World Regional Geography Book Series

Emilija Manić
Vladimir Nikitović
Predrag Djurović *Editors*

The Geography of Serbia

Nature, People, Economy

IGU UGI

Springer

World Regional Geography Book Series

Series Editor

E. F. J. De Mulder
DANS, NARCIS, Utrecht, Noord-Holland, The Netherlands

What does Finland mean to a Finn, Sichuan to a Sichuanian, and California to a Californian? How are physical and human geographical factors reflected in their present-day inhabitants? And how are these factors interrelated? How does history, culture, socio-economy, language and demography impact and characterize and identify an average person in such regions today? How does that determine her or his well-being, behaviour, ambitions and perspectives for the future? These are the type of questions that are central to The World Regional Geography Book Series, where physically and socially coherent regions are being characterized by their roots and future perspectives described through a wide variety of scientific disciplines. The Book Series presents a dynamic overall and in-depth picture of specific regions and their people. In times of globalization renewed interest emerges for the region as an entity, its people, its landscapes and their roots. Books in this Series will also provide insight in how people from different regions in the world will anticipate on and adapt to global challenges as climate change and to supra-regional mitigation measures. This, in turn, will contribute to the ambitions of the International Year of Global Understanding to link the local with the global, to be proclaimed by the United Nations as a UN-Year for 2016, as initiated by the International Geographical Union. Submissions to the Book Series are also invited on the theme 'The Geography of…', with a relevant subtitle of the authors/editors choice. Proposals for the series will be considered by the Series Editor and International Editorial Board. An author/editor questionnaire and instructions for authors can be obtained from the Publisher.

This book series is published in cooperation with the International Geographical Union (IGU). The IGU is an international, non-governmental, professional organization devoted to the development of the discipline of Geography. The purposes of the IGU are primarily to promote Geography through initiating and coordinating geographical research and teaching in all countries of the world.

More information about this series at http://www.springer.com/series/13179

Emilija Manić • Vladimir Nikitović
Predrag Djurović
Editors

The Geography of Serbia

Nature, People, Economy

Springer

Editors
Emilija Manić
Faculty of Economics
University of Belgrade
Belgrade, Serbia

Vladimir Nikitović
Institute of Social Sciences
Demographic Research Centre
Belgrade, Serbia

Predrag Djurović
Faculty of Geography
University of Belgrade
Belgrade, Serbia

ISSN 2363-9083 ISSN 2363-9091 (electronic)
World Regional Geography Book Series
ISBN 978-3-030-74700-8 ISBN 978-3-030-74701-5 (eBook)
https://doi.org/10.1007/978-3-030-74701-5

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Serbia is a secret world
Where no day knows what the night brews;
And no night sees the dawn's gray child;
Where each bush in the brake defends its dream
as separate secret flame;
And no bird knows what waves and weaves
Those patterns in the rustling leaves.

Desanka Maksimović (1898–1993),
Famous Serbian poet[1]

[1]From: Maksimović D (1998) Don't Fear: selected poems. Association of Writers of Serbia, Belgrade

Preface

Serbia is a country in Southeast Europe that occupies southern parts of the Pannonian plain as well as the central parts of the Balkan Peninsula. As the area of an amazing variety of genetic relief types, with karst and aeolian formations as exceptional for their specificities, Serbia emerges from the low landing Pannonian plain to the highest mountainous regions in the Dinarides and mountains Prokletije, Šara, and Stara Planina. Different geological features, together with different climates and transit and specific domicile waters (karst springs and thermomineral waters), created various natural habitats with specific flora and fauna and numerous endemic and relict species. The area boasts plenty of traces of rich cultural heritage, since the central Balkans was the main migration corridor between southwest Asia on one side, and central and west Europe on the other.

The first geographic descriptions of the Balkans – that is, of the area of today's Serbia – appeared as late as the second half of the nineteenth century. Until then, the data about this "corner of Europe" could only be found in the descriptions of travelers passing through the Balkans. The earliest of such descriptions are related to pilgrims, and later also to Arabian travelogue writers. According to Radovanović in his book *Putopisi o Srbiji kroz vekove* (Travelogue about Serbia through the centuries), 2012, during the Ottoman rule, the imperial envoys on their way from Vienna to Constantinople were the only ones who recorded their observations about the landscapes they were passing through. They described these landscapes as "vast, immense areas of game-rich forests and uncultivated lands with traces of old civilization, inhabited with tall, fair skinned people who wore unusual garments." The oriental travelogue writers, such as the eminent Evliya Çelebi (seventeenth century), also confirmed these descriptions.

When Serbia regained sovereignty in the nineteenth century, it established an education system in which geography was, for the first time, included in the curriculum as a teaching course at Great School (1863). These were not yet scientifically founded information, but rather a sort of travelogues with geographic contents collected by travelogue and literary writers and culture workers: *Novejše zemljopisanije* (*New Land Description*, 1825) by Joakim Vujić, *Geografičesko-statističesko pisanije Srbije* (*Geographical-statistical Description of Serbia*, 1827) by Vuk Stefanović Karadžić, *Rečnik geografijsko-statistični Srbije* (*Geographical-statistical Vocabulary of Serbia*, 1846) by Jovan Gavrilović, *Prinos za geografiju Srbije* (*Contribution to Geography of Serbia*, 1873) by Jovan Dragašević, *Kneževina Srbija* (*Principality of Serbia*, 1876) and *Kraljevina Srbija* (*The Kingdom of Serbia*, 1884) by Milan Đ. Milićević, and *Srbija – opis zemlje, naroda i države* (*Serbia: Description of Land, People, and Country*, 1887) by Vladimir Karić.

The beginning of the development of geography as a scientific discipline in Serbia is related to the very end of the nineteenth century and the name of a distinguished Serbian geographer Jovan Cvijić, who founded the Geographical Institute within the History and Philosophy Department at the Great School in Belgrade in 1893. After completing his doctoral thesis in Vienna, Jovan Cvijić returns to Serbia as a follower of the famous Albrecht Penck, where he sets the foundations or karstology and karst terminology, thus marking a turning point in karst research (he was the one who introduced a new at the time, but now widely accepted term – karst). It was the beginning of the Serbian school of geography, and from then on began an

intensive development of individual geomorphology disciplines (karstology and speleology) and hydrogeology, but also of socio-geographic disciplines, such as anthropogeography and ethnology. The Geographical Institute, headed by Jovan Cvijić, becomes a pioneer of organized scientific research in different parts of the Balkan Peninsula, especially in the fields of geomorphology, settlements, and population. In 1910, the first association of the Balkans' geographers was founded – Serbian Geographical Society – led also by Jovan Cvijić. This is why it is impossible to fully understand the Serbian school of geography and its position in the European science of geography without considering the work and accomplishments of this famous Serbian geographer.

Cvijić was researching the Dinarides mountain range in order to better understand karst and the processes occurring within it. According to numerous karstologists, such as, Roglić, Sweeting, Ford, and others, Cvijić's doctoral dissertation represents, even nowadays, the beginnings of the karst studies, and his understanding of karst hydrology is the precursor of modern scientific interpretations of this process. He was the first to identify traces of Pleistocene glaciation in the Balkans, thereby initiating a change in the thought on the scope of Pleistocene mountain glaciation of Europe. Modern climate research has confirmed that there are differences in the glaciation phases during the Pleistocene, which were first identified by Cvijić. Due to all this, the geomorphology public worldwide, headed by the esteemed geomorphologist Ford, considers Jovan Cvijić as "the father of karst geomorphology."

At the same time, Cvijić had been exploring the origin of the population in the Balkans. He established his own anthropogeographic school that transformed Serbian and Yugoslav social geography, including initiation of the scientific approach to studying migrations of the Yugoslav peoples. His key publication in this field is the book, *La péninsule balkanique: géographie humaine* (1918), originally written in French, and subsequently extended and translated into Serbian – *Balkansko poluostrvo i južnoslovenske zemlje: Osnove antropogeografije* (*Balkan Peninsula and South Slavic Lands: The Basics of Anthropogeography*) and published in two volumes – the first in 1922 and the second posthumously in 1931. In this capital work, he imperceptibly introduces human geography into political geography and deals with all important aspects of the relationship between the geographical environment and the spiritual and material culture in the Balkans. According to renowned Serbian geographer Mirko Grčić, the classic paradigm of Cvijić's anthropogeographic school is very close to the "modern" system paradigm that points out the scientific synthesis of causal dependence among ethnic, ethnodemographic, social, cultural-civilizing, and geopolitical processes within their geographic demonstration and historical continuity. Having to thank precisely to Jovan Cvijić, but also to his students – geomorphologist Petar Jovanović (1893–1957), anthropogeographer Rista Nikolić (1877–1917), and anthropogeographer Jevto Dedijer (1880–1918) – the Serbian school of geography became firmly recognized in both Serbia and the world in the period between the two world wars. This is also confirmed by the fact that Cvijić had an exceptional role in determining the borders of the first modern state of South Slavic peoples (the predecessor of the Kingdom of Yugoslavia) as the chief of the ethnographic section of the Serbian delegation at the Paris Peace Conference (1919).

After the Second World War, Serbian geography developed within the framework of Socialist Yugoslavia, mostly following Cvijić's school of thought, but without the impact it previously had on world geography. The last decades of the twentieth century were extremely harsh for the entire Serbian science, and thereby also for geography. The international isolation of Serbia after the breakup of Yugoslav state caused, among other things, an enormous emigration of students and perspective scientists, and it almost extinguished cooperation with researchers of foreign universities and institutes. Such atmosphere caused an even further decline in the importance and visibility of Serbian geographic science in international scientific publishing industry. Huge social changes in Serbia after the year 2000, including a new science policy oriented toward the incitement of international cooperation and projects and toward publishing the research results in the world-leading magazines and publications, have, to a certain degree, opened a possibility for Serbian geographic science to fight to regain its

position on the European and world's map, by pursuing the most important heritages of Jovan Cvijić and his followers that withstood the test of time in the past 100 years. It seems that the work of geographers could be especially important in this respect, because many of today's complex social processes in Serbia and the Balkan Peninsula have been identified by Cvijić and his associates, also pointing to the possible direction of their far-reaching implications.

Many challenges concerning geohazard, demographic, and migration processes and regional geopolitical and geo-economic relations that Serbia faced in socialist, and especially in the post-socialist period, marked by the turbulent break-up of Yugoslavia and too slow transition of socio-economic order now represent research topics of contemporary geographers in Serbia, who are trying to make their contribution to solving and better understanding of the said challenges. Besides relying on the extremely rich scientific heritage of their predecessors, today's geographic research in Serbia is based on theoretical concepts, methodology apparatus, and technological achievements of contemporary geospatial science which imply a high degree of integration of geographic disciplines and related scientific fields. The editorial team of this monograph has based the concept of presenting the contemporary geography of Serbia precisely on this approach.

Analyzing the existing area of Serbia, it is impossible to neglect its specific natural environment, its history, the consequences of cohabitation in mutual Yugoslav state, the consequences of disintegration of that state, events at the end of the twentieth century and also the impact of the existing global and regional processes that are affecting the Balkans' territory. It seems that the issues from the human geography area are precisely the ones that are the most complex and that arouse great interest in the wider geographic public. By building "a house in the middle of the road," Serbia and its people have been permanently under different political, economic, and cultural influences. As a result, its cultural heritage became highly assorted, on the one hand, and its history was very dramatic on the other. It is almost impossible to find a nation in a world that, inhabiting the same territory, has changed four countries over the last 40 years! This is why it seemed to us that, by giving more room to human geography topics, the first encounter with Serbia will reveal to the reader of these pages just what kind of a "corner of Europe" Serbia is, who made it such, and how.

The most challenging demographic issues that contemporary Serbia is now facing are childbearing rates far below replacement level resulting in depopulation and intensive population aging, relatively high death rate and negative migration balance. The total population of Serbia has been declining since the dissolution of the former Yugoslavia in 1991 when the rate of natural change turned negative. The rising net emigration speeded up this trend at the turn of the millennium. In addition, Serbia is lagging behind most EU member states in terms of educational attainment of their working age population. Although Serbs are the dominant majority, the demographic profile of the country reveals rich ethnic heterogeneity, particularly in the Vojvodina region, resulting from the multifaceted interaction of historic, geographic, demographic and political factors.

At the same time, Serbia has still not completed its social and economic transitions, which last for more than thirty years now. Although the transition from centrally planned to market economy is a demanding process in itself, the political situation during the 1990s made it even more difficult for Serbia. The economic transition in the country, which started at the end of the previous century and continued at the beginning of this one, resulted in a transformed economy with still existing serious structural problems. Such demographic and economic circumstances have created several important issues that Serbia will continue to face in the future: environmental issues, rural and urban developments, and one of the most demanding regional disparities in Europe.

While deciding on the authorial concept of this monograph, we had the option of taking one of the two opposite approaches, each having its natural advantages and disadvantages. One implied a small team of authors, such as our three-member editorial team, giving their answer to the contemporary geographic issues in Serbia. This would, without a doubt, result in a scientifically homogenous concept of the monograph, which is an advantage that would be

appreciated primarily by the readers interested in the entire content of the book. However, the price of this approach would reflect a higher degree of subjectivity and general representation of the (sub)disciplines expected to be contained in a publication of this kind. The other approach implied a wide specter of authors of various academic specialties, not only in geography, but also in related scientific fields, who have a common trait that they, in their research, take the phenomena and processes shaping the contemporary geographic image of Serbia as their research subject. Risking a lack of compactness in style, which would probably make the book even more readable as a whole, we chose the latter option.

Since the first book, *Serbia: Description of Ground, Nation and Country*, written by Professor Vladimir Karić in 1887, which presented the most important geographical features of that time on 935 pages, geography and related disciplines went a long way from a pioneering development phase to modern science disciplines that give a significant contribution to the general development of Serbia. Today, the book *Geography of Serbia* integrates the results of scientific research of as many as 44 researchers from the renowned scientific institutions of Serbia: University of Belgrade (the Faculty of Geography, the Faculty of Economics, the Faculty of Philosophy, the Faculty of Mechanical Engineering), University of Novi Sad – the Faculty of Science, Serbian Academy of Science and Art (SASA), the Geographical Institute "Jovan Cvijić" of SASA, the Institute of Social Sciences Belgrade, the Institute of Balkan Studies SASA, the Archeological Institute Belgrade, the Institute of International Politics and Economics, and the Institute of Architecture and Urban and Spatial Planning of Serbia.

By choosing this kind of approach in regional-geographic analysis, we believe that the reader of this book has been provided with a higher quality content, based on more detailed analyses of particular processes, with each section of the book being more autonomous in terms of content. *The Geography of Serbia* provides the readers with an opportunity to get to know Serbia from all aspects: its diversity and wealth, its population and economy, but also the challenges it faces. It consists of five major parts (historical and geopolitical context, physical geography, demography, economy, and regional development and specificities) and includes 23 chapters that lead the reader through the history and culture of this part of Europe and the Balkans, through the Serbian nature, population, and economy, striving to point out on scientifically based facts, not only the structure but also the dynamics of the space it analyzes. It was really challenging to unify so many different disciplines and researchers, with the desire to provide an in-depth analysis in a comprehensive geographical study at the points that are believed to be of special importance for understanding Serbia, and which – like cubes in a mosaic when combined and interconnect – create a complete and unique picture of a space.

Belgrade, Serbia

Emilija Manić
Vladimir Nikitović
Predrag Djurović

Acknowledgments

We would like to thank for valuable advice, helpful comments, suggestions, and provided materials to the following individuals: Athanasios Loupas, Božidar Vasiljević, Danica Popović, Danica Srećković-Batoćanin, Dragan Bakić, Dragan Bosnić, Dragan Milovanović, Igor Kovačević, Iskra Maksimović, Kranislav Vranić, Ljiljana Gavrilović, Ljubomir Menković, Milomir Stepić, Miomir Korać, Mirko Grčić, Nebojša Šuletić, Rade Jelenković, Radovan Kovačević, Vladimir Mihailović, and Vladimir Petrović. Their contribution undoubtedly significantly improved the quality of this book.

We are particularly indebted to Radmila Jovanović on providing a part of cartographic designs to this book (Chap. 1 – Fig.1.2, Chap. 2 – Fig.2.1 and Fig. 2.5, Chap. 3 – Fig. 3.1, Chap. 4 – Fig.4.1, Fig.4.2, Fig.4.3, Fig.4.4 and Fig.4.5, Chap. 10 – Fig.10.3, Fig.10.4 and Fig.10.5, Chap. 12 – Fig.12.2 and Fig.12.3, Chap. 13 – Fig.13.1, Fig. 13.2, Fig.13.3 and Fig.13.4, Chap. 15 – Fig.15.3, Chap. 16 – Fig.16.1 and Fig 16.2, Chap. 19 – Fig.19.3, Chap. 20 – Fig.20.1, Fig.20.2 and Fig.20.3, Chap. 22 – Fig.22.7, and Chap. 23 – Fig.23.1).

The authors wish to express their deep appreciation to the following institutions for permission to use their self-published materials: Academy of Engineering Sciences of Serbia, The Archaeological Institute Belgrade, Dečani Monastery, Golubac Fortress doo, Matica Srpska, Mining Institute Belgrade, National Museum Belgrade, OneSoil company, and Desanka Maksimović' family. Our gratitude extends to the Statistical Office of the Republic of Serbia for providing us additionally processed data from the 2011 Census and the demographic statistics database, namely to: Snežana Lakčević, Assistant Director, Department for Social Statistics, Ljiljana Đorđević, Head of Population Census Division, and Gordana Bjelobrk, Head of Demography Division.

The book *Geography of Serbia* presents results gained from the researches taken more than a century as well as those obtained more recently by the authors of this book in a frame of a number of projects, including the results carried out within the 2020 Research Program supported by the Ministry of Education, Science, and Technological Development of the Republic of Serbia.

Above all, we gratefully acknowledge the authors of all the chapters for their time and efforts to make the interdisciplinary research findings in the field of geography of Serbia closer to a broad international audience.

Contents

Part I Historical and Geopolitical Context
Emilija Manić and Vladimir Nikitović

1 Geographical Position of Serbia 3
Milutin Tadić and Emilija Manić

2 Prehistory of Serbia: A Brief Overview 7
Dušan Mihailović, Dragana Antonović, and Aleksandar Kapuran

3 Serbia: A Historical Survey 21
Radmila Pejić, Sofija Petković, and Dejan Radičević

4 Political Geography of Serbia: Territorial Organization and Government 41
Nebojša Vuković

Part II Physical Geography
Predrag Djurović

5 Climate of Serbia 57
Boško Milovanović, Gorica Stanojević, and Milan Radovanović

6 Hydrological Characteristics of Serbia 69
Marko Urošev, Ana Milanović Pešić, Jelena Kovačević–Majkić, and Dragoljub Štrbac

7 Geomorphological Characteristics of Serbia 85
Predrag Djurović

8 Biogeographical Characteristics of the Territory of Serbia: Richness and Spatial Distribution of Biodiversity, Endemism and Biogeographical Regionalization 99
Vladimir B. Stevanović

9 Geohazard and Geoheritage 119
Ivan Novković, Slavoljub Dragićević, and Mirela Djurović

Part III Demography
Vladimir Nikitović

10 Demographic Profile of Serbia at the Turn of the Millennia 135
Daniela Arsenović and Vladimir Nikitović

11 Demographic Challenges in Serbia 143
Mirjana Rašević and Marko Galjak

12 Migration and Mobility Patterns in Serbia 157
Vesna Lukić

13 Approaching Regional Depopulation in Serbia 169
Vladimir Nikitović

Part IV Economy
Emilija Manić

14 Serbian Economy – History, Transition and Present 185
Đorđe Mitrović

15 Agriculture in Serbia 199
Žaklina Stojanović

16 Natural Resources and Manufacturing Sector 207
Emilija Manić and Milena Lutovac

17 The Transport Sector in Serbia 221
Ivan Ratkaj

18 Services: Finance, Trade and Tourism 231
Svetlana Popović, Dragan Stojković, and Radmila Jovanović

19 Serbia Internationally: International Trade and Integrations 251
Predrag Bjelić and Ivana Popović Petrović

Part V Regional Development and Specificities
Vladimir Nikitović and Emilija Manić

20 Environmental Issues in Serbia: Pollution and Nature Conservation 263
Vladimir Stojanović, Milana Pantelić, and Stevan Savić

21 Development Challenges Faced by Cities in Serbia 279
Nikola Krunić, Aleksandra Gajić, and Dragutin Tošić

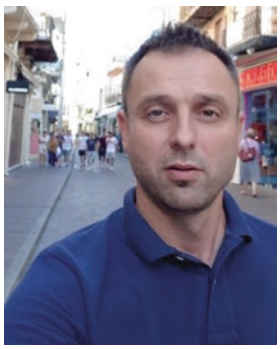
22 Rural Areas and Rural Economy in Serbia 289
Marija Drobnjaković, Žaklina Stojanović, and Sonja Josipović

23 Regional Disparities in Serbia 305
Dejan Molnar

Index 313

About the Editors

Emilija Manić lectures the Economic Geography and Geography of Tourism at the University of Belgrade the Faculty of Economics. She graduated from the University of Belgrade the Faculty of Geography where she received her master's degree (2005) and PhD (2008). Her main fields of interest and research are spatial analysis of economic activities, socioeconomic analysis, GIS application in the business and local government, tourism destination, and tourism impact. She is an author of several books on economic geography, tourism, and GIS in economic planning. She has published numerous research papers in leading national as well as international journals.



Vladimir Nikitović works at the Demographic Research Centre of the Institute of Social Sciences, Belgrade, and serves as the editor in chief of *Stanovništvo (Population)*, one of the world's oldest demographic journals. He received his academic education at the University of Belgrade – holds BSc in Geography and MSc in Demography at the Faculty of Geography (2003), and PhD in Demography at the Faculty of Economics (2009). His publications include several books and edited volumes as well as numerous research papers related to demographic and migration processes, cited in leading scientific journals and strategic policy documents. He had been engaged as manager, thematic expert, and consultant in numerous national and international projects, including the creation of national public policy documents in the field of demography and spatial planning.

Predrag Djurović was born in 1962. He graduated from the University of Belgrade, Faculty of Geography, where he received a master's degree (1990). In the same institution, he received Ph.D. in geomorphology with the topic "Alpine Karst of Mt. Durmitor – Geomorphological Study" (1996). The main fields of research interests are physical geography, especially geomorphology (karstology, recent and paleo glaciology, speleology). He is the editor of the "Speleological Atlas of Serbia" and the author of thematic maps in geomorphology, karstology, and speleology. Until 2001, he was employed by the Geographical Institute "Jovan Cvijić" Serbian Academy of Sciences and Arts., is a full professor at the University of Belgrade, Faculty of Geography, where he lectures in Paleogeography, Dynamic Geomorphology, Speleology, and Mountain Tourism.

Part I

Historical and Geopolitical Context

Emilija Manić and Vladimir Nikitović

Geographical Position of Serbia

1

Milutin Tadić and Emilija Manić

Abstract

Serbia represents an excellent example of how the geographic position of a country is a complex and extremely dynamic category. Located at the Southeast Europe, as a medium-size country, Serbia occupies the central part of the Balkan Peninsula and the southern rim of Pannonian Basin. Being in such geographical position, Serbia and its people have been permanently under different political, economic and cultural influences.

Serbia is predominantly highland zone criss-crossed by river basins in the south, with highly fertile agricultural lands and navigable rivers and canals of the Pannonian Plain in the north. Being located in the North Temperate Zone characterized by normal day-and-night cycles, Serbia has mild continental climate that passes into mountain climate in the southern highland regions and continental climate in the Pannonia plain. It is a continental country but with favourable position for traffic and transportation. The political issues at the end of the last century and transition from centrally planned to market economy shaped Serbia as developing European country with a prominent depopulation and a high out-migration rate.

Keywords

Geographical midpoint · Borders · Continental country · Economic-geographical position

M. Tadić (✉)
Faculty of Geography, University of Belgrade, Belgrade, Serbia
e-mail: tadija3@gmail.com

E. Manić
Faculty of Economics, University of Belgrade, Belgrade, Serbia
e-mail: geografija@ekof.bg.ac.rs

By the size of its territory, Serbia is among the medium-size countries in Europe (88,499 km^2) (Statistical Yearbook 2019), with almost seven million inhabitants (not including southern province Kosovo and Metohija) (Statistical Office of the Republic of Serbia 2020). Serbia is located at the Eastern Hemisphere and also at the Northern Hemisphere, approximately half-way between the equator and the Geographic Northern Pole. Serbia is situated at the Southeastern part of the European continent, and it is in Central European Time zone (CET).

The extreme points of Serbia's territory are determined by the following geographic coordinates (Fig.1.1):

N (46° 11′ 25″ N, 19° 40′ 00″ E),
S (41° 51′ 08″ N, 20° 37′ 33″ E),
W (45° 54′ 30″ N, 18° 49′ 16″ E),
E (43° 11′ 13″ N, 23° 00′ 47″ E).

The shortest distance of the territory of Serbia is 488 km, 'diagonally' between the northernmost and the southernmost points, and that between the easternmost and the westernmost points is 449 km. The midpoint of the geographic network field where Serbia is territorially located, that is, the *geographical midpoint of Serbia*, is defined by the coordinates of φ_0 = 44° N, λ_0 = 21° E, which correspond to Kragujevac (Tadić 2000) – the fourth largest city measured by the population of the country and one of the most important economy and educational centres in Serbia.

Serbia is located in the North Temperate Zone, and therefore characterized by normal day-and-night cycles: in the winter, solstice daytime lasts for 8 h and 53 min, while in the summer, solstice daytime lasts for 15 h and 30 min (Tadić 2010). These spatiotemporal mathematical-geographical determinants completely 'individualize' the geographical position of Serbia, significantly impacting its relative position and its physical characteristics.

Serbia is a *continental country*, one of the 44 landlocked countries in the world, which significantly decreases the

E. Manić et al. (eds.), *The Geography of Serbia*, World Regional Geography Book Series,
https://doi.org/10.1007/978-3-030-74701-5_1

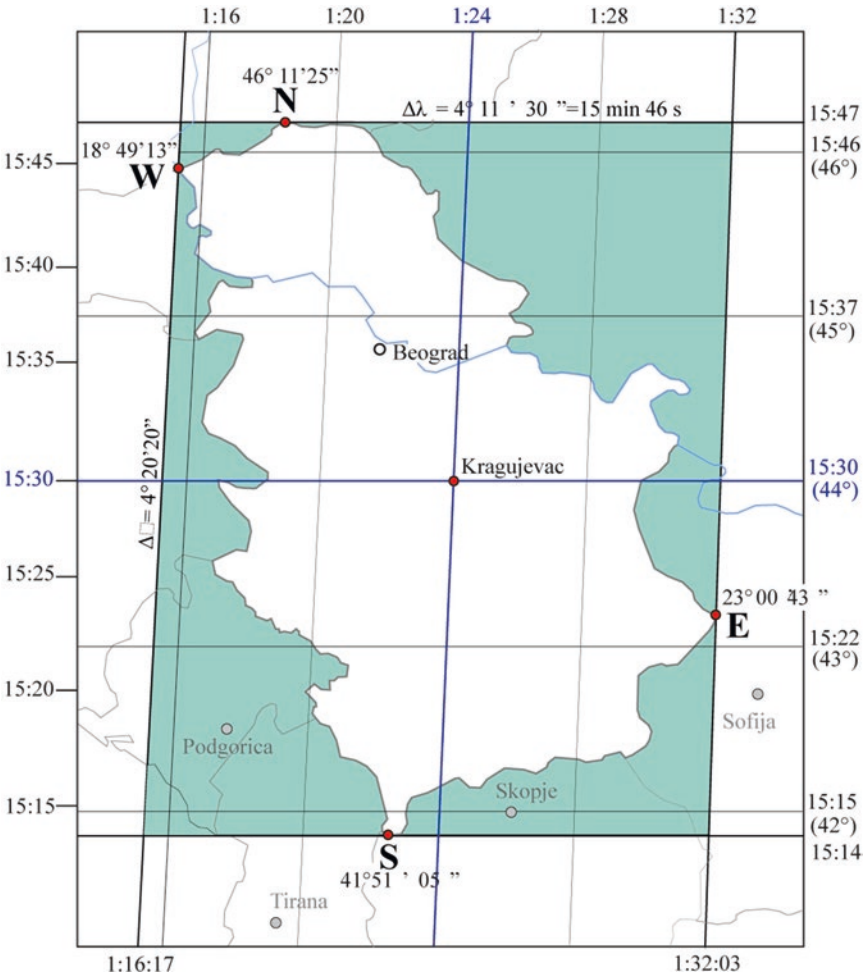


Fig. 1.1 The geographic network field where Serbia is territorially located (*Source:* authors' calculations based on data from Tadić 2010)

favourability of its geographical position. It borders with eight counties. The *borders* with Hungary, Romania, Albania and Bulgaria had been established after the First World War, at the Paris Peace Conference in 1919, and they were confirmed by the United Nation decisions after the Second World War. The borders with three former Yugoslav republics (Bosnia and Herzegovina, Croatia and Northern Macedonia) were internationally recognized after the break-up of the Socialist Federal Republic of Yugoslavia (SFRY) in 1991. With Montenegro, the international border was established in 2006, after Montenegro declared independence. However, some disputable border issues remained unresolved and will be subjected to bilateral agreements or arbitration in the future:

- One hundred and forty-five kilometres of the borderline along the Danube river's flow is the object of dispute between Serbia and Croatia, and negotiations on this are ongoing since 2003. Croatia suggests that the areas be divided according to the cadastre documentation, while Serbia suggests the border to be set along the midline of the Danube river's flow which meandered in the meantime.
- Ninety-five percent of the border between Serbia and Bosnia and Herzegovina is determined and clearly defined, but four minor sectors are still disputable.
- The borders between Serbia and Montenegro and between Serbia and North Macedonia remain unresolved due to the issues concerning southern Serbian province of Kosovo and Metohija. Since 1999, Kosovo and Metohija (10,887 km^2) are under United Nations administration – UNMIK (United Nations Interim Administration Mission in Kosovo)[1] that operates there together with EULEX (the European Union Rule of Law Mission)[2] and KFOR (a peace support operation NATO forces).[3] The independence of this territory, declared by the political representatives of the Albanians, is not recognized by Serbia or the United

[1]The official website of The United Nations Interim Administration Mission in Kosovo. https://unmik.unmissions.org. Accessed 6 December 2020.

[2]The official website of The European Union Rule of Law Mission. https://www.eulex-kosovo.eu/. Accessed 6 December 2020.

[3]The official website of the peace support operation NATO forces. https://jfcnaples.nato.int/kfor. Accessed 6 December 2020.

Nations,[4] so the political status as well as the borders issue is still opened questions (see Chap. 4).

Situated at the central part of the Balkan Peninsula and the southern region of Pannonian Basin, Serbia is at the same time both a Balkan and also a Pannonian and Central-European country. The largest part of Serbia (about 75% of its territory) extends south of the rivers Sava and Danube, which are natural borders of the Balkan Peninsula. It is situated in a predominantly highland-mountain zone criss-crossed by river basins, with mild continental to mountain climate and with deposits of natural resources such as coal, copper ore, and non-metallic deposits (Fig. 1.2).

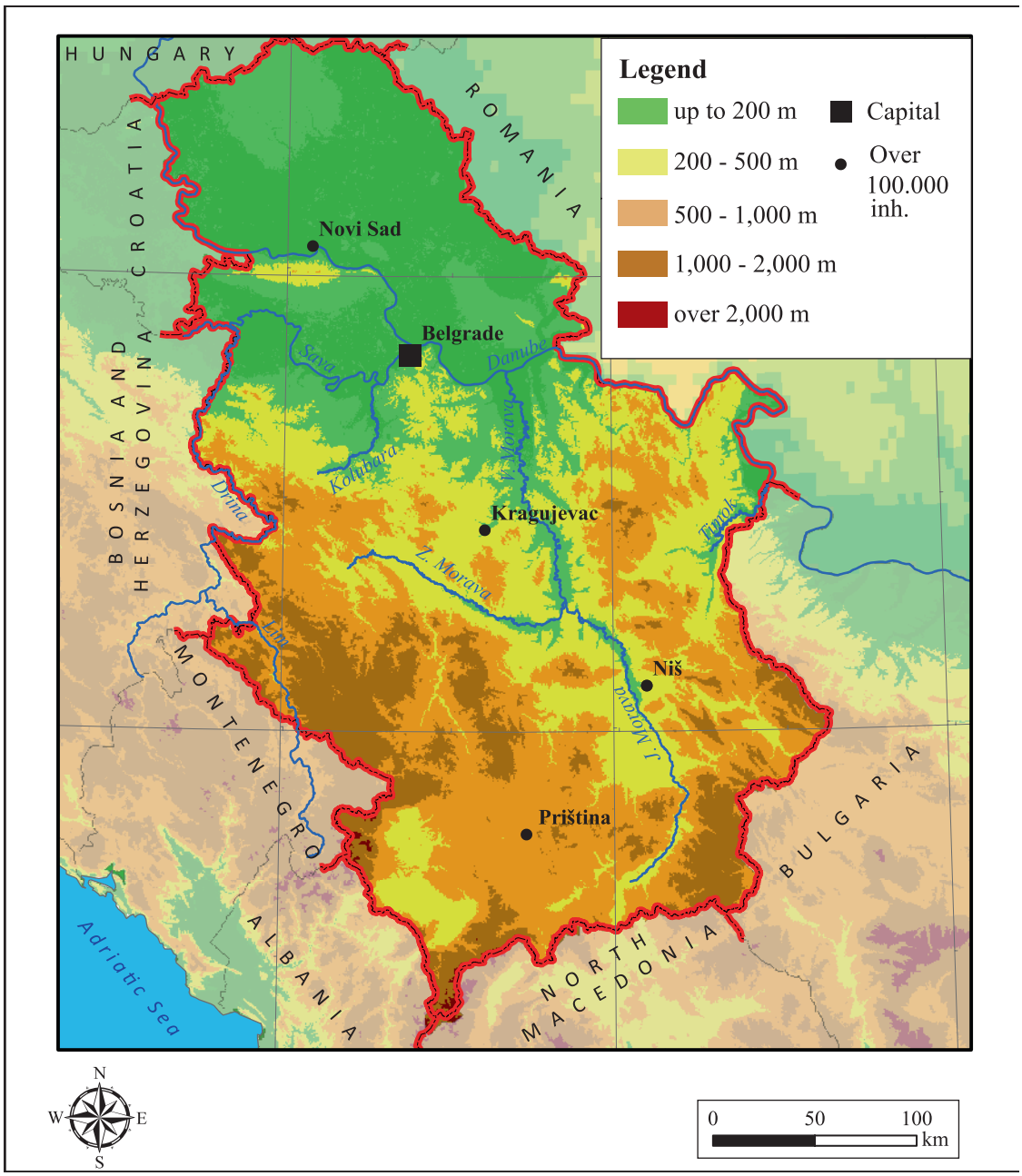


Fig. 1.2 Location and borders of Serbia

[4]The official website of The United Nations. https://www.un.org/geospatial/content/serbia-0. Accessed 6 December 2020.

The area to the north of the Sava and Danube rivers is low-lying and is a part of the vast Pannonian Plain, with mild continental to continental climate and with highly fertile agricultural lands and navigable rivers and canals. Due to such relief and the central position at the Balkans, Serbia has a favourable position for traffic and transportation.

Two *pan-European corridors* run through Serbia: Corridor 7 and Corridor 10. Corridor 7 is actually the Danube river navigation route, which connects the North and the Black Sea via Rhine-Main-Danube System, whereby it 'opens' the access to the World Sea for Serbia. Corridor 10 basically connects the Western Europe with the south of the continent and the Southwest Asia (it runs between Salzburg and Thessalonica, and it has four branches). It enters Serbia from the west (Ljubljana–Zagreb–Belgrade and continues with Branch B: Budapest–Belgrade). It further runs southward along the valleys of the Velika and Južna Morava and the Vardar rivers (Belgrade–Thessalonica), and eastward along the valley of the river Nišava (Branch C via Sofia to Istanbul).

Concerning its *economic-geographical position*, Serbia belongs to developing countries. However, comparing to the other developing European countries, Serbia is one of the poorest, with a prominent depopulation and a high emigration rate – the Gross Domestic Product per capita in 2018 was 7234 current US dollars (World Bank 2019), while the 2018 natural increase rate was −5.5‰ in comparison to the previous year (SORS 2019). There are many reasons for such state of affairs, which should be observed in a wider context of global and regional socioeconomic processes at the entire Balkans.

The Balkans has always been a bridge between Europe and Asia, where different political, economic, cultural and military interests have met and intertwined for centuries. Both the events from the earlier (the relations with Byzantine and Ottoman Empires, reconstruction of modern Serbian state, two World Wars) and contemporary Serbian history (disintegration of SFR Yugoslavia and relations to the neighbouring countries) point to this fact. Serbia and the Balkans are an excellent example of how the geographic position of a country is a complex and extremely dynamic category.

References

Statistical Office of the Republic of Serbia (2019) Statistical yearbook of the Republic of Serbia 2019. SORS, Belgrade

Statistical Office of the Republic of Serbia (2020) Population. Available via https://www.stat.gov.rs/. Accessed 8 Feb 2020

Tadić M (2000) Određivanje matematičkog horizonta za zadati konstrukcioni pol. Globus 27:153–162

Tadić M (2010) Matematička geografija Republike Srbije. Eon, Beograd

Prehistory of Serbia: A Brief Overview

2

Dušan Mihailović, Dragana Antonović, and Aleksandar Kapuran

Abstract

Research has shown that the territory present-day Serbia was continuously inhabited from the earliest prehistoric to historic times. Covering most of what is Serbia today, the Central Balkans acted as an important migration corridor that connected Southwest Asia with Central and Western Europe. Moreover, the Central Balkans represented an important ecological and social refugium for European human communities during harsh glacial periods and other crises. The highest population densities throughout the region's prehistory were recorded in river valleys, as well as the lowland and low hilly areas at their peripheries, while occupations of hilly-mountainous areas were more frequent during Paleolithic and Metal Ages. Apart from historical and social circumstances, population densities and the occurrence of specific settlement patterns were also influenced by the distribution of mineral and food resources exploited during particular intervals. Prehistoric cultural and demographic links between the Balkans and Central Europe or Southwest Asia have been well documented. However, the Balkans also saw the rise of authentic cultural manifestations such as the Lepenski Vir culture which have not been documented in other parts of Europe.

Keywords

Prehistory · Serbia · Paleolithic · Mesolithic · Neolithic · Eneolithic · Bronze Age · Iron Age

D. Mihailović (✉)
Faculty of Philosophy, University of Belgrade, Belgrade, Serbia
e-mail: dmihailo@f.bg.ac.rs

D. Antonović · A. Kapuran
Institute of Archaeology, Belgrade, Belgrade, Serbia
e-mail: d.antonovic@ai.ac.rs; a.kapuran@gmail.com

The role of the Central Balkans in European prehistory was largely determined by its geographical location and characteristics. In the past, the main migration corridors between Southwest Asia and Central and Western Europe passed through the Central Balkans, and the peninsula represented an important glacial refugium of Europe (Griffiths et al. 2004). Areas that provided optimal conditions for settlement (such as lowlands, river valleys, and basins) acted as the scenes of social and cultural interactions in different periods of prehistory. Cultural changes and population movements during these periods were undoubtedly greatly influenced by geographical factors. It is therefore not surprising that a multitude of evidence for demographic shifts and cultural and social contacts between different populations has been collected from the territory of Serbia. However, this territory also records some unique cultural manifestations, characteristic only of the Balkans.

2.1 Paleolithic

The evolution of hominins in the Balkans can be traced back to the late Miocene (Turolian) during which the Eastern Mediterranean experienced significant cooling and aridification. The discoveries of 7.2-million-year-old hominin fossils in Greece and Bulgaria (*Graecopithecus freybergi* and cf. *Graecopithecus* sp., respectively) indicate that major splits in the hominid family probably occurred outside Africa (Fuss et al. 2017). The oldest artifacts from the Central Balkans, dated to the early phase of the Middle Pleistocene, were discovered in the Balanica Cave Complex in Sićevo near Niš in the southeastern part of Serbia (Fig. 2.1).

The deepest layer of Mala Balanica, which was radiometrically dated to around 400 thousand years ago, yielded a fragment of a fossilized hominin mandible (Fig. 2.2). The fossil does not show Neanderthal-like morphological features and has thus been attributed to the species *Homo heidelbergensis* (Roksandic et al. 2018). The upper layers of

E. Manić et al. (eds.), *The Geography of Serbia*, World Regional Geography Book Series,
https://doi.org/10.1007/978-3-030-74701-5_2

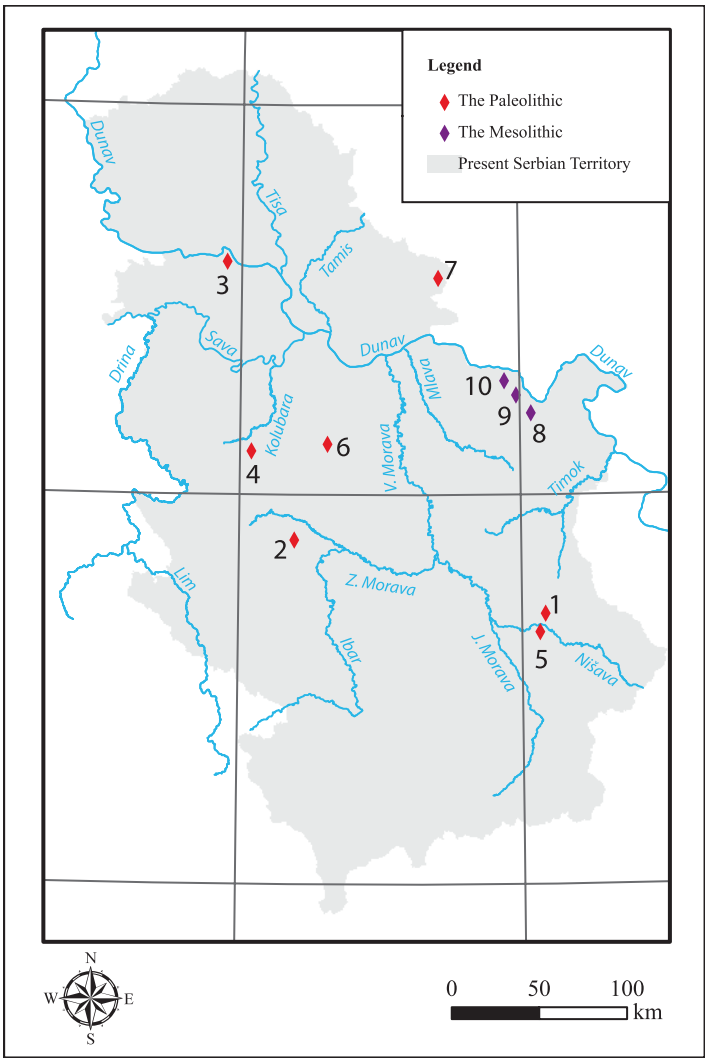


Fig. 2.1 Paleolithic and Mesolithic sites in present-day Serbia. (Modified from Mihailović and Zorbić 2017) Paleolithic: 1. Balanica, 2. Kosovska kosa, 3. Petrovaradinska tvrđava, 4. Šalitrena pećina, 5. Pešturina, 6. Risovača, 7. Crvenka – At; Mesolithic: 8. Vlasac, 9. Lepenski Vir, 10. Padina

Fig. 2.2 Fragmented mandible of *Homo heidelbergensis* from Mala Balanica. (Photo by M. Roksandić)

Mala Balanica (2a-2) and the lower layers of Velika Balanica (3a-3c) record numerous artifacts and faunal remains from the late Middle Pleistocene (400–200 thousand years ago), as well as traces of fireplaces. Balanica artifacts, including the typical Quina sidescrapers (Fig. 2.3), were found to have numerous parallels in the Yabrudian of the Levant, indicating that demographic shifts and/or cultural transmission occurred between the Middle East and Southeast Europe at the end of the Middle Pleistocene, during some of the interglacial periods (isotopic stages 9 or 7) (Mihailović and Bogićević 2016).

The Neanderthal economic activity was based on hunting different species of animals in the immediate vicinity of the habitation. For example, horses and bison were the most frequently hunted animals in the vicinity of Pešturina Cave (southeastern Serbia), which also records Neanderthal remains (Radović et al. 2019; Lindal et al. 2020) and remains of megafauna (Milošević 2016). At Hadži Prodanova Cave, the most numerous mammalian remains were those of ibex (Milošević 2016), while in the vicinity of Šalitrena Cave (western Serbia), Neanderthals mostly hunted for bovines, horses, and ibex, and less frequently for chamois and roe deer (Fig. 2.1).

Within the early Middle Paleolithic lithic material (which generally belongs to the typical Mousterian), Quina artifacts

Fig. 2.3 Stone tools from Mala Balanica. (Photo by D. Mihailović)

commonly occur with Levallois artifacts – indicating that Neanderthals planned their activities in advance (Hiscock et al. 2009). A technologically undifferentiated Typical Mousterian occurs in the interior of the Balkans during this period (Mihailović 2014). Mousterian with leaf-points, present in the Pannonian Basin and in the east of Balkans, has been confirmed so far only at two sites in Serbia: Risovača Cave (central Serbia) and the terrace in front of Šalitrena Cave (Mihailović and Zorbić 2017).

Although the Balkan Neanderthals likely died out 44–43 kya (as inferred by the available absolute dates in the region), this archaic group of hominins might have survived somewhat longer in the central and western parts of the peninsula (Mihailović 2017). So far, there is no conclusive evidence that their extinction was due to climate and environmental factors (Müller et al. 2011), nor by the effects of mega-eruption 40 kya (Lowe et al. 2012). The extinction of Neanderthals seems more likely to be linked to the emergence of modern humans, whose presence in the Balkans was confirmed at 43 kya (Tsanova 2008). In addition to archeological data, contact between the two populations is evidenced by the relatively high proportion of Neanderthal genes in the genome of the modern human from the Peştera cu Oase site in southwestern Romania (Fu et al. 2015).

The earliest evidence of the material culture of modern humans in Southeastern Europe comes from northern Bulgaria and southwestern Romania – where Paleolithic art has also been confirmed (Tsanova 2008; Géli et al. 2018). Most authors believe that modern humans settled Europe from southwest Asia and that this expansion occurred along the so-called Danube corridor (Chu 2018). This is supported by the Serbian Paleolithic record, which shows the majority of the early Upper Paleolithic (Proto-Aurignacian and Aurignacian) sites concentrated in the Danube and Sava River basins and peri-Pannonian lands, while there are none in the central and southern parts of the Balkans (Mihailović et al. 2011). However, it remains to be seen whether modern humans also used other routes for their migrations (Mihailović 2020).

Crvenka-At in eastern Vojvodina (Northern Serbian province) stands out among the Aurignacian sites in Serbia (Mihailović 1992) (Fig. 2.1). This multilayered site records an enormous quantity of lithic artifacts, which display characteristics seen in the Aurignacian sites of the Romanian Banat. While the simultaneity of these sites has not yet been confirmed, it can be assumed that this part of the Banat represented a unique social territory, that is, that the Aurignacian communities seasonally exploited the lowlands of the Banat and the low hilly zones of the Carpathian Massif (Hauck et al. 2018).

Several ephemeral settlements with a low number of lithic finds have been confirmed in eastern Serbia, suggesting that the Aurignacian communities seasonally inhabited hilly areas of this region too (Dogandžić et al. 2014). A significantly richer lithic assemblage was recovered from the Aurignacian layer at Šalitrena Cave in western Serbia, dated to 36–34 kya (Marin Arrojo and Mihailović 2017) (Fig. 2.1).

The majority of Upper Paleolithic sites in Serbia are those which record Gravettian and the early phase of Epigravettian. This is in accordance with the assumption that the Balkans represented one of the main European refugia during and just before the Last Glacial Maximum, not only for fauna and flora but for human populations as well. Moreover, the strong Central European affinity of the material culture of the north-

ern Balkans (Šalitrena Cave, Bulgarian sites) indicates that contacts between the communities that inhabited the Carpathian Basin and the northern Balkans intensified at the beginning of the Last Glacial Maximum, perhaps due to demographic shifts (Mihailović et al. 2011).

The Gravettian is best known from layer 4 at Šalitrena Cave, which yielded numerous artifacts and remains of fauna (Mihailović 2008a) (Map 1). Unlike Šalitrena Cave, most sites in eastern Serbia (e.g., Bukovac, Velika Cave, Pešturina, Velika Vranovica – Lower Cave) cannot be classified as base camps, but only as temporary or specialized camps related to ibex hunting and the acquisition of additional resources (Kuhn et al. 2014; Dimitrijević et al. 2018). During this period, the settlement of gorges and canyons had begun, fully apparent only in the late Pleistocene and early Holocene.

Recolonization of the hilly-mountainous zone occurred during the Late Glacial. While the interior of Serbia saw no increase in the Epigravettian presence, the traces of frequent settlement (probably seasonal in character) were recorded in the coastal zone and the territory of northern Montenegro.

2.2 Mesolithic

As is the case with the final Paleolithic, Mesolithic sites have been recorded mostly in the coastal zone of the Balkans. In the interior of the peninsula, however, Mesolithic sites are generally lacking. The notable exception is the Iron Gates region of the Danube River, where a large number of Mesolithic settlements were discovered and examined in the 1960s and 1970s, thanks to the protective research undertaken due to the construction of hydroelectric power plants on the Danube (Radovanović 1996). Since later studies in Serbia did not reveal any additional Mesolithic sites, the question arose as to whether the Central Balkans had been inhabited in the early Holocene at all (Perlès 2003). However, we cannot exclude the possibility that the Mesolithic settlements were erected directly along the banks of rivers, lakes, and seas and that they are today flooded, eroded, or covered with thick layers of alluvial deposits.

The beginnings of the settlement of the Iron Gates gorge go back to the end of the Pleistocene and the beginning of the Holocene, with sites such as Climente and Cuina Turcului on the left bank of the Danube, as well as Vlasac, Padina and Lepenski Vir on the right bank of the river (Radovanović 1996; Jovanović 2008; Borić 2011) (Fig. 2.1). The archeological and isotopic analyses have demonstrated that fishing had a significant role in these settlements (Bonsall et al. 2016), while still seasonally exploiting the hilly-mountainous zone (Mihailović 2008b). Adaptation to the new conditions of life was gradual, as evidenced by the transformation of chipped stone artifacts and the appearance of bone, antler, or horn tools (Mihailović 2007). In most settlements dated to this period, graves were also noted. According to some interpretations, the graves could have played the role of territorial markers, as a means for a community to claim territory (Radovanović 1996).

Favorable ecological conditions have prevailed in the Iron Gates during the Boreal age, which led to a boom in the hunting and fishing economy, reflected in the intensification and specialization in catching big fish, such as sturgeons and catfish (Živaljević 2017). At this time, the process of sedentarization of the Iron Gates Mesolithic communities began (Dimitrijević et al. 2016), and a local domestication of the dog is recorded at Vlasac (Radovanović 1999; Dimitrijević and Vuković 2015). There are also indications that contacts with Neolithic communities of Anatolia (Turkey) were already established during this period (Cristiani et al. 2016).

Many riverbank sites in the Iron Gates were abandoned during the global climatic oscillation which occurred around 6200 years ago, with the notable exception of Lepenski Vir (Bonsall et al. 2002). The site of Lepenski Vir existed between 6300 and 5900 BC, as a unique phenomenon in the Mesolithic of Europe (Srejović 1969). More than 50 dwellings with trapezoidal bases and limestone plastered floors were discovered at the site, many of which contained figurative and ornamental stone sculptures with fish-like features (Fig. 2.4). Burials were carried out both within (below the floors) and outside of the dwellings (Borić 2016).

At Lepenski Vir, the phase with trapezoidal buildings (i.e., Lepenski vir I) is concurrent with the appearance of the Neolithic in the Central Balkans (Radovanović 2006; Borić

Fig. 2.4 Stone sculpture from Lepenski Vir, the so-called Foremother. (Photo by National Museum, Belgrade)

2011). Interactions between the Mesolithic and Neolithic populations have been confirmed in the technological domain (e.g., the appearance of Neolithic elements in chipped and polished stone, bone and horn tool production), but also via molecular studies. Strontium and nitrogen isotope data have shown that there was contact between the local (hunter-gatherer) and newly arrived (farmer) populations (Borić and Price 2013). Furthermore, aDNA analyses of the Lepenski Vir hunter-gatherers have demonstrated a clear genetic affinity toward northwestern Anatolian Neolithic populations (Mathieson et al. 2017), confirming the Iron Gates as a region of interaction between different populations.

2.3 Neolithic and Eneolithic

The emergence of the Neolithic in the Balkans at the beginning of the sixth millennium BC was driven by the influx of cultivated cereals and domesticated animals from the Middle East and new technological developments such as the production of pottery, in favorable ecological conditions. This change was accompanied by dramatic demographic growth and the formation of communities much larger than those of Paleolithic and Mesolithic. The Neolithic Starčevo and Vinča cultures occupied territories much larger than present-day Serbia, encompassing the bordering parts of neighboring countries too, and, taken together, lasted for almost two millennia.

During the Neolithic, areas south of the Sava and Danube Rivers were more densely populated than those in the north (i.e., the present-day northern Serbian province of Vojvodina). The reason for this probably lies the fact that wetlands covered vast expanses of today's northern Serbia, from prehistory until the construction of the irrigation system in the eighteenth century. Prehistoric settlements were therefore positioned on elevated ground, not prone to flooding.

Two cultures dominated the Neolithic landscape of the Central Balkans: the Starčevo (older) and the Vinča (younger) cultures (Fig. 2.5). The northern part of present-day Vojvodina was inhabited by people of the Körös culture during the Early and Middle Neolithic and by those of the Tisza culture during the Late Neolithic. Continuous development

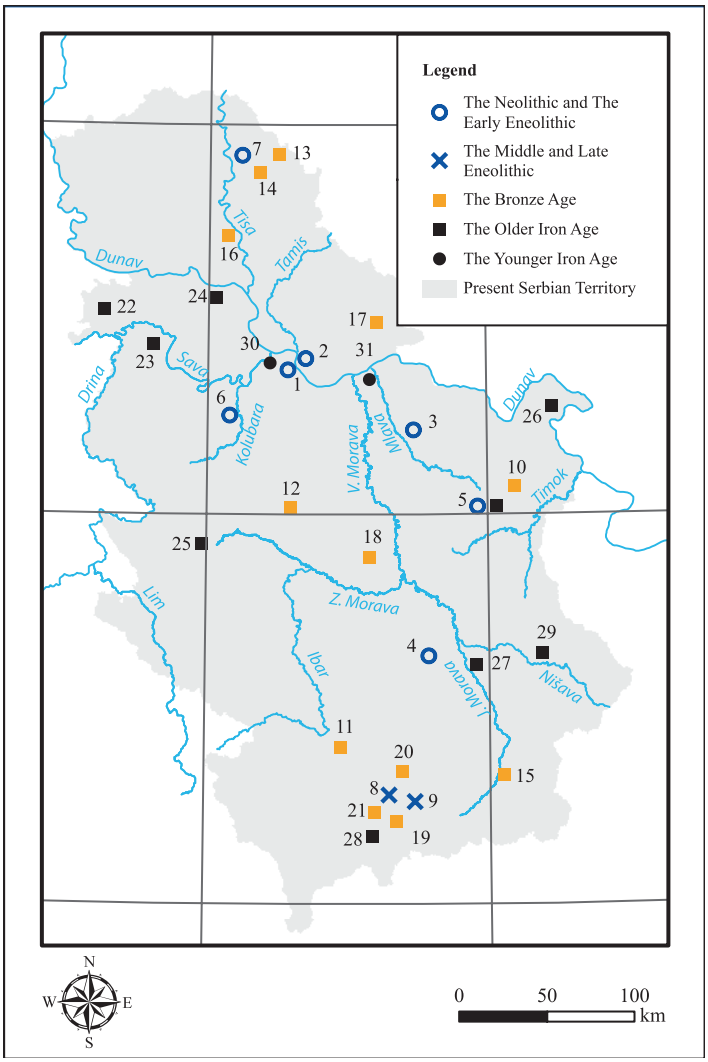


Fig. 2.5 Neolithic, Eneolithic, Bronze Age, and Iron Age sites in present-day Serbia, all of which are mentioned in the text. (Modified Mihailović and Zorbić 2017)
Neolithic and Early Eneolithic: 1. Vinča, 2. Starčevo, 3. Belovode, 4. Pločnik, 5. Zlotska pećina, 6. Crkvine-Stubline, 7. Čoka; *Middle and Late Eneolithic*: 8. Gladnice, 9. Hisar-Suva Reka; *Bronze Age*: 10. Ružana, 11. Jarmovac, 12. Prljuša-Mali Šturac, 13. Mokrin, 14. Ostojićevo, 15. Meanište, 16. Feudvar, 17. Židovar, 18. Ljuljaci, 19. Iglarevo, 20. Graštica, 21. Karagač; *Early Iron Age*: 22. Gradina upon Bosut, 23. Gomolava, 24. Kalakača, 25. Mojsinje, 26. Vajuga-Pesak, 27. Vrtište, 28. Pećka Banja, 29. Sinjac Polje; *Late Iron Age: 30.* Karaburma, 31. Pećine

of Starčevo and Vinča cultures indicates that the same population inhabited these areas during a period of almost 2000 years.

The people of the Starčevo and Vinča cultures generally preferred their settlements to be located near rivers, and only quite rarely in mountainous areas. In the Early Eneolithic, however, the settlement pattern changed, as the proportion of settlements located at higher altitudes and caves increased, while river valleys were still densely populated. This was likely due to more frequent foreign invasions during this period, which forced the population to withdraw to better-protected areas.

There were two basic types of settlements in the Neolithic and Early Eneolithic: lowland and hillfort settlements (Ristić-Opačić 2005). However, no single settlement type was specific to a particular phase of the Neolithic and Early Eneolithic. Hillfort settlements were erected in the areas south of the Sava and Danube Rivers. Cave settlements begin to appear only in the Eneolithic, which can possibly be related to the climate catastrophe in the southeastern part of the Balkan Peninsula (Todorova 2007) and migration caused by it. Caves represented ideal locations for settlements as they provided coolness, moisture, and security.

Vinča culture settlements occupied between 0.5 and 200 ha (Chapman 1981), and the larger settlements (such as Crkvine-Stubline in Posavina, Fig. 2.5) supported at least 2000 and possibly up to 3500 inhabitants (Crnobrnja 2014). On the other hand, Starčevo culture settlements were probably inhabited by smaller communities, as inferred from the less dense spatial distribution of residential buildings.

Agriculture certainly represented the main subsistence strategy during Neolithic and Eneolithic. The most frequently cultivated plant species were einkorn wheat (*Triticum monococcum*) and emmer wheat (*Triticum dicoccum*), while other types of cereals were also widely represented: bread wheat (*Triticum aestivum/durum*), barley (*Hordeum vulgare*), and millet. Flax (*Linum usitatissimum*) was probably grown for the production of fiber and oil (Tasić and Filipović 2011). In addition to cultivated plants, Neolithic and Eneolithic communities also consumed wild plants, and collecting of wild fruits certainly represented an important subsistence practice during those times.

Livestock farming was limited to several species. The presence of domesticated animals such as cattle, sheep, goats, pigs, and dogs was confirmed in several Neolithic sites. The people of Starčevo culture predominantly herded cattle, in contrast to the Early Neolithic localities in Greece, Hungary, and the Carpathian region, where sheep and goats were prevalent. Adult cattle were represented in a much higher proportion than young animals (Stojanović and Bulatović 2013), so it is assumed that these bovines were raised primarily for milk and as draft animals.

Fig. 2.6 Anthropomorphic figurine from Vinča. (Photo by N. Tasić)

Neolithic and Early Eneolithic communities had extensive craft production, as evidenced by the numerous and varied pottery, stone and bone tools, weapons, and ornamental and cult objects found at sites throughout Serbia (Figs. 2.6 and 2.7) (Antonović 2003; Šarić 2014; Vitezović 2011; Vuković and Miloglav 2018).

Wood was used extensively in the production of furniture and items for daily use, as evidenced by the numerous stone axes, adzes, and chisels, as well as by the prints of rectangular planks in daub fragments which represented parts of the walls of dwellings. The diversity of rock types used as raw materials for production of tools and ornamental and cult objects indicates that Neolithic inhabitants of the Central Balkans had extensive knowledge of the geological resources. Amorphous pieces of malachite, azurite, galenite, and cinnabarite, which were discovered at some sites of the Starčevo and early Vinča cultures (Antonović 2014), imply an early knowledge about different types of ores, which would eventually lead to the discovery of metallurgy around 5000 years BC. The technology of copper smelting and casting already reached an enviable level in the earlier phases of the Vinča culture and continued to develop during the Early Eneolithic, as evidenced by the production of massive copper tools. The extensive production of smaller tool types for daily use (e.g., awls, chisels) began only after the Vinča culture, during the Middle and Late Eneolithic, throughout the territory of Serbia.

Fig. 2.7 Stone mortar from the site of Vinča-Belo Brdo. (Photo by N. Tasić)

Trade contacts are indirectly recorded in some Neolithic and Eneolithic settlements. Luxury goods such as obsidian (volcanic glass) and *Spondylus* bivalve shells were imported from geographically remote areas. On the other hand, decorative items characteristic of the Vinča culture were exported, as exemplified by the marble button-like items discovered at the Tisza culture site of Čoka in Vojvodina (Fig. 2.5). Salt (halite) was likely one of the central goods in prehistoric exchange networks since it has an important role in human nutrition (Tasić 2009). This pivotal resource could have been obtained from the mines in Tuzla (Bosnia) and Transylvania (Romania), but it could have also been obtained from saline soils found along the Danube, Tisza (Tisa), Maros (Mориš), and Temes (Tamiš) Rivers (Tasić and Filipović 2011).

Eneolithic period was marked by frequent cultural shifts, and the territory of today's Serbia never again displayed the cultural unity seen during the Neolithic. As the great Vinča culture came to an end around the mid-fifth millennium BC, the territory of Vojvodina was occupied by the southward expanding populations of the Tiszapolgár and Bodrogkeresztúr cultures, respectively. The communities of the Bubanj-Sălcuţa-Krivodol cultural complex began to settle in the territory of eastern and southern Serbia even before the end of the Vinča culture. At the beginning of the fourth millennium BC, after several centuries of peaceful and stable development, these cultures were replaced by the new ones, in the waves of migration and cultural change which characterize the Eneolithic period.

The Middle to Late Eneolithic settlement patterns on the territory of Serbia were strongly influenced by the climatic conditions that prevailed during the fourth and third millennium BC, as well as by the features of relief. The hilly-mountainous terrain and pastoral lifestyle led to a new way of organizing settlements south of the Sava and Danube Rivers, and the increased demand for copper during this period resulted in intensified colonization of the areas rich in this mineral resource (i.e., western and eastern Serbia).

Climatic changes (a noticeable temperature drop and a decrease in humidity) at the end of the fourth millennium BC led to the thinning of the forest cover and the expansion of the grasslands. As a result, many fertile soils have turned useless (Srejović 1981), which in turn forced the central Balkan populations to shift from sedentary agriculture to nomadic pastoralism, characterized by seasonal population movements from the highlands to the lowlands. Domestication of the horse by the nomadic tribes which inhabited the grasslands between the Volga River and the Ural Mountains represents a key point in this change of lifestyle. More waves of settlement followed, especially in the northern Pannonian regions of Serbia and in the valleys of large rivers in its central part. The Cernavodă III-Boleráz, Baden, and Kostolac cultures alternated successively, until the arrival of predominantly nomadic populations from the Pontic and Central Asian steppes (Gladnice and Hisar sites in southern Serbia, Fig. 2.5). These nomadic cultures constructed large tumuli (burial mounds), as exemplified by those of the so-called Pit Grave or Ochre Grave culture, about 1000 of which have been recorded in Serbia (Tasić 1983).

The Late Eneolithic period is characterized by (among other things) an increase in the production of copper items, especially cruciform axes (Jovanović 1971), the majority of which were discovered in the areas of the most intensive copper exploitation (northeastern Serbia). These items were also found in other regions of Serbia, where they probably arrived through the exchange, as valuable and luxury items. The economic transition to metallurgy also led to changes in the religion and treatment of the dead, which is best reflected in the abandonment of skeletal burial (inhumation) and the adoption of cremation (Jovanović 1971).

Settlements in the plains of the Pannonian Basin, as well as those on the terraces of large rivers in the Central Balkans, retained the form of the earlier Neolithic settlements but differed by having smaller numbers of residential buildings. At the same time, a new type of high-altitude settlement was emerging in the hilly-mountainous zones of northeastern Serbia. Groups of smaller residential buildings were constructed in inaccessible locations (e.g., above canyon entrances, at elevations above river mouths), and as a rule protected by a steep rocky cliff on one side (Kapuran 2014). It is assumed that these settlements represented landmarks in the landscape, occupied by the shepherds who were herding their animals in the surrounding territories during the summer months.

2.4 Bronze Age

The earliest Bronze Age in the territory of Serbia is documented by the sites of the Vinkovci and Maros cultures in the Pannonian Basin, Belotić-Bela Crkva in western Serbia, and Bubanj–Hum III culture in central and southern Serbia (Fig. 2.5). These cultures spanned almost the entire territory of present-day Serbia, although recent research in the field of archaeometallurgy has suggested that the copper-rich areas were the most densely populated ones. In addition to those located in eastern Serbia, there are indications that other copper mines had been also exploited during the Bronze Age, such as Prljuša-Mali Šturac on Rudnik Mt. in central Serbia (Antonović 2017) and Jarmovac-Majdan near Priboj in southwestern Serbia (Derikonjić 2010) (Fig. 2.5).

The Early Bronze Age in Serbia is characterized by a small number of recorded settlements, but a large number of explored necropolises. While only a single grave from the site of Surčin near Belgrade is attributed to the Vinkovci culture, a multitude of burial sites concentrated in the vicinity of Kikinda in Vojvodina are attributed to the Maros cultural group, with Mokrin and Ostojićevo (Girić 1971) necropolises probably being the best researched ones (Fig. 2.5). Hundreds of individuals were inhumated at these sites, along with grave goods such as pottery vessels and copper, bronze, or gold jewelry. The communities of the Belotić-Bela Crkva culture in western Serbia mostly inhumated their deceased, but cremations are also recorded; the burials were covered by stone or earth mounds of variable size (Fig. 2.5). At Meanište necropolis, located in the south of Serbia near Vranje (Fig. 2.5) and dated from the twenty-second century to the eighteenth century BC, only cremation burials are recorded, where the remains of the deceased were placed within circular stone structures (Bulatović et al. 2016). The material culture of the Early Bronze Age communities of southern Serbia displays strong influence of cultures located further south on the Balkan Peninsula.

During the Middle Bronze Age, the territory of today's Serbia was influenced by two large cultural complexes known as the Vatin and Bubanj-Hum IV. The contact between the territories of these two complexes was situated somewhere along the rivers of Zapadna Morava and Nišava (Fig. 2.5). In contrast to the previous period, several Middle Bronze Age settlements and burial sites were recorded in the plains of the Pannonian Basin; in the western part, however, no settlements dated to this period have been recorded. In addition to typical open-air settlements, the most important Vatin culture sites are the so-called tell-culture settlements such as Feudvar near Mošorin and Židovar near Vršac (Fig. 2.5). Feudvar was surrounded by powerful rampart defenses, reinforced with palisades and trenches, which enclosed houses of uniform size, organized in rows, with relief-decorated facades. A tell-type settlement of Židovar was formed on one of the hills on the outskirts of Deliblato Sands (Fig. 2.5). These sites likely represented the economic and political centers of the communities in the southern Pannonian Basin. Numerous other settlements were recorded in the vicinity of Vršac, Pančevo, Belgrade, Požarevac, and along the Danube (Fig. 2.8). Toward the end of this period, there was a strong influence of the so-called Transdanubian Encrusted Pottery culture.

Judging by the stylistic and typological characteristics of pottery, a distinct variant of the Vatin culture was present in the territories south of the Sava and the Danube. This culture was originally described based on the material from the site of Ljuljaci near Kragujevac (Bogdanović 1986), but is now known from a number of similar settlements thanks to new discoveries during the last few decades. The Middle Bronze Age is also marked by an increase in bronze production, thanks to the connections established with the mining areas in the Carpathians and Eastern Serbia.

During the Developed Bronze Age, the Vatin cultural complex collapsed. This was most likely due to the new climatic fluctuations of the mid-second millennium BC, and the resulting southward migratory waves of people from the Danube region.

The first migratory wave is marked by the influx of populations of the Transdanubian Encrusted Pottery culture, which originated in areas along the Danube where it persisted in enclaves until the very end of the Bronze Age (i.e., the cultural group Dubovac-Žuto Brdo-Grla Mare). The territories previously occupied by the populations of the Vatin complex (i.e., Vojvodina, Danube and Sava valleys, western Serbia) were now dominated by the Belegiš culture, well-known for its numerous necropolises (Gomolava, Karaburma, Feudvar) with cremated deceased (Fig. 2.5). Since its inception, the Belegiš culture had been under the influence of newly arrived populations from central Europe, associated with the Hügelgräber and Channeled Pottery cultures (Tasić 1972a). This interaction was rather gradual and peaceful in nature.

Fig. 2.8 Votive cart from Dupljaja. (Photo by National Museum, Belgrade)

While the communities of the Tumulus (Hügelgräber) culture practiced biritual burials (i.e., both inhumations and cremations) under tumuli or flat graves – as exemplified by the necropolis of Velebit (Kapuran 2019), the Channeled Pottery culture is characterized by cremations under flat graves exclusively.

New cultures which almost exclusively practiced cremation burials were also emerging in the areas south of the Sava and Danube: the Paraćin culture in central Serbia; the Brnjica culture in southern Serbia, and in the present-day southern Serbian Autonomous Province of Kosovo and Metohija (with sites such as Graštica near Priština, Iglarevo at the Kosovo-Metohija border, and Karagač; Fig. 2.5) (Ljuci 1998). While Graštica represents a typical (cremations-only) Brnjica culture burial site, the two necropolises at Iglarevo also record inhumation burials (in addition to cremations). These sites yielded large numbers of bronze items, including weapons and jewelry (e.g., Mycenaean swords and long decorative needles).

The developed Bronze Age had seen a noticeable rise in the production of bronze, before reaching the peak during the next phase of the Bronze Age. Significantly, there was a resurgence of the production of anthropomorphic figurines related to religious rituals, with the artistically most elaborated objects occurring within the Dubovac-Žuto Brdo-Grla Mare cultural group.

The last two centuries of the second millennium BC are denoted in Serbian archeology by several terms, such as the Late Bronze Age-Early Hallstatt (Garašanin 1954), the Transitional period (Garašanin 1983, 1994; Vasić 1977), or the Iron Age I (Garašanin 1973, 1975). In the central European chronological scheme, this period is denoted as Hallstatt A (A1–A2). Today, it is clear that the first objects made of iron appear in the territory of present-day Serbia during the first millennium BC. Furthermore, since this period is marked by the largest number of recorded bronze objects during the entire prehistory, the appropriate term for it would be the "Bronze hoards horizon" (Tasić 1983). According to Garašanin (1983), the period can be divided into four phases, all of which except the first have the characteristics of the Gava group and the Urnfield (Urnenfelder) culture.

During the last two centuries of the second millennium BC, the Pannonian Basin was inhabited by populations that utilized black polished and channeled pottery of the Gava group and practiced a sedentary lifestyle, as inferred by the research of vast necropolises with cremated deceased found across Vojvodina. This cultural group is also well-known for finds of large accumulations of bronze objects (hoards) which included various types of weapons, tools, jewelry, and ingots, either stored in larger ceramic vessels or directly buried in the ground. Presumably, these hoards had a votive character, that is, they represented symbolic offerings to gods (i.e., the wealth bestowed by a community or individual upon the gods to pacify them).

Hoards of bronze objects are most prevalent in the Pannonian Basin, while being found in much smaller numbers in the region bounded by the Sava and Danube in the north and the Zapadna Morava and Nišava on the south (Fig. 2.9). There are no known bronze hoards in the territories further to the south.

At one point, there were significant cultural changes and demographic shifts in central and southern Serbia. Indigenous communities that inhabited the plains for centuries were beginning to retreat into the inaccessible mountainous zones, most likely due to the imminent threat posed by hostile pop-

Fig. 2.9 Rudnik bronze hoard. (Photo by A. Đorđević)

ulations coming from the north. The scorched settlements of indigenous communities were thereafter occupied by the populations associated with the Channeled Pottery cultural group (Bulatović 2007), indicating that the population shift in the area had taken a violent turn. Therefore, the appearance of channeled pottery represents the clearest evidence of a new order, established after the destruction of indigenous settlements by the invaders from the north. These conquerors are, among other things, associated with the massive production of diverse bronze weapons.

2.5 Iron Age

According to Vasić (1990), the Early Iron Age can be divided into the Early Phase (tenth to eighth centuries BC; Hallstatt B), the Developed Phase (eighth to sixth centuries BC; Hallstatt C), and the Late Phase (sixth to fourth centuries BC; Hallstatt D), ending with the arrival of the Celts. Systematic archeological excavation of the settlement of Hisar in Leskovac (southern Serbia) has demonstrated that the earliest iron axes were used at the beginning of this epoch (Bulatović and Kapuran 2013). Another early record of an iron axe comes from the site of Gradina upon Bosut (Vojvodina), dated to the eighth century BC (Medović and Medović 2011, 65). This early stage is also documented at the necropolis of Mojsinje near Čačak (western Serbia), with a find of a single large-sized fibula with triangular foot (Vasić 2014). A number of iron objects were also recovered from the collective burial at Gomolava in Posavina (Tasić 1972b) (Fig. 2.5). All known settlements dated to this period (i.e., Gradina upon Bosut, Gomolava, Kalakača, Židovar, Titelski breg) are located in the territory of the northern Serbian province of Vojvodina (Fig. 2.5). These sites record numerous storage pits used to store cereals, marking the return to agriculture and a sedentary lifestyle (Vasić 1990; Jevtić 2011). There is also a change in funerary customs, as communities return to inhumation burial rites. At the group burial at Gomolava (Tasić 1972b) and the burial site of Mojsinje near Čačak (western Serbia), grave goods are usually represented only by a single ceramic vessel, while bronze grave goods are rare. In other cases, only individual burials were found.

During the eighth to sixth centuries BC (the Developed Phase of the Early Iron Age; Hallstatt C), elements related to the Basarabi culture dominated, first in eastern Serbia and later in its wider territory. With their origin in the east (Oltenia), these elements represent a reflection of the Thraco-Cimmerian or the Carpathian-Lower Danubian cultural complex. At the site of Vajuga-Pesak in the Iron Gates, the only known Serbian necropolis dated to this period, the individuals were buried with jewelry and weapons made of bronze and iron (Popović and Vukmanović 1998) (Fig. 2.5). The settlements recorded in the hilly-mountainous zones of eastern Serbia were ephemeral in character, and the subsistence strategy of these communities was oriented more toward animal husbandry (Kapuran 2014).

The first influence of the Glasinac culture can be observed during this period in western and southwestern Serbia, as exemplified by the aforementioned iron fibula from Mojsinje necropolis near Čačak. In the southern Serbian province of Kosovo and Metohija, this period is recorded in the earlier