

Mining in medieval Serbia



Aleksandra A. Fostikov 

Istorijski institut Beograd, Beograd

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Corresponding author:

Aleksandra A. Fostikov

Correspondence email:

aleksandra.fostikov@iib.ac.rs

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Abstract:

Mining, also known as *Montanindustrie*, in the territory of medieval Serbia had a long road of development, from surface mining to dizzying achievements which began with the arrival of the Old Saxons in the 13th century. Thanks to their influence, or the combination of technological development and available raw materials, Serbia underwent a general economic rise and as early as the first half of the 15th century it accounted for the production of one quarter or one fifth of silver in Europe. However, the Old Saxon influence was not limited only to mining, but it also included the development of mining towns, as well as craft industry. That is why this paper elaborates on the development of mining in the territory of medieval Serbia from its settlement until its fall under the Ottoman rule, with the aim of exploring long-term processes which substantially affected the change not only in the economy, but in society as well.

Keywords: economy; mining; Old Saxons; Serbia; Middle Ages/medieval; international initiatives

INTRODUCTION

It is never simple to study the development of a single branch of economy because it is long-lasting phenomenon which, although it may be explored by segments or periods, still entails the exploration of sets of important factors, both the basic ones (resources, means of work, workforce, technological progress) and the specific ones (territory, population, social organization, epoch, influences). A particular problem in studying a branch of economy during an epoch, particularly in earlier periods, is the fact that its development is not fully subject to the application of the modern economic theory. Therefore, regarding the research of mining in the territory of medieval Serbia we must first address economic history, according to which it is one of the five existing medieval industries¹. It must be further upgraded by the partial application of the economic sectors theory, according to which mining belongs both to the primary and secondary sectors, i.e., both to the extraction and primary processing of raw materials. In the end, mining must also be observed from the perspective of its relationship with other types of industry and production, as well as in its correlation with the above-mentioned basic and specific factors (Fostikov, 2019, str. 9–10, 30).

Accordingly, before we point to the general directions of development, as well as the changes in that development and the effect of mining itself on the development of general economy and society, we must emphasize several especially important facts. Apart from the population-territory-language relationship which is relevant for marking the chronological period as the time from the settlement of the Slavs to the fall of the Serbian state under the Ottoman rule – or the territories considered Serbian in that period (the borders of King Milutin's state, 1282–1321, expanded in the north by the borders from the time of the Serbian Despotate, 1402–1459) – as one of the most important factors, we must emphasize the arrival of the Old Saxon miners in the 13th century as indisputably related to rapid technological progress that will lead to Serbia, rich in mineral resources, to become not only economically strong, but also to produce one quarter or one fifth of Europe's silver. Moreover, the arrival of the Old Saxons, together with the rise of mining, led to the further urbanization thanks to the foundation of mining towns (*montans*)², that, at the same time, became the most important economic centres, in which trading colonies were established and crafts flourished³. These towns attracted an increasing number of inhabitants and became more densely populated, just as the mining regions themselves, but at the same

time they also became isolated islands subject to a special code which regulated the operation of the mines and the economic and social life of the urban centres based on the so-called Saxon pravity, or acquired rights/privileges (Fostikov, 2019, pp. 9–10; Fostikov, 2021, pp. 153–158).

As one of the most important factors, we must emphasize the arrival of the Old Saxon miners in the 13th century as indisputably related to rapid technological progress that will lead to Serbia, rich in mineral resources, to become not only economically strong, but also to produce one quarter or one fifth of Europe's silver.

Finally, when speaking of the chronological development of mining, it is necessary to point out that in the territory of medieval Serbia it covered a long road of development, from surface mining to dizzying achievements in the period from the 13th to the 15th century, and then, after the eventual fall of Serbia under the Ottoman rule, it dwindled for a short period of time, only to fall completely into oblivion, even in the folk tradition, after the shifting of home territories from the south to the north after the middle of the 17th century (Ćirković, Kovačević-Kojić, Ćuk, 2002, pp. 5–6).

However, despite the importance of mining for medieval Serbia, it was long on the margins of the researchers' interest, just as many other topics. After the first steps undertaken by Konstantin Jiriček and then by Stojan Novaković in the last third of the 19th century, it became the research topic once again as late as the middle of the 20th century. Numerous papers on mining were written by Mihailo Dinić and Vasilije Simić, as well as Sima Ćirković, Desanka Kovačević Kojić and Ruža Ćuk, who compiled a monograph with that topic at the beginning of the 21st century (Ćirković et al., 2002). At the same time, more detailed research of mining began within archaeology, led by Dušan Mrkobrada (Vranić, 2021, pp. 726–727). In the younger generation of researchers of Serbian medieval mining, Vladeta Petrović has paid special attention to certain matters, while Srđan Katić has dealt with Ottoman mining which is, in many ways, not only the continuation, but also the legacy of medieval mining⁴. Further archaeological research of this period is conducted by M. Vranić⁵. Slightly more papers written during the 20th and the 21st centuries are dedicated to the Old Saxons as well, the question which in itself intrigued numerous researchers. However, that question alone has never

been explored in detail, except from the perspective of crafts (Fostikov, 2021). In addition, since the discovery of Despot Stefan's Mining Code, which had many Cyrillic editions (Radojčić, 1962; Marković, 1985) and one Latin edition (Ćirković, 2005), several authors have dealt with it, while more serious comparison-based research of this Code is yet to be conducted (Katančević, 2022; Katić, 2024; Fostikov and Rokaj, in the process of preparation). In line with the fact that mining is just one branch of economy and, thus, a comprehensive and broad topic, here we will try to point to the most important features of its development and to look briefly at the most significant factors, as well as the processes and phenomena affected by mining in return.

DEVELOPMENT OF MINING FROM THE SETTLEMENT IN THE BALKANS TO THE ARRIVAL OF THE OLD SAXONS

There are no preserved written data about mining in the Balkans after the period of the settlement of the Slavs, which would give us a precise picture about the use of raw materials, their primary processing or the course of the process. However, based on the facts that, after their arrival in the territory of the Balkans, the Slavs found the remnants of ancient mining, as well as that they already had Slav terms for extraction and primary processing (ore, hole, heap, pit), and those referring to metalworking, both of precious and other metals, in the broadest meaning (blacksmith, goldsmith), and that they definitely manufactured weapons and tools containing metal components, they must have used the deposits they found, at least the surface ones (Ćirković et al., 2002; Fostikov, 2019). Accordingly, some more data about mining industry in the early Middle Ages will certainly be provided at least by systematic archaeological research.

THE OLD SAXONS AND THEIR INFLUENCE ON THE DEVELOPMENT OF MINING

In contrast to the missing information about mining and metallurgy during and after the settlement period, even during the reign of the first Nemanjić rulers, the development of this branch of economy in the territory of medieval Serbia can be followed in continuity from the first half of the 13th century to the disappearance of Serbian statehood, thanks to both written and archaeological data. The beginning of that period was marked by new mining vigour, which spread from Central to Southeast Europe. The main

carriers of that zest were mining experts, in this part of Europe known as the Old Saxons. Although it was long considered that those were experts of ethnic German origin or even directly Saxons, these groups were in fact composed of different ethnoses and, since a number of those settlers, first recorded under that name in the territory of Hungary back in 1206, were Germans/Saxons, this term is common in the broader territory of Hungary and Southeast Europe. In other parts of Europe, these mining experts are also mentioned under the names of Flandrenses, Teutonic, Saxones, or Latins (Fostikov, 2021, pp. 153–155).

The germs of the knowledge they spread, as it can be concluded from the written sources, both narrative and those from the sphere of legislation, they essentially owe their roots to Roman mining knowledge and law, on which the German terminology was built, in line with the fact that Roman mining persisted in some parts of Central Europe with German inhabitants. It was on these foundations that mining further developed, and with time, mining technology itself evolved based on the experience. Therefore, the Old Saxons brought new technologies and techniques, such as the skill of digging deep trenches and the method of melting and processing ores. Among them there were also the representatives of metallurgy and other crafts and, since the main terminology was based on the German language, their arrival also brought the Germanisation of local languages, which first adopted the terms referring to mining, and then the names of individual crafts, as the accompanying infrastructure. Therefore, very early, the medieval version of the Serbian language integrated, among others, the terms: tailor, shoe-maker and bag-maker (Pfeifer, 2002; Szende, 2019; Fostikov, 2021).

Although today it is not known when exactly the Old Saxons reached the territory of medieval Serbia, it certainly must have been at least several decades before the first mention of their name in the toponyms listed in the charter of Stefan Uroš I (about 1252–1254). They arrived in these territories most probably through Transylvania and the region of seven chieftains, at least in part, although it is also possible that they arrived directly from Spisz (Zips) in northern Hungary. According to the research to date, the beginnings of their activities in the territory of Serbia are related to Brskovo. During the dizzyingly rapid development of mining in the territory of medieval Serbia, the term “Old Saxon” was no longer merely an ethnic category, conditionally speaking, but it soon entered the legal terminology and be-

came a synonym for the “miner” by the middle 14th century at the latest (Gogić, 2010; Fostikov, 2021, pp. 155–157).

However, despite the importance of the Old Saxons, or of these groups of mining and metallurgy experts, the mapping of their influence on mining, i.e., on general economic or social development of the medieval territories in Europe’s medieval frameworks, or the establishing of similarities and differences of the Old Saxon influence in the territory of Southeast and Central Europe, as well as East Central Europe, have not been explored in detail yet, especially not on the basis of comparison, so that new results may be expected in that respect.

MINING FROM THE 13 CENTURY TO THE FALL OF THE SERBIAN STATE UNDER THE OTTOMAN RULE

After the arrival of the Old Saxons and revival of mining production and the rise of this branch of economy in the territory of medieval Serbia, mining developed uninterruptedly until the fall of this territory under the Ottoman rule. In the first stage of development, during the 13th century and the rise of Brskovo and Rudnik, the number of the newly-opened mines constantly increased. Namely, the first half of the 14th century in the territory of Serbia witnessed the operation of the mines of Novo Brdo, Janjevo, Gračanica, Trepča, Koporići, Belasica, Plana, Zaplanina, Kovači, Livađe, Rogozna, Gluhavica, Kučevo, Lipnik and Trešnjica; in the second half of the 14th century: Srebrenica, Crnča, Bohorina, Ostraća and Kratovo and, in Bosnia: Olovo, Kamenica, Kreševo, Fojnica and Busovača; in the first half of the 15th century, there were as many as 25 active mines, including the newly-opened ones: Rudišta, Krupanj and Zajača in Serbia, and Dusina and Deževica in Bosnia. After the fall under the Ottoman rule, this number first dropped to only fifteen mines, while in the 16th century only seven of them remained active. All of them were situated in several mining basins, particularly the basins of Rudnik, Kopaonik, Novo Brdo and Podrinje. On the whole, it is known that at the time of the most intensive mining activity, there were as many as 43 active mines in the territory of medieval Serbia and Bosnia (Ćirković et al., 2002; Vranić, 2021, p. 724)⁶.

According to the descriptions of travel writers, the mineral resources of Serbia, particularly of precious metals, were enormous. As early as 1308 there were already seven silver mines, while in 1332 five gold

mines were recorded, including several others where electrum, a natural alloy of silver and gold was extracted (Ćirković et al., 2002, 33). That precious metal mining was really at a high level is indicated by the data establishing that in the first half of the 15th century Serbia accounted for the production of one quarter or one fifth of silver in Europe. In addition, it also produced iron, lead and copper. According to some estimates, more than 30 tons of silver and gold were produced annually in the territory of Serbia and Bosnia, while in the first half of the 15th century this production was estimated at minimum 10 tons (Ćirković et al., 2002; Fostikov, 2019).

After the fall of the Serbian Despotate under the Ottoman rule, the mines first stagnated, and some of them were even destroyed, while the organization of their operation was also changed under the new rule. Nevertheless, after several decades, mining was once again revived vigorously, and from the original Turkish texts, the operation of the important mines can be followed (Mišić, 2014, p. 109; Amedoski, Petrović, 2018, pp. 1126–1127).

ORGANIZATION OF MINING, LEGISLATION AND URBANIZATION

The organization of mine operations was regulated by laws and customs, which gradually turned into quite detailed mining codes that regulated not only the work of the miners, mining facilities or mining artisans who participated in mining operations, but also the method of cutting forests necessary for the process of melting and construction of underground installations. Furthermore, the same laws, codes or accompanying statutes of mining towns also regulated the operation of the market places for the sake of protecting miners, who had the right of first refusal regarding certain necessities. A large amount of data about mining jobs is provided by Despot Stefan's Mining Code and, according to the parallels and comparative bases from the preserved codes from individual mining towns, such as Kutná Hora *lus regale montanorum* or the subsequent work by Agricola, which also contains drawings of the operations in mines and surrounding complexes, it is not difficult to imagine either the miners' hard work or the mining system, as well as ore processing and refinement, but also the work supervision system (Agricola, 1556; Radojčić, 1962; Marković, 1985; Bílek, 2000; Ćirković, 2005; Katić, 2024). Speaking of mining, organization of work and legislation, it must be pointed out that mining is exactly the proper example of early proto-

industrialization, the foundations of which are found in the operation of mechanical machines, small complexes/metalworking factories, the application of corporate law, social protection, shift work, high division of labour, and export production (Fostikov, 2022). Just as today, mining was also a risky occupation in the past. Apart from the collapse of subterranean structures, the problem is also posed by fires caused by gas accumulation, while fighting mine shaft floods was also common at the time (Ćirković et al., 2002, pp. 60–61).

All those laws, as well as subsequent codes, were essentially based on the so-called Old Saxon *pravice*, or mining law, also known as *ius Theutonicum*, which referred not only to mining, but also to the mining towns (*montans*) whose development was affected by it (Szende, 2019). Therefore, the mining towns were specially organized, like islands in the feudal sea, while the accelerated urbanization process based on such rights led to an increased influx of population which gravitated towards these towns in the mining regions. Moreover, when the mines were opened and expanded, there had to be at least some infrastructure of workforce, in which the primary place was held by miners and mine artisans (Katić, 2009; Petrović, 2011; Fostikov, 2021).

An excellent example of mining legislation, which covered both work in mines and the organization of mining settlements and the miners' rights in everyday life, is offered by the local code known as Despot Stefan's Code, whose Cyrillic version is accompanied by an excerpt from the Statute of Novo Brdo, to which it actually refers. It is a domestic version created on the basis of domestic custom norms of the miners, and the reception of Old Saxon law, two centuries after the arrival of the first Old Saxon miners, when the expert council of 24 good men was established for the purpose of codification and/or selection and establishment of appropriate norms. During that period and after its acceptance, Old Saxon law developed in the new language environment and in different, specific social and territorial conditions so that, naturally, a necessity arose for the re-codification of the older number of laws and custom norms. Although the Cyrillic version bears 1412 as the year of publication, according to the critical analysis it may be concluded not only that the Code was prepared much earlier, but also that it is a later version of codification (Radojčić, 1962, p. 31; Marković, 1985, p. 35; Ćirković, 2005, pp. 72–73; Ivanović, 2015, pp. 159–187; Katančević, 2020, p. 277; Ivanović, 2023, pp.

580-585; Fostikov and Rokai, in the process of preparation). Figure 1 Figure 2



Figure 1. Illustrated transcript of Despot Stefan Lazarević's Code on Mines from the 16th century, Collegium of Mining, Archives of the SASA 465, sheet 2v. The Code itself dates back to 1412. Photo: Archives of the SASA

The rise of mining was also accompanied by the rise of other branches of economy, particularly crafts and organized trade, as well as the process of accelerated urbanization, while of indisputable significance is the

appearance of money as a medium of exchange is. First of all, there was a rise in those crafts that were necessary for the operation of the mines and the life of the miners, and then, with the rise of towns and urbanization, also those necessary for everyday life of the inhabitants flowing into the mining regions. At the same time, the rise of money industry also led to the opening of money mints, while increasing emissions led to the transition to monetary economy. Based on the first money emissions, it is believed that the first money was minted in Brskovo after 1253 (Ivanišević, 2001; Gogić, 2010, pp. 208-209; Fostikov, 2019; Fostikov, 2021). In addition, one of the consequences accompanying the development of mining towns is the change in the religious structure of the population, now including Catholic miners, but also the seaside merchants, primarily those from Kotor, and later from Dubrovnik, who established their trading colonies in the mining towns. According to written sources, the first Catholic parish is mentioned in Trepča as early as 1303 (Ćirković, 1997; Gogić, 2016).

MINING AND THE ENVIRONMENT IN THE MIDDLE AGES

Speaking of mining, which consists of two segments – the first referring to extraction, and the second belonging to the sphere of primary and secondary processing – it can be clearly seen that mines are a combination of subterranean structures and surface processing facilities. These facilities are small complexes, often in a series, in line with the need for continuous water and fuel supply. That is why in the past, depending on the geographic location, they were situated next to the mines and sometimes a little farther from them. The fact that the only fuel at that time was wood and then charcoal, as well as that wood was necessary for building both subterranean and surface structures, and also for building facilities for everyday life, clearly indicates that during the Middle Ages huge deforestation took place which led to some regions becoming bare even at that time. The Old Saxon practice implied that forests could first be cut without any control, as well as that the cleared space could be used in line with the miners' needs, while the restriction of that right was introduced as late as the mid-14th century, within Emperor Dušan's Code, which stipulates that the place intended for wood cutting must remain unpopulated in order to create conditions for the growth of new forests (Mrgić, 2010, p. 95; Fostikov, 2019).

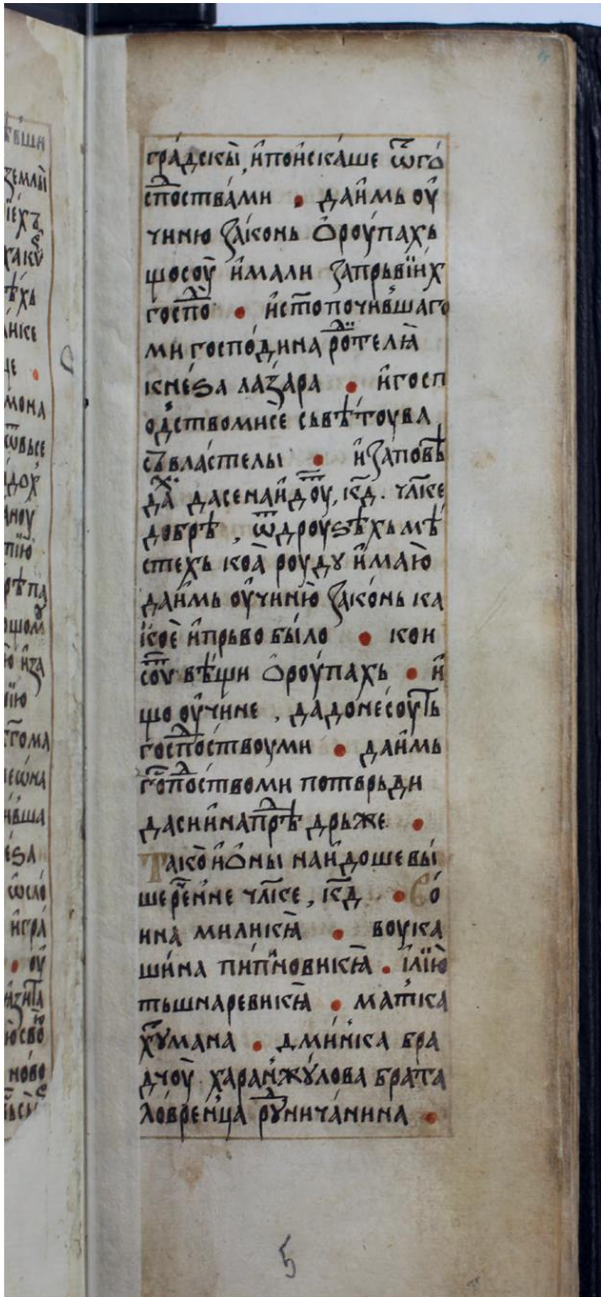


Figure 2. Illustrated transcript of Despot Stefan Lazarević's Code on Mines from the 16th century, Archives of the SASA 465, sheet 5r. The Code itself dates back to 1412. Photo: Archives of the SASA

However, a much larger problem than wood cutting, undermining the natural eco-system and air processing, was air and soil pollution, partly due to extraction and even more due to ore processing and

refinement and the production of huge quantities of charcoal necessary for the operation of foundries. The poor air quality was complained about by the inhabitants of Srebrenica who, because of suffocation, asked for the displacement of the foundries from the centre of their settlement, while the water in Srebrenica was so polluted that it caused widespread goitre. Water pollution in Majdanska reka led to the lack of water in that region, while the people from Dubrovnik believed that Rudnik itself was an unhealthy place that should be avoided. Agricola in his own time was already aware of numerous problems with the eco-system and health and, in that respect, he listed a series of data in his book on metallurgy, drawing attention both to diseases affecting miners and to the harms to the environment and general health. Recent research points to a particular problem of soil pollution caused by the disposal of ore waste, whose decomposition leads to increased concentration of toxic elements (arsenic, lead, nickel and chromium). The explorations conducted in Rudnik and Srebrenica have shown that such effect on the environment lasts for several centuries. In the end, speaking of mining, including medieval mining, with the aid of new technologies it has been established that air pollution has always followed the line of mining development. When mining was on the rise, pollution also increased, while in the periods of the declining mining activity, air was purified (Brännvall et al., 1999; Ćirković et al., 2002, p. 58; Vranić, 2021).

CONCLUSION

From all the above-mentioned, as well as according to the opus of papers dedicated to mining in medieval Serbia and beyond, we can conclude that this topic is one of those that in themselves deserve, but also require being studied in further research of written sources, archaeological explorations and the broader and as interdisciplinary research as possible, on comprehensive comparative foundations. Only in this manner can this topic be more deeply perceived and studied. Therefore, in the future it is necessary to gather an interdisciplinary national and international team which will dedicate attention to this issue in order to synthesize certain phenomena, processes and factors. [Figure 3](#)



Figure 3. Brskovo, area of medieval mining activity, archaeological research in 2023. Photo: Mirko Vranić

Endnotes

¹The other four are: household, rural, town and developed trade.

²The word “montan” is adopted in historiography as a term denoting mining settlements subject to Old Saxon acquired rights or privileges (*pravice*). The word “montan” comes from the name for medieval mining industry, or *Montanindustrie*.

³The rise of metallurgy contributed to the better quality of weapons and tools, including the agricultural tools.

⁴To avoid encumbering the text by listing all the papers by these authors, we will point out that all those papers, including the ones quoted below, are available online in the Repository of the Institute of History in Belgrade.

⁵M. Vranić is currently completing the doctoral dissertation on the topic “Mining and Metallurgy in Medieval Serbia: Archaeological Findings”; he is also one of the archaeologists who cooperate on the currently ongoing research into the mining in Brskovo and Rudnik.

⁶Having in mind that the majority of these mines and surrounding settlements is well known in the literature, and in greatest part listed in the *Lexicon of towns and market places in the medieval Serbian lands*, with the overview of sources and older literature, we do not deal with them in particular in this paper (Lexicon, 2010).

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Рударство у средњовековној Србији

Сажетак:

Рударство, познато и под називом Монтаниндустрије, на територији средњовековне Србије прошло је дуг пут развоја, од површинског копања до вртоглавог успона, који је започео доласком Саса у 13. веку. Захваљујући њиховом утицају, односно комбинацији технолошког развоја и доступних сировина, Србија је доживела општи економски успон, те је већ у првој половини 15. века била заслужна за производњу четвртине или петине европског сребра. Међутим, саски утицај није се ограничио само на рударство већ и на развој рударских градова, као и на занатску привреду. Стога се у овом раду разматра развој рударства на територији средњовековне Србије од насељавања до пада под осман-ску власт, са циљем да се испрате дуготрајни процеси који су битно утицали на промену како саме привреде, тако и друштва.

Кључне речи: привреда; рударство; Саси; Србија; средњи век