

## „Gold rush” or „considered investment”? Origins of mining towns in the medieval Central Europe

„Zlatá horečka” nebo „promyšlená investice”? Vznik horních měst ve středověké Střední Evropě

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**Abstract:** The 13<sup>th</sup> c. socio-economic change in Central Europe brought into existence a new kind of urban settlement: the mining town. The aim of this article is to analyse the modes of development of these towns and to identify which factors were decisive in their emergence. The study is based on analysing the factors of localization (environmental and socio-economic), urban layout and development patterns. I suggest that mining towns developed according to two models: the “gold rush” and “considered investment”. The first model assumes that the process of the emergence of towns was dynamic and hard to control. Mining was the main reason for the creation of towns. In the second model, the mining town was a part of a wider and centrally considered investment in land reorganization and colonization. In this case, mining was not the only reason to create a town. Here, I show that despite certain variability in the described features, these can still be perceived as prerequisites for distinguishing both modes of the emergence of towns

**Key words:** urbanization, mining, landscape archaeology, urban layout, charter, colonization

### INTRODUCTION

Mining towns were specific urban centres with mineral resources extraction-based economy. In Central Europe this type of towns developed during the 13<sup>th</sup> and 14<sup>th</sup> c. During that time regions of Germany (especially eastern part), Poland, Bohemia, Moravia and Hungary witnessed a major social and economic change. In general, the change was initiated by local rulers who wanted to rearrange a foundation for their territorial power and boost their financial profits. To this end they reconstructed old and created new settlement network. The latter process, of so-called town-village colonization, involved establishment of a number of new villages and towns with a novel to this part of Europe type of spatial and legal organization (Gawlas 1996). Settlers, who created the new towns, partially originated from the West. They introduced and adapted legal system, trading and farming techniques, crafts and, importantly, brought along a capital, on which they were able to build new lives and businesses (Małowist 2006). The reason why more resources originating from mining towns, i.e. non-ferrous, precious metals, were in demand was the fast growing economy of Western Europe (Małowist 2006). Rich and freshly colonized areas of Central Europe attracted groups of miners, who encouraged by local kings and princes, started to look for new deposits. If they were lucky enough to find a rich one, they settled down in the vicinity of a mine. As a result of such a mutually beneficial cooperation between authorities facilitating spatial and legal rearrangements and new, skilled settlers increasing mineral resources extraction output, mining towns came to existence in Central Europe. My aim here is to look into the general mode and dynamics of emergence of mining towns in Central Europe. Were they an effect of (i) a dynamic and uncontrolled development in chase for a profit as in the

classical gold rush scenario, (ii) or rather a part of a process, planned and conducted by a ruler?

### METHODS

I assume that those questions can be answered by analysing town's factors of localization and urban layout development. I will focus on environmental and socio-economic factors. In the first group we have: relation to ore deposits, access to basic resources (like farming areas, woodlands, water sources) and topographic relief. Socio-economic factors encompass: communication network, presence of pre-chartered infrastructure, military usefulness and position in settlement network. By studying these factors one can infer how and why a place for building a new town was chosen. Analysis of urban layout can provide additional information about town development, function and social structure. Here, I suggest that the development pattern, the role of other non-mining functions as well as the localization factors of a town (in relation to topography, natural resources and settlement network) can give us fairly good idea about the general mode and dynamics of emergence of mining towns.

### HYPOTHESIS

Previous research indicated that medieval mining towns were developing according to a certain pattern (Nováček 1994). First, groups of miners were penetrating a new territory, if they had found ore deposits they settled down in a kind of non-permanent camp. If the deposit turned out to be rich enough to sustain bigger mining enterprise, more settlers came along and built permanent settlement around the mines. After some time, more and more people (artisans, traders) arrived to the rich and growing settlement. When the mining settlement became large enough a local

ruler, king or prince, tried to rearrange it by granting town privileges and organizing a new town centre. Such a new organism, except of town law, gained also mining law and became a centre of a mining district.

Is that view correct? I assume that this neat model is somewhat too general. I hypothesize that the creation of mining towns was much more complicated and we can, in fact, distinguish two different models. The first model assumes the “gold rush” character of mining towns emergence. The process was dynamic and hard to control. In the second model, mining town was a part of a wider and centrally “considered investment” inland reorganization and colonization. In this case mining was not the only reason to create a town.

#### CHRONOLOGICAL AND TERRITORIAL SCOPE

My studies concern mining towns and settlements established during the 13<sup>th</sup> and 14<sup>th</sup> c. It was a time of large-scale urbanization (Gawlas 2006) and intensive development of mining (Molenda 1963). The crisis of European economy (Dygo 2006) and mining technology (Molenda 1963) in the second part of the 14<sup>th</sup> c. and in the beginning of the 15<sup>th</sup> c. had ended both those processes. During that time territories of nowadays eastern part of Germany, Poland, Czech Republic, Slovakia, had created so called Sudethian-Carpathian Economic Zone (Małowist 2006). Strong cultural and economic connection inside this zone allows to study its mining towns as a homogeneous phenomenon.

#### DEFINITION

The first question here is what exactly was a mining town? It is difficult to establish one definition, especially for medieval times. In fact, there is a lot of discussion about the general definition of the Central-European town (see Piekalski 2014), which further complicates the situation. The most common definition is based on economy. According to D. Molenda (1972) the development of a mining town was based on mineral resources extraction and most of its inhabitants were directly or indirectly employed in the mining industry. Similar definition was expressed by H. Ebner (1989) and K. Kratzsch (1974). Some researchers additionally emphasized the importance of non-mining activities like trade and craft for creating an urban structure (Kaufhold 2004, Ratkoš 1974).

Another definition is based on legal issues: specific privileges that distinguished mining towns from other urban centres (Vozár 1980). During the Middle Ages those privileges consisted of mining freedom (personal freedom of miners and freedom to search for an ore and extract it), free access to basic resources (water, wood) and tax exceptions (Kořan 1950). The mining law put together with the town law created the new legal form of a town (Kaufhold 2004). The very first example of such a combination comes from Freiberg (Upper Saxony, Germany) in the end of the 12<sup>th</sup> c. (Blaschke 2003). Mining law was further developed during the Late Middle Ages and the Early Modern Period (15–16<sup>th</sup>

c.) to finally become a combination of privileges designed to create the best possible framework for mining industry and mining towns. The towns used to receive those privileges not only on the very beginning but also after charter as economic incentives (Jančárek 1971).

Economic and legal definitions are very general though. Looking at mining towns from a perspective of their morphology indicates that under the term “mining towns” one can find a huge diversity of forms. There are small abandoned settlements like Treppenhauer (Germany), towns with a street market like Banská Bystrica (Slovakia), large irregular towns like Kutná Hora (Czech Republic), and towns of various size with regular street pattern (grid plan). Their morphology is what actually suggests that all these towns had different origins.

#### KEY ISSUES: MINING SOCIAL STRUCTURE, CHARTERED TOWNS AND SETTLEMENT NETWORK

At this point three issues require clarification. The first is social structure of the 13<sup>th</sup> and 14<sup>th</sup> c. mining industry. According to previous research (Molenda 1963, Nef 1987), miners, i.e. people with special mining-related knowledge and skills, used to live and work in groups. It is assumed that they were working with their families (Steuer 1993) or were creating small partnerships (*Gewerkschaft*) (Molenda 1963). They were free and were travelling in search for new ore deposits and remained independent of local village or town communities (Nef 1987). The lord's authority was represented by the *Bergmeister*, who was the leader of a community (Schwabenicky 1993b).

Another thing is a phenomenon of the Central-European chartered town (germ. *Lokationsstadt*, *Gründungsstadt*). They were formed during the process of charter (lat. *locatio*): creation of a town in legal (privileges) and spatial sense (new spatial organization – reorganization of older structure or building entirely new one on so called “green grass”). Those towns were the crucial element of colonization process east from River Elbe (Rębkowski 2011). As I will prove later some of mining towns were a specific kind of chartered towns.

Finally, chartered towns were created as trade, judicial and administrative centres for surrounding villages (Gawlas 2003). To perform these central functions the towns needed hinterland with enough supplies. This situation was described by Walter Christaller in the Central Place Theory (Müller 2012). According to him in hypothetic homogeneous space, settlements are placed in a regular hierarchical and hexagonal network. What is important, a level of centrality depends on presence of central features (e.g. administration, cult) and costs of transport (supply). Even though the theory lost its value in research on modern settlement network (Müller 2012), I assume that it can be useful to understand the development and functions of medieval urban network created during the colonization in Central Europe. When we take look at this network it appears to fit well into the Central Place Theory assumptions. The chartered towns were the central points of regular settlement network. Each

of those towns controlled surrounding areas, which usually did not overlap with another town's premises. The range of controlled area was equal to the influence of town's market and town jurisdiction. The influence zone of local market was estimated to cover an area of maximum 15 km radius from a town, based on the travel possibilities (on foot – there and back in one day), and 10–12 km based on the mile law (*Meilenrecht*). This latter value was also the area controlled by *Weichbild*, the medieval juridical district (Goliński 2005). If a town had higher central position those values could be larger. U. Müller (2012) estimated that medieval towns in Germany controlled area in radius from 7,5 to 22,5 km (1–3 medieval miles). Hence, the position of a town in settlement network can explain its genesis and function and is therefore useful for distinguishing “gold rush” towns from well planned investment towns.

#### “GOLD RUSH” TOWNS

“Gold rush” towns were a kind of mining towns that developed mostly based on mineral resources extraction. The process was dynamic and in some part uncontrolled. The way they evolved put them in a specific position in natural and cultural landscape. It can be seen especially in case of towns like Kutná Hora (Czech Republic), Banská Štiavnica, Kremnica (Slovakia), Olkusz (Poland) and abandoned mining settlements Treppenhauer, Hohenforst and Ullersberg (Upper Saxony, Germany).

#### FACTORS OF LOCALIZATION

The most important factor of localization for “gold rush” towns was an ore deposit vicinity. In most cases a mining town was built exactly on the ore deposits zone (sometimes exactly on the mining fields) like in Kutná Hora (Bartoš 2004) (Fig. 1), Banská Štiavnica (Labuda 1993a), Kremnica (Čelko 1990, Fröhlich 2007) (Fig. 2), Olkusz (Molenda 1978) or like in case of abandoned mining settlement in Upper Saxony (Schwabnický 1990, 1991, 2009).

The localization close to deposits, even if beneficial for an ore extraction efficiency, was not always optimal for building houses and urban infrastructure. Kutná Hora for instance, developed on a little steep slope over a high bank of the Vrchlice river (Kuča 1998). Similarly, the topographic background was unfavourable in Banská Štiavnica, where the town was formed in the conjunction of two streams at the bottom of the valley (Tóthová 1990). Similar situation was in Kremnica (Lamoš 1969).

Another factor of localization, that was pushed to the background, was an access to food production areas. In the first place the ore deposit zone was not always good for farming. For example in the Olkusz region soils were rather sandy and barren (Nowak 1978). Mining activities could start on the area that belonged to the king or prince, who were always in possession of mining *regalia* and as town lords could secure more farming land for citizens. However, when a mining town was started on the Church's or a nobleman's land it was impossible for the town lord (king or

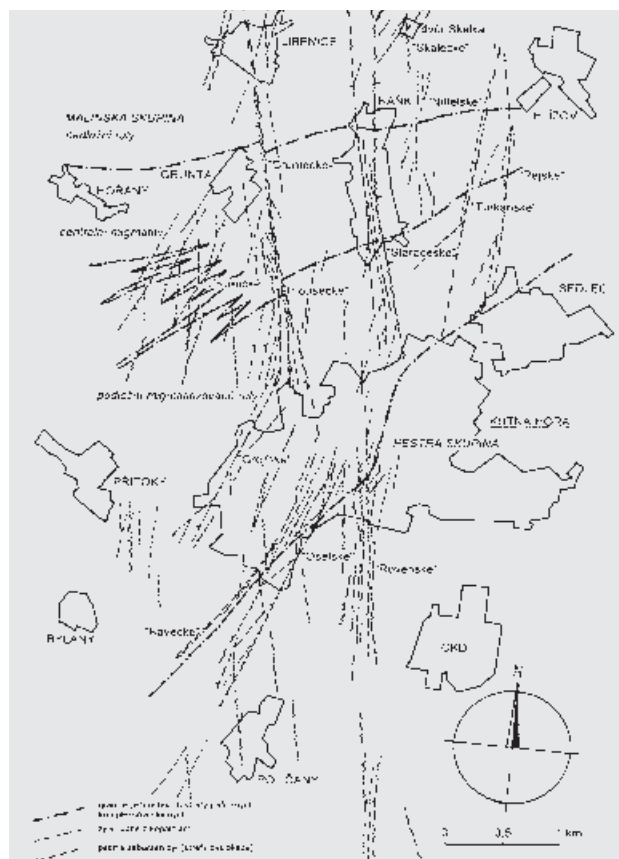


Fig. 1. Kutná Hora – ore deposits (Bartoš 2004).

Obr. 1. Kutná Hora – ložiska rudy (Bartoš 2004).



Fig. 2. Kremnica - ore deposits (map source: <https://zbgis.skgeodesy.sk/mkzbgis/sk/> – layer: Základná mapa SR 1:50000 ZM 50, access: 11. 09. 2017; modified by the author).

Obr. 2. Kremnica – ložiska rudy (zdroj map: <https://zbgis.skgeodesy.sk/mkzbgis/sk/> – vrstva: Základná mapa SR 1:50000 ZM 50, prístup: 11. 09. 2017; upravitel autor).

prince) to grant farming areas on someone else's land. This scenario occurred in case of most chartered towns in Central Europe (Samsonowicz 1986). Some authors (Krasnowolski 2004, Molenda 1978) assumed that lack of land granted during a charter is one of the features of the mining town. Such a situation can be observed in Kutná Hora, where all the farmlands belonged to the monastery in Sedlec (Charvátová 1993) and in Olkusz (Molenda 1978). I reckon that lack of farms in possession of a town community and burghers could cause considerable problems with food supply (e.g. price increase).

Another question is: what kind of pre-urban structures influenced the town localization? In case of “gold rush” towns it was mostly the presence of a mining settlement, like in Kutná Hora (Štroblová et Altová 2000), Banská Štiavnica (Labuda 1998, Marsina 1990), Kremnica (Štefánik 2010b) and Olkusz (Molenda 1978). Another possible structure was a castle connected with mining administration, which could appear next to a mining settlement when production was flourishing like in Kutná Hora (Štroblová et Altová 2000) and Banská Štiavnica (Labuda 1982, 1990, 1997a). The presence of these structures facilitated the emergence of a chartered mining town.

An access to road network also suffered due to the importance of mining. For example the main route in the area of Kutná Hora ran few kilometres east from the town. It was a considerable distance then, so because of the growing importance of the town the route was moved to Kutná Hora by the king's privilege by the end of the 14<sup>th</sup> c. (Štroblová and Altová 2000). Also Banská Štiavnica was initially localized in some distance from the main route (Štefánik 2010a). Analogous situation can be observed in Olkusz (Kiryk 1978b, Molenda 1978) and Kremnica where local roads increased importance more than one hundred years after the towns' charter (Lamoš 1969)

Another clue for distinguishing a “gold rush” mining town comes from the analysis of its position in a settlement network. It seems that the ore deposit vicinity also influenced this factor of localization. It can be especially visible in case of abandoned mining settlements (Treppenhauer, Hohenforst, Fürstenberg) in Upper Saxony. The region had been colonized before the ore was discovered and the mining activity started. Each of the mentioned sites was located really close (about 3 km) to an older town, which was already established as a central market and an administrative hub for non-mining lands (Kenzler 2012, Schwabenicky 2009). Also Kutná Hora was localized 10 km from Kolín and 10 km from Čáslav, the two towns in control of mining before Kutná Hora's emergence (Kořan 1950). The border between their mining districts, known from written source, was running exactly through the area of the future mining town of Kutná Hora (Štroblová et Altová 2000). Both those towns probably had no interest in developing a new urban centre (Kořan 1950), especially when it was encroaching their hinterlands. Localization of Olkusz can also suggest similar situation. The distance from this centre to a nearby older town, Sławków,

was quite short: about 12 km. The average distance between older multi-functional chartered towns in this area was much larger: 20–30 km (Cembrzyński 2014).

#### URBAN LAYOUT

Localization on the active mining fields and in the difficult terrain influenced the shape of a mining town. It forced dwellers to build in between mines and adapt all constructions to available land. As an effect, the new town had an irregular urban layout, which could be dynamic for years. We meet this situation in Kutná Hora (Fig. 3). The layout of main streets stabilized during the Middle Ages (Frolík et Tomášek 2002), but in some places street pattern was dynamically changing until the 16<sup>th</sup> c. (Frolík et Tomášek 2004). It was caused by late medieval mining operation confirmed by written sources (Bílek 2000a, Kořan 1950) and discoveries of shafts inside the town walls (Bílek 2000b, Frolík and Tomášek 2002, Velímský 2007). Furthermore, a large part of the urban fabric was built on gangue heaps (Frolík et Tomášek 2002). In Banská Štiavnica according to architectural and archaeological investigations the urban fabric in the 14<sup>th</sup> c. was rather scattered and adapted to the topographic relief of the valley (Fig. 4) (Dvořáková et Tóthová 1995). This situation could also be caused by mining, which traces were discovered close to town buildings (Dvořáková et Tóthová 1995, Labuda 1993b, 1997b, 2003). In Kremnica the eastern side of the market was deformed due to variable relief (Fig. 5) (Lamoš 1969). Mining infrastructure also interfered with buildings in mining settlements of Treppenhauer, where shafts were situated partially between houses (Fig. 6) (Schwabenicky 2009), Hohenforst (Schwabenicky 1991) and Ullersberg (Schwabenicky 1990).

#### DEVELOPMENT PATTERN

As stressed above, all factors of localization were subordinate to mining. Also a shape of a town was affected by this activity. It was an effect of specific development pattern of a “gold rush” town. The process of town formation started with a discovery of ore deposit. I assume that at the beginning, during first extraction works, miners were living conveniently close to the mines in some randomly scattered buildings. It is difficult to unearth such early structures that preceded a mining town due to its further development, but medieval buildings found on several mining sites can serve as a useful analogy. Excavations in Jihlava-Staré Hory (Czech Republic) (Hrubý 2011) and Cvilínek near Černov (Czech Republic) (Hrubý et al. 2012) revealed relics of pit-houses. They were localized close to shafts and ore-processing zones and could have had residual or storage function.

The next step on the way to form a mature mining town involved the development of a mining commune and building a permanent settlement. It served primarily as a direct supply and probably administration centre for the mining industry (raw materials, tools). All non-mining functions were pushed into the background and sustained only at the most basic level. With time, this structure naturally started

to gain urban features. This stage of development can be well illustrated by the site Treppenhauer in Upper Saxony (Schwabenycký 2009). The presence of specific town institutions (butcher, bakery and shoemaker stalls) mentioned



Fig. 3. Kutná Hora – urban layout with shafts known from written sources (spots with X) and known from fieldwork (empty spots) 1–3 (Frolík et Tomášek 2004); 4 – *Vinea*, 5 – *U Kola* (Bílek 2000a); 6 – *Chudobice*, 7 – *U kola*, 8 – *Svaty Jiří*, 9 – *Pruun (Studnice)* (Bartoš 2004); 10–13 – (Bílek 2000b); 15–16 – (Frolík et Tomášek 2002); 17 – (Velímský 2007); A – *Vlaský dvůr* (king's castle and mint); B – *Hrádek* (fortified manor); C – Upper St. Mary's church; D – John the Baptist's church; E – Lower St. Mary's church; F – St. Bartholomew's church; G – St. Georg's church; H – St. Barbara's church (plan source: Bartoš et al. 2010).

Obr. 3. Kutná Hora – dispozice města s šachtami známými z písemných pramenů (místa označená křížkem X) a terénního výzkumu (místa označená prázdnými kolečkami) 1–3 (Frolík, Tomášek 2004); 4 – *Vinea*, 5 – *U Kola* (Bílek 2000a); 6 – *Chudobice*, 7 – *U kola*, 8 – *Svaty Jiří*, 9 – *Pruun (Studnice)* (Bartoš 2004); 10–13 – (Bílek 2000b); 15–16 – (Frolík, Tomášek 2002); 17 – (Velímský 2007); A – *Vlaský dvůr* (královský hra a mincovna); B – *Hrádek* (pevnost); C – Horní kostel Panny Marie; D – Kostel Sv. Jana Křtitele; E – Dolní kotel Panny Marie; F – Kostel Sv. Bartoloměje; G – Kostel Sv. Jiřího; H – Kostel Sv. Barbory (zdrojový plán: Bartoš et al. 2010).



Fig. 5. Kremnica (Paulyni 1971).

Obr. 5. Kremnica (Paulyni 1971).

in written sources, and archaeological traces of trade (imported goods), craft and fortifications were considered as an evidence for urban character of this settlement (Kenzler 2008, Schwabenycký 1993a, 2009). On the sites Hohenforst and Ullersberg, which had similar proto-urban character, traces of fortified buildings were found, possibly linked with mining administration (Schwabenycký 2009). Despite of having some urban features those settlements were abandoned probably because of a decline in mining production and lack of other central functions (Schwabenycký 2009). In fact, this type of a development and decline pattern was nothing unusual in Europe. It can also be traced on the Czech side of the Ore Mountains in Kreamsiger (near Přísečnice, Chomutov district) (Lissek et al. 2014) and in Western Europe: Altenberg near Müsen (Siegerland region, Germany) (Lobbedey 1993), Brandes-en-Oisanes in French Alps (Bailly-Maitre



Fig. 4. Banská Štiavnica – modern layout of historical centre (Dvořáková et Tóthová 1995).

Obr. 4. Banská Štiavnica – moderní podoba historického centra (Dvořáková et Tóthová 1995).

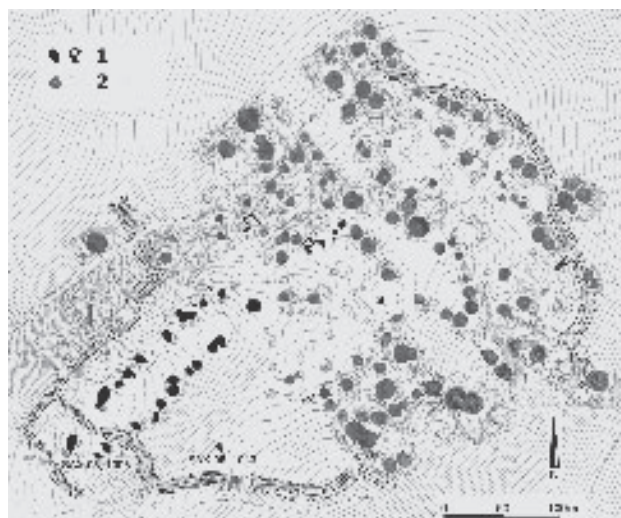


Fig. 6. Treppenhauer – 1) buildings; 2) shafts (Kenzler 2008).

Obr. 6. Treppenhauer – 1) budovy; 2) šachty (Kenzler 2008).

et Dupraz 1990), Blankenrode (Westphalia, Germany) and Prinzbach (Schwarzwald, Germany) (Hucker 1984).

The key to further growth was the high level of mining production. It could attract more “urban people” such as artisans, merchants and investors who could create and foster urban life. It is difficult to find them mentioned in historical

sources from those early stage. Nevertheless, the emergence of some mayor central buildings could be a proof of growing rank of mining settlement. In Banská Štiavnica the king’s castle had been built in the end of the 12<sup>th</sup> c. (Labuda 1982, 1990, 1997a) and the large parish church probably in the first quarter of the 13<sup>th</sup> c. (Dvořáková et Tóthová 1995).

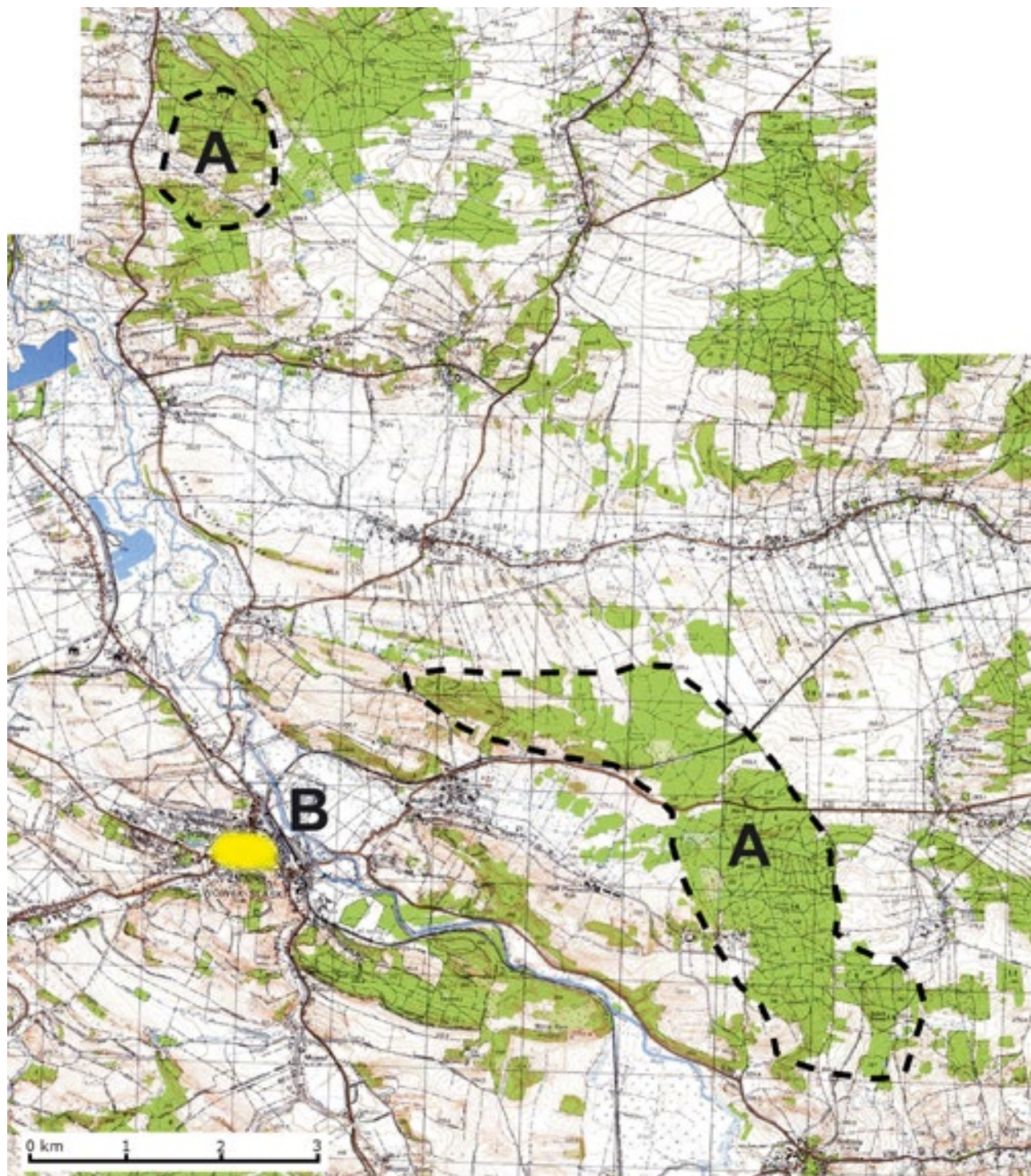


Fig. 7. Lwówek Śląski – A) survived relicts of mining activities; B) chartered town (map source: <http://mapy.geoportal.gov.pl/imap/> - layer: raster, access: 11. 09. 2017).

Obr. 7. Lwówek Śląski – A) zachované zbytky těžební aktivity; B) privilegované město (zdrojový plán: <http://mapy.geoportal.gov.pl/imap/> - vrstva: rastr, přístup: 11. 09. 2017).

In Kutná Hora the castle (a seat of king's mint), was built around year 1300 (Záruba 2008), or even earlier (Štroblová et Altová 2000) as a result of growing production after the “silver rush” (Čechura 1979).

A breakthrough came when a settlement was large and important enough to become a town with urban privileges (i.e. chartered town). Several factors could have triggered this transition: mining production, growing urban social class (merchants, traders) and economic needs of the ruler. The best example of such breakthrough can be seen in Kutná Hora. Mining activities might have started there around



Fig. 8. Złotoryja – A) pre-urban mining settlement; B) pre-chartered settlement with St. Nicholas's church; C) chartered town (Gładkiewicz 1997 modified by the author).

Obr. 8. Złotoryja – A) horní osada před udělením práva těžby; B) osada před udělením práva s kostelem Sv. Mikuláše; C) privilegované město (Gładkiewicz 1997 upravil autor).

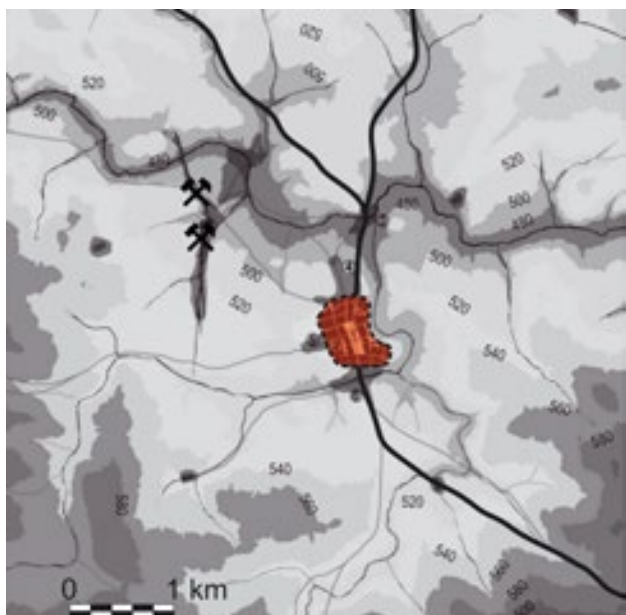


Fig. 9. Jihlava and its hinterland with main ore deposits in Staré Hory (Hrubý 2011 modified by the author).

Obr. 9. Jihlava a okolí s hlavními nalezišti rudy ve Starých Horách (Hrubý 2011, upravil autor).

the middle of the 13<sup>th</sup> c. (Bartoš et al. 2010), but the first direct information about it comes from 1276 (Čechura 1979, Kořan 1950). The decisive factor, enabling the transition, occurred in 1294 with the “silver rush”, i.e. intensive growth of production and inflow of people (Čechura 1979). In 1300 the mining community received a new law from the king Wenceslaus II: *Ius regale montanorum*, which set a beginning of the town in the legal sense (Štroblová et Altová 2000). In Banská Štiavnica the transition process was longer. Mining started most likely in the 12<sup>th</sup> c. (Ratkoš 1974), boosted by foreign settlers (Štefánik 2010a). Probably they attracted more settlers to come and search for ores. Finally, after a century of growth, the mining centre received town privileges in the first half of the 13<sup>th</sup> c. (Štefánik 2010a), before 1235 (Tóthová 1990). A little more compact process can be traced in Kremnica, where mining started in the 13<sup>th</sup> c. (Hunka 2005). Probably growing production of gold persuaded the king to place a local mint there, even before the charter (Lamoš 1969). The 1328 act of charter was connected with the monetary reform in the Hungarian Kingdom and the new town became a seat of the king's central mint chamber (Štefánik 2010b).

To summarize, a “gold rush” mining town was characterized by several features: it was placed in the vicinity of mines, it was a continuation of the pre-urban mining settlement, its location was often not optimal with respect to the topography, town was outside of a communication network, had problems with an agricultural hinterland, was placed independently from the existing settlement network and its urban layout was irregular, adopted to mining in-



Fig. 10. Banská Bystrica – ore deposits: position of shafts, heaps and galleries from the Middle Ages and Modern Era (<http://mapserver.geology.sk/geofond/sbd/> - access 11. 09. 2017).

Obr. 10. Banská Bystrica – naleziště rudy: poloha šachet, hald a štol v středověku a v moderní době (<http://mapserver.geology.sk/geofond/sbd/> - přístup 11. 09. 2017).

infrastructure and terrain. The act of charter was an effect of growing production and development of urban functions. Even though we can observe a certain variation throughout these features, these can be perceived as prerequisites for distinguishing a “gold rush” mining town.

### “CONSIDERED INVESTMENT” TOWNS

In contrast to the “gold rush” type of towns, in “considered investment” towns mining activities, even if present from the very beginning, were not the only reason for their development. Their emergence as centres of mining districts was externally planned by the founder along with their other non-mining functions. The process of town formation was not dynamic and uncontrolled like in “gold rush” towns but regulated by the charter. In that single act a town was “equipped” with privileges, territories and a suitable position for development.

### FACTORS OF LOCALIZATION

In opposition to “gold rush” towns, vicinity to ore deposits was not the most important for the “considered investment” towns. These towns were placed rather outside deposit zone where mining activities could not interfere with urban fabric. Deposits could be situated close to a town, like secondary gold deposits in Lwówek Śląski (Fig. 7) (Stolarczyk 2009) and Złotoryja (Fig. 8) (Maciejak 1997), or located in a distance of 1.5–2 km in case of Jihlava (Fig. 9) (Měřínský, Hrubý, et Zimola 2009), Bytom (Dziewulski 1979, Molenda 1963) and Sławków (Kiryk 1978a) or 6 to 8 km in case of Spišská Nová Ves (Žifčák 2010) and in Banská Bystrica (Fig. 10) (Skladaný 2010).

The independence from deposit zone location while selecting a suitable place for a new town created a number of opportunities to optimize urban planning in relation to important factors of localization. The perfect area should provide: enough space for building a regular town, access to water sources, good communication capabilities and, if possible be easy to defend. These conditions for localization were met in Jihlava (Hrubý 2011, Hrubý et al. 2006, Měřínský 2009), Bytom (Andrzejewska 2000), Sławków (Kiryk 1978a, 1978b, 2001), Lwówek Śląski and Złotoryja (Eysymontt 2009), and also in Banská Bystrica (Skladaný 2010) and Spišská Nová Ves (Žifčák 2010).

Access to basic resources appears to be well thought in “considered investment” towns; for instance there seem to be less problems with agricultural hinterland than in “gold rush” towns. Farmlands were granted during the charter process in Bytom (Drabina 2010), Sławków (Kiryk 2001), Złotoryja (Gorzkowski 1997a) and Lwówek (Eysymontt 2009). If possible, towns were localized on fertile soils, which happened in Banská Bystrica (Skladaný 2010), and Spišská Nová Ves (Žifčák 2010).

Among pre-urban structures, that influenced localization of “considered investment” mining towns, the presence of an earlier mining settlements was not the most important. Base for colonization could be provided by a non-mining

village. For example, the village Stara Jihlava (Old Jihlava), localized close to the ford on Jihlava river, constituted base for emergence of the town of Jihlava, (Hrubý 2011, Hrubý et al. 2006). In Banská Bystrica (Rábik, Labanc et Tibenský 2013) and Spišská Nová Ves (Žifčák 2010) Slavic settlements existed before arrival of new settlers, who developed the towns. Another pre-urban structure, facilitating charter town development, could be an important point in local settlement network, with some central functions such as market settlement or stronghold. The former situation occurred in Sławków (Kiryk 1978a, 1978b, 2001), and possibly in Lwówek Śląski and in Złotoryja (Eysymontt 2009), whereas the latter - in Bytom (Drabina 2010, Szydłowski 1966). Their centrality and existing infrastructure (farmlands, church) made them suitable basis for creating a new urban organism.

The next factor that strongly influenced localization of “considered investment” towns was a trade route. A town could be planned as a stopover on the long-distance trail, with a market, a tax chamber and all infrastructure necessary for travellers. The trail provided an access to information and new cultural and technical achievements. However, in many cases we do not know what was first: a road or a town. For example, the main road that ran through the area of Jihlava (“Haberská path”) was existing long before the town’s emergence (Hrubý 2011, Hrubý et al. 2006, Měřínský 2009); also Bytom and Sławków were localized on the old main route from Cracow to Wrocław (Kiryk 1978b, Szydłowski 1966). The pre-urban route chronology was also possible in Złotoryja (Gorzkowski 1997a), Lwówek (Zlat 1961), Banská Bystrica (Skladaný 2010) and Spišská Nová Ves (Žifčák 2010).

In contrast to “gold rush” towns, “considered investment” towns were created as local centres, constituting the crucial part of settlement network. To sustain their central functions they needed to control certain area (see description of Central Place Theory in *Introduction*). Lwówek and Złotoryja are good examples of this situation. What is important, both towns were chartered in the same horizon of colonization (Zientara 2006), hence there was a regular distance between them and other central places of that period: 19 km (straight line) from Legnica (prince’s seat) to Złotoryja, 23 km from Złotoryja to Lwówek and 20 km from Lwówek to Lubań. What is also important Złotoryja and Lwówek were centres of a judicial district (*Weichbild*) (Chorowska et al. 2009, Gorzkowski 1997a), so their hinterland should cover the area in the 10 km radius from the town (Goliński 2005), which actually fits the distances between towns. Similar situation can be observed in Jihlava (Hrubý 2011), Bytom and Sławków (Cembrzyński 2014).

### URBAN LAYOUT

“Considered investment” towns were often established on an empty area and in a suitable localization, therefore mining shafts and terrain relief did not spatially constrained or disturbed their further development. As a result it was possible to create a layout with regular rectangular market



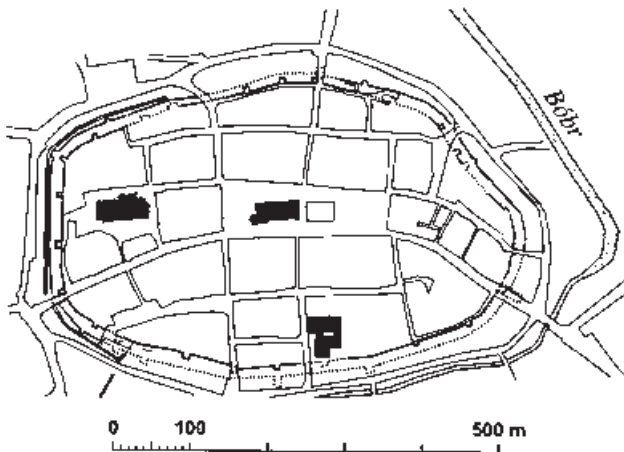


Fig. 11. Lwówek Śląski (Eysymontt 2009).

Obr. 11. Lwówek Śląski (Eysymontt 2009).

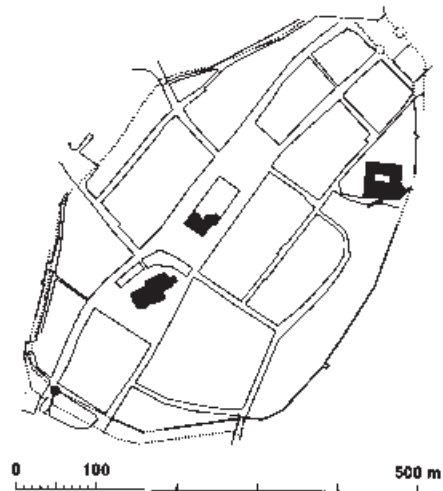


Fig. 12. Złotoryja (Eysymontt 2009).

Obr. 12. Złotoryja (Eysymontt 2009).



Fig. 13. Bytom (Bimler 1943).

Obr. 13. Bytom (Bimler 1943).

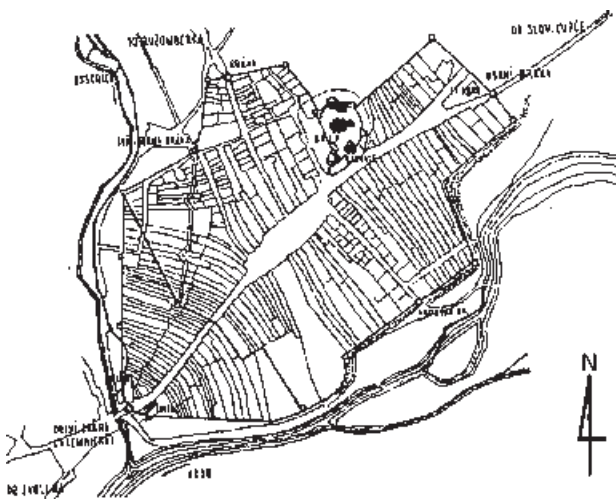
Fig. 14. Sławków – contemporary urban layout (map source: <http://mapy.geoportal.gov.pl/imap/> layer: raster, access: 11. 09. 2017).Obr. 14. Sławków – současný vzhled města (zdrojový plán: <http://mapy.geoportal.gov.pl/imap/> vrstva: rastr, přístup: 11. 09. 2017).

Fig. 15. Banská Bystrica (Schröcke 1994).

Obr. 15. Banská Bystrica (Schröcke 1994).

and network of perpendicular streets (grid plan). Such a layout was quite typical for new colonization towns established from the 13<sup>th</sup> c. onwards east from River Elbe (Eysymontt 2009, Piekalski 1999). An early examples of spatial regulation are Lwówek (Fig. 11) and Złotoryja (Fig. 12), where urban layout was probably adapted to the main road (Eysymontt 2009). Fully developed regular layout can be found in Jihava (Měřínský et al. 2009), Bytom (Fig. 13) (Wójcik-Kühnel 2004) and Sławków (Fig. 14) (Krasnowolski 2004). The grid plan was not the only possible version of urban layout, which could also be slightly adapted to terrain relief or road network. This situation can be met in Banská Bystrica (Fig. 15) and Spišská Nová Ves, where the urban layout had a form of a spindle-shaped street-market surrounded by regular burgher plots (Skladany 2010, Žifčák 2010).

## DEVELOPMENT PATTERN

The extraction of mineral resources in the area was a prerequisite to establish a “considered investment” mining town. Unlike in the case of a “gold-rush” town there was no central point naturally developing into subsequent town, but the spot for localization was chosen on the basis of aforementioned factors. Mining activity was indeed present for some time before the charter (few decades) in Złotoryja and Lwówek regions (the 12<sup>th</sup> c.) (Dziekoński 1972, Gorzkowski 1997b), as around Bytom and Sławków (the 12<sup>th</sup> c.) (Boroń 2013) and in Spišská Nová Ves (the 13<sup>th</sup> c. ?) (Žifčák 2010). Or it had started shortly (few years) before charter like in Jihlava (around 1230–1240) (Hrubý 2011, Vosáhl 2011) and Banská Bystrica (before 1255) (Ratkoš 1974).

Increasing mining production in the area was an additional, but not the most important, reason for new dwellers to colonize new lands. It is visible for example in a region where Jihlava was established. The colonization had started there in the 12<sup>th</sup> c., but a discovery of silver deposits in the third decade of the 13<sup>th</sup> c. opened a new chapter in this process (Hejhal 2012). Charter of towns like Lwówek or Złotoryja was also a part of the town-village colonization which had started in Lower Silesia at the beginning of the 13<sup>th</sup> c. (Gawlas 1996). The same situation occurred in Bytom and Sławków (Rajman 1998). The charter of a “considered investment” mining town was the climax of two complementary processes: the town-village colonization and growing mining production. Moment of charter, localization, function, form were all optimally planned by the lord and his officials to achieve certain benefits (money, supply, power). In the act of charter urban commune received privileges and lands along with new spatial form. Many charters took place in the course of the 13<sup>th</sup> c.: Jihlava in 1243 (Hrubý 2011, Hrubý et al. 2006, Měřínský 2009), Lwówek Śląski in 1217 and Złotoryja between 1211 and 1232 (Eysymontt 2009), Bytom in 1254 (Drabina 2010), Sławków between 1278 and 1286 (Kiryk 1978a, 2001), Banská Bystrica in 1255 (Skladany 2010) and Spišská Nová Ves before 1268 (Žifčák 2010). Mining towns received special mining privileges that allowed burghers to search for and explore ore deposits and granted access to other raw materials (timber, water). Such privileges are known from Banská Bystrica (Ratkoš 1974), Lwówek (Dziekoński 1972), Spišská Nová Ves (Žifčák 2010) and Jihlava (Hrubý 2011). It has to be stressed however, that this type of mining town was not designed to only serve as a supply and administrative centre for local mining, but was an important market and administrative hub for surrounding non-mining areas. For example, Jihlava (Hoffmann 2009, Svěrák 2009) and Spišská Nová Ves (Žifčák 2010) became significant trade and craft-production centre, Złotoryja had growing textile production (Bogacz 1997) and Bytom was a seat of prince (Drabina 2010).

To summarize, a “considered investment” mining town was characterized by several features: it was placed in a distance from mines, sometimes it was a continuation of a pre-charter non-mining settlement structure, it was estab-

lished in a suitable localization, provided with agricultural hinterland, well connected with roads and was a considerable part of settlement network. Its urban layout was mostly regular, because the charter was planned process aiming at creation of a town with mining and non-mining central functions that could provide benefits for the owner. Here again, despite of some variation in these features, they might be helpful in distinguishing a “considered investment” town.

## CONCLUSION

I suggest that there are two models of mining towns development: “gold rush” and “considered investment”. In the first model, a town was created during a dynamic increase in mining production and settlers inflow. The process can be divided into four stages. In the first stage (1) mining prospectors discovered the deposit. After that (2) miners arrived and established a non-permanent mining camp. In the next phase (3) miners and their families started to settle down near new mines and form mining commune and create a permanent settlement, which became an administrative and supply centre for surrounding mining area. With increase of production the settlement gained also some non-mining functions of urban character. With further growth of mining production and population the settlement came to the breakthrough (4): it was so large and important that getting some privileges and regulations (charter) was a necessity. At this point the settlement became a kind of communal town with mining-based economy.

Towns formed in the second model were from the very beginning connected with the mining as well. The difference is that those towns were carefully planned as an investment and were part of a wider process of recreating the long-term economic basis for power and wealth of a ruler. This process also started (1) from discovery of deposits and (2) creation of non-permanent camps in a mining area, but probably without one central and most important settlement. In the next phase (3) the town-village colonization emerged, a process of recreating old settlement network and taking up new lands. This process led to (4) creation of a chartered mining town: a multi-functional urban centre. Such mining town had diversified economy enabling to survive any crisis of mining and easily adopt to new conditions. It is possible that people responsible for this considerate town planning could have been aware that mono-economy might cause serious problems in the future.

These two models cannot be strictly applied to each and every mining town. There is a lot of variance in described factors of localization and development patterns. With so many unknown or partial information about that period we can treat these two directions of medieval mining urbanisation as the best proxies for studying the emergence of mining towns. Those mining towns were a considerable part of transition in the Central-European landscape, society and economy, which formed a basis for our present-day reality. I can conclude that the mining towns that still exist on the map were rather quite successful “considered investment”!

## SUMMARY

Central-European mining towns developed during the 13<sup>th</sup>- 14<sup>th</sup> c. when rulers of Germany, Poland, Bohemia and Hungary were recreating economic basis for their power. The question is if those towns emerged in an uncontrolled and dynamic way or were rather part of a planned investment? To study this issue it is necessary to analyse factors of localization (e.g. access to deposits, topography, settlement network), urban layout and development pattern. On the basis of such analysis I suggest that there are two kinds of mining towns: "gold rush" and "considered investment".

The "gold rush" mining town was characterized by several features: it was placed in a vicinity of mines, it was a continuation of a pre-urban mining settlement, its charter was often not optimal with respect to the topography, town was outside of a communication network, had problems with an agricultural hinterland, was placed independently from the existing settlement network and its urban layout was irregular, adopted to mining infrastructure and terrain. The act of charter was an effect of growing production and gradual gaining of urban function.

The "considered investment" mining town was characterized by several features: it was placed in a distance from mines, it could be a continuation of the pre-urban non-mining settlement structure, it was established in a suitable localization, provided with agricultural hinterland, well connected with roads and was a considerable part of settlement network. Its urban layout was mostly regular. The charter was planned process aiming at creation of a town with mining and non-mining central functions that could provide benefits for the owner.

I assume that these two models of mining town development can be divided into four stages. The first model: (1) discovery of deposits; (2) creation of non-permanent camps; (3) emergence of a permanent mining settlement from a most important camp, with some non-mining functions; (4) formal establishment of a town (charter) after large growth of mining production. The second model: (1) discovery of deposits; (2) creation of non-permanent camps; (3) introducing the town-village colonization, which reorganizes settlement structure; (4) charter a mining town in an optimal localization, with many mining and non-mining central functions.

## SOUHRN

Středoevropská horní města se rozvíjela v průběhu 13. a 14. století, když němečtí, polští, čeští a maďarští panovníci budovali hospodářskou základnu své moci. Otázkou je, zda tato města vznikala neřízeným dynamickým způsobem nebo spíše jako součást plánované investice? Studium této otázky vyžaduje analýzu faktorů lokalizace (jako je přístup k nalezištím, topografie, síť sídlišť), struktury měst a vzorce jejich vývoje. Na základě takové analýzy si dovoluji tvrdit, že existují dva druhy horních měst: města vznikající následkem „zlaté horečky“ a města vznikající následkem „promyšlené investice“.

Horní města vznikající následkem „zlaté horečky“ jsou charakterizována několika odlišnostmi: nacházejí se v blízkosti dolů, jsou pokračováním dříve založených osad existujících před udělením práva těžby, jejich privilegium není optimální po stránce topografie, jsou mimo síť cest, mají problémy se zemědělskou půdou v okolí, byla založena mimo existující síť sídlišť a jejich struktura zástavby je nepravidelná, přizpůsobená těžební infrastruktuře a terénu. Udělení privilegia bylo následkem rostoucí produkce a postupného nabývání městské funkce.

Naopak horní města vznikající následkem „promyšlené investice“ jsou typicky umístěna v určité vzdálenosti od dolů, mohou a nemusí být pokračováním existující neprivilegované osady bez práva těžby, jsou zakládána na vhodných místech, odkupují zemědělskou půdu v okolí bez problémů, jsou dobře dostupná po stránce sítě silnic a jsou zasazena do stávající sítě sídlišť. Jejich zástavba je víceméně pravidelná. Udělení městských práv byl plánovaný proces, jehož cílem bylo vybudování města s horní funkcí i funkcí městského centra, která by mohla být pro investora prospěšná.

Domnívám se, že vývoj těchto dvou modelů horního města lze rozdělit na čtyři etapy. První model: (1) objevení naleziště; (2) založení přechodného tábora; (3) výstavba trvalého horního města z nejdůležitějšího tábora, s jistými netěžebními funkcemi; (4) formální založení města (s právem těžby) po rozmachu těžební činnosti. Druhý model: (1) objevení naleziště; (2) založení přechodného tábora; (3) zahájení osídlování vesnice-města s reorganizací struktury osídlení; (4) udělení těžebního práva a založení města na ideálním místě s mnoha těžebními i jinými funkcemi centra.

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