušánky and Nechvalín. A relatively large assemblage of 28 relief marks has been processed from both locations. Parallels to both marks were found only in Pohansko near Břeclav. No match has been found yet in Mikulčice (Hlavica 2016; 2023, 68), which does not indicate a very intensive exchange of consumer goods between the centres and their agricultural hinterland, although a certain transfer of professionally produced ceramics to the rural environment undoubtedly occurred, as evidenced by finds of high-quality ceramics from the Mikulčice and Blučina typological groups at some agricultural settlements (Kavánová – Vitula 1990; Macháček 2001b; Mazuch 2013, 92; Hladík 2020, 245). However, in my opinion, the two relief marks do not support the hypothesis ‘on market interactions with primary food producers’ as formulated by Michal Hlavica (Hlavica 2023, 55), whose argument is not even consistent on the issue of the status of potters, who, according to Hlavica, freely sold their products as independent craftsmen to other Moravians. This would hardly be possible if the economy of the centres for which potters produced their wares were controlled by the ruling elite, as Hlavica repeatedly claims. According to him, each agglomeration had its own ceramic producer who satisfied the needs of residents from different social classes. However, ceramics remained mostly within the agglomerations and did not circulate in large volumes even between neighbouring centres.

The few identical marks occurring simultaneously in Pohansko and Mikulčice (five individuals out of 470 documented marks from both locations) can be explained more as evidence of the movement of individual people (with their own food and utensils) than as

a massive movement of traded goods between centres (*Hlavica 2023*, 88–89). According to ethnographic analogies from the western Mediterranean, the typological similarity between the Great Moravian ceramics from Pohansko and Mikulčice can be explained by the existence of branch workshops, which emerged as a result of the movement of some potters from one production centre to other important consumer settlements (*Vossen 1991*). A transfer of this type could have taken a violent form in the Early Middle Ages and be organised by a central authority, as shown by the example of the transfer of merchants (and craftsmen?) from Slavic Rerik to Viking Haithab by the Danish king in 808 (*Schwind 1984*, 303). A similar formal spectrum and decorative style of Great Moravian ceramics spread in this manner (*Macháček 2001a*, 257). In this situation, free access for independent producers to the local market, where they would offer their goods in competition with other potters, is unlikely. From the perspective of pottery production, the Great Moravian agglomerations appear more like closed socio-economic systems with their own pottery workshops, isolated from other centres (*Staňa 1984*; *Macháček 2001a*, 246–257; *Hlavica 2023*, 71). And yet, it is interesting that identical marks (two potsherds with identical marks in Pohansko) appeared at the relatively distant (37 km) Lower Austrian site of Pellendorf (*Kühntreiber 2019*), which lay halfway along the route from Pohansko to the Danube – the main travel artery in this part of Europe. This seems to indicate the involvement of ceramics in long-distance trade (*Hlavica 2023*, 89), possibly serving as packaging for rarer commodities (e.g. wax), which Moravians traded on a pan-European level, as can be seen, e.g. from the Raffelstetten customs regulation (*Bartoňková – Večerka 2013*, 100).

Testing the test

According to Karl Popper, although scientific theories and interpretative models are never fully verifiable, they must be testable. If a theory withstands detailed tests, it can be deemed proven and cannot be abandoned without ‘good reason’. A good reason would be replacing it with another ‘better testable’ hypothesis or to falsify the original theory (*Popper 1997*, 10–11, 264).

Every effort to falsify existing hypotheses in the sense of Karl Popper’s considerations can be appreciated, because science needs ever greater competition between hypotheses and increasingly rigorous testing. If we are not sufficiently critical, we always find what we need (*Popper 2000*, 108, 123). However, testing must also be of high quality in order to refute and replace existing theories. It is therefore a good idea to ‘test the test’ and assess whether it is of sufficient quality to falsify the original theory and whether the alternative hypothesis is built on solid foundations.

Petr Dresler attempted to falsify the original theory about the unified socio-economic system of Great Moravian centres and their hinterlands. He based his testing on criticism of the dating of rural settlements from the vicinity of Pohansko near Břeclav and the claim that they are not contemporary with the central agglomeration, arguing that it was impossible to accurately date fragmentary pottery with indistinct features obtained in surface collections on the ploughed surface of fields. However, this argument cannot be used to refute the current theory, because the chronological inaccuracy means that Pohansko and the surrounding agricultural settlements could have been both non-contemporary and contemporary. This argument, therefore, fails as a test criterion.

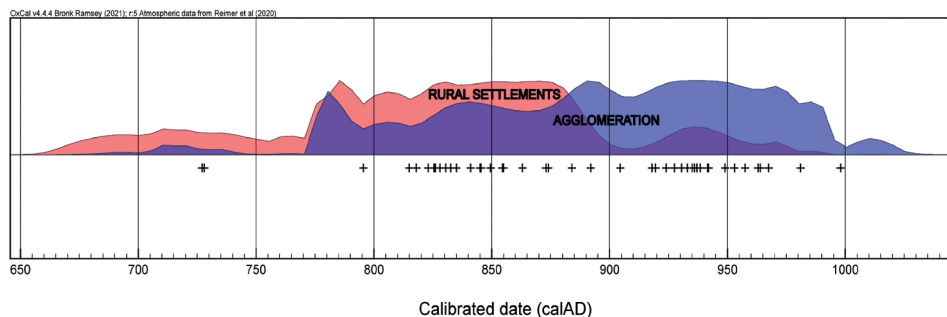


Fig. 5. SUM plot summarising the distribution of radiocarbon measurements from rural settlements in the Pohansko hinterland (red plot, Kostice – Zadní hrád, Poštorná) and the Great Moravian agglomeration in Pohansko (blue plot). Modelled using the OxCal v. 4.4 software and the IntCal20 calibration curve (Bronk Ramsey 2017; Reimer et al. 2020) and radiocarbon measurements published in the literature (Košta et al. 2019; Macháček et al. 2016; 2018; 2021a; 2021b; see Online Supplementary Material 1 for details).

Unfortunately, we cannot use artefacts made of materials other than ceramics (e.g. metals), which could be dated more precisely, to identify rural settlements, because in the Great Moravian period, the metallic component of the material culture of rural communities was not very rich and consisted almost exclusively of iron objects, which often escape attention during prospecting with a metal detector and cannot be dated more precisely.

Much more precise synchronisation of the centre and the hinterland can be expected based on the excavation of rural settlements. Recently, finds from the early medieval settlement of Kostice – Zadní hrád were published, which Petr Dresler did not yet have at his disposal when writing his critical study. A comparative statistical analysis of large and high-quality assemblages of settlement ceramics conducted by Adéla Balcárková shows that most of the Great Moravian settlement features from this site can be synchronised with the older phase of the Great Moravian period in Pohansko (Balcárková et al. 2017, 53). This makes it possible to challenge Petr Dresler's assertion that the agricultural settlements arose only after the disappearance of the Pohansko settlement. As such, this thesis certainly does not apply to the Kostice – Zadní hrád site. However, it is similar with other rural settlements (Břeclav-Libivá, Břeclav-Poštorná, Mikulčice-Podbřežníky, etc.) from the hinterland of Pohansko and Mikulčice, where typical Great Moravian ceramics of the Mikulčice group with grooved rims were discovered during excavations (Macháček 2001a; Mazuch 2013), which allows us to synchronise these sites with the later developmental phase of the Great Moravian central agglomerations (Kavánová – Vitula 1990; Macháček 2001b; Mazuch 2008). A similar conclusion applies to the inhumation graves of people and animals (dogs), which were discovered at agricultural settlements in the hinterland of Pohansko. Their radiocarbon dating overlaps with the dating of inhumation graves and animal bones at Pohansko (Fig. 5; Košta et al. 2019, 191; Macháček et al. 2018; 2021, 273). It was shown that all settlements in the hinterland of Pohansko and Mikulčice where regular archaeological excavations were conducted could have been (and probably were) contemporary with the Great Moravian agglomerations. This claim cannot be refuted for now, and the attempt to falsify the existing theory in this way appears to be unsuccessful. Marek Hladík with colleagues recently reached a similar conclusion when they stated about Pohansko and Mikulčice that ‘... *unfortified rural settlements existed around both of the*

central places. Based on this, we are inclined to support the view that – analogically to Mikulčice – there was a network of settlements that coexisted and cooperated with the Pohansko centre and functioned as its economic hinterland ...’ (Hladík et al. 2022, 136).

Based on the latest analyses, the attempted falsification by Michaela Látková (Látková 2017, 135) can also be questioned. It claimed that the staple crops (or a substantial part of them) were grown locally by the inhabitants of the central settlements themselves (*‘the staple crops were cultivated locally by the central site itself’*). The question is what exactly is meant by the term ‘locally’. However, it turns out that this could not have been in the river floodplain in which the central Great Moravian agglomerations were located. The archaeobotanical and palynological study by Libor Petr and colleagues shows that at least in the case of Pohansko *‘supplies were brought from the hinterland, where chernozem soils were better suited for agricultural production... The spectrum of cereal weeds recorded by archaeobotany demonstrates that crop fields were situated outside the alluvial floodplain zone on chernozem or loess soils located approximately 3–4 km from Pohansko’* (Petr et al. 2025, 151, 161). It is at this distance that agricultural settlements are located on river terraces; these are dated to the Great Moravian period by large pottery assemblages and the radiocarbon method. At some of them, prospecting methods (e.g. geophysical) indicate dozens to hundreds of underground silos (Macháček et al. 2024) that could have been used to store grain supplies. This could be used in a few months as seed for the new season, or for direct consumption even after several years (Pleinerová 1995, 62–63). Although the yields of early medieval agriculture are usually considered to be very poor (Le Goff 1991, 215), it seems that the 9th century brought innovations and changes in agrotechnology to Moravia including the massive spread of iron agricultural tools such as ploughshares, coulter, sickles, scythes, etc., and the cultivation of new crops such as millet (Macháček – Müllerová 2022, 287–288; Macháček et al. 2025), which enabled a significant increase in food production. In the vicinity of the Great Moravian agglomerations, this was reflected in the increase in storage capacities in underground silos (Balcárková et al. 2015, 92–94) and, indirectly, in population growth (Galeta – Pankowská 2023).

It therefore seems that supplies, especially grain, intended for feeding populous proto-urban centres were stored at agricultural settlements and gradually moved to centres whose population had a different diet than the peasants from their hinterland, not only in Moravia, but also in early Přemyslid Bohemia (Kaupová et al. 2018; 2019). A model of this type is not entirely unusual and is also assumed, e.g. in the Minoan palace complexes on Crete, where, according to archaeological excavations to date, there is insufficient storage space for the supplies necessary to support all the palace inhabitants. Therefore, decentralised storage at rural settlements, which were only controlled from the centre, is considered (Smlíšek 2025).

The question is on what economic–social principle the transfer of food from the hinterland to the centres was based. The majority of researchers lean towards the market, with farmers selling their surpluses to residents of Great Moravian agglomerations at the local market. However, I doubt that this was possible in 9th-century Moravia, as Great Moravia was still an uncommercialised economy, lacking both a market for internal trade, a class of independent merchants working for their own profit, or a currency that would have served as a universal medium of exchange. Not even craft specialists worked here yet for the internal market and instead still served the needs of the elite or embryonic ‘states’, whose agents controlled long-distance trade (Smith 2004, 78–79, 89), which, on the con-

trary, was relatively developed due to the probable involvement of Moravian elites in the pan-European slave market (*Macháček 2021*). Surplus production was an investment in the power and prestige of the chiefs/princes, who distributed goods selectively based on their political goals. On the contrary, in a market economy, which by then had its own thousand-year history but had not yet fully functioned in Great Moravia, producers would send their products to the market to be bid on by buyers. It only appeared in highly complex social regimes whose political form was based on the state system and social stratification. However, it is necessary to realise that various forms of distribution of material goods (market, redistribution, reciprocity) exist in parallel and are not mutually exclusive. The decisive factor for assigning a particular exchange system to a particular category depends primarily on which mode of exchange dominates the society and, above all, which one unifies the entire economy (*Murphy 2004*, 139–141).

Research on ‘mass’ goods, e.g. pottery, is crucial for identifying the internal market (*Štefan 2014*, 162). In this sense, the situation in Moravia in the 9th century can be compared with the later period when the economy of the Czech lands was already significantly monetised (*Macháček – Videman 2013*) and probably also commercialised. According to Ladislav Varadzin, who has intensively studied this issue, the standard of a partially commercialised economy was Přemyslid Bohemia (*Žemlička 1997*, 161), where the distribution of ceramics in the 10th to 12th century was based not only on the collection of taxes from centres, but also on market exchange. The result of a comparison of older Mojmir Moravia and later Přemyslid Bohemia is not surprising. The Bohemian distribution pattern characterised by the ‘*frequent mutual penetration of workshop distribution circuits*’ (*Varadzin 2010*, 56) differs from the situation in the core of Great Moravia. The difference lies in the fact that in 9th-century Moravia there was no significant overlap of ceramic distribution circuits, as was the case later in Bohemia (*Macháček 2001a*, 246–250; *Štefan 2014*, 161). The fully commercialised economy of the High Middle Ages is characterised by the interweaving of multiple distribution circuits (*Vařeka 1998*, 132). If market exchange can be recognised by the movement of pottery from the centre towards the rural consumer, as Ivo Štefan (*Štefan 2014*, 162) suggests, then market exchange was not yet fully developed in 9th-century Moravia, as indicated by the low occurrence of identical marks in the centres and in the countryside (see above).

Based on current knowledge, it appears that the Great Moravian agglomerations were subsistence-dependent on their agricultural hinterland, with which they were not connected by market relations. So on what principles did the transfer of food and goods work in Great Moravia without a developed commercial and fully market economy?

The traditional explanation presented mainly by the historians of earlier generations was based on the top-down principle, i.e. the exploitation of the hinterland through force by the Great Moravian elites settled in the centres. Dušan Třeštík considered a more or less regular collection of an archaic tax based on the number of offspring in the form of ‘*poludja*’, i.e. through the plundering expeditions of an armed band (*Třeštík 1997*, 292–296), as is known from Kievan Rus’ (*Havlík 1987*, 18–19). As a possible alternative, Třeštík offered a service organisation, within the framework of which free people who earned a living on their own land would be obliged to pay taxes and perform service. However, this would mean their de facto transformation into subjects (*Třeštík 1997*, 296), which would probably not have been possible without force by the elites (*Wihoda 2010*, 266). According to Zofia Kurnatowská, the forced resettlement of the population also led

to an increase in the density of settlements around central hillforts, at least in Piast Poland (Kurnatowska 1984, 169).

However, the relationship between ordinary villagers and the residents of Great Moravian agglomerations can also be viewed in another way, i.e. from a bottom-up perspective. It is possible that people could voluntarily come together for the purpose of common defence, mutually beneficial reciprocity, and collective religious rituals (DeMarrais – Earle 2017). The socio-economic system of the Great Moravian agglomerations and their hinterland would thus have emerged on the basis of compromises and negotiations between farmers from the countryside and craftsmen, merchants, and warriors or chieftains from the centres, who united to protect and promote their common interests (Furholt *et al.* 2020), both against an external enemy (e.g. the Frankish Empire) and against other Moravian communities. The population may also have partly rotated between the central agglomerations and the countryside, as indicated by the settlement of the southern suburb of the agglomeration in Pohansko, which shows a number of formal similarities with rural settlements, and thus differs from the settlement structures in the core of the agglomeration (Vignatiová 1992; Dresler *et al.* 2008). The settlement here may have had the character of a type of ‘favela’, as they are known from large agglomerations in today’s South America and Africa. Rural residents could freely come and go to the southern extramural settlement, and they also participated in various military actions, both defensive and expansive, as evidenced by the relatively frequent finds of militaria in this part of Pohansko (Vignatiová 1992, 58–65). The countryside was also relatively heavily militarised at that time, as evidenced by the finds of solitary graves with weapons and riding gear from rural settlements in the immediate hinterland of Pohansko (Macháček *et al.* 2021). Temporary and conditional military assistance from armed villagers could have been part of their negotiations with the residents of the centre, to whom the villagers need not have been subordinate. Societies that historically created large agglomerations and cities did not always exhibit features of administrative hierarchy and authoritarian rule. Cities also emerged as large regional confederations and civic experiments based on cooperation and negotiation. Monarchy, military aristocracy, and other forms of social stratification were not always necessary to achieve this (Graeber – Wengrow 2021). However, this social experiment did not last long even in Great Moravia. The existing social contract was apparently disrupted by the incipient process of feudalisation and the temporarily unsuccessful attempt to introduce the early medieval manorial system (Macháček 2016; 2019a). As a result of the upheavals caused by these disruptive social innovations, Great Moravia and its agglomerations eventually disappeared into the maelstrom of history (Macháček 2019b).

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