

A STRONG CLASS OF SERIOUS SCHOLARS:
THE POWER DYNAMICS OF KNOWLEDGE PRODUCTION IN THE
EARTH SCIENCES IN SERBIA, 1880-1914

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I hereby declare that this dissertation contains no materials accepted for any other degrees in any other institutions and no materials previously written and/or published by another person otherwise noted.

Abstract

This dissertation examines the social and political factors that conditioned the establishment of the earth sciences in Serbia during the long nineteenth century. It presents the development of scientific circles, institutions, and practices on the European periphery and analyses the power dynamics that stood behind them. At the beginning of the nineteenth century, Serbia was an Ottoman province that was striving to become an independent nation state, in which it ultimately succeeded in 1878. Science was in Serbia intrinsically dependent on the process of state-building and the formation of state elites, in which scholars became the carriers of the process of the transformation of society. The formation of scientific circles, their recognition in Serbian society, and the establishment of institutional, educational, and research practices depended on their successful embeddedness in the contemporary political, intellectual, and social networks.

This study exemplifies how notions of expertise and epistemic fields were constructed in the earth sciences, and how scholars divided research and responsibilities among themselves. Through the examination of personal notes, diaries, correspondence, and scientific publications, I have identified the power dynamics and strategies that led some of them to achieve the status of experts, recognised as such either by their colleagues, or by the state administration. In this respect, I have given special attention to the role that state and politics had on the

dynamics of these circles, as well as to the role international scientific networks played in the recognition of their expertise.

Particular focus is given to the careers of Jovan Žujović and Jovan Cvijić, who established scientific circles around them. Žujović became the primary organiser of scientific research in mineralogy, petrography, geology, palaeontology, and seismology by mobilising his students to study abroad and conduct research in earth sciences. The expansion of the circle led to the creation and division of separate scientific sub-disciplines in which scholars established their expertise. Through the interaction with international scientific networks, these scholars were looking for recognition and affirmation of Belgrade as a new international scientific centre. In this endeavour, Jovan Cvijić turned out to be the most successful. Because of his pragmatically chosen topics, he managed to distinguish himself both internationally and in Serbian public opinion. Both Žujović and Cvijić managed to assert themselves as the founding figures of Serbian science, yet that role depended on their social and political capital as much as it did on their academic capital. Science was strongly embedded in social and political processes and its development was conditioned by successful interaction across multiple social networks.

To my sister, Vesna

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List of abbreviations

AS – Arhiv Srbije [Archive of Serbia]

ASANU – Arhiv Srpske akademija nauka i umetnosti [Archive of the Serbian Academy of Sciences and Arts]

DSS – Društvo srpske slovesnosti [Society of Serbian Literature]

GRA – Geologische Reichsanstalt

NHM – Natural History Museum

SANU – Srpska akademija nauka i umetnosti [Serbian Academy of Sciences and Arts]

SKA – Srpska kraljevska akademije [Serbian Royal Academy]

SUD – Srpsko učeno društvo [Serbian Learned Society]

Note on transcription of old Cyrillic letters:

In the transcription of the old Serbian texts, made before the standardisation of alphabet, I tried to follow instructions of the Library of Congress regarding transcription of Serbian, Russian, and Old-Slavonic texts. The problem was in diverse and non-consistent use of variants of letters. For this reason I had to make compromises between styles. The list below is a summary of transcription of all letters that do not have corresponding Latin letters in modern Cyrillic and Latin alphabets.

ѣ = y

ѡ = '

і = i

ї = ĭ

ѣ = §

шт = ś

я (malo jus) = ă

ю = iu

оу = ou

ѣ = ĭ

и = í

(jat) = ě

у = ŷ

і-а = ä

э = ę

ω = w

ѣ = ", except when found at the end of the word. In that case it is not transcribed.

θ = ʈ

(veliko jus) = ö, Ɔ

dz = ɖ

kxi = ɣ

Introduction

Science in Serbia has existed on the periphery of scientific activities in Europe, yet its impact has not been without international significance. Their peripheral status did not prevent scholars in Serbia from actively participating in international exchange of knowledge, specimens, and instruments. However, their orientation towards their own local interests, their exploration of their immediate environment and their political engagement also make them significant for history of science in addition to their international cooperation. This study of the early years of the earth sciences in Serbia will provide insights on the power dynamics of a small-scale scientific environment that engaged in active exchange with large scientific centres, and it will examine both the implications for the relations between centres and peripheries, and the process of construction of epistemic borders between scientific disciplines, formed as a result of these power dynamics. Knowledge production in Europe depended on interconnectedness of diverse academic and professional centres, and earth scientists of Serbia used all available opportunities to seek their way to recognition.

In this study I examine the processes of knowledge production from the perspective of a peripheral scientific environment. While the core practices of earth sciences were ramified in Western European academic centres, nineteenth century scholars in Serbia strove towards finding their own recognition as experts in their respective scientific fields. The remoulding of scientific practices in the earth sciences in the Serbian academic environment offers insights on the dynamics of the centre-

periphery relationship, where transfer of knowledge and practices from Western academic centres is regarded as an entangled history of uneven mutual influences. Specifically, my intention is to bring evidence about the creation of social power structures that depended on scientific work and production of knowledge, through which scholars determined their reputation and expertise. These insights lead to better understanding of the processes that accompany the formation and expansion of scientific research and knowledge production on the peripheries of Europe, but also outside of Europe, in colonies and independent countries that invested in the development of their own scientific environment.

Consequently, my intention is to bring a fresh perspective to studies of science and technology on the European periphery, by demonstrating how Serbian scientists developed strategies for coping with their peripheral roles, and how they strove to ascend to a more central position in international and local frameworks. At the same time, my research has been inspired by the wave of recent scholarship on imperial and colonial science. By countering diffusionist models of the development of science, these approaches have emphasized the relevance of local knowledge and the active participation of scholars from the peripheries in global scientific developments. At the same time, they assert that scientific work was not without political significance, and particularly during the long nineteenth century it was used as an instrument of political domination.

In Europe, the majority of research in history of science has focused on major scientific centres in Great Britain, France, Germany, and in part, Italy. Particularly, in history of earth sciences, the scholarship of these countries had the most significant impact on the development of scientific disciplines and standardisation of methods, which is why in contemporary scholarship there is much emphasis on the work

conducted by scientists like Steno, Hutton, Werner, Cuvier, Brongniart, Lyell, von Buch, Sedgwick, and Murchison, who established dominance over their scholarly environments in knowledge production. While it is indisputable that the most significant discoveries were accomplished in several scholarly centres of these few countries, their work depended on cooperation with scholars from the peripheries, who sought their own recognition through international networks by giving contributions about their own locales.

In the last couple of decades, an international collaborative project, under the name *Science and Technology on the European Periphery* had gathered historians of science from Greece, Spain, Portugal, Turkey, and Denmark together in order to bring more attention to the production of knowledge on the European periphery. Their goal has been to overcome narratives of transfers of knowledge and practices from the centres to the peripheries that were present in diffusionist interpretations of scientific development, and point rather towards active appropriation, mis-appropriation, and re-appropriation of knowledge and practices on the peripheries. Bound by specific local conditions, political, ideological, and social factors, scholars from the peripheries modified the appropriated knowledge and practices. “What the local scholars do when faced with the new ideas and practices is to continuously formulate fluid strategies of appropriation, and in order to understand these strategies of appropriation historians of science will have to pay more attention to cultural affinities, dispositions for adoption, and potent proclivities to resistance.”¹ What this approach stresses is “to bring to surface the specificities of local sites which have had a decisive role in knowledge production, and to underline the

1 Kostas Gavroglu, “The STEP (Science and Technology in the European Periphery) Initiative: Attempting to Historicize the Notion of European Science,” *Centaurus*. Vol. 54 (2012): 316.

decisive active role of all those whose intellectual, professional and often political interventions shaped the process of appropriation.”²

At the same time, the goal of this initiative is to take science on the peripheries away from the sphere of national history and contributions to national scientific canons. As Gavroglu points, national histories of science easily slide into parochialism and ignore international context. “Entrenched historiographical mentalities often carry with them ideologies of national grandeur, while others project the rhetoric of modernization.”³ In a similar manner, my intention is to take the story about the development of science in Serbia outside the parochial narratives, and offer an alternative to contemporary discourses of Serbian historiography.

While national histories of science challenged the notion of universal science, as James Secord pointed out, at the same time they frequently remain aligned with nationalism and descend into parochial antiquarianism. In his view, situating knowledge can sometimes produce a conclusion, rather than a method, reinforcing the previously established paradigms, instead of questioning them. Thus, researchers should be careful while deconstructing the process of knowledge production. Secord emphasised the social nature of knowledge production, and argued that it should be treated as a form of communication and science as a practical activity.⁴

Such decentralized visions of history of science have appeared in the last couple of decades in research dealing with imperial and colonial science. It had challenged diffusionist views by demonstrating the evidence of knowledge production systems from outside of Europe in the formation of science. In a 1967 article, George Basalla depicted the transfer of knowledge from European academic centres to other parts of the world as

2 Kostas Gavroglu et al., “Science and Technology in the European Periphery: Some Historiographical Reflections,” *History of Science*, vol XLVI (2008): 154.

3 Gavroglu, “The STEP,” 318.

4 James A. Secord, “Knowledge in Transit,” *Isis*, vol. 95, no. 4 (December 2004): 655-668.

a process during which knowledge and practices of European academic centres were transferred to countries in the peripheries. For him, the transfer was one directional and required the eradication of the local belief systems and implementation of the European models.⁵ This essay received a wide response from scholars and became one of the mostly criticized articles in the history and philosophy of science. The idea of European supremacy faced condemnation and prompted further discourse on the issue. The response came from numerous authors who focused on the role of science in the establishment of empires, which consequently incited a discussion on the role of local knowledge of the indigenous populations with whom researchers interacted during their explorations.⁶

The recognition of local knowledge systems inspired further research on transfers of knowledge and practices, and on interactions between colonial science and local cultures. The interdisciplinary cooperation between academic centres across the globe resulted in several congresses and edited volumes which demonstrated new perspective on the appropriation of Western science and technology. Significant contributions in the field of history of imperial and colonial science and technology were given by scholars like Roy MacLeod, Kapil Raj, Patrick Petitjean, Sverker Sörlin, and Lewis Pyenson. The discourse on the relationship between knowledge and power perceived science as a tool of domination of European empires in their colonies and as a legitimising principle for the exploitation and transformation of local societies according to European models.⁷

5 George Basalla, "The Spread of Western Science," *Science* vol. 156 no. 3775 (May 5, 1967): 611-622.

6 David Wade Chambers and Richard Gillespie, "Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge," *Osiris*, 2nd series, vol. 15 Nature and Empire: Science and the Colonial Enterprise (2000): 221-240.

7 For example: Patrick Petitjean, Catherine Jami, and Anne Marie Moulin (eds.), *Sciences and Empires: Historical Studies about Scientific Development and European Expansion* (Dordrecht: Kluwer Academic Publishers, 1992); Patrick Petitjean (ed.), *Les sciences hors d'Occident au XXe siècle Vol. 2: Les sciences coloniales, figures et institutions* (Paris: Orstom, 1996); Feza Günergun and Dhruv Raina (eds.), *Science between Europe and Asia: Historical Studies on the Transmission, Adoption, and Adaptation of Knowledge* (Dordrecht: Springer, 2011); Roy M. MacLeod and Philip Rehbock (eds.), *Nature in its Greatest Extent: Western Science in the Pacific* (Honolulu, HI: University of Hawaii Press, 1988); Roy M. MacLeod and Milton James Lewis, *Disease, Medicine, and Empire:*

The significance of knowledge production on the peripheries for general understanding of history of science presented in these studies thus contrasted the overwhelming Euro-centric perception of science. While it is undeniable that science originated and expanded in Western Europe, the systematic nature of scientific work incorporated a large variety of local knowledges to itself. Consequently, knowledge production became strongly attached to political and social power, both on the national and international level. David Turnbull asserts that all knowledge systems are inherently local and that the development of “knowledge production systems” requires an accumulation of local knowledge and practices and their standardisation into a cohesive “assemblage.” Turnbull claims that Western science should not be regarded as one unified knowledge system, while implying that locality played a significant role in the development of scientific traditions in Europe. Consequently, he understands “research fields or bodies of technoscientific knowledge/practices” as assemblages whose “disparate elements are rendered equivalent, general and cohesive” through active and evolving processes which assemble various social strategies and technical devices.⁸ Heterogeneous knowledge practices of Western science are thus assembled, and redistributed between their practitioners, transferring the “incommensurable and isolated knowledge” in space and time.⁹ Accordingly, Turnbull characterises knowledge systems

Perspectives on Western Medicine and the Experience of European Expansion (London: Routledge, 1988); Roy M. MacLeod, *Dominions Apart: Reflections on the Culture of Science and Technology in Canada and Australia, 1850-1945* (s.l.: Canadian Science and Technology Historical Association, 1994); Deepak Kumar and Roy M. MacLeod (eds.), *Technology and the Raj: Western Technology and Technical Transfers to India, 1770-1947* (New Delhi: Sage Publications, 1995); Roy M. MacLeod (ed.), *Osiris*, 2nd series, vol. 15, *Nature and Empire: Science and the Colonial Enterprise* (2000); Patrick Petitjean, “Sciences et empires: Un thème prometteur, des enjeux cruciaux,” in *Science and Empires*, 3-12; Sverker Sörlin, “National and International Aspects of Cross-Boundary Science,” in *Denationalizing Science: The Contexts of International Scientific Practice*, eds. Elizabeth Crawford, Terry Shinn, and Sverker Sörlin (Dordrecht: Kluwer, 1993), 43-72; Lewis Pyenson, *Cultural Imperialism and Exact Sciences: German Expansion Overseas, 1900-1930* (New York: P. Lang, 1985); Idem, *Civilizing Mission: Exact Sciences and French Overseas Expansion, 1830-1940* (Baltimore: Johns Hopkins University Press, 1993).

8 David Turnbull, “Local knowledge and comparative scientific traditions,” *Knowledge & Policy* vol. 6, no. 3/4 (1993-4): 33.

9 Ibid.

as having ability to connect and equate knowledge and practice, which he does not find inherent in the knowledge itself.¹⁰ Therefore, Western science was for the purposes of this research treated as varieties of Western European knowledge systems whose assemblages evolved and transformed in time and space through various processes of accumulation, adaptation, and redistribution of knowledge and practice, within and outside of the places of their origin.

The implications about the political use of science in the formation of European empires demonstrated in the studies of imperial and colonial science marked scientific research as politically embedded in local power structures. Different political and social power structures across Europe created specific conditions for the appearance of science. The creation of a scientific environment on the periphery of Europe could be indicative of social and political elements that accompany the formation of new scientific circles. In the Serbian case, the process of formation of a scientific environment was embedded in the power dynamics of small scales. The young, emerging national state was emulating political and cultural models of other European countries, and science became appropriated as one of the elements of cultural and political emulation. In this study, I demonstrate what this process looked like, using the example of the formation of scholarly circles in the earth sciences. While their work was not an exemplary case of achievements in earth sciences, it is demonstrative of power dynamics that influenced the social and political conditions of emerging scientific centres.

This process was conditioned by specific local traits of the social and political environment, but at the same time followed major trends occurring in other parts of Europe. The cultural understanding of the meaning of science and the position that scientists held in society was gradually changing during the nineteenth century. Steven

¹⁰ Ibid.: 37.

Shapin and Arnold Thackray's article on prosopography demonstrated the shifting meaning of science in Britain since the eighteenth century. The very notion of a *scientist* was a relatively recent social construct that could be observed in the first decades of the nineteenth century. At the same time, so were the notions of *science*, *scientific community*, and *scientific career*. They proposed investigation of scientific circles as networked groups that maintained specific social status in the society and analysis of their common background characteristics that made them a recognisable social layer in the society. This approach was not supposed to be biographical, but rather context-related, in order to "establish links between action and context."¹¹ By applying this approach, one could give insights into interpersonal dynamics of social processes that accompanied scientific work and application of scientific work in practice.

During the nineteenth century, the position of science in society was reshaped by the growing professionalisation and academisation of disciplines. Science was shifting its position from amateur practices of self-supporting individuals, who engaged in them as a form of cultural activity, to professional occupations that depended on salaries from state supported institutions. At the same time, geological surveys, previously conducted by amateur scholars and focuses on local surroundings, became a matter of international enterprise, conducted by professionals who expanded geological research outside the European yard and made international cooperation necessary for conclusive scientific work. Humboldt, Lyell, von Buch, and Élie de Beaumont had enormous influence on the internationalisation of geological research. Theories of the origin of earth did not reach consensus yet and several competing theories influenced cooperation on the accumulation of empirical data from all over the world. Perhaps the most influential and

11 Steven Shapin and Arnold Thackray, "Prosopography as a Research Tool in History of Science: The British Scientific Community 1700-1900," *History of Science*, vol. XII (1974): 1-28.

most successful attempt to synthesise a theory of orogeny from data gathered was done by Eduard Suess, whose network of collaborators helped him expand his field of research and devise his own theory of orogeny. Such international endeavours became paradigmatic for nineteenth century earth sciences as networks of cooperation expanded across the globe.¹²

In earth sciences, one can thus observe the growth of geological surveys and gradual appearance of courses in mineralogy and geology at the university level of education. The establishment of first degrees in earth sciences shifted the production of degrees in this field from the mining academies to universities. This was a global trend that reinforced university education as a measure of expertise of scholars, turning them into professional scientists. This put them in a dependant position in relation to the state, as the state administration began classifying and standardising degrees. Consequently, scientists became regarded as state clerks and their rise in social status became inseparable from the state's social and political changes. The intersection between scientific circles and politics has been thoroughly examined in the case of France and Germany in the works of Robert Fox, Charles E. McClelland, and Fritz Ringer, who followed scholarly circles in their social recognition as professionals and state clerks, whose social power depended on state political recognition of their qualifications.¹³

In my thesis, I demonstrate similar processes in Serbia. The growth of state apparatus was linked with education as a means of producing qualified men who were

12 Mott T. Greene, *Geology in the Nineteenth Century: Changing Views of a Changing World* (Ithaca: Cornell University Press, 1982); David R. Oldroyd, *Thinking about Earth: A History of Ideas in Geology* (London: Athlone, 1996).

13 Robert Fox, *The Savant and the State: Science and Cultural Politics in Nineteenth-Century France* (Baltimore: Johns Hopkins University Press, 2012); Charles E. McClelland, *The German Experience of Professionalization: Modern Learned Professions and their Organisations from the Early Nineteenth Century to the Hitler Era* (Cambridge: Cambridge University Press, 1991); Idem., *State, Society, and University in Germany 1700-1914* (Cambridge: Cambridge University Press, 1980); Fritz K. Ringer, *The Decline of the German Mandarins: The German Academic Community, 1890-1933* (Cambridge, MA: Harvard University Press, 1969); Idem., *Fields of Knowledge: French Academic Culture in Comparative Perspective 1890-1920* (Cambridge: Cambridge University Press, 1992).

supposed to serve on all levels of administration. In a country that had serious problems with illiteracy, the educated elite of the country was considerably small in number. On one side, higher strata consisted of diverse kinds of administrative, political, educational, and economic elites that were mutually entangled, and individuals performed multiple roles in social power structures. This made scholars closely connected with administrative and political elites, which resulted in their frequent political engagement.

On the other side, the small number of educated people made the country's elite open for advancement in social status through education. Ljubinka Trgovčević has demonstrated the role of education in the production of elites of Serbia throughout the nineteenth century by examining the state investment in education of youth in Western academic centres. The crucial contribution of her study is the concept of *planned elites*, with which she argues that education abroad was part of a conscious investment on the part of the intellectuals that led the country, in order to create state elites who would govern the country. It was part of a process of state building that strived to change the patriarchal peasant society of a peripheral Ottoman province into a contemporary European society, dominated by urban elites.¹⁴ The study of Milenko Karanovich on the development of education in the first decades of existence of the Serbian principality gave a valuable contribution to understanding the relations between education and state building.¹⁵ A step further was taken by Charles Jelavich, who examined the roles of philology, history, and geography on the construction of South Slavic national identities.¹⁶ These studies connected the political process of state building with intellectual envisioning of the state through scholarly work.

14 Ljubinka Trgovčević, *Planirana elita: o studentima iz Srbije na evropskim univerzitetima u 19. veku* [Planned Elite: Students from Serbia on European Universities in the 19th Century] (Belgrade: Službeni glasnik, 2003).

15 Milenko Karanovich, *The Development of Education in Serbia and Emergence of Its Intelligentsia (1838-1858)* (Boulder, CO: East European Monographs, 1995).

16 Charles Jelavich, *South Slav Nationalisms – Textbooks and Yugoslav Union before 1914* (Columbus, OH: Ohio State University Press, 1990), 139-175.

The emergence of scientific circles in this way depended on the formation of *planned elites*, to whom the scientists ultimately belonged. In this society, political and private life were closely entangled scholars shared the same private space with members of administrative, economic, and political elite. The power dynamics, partially drawing from the patriarchal social origins and partially from the emulated Western morals, were strongly male homosocial. In the circle of scholars I examine, all active members of the circle of earth scientists were male, even though by the late nineteenth century there was a strong current among Serbian intellectuals (again, male) that promoted education of women, and despite the fact that women had open access to higher education since 1870s. The few women who participated in several sessions of the Geological Society were usually students who presented their course assignments, but they did not remain long among them. However, the women who do appear in this story were usually family members, wives, and cousins, and in the most exceptional cases – queens. Family relations performed a significant role in the construction of social and political dynamics, and marriage was one of the means that created connections between different layers of the elite. This was a way that helped rising scholars of the *planned elites* establish connections with already established social and political circles. For this reason, I examine the relations between public and private life in the formation of social and political dynamics that conditioned the establishment of the circle of earth scientists in Serbia. My intention is to give insights into how scientists related to each other, within their own ranks, how they established relations with other scholars – outside their own circle, and finally, how they established their position in the society, as a social class, and as political actors in the formation of state policies.

In the last couple of decades, the scholarship interested in history of science in Serbia has largely focused on the national (local) significance of scientific research and its impact on future generations of scholars. These studies have by and large neglected international studies in history of science and considerably limited their own scope of influence. Thus, contemporary research on science in Serbia remains embedded in national history, where the early scholars became the founders of science in the country and patriotic participators in the “national struggle for unification of all Serbian lands.” Most of these studies functioned as apologetics, revolving around the notion of “contribution to science,” praising the accomplishments of scholars, listing the reasons why they were important for the formation of the sciences in the country, and why they established the canon of scientific scholarship. These studies should be credited for thorough examination of primary sources and meticulous reporting on the events and accomplishments of scientists.

Most of these studies are focused on the accomplishments of individuals. Thus, studies about the life and work of Jovan Žujović and Jovan Cvijić are the most representative of the scholarship in the history of earth sciences. Other scholars in this field did not get equal attention, as the preserved source material is mostly related to these two scholars. They left behind a significant amount of ego documents from which historians and scientists extracted a remarkable amount of information. This condition affected the outcome of this study too, as there are not many sources preserved about Sava Urošević, Svetolik Radovanović, Petar S. Pavlović, Dimitrije Antula, Svetolik P. Stevanović, and Vladimir K. Petković. Žujović left three diaries behind and a number of memoir-like recollections, along with a considerable amount of notes and administrative documents. Jovan Cvijić left a very diverse collection of mostly letters and an unfinished memoir that his wife Ljubica published.

Most studies conducted so far have essentially been biographical in nature, focused on event history. Milan T. Luković wrote the first contemporary history of geology of Serbia in an article published in the collected volume dedicated to the celebration of sixty years of the Serbian Geological Society. This was a short summary of the events that led to the establishment of the earth sciences in Serbia and appraisals to the most significant actors that participated in it.¹⁷ Similar kind of summaries appeared in the first volume of Kosta Petković's *Geologija Srbije*, where he summarised the stages of development of earth sciences, emphasizing the roles of Josif Pančić, Jovan Žujović, Jovan Cvijić, and of his father Vladimir K. Petković.¹⁸

The most significant and the most diverse are the edited volumes, published by the Serbian Academy of Sciences and Arts, which organised conferences dedicated to anniversaries of Žujović and Cvijić. Each conference produced a volume with articles about the work of these two scholars. These thematic volumes for the most part maintained the same kind of approach to historical analysis and focused on their contributions and accomplishments in science and their patriotic/political activities that made them recognisable figures in the political sphere.¹⁹

Intellectual biographies are the most common genre of history writing related to history of earth sciences. Two acolytes of Cvijić, Vojislav Radovanović²⁰ and Milorad

17 Milan T. Luković, "Šezdeset godina rad Srpskog geološkog društva" [Sixty Years of Work of the Serbian Geological Society], in *Spomenica 1891-1951: 60-godišnjica Srpskog geološkog društva* [Memorial 1891-1951: Sixty Years of the Serbian Geological Society] (Belgrade: Prosveta, 1951), 15-54.

18 Kosta Petković, *Geologija Srbije I: Istorijski razvoj* [Geology of Serbia I: Historical Development] (Beograd: Zavod za regionalnu geologiju i paleontologiju Rudarsko-geološkog fakulteta, 1977).

19 Radomir Lukić, Milisav Lutovac, Dušan Nedeljković, Petar Stevanović (eds.), *Naučno delo Jovana Cvijića: Povodom pedesetogodišnjice njegove smrti*, SANU Naučni skupovi vol. IX, Predsedništvo vol. 2, (Belgrade: SANU, 1982); Vidojko Jović (ed.), *Jovan Žujović – Život i delo: Povodom stopedesetogodišnjice rođenja i sedamdeset godina od smrti (1856-1936)* [Jovan Žujović – Life and Work: On the Hundredfiftieth Anniversary of His Birth and Seventy Years of His Death (1856-1936)], Naučni skupovi, vol CXXVIII, Odeljenje za matematiku, fiziku i geo-nauke, vol. 5 (Belgrade: SANU, 2010); Vidojko Jović and Ana M. Petrović (eds.), *150th Anniversary of Jovan Cvijić's Birth* vols. I-II, Scientific Meetings Book CLXII (Belgrade: Serbian Academy of Sciences and Arts, 2016).

20 Vojislav Radovanović, *Jovan Cvijić* (Belgrade: Nolit, 1958).

Vasović²¹ wrote biographies of Cvijić where they praised his multifaceted scientific and political work. Their focus was more on his scientific work, which sets them apart from the majority of biographical studies that were more oriented toward political aspects of their work. Jovan Cvijić's employment of anthropogeography for political purposes had considerable political influence during the First World War and the Paris peace negotiations, during which he participated as negotiator. Ljubinka Trgovčević addressed this topic in her study on the role of intellectuals at the Paris peace conference.²² Marko Pišev analysed Cvijić's political employment of ethnography in the construction of ethnic and national identities in the Balkans.²³ Slobodan Naumović gave a biographical overview of his intellectual and political engagement into ethnology and evaluated him primarily as a political actor in the Serbian nationalist discourse.²⁴ In the most recent study, Vedran Duančić, examined the geographical construction of space in Yugoslavia in the interwar period, in which he touched upon the influence of Cvijić on it. His approach stands out from the previous authors, as he decentred the narration from Cvijić himself and located his position within contemporary international and Yugoslav scholarship.²⁵

Jovan Žujović received less attention compared to Cvijić. His political engagement was analysed by Latinka Perović and Đorđe Đurić. His political diary was the basis of the article of Perović where she examined his dual social role, as a scholar

21 Milorad Vasović, *Jovan Cvijić: Naučnik, javni radnik, državnik* [Jovan Cvijić: Scientist, Public Servant, Statesman] (Novi Sad: Izdavačka knjižarnica Zorana Stojanovića – Matica srpska, 1994).

22 Ljubinka Trgovčević, *Naučnici Srbije i stvaranje jugoslovenske države* [Serbian Scientists and the Creation of the Yugoslav State] (Belgrade: Narodna knjiga, Srpska književna zadruga, 1986).

23 Marko Pišev, "Ko je ko u Kraljevini SHS: Formalna analiza Cvijićeve rasprave o jedinstvu južnih Slovena" [Who Is Who in the Kingdom of the Serbs, Croats and Slovenes: A Formal Analysis of Jovan Cvijić's Treatise on South Slav Unity], *Etnoantropološki problemi*, vol. 5. no. 2 (2010): 55-79; idem., *Politička etnografija i srpska intelektualna elita u vreme stvaranja Jugoslavije, 1914-1919: slučaj Jovana Cvijića* (Belgrade: Srpski genealoški centar, 2013).

24 Slobodan Naumović, "Jovan Cvijić," in *Srbi 1903-1914: Istorija ideja*, ed. Miloš Ković, (Belgrade: Clio, 2015), 662-748.

25 Vedran Duančić, "Nationalist geographies in interwar Yugoslavia: manoeuvring between national and transnational spaces," *European Review of History: Revue européenne d'histoire*, vol. 25, no. 3-4 (2018): 588-611.

and a politician.²⁶ Đorđe Đurić, on the other hand, wrote a detailed political biography, in which he tracked events in Žujović's life, political contacts and influences, locating his political activities and presenting them in a chronological order.²⁷

The orientation towards intellectual biographies in Serbian scholarship could be best exemplified with the project of the Serbian Academy of Sciences and Arts, led by Miloje Sarić and Vladan D. Đorđević, that created a multi-volume edition of biographies of Serbian scientists. The first volume of *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] appeared in 1996, as an edition of Academy's *Odbor za proučavanje života i rada srpskih naučnika*. In total, until 2018, sixteen volumes were published. This project was significant because among these sixteen volumes appeared biographies of earth scientists which did not receive so much attention so far.

In order to follow the establishment of earth sciences in Serbia during the nineteenth century, it was necessary to observe first the intellectual history of the Serbian national movement and the role of education in the process of state building. In the first chapter, I present the continuities and discontinuities in Serbian intellectual thought in regard to natural history, and earth sciences in particular. My goal is to present the state of intellectual and institutional development that occurred before 1880 and depict the conjuncture that conditioned the expansion of earth sciences during the time of Žujović. Starting from the first scholars who wrote scientific work during the Enlightenment, I locate the ideological origins of the educational orientation of the nationalist ideology and significance placed on knowledge as an important element of emancipation of peasants. The work of three scholars who wrote the first books in natural history in

26 Latinka Perović, "Naučnik i političar: Jovan M. Žujović" [A Scientist and a Politician: Jovan M. Žujović], *Tokovi istorije*, no. 1-2 (1993): 55-65.

27 Đorđe Đurić, *Srpski intelektualac u politici: Politička biografija Jovana Žujovića* [Serbian Intellectual in Politics: Political Biography in Politics] (Belgrade: Srpsko društvo za istoriju nauke, 2004); Idem., "Jovan Žujović," in *Srbi 1903-1914: Istorija ideja*, ed. Miloš Ković, (Belgrade: Clio, 2015), 388-401.

Serbian, can be identified as the first efforts to propagate science among Serbs. Nevertheless, these works originated in the Habsburg Monarchy and had only indirect impact on science and education in the Serbian principality. My focus then shifts to the first geological surveys conducted in the principality. These surveys were conducted by foreigners, who were hired by state authorities who wanted to begin mining exploitation. My goal here is to show the significance that knowledge about the earth represented for the process of state building and development of economy. During these surveys, foreign scholars established a firm basis for the development of the local school of geology. From there on, I examine the education and knowledge related institutional developments in the principality. By presenting the expansion of education during the nineteenth century and appearance of scholarly societies and their attitudes towards natural sciences and research, my intention is to show the social and political context in which science became a respectable social activity.

In the second chapter, I analyse the employment opportunities in earth sciences that occurred after 1880 and the process of hiring of scholars to academic and educational positions. By combining Trgovčević's notion of *planned elites* with Bourdieu's notions of social and educational capital, I am analysing the social and educational strategies that stood behind the hirings in earth sciences. After Žujović was hired as the professor in mineralogy and geology at the Grand School, he influenced a number of his students to pursue careers in earth sciences. Through this chapter, I follow their social background, education, relations to Žujović, and advancements in their careers.

With the third chapter, I restart the narration from 1880 and examine the role that politics performed in the formation of earth sciences. The political influence that state administration exerted on the academic sphere was significant. By showing the

importance of politics from below, I demonstrate the role that personal and familial relationships played in the Serbian political life and the pressure from the wider community on scholars to enter politics and serve the state. Because of the small size of the Serbian elites, the circles of social, political, and economic elites overlapped with scholarly elites. They shared the same space and this made scientific circles closely connected with the highest political circles. In many instances, scientists served as state clerks, on lower and higher positions, reaching in two cases to the positions of ministers in the government.

The formation of the earth sciences in relation to international scientific circles is the subject of the fourth chapter. I follow the strategies of the earth scientists to achieve international recognition and establish themselves as experts among the community of scholars. The power dynamics of international relations of scientists used expertise as a currency for establishing prestige. The particular focus of this chapter is the centre-periphery relations between scientific circles of Vienna and Belgrade and the struggle that occurred between them over the research territories. Here I deal with the notion of imperial science and the means through which scientific work established its own spheres of political dominance and how scholars related to international politics of their own countries. I start with the story about ambitions of Serbian scientists to establish Belgrade as the centre of scientific research in geology of the Balkan Peninsula, and I end with examples of direct involvement of Serbian scholars in Serbian international politics and diplomacy. The goal of this chapter is to point out the differences between kinds of territorial ambitions of scientific imperialism and actual political aspirations that the Serbian nation state held in the Balkans.

The establishment of scientific reputation through scientific work is the topic of the fifth chapter. Here I analyse strategies of scientific work that lead to individual's gain

of reputation. By following different strategies, from specimen collection and exchange, to methodological principles that emphasised empirical work as a means of contribution, I demonstrate the influence of positivist ideas that Žujović propagated among his students that envisioned the method of science as meticulous collection of specimens and their identification and classification. This methodological attitude was used as a guiding principle through which Serbian scholarly circles would gain their reputation in the world for providing reliable empirical data. On another level, scientific work had to demonstrate its usefulness to the public, and I further examine the research topics that were instigated through the pressure of the community, which required certain knowledge that was deemed useful for the society.

Further in the fifth chapter, I address the means by which Jovan Cvijić acclaimed international prestige. I demonstrate his well timed topic-oriented strategies with which he entered previously unoccupied fields and managed to quickly get international recognition. He was under the influence of Eduard Suess and Albrecht Penck, which made him inclined towards speculations and theoretical assumptions. Jovan Žujović did not approve this kind of methodology, which created a conflict between the two. Their rivalry in regard to research is the subject of the last section, where I demonstrate the social and political implications of this conflict.

The power dynamics that stood behind the formation of this circle of earth scientist indicates the diverse social, political, and methodological strategies through which individuals claimed reputation in the earth sciences. For this small circle of scholars on the periphery of major European scientific events, gaining reputation involved establishing close personal connections with scholars from the inner circles of academia. This included both the wider scholarly circles of the academy and narrow social circles of earth scientists. This was the field where disciplinary boundaries where

established and division of academic positions determined prestige and spheres of influence. Also, their reputation depended on their active participation in the political sphere as loyal citizens who served as state administrators, and as active propagators of the national program. Social recognition of scholars depended on how they demonstrated their expertise to the public. The most obvious way was through political engagement and propagation of nationalist ideology, but it also included demonstrating the practicality of knowledge for the economic and social benefit of the state. The notion of expertise thus remained divided between how it was perceived in the inner circle of scholars and how it was perceived in the public. International connections and international recognition helped individuals gain reputation, but such accomplishments were frequently used as a currency in the public discourse, where building of a national school of earth sciences became a matter of national prestige. While the impact of earth sciences in international communication was limited, though duly noted, international networks were used for strengthening of the domestic circles. The political ambitions of the young Serbian state required a strong intellectual elite, and Serbian earth scientists exploited this ambition for advancement of their own agenda. This made nationalism an inherent part of the habitus of the scholarly elite, which was skilfully combined with scientific ambitions in international cooperation.

1. Setting the Scene

At the beginning of the Serbian national movement, there was little interest in the knowledge of nature. The insurgents were interested only in finding literate men for the administration that was supposed to provide the foundations for the state. The First Serbian Uprising (1804-1813) was an insurrection of Ottoman peasants living in the Sanjak of Smederevo (also known as the Pashaluk of Belgrade). It did not take long before the rebellion developed into a national cause and began establishing institutions of the new state. The insurgents needed any literate men to run the government. In a society where literate people were rare, this posed a problem. However, north of the Sava and the Danube lived a significant Serbian population which supported the struggle for independence and provided both men and material necessary for the insurgency. A number of educated men crossed the rivers and occupied the positions of administrators and educators. This first insurrection failed, but it set the foundation for the modern Serbian state. The territory of the Sanjak in the years following the Second Uprising (1815) became first an autonomous principality of the Ottoman Empire (1830), and then later (1878) an independent state. In the years that ensued between 1815 and 1878, one of the main obstacles in the formation of the state was the absence of sufficiently educated people at all levels of administration.¹ Over the years, the practice of inviting the educated from the Habsburg Empire continued, and a number of citizens of the Habsburg Empire arrived in the principality in order to take important positions. Not all of them

1 The role of the education in the formation of the Serbian state has been already studied by Karanovich and Trgovčević. See Milenko Karanovich, *The Development of Education in Serbia and Emergence of Its Intelligentsia (1838-1858)* (Boulder, CO: East European Monographs, 1995), and Ljubinka Trgovčević, *Planirana elita: o studentima iz Srbije na evropskim univerzitetima u 19. veku* [Planned Elite: Students from Serbia on European Universities in the 19th Century] (Belgrade: Službeni glasnik, 2003).

identified themselves as Serbs. Many Croats, Germans, Czechs, and Poles arrived and became part of the institution building process.

The aim of this study is to analyse the emergence of scientific research in Serbia, so we need to clarify the different meanings of the notion of the *Serbian*. The term can share both territorial and ethnic designations. While the population ethnically denominated as *Serb/Serbian* lived at the beginning of the nineteenth century in both the Ottoman and the Habsburg empires, national identity was still forming and the clear self-identity of the *Serb*, at least among the large peasant population, was still not an easily definable category. The differences between the populations distributed over the large territory of these two empires were significant. However, a group of enlightened intellectuals in the Habsburg Monarchy started actively engaging in discussions about Serbian identity already in the late eighteenth century. Furthermore, in the Habsburg Empire, Serbian identity was strongly associated (though not exclusively) with the Orthodox Church. On the other hand the actual realisation of national goals became reality after the two peasant insurgencies in the Ottoman Empire. In this way, an Ottoman province became the core of the modern Serbian state, for which ideological inspiration was sought in the West.

While the Serbian intellectual elite in the principality emerged during the nineteenth century from the peasant class of Ottoman society, in this process one must not neglect the influence of scholars from the Habsburg Empire. Among the Serbs from the Monarchy there were several learned men who studied natural history before similar activities took place in Serbia and whose work influenced the emergence of natural sciences in Serbia. The focus of this research is directed towards the development of the geological and geographical scientific scene in the Serbian principality (later kingdom). The notion of “Serbian” has primarily a territorial meaning and relates to the state, rather

than to the ethnic group. Nonetheless, the influence of the Habsburg Serbs on the establishment of the scholarly disciplines in the Serbian state will not be neglected.

By the time Jovan Žujović, the first Serbian geologist, returned from Paris in 1880, the principality's education system managed to produce two institutions of higher education. First, the Lyceum in 1838, and then later the Grand School in 1863. These were not officially universities, yet they tried to emulate Western institutions of higher learning. The Grand School was an equivalent to a German Hochschule and posed as a level below university education. Circles of learned men were slowly forming. In 1841, the Society of Serbian Literature (*Društvo srpske slovesnosti*) was founded, which in 1864 transformed into the Serbian Learned Society (*Srpsko učeno društvo*). Therefore Žujović's arrival from Paris should not be qualified as the beginning of earth sciences in Serbia. The scene was already set by several other actors, whose work dealt with natural history before Žujović. I would like to avoid narratives about origins and predecessors and point out that the real beginning of the earth sciences in Serbia cannot be precisely dated. While Žujović was a crucial figure in the establishment of earth sciences, the scene had been already set before him and he did not have to start from scratch.

In this chapter, I address three different topics that jointly contributed to the formation of the earth sciences in Serbia after 1880. First, I address the first books published in natural history in Serbian. These were the works of the Enlightenment scholars from the Habsburg Monarchy who advocated education as one of the primary means of advancement of Serbian nationalist goals. The propagation of education in the Serbian principality became one of the main intellectual goals of the state-building during the nineteenth century. Second, I present the history of geological surveys in Serbia before 1880, conducted by foreign researchers. These researches constituted the basis for further research after 1880. And finally, I discuss the development of scholarly

institutions and circles, together with the formation of educational system in Serbia. Consequently, in this chapter, I demonstrate the relations between nationalist propagation of education and state-building that contributed to the formation of knowledge production centres. From pragmatic economic interests of research to political recruitment of scholars, the social and political conditions in the Serbian principality determined the conjecture of the development of scientific circles in relations to power structures.

1.1. Jestestvenica

Among the small circle of learned Serbs in the Habsburg Monarchy there was an idea that the people would benefit from knowledge. At the time, the Habsburg Empire was under the strong influence of the Enlightenment. Both Maria Theresa and Joseph II envisaged policies which supported development of the educational system, which opened enough space for the Serbian literate elite to exercise their privileges and promote education in the Serbian language. Authorities gave permission in 1770 for the opening of the printing shop in Vienna which was supposed to print books in the Serbian language. The first secondary school which operated in Serbian was opened in Karlowitz (Sremski Karlovci) in 1791, while the second one began its work in 1810 in Neusatz (Novi Sad), while at the same time a teachers' college was opened in Szentendre.² In the context of the Serbian Orthodox community in the Habsburg Empire, the Enlightenment was a movement which promoted education at the most elementary level. Belonging to the stream of the Habsburg Enlightenment, their aim was to battle superstition and help

² Ljubinka Trgovčević, "The Enlightenment and the Beginnings of Modern Serbian Culture," *Balkanika* XXXVII (2006): 103-104.

people better use their natural resources. Atanasije Stojković and Pavle Solarić were associated with the line of enlightened scholars who publicly embraced Herder's ideas about nationhood and identified the roots of national identity in culture and language, and began dreaming about the Serbian national renewal. Dositej Obradović, the most important figure of this movement, by the end of his life managed to see the First Serbian Uprising and personally participate in it. Shortly before his death, he became a minister of education in one of the first insurgent governments. As the most important name of the enlightened movement among Serbs he actively engaged in the promotion of literacy, education, and rational thinking, and he fought superstition as the plague that poisons human minds and leads to ignorance.

At the time, because of the religious privileges that the Metropolitanate of Karlowitz had, the major authority among the Habsburg Serbs was the Orthodox Church, whose religious authority was exercised in the sphere of education as well. The language used by the literate was an artificial language which was based on the Serbian recension of the Old Slavonic language with strong influence of the contemporary Russian church language. The engagement of Obradović, who was initially a monk in an Orthodox monastery, has turned against church authority and directed himself towards the secularisation of education and the use of vernacular in writing.

While Obradović himself was not personally engaged in natural history, his engagement in the promotion of education inspired both Atanasije Stojković and Pavle Solarić to write the first books about the knowledge of the natural world for the use and the benefit of the Serbian people. Both authors acknowledged that their publications were written at the behest of Obradović. Chronologically, the first work was the three-volume book of Atanasije Stojković, titled "Physics" (*Fisika*), which presents an overview of the knowledge of nature with the aim of battling superstition and teaching people about the

benefits of knowledge and education.³ German scholars of that epoch used alternatively the words *Physik* and *Naturwissenschaft* to define a universal natural science. Although the terminology was not fully developed and the meanings varied, they generally subsumed under these terms the *natural philosophy*, *natural history*, and *applied mathematics*.⁴ For Stojković, two words were used to translate these terms and both corresponded with the notions on the German language: *fisika* and *estestvenica*. While both of these words were translations of the German terms, the equivalence of the meanings was sought after in the Russian language. Consequently, he defined the *fisika* as the science (*nauka*) of nature (*estestvo*), and *estestvenica* as a direct translation of the German term *Naturlehre*. Consequently, in his case these two words are synonyms and he treated them in his text as equal.⁵ However, in German language of that time, the difference between *Naturlehre* and *Naturwissenschaft*, as Denise Phillips has demonstrated, could have signified a potential different level of knowledge expertise, and over time the difference between the learned men (*Gelehrte*) and the researchers (*Naturforscher*).⁶ For Stojković, there was no such distinction. *Estestvoispitatel* (natural researcher) was the person who was knowledgeable in nature and researched and observed the things in nature, and finally produced knowledge which Stojković himself presented to the public.

With this three-volume work Stojković wanted to provide to his readers a comprehensive knowledge of all the things that can be found on earth and in the universe in general; he introduced his readers to knowledge of physics, astronomy, natural philosophy and natural history. The volumes were published continuously, the first one in 1801, the second one in 1802, and the last volume in 1803. As part of volume one and

³ Atanasije Stojković, *Fýsika I-III* [Physics], (Buda: 1801-1803), 7.

⁴ Denise Phillips, *Acolytes of Nature: Defining Natural Science in Germany, 1770-1850* (Chicago: University of Chicago Press, 2012), 27-29.

⁵ Stojković, 7.

⁶ Phillips, 22-25.

volume three, Stojković included several chapters in which he presented the knowledge of earth sciences. Although it is very difficult to establish direct links between his work and the emergence of scholarly disciplines in Serbia, this work should be noted for being the first scientific work written in Serbian. For those who were willing to learn, for a long while these three volumes were one of the rare options on the library shelves. However, at the time when this work was written, the audience interested in it was limited and this trend continued.

While credited for writing both the first novel in the modern Serbian literature and the first textbook of physics in Serbian, Stojković's greatest accomplishments were in Russian academia. He was a professor, and later a rector of the Kharkiv University. His later work in Russia, after 1804 when he moved to Kharkiv, was not relevant for the establishment of science in Serbia, he later produced no other work in Serbian.⁷ He was probably more influential in Russian nineteenth century science, and consequently in European scholarly circles, than in Serbian. His educational path led him through several institutions of the Habsburg Empire, which was caused by constant pecuniary problems which forced him to quit his education several times. He grew up in Ruma, where he began his education in the lower gymnasium. Later he studied in gymnasiums in Sopron and Szeged, then a Lyceum in Szeged, and then at the universities in Buda and Pozsony.⁸ For a while he studied in Vienna as well, after which he moved to Göttingen where he received his doctorate.¹⁰ With his later ten-year-long professorship in Kharkiv and his

7 Djordje Arsenić, *Atanasije Stojković (1773-1832): Profesor Harkovskog univerziteta; pisac prvog romana u novijoj srpskoj književnosti i pisac prve fizike na srpskom jeziku* [Atanasije Stojković (1773-1832): The Professor of the Charkiv University; The Writer of the Novel in the Newer Serbian Literature and the Writer of the Physics in Serbian Language] (Belgrade: Institut za nuklearne nauke "Vinča", 1995).

8 Sandra Novaković, *Put do krsta Svetog Vladimira: Život i delo Atanasija Stojkovića* [Road to the Cross of Saint Vladimir: Life and Work of Atanasije Stojković] (Ruma: Gradska biblioteka Atanasije Stojković, 2012), 15-16. 10 Arsenić, 11-14.

early retirement to an estate given by the Russian state the career of this itinerant scholar came to an end.

Only a year after the publication of the last volume of the *Physics*, Pavle Solarić published his *New Civic Geography, The First in Serbian, in Two Parts* [*Ново гражданско землеописаніе, перво на Езику Сербскомъ, у две части*].⁹ This work was actually a modified translation of Adam Christian Gaspari's book which Solarić published under his name.¹⁰ The word used in the title and the textbook - “землеописаніе” was a literal translation of the German “Erdbeschreibung” from Gaspari's title. This book was accompanied by an atlas¹¹ and a book with explanations for the *Geography*, titled *The Key to My New Civic Geography*.¹² Because one of his friends complained that it was difficult for him to understand the textbook, Solarić decided to write *The Key* in order to accompany his original book and provide further explanations for what he had previously written. This arrangement was made because the readers were not too familiar with the knowledge of natural history and needed some basic instructions. However, *The Key* was not written for people who had read the book by Atanasije Stojković, because they had already acquired the necessary knowledge in order to read his *Geography*, as Solarić assumed that not everyone had read the *Physics*.¹³ The purpose of writing *The Key* was actually to explain the basic mathematical and geometric principles which would enable

9 Pavle Solarić, *Novo graždansko zemleopisanie, pervo na Eziku Serbskom, u dve časti* [The New Civic Geography, the First written in Serbian Language, in Two Volumes] (Venice: 1804).

10 After examining the texts, I assume this is the volume which Solarić used: Adam Christian Gaspari, *Lehrbuch der Erdbeschreibung zur Erläuterung des neues methodischen Schul-Atlases* (Weimar: 1796). Considering that the time when Solarić was writing was full of political upsets because of Napoleon's campaigns, between 1796 and 1804 there was a number of changes of borders along with political changes, which made Solarić update the text according to the most current political situation.

11 Pavle Solarić, *P'šij Zemlepisnik* [Written Atlas] (Venice: 1804).

12 Pavle Solarić, *Ključić u moe zemleopisanie črez nekoliko pisma Moemu Priätelŭ L... * N... ** [The Key to My New Citizen Geography through Several Letters to My Friend L... N...] (Venice: 1804).

13 Solarić, *Ključić*, 6-8.

the reader to find a way through the coordinate systems employed in the book. The book actually begins with an explanation of the most basic mathematical functions such as addition, subtraction, multiplication, and division.¹⁴

Solarić is mostly known today as a poet, and these three publications from 1804 were his only works in natural history. He was born in Velika Pisanica, near Bjelovar, educated in Karlowitz and Zagreb, and he spent most of his life in Trieste, where he wrote most of his poems. In the spirit of the Enlightenment Solarić pondered the usefulness of knowledge about nature and invited people to learn. The universe was not built for man, but man was the one who took his place in the hierarchy of the universe and had his own purpose. Consequently, it was man who was supposed to learn how nature works. From this he inferred that there was no evil and that all the perils had come from human ignorance, because people had not known the difference between harmful and useful. Because god created the universe and set the laws, all the evil that came to humans was actually the punishment for their ill behaviour caused by their ignorance. This view was characteristic of naturalist and deist thinkers of the Enlightenment and Solarić appropriated it from Gaspari's text.¹⁵

The knowledge had been there. Everything that had been necessary, useful, comfortable, and even luxurious had been already known, and had been written and re-written about. Now, Solarić offered that knowledge, translated into Serbian, for the benefit of the people, so they would know their land and rationally use it.¹⁶ While most of Solarić's text represented an overview of the political divisions of the land and economic and cultural aspects of the lands described, in the opening, the author dealt with different types of landscape and defined different landforms. This work was in its nature

¹⁴ Solarić, *Kliočić*, 14-15.

¹⁵ Solarić, *Novo graždansko zemleopisanie*, v.

¹⁶ Solarić, *Novo graždansko zemleopisanie*, xiii.

geographical and emphasised descriptions of land formations, peoples, and resources. In one part it addressed the issue of the structure of mountains. At the core of every mountain the author placed granite, which according to him can be found as the main constituent in the interior of the planet.¹⁷

The mention of fossils had a similar purpose. Solarić, as well as Gaspari, noticed the appearance of petrified bones and teeth which appeared in areas where such animals do not live, whether they were marine animals found deep into mountains or bones of elephants and rhinoceroses found in cold climates of Siberia and America. There was no extensive deliberation on the presence of fossils. In the course of the discussion this was mentioned just to demonstrate that such evidence pointed to a much older past of earth than the history of mankind and neither of the authors made any further speculation on the origin of earth.¹⁸

In comparison with the work of Stojković, Solarić's work was more leaning towards social sciences and at the time belonged to geography, which was building its own epistemological border and distancing itself from history. Gaspari himself argued that geography should be independent from history and that it has its own subject of investigation.¹⁹

The role of the Orthodox Church in the development of the Serbian national movement during the nineteenth century was considerable, particularly when it comes to the construction of the Serbian national identity and narratives, but their religious position was at the same time antagonistic to the main inclinations of the intellectual elite. The ideals of the Enlightenment confronted the conservatism of the Orthodox Church. One of the main points of the split was the primacy of the church in educational

17 Solarić, *Novo graždansko zemleopisanie*, 46; Gaspari, *Erdbeschreibung*, 58.

18 Solarić, *Novo graždansko zemleopisanie*, 48; Gaspari, *Erdbeschreibung*, 61.

19 Adam Christian Gaspari, *Vollständiges Handbuch der neuesten Erdbeschreibung*, Erster Band (Weimar: 1797), 1-2.

matters which was manifested in both empires. Obradović and Stojković challenged this dominance and tried to challenge the predominant religious orientation of the education with enlightened orientation towards rationality. Particularly significant point of disagreements was the issue of Serbian language, as the enlightened scholars favoured the use of vernacular Serbian, while the church maintained the use of the artificially created church language which was at that time under a strong influence of Russian. During the early nineteenth century the issue of language and script was predominant in the intellectual debates as it formed the key element in the national ideology. The church was here at disadvantage as the language their priests used in education was incomprehensible to the population and the change in orientation towards the vernacular versions of the language practically deprived the priests and the church of their power in the matters of teaching. Issues of natural history and natural philosophy further aggravated their relationship between the church and the enlightened intellectuals. However, the language issues remained the primary point of dispute with the Orthodox Church until 1850s when the language reform finally ended with the victory of the Vuk Karadžić's party which eliminated all other versions of the Serbian vernacular and script, including the church language.

In the third case of the enlightened science, the scholar's career was tied with the church hierarchy and church language. While the enlightened scholars, such as Stojković and Solarić, worked towards the promotion of science, and to a certain degree against the authority of knowledge production by the Orthodox Church, one member of the Serbian Orthodox Church hierarchy actually engaged in the writing of a textbook in natural history. The life and work of archimandrite Pavel Kengelac²⁰ (1776-1834) can be a subject of a whole different research. His activities in both the scientific and the

²⁰ In modern Serbian alphabet, his name should be written as Pavle Kenđelac or Павле Кењџелац. However, I use the original transcription of his name.

ecclesiastical communities of his time were peripheral, and being the archimandrite of a small monastery in Banat, he was poorly connected with scholarly networks. However, in his life story one can recognise parts which resemble the life of a typical enlightened learned man, and at the same time, of an educated Orthodox monk, and as such Kengelac can be considered unique. While Stojković did not manage to get to the position of an archimandrite in an Orthodox monastery, and instead went to Kharkiv to become a university professor, Kengelac worked his way into the church hierarchy and gained the position.

Pavel Kengelac was initially meant to be a merchant. After finishing his elementary school in Nagyikinda, his parents sent him to be an apprentice in several private enterprises across the Habsburg Empire. From Szeged to Buda, from Buda to Székesfehérvár, and then back home to Nagyikinda, by the time he finished his apprenticeship, Kengelac was twenty years old and expressed desire to gain more knowledge and receive a proper education. From there on, his path of education in the spirit of that time became a tortuous journey between places of study and places of research and collecting curiosities. In Késmárk he hired a private tutor who helped him pass through six grades of gymnasium in one year, after which he went to Pozsony for one year, and then Sopron for three. I was unable to determine what kind of schools he attended. According to his own testimony, he audited there only sciences (*nauki*).²¹

From this point, Kengelac embarked on a journey across Europe. Through Moravia and Poland he reached Danzig, then Riga, and finally ended up in St. Petersburg at the seminary of the Alexander Nevsky Monastery, where he stayed for one year and eight months to study theology. From there he went on another journey to Sweden, Denmark, Britain, France, and then to Hamburg from which he continued to Halle where

21 Stevan Bugarski, "Autobiografija arhimandrita Pavla (Kengelca)" [Autobiography of Archimandrite Pavle (Kengelac)], *Zbornik Matice Srpske za istoriju*, vol. 86 (2012): 70.

he began another episode in studying, this time for two and a half years. There, according to his own testimony he studied “philosophy, law, and other things” and became a doctor in philosophy in 1896.²²

When he returned, Kengelac managed to obtain for himself a position of archimandrite of the monastery St. Djuradj on the Brzava river in Banat in 1898. His appointment was almost immediate. What is known about his life is that the monastery life for him was not a successful venture. His arrival to the monastery was not well received by other monks and very soon he got into conflict which forced him out of the monastery for several years. In addition to his problems, in 1807 church officials discovered one of his letters in which he made a promise to accept union if he was to be elected as a bishop one day. For this reason, he was banned for ever entering the candidacy for an Orthodox bishop.²³

In the light of his education in sciences and his controversial life as a monk, the appearance of the book on the natural sciences in 1811 might not seem surprising. In many aspects, this work was a combination of the contemporary knowledge about nature and philosophical deliberations of an Orthodox monk. The orthography used for this work was much older than the one used by Stojković and Solarić, and the language used was the old church language used by the Serbian Orthodox Church.²⁴

The question of the origin of earth was given an important place at the beginning of his work. His narrative began with the reference to the Book of Genesis and the description of the creation of the world. He pondered about the possible questions one *estestvoslovac* (natural scholar) could ask Moses and what kind of additions would Moses have made in order to comply with the curiosity of the *estestvoslovac*.²⁵

²² Ibid.

²³ Bugarski, 68-71.

²⁴ Pavel Kengelac, *Estestvoslovie* [Natural Science] (Buda: 1811).

²⁵ Kengelac, 1-3.

Eventually, Kengelac made the claim that the inquiry about the origin of the world should not belong to a *bogoslov* (theologian), but to a *estestvoispitel* (natural researcher) instead.²⁶

It remains unclear today whether these kinds of attitudes got Kengelac into conflict with the monks and the hierarchy of the Orthodox Church and whether the accusations about his potential acceptance of the union and ultimate restriction of access to higher positions had anything to do with his willingness to introduce science into theology. The publication of 1811 caused a lot of stir among the Orthodox clergy and apparently he was accused of making an act undignified for a monk, of indecency, and even of plagiarism.²⁷

The accumulation of materials at the bottom of the ocean and the influence of the subterranean fires and volcanoes on the elevation of mountains was at the fulcrum of his theory. He challenged the Biblical perception of time by questioning the meaning of time in the first three days of creation, because without the Sun there can be no talk about the night and day. However, he did not question the veracity of Biblical events.²⁸ Like the majority of scholars in his time, Kengelac was conflicted with his attempts to conform the Book of Genesis with the field evidence found by scholars. He pointed out the equal distribution sea accumulated matter, such as sea shells, bones, scales, sand, and chalk, with iron, lead, copper and marble, which equally appear in the depths of earth, at the top of mountains, and at the bottom of the ocean, and wondered how such distribution came to being and how much time was needed for their creation. This inspired him to think about discrepancies between the Bible and the findings, which led him to the conclusion

²⁶ Kengelac, 4.

²⁷ Bugariski, 68.

²⁸ Kengelac, 5-6.

that Moses just was not thorough as a natural researcher (*estestvoispitatel*), or that he maybe just heard those as stories coming from his ancestors.²⁹

While Kengelac outlined a four volume book of natural science, he managed to write only one volume. His project might be in extent equal to the one Stojković made, except that Kengelac failed to find enough support in his environment to finish it. Stojković publicly advertised his project and received a number of payments for pre-ordered copies (*prenumeranti*), whose names were listed at the beginning of the book. This list consist of, for that time, a considerable number of subscribers, all of whom were from the Habsburg Monarchy. The separation of the Serbin ethnic corpus between the Habsburg and the Ottoman lands could be easily demonstrated with this list. While Stojković was one of the flag-bearer of the Serbian national movement and used his work for the advancement of national goals, it is noticeable that the considerable majority of his readers were solely from the Habsburg Empire. Ottoman Serbs, who stated the insurrection in 1804 were not interested in this kind of intellectual discourse. Kengelac did not manage to reach larger audience even among the Habsburg Serbs and even faced with accusations that probably hindered his efforts to complete the project. His attempt to conflate the most contemporary knowledge about nature with Orthodox theology was not received readily. The life paths of these two scholars had a similar beginning. They both made long itineraries during their education, changing a large number of schools, they both received doctorates at German universities and both published comprehensive volumes on the natural sciences, which was for that time an expected career path. However, the unsuccessful attempt of Stojković to join the monastery and become an archimandrite made his path away from church hierarchy and into university where he received recognition. The *Physics* volumes were written shortly after he finished his

²⁹ Kengelac, 3-8, 43.

education and attracted some attention from the literate audience among the Habsburg Serbs. On the other hand, Kengelac found little support among the circles of Orthodox Church and faced condemnation for his work.

In the attempt to make a comprehensive overview of the current knowledge about nature, all of the three aforementioned scholars resorted to summaries of contemporary scholarship. At the time there was still no clear distinction between the disciplines and an integrated approach to the natural world was common. The utilitarianism of the Enlightenment was at that time slowly becoming discarded and the romantic urge to unify knowledge and create collective cause was gaining momentum.³⁰ Universal science was developing national shape and vernaculars were becoming more relevant in scholarly publications. At the outset of the emerging Serbian national movement these three scholars felt the need to contribute to the national cause. At the time (1800s and 1810s), the church language was still officially the main language of writing, but Obradović and his peers were leaning towards the vernacular. The use of Church Slavonic language in the work of Kengelac thus maybe seemed old fashioned already at that time, comparable to both Solarić and Stojković who used a slightly modernised versions of the alphabet and a more vernacular version of the language.

In the following decades the question of alphabet and orthography was one of the most prominent issues and the scholars were fervently debating which variants would be the most suitable for the literature. Natural sciences did not fall within the scope of Serbian scholarly debates for quite long. The audience which could have read the works of Stojković, Solarić, and Kengelac was living in the Habsburg Empire, and few literate Serbs in the Ottoman Empire were more concerned with troubling political issues and

³⁰ Phillips, 86-87.

dealing with the overwhelming illiteracy in the principality. Consequently, we cannot talk about continuity between these three scholars and the emergence of the earth sciences in Serbia after 1880. Nonetheless, they were not without influence, perhaps more regarding the creation of the scholarly environment and language in which such debates could take place. Particularly, they created an opposition towards the dominant role of the clergy when it comes to the authority of knowledge production. Earth sciences had the potential to cause a stir when it comes to the theories of the origin of earth, as it was occurring in other European countries.

1.2. Surveyors, Travellers, and Miners

Foreign travellers who passed through the Balkans occasionally registered land formations as curiosities that could have interested their audiences in Western Europe. There was more interests in depictions of population, customs, and history, but nature and economy were also points of interests for western scholars. In general, travel writing created narratives that set Western Europe as the point of reference and the other parts of the world as inferior peripheries were built upon such travel writing. This was one of the means that distinguished the coloniser from the colonised, that set Europe as the centre, and the rest of the world as periphery. European perspectives on the rest of the world and on self were constructed, in part, with travel writing. Since the first publication of Edward Said's *Orientalism*, studies of post-colonialism examined the role of travel writing on the creation of images of the other. Larry Wolf's work on the construction of the notion of Eastern Europe pointed towards the role of the intellectuals of the Enlightenment on the creation of the East-West division within Europe and the labelling

of the East as underdeveloped. Maria Todorova's study on the narratives about the Balkans examined the narratives that created perception of this region as violent, divided, and backward. She emphasised the role of the Balkans in European intellectual construction of self and other, particularly because the region lay within Europe, and yet at its periphery, which created an attitude towards it as "inner other."³¹

The politics of writing among the scholars from the Balkans did not avoid the practices of creating stereotypes either. Milica Bakić-Hayden used the narratives from ex-Yugoslavia to exemplify the "nesting orientalisms" of the small nations. The narratives about self and other could be applied to small environments, any neighbour, and thus create images of backwardness and violence that constructed the civilised self and the uncivilised other. The practice of orientalising the other was not strange to the Balkan nations, and Serbian scholars used similar travel writing to assert the cultural dominance of Serbia over its neighbours.³²

While expeditions into unknown parts of the world played a significant part on the building of reputation of the scholars among the experts and well educated circles around Europe, the still under-researched parts of Europe itself provided opportunities for further investigations that lay in the vicinity, still uncovered, uncatalogued, uncommented, with plenty of exotic ethnic and natural phenomena that aspiring scholars could write about and acclaim scholarly reputation. Narratives that described the population and the history of the visited lands were more common. However, the revolutionary change that came with Alexander von Humboldt's expeditions to Latin America and to Siberia put more demands on travellers with requests for detailed

31 Edward W. Said, *Orientalism* (New York: Vintage Books, 1979); Larry Wolff, *Inventing Eastern Europe: The Map of Civilization on the Mind of the Enlightenment* (Stanford, CA: Stanford University Press, 1994); Maria Todorova, *Imagining the Balkans* (Oxford: Oxford University Press, 2009).

32 Milica Bakić-Hayden, "Nesting Orientalisms: The Case of Former Yugoslavia," *Slavic Review*, vol. 54, no. 4 (1995): 917-931.

accounts of their surveys, precise measurements of various natural and physical factors, use of precise instrumentation for those measurements, and all encompassing cataloguing of natural phenomena. This change was particularly significant for the professionalisation of science in Europe, but also it changed the quality of the European perception of nature because of Humboldt's application of terrestrial physics to his comprehensive synthesis of the described lands.³³

In the first half of the nineteenth century, scholarly circles were divided between amateurs and professionals, where the amateurs still held the more dominant role. The major obstacle was still the source of income, which limited these practices to rich members of the societies. Professionals usually worked for various state surveys, which did not provide them with enough income. The available training was usually in medicine and a number of trained physicians engaged in natural-historical research. In the absence of adequate academic degrees or qualified specialisations, young scholars in the first half of the nineteenth century used travels as a means to gain recognition for their knowledge and experience achieved during their journeys. This largely depended on the quantity of samples, measurements, and data collected during the expeditions.³⁴

Mary Louise Pratt has analysed the types of narratives that could be identified in the geographical-historical-cultural-ethnographic travelogues that depicted the “foreign lands”, seen both from the European and the local perspective and their role in the construction of identity and images of the self and foreign lands. Hence, knowledge of natural history was not innocent of political justifications. She examined how travel writing employed natural history to produce narratives that established European perception of the world as a point of reference. Enlightenment methods of classification,

33 Michael Dettelbach, “Humboldtian Science,” in *Cultures of Natural History*, eds. Nicholas Jardine, James A. Secord, and Emma Spary, (Cambridge: Cambridge University Press, 1996), 287-304.

34 David E. Allen, “Amateurs and Professionals,” in *Cambridge History of Science*, vol. 6, eds. Peter J. Bowler and John V. Pickstone, (Cambridge: Cambridge University Press, 2009), 15-23.

mostly built on the Linnaean system, exploited local knowledge traditions for advancement of European world views. Pratt however also stresses the influence that such travelogues had on the transculturation of the local intellectual environment, as the locals adopt the means of representation, they began writing their own travelogues that refocused the narration on the greatness and importance of the local, praising and constructing narratives of the self.³⁵

Foreign travellers in the Ottoman lands, and in particular in Serbia, constructed images of the foreign, exotic, and generally different social, political, cultural, linguistic, and ethnic environments through which they gained reputations in their own home countries. In such a manner travellers like Felix Kanitz performed a significant role in the construction of the Serbian national identity. As a foreigner with archaeological, ethnological, and historical interests, Kanitz created an image of the Serbian principality, that looked favourable in the eyes of Serbian intelligentsia of that era. His works, based on his journeys in the Balkans between 1858 and 1889, are an exemplary case of a successful scholarship, that was built on amassed historical and ethnological materials from this area.³⁶

Serbian scholars, in a similar manner, had to (re)discover their own country. Constructed images of Serbia from the early years of Serbian national movement evolved from the purely historical and literary interests to more pragmatic studies about natural resources. In the first half of the nineteenth century, intellectual discourses revolved around the issues of language, alphabet, literature, and history. Vuk Karadžić, who was the main protagonist and ideologist of the early national movement, created some of the first amateur geographical studies of Serbia. Even though he was missing a leg, he

35 Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992).

36 Particularly significant for Serbian scholars was his book on Serbia: Felix Philipp Kanitz, *Serbien: Historisch-ethnographische Reisestudien aus den Jahren 1859-1868* (Leipzig: Hermann Fries, 1868).

conducted an impressive amount of fieldwork, collecting poems, stories, customs, beliefs, adages, and recording words for the dictionary of Serbian vernacular. However, for him lands were just contexts in which people lived. Customs and peoples were more important than landscape and nature. Vuk Karadžić's interests in geography therefore stemmed from his need to locate (and invent) Serbs on a map and ascribe them traits that would make them Serbian. For this purpose, he used language as the primary identifier. The borders of the Serbian principality did not limit his research, as his vision of the nation surpassed the administrative limitations, but for the same reason lacked pragmatical goals of state building.³⁷ The road of inner discovery was for this reason paved by foreign scholars who conducted the first surveys and whose routes Serbian scholars would later follow, revisiting and completing the image of the land.

1.2.1. S.A.W. Freiherr von Herder

There were rumours that silver could be found in Serbia. Prince Miloš had certainly heard them. People knew about the Ottoman mines and talked about the time when "Turks" organised labour for the mines and the foundries. Ottoman authorities had been mining on the territory of Serbia since they gained control of the territories in the fifteenth century in mines around Rudnik. Mining operations in Kučajna and Majdanpek began in 1552 and 1559, respectively. These mines were lucrative for their concessionaires and the Ottoman state administration earned considerable revenue for their exploitation during the several centuries of their mining. Their exploitation was successful until the wars of the late seventeenth century, when due to political instability

³⁷ Vuk Karadžić, "Srbi svi i svuda" [Serbs, All and Everywhere], *Kovčežić za istoriju, jezik i običaje Srba sva tri zakona*, vol. I (1849): 1-26; idem, "Boka Kotorska" [Bay of Kotor], *Kovčežić za istoriju, jezik i običaje Srba sva tri zakona*, vol. I (1849): 27-42.

the operations got regularly interrupted. The crisis of the central authority in the Empire affected the mining production during the eighteenth century, which was at times in decline. Austrian occupation of Serbia 1718-1739 improved the mining operations, but with the return of the territory back to the Ottoman control, mining production began to fluctuate again. During the 1740s and 1750s the production in the Majdanpek mines was lucrative, but then began to falter again due to embezzlement and corruption of local governors and tax collectors. The centrifugal forces that were tearing the Ottoman Empire at that time affected the mining exploitation too. Because of banditry that interrupted mining operations and then another war with Austria (1788-1791) the mining operations were decreasing, but still working when the First Uprising started in 1804. People who worked on the mining endeavours were of various ethnic origin, but the concessionaires were usually Turkish or Jewish. When the insurrection started, all the Muslims fled the province, thus abandoning the mining operations along with other business ventures. The knowledge about the mining possibilities thus remained among the population, but there was no solid knowledge about the know-how.³⁸

It was speculated that there were deposits of coal, salt, and iron. Certainly, the participants in the insurrection knew how to find lead. During the First Insurrection, the rebels under Karadjordje dug and melted lead for the ammunition. And then, there were some people panning the gold in the Pek river. The remains of mine shafts, foundries, and dispersed piles of slag could have been found all over the country. It was certain that the land was rich with ores, but there was little knowledge on how to find them, extract them,

38 Srđan Katić, *Osmanski dokumenti o rudniku Majdanpek XVI-XVIII vek* [Ottoman Documents on the Majdanpek Mine 16th-18th Century], (Majdanpek: Muzej u Majdanpeku, 2009), 5-6, 101-102, 127-128; idem, *Istorija rudarstva i metalurgije u Osmanskom carstvu: Na primeru Smederevskog sandžaka* [History of Mining and Metalurgy in the Ottoman Empire: On the Example of the Smederevo Sanjark], Doctoral dissertation (Belgrade: 2005), 47-70, 272-295.

and transform them into profitable goods. Those who possessed the knowledge, fled the sanjak when the insurrection started.³⁹

In the 1830s, the Principality of Serbia enjoyed autonomy from the Ottoman Empire, yet it was not economically independent. The economy depended mostly on agriculture, which was at the time still rudimentary and yielded poor harvests which were not able to sustain the entire population. Prince Miloš was a practical and ambitious man. The rumours about silver, coal, and salt deposits at his disposal certainly captured his imagination at the opportunity to make himself a rich man. The principality was, after all, his own feud and as the lord, he had the land resources at his own command. Finding silver in Serbia provided him with the opportunity to mint his own coins and build independence from the foreign coinage. In addition, possibilities of digging coal and salt seemed lucrative as well, particularly that the economic benefits from them were clearly seen and the peasant population could have easily been mobilized as the labour force for the excavations. He already had a monopoly on the selling of salt and the possibilities of finding coal on the Danube river banks seemed like another opportunity to develop lucrative business.⁴⁰

In the summer of 1835, Miloš summoned Sigismund Amadeus Wolfgang, Freiherr von Herder to conduct a survey of the land and investigate the possibilities of opening mining business. Miloš was supposed to be the owner and extract all the profits from the excavations. Baron Herder was, on the other hand, the man who was supposed to find it all. The first contacts with him were made in 1834, when Prince Miloš inquired about the number of workers necessary for the opening of a mine. Baron Herder replied in a letter,

39 Baron Ž.A.W. Herder, *Rudarskyi put po Serbiu 1835. u izvodu* [Mining Journey around Serbia in 1835 in Excerpts] (Belgrade: Kn'igopečatn'a Knāžesko-Srbska, 1845), I-II; 40-41; Katić, *Istorija rudarstva i metalurgije*, 289-295.

40 Kosta Petković, *Geologija Srbije I: Istorijski razvoj* [Geology of Serbia I: Historical Development] (Beograd: 1977): 8-9.

after which he was invited to come to Serbia and conduct a survey of the small principality. At the time, Herder was a manager of the royal Saxon mining excavations in Freiberg.⁴¹

Baron Herder began his survey on 24 August 1835 from Kragujevac. During his ten weeks long journey, he made a circle around Serbia and by 2 November arrived back to his starting position. The full report about this journey Herder finished on 10 November and presented it to the prince's brother, Jevrem Obrenović. This report was received by the Serbian authorities and kept in the drawers of the Ministry of Foreign affairs for ten years.⁴² At the time, there was no person capable of reading and understanding the knowledge conveyed in the report and the making of the survey seemed like a fruitless effort at the time. Nonetheless, Prince Miloš, who personally started investing in education of Serbian youth, financed education of four students (Ivan Matić, Đorđe Branković, N. Pavlović, Vasilije Božić) who were sent to the Habsburg mining academy in Schemnitz (Selmezbánya/ Banská Štiavnica) in 1839.⁴³ With the return of three of these students from the mining school, the first set of conditions was met to reopen mining activities in Serbia. Nevertheless, by that time Miloš had been ousted from power and his efforts were lost to the new government of the *Ustavobranitelji*. The new regime represented an oligarchy gathered in the State Council that used its constitutional authority to dominate over the powerless Prince Alaksandar Karađorđević. They continued with the investments in mining, which led to the opening of the Majdanpek mine in 1848. For this endeavour, the majority of the experts came from abroad and until the end of the century, the primary experts in mining engineers

41 Ibid. Otherwise, Herder was the second son of the philosopher Johann Gottfried Herder.

42 Petković, *Istorijski razvoj*, 9.

43 Trgovcević, *Planirana elita*, 33-35. Karanović, *The Development of Education*, 157-158.

remained foreigners. Maximilian Hantken's and Theodore Fuchs's role in prospecting was particularly significant.⁴⁴

One of the students from Schemnitz translated the Herder's report in Serbian language in 1845 by abbreviating the report and retelling the story from the third person.⁴⁵ The original journal from the travel appeared in German edition only a year later, published by the author himself.⁴⁶ Day by day, Herder recorded the things he observed, making professional and personal impressions about the landscape and geological structure of the land. His route was short and descriptions brief, usually indicating places where he considered further investigations necessary before continuing to his next destination. On several occasions, he stopped to make chemical examinations or rock samples and water. Herder's primary interest during his voyage was to note the structure of earth and classify the types of rock he found on the way. This task was accompanied with the examination of water sources and observations about the nature. In the description, he included the evaluation of economic resources that could be extracted from the land. For his employers, Herder was looking for ores (particularly silver), coal, salt, mineral waters, and rocks which could be used for the construction of houses. Usually, Herder hinted towards locations where further prospecting was required as he suspected that certain locations contained a profitable amount of ores, but considering the limited time he spent in Serbia, he did not have sufficient time to make detailed analyses himself.⁴⁷

44 Petković, *Geologija Srbije I*, 19-28.

45 Ž.A.W. Herder, *Rudarsky put. po Srbiji 1835*. I was not able to identify him, as the 1845 edition of the translation does not contain the name of the translator. Kosta Petković and Jovan Žujović as well have not revealed the name of the mining engineer.

46 S.A.G. Freiherr von Herder, *Bergmännische Reise in Serbien in Auftrag der Fürstlich-Serbischen Regierung, ausgeführt im Jahre 1835* (Pest: Konrad Arnold Hartleben, 1846).

47 Herder, *Bergmännische Reise*.

One important note can be made here: Herder was not sufficiently prepared for this journey and made observations *ad hoc* as he was travelling.⁴⁸ While most of the sources of that time indicate that mining was fully abandoned in Serbia at that time, and that since the Ottoman miners left Serbian territory after 1804 because of the insurrection, the only remains of the mining activities were abandoned shafts, smelters, and piles of slag left aside roads. Testimonies about abandoned Ottoman mining activities were present in most geological survey reports of the nineteenth century. From the journal that Baron Herder made, it can be extrapolated that he was already informed about the locations he needed to visit. This included both the information about the locations where shafts and piles of slag could be found and locations where water was suspected of being salty or sulphurous. For example, he abandoned investigation of a potentially sulphurous waters which could be used for a spa, because he knew about the potentially rich ore deposits around the mountain Rudnik.⁴⁹ The southern bank of Danube around the Iron Gates, Majdanpek, mountain Kopaonik, and the Rudnik mountain were already placed on his map and the locals readily provided him information about the potentially rich ore sources. During the journey, Herder held two meetings with peasants who were gold panning in the rivers Pek and Timok. They shared their experience and the knowledge about locations and the yield. The activity was not much remunerative and it was a seasonal job for one small group of peasants.⁵⁰ This report ultimately combined the local knowledge with foreign knowledge. The locals knew where were the localities but possessed no practical knowledge on what to do with them and Herder was supposed to represent the foreign know-how from which the exploitation of the land resources would begin.

48 Kosta Petković, *Geologija Srbije*, 11.

49 Ibid., 121.

50 Ibid., 13-14, 61.

Nonetheless, this interest was mostly economic and there was little scientific curiosity behind it. Even though Herder went beyond purely economic reasons, this was of little interest for his employers who sought only information on economically viable resources. Kosta Petković emphasized the importance of Herder's journal because its translation provided the first professional geological terminology in the Serbian language. In one other aspect, the translation seems noteworthy. Considering that the translator was making a summary of Herder's journey, he shortened the account and eliminated the sections he considered unnecessary. Descriptions of nature and Baron's admiration for nature were included in the translation, but in most sections the translator decided to omit the detailed account of the rock types and orientations and positions of rocks. For example, the strike and dip orientation which Herder regularly recorded were completely missing in the translation. On the other hand the translation included analysis of all economically beneficial occurrences (coal, salt, ores, mineral waters) and suggested their exploitation.

For the translator, the information about mining had priority over information about structure of earth. For example, in the translation of the Herder's report for 28 August 1835, the translator noted that Herder examined an abandoned watchtower which was adjoined to the former neighbouring silver mines and noted how he was not able to reveal anything noteworthy.⁵¹ At the same time, in the Herder's original text, the description of the area contained a detailed account on the types of rocks that can be found in the vicinity. He observed in his examination of the structure of the landscape: rothe Sandstein (red sandstone), Glimmerschiefer – Conglomerat (mica schist – conglomerate), Thonschiefer (slate), Kalkstein (limestone), porphyratiges Conglomerat (porphyritic conglomerate), Porphyry (porphyry), and Thon (clay) were all located in his

51 Herder, *Rudarskyĭ put*, 3.

exploration during that day, but none was considered worthy of mentioning by the translator. This tendency can be followed all along the translation. Most of the detailed descriptions of the rocks and minerals were omitted and only occasionally translated into the Serbian version. It is uncertain why the unidentified translator decided to make an abbreviated account on what Herder observed during his journey and translate some of the geological terms and omit others.⁵²

While the main goal of this research was to provide economically useful information for the Serbian government (and the prince), it inadvertently positioned the knowledge of earth in Europe with the Serbian land formations. The connection with the already explored Carpathian basin was repeatedly sought in the vicinity across the river Danube. Similarly to Boué later, Herder anticipated that the stratigraphic layers from Banat would cross into Serbia and similar occurrences would be found on the other side of Danube. Thus the copper ores, limestone, and mica schist from Banat⁵³ and the sandstone from the Carpathian mountains were expected to occur in Serbia as well.⁵⁴ These assumptions turned out to be mostly confirmed, but at the time of Herder's journeys, these claims were still not uttered with certainty.

Such observations were directed to the Serbian officials interested in prospecting. Nonetheless, the actual impact of this survey was largely diminished by the lack of response by the contemporary authorities and the lack of educated men who will use the provided information for practical gains. The circumstance that Herder's report sat idle in a drawer for ten years was not mitigated by its translation. The mining in Majdanpek restarted in 1849-1858 and struggled over the next couple of decades as neither of the business ventures managed to profit from the exploitation of the mine.⁵⁵

52 Herder, *Bergmännische Reise*, 9.

53 Herder, *Bergmännische Reise*, 18-19.

54 Herder, *Bergmännische Reise*, 44-46.

55 Kosta Petković, *Geologija Srbije*, 19.

1.2.2. Ami Boué and Auguste Viquesnel

Only several months after Herder traversed the land, Ami Boué began his endeavour across the Ottoman territories. In the company of Viquesnel, and Fournoue de Montalembert, both members of the *Société géologique de France*, and two unknown Moravians – Friedrichsthal, a botanist, and Adolf Schwab, a pharmacist and entomologist-zoologist,⁵⁶ Boué started his journeys around the European part of the Ottoman Empire in Belgrade, with the aim of recounting the exotic lands for the educated audience in Western Europe. Such travelogues were common among intellectuals since the eighteenth century. Travelling and seeing distant places contributed to scholar's credibility.⁵⁷ Before coming to the Balkans, Boué already had experience in surveying the land. From Scotland and Ireland to Galicia and Istria, he explored the continent in search for curiosities. Unlike Herder, Boué made a detailed preparation for the journeys and spent years studying Turkish, Bulgarian, and Serbo-Croatian language.⁵⁸

Boué was personally acquainted with Vuk Karadžić, with whom he corresponded. Karadžić wrote to Prince Miloš on behalf of Boué, informing him about Boué's intentions and his reputation as one of the founders of the *Société géologique de France*. He stressed Boué's experience as a researcher traveller who already made mineralogical and

56 Ami Boué, *La Turquie d'Europe ou observations sur la géographie, la géologie, l'histoire naturelle, la statistique, les mœurs, les coutumes, l'archéologie, l'agriculture, l'industrie, le commerce, les gouvernements divers, le clergé, l'histoire et l'état politique de cet empire*, vol. 1 (Paris: Arthus Bertrand, 1840), ix.

57 David E. Allen, "Amateurs and Professionals," 15-23; Stuart McCook, "'It May be Truth, But It is not Evidence': Paul du Chaillu and the Legitimation of Evidence in the Field Sciences," *Osiris*, 2nd series, vol. 11 (1996): 177-197. Katie Whitaker, "The Culture of Curiosity," in *Cultures of Natural History*, eds. Nicholas Jardine, James A. Secord, and Emma Spary, (Cambridge: Cambridge University Press, 1996), 75-90.

58 Todor Nikolov, "Ami Boué (1794-1881) et la naissance de la géologie bulgare," *Travaux du Comité français d'histoire de la géologie, Troisième série*, T.X (1996), <http://www.annales.org/archives/cofrhigeo/boue-bulgare.html> (accessed 8 July 2018).

geognostic explorations of many countries of Europe. This must have made an impression on the Prince, because Miloš organised a welcoming reception for the scholars and offered them assistance on their journeys.⁵⁹ Stevan Radičević, secretary of the Council (Sovjet), who accompanied Herder on his journey, joined the new expedition. This was a way Boué could have accessed the information from Herder's survey.

Boué used intensively Herder's text as a source of information which guided him along the journey, because he knew more about what Herder observed than was written in Herder's report to the Serbian authorities. He reported that Herder discovered the presence of ores (la gelène argentifère, la blende, le fer oxidulé, le fer pyriteux) in the layers of porphyry (porphyre silicifié) in the surroundings of the mountain Rudnik in central Serbia. Because porphyry was not recorded in Herder's written report, Petković concluded that Boué must have heard about it from him personally.⁶⁰ Boué's expedition observed central, western, and southern parts of Serbia. Thus, Boué and his companions visited Rudnik and Kopaonik and found mining deposits there in 1836, but they saw Majdanpek only in 1837. Boué made three journeys around the European parts of the Ottoman Empire, between 1836 and 1838, and already in 1836 parts of his impressions were published in the *Bulletin de Société géologique de France*.⁶¹ Soon, translations of this report appeared in German and English language, presenting thus his preliminary results to a wider learned audience.⁶²

Even though Herder made his survey just several months before, the results of his work became known to the public much later. Nonetheless, Boué, who needed this

59 Petković, *Geologija Srbije I*, 11-13.

60 Boué, *La Turquie d'Europe I*, 373; Petković, *Geologija Srbije I*, 14.

61 Ami Boué, "Résultats de ma première tournée en Turquie d'Europe, faite, en partie, en campagne de MM. de Montalembert et Viquesnel," *Bulletin de Société géologique de France* VIII (1836): 14-63.

62 Ami Boué, "Geognostische Ergebnisse der Reise in der Türkei." *Neues Jahrbuch für Mineralogie* (1836): 700-703; Idem, "Some observations on the geography and geology of the Northern and Central Turkey." *Edinburgh New Philosophical Journal* XXII (1837): 47-62, 253-270; XXIII (1837): 54-69.

knowledge, mostly got himself familiarised with his study – he frequently relied and quoted Herder's finding, even though there was at the time no publication from which he could have quoted. At one point, Boué stated that the knowledge about the mineral richness of the Serbian terrains was already partially known, because of the surveys Austrians had made during their occupation of the area in the eighteenth century (1718-1739). The second source of knowledge about the rocks and minerals in Serbia was Herder.⁶³

In the forthcoming years, several editions of such reports were published by both Ami Boué and his companion Auguste Viquesnel, which repeatedly summarised the findings, often repeating the same text in various forms and translations. In both cases, their reports attempted to cover a wide range of topics and to inform on the observed phenomena, from land formations, rocks and minerals, to landscape, settlements, population, and political situation. Detailed examinations and descriptions were the instruments of scholarly authority and both authors addressed both the questions of natural and social sciences. Ethnographic, historical, and political narratives found their place along with the descriptions of the landscape, structure of earth, plants, and animals.⁶⁴

This type of reporting was typical for travelogues and influenced the first Serbian authors who attempted to give scholarly accounts about the Serbian principality. Whether we talk about inspiration, emulation, or appropriation of the writing style, these first Serbian accounts had to lean on the form and the content of the previous Western writers.

63 Boué, *La Turquie d'Europe* I, 372.

64 Auguste Viquesnel, "Journal d'un voyage dans la Turquie d'Europe," *Mémoires de la Société géologique de France* serie 1, Tome V, Memoire no. 2 (1842): 35-127; idem., "Journal d'un voyage dans la Turquie d'Europe," *Mémoires de la Société géologique de France*, serie 2, Tome. I, Memoire no. 6 (1842): 207-303; idem., "Résumé des observations géographiques et géologiques faites, en 1847, dans la Turquie d'Europe", *Bulletin de la Societe Geologique de France*, Serie II, no. 10 (1853): 454-481; idem., *Voyage dans la Turquie d'Europe: Description physique et geologique de la Thrace I-II*, (Paris: Arthus Bertrand, 1868).

While neither Boué nor Viquesnel had more particular interest in the Serbian principality than in other parts of the Ottoman Empire, their detailed accounts provided enough information for the subsequent Serbian authors to build their patriotic narratives with the knowledge of the Serbian lands coming from these two French writers. However, when it comes to earth sciences, Boué's, Viquesnel's, and Herder's accounts for a long time remained the most authoritative sources of information about the structure of the rock formations and mineral deposits in Serbia. Even during the 1890s, Jovan Žujović believed it was appropriate to translate and publish Boué's work into Serbian.⁶⁵

In 1840, Ami Boué published his capital four volume work on the European part of the Ottoman Empire. This work attempted to make an overview of all the topics of interest, from natural features of the land, to ethnographic, economic, and historical accounts of the lands. The learned audience in Europe received a comprehensive survey which summarised and explained everything that Boué's expedition revealed and everything they acquired through previous work of scholars. Boué used a systematic topic-oriented approach where he presented the data according to the type of information he was providing. Therefore, he did not follow the chronological order of the surveys, but accordingly to the type of information he wanted to present. The first section of the first volume of this study was dedicated to landscape features, or what would today be considered geography. The second section belongs to geology, where he presented the types of rocks found in the European Ottoman lands, classified according to the stratigraphical layers he believed they belonged to, and the stratigraphical time sequence they originated from (see fig. 1).⁶⁶

65 Ami Boué, "Geološka skica evropske Turske" [Geological Sketch of European Turkey], Jovan Cvijić, Jovan M. Žujović, Milenko M. Žujović (trans.), *Geološki anali Balkanskog poluostrva*, vol. 3, no. 3 (1891): 1-157.

66 Ami Boué, *La Turquie d'Europe ou Observations sur la géographie, la géologie, l'histoire naturelle, la statistique, les mœurs, les coutumes, l'archéologie, l'agriculture, l'industrie, le commerce, les gouvernements divers, le clergé, l'histoire et l'état politique de cet empire* I-IV (Paris: Arthus Bertrand, 1840).

On the other hand, instead of a topic-oriented narrative, Viquesnel decided to base his narrative on regional descriptions. He depicted their journeys as they moved from one valley to another, focusing on the presentation of the structure of earth. Viquesnel was not interested in ethnography, so he dedicated his work to depiction of geological features, and was accompanied with a geological map of the European Turkey. Rocks and minerals were identified according to Pierre Louis Cordier's classification and nomenclature, and the curious readers who wanted to examine the specimens were able to find them available at the Museum of the Jardin-des-Plantes.⁶⁷ Each rock was located according to the time of its origin and placed on the stratigraphical column. His stratigraphic classification was somewhat similar to Boué's. Layers identified in the Balkans were sorted as Crystalline schists, transition layers, Cretaceous formations, Tertiary formations, and alluvial deposits. In this way, Viquesnel meticulously recorded the changes in the land formations, different rocks and minerals they observed, shifts of the stratigraphical layers, changes of the mountains, changes of height, and strike and dip for each land formation. Regarding this, his report was more similar to Herder's in nature, just considerably more detailed. The purpose of this text was to provide some additional information to Boué's review of the European Turkey.⁶⁸

1.2.3. Surveyors from the Habsburg Lands

The Serbian government soon realised the benefits of geological surveys for mining industry and continued to hire foreign experts for such endeavours. August Breithaupt conducted a survey in 1856 in search for locations useful enough for mining

⁶⁷ Auguste Viquesnel, "Journal d'un voyage dans la Turquie d' Europe" *Mémoire de Société géologique de France*, V (1842): 36.

⁶⁸ The section which described the terrains of Serbia was in: Viquesnel, "Journal d'un voyage", 35-78.

exploitation. His primary focus was on the exploitation of the Majdanpek mine, but he also examined other localities that had potential for future mining. He was examining localities that had layers of sfalerite, galenite, siderite, and salt. During this research, Breithaupt discovered a new type of rock – *timazit* (see fig. 8), a kind of gabbro, and a new mineral – gamsigradite, a type of amphibole. Bernhard von Cotta conducted his surveys in 1863, when he continued his surveys of Banat by crossing into Serbia and examined localities of Golubac, Kučajna, and Rudnik. He was following the distributions of the igneous rocks from Banat to Serbia and speculating about their underground spreading. Both Breithaupt and Cotta were teaching at the mining academy in Freiberg and were among the most prestigious experts in mining geology of that era.⁶⁹

Approximately around the time when Breithaupt and Cotta made their surveys, studies of natural history received a radical boost with first publications of Josif Pančić. His work in botany was noticed by Vuk Karadžić, who suggested that he should go to Serbia and seek employment there. The arrival of this Croatian physician, who migrated to Serbia in search of employment in 1846, marked a change in attitude towards natural history. Before Pančić, all the effort had been directed towards translations and promotion through education. Among Serbian savants there was no developed notion of field research in natural sciences. While field research represented one of the primary activities of scholars interested in ethnography, literature, and history, there was no interest in applying the same principle for gathering knowledge about nature. Josif Pančić was appreciated for his interests in botany and work he performed in that field, and was

69 August Breithaupt, "Exposé über Maidanpek in Serbien," *Berg- und hüttenmännische Zeitung*, 16. Jahrgang, no. 2 (1857): 13-15; idem., "Behandlungen des Bergmännischen Vereins zu Freiberg (Fortsetzung)," *Berg- und hüttenmännische Zeitung*, 19. Jahrgang, no. 12 (1860): 124; idem., "Timazit, eine neue Gesteinsart, und Gamsigradit, ein neuer Amphibol: Mit beiläufigen Bemerkungen," *Berg- und hüttenmännische Zeitung*, 20. Jahrgang, no. 6 (1861): 51-54; idem., "Sitzung vom 2 Februar 1864," *Berg- und hüttenmännische Zeitung*, 23. Jahrgang, no. 14 (1864): 118-119; Bernhard von Cotta, *Erzlagerstätten im Banat und in Serbien* (Wien: Wilhelm Braumüller, 1865).

recruited in 1853 to teach all of the three branches of natural history.⁷⁰ Pančić's work was focused botanical topics, but in some cases he briefly addressed geological problems. As in the cases of his studies of the plants that grow on serpentine layers and those that grow on quicksand. Even though he did some work that involved earth sciences, he did not engage in it as a research subject. His textbook for his course in mineralogy and geology was a translation, and in this manner he continued with translating practices of his contemporaries.⁷¹

In 1869, another Viennese traveller passed through these areas. Ferdinand von Hochstetter, professor at the Polytechnisches Institut/Technische Hochschule in Vienna, and surveyor for the Geologische Reichsanstalt (GRA), made an expedition through the eastern parts of the Balkans, without passing through the territory of the Serbian principality. Even though originally his journey was not related to Serbian geology, he passed through the regions around Vranje and Niš, and through the Southern Morava valley, which after 1878 became Serbian territories. This was a detailed geological survey that identified the rock types and strata according to their position on the stratigraphical column, thus locating the Triassic, Jurassic, and Cretaceous formations in those regions.⁷²

The next scholar coming from the Geologische Reichsanstalt who conducted the survey of the Balkans was Emil Tietze, and he travelled through Serbia between Boljetin,

70 Nikola Diklić, "Josif Pančić (1814-1888)," in *Život i delo srpskih naučnika* vol. 1, ed. Miloje Sarić, (Belgrade: SANU, 1996), 7; Milan T. Luković, "Šezdeset godina rad Srpskog geološkog društva" [Sixty Years of Work of the Serbian Geological Society], in *Spomenica 1891-1951: 60-godišnjica Srpskog geološkog društva* [Memorial 1891-1951: Sixty Yars of the Serbian Geological Society] (Belgrade: Prosveta, 1951), 15-16.

71 Josef Pančić, "Die Flora der Serpentinegebirge in Mittel-Serbien," *Verhandlungen d.k.k. zoologisch-botanischen Gesellschaft in Wien* (1859): 139-150; Josif Pančić, "Živi pesak u Srbiji i bilje što na njemu raste" [Quicksand in Serbia and Plants that Grow on It], *Glasnik Društva srbske slovesnosti*, vol. XVI (1863): 197-233; Josif Pančić, *Mineralogija i Geologija po Naumanu i Bedantu* [Mineralogy and Geology According to Nauman and Bedant] (Belgrade: Državna štamparija, 1867).

72 Ferdinand von Hochstetter, "Die geologischen Verhältnisse des östlichen Theiles der europäischen Türkei: nebst einer geologischen Karte in Farbendruck," *Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt* vol. 20 no. 3 (1870): 365-461; Idem, "Die geologische Verhältnisse des östlichen Theiles der Europäischen Türkei," *Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt* vol. 22 no. 4 (1872): 331-388.

Majdanpek, and Donji Milanovac in 1870. He was particularly interested in the copper ores of Majdanpek and reported about Neocom and Turon formations between Boljetin and Donji Milanovac. During this survey Tietze identified a new mineral, which he named Milanite.⁷³

József Szabó, professor at the University of Budapest, conducted three expeditions through Serbia in search for igneous rocks between 1873 and 1875. During his 1874 expedition, he was accompanied by one of his former students, Šandor Popović, who was a professor at the Serbian Gymnasium in Novi Sad. These surveys were part of the larger project on the igneous rocks of Hungary that Szabó conducted and his Serbian findings were supposed to provide more information on the distribution of formations from the Pannonian Basin into the Balkan Peninsula.⁷⁴

The interests of geologists from the GRA towards the Balkans was confirmed after Franz Toula started his surveys. Unlike his predecessors, Toula devoted his career to the study of geology of the Balkan Peninsula, and part of his field journeys traversed through Serbian territory. While his primary interests were in the Bulgarian provinces, he explored sections of the eastern parts of Serbia. In 1875 and 1880 he made two expeditions into the eastern part of the peninsula, crossing several times through the four provinces that were joined to Serbia after 1878. His findings in the Pirot region were particularly significant for the future Serbian geology, as he made stratigraphical identifications of the Triassic, Jurassic, and Cretaceous layers in those areas, locating along with them granite and red sandstone formations.⁷⁵

73 Emil Tietze, "Geologische Notizen aus dem nordöstlichen Serbien," *Jahrbuch der kaiserlich-königlichen geologischen Reichsanhalt* vol. 20 no. 4 (1870): 567-600.

74 József Szabó, "Magyarország és Serbia néhány jellegess vulkáni közetének mikroszkopikus tanulmányozása" [Microscopical Study of Some Typical Volcanic Rocks in Hungary and Serbia], *Földtani közlöny*, vol. VI, no. 1 (1876): 1-15.

75 Franz Toula, "Geologische Untersuchungen im westlichen Theile des Balkans und in den angrenzenden Gebieten. I. Kurze Uebersicht über die Reiserouten und die wichtigsten Resultate der Reise," *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften Mathematisch-Naturwissenschaftliche* vol. I no. 72 (1875): 488-498; Idem, *Eine geologische Reise in den westlichen*

Geological and geographical research of the territory of Serbia provided data that helped better understanding its surroundings. From the Carpathians a mountain range ran through Serbia that connected with the Balkan and the Rhodope mountains. The Dinaric Alps were distributed west-east along the coastline from the Istria to the Aegean Sea. Its northern parts spread into Serbia, gradually transforming into the Pannonian Basin. Herder, Boué and Cotta expanded the already known research of the Banat and the Carpathians. Szabó extended his research of the igneous rocks of the Pannonian Basin with his findings in northern Serbia. Finally, the research of Tietze and Toula largely depended on what had been already found or would be found in the eastern mountain ranges of Serbia (see fig. 2 and 3).

Balkan und in die benachbarten Gebiete: unternommen im Spätsommer 1875: topographische Schilderungen (Vienna: 1876); Idem, "Geologische Untersuchungen im westlichen Theile des Balkan und in den angrenzenden Gebieten: 3. Die sarmatischen Ablagerungen zwischen Donau und Timok," *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften Mathematisch-Naturwissenschaftliche* vol. I no. 75 (1877): 113-150.

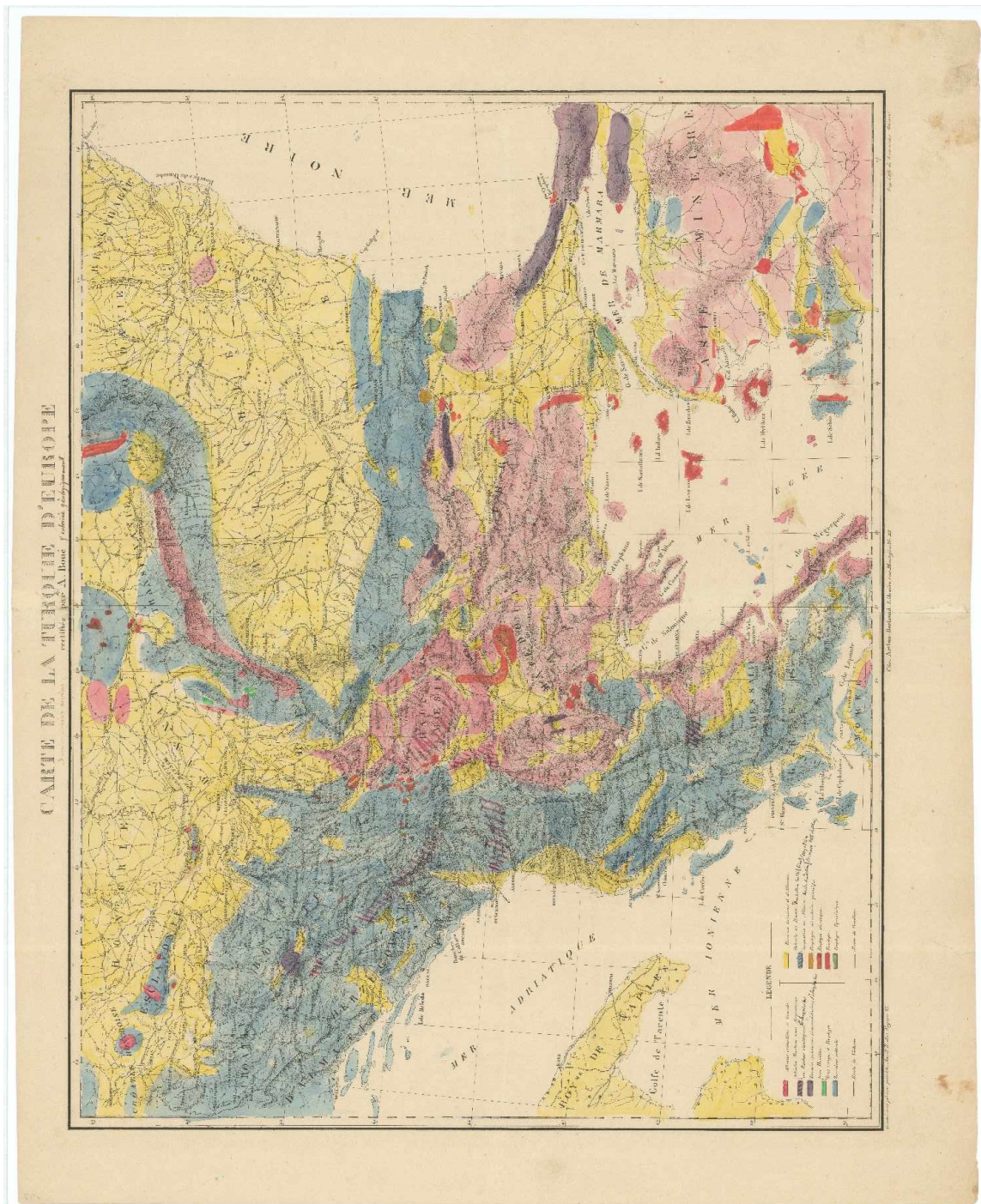


Figure 1:
 Ami Boué, *Carte de la Turquie d'Europe*: coloriée géologiquement, no date. Blue areas mark the Cretaceous areas, pink areas mark the crystalline schists and granites, red areas mark trachytes, and yellow areas mark alluvial regions. Source: Library of the Geologische Bundesanstalt. A-12135 MA Karte 25.

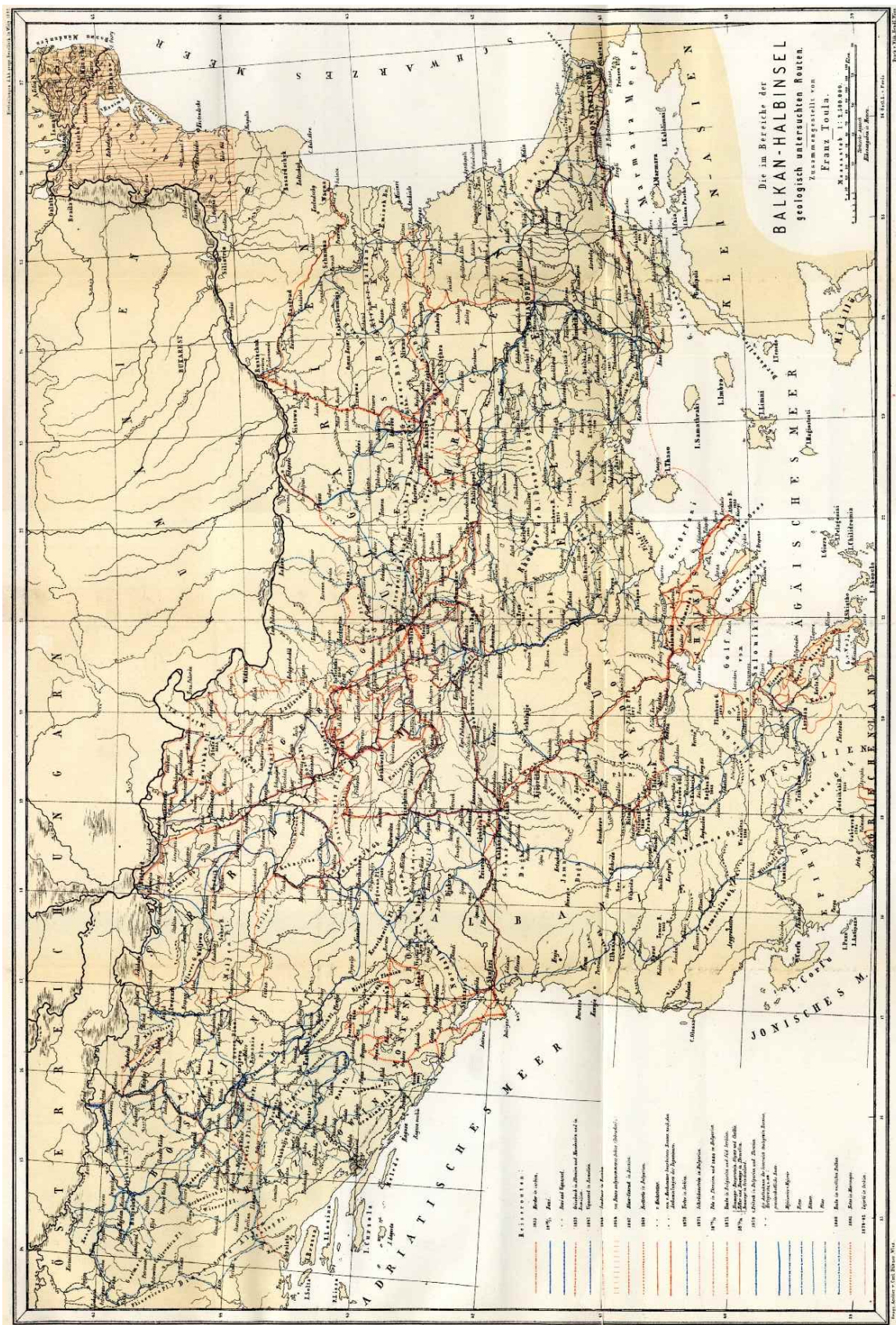


Figure 2: Franz Toula, "Die im Bereiche der Balkan-Halbinsel geologisch untersuchten Routen," *Mittheilungen der kais. königl. Geographischen Gesellschaft in Wien*, vol. 26 (1883); annex. Routes of geological surveys before 1890.



Figure 3:

Fran Tula. Same map. Focused on the territory of Serbia.

Herder in Serbia 1833:

Boué 1836/37:

Boué and Viquesnel:

Hochstetter:

Tietze in Serbia 1870:

Žujović in Serbia 1878-1882:

1.3. Scholarly Activity and Education

In the spirit of the Enlightenment, promoters of the Serbian national ideology from the beginning of the nineteenth century espoused education for the masses as one of the primary goals in the transformation of the Serbian principality. Enlightened yearning for knowledge and its practical use remained one of the primary traits of intellectual narratives in Serbia well into the twentieth century. This situation was conditioned by the low level of literacy in Serbia until the mid-twentieth century. The scholarly texts published during the nineteenth century can be characterised as having educational objectives with an aim to acquaint the pupils and the general public with the most recent scientific knowledge about various topics. The work on establishing of primary and secondary school system required textbooks and standardisation of the knowledge taught in the principality's school system. For this reason, the first books that addressed the earth sciences were generally meant to be school textbooks, with the notion that the wider audience could benefit from them too.

Intellectuals actively participated in the creation of an independent Serbian state. Their ideals set the parameters for the institution building and the social, political, and economic transformation of the country. Western models they strived to emulate were not always in congruence with the nature of the patriarchal society of Serbia that was deeply structured as a peripheral Ottoman province. The practices and structures of power of the Ottoman Empire were not desirable in the plans of the Serbian intelligentsia, yet they determined the conditions in the principality for several decades. The influences from the West were rather haphazard and depended on the person who was engaged in the educational activity.

Maria Todorova warned against the use of narratives which stress the backwardness of Eastern European nations in historical explanations. Her analysis of the theories of nationalism which addressed Eastern Europe revealed many misconceptions about transfers of ideas. She suggested a more nuanced treatment of transfers and proposed an examination of the nation building as relatively synchronous processes within a *long durée* framework of a broader European space.⁷⁶ One of the relevant issues of the nationalism she addressed was its reliance on roots and tradition. However, she indicated that “despite its past-oriented rhetoric, nationalism in its practice was an equally radical futuristic project.”⁷⁷ In a similar way, my treatment of tradition in nineteenth century narratives will consider it an intellectual construction of the nineteenth century scholars who needed it for building of the Serbian academic environment.

The patriotic service that scholars performed in invigorating the public spirit with national goals was understood at the same time as a mission of enlightenment and education, the introduction of the most useful know-how coming from the West, and construction of self-awareness about the tradition and the identity of the specific Serbian heritage. The transfer of ideas from the west intrinsically implied construction of a nationalist narrative that would support the nation and state building process. Holm Sundhausen already pointed towards the influence which the philosophy of Johann Gottfried Herder exerted in the establishment of the Eastern European nationalist narratives and at the same time at the influence the folk songs of Eastern European ethnic groups exerted on Herder's ideas. In this way, South Slavic folk songs were among the many that inspired Herder in the formation of his ideas of the folk spirit.⁷⁸ Inspired by Herder, many scholars engaged in the construction of Serbian tradition: customs, poems,

76 Maria Todorova, “The Trap of Backwardness: Modernity, Temporality, and the Study of Eastern European Nationalism,” *Slavic Review* 64, no. 1 (2005): 140-164.

77 Ibid., 143.

78 Holm Sundhausen, *Der Einfluß der Herderschen Ideen auf die Nationsbildung bei den Völkern der Habsburger Monarchie* (Munich: R. Oldenburg Verlag, 1973), 15-16, 158-164.

adages, stories, and myths became the focal point around which the nationalist narratives revolved, thus both reaffirming and transforming the patriarchal society. In the Herderian perspective, history and language became two crucial elements of the Serbian national identity and consequently the most relevant issues that had to be clarified and defined.

When put in the perspective of Serbian nineteenth century scholarly work, tradition and progress seem difficult to separate. The duality of Serbian cultural space in the eighteenth and nineteenth century created an environment of entangled influences between the Habsburg and the Ottoman sphere. Enlightened scholars such as Dositej Obradović, Atanasije Stojković, and Pavle Solarić from the Habsburg Monarchy gave the initial momentum to scholarly activities. Over the course of the nineteenth century some of the Habsburg intellectuals (not only Serbs) invigorated the appearance and growth of the intellectual circles in the Principality of Serbia. Vuk Karadžić, on the other hand, is an exemplary case of the opposite transfers. Born in a village near Loznica in the Ottoman territory, Karadžić spent his life travelling around Europe. Between the Habsburg Empire and the principalities Serbia and Montenegro (at the time both still formally dependent of the Ottoman Empire), his work produced a large collection of ethnographic materials on the South Slavic Balkan area. He might not have become a creative participant in the creation of national narratives, had he not been incited by the censor of the Habsburg government Jernej Kopitar, who assigned him to work on the Serbian language and art.⁷⁹ As the aftermath of Kardžić's work, the methods and the selection of materials which would be recorded established a paradigm according to which the products of the Serbian tradition were recorded. Slowly, intellectuals were discovering the tradition of the South Slavic population and shaping it in the forms articulated by Western scholars.

79 Holm Sundhaußen, *Herderschen Ideen*, 155-156.

Consequently, the emphasis on language, historical narratives, epic poems, and adages remained predominant throughout the nineteenth century under the influence of Romanticism. While the ideas of the Enlightenment did not give much credit to the oral tradition of peasant societies, the emergence of romanticism and more intensive influence of Herder's philosophy incited a systematic collection of the oral tradition. Serbian patriarchal society was discovering itself through Western scholarly paradigms. Circles of learned men were searching for willing workers who would perform their patriotic duty by recording oral tradition and remnants of the national history. Interest in the natural sciences came rather late, however. Although Stojaković and Solarić already wrote books on natural history and natural philosophy in the early nineteenth century, the attention of the learned men in the principality was not directed towards natural topics until the 1850s. When the interest in nature finally appeared, it was embedded in the research on history and folklore.

Because the main interest of this study is to examine the development of geography and geology and the epistemic border that separates these two fields, the analysis will address first the questions of how scholarly activity in nineteenth century Serbia was understood by the scholars and how the scholars that established the separate disciplines of earth sciences made epistemological distinctions between them. The position of scholars in Serbian society was conditioned by circumstances outside of scholarly circles. One way of looking at this conditioning is to follow Thomas Gieryn's proposition that the production of scientific knowledge may be observed from a different angle: "not upstream at facts in their making, but downstream in their consumption."⁸⁰ What is the role that scientific work performs in a society, and for what kind of expertise are the scholars summoned? The knowledge producers actively seek recognition for their

⁸⁰ Thomas F. Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: University of Chicago Press, 1999), ix.

work and seek support from the society, both financial and institutional, which is supposed to acknowledge their primacy in the domains of knowledge and truth.⁸¹ Gieryn argues that science is constructed in local and episodic enactment and that we can determine the cultural boundaries of science by analysing the episodes in which the credibility of the scholarly work is contested. Furthermore, the participants of scholarly debates actively and passively construe epistemic authority in order to determine the borders between science and pseudo-science, and between different fields of authority within scientific disciplines.⁸² The epistemic authority of science in the social and political setting of the Principality of Serbia, where at the time no established scientific environment existed, largely depended on the nationalist ideology and the needs of the emerging state administration. In this particular context, I will examine the understanding of what was considered science and scholarly work in Serbia and how the expertise among various scholarly disciplines was delineated. Consequently, epistemic authority will be defined as cultural understanding of what is science, what makes the credibility of science, and what divides and constitutes scientific disciplines.

In the moment when Serbia gained its autonomy in 1830, there were sixteen town elementary schools and several village schools with a population of approximately 800 students.⁸³ By the 1836, the government invested in new schools, and the number rose to 72, with an enrolment of 2,514 students. According to the 1834 census, Serbia had at that time 678,132 inhabitants.⁸⁴ Far from any scientific practices, Serbia struggled even to acquire a sufficient number of educated people to maintain its administrative apparatus. Prince Miloš Obrenović understood his role of the governor of one Ottoman province as his personal fiefdom and treated the state treasury as his own. Consequently, any decision

81 Ibid., x.

82 Ibid., 12-19.

83 Karanovich, *The Development of Education in Serbia*, 25.

84 Ibid.

about support for education, science, or culture in general was dependent solely on him. Considering that the prince was illiterate and during his entire reign he preserved the traditional patriarchal attitudes of rural Serbia, his attitudes towards education and intelligentsia were not favourable. He detested the literate people who filled his administrative office, he put little trust in them, and favoured those who excelled in warrior skills and physical strength. However, this posed pressure on the intellectual circles to determine their primary focus: promotion of literacy.

The first intellectual society in the Principality of Serbia was formed in 1841 in Belgrade, during the brief first reign of Prince Mihailo Obrenović. The small group of enthusiasts wished to promote and standardise the vernacular Serbian language and to work on the establishment of science. Its name, *Društvo srpske slovesnosti* (Society of Serbian Letters⁸⁵ (DSS)) can be linked with the contemporary focus on language and literature, but as well on the contemporary understanding of scholarly activity as a form of literary work. Most of its founders and initial members were people who emigrated to Serbia from the Habsburg Empire. Although, the primary concerns of the society were related to language, the society was opened for all other scholarly activities.

In the first issue of the journal *Glasnik Društva srpske slovesnosti* (Proceedings of the Society of Serbian Letters), the society published the program of activities which proclaimed the goal of dissemination of sciences among the Serbian people through the means of publication of fragments of texts and essays of “all the general sciences,” and “such particular sciences, related to the Serbian nationality.” While the “all general sciences” were not divided into smaller units, among the particular (Serbian related) sciences, they listed: Serbian history, Serbian antiques, Slavic history and antiques, geography of Serbia, statistics of Serbia, and natural history.⁸⁶

⁸⁵ Alternatively translated to English as Society of Serbian Literature and Society of Serbian Scholarship.

⁸⁶ Konstantin Branković, “Predgovor” [Foreword], *Glasnik Društva srpske slovesnosti* no. 1 (1847): n.p.

This declarative proclamation on the scientific work contained one of the first epistemic boundaries set among Serbian scholars. Geography of Serbia (author of the foreword, Konstantin Branković, chose the word “Zeml'eopisaníe” (description of earth)) was divided into a) description of the Serbian areas, and b) description of the journeys with the aim of depicting of Serbian history and nationality (*narodnosti*), journeys around Serbia, and around foreign and Slavic countries. Statistics of Serbia (Branković chose the words “državopísanie” [description of state] and “Statistika”) category had no subdivisions, and was described as “various data for statistics.”⁸⁷ The item in this programmatic statement which was labelled “Prirodoopisaníe” (description of nature) corresponded with the contemporary notion of natural history. It was divided into: realm of animals, realm of plants, and realm of minerals.⁸⁸

In this division, we can observe traces of boundary work. At this particular moment, there were no actual scholars engaged in scientific research in these fields. Cultural boundaries of science were set in a society with a low level of literacy and the initial task of this group of scholars was to provide translations of appropriate scholarly work which would promote scientific knowledge in Serbia. It is no surprise that their initial publications were sold as “children's library” and consisted mostly of translations.⁸⁹

Nonetheless, this initial division of disciplines was transformed soon after, when members of the society decided to form five separate sections: ezykoslovni (linguistic), istoriíski (historical), pravoslavni (legal), filosofiíski (philosophical), and prirodoslovni (natural-historical).⁹⁰ It seems that this organisation was not supported by all members of

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ Jovan Gavrilović, “Izvestiá o dělaníu Društva Srbske Slov[esnosti] god[ine] 1849.” [Report on the Activities of the Society of Serbian Letters for the Year 1849], *Glasnik Društva srbske slovesnosti* no. 3 (1851): 279.

⁹⁰ Ibid., 277-278.

the society. One of the founding members of the Društvo srpske slovestnosti, Atanasije Nikolić, protested against such divisions because he felt that the overall work in the society will be hampered by these divisions. In the speech he held on 14 April 1849, he reminded his colleagues of the initial goals and advocated against any divisions within the society. The reason for his protest was the still unfinished business regarding the standardisation of the scientific language. This task, according to him, required consensus, not only from the members of the Društvo Srpske Slovesnosti, but from the general public as well, and any further divisions within the society would potentially dilute the effort.

[...] all the Messrs. Professors, who teach today various sciences in [our] mother tongue, will feel intensely this urge, because those who know [will] say how difficult it is to guess in Serbian language all those technical terms, used for centuries in foreign languages. [...] Once an expression or a technical term gets into the language, it is difficult to force it out and replace it with another one. In order to prevent this thing, and in order not to encumber the language with unpleasant terms, it was found appropriate to make decisions on these terms by an agreement, to announce these solutions of the Society in newspapers, so even those who are not members of the Society could express their opinions, so would the Society, by making the use of it, receive a more general approval. These are the reasons for the existence of the Society of Serbian Letters.⁹¹

Nikolić continued further on, lamenting about unproductive discussions about the constitution of the society, while the publication of the required dictionary of technical terminology was given up. After he saw the proposal which divided the society into five sections, he raised this issue, but was apparently interrupted and prevented from finishing his speech. During the next meeting (14.04.1849) he implored his audience to start working again on the technical dictionary project and stop arguing about the organisational issues. In his view, the division of the society into five departments would have reduced the productive output and damaged the cohesion of the society:

Even in this situation, when assemblies are held, barely seven or eight members come; so how could we convene five or six sections with that number of members? How many

91 Atanasije Nikolić, "Slavno Društvo srpske slovesnosti" [The Honorable Society of Serbian Letters], in *Glasnik Društva srpske slovesnosti* no. 3 (1851): 30.

participants will the Society be able to find for each section, when one could not find them now in the assembly? We, or to be more precise, the few of us who are coming to the Society, we are looking to convene at least once a month, and then when we meet, to speak the truth, do we bring some of the literary works of ours to contribute to development of the Society? I can say, and the evidence can be found in the Protocols of the Society, that at the beginning there were several hard-workers who worked on something and presented their works at the Society, no matter how small; but when they saw that other members do not want to work and that they, as a matter of fact, spoil [the work] and that they come to the Society only to criticise others work, or in other words to make fun [of it], then even those [hard-working members] stopped working, and some even stopped coming to the Society.⁹²

The division into sections was perceived primarily as an administrative problem which damaged the motivation of the members to work. However, Nikolić saw this as an epistemic issue as well, because individually, scholars had the right to divide the work between themselves and choose the topic of their desire, but here he favoured the “wide and undivided field” and argued against the work in a “restricted field.” He perceived scholars as labourers in one universal cognitive field in which epistemic issues can be equally recognised by all participants.

[...] is it forbidden to anyone, under the current organisation of the Society, to work on the agreeable subject, i.e. to work according ones own will in this wide and undivided field? And is it going to be easier to steer ourselves in a restricted field than in an unrestricted? Or, can that be, if one wants that without all these formalities? Is it restricted now for two [or] three members to gather, without any formal decision, to work on one project, or one science, or does that really have to be under the name of a section? Or, one could thing that we would be, after being divided into sections, different and more hard-working?⁹³

Nikolić perceived hard work as a parameter of a successful scholarly activity. The number of published papers and the participation at the assembly meetings were a measure of contribution. However, he needed a focused joint work on a common goal, which was the betterment of peasant life and he argued for moral upbringing and change of working habits among peasants. For this reason he considered that the accessibility of books and the dispersion of knowledge among peasants through public reading should be

92 Ibid., 32.

93 Ibid., 33.

the primary goals of the society and that the work on the development of sciences is something that should be done in addition to this primary task.⁹⁴

Despite Nikolić's pleading, the society divided itself into these five sections. Each member was given the choice of which of the sections' work he was going to participate in. However, this decision encountered a problem, since the members of the Društvo Srpske Slovesnosti were not responding promptly to the inquiry. At the end of 1849 the linguistic section had five regular and four corresponding members, the historical section had five regular and one corresponding member, then there was the legal section with eight regular members, the philosophical section with six regular members, and the natural-historical with two regular members and one corresponding.⁹⁵ At the end of the following year, when the departments were finally constituted, the situation was slightly different: the linguistic department had twenty members (ten regular, and ten corresponding), the history department had sixteen members (eight regular, and eight corresponding), the legal department had fourteen members (eleven regular and three corresponding), while the philosophical had six (all of them regular) and natural-historical had ten (six regular and four corresponding).⁹⁶

Nine years after the first intellectual society in Serbia was founded, its members delineated within the cultural boundaries of science a separate field for *prirodoslovlje*. The sciences of nature were comparatively less represented in the Society of Serbian Letters than linguistics, history, and law, yet they received their due attention. At the time, there were no trained scholars engaged in natural sciences. Nonetheless, it is worth mentioning that it was registered in the report of the Društvo Srpske Slovesnosti for 1850 that Josif Pančić, the physician of the District of Kragujevac, became a corresponding

⁹⁴ Ibid., 35-37.

⁹⁵ Gavrilović, "Izveštā o dēlanju Društva Srpske Slovesnosti god[ine] 1849.": 277.

⁹⁶ Jovan Gavrilović, "Izveštā o dēlanju Društva Srb[ske] Slovesnosti 1850. godine" [Report on the Activities of the Society of Serbian Letters for the year 1850], *Glasnik Društva srpske slovesnosti* no. 3 (1851): 284.

member of the society in the year 1850.⁹⁷ His own personal interests in botany and his enthusiasm for research traced a path on which the institutional building of natural sciences occurred. At the time of this first delineations of scientific space, there was a general proclamation on the need to investigate natural space. Pančić, however, narrowed the focus of his research in natural history, and specifically, in botany, establishing himself as an expert in this particular field. His scientific efforts led to a rise of standards for research and the quality of publications, which he propagated to his students at the Lyceum and the Grand School.

1.3.1. The Purpose of Geography and State Sciences

Within the Serbian intellectual circles of the 1840s and 1850s the practices of scholarly work were mostly revolving around the construction of the national identity through meticulous collection of ethnographic materials, research of national history, and standardisation of language. Here, a space opened for the natural sciences. Among the earth sciences, geography, rather than geology or mineralogy, found its initial momentum.

Geography had a particularly important place in the writings of the Enlightenment philosophers. Editors of the *Encyclopedie* dedicated more space to geography than to any other science, while geology had no entry of its own.⁹⁸ There was a recognised practical goal in the promotion of geography, as it consisted a comprehensive body of systematised knowledge about the world, useful for the advancement of education and transformation of the society. This idea was inherited in Serbia from the Enlightened

⁹⁷ Ibid., 287.

⁹⁸ Anne Marie Claire Godlewska, *Geography Unbound: French Geographic Science from Cassini to Humboldt* (Chicago: University of Chicago Press, 1999), 27.

scholars, Stojković and Obradović. Deep into the nineteenth century, Serbian scholars still identified the overall dispersion of education as their primary goal. In that intellectual environment, the first Serbian geographical writings appeared.

Modern geography was gradually developing as a scientific discipline through the nineteenth century. It was originally an assisting discipline of history. Various forms of antiquarianism and interest in ethnic groups within historical research required the precise location of events and peoples on the map. While geography in Europe was slowly releasing its ties with history through the nineteenth century, in the Serbian case, the initial enthusiasm for history of the Serbian people maintained these connections in that time period. At the same time, eighteenth century and early nineteenth century geography in Europe depended to a large extent on descriptive narration. While cartography was perfecting its methods and improving visualisation, geography was still more oriented towards minute descriptions of the physical features and the nations in the world.⁹⁹ The practices of chorography largely influenced the initial geographical works in Serbia by directing the research interest towards naming and cataloguing of all of the curiosities of the land with special attention given to local histories and ethnic groups.¹⁰⁰ In that tone, the first geographical works in Serbia, from 1850s on, were mostly concerned with historical and ethnographical information and such approach remained dominant until Jovan Cvijić began his work in the 1890s.

Alexander von Humboldt and Karl Ritter's initiative to make geography a science which would encompass all the human knowledge on nature and society departed

⁹⁹ Godlewska, *Geography Unbound*, 61.

¹⁰⁰ David N. Livingstone, *The Geographical Tradition: Episodes in the History of a Contested Enterprise* (Oxford: Blackwell, 1992), 77; Charles W.J. Withers, "Geography's Narratives and Intellectual History," in *The SAGE Handbook of Geographical Knowledge*, eds. John A. Agnew and David N. Livingstone, (London: SAGE, 2011), 40-43; Darrell J. Rohl, "The Chorographic Tradition and Seventeenth- and Eighteenth-Century Scottish Antiquaries," *Journal of Art Historiography* no. 5 (December 2011): 2-4.

from the historical perspective of the original geographical-historical narratives. While traditions of geography writing insisted on exhaustive descriptive narrations, for Humboldt and Ritter, geography was much more than a dry collection of data, for it aimed at a comprehensive understanding of the connections within the nature and between humanity and nature. Ritter wanted to preserve the historical elements in geography in a teleological conjoining of the social and the natural, while transforming it into a science of the regions. From a descriptive scholarly activity, geography became a science that looked for general laws which permeated nature. The shape of the earth in this way became intrinsically intertwined with the human activity in the first geographical texts in Serbia, and the forms and substances present in the earth became objects of practical use in the potential political and economic development of the Serbian principality and means to its independence from the Ottoman rule.¹⁰¹

The new Serbian state required educated people for its own development and scholarly traditions in Western Europe even created a scholarly discipline that corresponded with such needs.¹⁰² The know-how of the Western state administration was necessary for the principality's state building. Beside the knowledge of law, one of the solutions was sought in the German cameral sciences. Building of the state required natural resources and knowledge practices of their survey and documentation, which found its way into both the development of geography and *Staatswissenschaften*. In the German tradition of statistics, a descriptive manner of presentation was promoted since the eighteenth century. This vision of scholarly work of the disciplines of the *Staatswissenschaften* understood a comprehensive overview of any community or a

101 Livingstone, *The Geographical Tradition*, 8-9, 139-142.

102 Trgovčević, *Planirana elita*.

region through descriptions of several features, such as natural and economic conditions, cultural and historic traits, and such.¹⁰³

Here the overlap between geography and cameral sciences becomes relevant, since the first geographical works in Serbia mostly addressed the political geography of the world, while introducing statistical data to represent the overviews of the countries, their population, economic development, natural resources, and culture. The practical side of the cameral sciences in enumerating the natural resources came at the forefront for the story of earth sciences. German cameral sciences gained influence from natural history, particularly from the Linnaean system of classification, and mineralogy and mining were sometimes included in the study programs of the cameral academies.¹⁰⁴ It is no surprise that one of the first Serbia authors who dealt with geography, Milovan Spasić, actually studied cameral sciences in Berlin, receiving a doctorate in 1844, and later performed many state administrative services in Serbia. The connection between the state building and the knowledge of the land can be found in another case: Jovan Gavrilović, a state administrator, was one of the first to publish books about geography in an attempt to draw the public's attention to the usefulness of geographic knowledge.

The influence of the *Staatswissenschaft* was noticeable in the 1840s and 1850s when several articles appeared in the journal *Glasnik Društva srpske slovesnosti* (Proceedings of the Society of Serbian Letters).¹⁰⁵ Some of the articles were classified as *državopísanie*, and some as *statistika*. Here, one can notice the choice of terminology.

103 Alain Desrosieres, *The Politics of Large Numbers: A History of Statistical Reasoning* (Cambridge, MA: Harvard University Press, 1998), 19; Andre Wakefield, *The Disordered Police State: German Cameralism as Science and Practice* (Chicago: University of Chicago Press, 2009), 4-5, 111-126, 136-144.

104 David F. Lindenfeld, *The Practical Imagination: The German Sciences of State in the Nineteenth Century* (Chicago: University of Chicago Press, 1997), 28-37, 100-106; Lisbet Koerner, "Daedalus Hyperboreus: Baltic Natural History and Mineralogy in the Enlightenment", in *The Sciences in Enlightened Europe*, edited by William Clark, Jan Golinski, and Simon Schaffer (Chicago: The University of Chicago Press, 1999), 397-399.

105 The first article appeared in *Glasnik Društva srpske slovesnosti* no. 1 for 1847. By 1890 nineteen of such articles appeared in the journal. Out of that number ten were classified as *državopisanije*, and nine as *statistika*.

The word *državopísanie* can be freely translated as “description of the state,” which would most likely correspond to the German word *Staatwissenschaft*. Similar choice for naming the discipline was made in the case of *zemľopísanie* – *zemljopis* which similarly meant “description of the earth.” On the other hand, the word *statistika* was a mere adaptation of the German *Statistik*.

In the first edition of *Glasnik Društva srpske slovesnosti*, Jovan Steić prepared a translation of one encyclopedic article about Europe from Rotteck's and Welcker's lexicon of state-sciences.¹⁰⁶ The choice itself was paradigmatic of descriptive orientation of the contemporary scholarly work. The text that Steić translated contained physical description of the European landscape, overview of the mountains and rivers, then more detailed overview of the population, with a particular emphasis on religious divisions in Europe, followed by a review of political conditions in each country.¹⁰⁷

In the same volume, under the section five, labelled as *Zemľopísanie Srbsko* (Serbian Geography) Miloš Popović offered a translation of an article published in the German newspaper *Die Gegenwart* on Montenegro.¹⁰⁸ Nonetheless, he did not feel satisfied with the article and detected many mistakes in it, which were considered tolerable for a German, but unforgivable for a Serb. He decided to offer his own version of the text which would correct the article with more accurate data from his own source, change what he felt was incorrect and omit things he found unsubstantiated. The change was so drastic that he claimed that from the original article only the structure remained the same.¹⁰⁹ While this could be a starting point to begin a discussion on local knowledge,

106 Carl von Rotteck and Carl Welcker, “Europa,” in *Staats-Lexikon oder Encyclopädie der Staatswissenschaften in Verbindung mit Vielen der angesehensten Publicisten Deutschlands* vol. 5 (Altona: Verlag von Johann Friedrich Hammerich, 1837), 291-313.

107 Jovan Steić, “Evropa” [Europe], *Glasnik Društva srpske slovesnosti* no. 1 (1847): 99-126.

108 The quoted name of the author was “Frelih” [Fröhlich]. However, I was not able to determine the original source. *Die Gegenwart* was an Austrian daily newspaper, but it is uncertain if this was the same publication as the one Popović quoted.

109 Miloš Popović, “Crnagora i Crnogorci” [Montenegro and Montenegrins], *Glasnik Društva srpske slovesnosti* no. 1 (1847): 187.

the sources Popović claimed he used were mostly of Western provenance. He quoted several travellers, among whom the names of Ami Boué and Auguste Viquesnel stand out. In some brief depictions of earth composition, he identified in several places loam (*ilovača*) and lime (*vapno*), at the same time using the word *krš* to depict karstic features of the land. The article offered information in an encyclopedic and descriptive manner as natural and social features of the land were sorted in order – political divisions, soil and climate, hills, rivers, water springs, lakes, roads, population, and education. The primary goal was to be informative. For this reason the text comprised both the natural and the social approaches to description of the land. Considering that the structure of the article was following the original German publication and that the content was reflecting disagreements of the translator with the original text, the hybrid nature of this article can demonstrate the haphazard and uneven nature of transfers and means through which the structures and ideas were adopted and modified. National pride made him question the claims of the unknown German scholar. However, the structure remained the same. While this article did not contain anything particularly revolutionary in the domain of knowledge about the land, it can demonstrate how interventions in translations could have deviated from the original.¹¹⁰

Such general geographical and statistical overviews of the land were customary in German lands since the late eighteenth century and represented a form of patriotic knowledge about the fatherland. Denise Phillips pointed towards a relationship between the regional natural-historical studies and development of nationalism in German principalities in the first half of the nineteenth century. From the late eighteenth century, German scholars mobilised and started surveying and cataloguing the natural features of their principalities. These natural-historical explorations strived towards encompassing

110 Ibid., 187-200.

all natural features and presenting them to the audience for the prosperity of the nation.¹¹¹

While travelogues were quite similar, they represented a genre on its own. Knowledge about foreign lands was both a curiosity and a knowledge which could have secured economic benefit. From the perspective of intellectuals of the small Serbian principality, travelogues made by foreign travellers became a source of knowledge about their own country and the ground on which the patriotic knowledge about the fatherland could be built. While such overviews contained practical information, in the spirit of *Staatwissenschaften*, useful for economic planning, they addressed issues relevant for the construction of national identity. Montenegro was perceived in the plan of the Serbian national ideology as one of the Serbian lands. Accumulating knowledge about these lands was regarded as an inherent part of patriotic duty of scholars. While historical, linguistic, and ethnographic contents were considered sensitive for the national goals and therefore subject of debates, matters of natural-historical knowledge gained their relevance by the pure accuracy of the data acquired. When Popović decided to fix an article about Montenegro he considered unsatisfactory, his immediate choice for the natural-historical data was in the most authoritative and the most recent works on the geography of the European parts of the Ottoman Empire by Ami Boué and Auguste Viquesnel. However, because of the lack of references in the text it is hard to distinguish what precisely Popović took from Boué and Viquesnel. On their journey through the European parts of the Turkey, they did not pass through Montenegro and in their reports they refer to it mostly from secondary sources.¹¹²

Section six of the first volume of the *Glasnik* brought as well an article which was printed under the label *Državopisanie Srbsko* (Serbian State Science). Jovan Marinović,

¹¹¹ Phillips, *Acolytes of Nature*, 177-201.

¹¹² Ami Boué, *La Turquie d'Europe*, I, 7-14. Auguste Viquesnel, "Journal d'un voyage dans la Turquie d'Europe," *Mémoires de la Société géologique de France* serie 1, Tome V., no.2 (1842): 35-127; Auguste Viquesnel, "Journal d'un voyage dans la Turquie d'Europe," *Mémoires de la Société géologique de France* serie 2, Tome I, no.6 (1846): 207-304.

one of the most prominent politicians and diplomats of that time, submitted an article which presented the current statistical data about public education in Serbia. I am mentioning it here as one of the episodic enactments through which cultural boundary between geography and state-sciences was established. While in the first issue of the *Glasnik* two articles, written by Popović and by Marinović, were published under the section *zemľopísanie and državopísanie*, the translation of a geographical text from Rotteck's and Welcker's lexicon by Jovan Steić was grouped under the section of translations, together with a poem. The division between the *Zemljeopisanie* and *državopísanie* was not in the 1840s and 1850s firmly established. In the first two decades of the work of the Society of Serbian Letters its work was mostly engaged with language and history. Intellectual circles of Serbia were concerned with imminent national goals and all the intellectual activities were directed towards collecting information which could be useful for national and state development. Consequently, state-sciences and geography became part of some early works published in the *Glasnik Društva Srpske Slovesnosti*.

In the issue number three of the *Glasnik* two articles can be considered relevant for the question of distinction between state-sciences and geography. Jovan Gavrilović (1796-1877) published an article which presented his research on settlements and population in Serbia was titled *Contribution for Geography and Statistics of Serbia*.¹¹³ In the issue number four, this article was continued under the same name. On the other hand, Vladimir Jakšić (1824-1899) published an article about temperature changes in Serbia, based on his measurements of temperature in Belgrade, with the title: *Materials for State-Science of Serbia: I. Climate Relations on Earth*.¹¹⁴ While the text on geography

113 Jovan Gavrilović, "Prilog za geografiju i statistiku Srbije" [Contribution to Geography and Statistics of Serbia], *Glasnik Društva srpske slovesnosti* vol. 3. no. 3 (1851): 186-190 (wrong pagination: 178-180).

114 Vladimir Jakšić, "Građa za državopis Srbije: I. Klimatička odnošenja zemlje" [Materials for State-Science of Serbia: I. Climate Relations on Earth], *Glasnik Društva srpske slovesnosti* vol. 3. no. 3 (1851): 262-276.

and statistics was addressing the questions of population and settlements, the text on state-sciences (*državopísanie*) was presenting temperature changes in relation to effects it can produce on a society. In this particular instance, geography was related with statistics and dealt with the population numbers, while state-sciences dealt with natural phenomena.¹¹⁵

Vladimir Jakšić, who was one of the more prolific writers in the early years of the *Glasnik* studied *Staatswissenschaften* in Tübingen and Heidelberg. He published between 1851 and 1856 nine articles on the topic of *državopísanie*, out of which four were addressing weather and climate,¹¹⁶ four were studies on population,¹¹⁷ and one discussed economic issues.¹¹⁸ Jakšić's understanding of state-sciences merged the knowledge about the population and economy with the knowledge about climate and weather. The overlapping between geography, state-science, and statistics was consistently present in most works which dealt with description of the land. In any of the forms of description, whether the authors were talking about population, education, agriculture, historical monuments, or landscape formations, there was an inclination towards informative encyclopedic overview of the topics which attempted at brief, yet encompassing knowledge.

The relevance of such geographical-statistical overviews for the state building prompted publication of several works of this type in the 1840s and 1850s. Jovan Gavrilović and Milovan Spasić (1817-1908) were among the first to offer their work “for the benefit of the public” and provide the literate audience in Serbia the basic knowledge

115 Beside the already mentioned articles by Marinović and Gavrilović, it is worth mentioning two articles on statistics of education, published by Milovan Spasić in issues no. 9 for 1857 and no. 14 for 1862.

116 Beside the already mentioned article from 1851, issues no. 6 (1854), no. 7 (1855), and no. 8 (1856) contain Jakšić's articles on weather and climate.

117 These articles were published in the issues 4, 5, 6, and 7 for 1852, 1853, 1854 and 1855, respectively.

118 Idem., “Građa za državopis Srbije: Rasteně obšteg blagovanja i raskošī” [Materials for State-Science of Serbia: Growth of Overall Welfare and Luxury], *Glasnik Društva srbske slovesnosti* vol. 5. no. 5 (1853): 270-302.

about earth. Both were educated abroad and became high ranking state officials invested in the promotion of education.¹¹⁹ These first geographical textbooks were mostly concerned with the overview of the contemporary states in the world, their statistical analyses, depictions of the size, population, economy, and natural resources.

The duality of Serbian cultural space becomes visible in the biography of Gavrilović. Born in Vukovar, in the Habsburg Monarchy, Jovan Gavrilović was educated in the gymnasiums of Hungary (Pécs, Karlowitz (Kárloca/ Sremski Karlovci), Székesfehérvár, Szeged), and received a degree at the protestant school in Sopron.¹²⁰ He migrated to Serbia in 1831 and became a part of its political elite. Immediately upon arrival, he became a secretary of the Grand Court. Only a couple of months later he became a member of diplomatic missions in Istanbul (1831-1833) and later Bucharest (1836-1839). He subsequently served as Minister of Finance in 1860, and in 1861 a member of the State Council, which was the highest administrative institution in the principality at the time. After the assassination of Prince Mihailo in 1868, Gavrilović became one of the three regents to the under-age Prince Milan (1868-1872), along with Jovan Ristić and Milivoje Petrović Blaznavac. Gavrilović managed to attain some of the highest positions in the state administration, and to retain them despite the frequent and violent changes in the government during his time.¹²¹

He spent his life and career in the service of Serbia, securing some of the highest academic positions in the country, in addition to political ones. From 1848, he was a member of the *Društvo srpske slovesnosti* (Society of Serbian Letters (DSS)), and its vice-president¹²² in 1849, 1850, 1854, and 1859. After its formation, he became the

119 See Desrosieres, *The Politics of Large Numbers*, 149, 179-188.

120 Milorad Radević, "Autobiografija Jovana Gavrilovića" [Autobiography of Jovan Gavrilović], *Zbornik za istoriju Matice srpske* vol. 4 (1971): 124.

121 Ibid., 123-129.

122 This practically meant being the president of the society, considering that the Minister of Education was the president of the society only for ceremonial purposes.

president of the *Srpsko učeno društvo* (Serbian Learned Society (SUD)) (1864-1868).¹²³

These two institutions were predecessors of the present day Serbian Academy of Sciences and Arts, and over the course of the nineteenth century, they were regularly setting the scene of the cultural and intellectual life of Serbia. The interdependence of the intellectual and political circles in Serbia of that era, could be most easily seen in the histories of these two institutions. The fact that the president of the DSS was by the statute the Minister of Education, and that over time its members were regularly taking some of the highest state positions could testify about the interplay between the politics and the intellectual life.

Language reform was in the focus of the intellectual debates of the 1840s and 1850s. The standardisation of the vernacular had many proponents, as the church Slavonic language turned out to be impractical for literary purposes. The main actor hence became the already mentioned Vuk Karadžić, whose proposal for the official orthography won the debate in the end. While language debates are not the subject of this research, the context of these debates reflected on the discourse in the emergence of the earth sciences in Serbia. Jovan Gavrilović was a personal friend of Karadžić, and one of the main proponents of his orthography.¹²⁴

The first geographical work written by Gavrilović thus reflects the spirit of intellectual debates of that time – it was a dictionary. In his 1846 edition of Geographical-Statistical Dictionary of Serbia, Gavrilović tried to give an encompassing overview of the territory of Serbia with particular interest in the settlements and population.¹²⁵ Even though this work borrowed its form from linguistics, its content is truly geographical and statistical. Geographical dictionaries were not new. They were

123 Radević, “Autobiografija Jovana Gavrilovića”: 127-129.

124 In his autobiography, Gavrilović claimed that he met him already in 1814, and that ever since then they were friends. Radević, “Autobiografija Jovana Gavrilovića”: 125.

125 Jovan Gavrilović, *Rječnik geografsko statističny Srbije* [Geographical-Statistical Dictionary of Serbia] (Belgrade: 1846).

used as a form of presentation of geographical knowledge, in an alphabetical order, rather than through regional divisions since eighteenth century.¹²⁶ It could be more precisely described as an alphabetical overview of geographical and statical data. His intentions were, however, quite administrative. When he started working as head of a department of the Ministry of Finance in 1839, he realised he needed a list of all the settlements, districts, and counties in Serbia in alphabetical order. Being an administrator in the Ministry of Finance made him aware of the issues caused by the absence of any statistical data about the population and urged himself to complete the overview of all settlements. However, that task was not completed until 1844, when the new census was made.¹²⁷ He underlined that the dictionary was made solely from the “purely Serbian sources,” except for the data about the height of mountains, which are all derived from the Ami Boué's work *La Turquie d'Europe*.¹²⁸

The goal of the dictionary was to enumerate all the locations according to the counties and districts they belonged, and focused primarily to villages and towns, to which Gavrilović added data about mountains and rivers. The only data available to him about mountains came out of the book of Ami Boué. Each mountain was represented in the dictionary by the county location and height. At the time he was writing this dictionary, neither the Serbian, nor German edition of Herder's survey were still not published and he had no access to his data. While Gavrilović insisted on using domestic sources, they were completely absent when it comes to overview of the mountains.

At the end of his introduction he pleaded the audience to help him complete the work and correct all the mistakes. Gavrilović even offered to cover all the postal expenses for the contributors who would send him suggestions for corrections.¹²⁹ This

126 Godlewska, *Geography Unbound*, 38.

127 Gavrilović, *Rěčnik*, III-IV.

128 Ami Boué, *La Turquie d'Europe*.

129 Gavrilović, *Rěčnik*, XII.

offer, however, yielded no results. Four years later, he published an addition to the dictionary in attempt to correct the mistakes and complete the data. Gavrilović had to complain that he received no correspondence and that all the corrections he made in the text, he had to discover himself.¹³⁰

When I published in 1846 the “Geographical-Statistical Dictionary of Serbia,” I pleaded in the introduction of the afore mentioned work all, particularly in Serbia living, Clerks, Priests,¹³¹ teachers and generally all fans of the fatherland's Geography and Statistics:

1) To inform me, if any of the presented locations in the Dictionary was not written well, and how to write it properly.

2) To point out, if any of the places was omitted;

3) And considering that I did not enumerate all the hills in Serbia, but only the highest ones and those whose height was known; and all should be enumerated, with [the information] where, in which county and district can [they] be found.

4) In the same way, I did not enumerate all the rivers, and all should be [enumerated], and should at least enumerate where each originates, where it runs, and in which other river discharges.

5) There are areas among us, like Radjevina, Dragačevo, etc. where all should be enumerated, as well

6) Where can one find warm and mineral waters, like

7) Places where in the recent times battles occurred; where the battles were in older times, one has to later investigate in ancient histories and enumerate; and

8) In the end, one has to enumerate as well all the ruins of old cities, churches, monasteries, all by name, in which County [capitalised in the original], district, and shire place the current ones can be found, with the descriptions of what the people narrate about the ruins.

To this plead of mine, in the way it is presented here from 1 to 8, already 4 years have passed, and nobody from Serbia, nor from abroad replied yet.¹³²

In this quote, one could identify the main goals Gavrilović had in this endeavour.

His primary task was to enumerate all the elements in the landscape and to locate them in the state and in the administrative system of the country. For this reason, he needed precise names of all the towns and villages, and most of the content in the *Prilog za geografiju i statistiku Srbije* (Contribution to the Geography and Statistics of Serbia) was related to corrections of the names of various villages. His insistence on “precise names” stems from truly linguistic nature of his work. The determination of the precise name of a locality contributed to the language oriented nature of contemporary debates. It did not

¹³⁰ Jovan Gavrilović, “Prilog za geografiju i statistiku Srbije.”

¹³¹ Both the “Clerks” and “Priests” were capitalised in the original.

¹³² Ibid., 187-190.

mean solely determining the names used by the local population, but establishing the precise data source with exact place names. The statistical and historical information were of the primary interest for the presentation of the land. In this sense, his interest in the land formations was limited. His secondary source, Ami Boué, offered much more detailed information about the Serbian lands. Ami Boué was versatile in geology and reported in detail about the features of the land formations he observed in Serbia. If Gavrilović was using Boué's works, he could have presented to the public a much more detailed report on the land, but he chose not to. As it can be seen from the list, his main goal was enumeration and location, without any further investigation on the forms of landscape. His work on the dictionary continued, as in 1852 he published another addition to his dictionary. Much like the previous one, it was concerned only with the statical data about the population and corrections of the names of the locations.¹³³

In 1850, Jovan Gavrilović became a member of the government's School Committee. While in that position, he took the responsibility¹³⁴ to write a geography of Serbia and the Ottoman Empire for primary schools, and to translate from German a merchant's geography textbook for trading schools.¹³⁵ Similarly to his endeavour in the *Rěčnik*, Gavrilović aimed in the *Malyi zeml'opis* (Small Book of Geography) at representing the features of the Serbian territory, along with the overview of the Ottoman territories in Europe. This joint Serbian-Ottoman overview was a consequence of the official status of Serbia as an autonomous Ottoman province. On the other hand, the

133 Jovan Gavrilović, "Prilog za geografiju i statistiku Srbije": 227-248.

134 Radević, "Autobiografija Jovana Gavrilovića": 128.

135 Jovan Gavrilović, *Malyi zeml'opis Knjaževstva Srbije i Turskog carstva u Evropi za osnovne srbske škole* [Small Book of Geography of the Principality of Serbia and the Ottoman Empire in Europe for Serbian Primary Schools] (Belgrade: Pri knjigopечатnji Knjažestva Srbskog, 1850); Georg Wilhelm Hopf, *Kratki trgovacki zeml'opis za mladež Posleno-trgovackog učilišta: I. Čast: Evropa* [Short Merchant's Geography for Youth of the Business-Merchant School: I Part: Europe], trans. Jovan Gavrilović, (Belgrade: U Praviteljstvenoj Knjigopечатnji, 1853); Idem, *Kratki trgovacki zemljopis za mladež Posleno-trgovackog učilišta: II. Čast: Aziā, Afrika, Amerika, Australiā* [Short Merchant's Geography for Youth of the Business-Merchant School: II Part: Asia, Africa, America, Australia], trans. Jovan Gavrilović, (Belgrade: U Praviteljstvenoj Knjigopечатnji, 1854).

handbook he translated, *Kratkih trgovačkih zeml'opís za mladež Posleno-trgovačkog učilišta* (Short Merchant's Geography for Youth of the Business-Merchant School) offered systematised knowledge on the geographic regions of the world to students of the business-merchant school in Serbia. The representation in both textbooks focused again on statistical data about population and economy of states, giving little attention to the surface of earth.

Malyi zeml'opís was his original work and consequently deserves more attention. On page 2 of the book, Gavrilović stated that Serbia is a hilly country (*zemlja brdovita*), and enumerated some of the highest peaks, but restrained himself from giving any further explanation. He mentioned the rivers, described the climate, but his description of the land features ended there. Considering that he claimed to have read Boué's work, he definitely had access to more detailed knowledge about land in Serbia. Most of the book comprised the population analyses, describing the ethnic and religious composition, professional occupations, settlements, religious institutions, annual fairs, and schools. He took the same approach in the description of the Ottoman Empire, with a particular emphasis on the ethnic and religious structure of the population.¹³⁶ *Malyi zeml'opís* was continuously published until 1866, when the last edition was printed. In 1867 the status of the Serbian principality within the Ottoman Empire changed, and the Empire was forced to withdraw its military garrisons from Serbia. This made part of the data about Serbia in *Malyi zeml'opís* obsolete, which is probably the reason why it was not printed any longer.

On the other hand, the life and work of Milovan Spasić can be indicative of the career trajectory of someone in higher social positions and coming from Serbia. At the

¹³⁶ Gavrilović., *Malyi zeml'opís*.

time when education in Serbia was still in its infancy, he was fortunate to experience a privileged treatment due to the prominent position of his father who could pay his private tutor. He received his secondary education outside of Serbia. Around 1836, he was enrolled in a secondary school in Karlowitz (Kárloca/ Sremski Karlovci) which was a reputable Serbian secondary school in the Habsburg Monarchy. Spasić finished a lyceum in Pozsony in 1840, after which he received a state stipend to study political and philosophical sciences. Eventually he ended up in Berlin, receiving a doctorate in cameral sciences and returning to Serbia in 1844.¹³⁷ Upon his return, he entered the state administration and quickly advanced from the low positions of a clerk in the Ministry of Education and a librarian of the National library to the position of a director of the Western School County (Zapadni školski okrug) in 1845. By the end of his career he was one of the chief administrators in various state educational committees, eventually getting to the high position in the Ministry of Finance in 1864, and finally to the position of a state councillor in 1878.¹³⁸

Since he was part of the state administration, he was in a position where he could promote four of his geography textbooks he wrote from 1847 until 1855. Having the background in the cameral sciences, Spasić was inspired by the German model and presented to his readers textbooks which offered knowledge about the states, population, and economy.¹³⁹ His vision was not alone in this approach and a number of authors (beside Gavrilović, one should mention here Nikola Krstić and Milan Mijatović in the

137 Mihailo Podoljski, *Dr Milovan Spasić i njegov rad u Narodnoj biblioteci (prilog za istoriju Narodne biblioteke u Beogradu)* [Dr. Milovan Spasić and His Work in the National Library (A Contribution for the History of the National Library in Belgrade)] (Belgrade: 1931), 8-13.

138 Ibid, 14-17.

139 Milovan Spasić, *Zemlěopísanie celog sveta, sačiněno po naňnoviem državnom staníu za vyša i níža učílišta í za svako staně građana* [Geography of the World, Made According to the Most Recent State Situation for Higher and Lower Learning Centres] (Belgrade: 1845); Idem, *Zemlěopísanie: za predavaně u III razredu osnovny učílišta Knážestva srbskog* [Geography: For Lecturing in the 3rd Grade of Elementary Schools in the Serbian Principality] (Belgrade: Kn'igopečatná Knážestva Srbskog, 1848); Idem, *Estestveno zemlěopísanie za mladež* [Scientific Geography for Youth] (Belgrade: Društvo srbske slovesnosti, 1850).

1850s and 1860s, and Milan Dj. Milićević and Vladimir Karić in the 1870s and 1880s), engaged in similar projects, treating the states through numbers and measures, establishing general evaluations about the progress and development in countries, thus placing Serbia in a particular context of a country with great potential for development; alas not favoured by the historical circumstances which hindered its development under the Ottoman rule.

1.3.2. Teaching about the World

The fact that the intended primary audience for these textbooks were school children has to be taken into consideration. Adults who wanted to invest in their self-education were welcome to use the books as well. For most of the readers these textbooks represented a rich deposit of curiosities. Even in the mathematical geography sections, one could find attempts to intrigue the audience with peculiarities. The lack of teaching materials, such as globes, demanded from the writer to illustrate to his audience the shape of earth and its features. Milovan Spasić frequently resorted in his works to vivid descriptions, as children had to visualise. In order to define the shape of planet Earth, he made a peculiar comparison, describing the shape of the globe with the words ‘cannonball’ (*djule*) and ‘apple’ (*jabuka*).¹⁴⁰ He consciously intrigued the attention of his audience with images of people living upside down from them. He called them *protivnožnici* (opposite legged) which was a literate translation of the word ‘antipodes.’¹⁴¹ While such descriptions may have been intended spur the imagination of children, they may have been addressing the older audience as well. In the introduction of his 1845

140 Milovan Spasić, *Zemlěopísanie celog sveta*, 2; Idem, *Estestveno zemlěopísanie za mladež*, 2.

141 Milovan Spasić, *Zemlěopísanie celog sveta*, 2; Idem, *Estestveno zemlěopísanie za mladež*, 2. The example of “antipodes” was used with the purpose of children's education by Edme Mentelle in the eighteenth century. See Godlewska, *Geography Unbound*, 64.

book, Spasić wrote: “the scarcity of works which would acquaint us with the earth sphere – particularly deprives the learning youth of the opportunity to know the present state of the world.”¹⁴²

In several books we can find the same division of geographical work into three separate disciplines: mathematical, natural, and civic (*građanska*) geography. Similar definitions were repeated in the works of several authors. The mathematical geography received least attention. In the books that Spasić and Gavrilović wrote (and we could add to this the 1861 textbook of Nikola Krstić¹⁴³), the section on mathematical geography was limited to definitions of the globe as a sphere object and evidence which prove its spherical shape, the geometrical division of the sphere and the explanations of the meanings of the latitude and longitude.¹⁴⁴

Even though geology and geognosy were not in the focus, frequent explanations touched upon the issues of orogeny and the structures of the mountains; thus indirectly introducing theories of the origin of the earth. The distinction between primary and secondary layers of the earth, quite frequent in explanatory models at that time, appeared in several textbooks, distinguishing the crystalline granite core of the primordial mountains from the younger fossil rich layers. Such definitions were employed as part of the landscape descriptions, where the position and the structure of the mountains were placed in the relations with the plains. The layered structure of the earth was represented in a merely descriptive manner, without further intention to deal with the rock formations and the interior. Consequently, the authors used the geological narratives to enforce their geographical explanations, not directly engaging into structure and the origin of the mountains. The emphasis was more on the landscape, while the distinctions between

142 Milovan Spasić, “Introduction,” in *Zemlěopísanie celog sveta*, no pagination.

143 Nikola Krstić, *Obštyř zeml'opis za srbske gimnazije* [General Geography for Serbian Secondary Schools] (Belgrade: Državna kn'igopečatnă, 1861).

144 Milovan Spasić, *zemlěopísanie celog sveta*, 1-2; Idem (trans.), *Eststveno zemlěopísanie za mladež*, 1-4. Krstić, *Obštyř zeml'opis*, 1-2.

various types and layers of rocks remained a curiosity meant to intrigue the imagination of the audience.

In the same spirit was the 1852 textbook written by Milan Mijatović, a Serb from Srem who migrated to the Principality to become a high school professor of Latin, geography, and history. His perception of the geography could be exemplary of the epistemic borders of geography at the time in Serbia. Geography was for him a science that depicts the earth, according to its position, appearance, size, property and division into certain parts, in the present and in the past time. Further, he divided geography as a discipline into numerical [mathematical], natural, and civic geography. However, he saw geography primarily as a historical discipline and divided the research focus according to historical periods.¹⁴⁵

I would like to stress two aspects in Mijatović's outline of geography: historical and educational. This division of epistemic authority of geography corresponded directly along the lines set at the time in history, while the geographical was perceived as somewhat inherent to historical, with an added spatial component. The discipline itself had a purpose to teach and he did not see the research as an active component of geographical activities. Bearing on the traditions of European geographers, the discipline itself was reliant of history and originally belonged to historical mapping of the areas. Mijatović's understanding of the discipline relied both on the historical traditions and on the educational purposes of scholarly work.

The overlap between state-sciences and earth sciences can be seen in Mijatović's detailed descriptions of the states of the world. Mijatović's presentation of the countries included statistical, economic legal, and natural characteristics, presented in the manner

145 Milan Mijatović, *Obštyř zeml'opis za učeću se mladež u gimnazií i polugimnaziãma Knãžestva Srbije* [General Geography for Learning Youth in gymnasium and semi-gimnasyums of the Principality of Serbia] (Belgrade: Kn'igopečatnã Knãžestva Srbskog, 1852), 1-2, 16-19.

of many works made at the time which subsumed statistical and geographic knowledge together. Understanding of the nature in the function of the benefits of the state was coming mostly from the German cameral sciences, and for that reason the knowledge about the products of the land was considered essential in the presentation of the economic wealth of each country. Thus, state-sciences opened doors for the knowledge coming from mineralogy and mining. Mijatović included in his descriptions the mineral richness of lands, specifying the types of ore or rocks which could be used for economic benefit. For example, in his description of Serbia, he briefly mentioned that one can find in earth: iron, copper, led, silver, marble, oil, and all sorts of stones, but not salt. This entire statement took only five lines of the publication.¹⁴⁶ The knowledge of earth was seen only in the function of knowledge about the state. Theories of the origin of earth and the inner structure of earth were of little interest at this point.

Likewise, in his 1861 textbook of geography, Nikola Krstić paid little attention to questions of the origin and structure of earth. Although, he mostly addressed the issues of human (or political) geography, he assigned space in his book to classification and definition of the various forms of landscape. He made the distinction between the mathematical, physical, and political geography and merely addressed the question of the earth's interior and noted that at his time it was still unknown whether the earth's interior is hollow, or filled with fire, water, or being solid.¹⁴⁷ Even though the allotted space for the physical geography was limited, Krstić offered his audience descriptions of landforms, particularly describing the volcanoes: “Volcanoes are hills that on their top have something like a mouth, through which smoke and flame comes out, and through

¹⁴⁶ Ibid., 71.

¹⁴⁷ Nikola Krstić, *Obštyř zeml'opís za srbske gímnazie* [General Geography for Serbian Secondary Schools] (Belgrade: 1861), 7.

which they frequently eject lava (first as liquid, then as condensed mass of molten rocks and metals), ashes, rocks, water, mud, and other similar things.”¹⁴⁸

Same as with Spasić's description of the round earth and the antipodes, Krstić had to incite his audience who never saw volcanoes in their lives to visualise the image of a volcano. The lack of educational materials and images deprived the audience of its actual look. Neither Spasić nor Krstić resorted to visualisation of the land formations. Although engravings were used in printed books of that time, contemporary publishing options in Serbia were limited.

I will return back chronologically a bit and reflect on two articles which dealt with descriptions of local environments. The first one is an article from 1853 by Dr. Andreja P. Ivanović, who described the Krajina County. After living in the county for three years, Ivanović noticed several “things” which are so rare on the surface of earth that he felt the need to take the quill into his hand and write about them.¹⁴⁹ He presented each of the four districts by its borders landscape features (whether they are hilly and how much plains there are), rivers, fertility of the land, products, villages, population, and historical relics. Formations of the landscape were in the function of the fertility of the lands. He assumed that plains were generally more fertile, but stressed as well cases where fertile land was found in hills. For this study, the most significant are his identifications of the ore deposits around Rudna Glava, which he claimed he identified himself. The copper and iron ore seam was twenty nine long steps long and according to his claim had 70-75% yield, which he estimated, would not be exhausted while there was Serbia existing.¹⁵⁰

148 Ibid., 11.

149 Andreja P. Ivanović, “Opisanie Okružja Kraínskog” [Description of the Krajina County], *Glasnik Društva srbske slovesnosti* vol. 5. no. 5 (1853): 227.

150 Ibid., 230. He as describing an area close to Majdanpek, one of the richest ore deposits in Serbia.

From the “doctor” title in his name it could be implied that he was most probably a physician, or a jurist. It seems unlikely he had any education in any of the earth sciences, as his descriptions lacked any precise details in description. He bounded the iron and copper ores together, not specifying the types of rocks and minerals he was observing. The natural-historical (*prirodoslovni*) department of the Society of Serbian Letters reported that they bought off from Dr. Ivanović the manuscript to publish it.¹⁵¹ The society reported on negotiations with several authors whose regional studies work they found worth publishing. People willing to engage in any kind of research were welcome and the society incited people to write, offering that they will buy off their scripts as a reward.

The second article with the regional focus was published in 1858. One of the members of the judicial court in Užice, Stojan Obradović, as a non-member of the Society of Serbian Letters, submitted his text on the Užice County. In the opening, he emphasized the amount of hard work he invested in the survey of the county, working on it in the rime of rest, in order to examine the entire are of the county and investigate everything, so he would not be embarrassed in front of the future researchers.¹⁵² Hard work and thoroughness of research appear here as criteria for establishing epistemic authority of the work.

While most of his work consisted of descriptions and enumerations of various locations, villages, rivers, and hills, he was mostly concerned with economic aspects of life in his area. He regretted the harsh conditions of the land which was infertile and at places barren, which influenced poor agriculture, but at places rich pastry for herders. Some of his investigations were reduced to simple enumeration of agricultural products

151 Dimitrije Cenić, “Izvēstie o dēlaniu Društva Srbske Slovesnosti u 1851. godini” [Report on the activities of the Society of Serbian Letters], *Glasnik Društva srbske slovesnosti* vol. 4. no. 4 (1852): 267.

152 Stojan Obradović, “Opisanie okružja užičkog” [Description of the Užice County], *Glasnik Društva srbske slovesnosti* vol. 10 no. 10 (1858): 296.

of the land, animals present in that area sorted according to their type, and rivers sorted according to their navigability.¹⁵³

One episode in his article is particularly telling about the local influences on knowledge of earth. While describing the caves in the region, Obradović noted that from the cave in Kremna a cold wind was blowing, which caused great discomfort for the people living there. For this reason, peasants decided to close the cave with rocks, thus stopping the wind from blowing. Unexpectedly, the next three harvests gave very poor yield. The peasants opened the cave and by the actions of the cold wind the output of the next harvest was immediately copious.¹⁵⁴ The presence of such local stories points to a still existing reliance on local knowledge and conviction in the accuracy of local beliefs. While educational background of Obradović is unknown, he most likely had some form legal education in a Western European country. However, he was constrained by such local narratives and decided to rely on them in his description of the region. Here, the systematic approach which was based on enumeration and description of various social and natural aspects of a region, got intersected with the folk stories of the local population. My intention here is not to challenge Obradović's writing, but to point to overlaps that existed at the time between Western scientific influences and local culture.

Obradović's work is relevant for this study for his account on mineral deposits. In a subsection called "from the realm of excavated minerals" he reflected on the absence of evidence about the mineral richness of the area. His assumption was that the region has to be abundant in minerals, except that this region was for long neglected in research. Even though he did not find any evidence of ores, he assumed that it is impossible that there are none. The main blame for the lack of knowledge about minerals in this county had to be laid on peasants.

¹⁵³ Ibid., 302-303.

¹⁵⁴ Ibid., 301.

Among the people, from the ancient times, there is an inherited foolish habit of hiding [the ore deposits], if anywhere would any of them appear, which was done for two main reasons: first, that they were afraid that their land will be expropriated without any compensation because of these ores, and second, because in their opinion, theirs and the neighbouring villages will become subjects of force labour (*kuluk*). For this reason, mines (*majdani*) were not explored, and were actually kept hidden.¹⁵⁵

While Obradović was sharing the experience of his local patriarchal environment, his perception of the world was influenced by Western understanding of the nature. Traditional understanding of the world was in this particular section considered responsible for the insufficiently researched mineral riches of the area which on the long run hindered economic progress. People were still having “foolish habits” inherited from “ancient times” and were not able to understand the benefits of the mining. The local population evoked the bad memories from the Ottoman era when mining was associated with forced labour and not so distant experiences with the Serbian authorities which had a habit of forcefully expropriating the land. For Obradović, the ignorance of the peasants was getting in the way of progress. He shared a common opinion among Serbian intellectuals, that education is a means of improving the life conditions in Serbia and that from it the entire principality would benefit. Knowledge was an instrument in identification of practical economic goals, in this case identification and extraction of mineral richness of the land. However, we can see in this case that the transfers of knowledge were not direct. Local interpretations embedded Western science into the patriarchal culture and created an amalgam of modern and traditionalist views.

1.4. Development of Institutions

¹⁵⁵ Ibid., 309.

The Lyceum, the first institution of higher learning in Serbia, was founded in the school year 1838/1839 as part of the Kragujevac Gymnasium, extending its secondary school program for one more year. It had only two professors, Isidor Stojanović and Konstantin Branković, and a limited amount of resources for its work. In the first year of its existence, in June 1839, Prince Miloš Obrenović abdicated and surrendered the power to a group of reform leaders, commonly known as the Constitutionalists, who were supposed to guard the transition to the rule of his two sons. Thus, the Lyceum was formed in the atmosphere of transition from the absolutist government of Prince Miloš to the bureaucratic oligarchy of the Constitutionalists. This new government recognised the Lyceum primarily as an institution whose main purpose was to provide basic education for the future members of the state administration. For that reason the students studied mostly law. The first curriculum of the Lyceum envisioned six classes for the first year of studying: philosophy (*filozovija*), general history (*opšta historija*), “pure mathematics” (*čista matematika*), statistics (*statistika*), German language, and drawing.¹⁵⁶ In this program, the disciplines which were addressing knowledge about nature did not seem to be part of the curriculum. However, the wide and encompassing discipline of statistics opened space for overviews of the mineral, animal, and botanical riches of countries, which provided certain knowledge about nature. While statistics might have been the discipline that was supposed to convey knowledge about nature, it was the philosophy which provided the comprehensive knowledge about the world, which encapsulated all sciences in itself. However, in the first school year the statistics were not taught, despite being represented in the curriculum.¹⁵⁷

156 Snežana Bojović, *200 godina Beogradskog univerziteta 1808-2008: Istorija institucije* [200 Years of the Belgrade University 1808-2008: A History of an Institution] (Belgrade: Princip 2008), 23-27; Ivan Božić, “Postanak i razvoj Beogradskog univerziteta” [Foundation and Development of the University of Belgrade], *Godišnjak grada Beograda* vol. XXII (1975): 140; Karanovich, *The Development of Education in Serbia*, 119.

157 Karanovich, *The Development of Education in Serbia*, 119.

In the 1839-40 school year, the program envisioned expansion of the Lyceum, its separation from the Kragujevac Gymnasium, with the formation of a two-year program in philosophy, thus forming a department which would in autumn of 1840 become separate within the school, second after the formation of the Legal Department. The philosophy section in 1840 included: Christian science with the interpretation of the Gospels (*nauka hrišćanska s tolkovanjem evangelija*), philosophy, logic, general history (*vsemirna historija*), geodesy (*zemljomerije*), field economy (*poljska ekonomija*), French language, German language, art of drawing (*umetnost nacrtu*), physics (*fizika*), and practical geometry (*praktična geometrija*). The new curriculum opened more space for the natural sciences, particularly with the introduction of geodesy and physics into the program. In addition, several new professors were employed, among whom Atanasije Nikolić was elected the first rector of the Lyceum.¹⁵⁸

The curriculum was mostly designed to conform with desires of the Constitutionalist state administration and their plans of education. However, they also depended on the availability of scholars who were capable of teaching certain courses at the Lyceum. The majority of the first professors arrived from the Habsburg Empire. These men were usually insufficiently qualified there to take high positions in the society or education system, but by moving to the Serbian principality, they had an opportunity to quickly advance in their careers. Since the 1830s, Habsburg migrants, most commonly Serbs, sought employment in the Serbian administration. Some of them started as elementary and high school teachers. For majority of them, teaching positions in high schools and at the Lyceum were entrance points to careers in the state administration.¹⁵⁹

158 Bojović, 24; Karanovich, *The Development of Education in Serbia*, 119; "Ustrojenije javnog učilišnog nastavljenija" [Regulation of the Public Teaching Curriculum], in *Zbornik zakona i uredaba o Liceju, Velikoj školi i Univerzitetu u Beogradu* [Collection of Laws and Regulations about the Lyceum, Grand School, and University of Belgrade], Dragoljub T. Baralić (ed.), (Belgrade: Naučna knjiga, 1967), 7-13.

159 Bojović, 37; Slobodan Jovanović, *Ustavobranitelji i njihova vlada (1838-1858)* [The Constitutionalist and their Government (1838-1858)] (Belgrade: Geca Kon, 1933), 94-95; Traian Stoianovich, "The

The beginning of the new rule was followed by the change of the principality's capital; the government and all the institutions moved from Kragujevac to Belgrade in 1839. With moving of the capital, the cultural life switched to the new political centre and intellectuals began their migration. The Lyceum followed this trend, transferring to Belgrade in 1841 where it occupied a temporary location until 1844, when it was moved into the house of Princess Ljubica (Miloš's wife), where it stayed until 1863.¹⁶⁰ Its dependence on political power from early days established connections with members of the state administration. First students of the Lyceum were supposed to be the next generation of state clerks. The highest positions were at the time held by the Serbs from the Habsburg Empire, but with the establishment of the Lyceum, the number of clerks educated in Serbia rose rapidly. Because of this, the Legal Department was developing during the next two decades, getting almost all attention in the reforms of education.¹⁶¹

During the 1850s the numbers of students started to drop. Because of the lack of literate personnel, having a secondary school degree was sufficient to find an employment in the state administration. Right after the graduation from the gymnasium, students were more willing to seek employment in the state service, earn money, and gain career experience, rather than risking two more years of poverty as students of the Lyceum. In addition, Lyceum degrees were not recognised outside of the Serbian principality. Only after 1850 was the Department of Philosophy recognised by the Habsburg authorities as an extension of the Belgrade Gymnasium, but the Legal Department did not receive such recognition. This was a considerable problem for students who wanted to continue their studies abroad, but the government did not take the issue seriously. The main goal of the educational system was to create the bureaucratic

Pattern of Serbian Intellectual Evolution, 1830-1880," *Comparative Studies in Society and History*, Vol. 1, No. 3 (March 1959): 243.

160 Karanovich, *The Development of Education in Serbia*, 120-121.

161 Slobodan Jovanović, *Ustavobranitelji*, 87-91; Karanovich, *The Development of Education in Serbia*, 122-133.

intelligentsia and for this reason the Lyceum was during the Constitutionalist regime mostly producing jurists necessary for the administration, but other professions did not receive much attention, and were consequently not concerned with international reputation or recognition.¹⁶²

The educational reform of 1853 transformed the teaching practices of the Lyceum into a more elaborate, systematically divided curriculum. It prolonged the education to three years. The school was divided into three departments, one of which was General Department (*Opšte odeljenje*), which included statistics in its program, but no natural sciences. The completion of the program of the General Department was the precondition for the enrolment into the other two programs: the Legal Department and the Natural-Technical Department (*Jesteslovno-tehničko*). The formation of the latter was significant for the formation of the scientific disciplines in Serbia. In it, two fields of intellectual work were merged – natural scientific, under the name of *jesteslovije* or *jestestvenica* which merged all the natural sciences together, and the technical sciences which bound all the engineering in one curriculum. Students at this department were supposed to have classes in physics (*fizika*), physical geography and meteorology (*fizička geografija i meteorologija*), natural history (*jestestvena istorija*), mineralogy with geognosy (*mineralogija s geognozijom*), botany (*botanika*), zoology (*zoologija*), chemistry (*hemija*), technology (*tehnologija*), civil architecture (*građanska arhitektura*), science of trade with bookkeeping, agronomy (*agronomija*), and the short overview of the administrative and public law of Serbia.¹⁶³

While at the time intellectuals were still operating within the field of education, their general understanding of the practice within that field started to differentiate. At the

162 Slobodan Jovanović, *Ustavobranitelji*, 90-91; Karanovich, *The Development of Education in Serbia*, 136-137.

163 "Ustrojenije knjaževsko-srbskog liceja" [Regulation of the Princely-Serbian Lyceum], in Baralić (ed.), 27.

time, science and education were treated as a unified field. *Jestestvenica* as a special scholarly discipline – natural history, a term more frequently used in Western Europe, as already mentioned, already existed as a notion in the writings of Atanasije Stojković. The curriculum of 1853 opened the space for teaching of this discipline in its various sub-fields, but the qualifications necessary for someone to teach it were still not clearly defined. The absence of a medical faculty further hampered the production of degrees.

These changes of the 1853 curriculum of the Lyceum are significant for the study of earth sciences in Serbia. First, it was the first appearance of the physical geography, mineralogy, and geognosy in the curriculum of a higher education institution. The peculiar binding of geography and meteorology shows the perceived closeness of those fields, common in the practice of European scholars at that time, and also identifiable in the works of Jovan Gavrilović and Milovan Spasić, but can also be observed in the much later work of Pavle Vujević. Second, two professors hired for the positions in those fields for that year were Josip Pančić and Mihailo Rašković. The former was a physician and was appointed as the head of the newly established chair of natural sciences (*Katedra jestestvenice*), and the latter was a mining engineer by education, and was appointed as a professor of chemistry. A mining engineer was teaching chemistry, while a physician was responsible for all the sciences encircled by the notion of *jestestvenica*. In addition, mineralogy, botany, and zoology were assigned a separate cabinet (*kabinet*)¹⁶⁴ which opened the separate space where these disciplines could be practised.¹⁶⁵

When the Lyceum was transformed into the Grand School (*Velika škola*, translated into German as Hochschule) in 1863, Pančić continued teaching all of these subjects until 1880. Because he felt unqualified to teach that specific field of science, he

¹⁶⁴ At the time, this term had a meaning of a department, but actually represented a foundation of an institute.

¹⁶⁵ "Ustrojenije knjaževsko-srbskog liceja" [Regulation of the Princely-Serbian Lyceum], in Baralić (ed.), 34.

persuaded one of his students, Jovan Žujović, to go to Paris and study geology at the Sorbonne. Žujović would take over the position of the professor of geology and mineralogy almost immediately upon his return from Paris in 1880, thus relieving Pančić of this duty.¹⁶⁶

At the time, there were serious obstacles that prevented further opening of the fields of natural sciences. Between 1853 and 1880, Pančić was the sole authority in the field of *jestestvenica*. Opening of a separate chair for natural history still encountered difficulties, as the equipment and the collections were still missing. Over the years Pančić struggled to persuade the Ministry of Education to provide more funding for the natural history cabinet at the Grand School, as it was unequipped for the practical work with students. While the Legal department was developing in the period between 1853 and 1863, the Natural-Technical Department stagnated because it was encumbered with so many diverse disciplines.¹⁶⁷

The transformation of the Lyceum into the Grand School was an attempt to renew the energy of the higher education project and create a school which will have higher aspirations and better prepare students for the studies abroad. While devised as an equivalent of a Hochschule, it assumed a structure of a university and was divided into three separate faculties: Faculty of Philosophy, Technical Faculty, and Faculty of Law. While the latter two had a four-year program of education, the Faculty of Philosophy was organised with a three-year coursework.

The original Natural-Technical Department of the Lyceum was then split in two. The Faculty of Philosophy was envisioned as a program in which the students would learn humanities and social sciences – philosophy, philology, history, Latin language,

166 AS, Fund Velika škola, 1880.78. Decision by the Ministry of Education about Jovan Žujović's appointment, 19 November 1880.

167 Bojović, 43-47.

literature, economy, finance, and state sciences. Natural sciences – mathematics, physics, zoology, botany, and geology with geognosy were included in a general curriculum which was shared with the Technical Faculty. Natural sciences were represented in more detail in the program of the Technical Faculty: elementary mathematics, physics, zoology, botany, mineralogy with geognosy, political economy, chemistry, descriptive and practical geometry, higher mathematics, science of the construction on dry lands and water, mechanics, and chemical technology.¹⁶⁸ In the organisation of the two faculties, the sciences of the *jestestvenica* were considered closer to technical sciences, which set their epistemic borders of natural history closer to engineering than to philosophy.

In a syllabus from January 1867, one can observe an outline for a course in mineralogy and geology. As the professor of *Jestestvenica* at the Grand School, Josif Pančić was at the time officially teaching “zoology, botany, mineralogy, geognosy, and field economy.”¹⁶⁹ The syllabus preserves the structure of his course in earth sciences and internal divisions between sub-disciplines he identified in that course. Here, I am presenting an outline of its contents:

Program in Mineralogy and Geology 16 January 1867:

- Mineralogy and geology. Difference between these two sciences. Associate sciences to mineralogy and geology.
- Mineralogy.
 - First branch. Minerotomy. (*Minerotomija*)
 - I Morphological characters
 - Crystallography.
 - II Physical characteristics of minerals
 - III Chemical properties of minerals
 - Second branch. Minerography.
 - I Mineralogical system of classification.
 - II Systematic description of the mineral.
- Geology.
 - First branch. Geognosy.

168 “Zakon o ustrojstvu Velike škole (Akademije)” [The Foundation Law of the Grand School (Academy)], in Baralić, 39-40.

169 *Kalendar” sa šematizmom” srbskog” knjžestva za godinu 1866* [Calendar with Schematism of the Serbian Principality for the year 1866], (Belgrade: 1866), p. 28.

- I Geophysics.
- II Petrology.
 - A. Petrography.
 - B. Petronomy.
- Second branch. Geotectonics.
 - A. Layered rocks. (*Naslagane stene*)
 - B. Massive rocks. (*Masivne stene*)
- Third branch. Geogenics. (*Geogenija*)¹⁷⁰

This list represents only a small portion of what Pančić was teaching. Beside this course, he was teaching zoology and botany, as it was done in traditional formation of natural history in Western Europe. One course was designed in order to encompass all disciplines of earth sciences, stressing mineralogy and geology as its primary constituents. Petrology was allocated within geognosy, as an assisting discipline within geology. In time when Atanasije Stojković wrote his *Fisika* enlightenment concepts of order and classification dominated the representation of earth sciences, particularly in mineralogy and petrology. In Serbian scholarly work since those early enlightenment writers there were no serious attempts to write or teach earth sciences before Pančić. Scholarly activities were mostly influenced by the romanticist ideas under which literary and historical traditions developed, and natural history did not receive enough attention. Earth sciences were still at the time forming and defining themselves, gradually making the expertise in this field independent from mining schools.

Reforms of the higher education kept affecting the epistemic borders between disciplines. The 1873 reform of higher education reorganised the study of the natural sciences once again. The aim was to cancel the category of general coursework, obligatory for students of all faculties, and form more specialised departments. In the new division of coursework, the natural sciences were allocated their own academic

¹⁷⁰ AS, Fund Velika škola, 1867.3. Program for Mineralogy and Geology, 16 January 1867.

space in the form of a subsection of the Faculty of Philosophy. This faculty was organised with two subsections: Historical-Philological, and Natural-Mathematical. In the end, general coursework was not cancelled. They shared seven courses, considered relevant for both study groups: philosophy, the history of Serbs and other Slavic peoples, zoology with anatomy, statistics, people's economy (*narodna ekonomija*), pedagogy, and hygiene. The peculiar reappearance of statistics as a middle ground between social and natural sciences in this case bound the studies of population and natural resources together.

In this division, natural sciences appeared within the Natural-Mathematical subsection: higher mathematics, physics, botany, mineralogy with geognosy, and chemistry. The migration of the natural sciences from the Technical Faculty was, however, incomplete. They remained inherently tied with the coursework at the new Technical Faculty through courses which were shared with the Faculty of Philosophy: physics, mineralogy with geognosy, chemistry, higher mathematics, and hygiene.¹⁷¹ Mineralogy with geognosy kept reappearing in the curriculum of the Grand School, associated both with natural history and technical sciences. Since 1853, it was still in charge of Josif Pančić, who taught it at both faculties. This changed with the return of Jovan Žujović from Paris in 1880. His immediate appointment to the position of a *supplementary professor* (*suplent*) changed the balance in the attitude towards earth sciences and *jestestvenica* in general.

1.5. From Literature to Science

¹⁷¹ Bojović, 62-63. "Izmene i dopune u zakonu o velikoj školi od 24. Septembra 1863. god." [Changes and Improvements in the Law on the Grand School from 24 September 1863], in Baralić, 53-54.

The narratives about the practical use of natural resources were however, accompanied by the more dominant narratives dealing with the traditional cultural remains. Most of the mid-nineteenth century geography texts deal with the aspects which were already at that time qualified as “human geography.” In the Serbian context this in practice understood the repetition of the ethnographic research started by Vuk Karadžić and his followers, with the detailed representation of the products of the patriarchal culture in the past. Epic poems thus, came to the forefront of the studies and descriptions of the people’s character became one of the primary choices in the depictions of the lands. While poems and history remained in the focus when the discussion was about the Serbian lands, in the representation of the “foreign” countries, economic features and population received more attention.

Over time, attention to the aspects of the land gradually gained importance. The foreign researchers who explored the principality gave accounts that were accessible to Serbian scholars. From there on, local scholars made first attempts to translate and adapt the foreign knowledge to Serbian audience. First explanations focused mostly on definitions of the shape of earth, distribution of water and land, and terminological explanations of what can be defined as a mountain, plain, bay, promontory, island, or a lake. While similar definitions can still be found in textbooks of geography in Serbia, these nineteenth century texts aimed at more than explaining terminology to primary and secondary school children and aimed at representing such definitions as aspects of real science. The audience was as well wider, and anyone literate of that time was offered a systematic, clear meaning of words which explained how the earth was shaped.

Such aims were not detached from the contemporary European scholarly work. The paradigms of debates remained under strong influence of European Romanticism, while specific Serbian contexts determined the interests of the audience. All was for the

benefit of the people. Anyone who wanted to improve one's knowledge was offered a systematic scientific overview of what was currently known in the field. In practice, beside school children, the audience could have included a number of merchants and army officers, perhaps rich peasants in the higher social strata, and mostly state administrators, teachers and priests. As precursors to libraries, reading rooms (čitališta) became places of gatherings of people interested generally in literature, and consequently in learning. As such, Belgrade slowly became one of the most principal areas of knowledge production and distribution. While until the formation of the university, the Grand School (Visoka škola) was the highest institution of education, the role that secondary schools performed in the education and formation of the intellectual elite cannot be neglected. Some of the first books written about earth sciences were school textbooks for these schools while their writers were school teachers. The social status of a secondary school professor was reputable, and the position itself was sometimes a precursor to a higher position in a career of a state administrative worker.

From these circles the early scholarly work began. Among the various state administrators, teachers, and school inspectors, few of them chose to write textbooks for schools. Frequently, foreign publications were taken as a model, often translated with added modifications. The authors and translators were commonly educated in Western academic centres, and paradigms taken from the West were employed in the local Serbian-Ottoman context, while adapting them to what the authors considered the most imminent need for of the people. Along with the work of Spasić and Gavrilović, whose social status was of a state administrators, several figures appeared working in the emerging school system. Secondary school teachers appeared as some of the first authors of textbooks. However, over the course of the nineteenth century, many of the school teachers managed to advance in their career and gain prominence in the political work

(such as Nikola Krstić and Vladimir Karić). Consequently, school positions became a stepping stone in the advancement of political careers.

While none of the first authors engaged in proper scientific work, their role in the promotion of the scientific knowledge and principles still made them actors in the formation of the earth sciences in Serbia. Their goal was primarily education and the promotion of interest in science. The general public was supposed to benefit from the knowledge presented in the books, and with it the nation and the state. For this reason, their primary aim was set to depict the current status of countries in the world and present the national overviews. Henceforth, the population, economy, and the state organisation became more important, and occupied most of the narratives.

Nonetheless, they made first steps in introducing notions of structure of earth and origins of mountains. These descriptions were brief and approximately summarising contemporary knowledge about land formations. In their nature, they were more subject to descriptive geographical traditions. Partially, because of the foreign influences, and partially because the lack of educational materials forced them to make proper examples through descriptions of the earth formations. Consequently, geography was the first earth science to gain wider audience and purposeful recognition in the eyes of the public opinion.

The development of scholarly disciplines was strongly associated with state building and the political and administrative elites that were its carriers. The process depended on the formation of a social circle of intellectuals whose agenda was the promotion of education. It was the era of late Serbian Romanticism and intellectuals were more inclined towards literature and history, which influenced the way they recognised the importance of knowledge production and ultimately the formulation of ideals that guided the appearance of earth sciences. Geography received more attention for its social

and political aspects, rather than its natural ones. Mining was, on the other hand, important for economic reasons, which was sufficient enough to start exploitation of the local mines, but not enough to overflow into the scientific sphere. However, the development of scholarly disciplines was also tied to the political sphere and social and political power dynamics that determined the position of scholars in society.

2. Making a Career in the Earth Sciences in Serbia

2.1. Investment in Education

The authorities of the Serbian Principality invested over several decades in the higher education of students abroad. These investments were assigned according to the needs of particular administrative services. State institutions required experts in various professions (law, military, education, medicine, engineering) and depending on the estimation of the needs of the services, each ministry, depending on its funds, assigned a certain number for students at foreign universities. Reproduction of social and political capital thus became closely tied to education. State stipends were in this way in the responsibility of the various ministries who invested in their own infrastructure. Stipend recipients were upon graduation required to work in the state service providing qualified personnel for the expanding administration.¹

However, because the state administration made these allocations depending on their own administrative estimation of the needs of the future administration, their plans frequently overdetermined education in certain areas. Furthermore, ministries were not equal in their allocation of funds. The Ministry of Defence allocated most funds for education abroad, as it requested more skilled officers for the army. The Ministry of Internal Affairs invested mostly in education of physicians, as medicine was part of their responsibility. In this respect, education in sciences depended largely on the Ministry of Education, considering that employment in that field largely depended on the needs of

1 Trgovčević, *Planirana elita*, 34.

that ministry, which employed scholars as primary or secondary school teachers. Most stipends were allocated by the Ministry of Defence (42.3%), then by the Ministry of Education (24.4%), and then by the Ministry of Internal Affairs (17.8%), and the Ministry of Construction (9%).² The conditions of the stipends required from recipients to spend at least twice as much time in the state service than the time they were receiving the stipend, thus securing the qualified personnel for the state offices.³

Serbian society was all throughout the nineteenth century agricultural and the peasants constituted the majority of population, while agriculture was the main economic resource and main source of foreign export. Nonetheless, the conditions of agricultural production were still such that poverty plagued the country and opportunities for escaping the difficulties of rural life mostly relied on the opportunities in the state administration. Industrialisation was slow and employment opportunities in the cities were limited.⁴ The administrative demands of the state opened up space for advancement via the social stratification resulting from education. State stipends were an opportunity for children of peasants and low class merchants to advance in career. However, their advancement was still limited. Despite the opening of employment opportunities for lower classes, the educational system had limited impact on the expansion of the elites of the country and was reproducing social inequalities. Those originating from the previously established elites gained most the investments in education, both to education within the principality and to education abroad.

2 Ljubinka Trgovčević, "Generacije intelektualaca ili generacije obrazovanog građanstva u Srbiji 19. veka," [Generations of Intellectuals or Generations of Educated Citizenship in 19th Century Serbia], in *Srpske političke generacije (1788-1918): Članci sa Okruglog stola 28.-29. maj 1997*. [Serbian Political Generations (1788-1918): Articles for the Round Table 28-29 May 1997], edited by Slavenko Terzić, Historical Institute of Serbian Academy of Sciences and Arts Collection of Works 15, (Belgrade: Historical Institute SANU, 1998), 54-55.

3 Trgovčević, *Planirana elita*, 50.

4 Marie-Janine Calic, *Socijalna istorija Srbije 1815-1941: Usporeni napredak u industrijalizaciji* [Social History of Serbia 1815-1941: Slow Progress in Industrialization] (Belgrade: Clio, 2004), 36-42, 177-190.

In her assessment of the Serbian state program for students abroad, Ljubinka Trgovčević subsumes nineteenth century educational planning in Serbia under the framework of a *Planned Elite*. The transformation of Serbian society from a “rural patriarchal” into a “modern” one was envisioned through a series of educational projects which helped young students, mostly of peasant origin, to attain education at Western European universities. In this way leaders of the state created over the course of the century an educated elite which was supposed to guide the state in its transformation into a society devised after the Western European model.⁵

The newly emerging Serbian elites also highly depended on immigrants or descendants of immigrants from the Habsburg Empire, who had filled the highest administrative positions since the early years of autonomy (1830-1858). In the absence of local intelligentsia, the political elite of the Serbian principality depended largely on “imported bureaucrats,” as Traian Stoianovich called them.⁶ Thus, in the early formative years of the Serbian state, the administrative elite mostly consisted of the leaders of the insurrection and their descendants, coming from rural patriarchal families, and the immigrants from the Habsburg Empire who formed the whole social layer of the “imported bureaucrats” who became the initial state and administrative structure of the principality.⁷ The mixture of these two groups created the administrative environment which supported planned education. The social boundary between the elites and the peasants was vague during the nineteenth century. Despite the differences, these social layers were closely intertwined and advancement into the state administrative elite was

5 Trgovčević, *Planirana elita*, 34-40.

6 Traian Stoianovich, “The Pattern of Serbian Intellectual Evolution, 1830-1880,” 242.

7 Traian Stoianovich, “The Pattern of Serbian Intellectual Evolution,” 242-247; Mirjana Marinković, “Državotvorna generacija – generacija kneza Miloša Obrenovića, 1815-1835” [State Forming Generation – the Generation of Prince Miloš Obrenović, 1815-1835], in *Srpske političke generacije (1788-1918): Članci sa Okruglog stola 28.-29. maj 1997*. [Serbian Political Generations (1788-1918): Articles for the Round Table 28-29 May 1997], edited by Slavenko Terzić, Historical Institute of Serbian Academy of Sciences and Arts Collection of Works 15, (Belgrade: Historical Institute SANU, 1998), 75-85.

open for peasants. It is debatable whether these educational plans were designed with the aim of formalising the existing social stratification or whether they had a genuine notion of social benefit behind them. Children of peasants recognised as promising students, were assisted in their education in order to become a part of a growing administrative elite which would no longer rely on foreign immigrants.⁸ The close connections of the forming urban environment to its rural surroundings were by the late nineteenth century still determining the dynamics of Serbian society, so that it was difficult to distinguish where one environment ended and the other one began. Economy was still dependent on agricultural production and were in most aspects hard to distinguish from villages.⁹

Ljubinka Trgovčević emphasised in her *Planned Elites* the role of state planning in education abroad and connected it to the necessities of the state administration. Her investigation of the investments in education in Western European academic centres tied it to the process of modernization and making the state the principal actor in the creation and proliferation of the elites.¹⁰ My goal is to contextualise the process of formation of scientific disciplines and institutions on the example of earth sciences.

In this chapter my intention is to analyse the appearance of educational institutions and employment opportunities in order to examine their role in the formation of the natural sciences in late nineteenth century Serbia. I will apply Pierre Bourdieu's notions of habitus, cultural capital, and field of power as conceptual tools of analysis. These notions will be tied to Trgovčević's notion of *planned elites* and through their interaction I will establish the framework for analysis of the intellectual and political

8 Traian Stoianovich, "The Pattern of Serbian Intellectual Evolution," 242-247; but also see Latinka Perović, "Politička elita i modernizacija u prvoj deceniji nezavisnosti srpske države" [Political Elite and Modernisation in the First Decade of Independence of the Serbian State], in *Srbija u modernizacijskim procesima XX veka (Naučni skup)* [Serbia in the Modernisation Processes of the 20th Century (Conference)], (Belgrade: Institut za noviju istoriju Srbije, 1994), 235-245; and Holm Sundhaußen, *Istorija Srbije od 19. do 21. veka* [History of Serbia 19th until the 21st Century], (Belgrade: Clio, 2007), 177-183.

9 Mari-Žanin Čalić, *Socijalna istorija Srbije 1815-1941: Usporeni napredak u industrijalizaciji* [Social History of Serbia 1815-1941: Slow Progress in Industrialisation] (Belgrade: Clio, 2004), 177-190.

10 Trgovčević, *Planirana elita*.

investment in education. In Bourdieu's understanding of social hierarchies, social stratification is reproduced from the economic and political fields into other fields of power, and in this reproduction he identified education as a major tool of social reproduction. Or, rather, economic and political capital are interchanged with cultural and educational capital in any of the particular fields where these capitals are used as currency. The value of these capitals in different fields can vary, but it enables conversion of roles between different fields.¹¹ Instead of attaching the investment in education simply as a goal of a (faceless) state administration, by adhering to Bourdieu's concepts, I will associate this project with members of administrative, political, and economic elites, and treat the building of the educational system as part of their investment in it. Furthermore, I will connect it to intellectuals, who used their political and social influence to further investment in education and promote it as one of the primary state goals.

While Bourdieu's analysis of education mostly relied on France and its social classes, my analysis will stray from his context into a nineteenth century Serbian society, which institutionally and socially differed from the social context Bourdieu analysed. Serbian society was less stratified and had greater social mobility, but was on the other hand more stricken by poverty and absence of institutional development. There was no nobility and the bourgeoisie was still in the process of formation. Illiteracy was in the late nineteenth century still high in Serbia and the majority of population did not consider education important. Educational institutions in Serbia were developing all through the nineteenth and twentieth century, which made their role in the reproduction of social inequalities limited, yet one can still observe them as instruments of formation of social

11 For example, see: Pierre Bourdieu, *Distinction: A Social Critique of the Judgement of Taste*, trans. Richard Nice (Cambridge, MA: Harvard University Press, 1984), 318-338; idem., *The State Nobility: Elite Schools in the Field of Power*, trans. Laretta C. Clough (Cambridge: Polity Press, 1996); Pierre Bourdieu and Loïc J.D. Wacquant, *An Invitation to Reflexive Sociology* (Cambridge: Polity Press, 1992), 153-160.

inequalities. In addition, following Trgovčević's argument, state elites were limited in numbers throughout the nineteenth century, and because of the practical needs of the state administration, in perpetual need of expansion. This made the social and political elites in Serbia open for aspiring young students willing to use education as a tool for advancement in their social status. By combining those two approaches, my analysis will seek answers in the interplay between systemic necessities of the society and the vested interest of the individuals.

Bourdieu differentiates between several types of power: between economic and political, but also between symbolic and cultural, each exemplified with a different type of capital. In his understanding, social status does not have to be necessarily tied to income or political positions, but could be tied to symbolic value of knowledge and skill, earned in the educational institutions, and socially tied to a specific cultural status.¹² Awarding of a degree thus functions as a gift exchange which grants someone a symbolic capital – “the institutionally organised and guaranteed misrecognition.”¹³ Bourdieu connects the notion of economic capital with pre-capitalist practices and argues that any form of capital as such represents social relations in a society – networks and relationships. Capital in this way represents social practices embedded in social hierarchies, and with them various states of misrecognition between individuals and groups.¹⁴ In Serbia of the nineteenth century, the growing educational system eventually began creating its own hierarchies, closely tied itself to political structures, but gradually gained relative independence from political power.

For Bourdieu, the appearance of cultural and credential markets is the identifier of contemporary institutionalised forms of power which neglect the traditional forms of

¹² Idem., *The State Nobility*.

¹³ Pierre Bourdieu, *Outline of a Theory of Practice*, trans. by Richard Nice (Cambridge: Cambridge University Press, 1977), 171.

¹⁴ Pierre Bourdieu, *Outline of a Theory of Practice*, 171-183;

social domination which depended on patronage. In this kind of society, culture becomes a form of capital, exercised through credentials gained through education, and capitalized in the form of institutional positions which pertain to professional authority on their own. Education is thus a type of investment in a power position in the society. In the context of Serbia's formation of the educational infrastructure, this investment can be considered a way for the political elites to maintain their power dominance. From one generation to another, their political and economic capital was used to create new types of symbolic power, developed and reproduced through symbolic labour. Maintenance of their power relations through education was reproducing the social diversification from one field (economic or political) to a different field through the educational system.¹⁵

My intention is to apply his terminology on a micro level. I will employ his framework to my examination of the beginning of earth sciences in Serbia, a scene with a limited number of actors. Some of the actors involved in the formation of the scientific disciplines came from families connected with higher and lower administrative strata (like Jovan Žujović, Svetolik Radovanović, Sava Urošević, Patar S. Pavlović, Jelenko Mihailović, Vladimir K. Petković), and some were tied to economic elites of the society (like Dimitrije Antula, Jovan Cvijić), while only one of the actors came from a peasant family (Svetolik P. Stevanović).

In this chapter I will address the social backgrounds of the actors involved in the establishment of the earth sciences and correlate the relationship between employment opportunities and establishment of institution in this field. Bourdieu's notion of "fields of power" can help situate understanding of expertise and its role in the society and in academia. What I call "fields of expertise" will situate the reputations and relations of experts who competed for the same positions. These fields of expertise were social areas

15 Bourdieu, *Outline of a Theory of Practice*, 10-22, 171-197; idem., *The State Nobility*, 73-101.

where scholars asserted themselves as experts in geology, mineralogy, petrography, palaeontology, geography, or geomorphology. Opening a new field depended on institutional support from the state, even though practices of research and teaching existed in times before that. Creations of chairs, institutes, museums, and journals depended on negotiations with the state over the resources, but also among the scholars themselves. In this task the central figure was Jovan Žujović, whose social and political networks connected him with highest circles of political power of that time. He had an opportunity to select his collaborators in the early years and organise a network that supported establishment and epistemic divisions between many disciplines of earth sciences. Educational qualifications played a significant role in this process, but social and political fields still had a decisive involvement in the process and employment still depended on the social and political capital that actors possessed.

2.2. The Reform of 1880 and the Earth Sciences

Intellectual circles awaited the arrival of professionals with a sufficient level of expertise in order to strengthen the Grand School's growing faculty. In 1880, Žujović was expected to be the expert who would establish the basis for the earth sciences. However, this begs the question: why was Mihailo Rašković not considered qualified enough, as a mining engineer, to teach earth sciences in the Grand School? In this particular case, expertise was not exactly missing, and Rašković could have been the one to establish earth sciences in Serbia.

For the intellectual circles of the 1880s, Žujović was much more than a young scholar with a degree from a French university. His place in the society was situated by the political and social status of his family. As I will explain in detail in the chapter about

his political engagement, he was from early on invited to participate in political life, mostly because of his family ties with the highest state administration. In the same way most professors were considered qualified for the highest state administrative positions, Žujović was treated as one of the skilled state clerks of the disposal to the government. For his family ties, he was considered bound to state service.

The state did not fund the education of Jovan Žujović. His father supported him during his education in Paris, and he chose courses at the Sorbonne without any intervention from any of the ministries. There was no state planning involved in the study of geology, and the whole incentive to finish the *licence* was his own initiative, incited by Pančić's suggestion.¹⁶

Mladen Žujović, Jovan's father, was a mayor of Belgrade and by the 1860s highly positioned in the state hierarchy, achieving the status of the state councillor during the reign of Prince Mihailo Obrenović.¹⁷ As a member of the political elite of the country, his father financed education of his children, offering them a respectable position in the social hierarchy of a country which lacked educated personnel, which brings in mind Bourdieu's evaluation of the character and role of education in the reproduction of social inequalities. Jovan's brothers had successful careers and were well positioned in the society. Jevrem became a physician and a medical officer in the army, Đorđe was a military officer, reaching the rank of major during his career, and Milenko was a lawyer who worked as a secretary in the Ministry of Justice.

Three stages of Jovan Žujović's education, one in Zurich, one in Belgrade, and one in Paris, were all financed by his father. The first episode, at the Zurich Polytechnic was unsuccessful because of Žujović's political engagement with the socialists. His father disapproved of his lack of progress with studies and condemned his political

16 Milan T. Luković, "Šezdeset godina rad Srpskog geološkog društva," 15-16.

17 More about the political ties of the Žujović family in the chapter 3.

affiliations. Not many students could have afforded a second chance. After he returned to Belgrade, he finished studies at the Grand School, and only after he had proven himself there, his father gave him another opportunity to study this time in Paris, at the Sorbonne.¹⁸

Cultural understanding of the place of natural sciences in Serbian society still associated it with education, where its primary purpose lay. Contemporary investment in education was focused on the immediate concerns of the economy and administration. The job market highly depended on the employment capability of the state administration. For this reason, investment in education had a specific goal to resolve practical issues that were appearing in the plans of state administration. For example, medicine depended on the state engagement in the employment of physicians, because there were no conditions which would support private practice and Ministry of Internal Affairs had to allocate physicians to provinces where they would not have normally gone.¹⁹

It was similar with mining engineers. Most private mining endeavours failed and the state frequently had to take them over. Mining engineers were thus frequently employed by the state, sometimes to prospect, and sometimes to oversee mining operations in state enterprises.²⁰ Mihailo Rašković, who started teaching chemistry in 1853, was educated as a mining engineer in academies in Schemnitz and Příbram, and possessed qualifications in earth sciences. However, the Ministry of Education decided to employ Rašković to teach chemistry. At the time, the state leadership recognised the

18 AS, Fund Jovan Žujović, JŽ-137, Letter from Đorđe Žujović to Jovan Žujović, 31.05.1873; and JŽ-120, Letter from Jovan Žujović to his father, 3 August 1879; Aleksandar Grubić, "Jovan M. Žujović (1856-1936)," in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 1, ed. Miloje Sarić, Biografije i bibliografije vol. 1 (Belgrade: Serbian Academy of Sciences and Arts, 1996), 296-301.

19 Trgovčević, *Planirana elita*, 49-56.

20 Kosta Petković, *Geologija Srbije I*, 20-29.

necessity for mining and Rašković participated in many mining surveys across Serbia, but he never published any research studies in geology.²¹

Similarly, the decision to hire Pančić to teach natural history was driven by the absence of a more qualified person. At this stage of development of scientific disciplines, scientific expertise was still not clearly defined as there was a lot of overlap in knowledge and practices. From that perspective, the engagement of Pančić, someone educated in medicine, was not uncommon in the European scientific scene, though it was more present in the first half of the nineteenth century, that physicians often took over roles of teaching natural sciences (like Hermann von Helmholtz, Richard Owen, or Eduard Suess, for example). The focus of intellectual and political circles was narrowed on the most practical issues of prospecting Serbia for valuable economic resources – learning about their own country, and expansion of education – transferring/translating knowledge from the West. In this narrow focus, there was no incentive to do scientific research. Reports that Rašković made were of an administrative nature and were never intended to represent scientific discoveries. He was a teacher and a surveyor for the state. Pančić, on the other hand, began participating in the work of the Serbian learned society by publishing the results of his field surveys in the form a scientific discourse. For Pančić, translating and writing textbooks for schools was not the main goal of his intellectual labour; he engaged in field research and presented his findings as original discoveries. In 1854 he sent a crate with Tertiary fossils with a report to the Geologische Reichsanstalt for analysis.²² His study on quicksand was one of his rare explorations of

21 Snežana Bojović, “Mihailo Rašković (1827-1872),” in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 1 (Belgrade: SANU, 1996), 65-91.

22 “VIII. Verzeichniss der and die k.k. geologische Reichsanstalt gelangten Einsendungen von Mineralien, Gebirgsarten, Petrefacten u.s.w Vom 1. October bis 31. December 1854,” *Jahrbuch der k.k. geologischen Reichsanstalt*, vol. V (1854): 873.

the earth sciences, but in it Pančić presented his original findings and connected them with international scholarship.²³

The reform of higher education of 1880 provided more institutional diversification to the Faculty of Philosophy. The studies were prolonged to four years and made more elaborate. The new law allowed the Grand School to create new departments, which resulted in the formation of three new chairs from the former chair of *jestestvenica*: zoological, botanical, and mineralogical and geological. Earth sciences benefited from the reform, and Žujović, freshly arrived from the Sorbonne, was given the opportunity to teach an extended selection of courses in this field. He was affiliated with the Natural-Mathematical Department, and assigned to teach mineralogy with geognosy (*mineralogija sa geognozijom*) and geology with palaeontology (*geologija sa paleontologijom*).²⁴

From this point, the formation of the institutions which dealt with earth sciences built up momentum and more institutions emerged on the Serbian intellectual scene. The lack of qualified personnel which had been hindering these disciplines in the past, was gradually resolved under the initiative of Žujović in the next two decades. From the perspective of the intellectual scene of the 1880s, the arrival of any scholar educated in the West, with a sufficiently respectable expertise in any field of science would have been received with enthusiasm. Jovan Žujović did not have a doctorate, but he was still considered well qualified for the teaching position at the Grand School. As time passed, by the end of the nineteenth century requirements for teaching positions were stricter as more scholars received proper education abroad.

23 Josif Pančić, “Živi pesak u Srbiji i bilje što na njemu raste” [Quicksand in Serbia and Plants that Grow on It], *Glasnik društva srbske slovesnosti*, vol. XVI (1863): 197-233.

24 AS, Fond Velika škola, 1881.91. Order of the Ministry of Education to Jovan Žujović to propose a program for Mineralogy and Geology, 21 January 1881; “Zakon o izmenama i dopunama u ustrojstvu velike škole od 24 Septembra 1863 god.” [Law on Changes and Improvements in the Constitution of Grand School of 24 September 1863], in Baralić, 67-69. The law was adopted on 25 January 1880.

Cultural perception of expertise and qualifications changed radically during the nineteenth century. In this sense, when I speak about expertise in different fields of earth sciences and the role of individuals in the establishment of new institutions which supported research in earth science, I am referring to the perception of knowledge and abilities in society. From a society of mostly illiterate peasants came a new layer of young, educated men, enthusiastic to build a society that would resemble Western European ones. In this process, the society needed experts in various fields of knowledge and practice, and experts were available from abroad. Elites in the country invested in education which was supposed to provide necessary expertise in many different fields.

Žujović occupied a field of expertise which was uninhabited at the time and thus situated in a field where he could determine the boundaries by himself. In the first years of his work as a professor, there was no other earth scientist with whom he could have cooperated or competed. All the power relations and negotiations that could have led to expansion and development of field of earth sciences had to be dealt among the circles of educational, political, and administrative elite. In other words, if Žujović wanted to negotiate expansion of the field of earth sciences, in the battle over resources he had to negotiate with intellectual and political elites that were usually outside scientific fields. Belonging to a well positioned family suited him well, as he was acquainted with some of the highest members of the state hierarchy.²⁵

In 1883, Žujović was administratively promoted to the rank of a tenured professor. In that year, besides his promotion, a new department (cabinet) – Mineralogical and Geological Cabinet – was established and he became its director. In addition, he managed to establish a student seminar, geological student conferences, and the Department for the Creation of a Detailed Geological Map (*Odsek za izradu detaljne*

²⁵ More about this in the chapter 3.

geološke karte). From this moment on, further compartmentalisation of the scientific disciplines followed with the establishment of new chairs and institutions with higher specialisations in sub-disciplines of earth sciences.²⁶

While geology and mineralogy thrived at the Grand School in the 1880s, geography was still practised under the parameters set by the educational and literary-patriotic goals of the 1850s and 1860s. Its major importance for political propaganda made it an important subject for intellectual and political workers interested in the promotion of Serbian national idea. Geography was already employed for the same nationalist purposes all over Europe and it participated in the construction of many European national identities.²⁷ For that matter, geography played a significant role in the construction of the Serbian national identity, as one of the main tools for construction of the national borders of Serbian ethnicity. Charles Jelavich analysed the role of history, literature, and geography in the construction of South Slavic national identities, and found geography highly employed for the propagation of nationalism among the South Slavs.²⁸ Geography's relevance for the matters of nationalist politics made the practice of geography in Serbia strongly tied to historical and ethnographical research, while at the same time giving strong emphasis on the economic and political aspects of depicted areas. Physical geography was represented in textbooks in a set of classifications of various forms of landscape and then as a catalogue of specific land formations and toponyms, classified and assorted according to regions. In this way it contributed to patriotic goals as a genre of travel literature which constructed images of national

26 Aleksandar Grubić, "Jovan Žujović," 301-304.

27 Generally on nationalism and geography: Mark Bassin, "Race Contra Space: The Conflict between German *Geopolitik* and National Socialism," *Political Geography Quarterly*, vol. 6 no.2 (April 1987): 115-134; idem., "Russia between Europe and Asia: The Ideological Construction of Geographical Space," *Slavic Review*, vol. 50 no. 1 (Spring, 1991): 1-17; Dimitar Bechev, "Contested Borders, Contested Identity: The Case of Regionalism in Southeast Europe," *Southeast European and Black Sea Studies*, vol. 4 no. 1 (2004): 77-95; Godlewska, *Geography Unbound*; Kevin R. Cox, *Political Geography: Territory, State, and Society* (Oxford: Blackwell, 2002), 165-204.

28 Charles Jelavich, *South Slavic Nationalisms: Textbooks and Yugoslav Union before 1914* (Columbus: Ohio State University Press, 1990).

territories, thus promoting aesthetic and economic knowledge about the land, much in line with educational and literary traditions.

“Comparative geography and ethnology” (*Uporedna geografija i etnologija*) appeared on the curriculum of the general program for both Historical-Philological and Natural-Mathematical Department. Geography was separated from meteorology, but adjoined with ethnology, thus making the discipline closer to the social sciences. Nonetheless, despite its presence in the curriculum, there was no one hired to teach that course at the Grand School. This school did not have a lecturer in “comparative geography with ethnology” until 1886, when Colonel Jovan Dragašević, a member of the Serbian Learned Society, was hired to teach that subject as an honorary professor and remained there until 1888. There was no other professor of geography until hiring of Cvijić in 1893.²⁹ In this way, when it comes to higher education, institutional establishment of geography lagged thirteen years behind mineralogy and geology. Even though there was willingness to introduce geography to the curriculum, there was no qualified teacher present. Jovan Dragašević had generally thorough education as a military officer and possessed knowledge on geography, topography, and cartography. He was publishing textbooks in geography in the 1870s and 1880s for secondary schools, and for the military academy, where he was teaching geography until 1884.³⁰

Despite the absence of geography from the curriculum of the Grand School, it was still a considerable factor in the creation of intellectual circles. Intellectuals with no

29 “Zakon o izmenama i dopunama u ustrojstvu velike škole od 24 Septembra 1863 god.” [Law on Changes and Improvements in the Constitution of Grand School of 24 September 1863], in Baralić, 67-69. The law was adopted on 25 January 1880; *Kalendar sa šematizmom knjažestva Srbije za godinu 1881* [Calendar with Schematism of the Serbian Principality for the year 1881], (Belgrade: 1881), 46-47. Also see other issues of state schematism: *Kalendar sa šematizmom*, years 1882-1894.

30 Jovan Dragašević, *Geografija za srednje škole* [Geography for Secondary Schools] (Belgrade: Državna štamparija, 1871); idem, *Načela vojne geografije za pitomce Vojne akademije i kao uput mladim oficirima za učenje geografije s pogleda vojničkog* [Principles of Military Geography for Military Academy Cadets and as an Instrucion to Young Officers for Studying of Geography from the Military Perspective] (Belgrade: Državna štamparija, 1876); idem, *Zemljopis Srbije i ostalog Poluostrva balkanskog* [Geography of Serbia and the Rest of the Balkan Peninsula], 5th ed. (Belgrade: Državna štamparija, 1880).

formal training in geography who published works in geography and collaborated with the Serbian Learned Society remained a significant force until the beginning of the Great War. Vladimir Karić and Milan Đ. Milićević were the most prominent representatives of this descriptive, literary-patriotic, and educational orientation in geography. Their political engagement as members of state administration and their role in the creation of state policies (particularly foreign policy) was reflected in their works, imbued with nationalist spirit. Strong ties between intellectual circles and political elite of the state could be well exemplified with Karić and Milićević, who occupied space in both the intellectual and political fields. Their high positions and influence made geography still significant in the 1880s and 1890s, though employed in the political field as an instrument of nationalist foreign policies.³¹

2.3. Employment Opportunities, Creation of New Institutions, and Career Advancement

Quick career advancement was the main characteristic of the 19th century scholars in Serbia. Žujović's career may be exemplary on how the reputation of a scholar resonated in the Serbian society of the late nineteenth century. A set of favourable circumstances contributed to his quick recognition as a scholar. The fact that he gained the *licence* degree at the Sorbonne gave him a great reputation, which opened high positions in the society to him. Furthermore, because of his father's loyalty to the Obrenović dynasty, it was assumed he would be loyal to the same political stream. In addition, many of the members of the political and intellectual elites belonged to the same social circles as he did, and it was easy for Žujović to get acquainted with them, which in addition opened many opportunities for him.

31 See the chapter 3.

Much of Bourdieu's argument that educational system reproduces inequality, and that it could be considered an investment into symbolic power echoes Trgovčević's notion of planned elite of Serbia. Investment in education, whether by the state or by individuals who invested in their children, provided considerable opportunities for students once they finished studies. Even education in secondary schools provided enough qualifications for working in the state administration. In some cases, secondary schools enabled enough personal contacts with members of the political and administrative elites, because secondary school professors frequently advanced in career and occupied highest positions in the state hierarchy. The Grand School provided even more opportunities in that sense. Professors of that school were frequently serving in the state administration as ministers and diplomats, as well as members or heads of various state committees and thus involved in decision making on all levels of state administration. The intellectual and political elites of Serbia shared the same education, as the Lyceum and the Grand School reproduced members of both elites. Because of the small number of students and professors, they usually knew each other as acquaintanceships were easily made. Former students became colleagues, both in schools and state offices.

Žujović personally knew most of the influential members of the society since his childhood. He was closely related to some of the most powerful people in Serbia, and was acquainted with members of the royal family, and even maintained close communication with some of them. The leader of the Progressive Party Stojan Novaković was his former professor from the Grand School and tried to convince him to engage in politics, which Žujović declined. I will address his political engagement further in the chapter about science and politics, but for now I just want to emphasise the personal connection he shared with members of the political elite.

In the first two decades after his graduation, Žujović was oriented towards an academic career and tried to avoid politics. Immediately after his return from France, in 1880, Žujović attained a position in academia, becoming a suplent at the Grand School. The same year he became a member of the French Geological Society and French Mineralogical Society. In 1883 he became a member of the Serbian Learned Society, and in 1886 a member of the Yugoslav Academy of Sciences and Arts in Zagreb, Croatian Scientific Society (*Hrvatsko naravnoslovno društvo*), and the Hungarian Geological Society. After becoming one of the founding members of the Serbian Academy, he was elected to the Hungarian Academy of Sciences as well.

In Žujović's own confession, when he was elected a member of the Serbian Royal Academy, he did not feel ready for the position, and he believed he did not have recognisable scientific results behind him.³² Although this modesty may be insincere, at the time of his inaugural address, Jovan Žujović was still a young and inexperienced scholar. However, intellectual circles of Serbia at the time needed him to make the claim for another epistemic field and build Belgrade's reputation as a scientific centre. It was an opportunity to form a whole new set of disciplines. At the moment of the formation of the Academy, in April 1887 king Milan named sixteen scholars to be the founding members. In one of his biographical notes, Žujović recorded that during one meeting of the members of the academy with king Milan he heard from the king himself that he opposed his election to the Academy, because he believed that Žujović was still too young. Nonetheless, when he heard that Žujović had been already elected a member of the Yugoslav Academy of Sciences and Arts, he decided to sign the promotion. However, Žujović already knew this. Intellectual and political circles were so close and interwoven

32 Jovan Žujović, "Pristupna akademska beseda, govorena na XII svečanom skupu Akademije 19. jula 1888" [Accession Academic Lecture, Given on the Twelfth Academy Session on 19 July 1888], *Glas Srpske Kraljevske Akademije* vol. IX (1888): 4.

that information (or rumours) easily travelled from higher positions to the lowest circles. In this particular case, the news about king Milan's reluctance to grant him membership in the Academy were passed down family lines. Žujović heard it as a rumour from his brother Milenko, who again, heard it from their cousin Milutin Garašanin.³³

From 1880, a number of his students rose to high positions. When he started his work at the Grand School, Žujović began forming institutions that were supposed to be the carriers of scientific work in the country. For students who usually lacked funds these institutions were an opportunity for employment, which Žujović tried to use. In this way Žujović managed to form a circle around him, consisting of his current and former students who collaborated with him on various scientific endeavours. During the 1880s and 1890s, a number of new academic institutions were founded in Serbia and Žujović's students took charge of organising them. After he secured his position by becoming a tenured professor in 1883 and establishing the Mineralogical and Geological Cabinet, he hired one of his students, who was still enrolled in the Grand School, Sava Urošević, to start working at the Cabinet as an assistant. This was the beginning of a small circle of close acquaintances who organised the earth sciences in Serbia. Urošević studied at the Grand school between 1880 and 1884, exactly at the time when Jovan Žujović began his work there. His cooperation with his professor began early on with his 1883 appointment as an assistant. In 1884, Urošević graduated from the Grand School and was immediately employed as professor-apprentice (*profesor pripravnik*) at the Mineralogical and Geological Cabinet, enabling him to teach in the 1884/85. At the same time, the Ministry of Education invested in his further education, granting him a stipend to go to the Sorbonne and get a degree in mineralogy, chemistry, and physics there.³⁴

³³ AS, Fund Jovan Žujović, JŽ-62/4. Notes about Stojan Novaković.

³⁴ AS, Fund Velika škola, 1884.151. Two applications for the position of apprentice professor; 1885.26. Decision on the appointment of Sava Urošević on the position of apprentice professor and his election for a state grantee (*državni pitomac*). 16 February 1885.

The family of Sava Urošević was considerably lower in the social hierarchy than the Žujović clan. His father was a primary school teacher, which made him part of the state administrative hierarchy, and a member of the educated class of the country, yet not a member of the social and political elite. Because they were employed by the state, school teachers were treated as clerks, ordered and moved around the country, unable to choose their own assignment. Although the economic and political capital at their disposal was low, they still shared a respectable amount of cultural capital, as the society's development largely depended on their practice. The possibilities for teachers upward mobility in the state hierarchy was decreasing towards the end of the century, but they remained at the core of the educational projects on which state's cultural policies largely depended. They were educated and well distributed around the country, which made them reliable collaborators for scholars in Belgrade who needed data from the provinces.

A son of a school teacher still had considerable opportunities for advancement in the social hierarchy. Sava Urošević was born in the village of Vrmdža, near Sokobanja, where his father was posted as a primary school teacher. Even though he grew up in a village, belonging to a family of a school teacher provided him with a habitus that separated him from the peasant strata of the society and made him closer to the educated strata. His education facilitated his upward mobility and gradual migration from the periphery to the centre. He started his education in a provincial town of Aleksinac, where he finished primary school and lower grades of the secondary school. After that he transferred to the First Belgrade Gymnasium where he finished his secondary education, after which he enrolled to the Grand School. While at the Grand School, because of the

impoverished status of his family, he was a recipient of the state stipend for impoverished students.³⁵

After finishing studies in Belgrade he continued receiving the state stipend. While studying in Paris, he was sending reports on his studying progress, with lists of courses and the acquired knowledge. These reports were sent to the Ministry of Education, but it was Jovan Žujović who evaluated the progress of the state grantee. This was a standard procedure for all state grantees. The ministry was giving stipends, but the faculty of the Grand School was evaluating the progress of students abroad.³⁶

Although Urošević's studies in Paris began in 1885, he had to interrupt them because of the war with Bulgaria that started the same year. He was conscripted in the army and remained in service until January 1886. Later, he returned back to Paris to continue his studies and acquired the *licence* degree at the Sorbonne in 1888. It was the same degree his mentor had received in 1880. Thus, after eight years, there were two scholars in Belgrade with a *licence* degree in mineralogy. Because Urošević was a stipend recipient, the ministry offered him a job position, but this was not a high position in academia: from October 1888 until January 1890 he was employed as professor in the Second Belgrade Gymnasium. One position in earth sciences at the Grand school has been already occupied.³⁷

The time was right for the Ministry of Education to support opening of new positions for earth sciences for these two men. In 1889, things were going well for the earth sciences in Serbia. Several new institutions were founded: the Geological Institute (*Geološki zavod*), the new Chair for Mineralogy and Petrography, and the first journal –

35 AS, Fund Velika škola, documents: 1880.8., 1881.58../37., 1882.19. Vidojko Jović and Stevan Karamata, "Sava Urošević (1863-1930)," in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 4, ed. Miloje Sarić, Biografije i bibliografije vol. 4 (Belgrade: SANU, 1998), 69-70.

36 AS, Fund Velika škola, 1886.111. Accompanying act of the Ministry of Education, following the report of stipend recipient Sava Urošević. Also, on requirements for stipend recipients, see more: Ljubinka Trgovčević, *Planirana elita*.

37 Jović and Karamata, "Sava Urošević (1863-1930)," 70.

Geološki anali Balkanskog poluostrva (Geological Annals of the Balkan Peninsula). In January 1890, Sava Urošević became a supplementary teacher at the newly founded chair, and later, in September, a tenured professor of mineralogy and petrography at the Grand School. At the same time he became the director of the mineralogical cabinet which separated from the Geological Institute.³⁸

These changes came as a consequence of negotiations Jovan Žujović had with the Ministry of Education, and generally with highest members of the political elite. His communication with them developed over the years; from the beginning he was encountering difficulties, as the ministry had a tight budget and requests for scientific activities and opening of new institutions were rarely welcome. Nonetheless, Žujović's knowledge and expertise were gradually recognised in the political circles. The state needed him for various tasks, mostly of educational nature. Like most professors, he was a member of various educational boards that participated in the reform, planning, and overseeing education in the country.³⁹ The request he made in 1881 for funding for field research and training in Austria-Hungary was denied with an explanation that there is no money in the treasury for it.⁴⁰ However, his request in 1882 to go to Pest and examine geological and mineralogical collections and acquire some specimens for his cabinet was approved.⁴¹ In return, he was providing expertise for the government, examining ore specimens for the Serbian exhibition at the world fair in Antwerp in 1885,⁴² or

38 AS, Fund Velika škola, 1889.340. Accompanying act of the Ministry of Education and documents of Sava Urošević for the Chair of Mineralogy and Geology of the Grand School; 1890.3. Notice of the Ministry of Education on the appointment of Sava Urošević, lecturer at the Second Belgrade Gymnasium to the position of *suplent* at the Grand School. 4 January 1890.; 1890.300. Notice of the Ministry of Education on the appointment of Mijalko Ćirić, Živko Milosavljević, and Sava Urošević as professors. 24 September 1890.

39 Most important of all was *Glavni prosvetni savet* – Main Council for Education.

40 AS, Fund Velika škola, 1881.31. Response of the Ministry of Education to the plea of *suplent* Jovan Žujović to travel to Austria-Hungary for the purpose of geological studies. 8 June – 5 July 1881.

41 AS, Fund Velika škola, 1882.127. Request of Jovan Žujović to Ministry of Education to go to Pest to examine mineralogical cabinets. 2-5 September 1882.

42 AS, Fund Velika škola, 1885.5. Notice of the Ministry of Education that the committee for the examination and selection of ores and minerals from the Mining Department and the Grand School for the exhibition in Antwerp. 5 January 1885.

investigating strange fissures in the land that occurred in Jošanica district. In the latter case, the Prime Minister and the Minister of Interior, his cousin Milutin Garašanin, demanded quick investigation and ordered him to go to the location and determine the cause of the fissures. Money for the research trip should have been taken from the research budget, already allocated to the Faculty. However, the Faculty of Philosophy replied that the allocated money was not sufficient for that research trip and that Žujović could not go. Such negotiations were gradually changing the understanding of expertise, as scholars, in this case Žujović, with the help of his colleagues from the Grand School, managed to persuade state administration of the necessity of investment in earth sciences. In this particular case, the government allocated special funds for the investigation of these fissures.⁴³

The establishment of the geological journal – *Geological Annals of the Balkan Peninsula*, was a result of his collaboration with the Ministry of Education. Žujović, as head of the editorial board, agreed to work without any remuneration, and all the income from the sale would have gone to the state printing office, except for a certain number of copies which should have been assigned for the cabinet. Fees for the contributors were supposed to be allocated from the budget of the Ministry of Education.⁴⁴

The creation of the Geological Institute was more of a formal name change of the previous Geological Cabinet, rather than actual establishment of a new institution. This change circumvented the ministry as it was done in agreement with the Rector Svetomir Nikolajević. Žujović's argument for this change was that with the establishment of the journal (*Geological Annals*), the Cabinet was communicating with similar types of institutions abroad, which would have created a confusion if the name – Mineralogical

43 AS, Fund Velika škola, 1886.88. Correspondence related to investigation of an unusual geological occurrence in the Kruševac county.

44 AS, Fund Velika škola, 1889.10. Notice from the Ministry of Education that the *Geological Annals of the Balkan Peninsula* will be printed under supervision of Jovan Žujović. 26 January 1889.

and Geological Cabinet, was still in use. Because this institution expanded its purpose and at the moment comprised of a museum, a cabinet, and a laboratory, that would have made it a fully developed institute. Žujović pleaded that the name should be changed to either *Geološki Zavod* or *Geološki Institut*, both of which could be translated into English as Geological Institute. His desire wanted to use that name particularly in communication with foreign institutions, as he believed that the new name would have shown the advanced status of their institute to their foreign collaborators. This name change was, however, only acknowledging the institutional growth of the cabinet and it did not substantially change anything in its operations.⁴⁵

The expansion of the network of people involved in the production of knowledge accompanied these institutional changes. After Urošević, Žujović managed to mobilise Svetolik Radovanović to pursue a career in earth sciences. Radovanović belonged to the generation that was one year younger than Urošević's, and graduated from Grand School in 1885. Right after graduation, he went to Vienna to study geology and palaeontology, where he spent the next couple of years, eventually finishing a doctorate degree in 1891.⁴⁶ There he actively corresponded with his former professor, keeping Žujović updated on his studies and assisting him in acquisition of professional literature in Vienna. Radovanović coordinated his studies with Žujović, and planned them according to the needs of Žujović's department at the Grand School, eventually specializing in palaeontology. At the same time, Radovanović participated in the foundation and organisation of the *Geological Annals*, which remained one of his assignments during the 1890s, when he was the editor of the journal.⁴⁷

45 AS, Fund Velika škola, 1889.204. Proposal of Jovan Žujović to the Rector of Grand School to change the name of the geological cabinet. 25 September 1889.

46 I will address in more details his studies in Vienna in the chapter about imperial science.

47 AS, Fund Jovan Žujović, 212. Correspondence with Svetolik Radovanović.

Like Urošević, Radovanović grew up in a provincial village. His father was a county clerk in the local administration of Aleksinac. Because his father was frequently transferred with his service around the country, working in various counties, during his childhood he was moving between Aleksinac, Kučevo, Gradište, and Kragujevac. He grew up without a mother. While his father was still working, he was earning enough to pay for Radovanović's education. He finished lower gymnasium in Kragujevac and in 1878 enrolled to the First Belgrade Gymnasium, where Urošević studied as well.⁴⁸

Originating from a family of a provincial clerk, Radovanović was inculcated through education into a specific habitus of the class of clerks, merchants, and lawyers. Inspired by romanticist fervour, he was among the secondary school students who were gathering in order to present their literary works. Intellectual literary orientation was still strong and youth in Serbian schools still drew inspiration from it, mixed with strong nationalist ideology of the youth organisations. While at the Grand School, Radovanović was active in student societies, like *Pobratimstvo*, and was among the founders of the Academic Choir Society. He played flute and violin. Such activities were common for Serbian academic youth and were a formatting element of the networks that connected intellectual and political elite, mostly originating from Belgrade secondary schools and from the Grand School. Usually, after graduation, these students pursued administrative careers, as those positions were available for students of lower economic positions. Fathers of Urošević and Radovanović advanced in the administration from the lowest levels. When their sons finished the Grand School, new opportunity for a career arose in the field that Žujović was opening. Field of earth sciences was uncontested and the first

48 Aleksandar Grubić, "Svetolik Radovanović (1863-1928)," in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 2, ed. Miloje Sarić (Belgrade: SANU, 1997), 107-108.

ones who would finish had an opportunity to quickly transform his/her educational capital into cultural capital, and with it – into economic and political capital.⁴⁹

From the correspondence that Radovanović had with Žujović while he was studying at the University of Vienna, we know that Žujović played a significant role in the choice and the course of studies. Radovanović focused particularly on palaeontology (Urošević focused on mineralogy) and he was aiming at working in Belgrade after graduation and this specialisation was lacking. Radovanović was a recipient of the state stipend during his studies in Vienna, but it seems not in its full extent.⁵⁰ Because his stipend was insufficient, his father had to give him additional support. Unfortunately for him, his father was retired in 1888, before Radovanović finished his studies, and the money from the retirement turned out to be insufficient to finance Radovanović in his last years of studies. He was trying in vain to apply for the full scholarship from the state, and even the support from Žujović yielded no result. His pleads managed to aggravate things, and at one point, he complained to Žujović, that he was threatened with physical violence.⁵¹

With the increase in the number of scholars specialised in earth sciences, an opportunity arose to expand scientific practices. In 1891, when Radovanović earned his doctorate in palaeontology, the Serbian Geological Society (*Srpsko geološko društvo*) and the chair for Paleontology were founded. At the same time, the Geological Institute was merged with the Mining Institute because the government lacked money and tried to save its funds by merging these two institutions. The growth of activities was a result of a

49 Aleksandar Grubić, "Svetolik Radovanović," 108-109; Petar Krestić, "Omladinska Generacija" [The Youth Generation], in *Srpske političke generacije*, 99-103.

50 AS, Fund Velika škola, 1890.90. Request from the Ministry of Education to the Rector of Grand School for an evaluation of the report of the state grantee, Svetolik Radovanović. 7 April 1890.

51 AS, Fund Jovan Žujović, JŽ-212/28-31, Letter from Svetolik Radovanović to Jovan Žujović 25.02.1888. (Julian calendar)/13.03.1888. (Gregorian calendar).

growing number of qualified personnel in academia, but was also limited by the budget which was frequently insufficient for such ventures.

The logic of state administration was still abiding by the same principles. While they supported educational projects, their employment strategies largely depended on the state administration. In 1891 Radovanović returned from Vienna as a highly specialized professional, but two positions in his field at the Grand School were already occupied. As a consequence, a new position in the state administration, that had not existed before, was created for him. The Mining Department of the Ministry of National Economy hired him to work as the official state geologist, or as the appointment was officially named – custodian of the Museum of Geology and Mining, geologist of the 5th rank (*klasa*).⁵² Two professors at the Grand School did not have a doctorate in earth sciences, and the only person who did was working for the Mining Department as the clerk of the lowest rank.

2.4. Development after 1891 and Expansion of the Žujović Circle

Over the course of the years, the network of former students of Žujović expanded. The most important actors in the establishment of earth sciences graduated from the Grand School in a very short period. The first two of his main collaborators graduated in 1884 and 1885, then Petar S. Pavlović graduated in 1886, Jovan Cvijić in 1888, Dimitrije Antula in 1892, and Svetolik P. Stevanović in 1893. All these students of Žujović achieved high positions in academia and played a crucial role in the establishment of the scientific scene in Serbia. Their career paths were not as straightforward as in the cases of Urošević and Radovanović. Institutions were frequently opened shortly after these students defended their doctoral theses and returned to Serbia; Žujović, Radovanović,

52 Which was the lowest class for a state clerk. Aleksandar Grubić, “Svetolik Radovanović,” 114.

and Urošević found employment in state institutions right after they returned, and only Cvijić had a similar career path. In the logic of the administration, the appearance of a new scholar on the scene was a good opportunity to create a new institution which will hire him. However, in practice, easy access to job positions in state institutions, both scholar and administrative, was becoming more difficult by the year and even though the number of institution rose, the competition for the postings was becoming more serious by the beginning of the twentieth century.

Nineteenth century secondary schools (*gimnazije*) were still the main institutions which employed scholars in Serbia. Many of them found employment in these institutions after returning from abroad. Throughout the nineteenth century, secondary schools were a stepping stone in any aspiration for a successful career in state administration. Since the 1840s, they were the centres of intellectual activities and professors actively participated in the work of the Society of Serbian Letters and Serbian Learned Society. Many of the scholars who worked at the Grand School spent a certain amount of time teaching in secondary school, while they were waiting for better employment. For example, after returning from Paris, and before becoming a professor at the Grand School, Sava Urošević taught at the Second Belgrade Gymnasium in 1888-1889. Petar S. Pavlović, was teaching in the Zaječar Gymnasium since his graduation and succeeded Urošević at the Second Belgrade Gymnasium. Dimitrije Antula was officially registered as a professor at the Third Belgrade High School, even though he was at the time studying at the University of Vienna. After the completion of his doctoral degree in 1896, he returned there as a teacher. This arrangement was made in order to secure him funding through his doctoral studies.⁵³

⁵³ Jović and Karamata, "Sava Urošević," 70; Aleksandar Grubić, "Dimitrije Antula (1870-1924)," in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 7, ed. Miloje Sarić (Belgrade: SANU, 2001), 126-127.

Generally, scholars could have expected employment from the state. State administration, central or local, and schools, secondary or the Grand School, were the most apparent choices. This made the scholars dependable on the political power, as the government provided their source of income. Particularly, the Ministry of Education had the power to relocate professors around the country to different postings, which intimidated professors. Younger scholars were particularly targets of frequent relocations, but in such cases relocations could have been signs both of advancement in career and punishment.

The career path of Petar S. Pavlović in early days did not suggest he would become a scientist. After short postings at the Zaječar Gymnasium (1887-1889), he was employed at the Second Belgrade Gymnasium (1889-1912), and performed the duty of a school inspector for the Ministry of Education in 1890 and 1892.⁵⁴ During his time at the Gymnasium, he took a leave of absence for the purpose of professional training in 1893, which lasted until 1895. He went first to Palaeontological Institute of the University of Vienna for one year of training, where he was trained by Suess, Wilhelm Waagen, and Theodor Fuchs. Time spent there gave him an opportunity to work at the Natural History Museum in the palaeontological section. Fuchs suggested to him to continue his specialisation in Zagreb, and for this reason he spent 1894-1895 at the National Zoological Museum (Narodni zoološki muzej) with Spiridon Brusina where he specialised in the field of malacology. From the perspective of the Serbian intellectual scene, this made him qualified to take charge of the newly founded natural history museum. In his further career he was perceived more as a curator and less as an expert in malacology.⁵⁵

⁵⁴ *Kalendar sa šematizmom*, 1886-1912.

⁵⁵ Nikola Pantić and Vojislav Vesić, "Petar S. Pavlović (1863-1938)", in *Život i delo srpskih naučnika* vol. 2, Biografije i bibliografije vol. 2, (Belgrade: SANU, 1997), 155-156.

Pavlović shared a similar social background with Jovan Žujović. They maintained a close friendship over the years. Of all of former Žujović's students, Petar Pavlović was the most frequent visitor at his estate in Nemenikuće.⁵⁶ They both belonged to families whose ancestors were among the leaders of the insurrection against the Ottoman regime, loyal to the Obrenović dynasty. Members of such families were commonly highly positioned in the state administration or the army. Petar S. Pavlović's father was cavalry lieutenant colonel Stojan Pavlović. His mother was Jelena, daughter of Nikola Milićević Lunjevica, and on her mother's side, she was a granddaughter of Tanasije Čarapić, one of the main protagonists in the First Serbian Insurrection. Petar was a cousin of Queen Draga – his mother and Draga's father were siblings. Pavlović had three brothers and two sisters; the eldest Pavle was a biologist, a professor in the Second Belgrade Gymnasium, who specialised in microscopy at the Sorbonne in 1901-02. The younger brother Ivan became an officer, ending his career as a general. The younger sister Katarina was a professor of the Higher School for Women and the Teacher's College. Members of this family rose to prominence during the Obrenović reign long before Draga's ascension to the throne.⁵⁷

The high social and economic capital of the Pavlović family granted Petar some leeway to choose his career. During his work as a professor in Zaječar Gymnasium, he quit his posting in order to prepare for the state professorial exam, and during his work in Second Belgrade Gymnasium, he took a two year leave of absence for professional training. He never earned a doctoral degree, but so far as his career went, he managed to attain high positions in science even without it. He returned back to Belgrade in 1895 and resumed his job at the Second Belgrade Gymnasium. His return coincided with the

56 Jovan Žujović, *Dnevnik iz Nemenikuća: Memento Oblomovke* [Diary from Nemenikuće: Memento Oblomovka], eds. Miloje R. Sarić and Aleksandar Ž. Petrović (Belgrade: Srpsko društvo za istoriju nauke, 2003), 64, 85, 99, 115, 286.

57 Pantić and Vesić, "Petar S. Pavlović," 153-154.

project of building of the natural history museum, which was headed by Žujović and Urošević. This gave him an opportunity to participate in the project and he got an assignment in 1895 to work as the manager of the board for building of the museum.⁵⁸

Even though Pavlović graduated from the Grand School in 1886, his advancement in career was slower than of his peers. He worked for in the Second Belgrade Gymnasium and he attained a position at the Grand School's Geological Institute only in 1897, as the curator of the zoological-palaeontological collection and a teaching assistant in palaeontology. In 1901, when the natural history museum was finally founded, named the Museum of Serbian Land (*Muzej srpske zemlje*), he was appointed temporary director. Because of the budget restrictions, his was still formally employed by the Second Belgrade Gymnasium where he was officially the professor of *jestestvenica*. This administrative manipulation with resources enabled funding for necessary job positions at newly founded institutions, but at the expense of the secondary education funds. Petar S. Pavlović was not the only scholar employed this way. He performed several duties at the same time, both at the gymnasium, the geological institute, and the board of the museum.⁵⁹

While Pavlović was gradually advancing in his career, more direct and more successful careers of Jovan Cvijić and Dimitrije Antula occupied prominent space in earth sciences. Unlike Pavlović, they both obtained doctoral degrees in Vienna, and advanced quickly in the hierarchy. Jovan Cvijić left for Vienna almost immediately after his graduation in Belgrade in 1888, after a brief posting at the Second Belgrade Gymnasium, and returned with a doctoral degree in 1893.⁶⁰ He provided Serbian academia with an expertise in geography and geomorphology, both which were field still

58 *Kalendar sa šematizmom*, years 1890-1901.

59 *Kalendar sa šematizmom*, years 1890-1905; Pantić and Vesić, "Petar S. Pavlović," 156-159.

60 Archiv der Universität Wien, PH.RA.760.34. Johann Cvijic, Philosophische Rigorosum Acten.

unoccupied by sufficiently qualified lecturers. Antula, on the other hand graduated in Belgrade several years later, in 1892, and was a student of both Žujović and Urošević. By 1896, he finished his doctorate in Vienna, studying in the Palaeontological Institute of the university, where he was mentored by Wilhelm Waagen.⁶¹

Compared to his peers, Jovan Cvijić was of relatively lower social origins. He was from a family of an impoverished merchant from Loznica. His family's financial status was such that through his education they were struggling to afford sending their children to school. Because of it, Cvijić was not able to complete his education without the financial assistance from various benefactors. At first, he was receiving a stipend from a merchant from Šabac who supported him during his studies in the Šabac Gymnasium. Later, the Municipality of Loznica gave him a stipend to study at the Belgrade Gymnasium. Because he was demonstrating good results in school already in the lower grades of the gymnasium, he managed to get attention and secure funding for his further schooling. Education in these schools also enabled him personal contact with some scholars who were then the professors and later became high political figures. Vladimir Karić taught him geography in the Šabac Gymnasium, and Andra Nikolić literature in the First Belgrade Gymnasium.⁶²

From childhood Cvijić was taught to aspire towards learning and skill, and knowledge-based careers. In his childhood recollections, Cvijić emphasized the influence of his mother, who, although of a peasant origin and uneducated, wanted her children to acquire education.⁶³

61 Archiv der Universität Wien, PH.RA.971.8. Demeter Anthula, Philosophische Rigorosum Acten.

62 Vojislav Radovanović, *Jovan Cvijić* (Belgrade: Nolit, 1958), 18, 24. Milorad Vasović, *Jovan Cvijić: Naučnik, javni radnik, državnik* [Jovan Cvijić: Scientist, Public Servant, Statesman] (Novi Sad: Izdavačka knjižarnica Zorana Stojanovića – Matica srpska, 1994) 21-22.

63 Jovan Cvijić, *Autobiografija i drugi spisi* [Autobiography and Other Texts], Vladimir Stojančević (ed.), (Belgrade: Srpska književna zadruga, 1965), 13-15.

Even though he grew up in a town, Cvijić spent a lot of time in the village of his mother, with his illiterate uncle Pera Avramović, whom he nonetheless described as one of the most knowledgeable men he met. This attitude towards village wisdom was seen as typical for the rural patriarchal community, and in his later work Cvijić maintained a lot of admiration for self-educated men from rural areas. The acquaintance with the peasant layers made him highly sympathetic to their causes, and politically a socialist. He described such a political stance as generational. Most students in his surroundings were socialist and Darwinist and he described it as a general attitude of young educated men. Contrary to Žujović, who was exposed to socialism in the intellectual circles of Zurich, in the company of Bakunin and Pera Todorović, Cvijić was only reading about it and had very general and vague attitudes towards political engagement. Inherently, those two scholars differed in their activities and positions, even though they both defined themselves as socialists early in their careers. What they shared was a general attitude towards the peasantry – belief that intellectual duty is to work on the improvement of life conditions of peasants, a conviction of the new educated intelligentsia of the 1870s and 1880s.⁶⁴

Originally, Cvijić wanted to study medicine. Because of the general lack of physicians in the country, the Ministry of Interior was offering stipends for this profession. For a young student from an impoverished family, there was a good prospect for advancement in both social and economic capital in this profession. The job would be secure and with it came a considerable reputation. Nonetheless, he lost his stipend from the Loznica municipality because of the absence of sufficient budgetary funds. In a moment of desperation, he spoke with his old geography professor from the Šabac Gymnasium, Vladimir Karić, who suggested him to go to Belgrade and study geography

⁶⁴ Cvijić, *Autobiografija*, 11-22.

at the Grand School. Karić, who held high positions in the state administration, was one of the most important persons in foreign relations. He promised Cvijić that if he pursued natural sciences at the Grand School, he would secure him funding from the state for studies abroad in that field.⁶⁵

The support from Karić apparently worked. During his studies at the Grand School, Cvijić was a recipient of the stipend for impoverished students.⁶⁶ He enrolled in the Natural-Mathematical Department in 1884, like Karić suggested, and after four years came out of the school with several articles published and earned a stipend, like he was promised. The Ministry of Education funded his studies at the University of Vienna with a task to get a degree in geography and geomorphology.⁶⁷ In between his studies in Belgrade and Vienna, for a short while (1888-1889) he taught at the Second Belgrade Gymnasium.⁶⁸

Immediately after Cvijić's return from Vienna in 1893, he was appointed a professor of geography, and in the same school year, in 1894, the Geographical Institute (*Geografski zavod*) was founded. As I have already mentioned, the chair in geography already existed, but the position was unoccupied. One of Cvijić's first steps was the foundation of the professional journal: *Pregled geografske literature o Balkanskom Poluostrvu* (Review of the Geographical Literature on Balkan Peninsula), which started in 1894. Cvijić immediately got employment at the school and remained at that position for several decades (with the exception of the wars – until his death in 1927). The foundation of the seminar and the journal accompanied his employment, thus raising the

65 Cvijić, *Autobiografija*, 22. Vasović, *Jovan Cvijić*, 23.

66 AS, Fund Velika škola, 1884.32.; 1886.4.; 1886.174.; 1887.87. Applications for stipends.

67 AS, Fund Velika škola, 1890.451.; 1891.84.; Acts of the Ministry of Education about studies of Jovan Cvijić.

68 Ljubica Cvijić, "Dnevnik" [Diary], in *Karst: Geografska monografija; Novi rezultati o glacijalnoj episi Balkanskog poluostrva* [Karst: A Geographical Monograph; New Results on the Glacial Period of the Balkan Peninsula], eds. Petar Stevanović, Mihailo Maletić, and Dragutin Ranković (Belgrade: SANU, 1987), 159.

institutional level of the school. The field of geography was unoccupied and the administration practically invented an institution to accompany appearance of an expert in that field.

While the case of Jovan Cvijić exemplifies the state investment into educated elites that Ljubinka Trgovčević argued in *Planirana elita*, the story of Dimitrije Antula falls out of that category. Antula came from a rich merchant family from Belgrade and was able to finance his own education. His choice of career in earth sciences was supported by his family, who allowed him to pursue science training. It was a form of conversion of social capital of a family that already had a considerable financial capital at disposition.

Dimitrije Antula originated from a Cincar (Aromanian) family from Macedonia, who migrated to Zemun, in the Habsburg Monarchy, right at the border with Serbia. This merchant town was right across the Sava river from Belgrade and was the main hub for trade with Serbia. Antula's father, Janko, and his brother expanded their trade business, opened a shop, and eventually moved to Belgrade where Dimitrije was born as the sixth child in the family, out of eight. Although they did not count members of the early elite from the time of insurrection among their ancestry, members of this family managed to position themselves highly in the Serbian society of the late nineteenth and early twentieth century. Investment in education as means of converting their economic capital into social and political capital enabled second generation to access some of the high positions in the hierarchy. Two of Dimitrije's brothers gained reputable positions, one as a merchant and a director of the state lottery, and other one as a court brigadier general in the army.⁶⁹

69 Grubić, "Dimitrije Antula," 124.

Antula's educational path resembled many of his peers. Like Radovanović, Urošević, and Cvijić, Antula studied at the First Belgrade Gymnasium and after it enrolled at the Natural-Mathematical Department of the Grand School. He had shown interest in geology during his studies, as he was noted as one of the frequent visitors in the Geological Institute. During his education there was no financial pressure as his family was able to support him through school. After graduation in 1892, Antula was not looking for employment, and instead spent 1893 and 1894 studying in the Geological Institute for the state professorial exam. At the same time, he started conducting field research, at his own initiative and expense, of the Cretaceous formations near Svrlijig.⁷⁰

In 1894 he got employment at the Third Belgrade Gymnasium, officially starting his employment in September. However, he was right at the beginning registered as absent and abroad. Apparently, his colleagues divided his assignments between themselves, and he used the wages from that job to finance his studies in Vienna during that time. This arrangement circumvented the Ministry of Education, and played on the regulations and the educational system of funding. It seems that Antula's doctoral studies abroad were financed from the state budget, after all. Although, it remains unknown how much conscious planning and negotiation were behind it. Evidently, Dimitrije Antula's negotiated a long leave of absence, full salary, and taking over of his duties by other professors.⁷¹

This arrangement brought him his reputation. By 1896, Antula completed his dissertation on Cretaceous fossils from Caucasus in 1896, specialising in the Palaeontological Institute, under the supervision of Wilhelm Waagen. Thus, he became a doctor in geology and chemistry, third with a doctorate in earth sciences in Serbia. His

70 Archiv der Universität Wien, PH.RA.971.8. Demeter Anthula, Philosophische Rigorosum Acten; Grubić, "Dimitrije Antula," 126.

71 *Kalendar sa šematizmom*, year 1895; Grubić, "Dimitrije Antula," 126.

professorial duties at the Third Belgrade Gymnasium were waiting for him and he finally took over teaching there right after he returned from Vienna.⁷²

By the time Antula finished his doctorate, three specialists in earth sciences were employed at the Grand School and one was working at the Mining Department. It would be difficult to clearly define when the real job competition for academic positions begins in Serbia. By 1897 there was little competition for the positions in academia. Radovanović held this position at the Mining Department until 1897, when he was promoted to the newly opened position of a professor of palaeontology at the Grand School. This happened a year after Radovanović became the corresponding member of the Serbian Royal Academy. This advancement in career for Radovanović opened the space for Antula. After a year of employment at the secondary school, where he taught mineralogy and geology, Antula filled the position of the state geologist that was open after Radovanović was promoted. Earth sciences expanded and at that moment had four professors employed at the Grand School: Žujović taught geology, Urošević taught mineralogy with geognosy, Cvijić – geography, and Radovanović – palaeontology. Only the latter two professors had doctorates, and Antula who was the third scholar with a doctorate in that company obtained employment in the state administration. After 1897 it was difficult to make quick advancements in career in academia. After a new position that was opened at the Grand School for Radovanović, the school did not feel the need for more professors in earth sciences. Antula was fortunate enough to get a position in the Mining Department, but he remained at this position for several decades, not getting a chance for a placement in academia.⁷³

72 *Kalendar sa šematizmom*, 1897-1898; Archiv der Universität Wien, PH.RA.971.8. Demeter Anthula, Philosophische Rigorosum Acte.

73 *Kalendar sa šematizmom*, 1897-1898.

Žujović was actively selecting the students whom he included in the circle of close associates. The period 1895-1897 was particularly beneficial for them, due to Žujović's strong political influence at the royal court through his friendship with Queen Natalija. In the 1896-97 school year Žujović was the rector and from this position he managed to secure the hiring of Radovanović. In 1897, Petar S. Pavlović was hired as a custodian of the geological collection and as an assistant. At the same time, an official committee for the establishment of the Museum of Serbian Land was formed. Besides Žujović, it comprised three members who belonged to this circle – Urošević, Radovanović, and Pavlović, who was the project manager.⁷⁴ In addition, in 1897 the Committee for the Detailed Geological Map of Serbia was upgraded to Department for the Making of the Detailed Geological Map of Serbia.⁷⁵

2.5. Reform of Education in 1896

Institutional changes resulting from the 1896 reform of the Grand School were a consequence of the enlarged number of qualified personnel which enabled further diversification and division of labour among Serbian scholars. The Faculty of Philosophy was reformed once again and new departments were established. In the new organisation there were four departments and the Faculty offered twenty-six courses. The new departments were Linguistic-Literary (*Lingvističko-literarni*), Historical-Geographical (*Istorijsko-geografski*), Mathematical-Physical (*Matematičko-fizički*), and Natural-Chemical (*Jestastveno-hemijski*). This division divided the earth sciences between historical and natural scientific fields. After the coursework of geography was combined with that of meteorology, and later ethnology, in 1896 it was joined together with the

⁷⁴ *Kalendar sa šematizmom*, 1897-1898; Pantić and Vesić, "Petar S. Pavlović," 158-159.

⁷⁵ For more details, see chapter 3.

program in history. The alignment of geography with history should not be surprising, considering that human geography was growing at the time. The Historical-Geographical department required students to pass exams in geography, ethnography, and four exams in history. On the other hand, the Natural-Chemical Department comprised the majority of the geological, mineralogical, and palaeontological studies. Students in this department had to pass exams in chemistry, mineralogy, zoology, anatomy with physiology, botany, geology, and palaeontology. In addition, Mineralogical, Geological, and Geographical institutes were clearly separated, each having its own director.⁷⁶

This division established more elaborate epistemic borders between disciplines. Not only were the students of social sciences and humanities separated from natural sciences, but administration created a split among the natural sciences as well. This reform transferred Cvijić to a different department from where Žujović, Urošević, and (later) Radovanović were. Žujović and students he favoured found themselves in the same department, while Cvijić became part of a department which focused mostly on humanities. Cvijić was not pleased with this division, as he was separated from students of natural sciences and geography he taught was in this way treated as if consisting only of human geography and ethnography.⁷⁷

The 1897 academic assembly session, during the time when Jovan Žujović was the rector of the Grand School presents an exemplary case of scholarly negotiations. Cvijić's attempt to extend his influence in the school failed because in the scholarly community he did not find enough support among his colleagues. On 2 May 1897, at the end of the session of the assembly of the Faculty of Philosophy of the Grand School, Jovan Cvijić made a proposal to introduce geography as one of the main courses in the curriculum of the Natural-Chemical. In a personal note about the event, Žujović found

⁷⁶ "Uredba Filozofskog fakulteta" [Constitution of the Faculty of Philosophy], in Baralić, 98-102.

⁷⁷ For further reference see my chapter 5 on the rivalry between Žujović and Cvijić.

that Cvijić made an insulting allusion about him. During the discussion, Bogdan Popović, a professor of literature, and Bogdan Bakić, head of the faculty senate, argued against his proposal, leaving the only qualified person in the room, Jovan Žujović, silent. According to Žujović, the atmosphere was extremely unfavourable to Cvijić. Cvijić accused the assembly for working against him, while Popović and Bakić returned the accusations, claiming that Cvijić is suffering from a persecution syndrome. His challengers claimed that in the Central European schools (*srednjeevropskim školama*) geography did not possess the role in education that Cvijić wanted to enforce in the Grand School.⁷⁸

After the discussion ended, Cvijić continued further on, stating that “this is not nice,” and that he was not consulted, expressing the desire to read something from a letter by Jovan Žujović. Up to that point, Žujović was silent, after which he stood up and claimed that he could not give testimony of the discussions as he did not have the registry of the faculty with him at the moment, but that he would be able to present the evidence which would show how the real discussion took place and what were the conclusions. For the matters of determination of the borders of the fields of expertise, the conclusions of the discussion seem relevant. The opinion was that the position of geography in the curriculum could not be established until the opinions of all the professors were received, including those who were not related to natural sciences. Their opinion was that geography should be included in the program of the scientific section (*jestestveničkog*), but not in the program of chemistry, mineralogy, and so on.⁷⁹

According to Žujović, Cvijić's behaviour provoked a negative response from the audience and Cvijić himself maintained a confrontational tone, accusing his colleagues of impolite and inappropriate behaviour, while at the same time issuing physical threats. The notes from the event, show much more about Žujović's personal attitude towards

⁷⁸ AS. Fund Jovan Žujović 39/29. Personal note.

⁷⁹ Ibid.

Cvijić. While the comments may come as an exaggeration or untrue, what is certain is that Žujović had a highly negative opinion about his colleague. In several places he called Cvijić *Mali* (little, short) and *Puša* (little boy), which both in the context had highly negative connotations.⁸⁰

It is uncertain why Cvijić wanted to exert the influence of geography into the chemical field, but one can recognise there influence of the Humboltian aspirations which perceived geography as a universal science which encompassed all fields. In the reform of 1896, Cvijić managed to include his course of physical geography to the Natural-Chemical department, but only as an auxiliary subject.⁸¹ Žujović and his colleagues from the Grand School, however, did not see the necessity of including geography in a much broader and distant curriculum as an obligatory assignment for the students. The power play between actors can be also considered in this case. Cvijić, being a young scholar did not have sufficient influence to establish his opinion over the assembly, while Žujović at the time had all the authority, being the rector of the school. From there on, Cvijić began building his own sphere of influence, mobilising his own students, and thus forming his own circle.

2.6. Reforms of 1900

During the same time the Grand School was expanding and new opportunities were arising. Another reform ensued in 1900. Twenty-nine courses were divided into eleven study groups. Svetolik Radovanović developed a proposal for the reform of the Natural-Chemical Department which would have enabled students to specialise in

⁸⁰ Ibid.

⁸¹ Vasa Čubrilo, "Život i rad Jovana Cvijića" [Life and Work of Jovan Cvijić], in *Karst: Geografska monografija; Novi rezultati o glacijalnoj eposi Balkanskog poluostrva* [Karst: A Geographical Monograph; New Results on the Glacial Period of the Balkan Peninsula], eds. Petar Stevanović, Mihailo Maletić, and Dragutin Ranković (Belgrade: SANU, 1987), 34.

specific field and pass only exams which were related to that field. Nonetheless, the proposal contained a requirement that they should attend all courses, without having to pass all the exams.⁸² This proposal entered the final version of the law and devised the coursework into three different categories: primary (*glavni*) courses, auxiliary (*pomoćni*), and secondary (*sporedni*). Main courses for each of the study groups were examined at the end of the last semester, a number of additional auxiliary courses were assigned to curriculum, whose exams were taken after the lectures were finished, while the secondary courses required only participation.⁸³

According to the Constitution of the Faculty of Philosophy in 1900, the coursework requirements for study groups that included any earth sciences in the curriculum:

IIa group (primary): experimental physics, chemistry, mineralogy.

IIIa group (primary): geology, palaeontology, geography.

IIIb group (auxiliary): experimental physics, chemistry, and mineralogy or meteorology.

IVb group (auxiliary): experimental physics, chemistry, palaeontology.

Va group (primary): history of Serbian people, geography, ethnography.

VIv group (secondary): geography, Latin, logic, psychology, history of philosophy, pedagogy.⁸⁴

The study groups consisted of remotely associated scholarly fields that according to the design were supposed to complement each other. Earth sciences appeared among the primary subjects of the II, III, and V study groups, while the study group III truly represented three different earth sciences and with the fourth one among its auxiliary subjects. Mineralogy was combined with chemistry and physics in study group II, but

⁸² Bojović, 80-81.

⁸³ Ibid.

⁸⁴ "Uredba Filozofskog fakulteta" [Constitution of the Faculty of Philosophy], in Baralić, 140-147.: 30 September 1900.

was only auxiliary in the study group III. The study group IV had botany, zoology, and comparative anatomy for its primary subjects, and palaeontology was envisioned as its auxiliary subjects. Geography was still closely tied with history and ethnography in group V, while acting as a secondary subject to group VI, which gathered linguistics and literature. Nevertheless, geography was officially recognised as an earth science in group III along with geology and palaeontology.⁸⁵

With this organisation, geography appeared across curricula both in the fields that belonged to natural history and among the historical-ethnographical disciplines. In this organisation Cvijić's subject received wider recognition, appearing in three study groups, while being the primary subject in two. Geology was, on the other side, present only in study group III. Palaeontology and mineralogy were both primary in one group and auxiliary in another. The reform happened during the last stage of autocratic regime of King Aleksandar that was marked with educational reforms, mostly directed to secondary school education. Žujović returned in 1900 from a year long exile after he was pardoned because of the king's marriage. This was a politically troubling period during which Žujović decided to become politically active and served as an elected senator in the assembly and his career began shifting more towards politics. Although he remained active in the Geological Society, the Academy, and was occasionally teaching at the Grand School, from 1901 Žujović's presence in the scientific world was decreasing. This new organisation of curricula affected mostly Urošević, Radovanović, and Cvijić.

Because of the political tensions in the country and disappointment with the overall situation in Serbian academia, Cvijić considered leaving the country. In 1902 he received an offer to become a professor at the Czech Charles University in Prague. He was already recognised internationally and had good cooperation with his Czech

⁸⁵ Ibid.

colleagues, which made the offer very attractive. The process of his election to this position and the approval of his move to Prague took time, but when his appointment was finally approved in 1903, the political climate in Serbia changed and Cvijić began questioning his decision to move. Cvijić extensively discussed this question with his colleagues. Albrecht Penck, Wilhelm Götz, Spiro Brusina, and Pavle Vujević supported the idea of him going to Prague, but in the end he decided to decline the offer. By the time his appointment was resolved, the political situation in Serbia changed after the assassination of the royal couple. The change in the atmosphere in the country made him change his mind. Also, it seems that he was concerned that he would be required to learn Czech language and he believed that he would not be able to do so. In the end he remained in Belgrade and continued building his circle of collaborators.⁸⁶

2.7. The Case of Svetolik P. Stevanović

While the number of the chosen few who joined the circle of close collaborators of Žujević was growing, the majority of the students did not manage to establish their presence within the circle successfully. Many left the school and started teaching in secondary school, others joined state administration. In one case, the career path was tortuous, since the scholar's position within the circle was not strong. Svetolik P. Stevanović finished his studies at the Grand School in 1893, the same year when Jovan Cvijić returned from Vienna with a doctoral degree. The life and career of this man speak to the role of education in advancing people of peasant social origin, with no social or economic capital to assist them in their ambition. He was from the village of Majdan at

86 ASANU, 13484.953./26-27, 32, Letters from Albrecht Penck to Jovan Cvijić. 17 March 1902, 17 April 1902., 6 November 1911; ASANU, 13484.206./5 Letters from Pavle Vujević to Jovan Cvijić, 14 June 1902; 13484.142./11 Letters from Spiro Brusina to Jovan Cvijić, 16 December 1902; Čubriločić, 36.

the foot of Rudnik mountain, one of the biggest mining excavation sites in the country. His education has led him through several secondary schools, in Gornji Milanovac, Čačak, and Kragujevac. He studied at the Natural-Mathematical Department of the Grand School 1889-1893. Because of his family's poverty he faced many financial obstacles while studying and had to finance himself by working as a servant and tutoring other students.⁸⁷

Stevanović was employed right after his graduation as an “unordained” (neukazni) professor at the Grand School, but only for a year, after which he had to seek other employment. For a while he worked as a clerk in the Ministry of Construction, and in 1897 got a teaching job at the Third Belgrade Gymnasium, where he worked until 1899. In that year he received a one year stipend for professional training.⁸⁸

Stevanović was supposed to spend one year in Munich at the Ludwig Maximilian University studying mineralogy and crystallography with Paul Groth. However, he found a way to extend his stay in Munich to five semesters and defend a doctoral thesis in 1902, the first in earth sciences since Antula in 1893. The next doctoral degree was acquired in 1904, when Pavle Vujević received his degree in Vienna. His arrival on the scholarly scene in Serbia strengthened the study of geography. However, at the time of his arrival, he was an outsider, as he was from Vojvodina and did not belong to the networks of the students of Žujović.⁸⁹

Since 1880, practically every young scholar who had achieved any form of specialisation or degree abroad managed to secure some form of employment in the state institutions closely related to knowledge production. However, Svetolik P. Stevanović was not that fortunate. His first employment with his new qualification was that of the

87 Vidojko Jović, “Svetolik P. Stevanović (1869-1953),” in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 8, ed. Miloje R. Sarić, Biografije i bibliografije vol. 8, (Belgrade: SANU, 2002), 109-110.

88 Jović, “Svetolik P. Stevanović,” 110.

89 Jović, “Svetolik P. Stevanović,” 110-111.

professor of the German language in Jagodina. Significant improvement came later in the year when he moved to the First Belgrade Gymnasium as a professor of *jestestvenica*. This early start tied his career to secondary education, where he remained through most of his career. Promotions to higher positions eventually happen only in this field, as he was performing only collateral roles in scientific institutions. In 1909 he became the director (school principal) of the Higher Women's Gymnasium (*Viša ženska gimnazija u Beogradu*) and a professor of mathematics, only to be transferred in 1911 to the First Belgrade Gymnasium with the same functions. During that time, he added two scholarly functions: the position of secretary and editor of the journal *Zapisnici Srpskog geološkog društva* (Minutes of the Serbian Geological Society) between 1903 and 1905, and teaching assistant during seminars in mineralogy in Urošević's cabinet during 1902-1912.⁹⁰

Because of his social background Stevanović encountered difficulties in establishing contacts with members of the social, political, and administrative elite of the country. At the time of his arrival at the scientific scene, all the major positions in academia were already occupied and the state was not providing funding for new ones. Only in 1922 did Stevanović attain the position of honorary professor of geology with mineralogy at the newly established Faculty of Agriculture. However, he retired in 1924, so his employment at the university was brief. What is peculiar about Stevanović is that his main scientific work began right after his retirement when he conducted most of his research and published most of his work.⁹¹

Stevanović had better academic qualifications than Urošević, Žujović, or Pavlović, yet he worked in secondary schools. At the same time, he was engaged in several administrative tasks in education, like in the Educational Council (1906-1912)

90 *Kalendar sa šematizmom*, 1904-12; Jović, "Svetolik P. Stevanović," 110-115.

91 Jović, "Svetolik P. Stevanović," 113-115.

and the exam committee for professorial exams, and his duties in science were generally peripheral.⁹² Institutional transformations that were happening at the beginning of the twentieth century were reinforcing the idea of a university and both the state administration and scholars insisted on raising the standards. Nonetheless, apparent lack of qualified personnel and lack of sufficient budget funds kept the expansion of scholarly activities limited and slow. In that process, Stevanović remained at the periphery, despite his high qualifications.

2.8. Organisation of the University

This was all preparation for the transformation of the Grand School into a university. From a political and social perspective, the foundation of the University of Belgrade in 1905 was a matter of prestige which was meant to prove the maturity of the modern Serbian state. It was considered inappropriate to upgrade the school before a list of requirements was set. The ministry of Education formed a committee for the establishment of the university which had Jovan Cvijić and Svetolik Radovanović in it. In a way, the Grand School was upgraded to the rank of a university by raising the standards and requirements. Administrative requirements limited the number of tenured professors at the university to eight. This complicated things for the academic staff, because they needed to find a way to organise the lectures with a limited number of professors, associate professors and lecturers. Among the first eight professors of the university were Jovan Žujović, as professor of geology, and Jovan Cvijić, as professor of

92 *Kalendar sa šematizmom*, 1904-12;

geography. Neither of the three recently graduated doctors of geology or mineralogy found employment in this first round of hiring.⁹³

The university inherited the division of the Grand School into three separate faculties. Therefore, the Faculty of Philosophy kept the original structure which embraced social and natural sciences together. The original eight professors of the university elected the new cohort of professors which were supposed to take over the lectures. Among Žujović's students only Sava Urošević was elected as a tenured (*redovan*) professor. The law prescribed that at the university there could be only twenty regular professors (4 at the Faculty of Law, 10 at the Faculty of Philosophy, and 6 at the Technical Faculty), thirty associated (*vanredni*) professors (6 at the Faculty of Law, 15 at the Faculty of Philosophy, and 9 at the Technical Faculty), and fifty docents and assistants.⁹⁴

Svetolik Radovanović was at the time employed as the Minister of Economy, and for obvious reasons not considered for one of the first positions. However, as soon as he left office, he was elected a tenured professor. With his return, the Grand School's original distribution of positions was restored. Žujović was during that decade generally absent from the Grand School and when he was teaching, he was often working as an honorary professor without salary. This arrangement prevented further hiring in the field, since Žujović was still considered a professor. However, the change in the organisation and rise in standards led to expansion of positions in earth sciences. Dimitrije Antula, while remaining at the position of state geologist, became an honorary professor at the Technical Faculty, teaching mineralogy and geology in 1907. Secondary school professors who were working as assistants remained at their positions, and in the next

93 "Opšta uredba univerziteta" [General Constitution of the University], in Baralić, 198-201; Bojović, 91-95; Božić, 146-148, Vasović, "Jovan Cvijić," 346.

94 Bojović, 93; "Opšta uredba univerziteta" [General Constitution of the University], in Baralić, 198-201.

generations this type of employment enabled many students to find assistant positions through secondary school funding.

In 1905, the Mineralogical-Petrographical Institute (*Mineraloško-petrografski zavod*) was remodelled and awarded a new building, giving Sava Urošević more command over his own institute.⁹⁵ At the same time Radovanović was working on the establishment of a seismological division within the Geological Institute. The formation of seismology as a new discipline among earth sciences had been developing since 1880s, but it lacked resources and qualified personnel.

The new Constitution of the Faculty of Philosophy from 1906 slightly changed the organisation of the curricula and reshuffled the study groups, slightly changing the requirements:

III: zoology, botany, and choose between: physiology, geology with palaeontology, experimental physics, chemistry

IV: mineralogy with petrography, geology with palaeontology, and choose between: physical geography, experimental physics, inorganic chemistry, zoology, botany.

V: physical geography, geology and petrography, and choose between: meteorology, experimental physics, mineralogy, zoology, botany

VI: Anthropogeography with physical geography, and ethnology with ethnography, history of Serbian people, and choose between: archaeology, Byzantology.⁹⁶

The new organisation maintained the separation of two fields of geography, but with allocated physical geography with anthropogeography as unavoidable element of it. The study groups IV and V were organised in a way that they covered earth sciences fully from two different approaches. The study group IV was designed to cover all the

⁹⁵ Jović and Karamata, "Sava Urošević," 71.

⁹⁶ "Uredba Filozofskog fakulteta" [Constitution of the Faculty of Philosophy], in Baralić, 376-377.: 1 February 1906.

traditional branches of geology, divided as two separate courses which were in addition supported with other natural sciences. The study group V was a compromise between physical geography and geology. By this time lectures were given by Radovanović, Urošević, and Cvijić, and Žujović gave lectures as unpaid professor. By this time, the four of them were established authorities in their fields and they all organised their networks of collaborators according to their interests.

The formation of scientific institutions was closely related to appearances of several actors on the intellectual scene. While students returning from studies abroad often did not seem impressive from the point of view of international science, for the emerging Serbian intellectual scene, they were crucial actors in building the Serbian intelligentsia. After earth sciences had split from the general natural historical field of *jestastvenica* as a separate field, cultural, epistemic, and administrative divisions between different disciplines had gradually been established. After institutional establishment of various chairs, the formation of specialised journals, institutes, and museums accompanied the creation of epistemic borders between geology, mineralogy, petrography, geognosy, palaeontology, and geography. These changes usually depended on emergence of individual actors willing to engage in practices of these specific disciplines. Thus, Urošević conducted separation of mineralogy and geognosy (later: mineralogy and petrography) from geology. Radovanović was responsible for the establishment of palaeontology as a separate entity, and after 1899 he took over geology, when Žujović was generally absent from academia because of politics. Cvijić established geography as a separate field on his own and was for a long time the sole authority in this field. Pavlović developed his career as a custodian at the time when the idea of a natural historical museum appeared. On the other hand, Antula and Stevanović encountered already occupied fields, and their employments could not have been financially or

administratively supported. Antula established his name as a geological expert for mining and maintained his position in the Mining Department for several decades. However, Stevanović remained employed at school position which were for most scholars only temporary.

2.9. Teaching Assistants: New Employment Opportunity

The foundation of a new institution required that a certain qualified authority should be presiding over the new institution. When the seismological service was founded in 1906, the qualified person behind this project was Svetolik Radovanović, but the expert who possessed the knowledge for this duty was Jelenko Mihailović, one of the former Grand School students who was working on the seismological measurements in the Astronomical Observatory up to that point.⁹⁷ Actually, Mihailović did not have required qualifications. It was an assignment he ended up working for years and gradually got trained in it.

Jelenko Mihailović had similar social origins like most of his peers. Born in a family of a village elementary school teacher, Mihailović finished his secondary education in gymnasiums of Knjaževac and Zaječar and in 1888 enrolled at the Natural-Mathematical department of the Faculty of Philosophy in Belgrade. He finished his education regularly in 1892, after which he had no further professional training. His career path led him to education and in the first four years after graduation he changed employment four times, teaching in the Belgrade Teacher's College, Niš Gymnasium, Kragujevac Gymnasium, Higher School for Women in Kragujevac, and finally settling in

⁹⁷ Nenad Banjac, "Jelenko M. Mihailović (1869-1956)," in *Život i delo srpskih naučnika* [Life and Work of Serbian Scientists] vol. 3, ed. Miloje Sarić, Biografije i bibliografije vol. 3, (Belgrade: SANU, 1998), 272-274.

the First Belgrade Gymnasium. In all these schools he taught several subjects, most frequently physics and mathematics, but also geometry, zoology, botany, and chemistry.⁹⁸

His career path was not leading towards earth sciences. He was teaching physics and geometry at the First Belgrade Gymnasium between 1895 and 1906, and that was in that period is official employment from which he was receiving salary. In 1897 he was hired by the recently founded Astronomical Observatory of the Grand School by astronomy professor Milan Nedeljković. In official records he was registered as a gymnasium professor working as a teaching assistant in astronomy, except for the year 1900 when he was registered as an assistant in meteorology.⁹⁹ Eventually, Mihailović's duty assignments in the observatory became meteorological instruments, and after a time he was taking care of seismological instruments which they acquired too. At the time, the Astronomical Observatory in Belgrade was assigned to keep track of weather and earthquakes, beside the night sky. Such arrangement of activities was common in Europe and astronomical and meteorological observatories frequently too care of earthquake registry.

At the same time, Žujović and Radovanović had their own initiatives related to the study of earthquakes. After the earthquake in Resava in 1893, Žujović summoned a meeting of the Geological Society and urged its members to start working on gathering of data about earthquakes around Serbia. In this meeting an "earthquake committee" was formed, but the research did not go much farther than that. Because of the lack of systematic registry of earthquakes, this task was eventually given to the Astronomical Observatory which took care of measurements from 1901. Nonetheless, this observatory was not conducting research in this field properly. Radovanović was regularly complaining about its work and the dilettante attitude of Nedeljković towards the

⁹⁸ Banjac, "Jelenko M. Mihailović," 272-273.

⁹⁹ *Kalendar sa šematizmom*, 1896-1906.

earthquake study and was trying to take away this research from him and establish his own observatory. Mihailović himself recorded that the instruments were outdated and that the building and location were unsatisfactory for any form of quality research.¹⁰⁰

After a long negotiation period, Radovanović managed to persuade the authorities to migrate the earthquake registry to the Geological Institute in early 1906. This happened several months after he stepped down from the position of minister in the government. He initiated the construction of a new building for the observatory and hired Jelenko Mihailović as a teaching assistant in geodynamics in the 1906-1907 academic year. This time, Mihailović was working as an assistant while still working as the professor of physics, mathematics, and geography at the Belgrade Real School (*Beogradska realka*). This arrangement continued until 1912 when the First Balkan War started and Mihailović was drafted to the army.¹⁰¹

The way Stevanović, Pavlović, and Mihailović got positions at the Grand School and the University was a result of structural changes in those institutions. From the mid-1890s onwards, professors had the opportunity to hire teaching assistants for their subjects and, of all the study groups, earth sciences exploited this opportunity most. Previously, the categories of *suplent* and temporary professor were applied to young students when the school needed additional teaching staff in a specific field. From 1899, Radovanović had the main responsibility for hiring of assistants. Žujović was for political reasons for the most part absent from the Grand School, though he was still teaching, and his engagement was mostly restricted to the Serbian Royal Academy and the Geological Society. Urošević and Cvijić had their own fields where they organised scientific labour,

100 ASANU, 13484.1061.2. Svetolik Radovanović's letter to Jovan Cvijić, 25 December 1907.; Jelenko Mihailović, "Seizmološki zavod u Beogradu: Njegov rad i njegova istorija" [Seismological Institute in Belgrade: Its Work and Its History], *Beogradske opštinske novine* (1 January 1940): 16-17.

101 *Kalendar sa šematizmom*, 1906-1912; Banjac, "Jelenko M. Mihailović," 273; Mihailović, "Seizmološki zavod u Beogradu," 16-17.

mobilised students, and built their own networks, where the position of a teaching assistant was a means of supporting their favourite students.

Dimitrije Antula worked shortly as an assistant in geology in 1897-98. Petar S. Pavlović was hired in the same year as an assistant in palaeontology in the Geological Institute and after Antula left he took over both palaeontology and geology. When he advanced to the position of director of the Museum of Serbian Land, he remained in the position of the assistant until 1905. Radovanović replaced him in 1906 with Vladimir K. Petković, his student who was working on a doctorate at the time. Jelenko Mihailović collaborated on the seismological project and became the assistant in geodynamics in the same year. However, Mihailović was an assistant in astronomy since 1897 and only in 1906 got associated with Radovanović.¹⁰²

The first assistant in mineralogy and petrography was hired in 1902 – Svetolik P. Stevanović, while he was still professor at the gymnasium. He remained assistant until 1912. Stevanović at the time held a doctorate in mineralogy, and was working for his professor, Urošević, who did not. The position of teaching assistant was the highest position in any scientific institution he managed to achieve before the wars started. His definitely did not lack initiative and presence, but in that period he was not considered for promotion at the University or at the Mineralogical Institute.¹⁰³

2.10. Cvijić's Circle of Geographers

Hirings in geography were not as consistent as in other field of earth sciences. Cvijić changed a lot of assistants between 1903 and 1912. In the circle he was forming around himself, Cvijić managed to incite a large number of students to engage in wide

¹⁰² *Kalendar sa šematizmom*, 1886-1912.

¹⁰³ *Kalendar sa šematizmom*, 1886-1912.

variety of “geographical” studies – ethnography, anthropogeography, geomorphology, and cartography were the main disciplines they engaged in through their research. He incited them to begin conducting research even while students, thus creating a network of collaborators. While for the Žujović circle it was the Geological Society, Cvijić used the sessions of the geographical seminar for gathering his students and collaborators in order to present research work and discuss latest issues in science. Students present their papers, either original findings or reviews and critiques of other people's work in various fields associated with geography. Students were sitting at the desks while professors sat on chairs against the wall. Cvijić was sitting in the first row and making notes in his notebook.¹⁰⁴

Cvijić would first give smaller assignments, and students who would prove themselves talented would become involved in the work of the Geographical Institute and if proved worthy that student would have been kept with him after the graduation. The method resembles the way the students developed their careers in western academia. Assistants at the Department of Geography would also work all the scientific and administrative assignments in the institute. Cvijić wanted them to learn first all branches of geography and then later specialise in chosen fields. Ultimately, Cvijić created a division in his own field, separating the natural and the social aspect of his own science. After 1905 geography became strongly tied with natural sciences, and ethnography became a separate subject. From 1906 a chair in ethnology was founded where his students Jovan Erdeljanović and Tihomir Đorđević taught. His students specialised either in physical geography or in anthropogeography, and only few combined two fields together by specialising both in physical geography and anthropogeography: Petar

104 Čubrilović, 40.

Janković and Borivoje Ž. Milojević. In the end, they were both at the forefront of his movement, getting most support from Cvijić.¹⁰⁵

Large number of students passed through this experience of geographical seminars and Cvijić used them extensively to recruit students who would become Some of them became his teaching assistants, but all of them remained there only for a brief period. One after another they changed on this posting: Rista Nikolić, Radoje Dedinac, Petar Janković, Borivoje Milojević, Vladimir Marinković, and Mihailo Dragić. Cvijić's favourite student, Petar Janković, in whom he invested a lot of energy, died young in 1909, before he managed to make a more significant impact on the scholarly scene. This was a big blow to Cvijić's efforts, but he had many willing collaborators to choose from.¹⁰⁶ Vasa Čubrilović, who was Cvijić's student during the 1920s, from his own experience felt that Cvijić was taking advantage of his students for his own research. Assignments had the purpose of helping Cvijić find a way to gather information for himself. Nonetheless, Čubrilović defended him, saying that Cvijić believed there was a connection between science and education. Čubrilović described the attitude of Cvijić towards his students as harsh and authoritative, non-pedagogical, which dissuaded many of his students from pursuing that discipline.¹⁰⁷

Cvijić was the sole authority in this field for a long while, and the first colleague who was hired to teach at the university as a trained geographer was Pavle Vujević, who was actually an outsider to this scene. He arrived from the Habsburg Monarchy in 1907 and became a lecturer in climatology and meteorology, thus not exactly occupying the same field of expertise as Cvijić. By his origin, Vujević was an "imported intellectual" and as an outsider in Serbian academia, his employment was designed to cover a still

¹⁰⁵ Čubrilović, 38-41; Vasović, *Jovan Cvijić*, 29

¹⁰⁶ *Kalendar sa šematizmom*, 1886-1912; Vasović, *Jovan Cvijić*, 29. Jovan Cvijić, "Petar Janković," in *Govori i članci* [Speeches and Articles], vol. 2 (Belgrade: Napredak, 1921) 239-243.

¹⁰⁷ Čubrilović, 41-42.

unoccupied field for which there were no qualified local scholars. He mostly focused on research on weather and climate as aspects of geography and their influence on human mentality, and he conducted studies in hydrology.

Pavle Vujević was from a merchant family from Ruma, a small town in the Syrmia region in the Habsburg Empire. Although Ruma was quite close to the Serbian border, the cultural and political gap across such a short distance was sufficient to make Vujević an outsider. He finished Serbian gymnasium in Novi Sad and continued his studies in Vienna where he became a student of Albrecht Penck. It seems that it was Penck who introduced Vujević to Cvijić. In his letter to Cvijić in 1901 he mentioned to him a young Serb from Syrmia for whom he had high hopes.¹⁰⁸ After he defended his doctoral thesis, Vujević went for further specialisation to the Prussian meteorological institute (das Königlich Preußische Meteorologische Institut) and worked for a while at the meteorological observatory in Potsdam during 1904 and 1905. For this reason his first position at the University of Belgrade in 1907 as a temporary docent was to teach meteorology and climatology, while only after 1910, when he became permanent docent, he started teaching physical and mathematical geography, and cartography.¹⁰⁹

We know that Cvijić and Vujević had an established personal connection as early as 1902 when the earliest letters from Vujević were preserved. Vujević sent detailed letters about his studies in Vienna and Berlin, reported on his conversations with Penck, Alfred Grund, Julius von Hann, and Ferdinand von Richthofen and regularly sent greetings and messages to Cvijić from all the scholars he spoke with. He regularly expressed interest in Cvijić's publications, asked for copies and inquired about the situation in Serbia. Also, Vujević regularly solicited career and research advice from

108 ASANU, 13484.953./23. Letters from Albrecht Penck to Jovan Cvijić. 2 August 1901.

109 Tomislav L. Lakićević, "Pavle Vujević (1881-1966)," *Život i delo srpskih naučnika*, vol. 4 (Belgrade: SANU, 1998), 141-142.

Cvijić, asked for opinions on his work and consulted him with corrections of his thesis. On the other hand, Cvijić requested geographical and geological maps from him, and books that were not available in Serbia at the time.¹¹⁰

Even though Vujević did not belong the narrow circle of Cvijić's students in Belgrade, it is likely that he was nevertheless in Cvijić's plans for the expansion of the Department of Geography. From the frequent correspondence it seems apparent that Vujević relied on Cvijić's professional advice and invested in good relationship with him. Several letters from 1906 and 1907 reveal Cvijić's involvement in the hiring of Vujević at the university. Vujević's letter from 5 June 1906 reveals that at that time Vujević was concerned about his possible employment. He told Cvijić that he heard that during "the fiery meeting of the faculty" his name was not mentioned and that Cvijić was advised not to recommend Vujević to the professor's assembly until further notice.¹¹¹ In his next letter in October of the same year, Vujević thanked Cvijić for supporting his candidacy during the faculty meeting.¹¹² Finally, in April of the next year, Vujević expressed gratitude for Cvijić's participation in his election to the position of docent at the university. This letter also reveals that Milan Nedeljković, professor of astronomy and the head of the astronomical and meteorological observatory objected to Vujević's appointment and was not pleased with the hiring.¹¹³

Establishing good contacts with the professors was essential for getting the job placements in academia. Similarly to Urošević's and Radovanović's regular contacts with Žujović while they were abroad, Vujević invested his time in proving his merit to Cvijić. Unfortunately, the testimonies that are preserved today are mostly from letters of the students who studied abroad, and for those who were in Belgrade, there are no written

110 ASANU, 13484.206./1-28. Letters from Pavle Vujević to Jovan Cvijić, 1902-1906.

111 ASANU, 13484.206./28. Letters from Pavle Vujević to Jovan Cvijić, 5 June 1906.

112 ASANU, 13484.206./29. Letters from Pavle Vujević to Jovan Cvijić, 2 October 1906.

113 ASANU, 13484.206./30. Letters from Pavle Vujević to Jovan Cvijić, 23 April 1906.

testimonies, since they had the opportunity to speak with them in person. Sessions of the Geological Society and of the geographical seminar definitely influenced the impressions that students left on professors. If the first lecturers at the Grand School got their jobs because they were simply the first qualified scholars in their fields, the generations that were coming in the following years were faced with growing competition. In this respect, the institutional environment around Cvijić was developing considerably slower than around Žujović. He did not have the social and political resources to create new institutions and create jobs for his students.

The last events that marked the formation of the field of earth sciences before the wars was marked by the establishment of two geographical institutions. The formation of the Serbian Geographical Society (Srpsko geografsko društvo) waited until 1910, while their journal, *Glasnik Srpskog geografskog društva*, appeared in 1912. Ethnography, anthropogeography, and human geography comprised a significant amount of research in this field, but geomorphology also became one of the most popular sub-fields within geography. Actually, geomorphology was the most represented topic in the first three issues of *Glasnik* published before the war. Even though geography attracted considerable attention among Serbian scholars already in the 1850s and 1860s, particularly in the context of national self-discovery and literary-historical orientation of the intelligentsia, the organisation of institutions in this field was considerably slower. Before Cvijić, motivations of people who shared interests in geography were literary, educational, political, and patriotic. By the 1880s the most prominent figures were Vladimir Karić and Milan Đ. Milićević, whose activities were mostly directed towards politics and education. Cvijić, as a professionally trained geographer, was facing competition and collaboration within a field that was already formed, but was part of educational and political fields. With his work on the organisation and with his research,

he redirected the trends away from the literary orientation, translations, and compilations; insisting on scientific methodology in research – observation and collection of data in the field. While many were interested in geography, not everyone was doing research according to Cvijić's standards. His task was to change the perceived goals of geography among his collaborators and create a network of collaborators that would supply him with useful data.

At the time, elsewhere in Europe, geography was still establishing itself as a scientific discipline. It was a science that was still seeking its recognition and its way into the curricula of the European universities. From the foundational principles, set by Humboldt and Ritter, this science strived to embody both the natural and social aspects of scientific research with various methodological approaches. It was initially a branch of historical studies, related to ethnographic research. With the development of its methodology and employment of both natural scientific and historical-ethnological approach, it became increasingly politically relevant for the construction of identity of late nineteenth century nation states and empires. Explorations of the lands, both national and foreign became an assertion of legitimate political interest with which the political significance of geography grew. The development of this discipline in Serbia was thus not separated from the contemporary European trends.

2.11. Independence in Production of Academic Degrees

Among the assistants in both geography and geology two stand out for their later successful careers, which developed in the interwar period. Vladimir K. Petković became one of the most dominant geologists in the interwar period and his assistant position was the beginning of this successful career. On the other hand, among the many assistants of

Cvijić, only one – Borivoje Milojević later became a professor and worked at the university. However, both of their careers took much longer to develop and took several detours before they became professors. Time of quick advancement to professorship passed and all future scholars needed more time to build their reputation and careers.

When in 1908 the University of Belgrade awarded its first doctoral degree, it was a degree in geology. By 1908 the field of earth sciences occupied a significant position in Serbian academia, mobilizing a considerable amount of social, political, and economic capital. Radovanović and Žujović were both ministers in the government in 1905, around the time when the university was formed, at the prime of their political influence. Scholars moved in social circles that had significant influence in the society, and some of the scholars who belonged to the strata of lower administration married daughters from highly influential families.¹¹⁴ The upgrade of their school to a university encouraged them to establish a doctoral program in earth sciences which would grant them independence from foreign academic centres, most specifically – Vienna. Vladimir K. Petković enrolled in the doctoral program of the new university in 1905 and finished it in 1908. While Petković appeared on the scientific scene almost at the end of the time period which is under scrutiny of this research, he is significant for marking the change in the educational strategies among scholars in earth sciences in Serbia. Similarly to Pavlović, Petković spent a year getting professional training in Vienna with Suess (1896-1897) without receiving any degree. After several detours in his career he returned back to the University of Belgrade. His doctoral thesis marked a closing of the Serbian scholarly scene of earth sciences to the external influences and a declaration of independence when it comes the production of academic degrees.¹¹⁵

¹¹⁴ I write in more details about this in the chapter 3.

¹¹⁵ I write in more details about this in the chapter 4.

In respect to connections within academia, Vladimir K. Petković was a student of all four professors: Žujović, Urošević, Cvijić, and Radovanović. Socially, he was close to many scholars of that time as his origins tied him to the social strata of lower state administration – his father was a police officer. In a similar way, his father was for administrative reasons frequently transferred around the country, until they finally settled in Negotin, after the father retired. He finished his secondary education in the Zaječar Gymnasium in 1892, the same as Mihailović, and immediately enrolled at the Faculty of Philosophy of the Grand School, where he studied until 1896. Specialisation in geology in Vienna came right after his graduation, but after his return from Vienna, there was not much interest in his specialization.¹¹⁶

Petković's first job was the position of clerk at the Serbian Royal Academy. He remained there until 1898 when he moved to Negotin where he managed to get a position at the Negotin Gymnasium, but he did not stay there for long. Allegedly, his father helped him get this position. During the 1890s Serbian foreign policy started working on the promotion of Serbian national identity through education. This meant opening of a large number of primary schools, as well as several secondary schools as well. Petković was hired to teach in the Serbian gymnasium in Skopje in 1898. This job held certain diplomatic responsibility, because of the sensitive nature of political situation in Macedonia, where education became a matter of contention between Serbian, Greek, Bulgarian, and Turkish agendas. The situation was inflammable and Petković got into argument with Bulgarians. After one fray in which he got into physical fight with a group of Bulgarian students (allegedly, he fired a gun, too) in which some people died, the situation worsened so much that he had to be transferred to Thessaloniki in September 1902, after spending some time in prison. However, he did not stay here for long either

¹¹⁶ Archiv der Universität Wien, Nationalien, 169/1896-97, 171/1897; Predrag Nikolić, "Vladimir K. Petković (1873-1935)," in *Život i delo srpskih naučnika* vol. 3 (Belgrade: SANU, 1998), 378-379.

and after one school year he was moved to Kragujevac Gymnasium, where he remained until 1905.¹¹⁷

The beginning of his doctoral studies brought him the position of a teaching assistant in geology and palaeontology; a position he held until 1912, even after finishing his doctorate.¹¹⁸ He was continuously conducting research in eastern Serbia, around mountains Rtanj and Tupižnica, which are close to Boljevac, the town he was born in. In this period he went for a short research and study journey to France, to Paris and Grenoble. A geologist by training, Petković focused on regional geology and after years at the Department of Geology as an assistant, he was promoted to the position of a professor in 1920.¹¹⁹

Even though he was less experienced and less qualified, Vladimir K. Petković won the competition for the chair in geology in 1920, when he competed to that position with Dimitrije Antula. The explanation for the decision, presented by two members of the committee, Jovan Cvijić and Svetolik Radovanović, was that Antula oriented himself too much towards mining and neglected science. In the judgement of the two members of the committee, Antula's involvement in scientific work was neglected for his occupation with mining research. They claimed he lost touch with real scientific work.¹²⁰

Nonetheless, this job appointment had a pre-history. In one letter that Radovanović sent to Cvijić in 1907, one can find evidence that Radovanović planned to hire Petković as the second professor of geology and palaeontology already then, a year before Petković even defended his doctorate and thirteen years before the actual competition took place. In this letter, Radovanović complained about the organisation of the university and allocation of funds, saying that the botanists already have two

117 Nikolić, "Vladimir K. Petković," 379-381.

118 *Kalendar sa šematizmom*, 1886-1912.

119 Nikolić, "Vladimir K. Petković," 383-385.

120 Aleksandar Grubić, "Dimitrije Antula," 130-131.

professors in one institute, while his needs would remain unfulfilled: “I need a docent more than anyone else, but while I wait for Vlada to defend his doctorate, the school will be filled with various lecturers for literature, French language, botany, etc., and right when I come they will yell at me: enough!”¹²¹

From this we can see that Radovanović envisioned Petković as the next docent at his institute; all that was required was for Petković to finish his doctorate. If in 1907 Cvijić was already familiar with Radovanović’s plans regarding Petković’s future, and the competition for the professorship in 1920 may have been only a formality. Antula’s early death in 1924 finalised any possible disagreements about the appointment.¹²²

Nonetheless, from an academic perspective, Antula’s practical focus on mining aspects of geology was not necessarily recognised as sub-par to science conducted in institutes and schools. Publications addressing mining may have been at the periphery of the international scientific discourse, but this did not disqualify its objectives in academic sphere. In the world of mining enterprises, earth sciences were a tool whose practical value was easily quantifiable by the productivity of the endeavour. The government of Serbia recognised the practical values of mining and the roles of earth sciences for its development. It may be that personal reasons influenced Radovanović’s and Cvijić’s decision to hire Petković instead of Antula, but it is still significant that Antula’s explorations for the purposes of mining enterprises and conducted with the state authority were taken against him as a sign of his separation from scientific research.

By the end of the century it was becoming increasingly difficult to attain high positions in academia. State regulations were limiting the number of professors and categorizing them as tenured professors, assistant professors, and docents.¹²³ The

121 ASANU, 13484 Jovan Cvijić, 1061.2 Letters of Radovanović to Cvijić. 25 December 1907.

122 Aleksandar Grubić, “Dimitrije Antula,” 130-131.

123 See previously on the foundation of the university.

assistant position, most frequently financed through employment in secondary schools, created opportunities for the most recent graduates to start their careers. Cvijić's assistants did not remain in these positions for long. On the other hand, Petković's assistantship resulted in his eventual promotion after the war. His direct competitor in the 1920 election was Dimitrije Antula, who was from 1907 teaching at the Technical Faculty, yet who was dismissed from this competition for losing contact with academia because he spent too much time in the Mining Department. Referees in this job contest were Cvijić and Radovanović. Although Antula was more qualified and had a doctorate from Vienna, Radovanović hired Petković, who defended his dissertation under Radovanović's supervision in Belgrade, and who was Radovanović's assistant for several years. Petković inherited the position of the expert from Radovanović, becoming eventually the main expert in geology and palaeontology after Radovanović retired.¹²⁴

A similar career path could be observed with another inheritor. Cvijić's position as the main expert in geography was eventually taken over by Borivoje Ž. Milojević, who after the death of Petar Janković became the main candidate for this position in geography. The parents of Borivoje Milojević were elementary school teachers, who struggled during their careers because of his father's political affiliation with the Radical Party. During Milojević's childhood, his family migrated a lot as his father was frequently relocated with his posting. This was a form of pressure from the authorities of the Obrenović regime towards the radicals. His father had been relocating until the radicals got to power in 1893 when he was finally being able to settle as a clerk in the administration of the Rađevina County. Nevertheless, the power shifted and his father was automatically fired. He tried to find a job as a teacher, but he was not satisfied with

¹²⁴ Grubić, "Dimitrije Antula," 130. I will discuss this in more detail in chapter 5.

the posting, after which he experienced a long period of unemployment and short-term jobs, after which he finally found a job as a clerk in the tax office. Frequent migration did not make Milojević's education anything more intermittent than of his colleagues. He finished lower grades in the Šabac Gymnasium, and then later continued in the Second Belgrade Gymnasium. Similar educational paths experienced all scholars who came outside of Belgrade, because of the limited number of secondary schools. In 1904 he enrolled in the program in Geography at the Grand School, and studied there during the school's transformation into a university.¹²⁵

Because of his poor financial conditions, Milojević had to work during his studies. Eventually, while he was still studying Cvijić hired him as his assistant in the 1906-07 school year, a post he occupied for two years. During his studies, he became involved in the work of the geographical seminar that occupied Cvijić's students. As many of the Cvijić's students, he received assignments to do field research of his choice. Milojević chose to do research on Pocerina, the region he grew up in. Nevertheless, his report was not particularly successful as both Petar Janković and Jovan Cvijić criticised him for making hasty conclusions. After his graduation in 1908, he apparently chose to leave his posting as a teaching assistant to Cvijić and opted to rather work in secondary schools.¹²⁶

Similarly to the majority of his colleagues, after graduation from the Grand School he started working as a secondary school teacher, first in the Valjevo Gymnasium, and later in the Čačak Gymnasium. During that time, he did not break the contact with the Geographical Institute and with Cvijić. His induction into academic world followed for that time predictable steps and the next one was professional training abroad. In 1911

125 Milorad Vasović, "Borivoje Ž. Milojević (1885-1967)," in *Život i delo srpskih naučnika* vol. 4, Miloje Sarić (ed.) (Belgrade: SANU, 1998), 180-182.

126 Vasović, "Borivoje Ž. Milojević," 180-183.

he received a yearly paid leave from the Ministry of Education for professional training. First he spent two months at the Geographical Institute in Vienna. After Vienna, he spent the winter semester at the University of Halle, then went to Gotha (to the publishing company, Justus Perthes, to study map production), and finally spent summer in Berlin, studying with Cvijić's old professor from Vienna, Albrecht Penck, who was at that time already teaching in the German capital. By that time, educational plans of several Serbian scholars of earth sciences were not focused on completion of degrees, but on professional training, which was less expensive for the budget. Čubrilović noted that Cvijić was opposing the idea of sending students after graduation to Europe if the same studies could be completed in Belgrade. Apparently, Cvijić believed that it was better to send students only for short specialisation abroad, but only those whose skill had been already tested in Belgrade. He believed that they would not be affected by "one-sided and harmful influence of the foreign environment."¹²⁷ Nevertheless, employment opportunities were still limited and Milojević had to seek employment again in secondary schools (Loznica Gymnasium in 1912/13, and Second Belgrade Gymnasium in 1913/14). In collaboration with Cvijić, he continued with his research of Jadar and Rađevina regions. Allegedly, his transfer to the Second Belgrade Gymnasium was a consequence of his fervent pleads to the ministry to be posted somewhere in Belgrade. He claimed that he threatened that he will leave state service unless he got assignment in Belgrade. This move got him closer to the institute and enabled access to the centre of knowledge production. In this short period between the wars he became the custodian of the collection of the Geographical Institute in Belgrade.¹²⁸

When the First World War started, Milojević was recruited and through long and perilous journey south with the retreating Serbian army through Albania, he ended up in

¹²⁷ Čubrilović, 42.

¹²⁸ Vasović, "Borivoje Ž. Milojević," 183-185.

Greece, in Thessaloniki and its surroundings. There, in 1918, he received a letter from Cvijić who suggested him to prepare and defend a doctoral dissertation at one of the Swiss universities. According to Serbian laws, he had to defend a dissertation within ten years after his graduation. This way, Cvijić thought that studying at a Swiss university would be the only way. Eventually, Milojević got permission to leave the army and in the same year he ended up in Lausanne in the winter semester of 1918/19, and summer semester in Bern and Fribourg. Nevertheless, he did not defend his doctoral thesis in Switzerland. The law about dissertations was changes in the meantime, which allowed him to get his doctorate in Belgrade. He returned back to Serbia in 1919 and completed his thesis in 1920.¹²⁹ Similarly to Petković's completion of doctoral degree in Belgrade, it marked a proclamation of independence of the University of Belgrade from foreign academic centres, when it comes to production of academic degrees. Already in 1921, Milojević became a docent at the University.

2.12. Conclusion

Before the 1880s, expert knowledge in the earth sciences was not structurally organised in Serbian society, but following Žujović's lead, during the 1890s and 1900s, a number of scholars (Radovanović, Urošević, and Cvijić) established fields of expertise where they had knowledge authority and organised production of new academic degrees. In this social and political environment, expertise became an asset that influenced other types of social interactions. Their involvement in politics and the work of public institutions became increasingly important and their influence expanded the bounds of academia.

¹²⁹ Vasović, "Borivoje Ž. Milojević," 185-187.

Teaching positions at the Grand School, and later the University of Belgrade, became the primary employment positions in which scholars established themselves as experts. Once a position was occupied, it was hard to remove that person from the position, even if a person with better academic qualifications appeared on the scene. Negotiating new positions in earth sciences required negotiating with the government, i.e. the Ministry of Education or Ministry of Economy, which placed strain on the state budget. The solution at the time was to create positions for teaching assistants and museum custodians, where the budgetary limitations were circumvented by officially hiring scholars as secondary school teachers. Peripheral positions in the institutes, and in the geological and geographical societies were used as opportunities for collaborators, and current and former students to prove themselves and present their research, either during the sessions of their meetings and during seminars, or through published articles in journals.

The available fields of earth science expertise narrowed with the creation of first employments, thus securing the positions of those who finished their education first, restricting access for those who came later, and consequently establishing fields of expertise as contested fields where experts competed over the postings. High positions at the Grand School, and later, the University, resulted later in accumulation of functions and duties in the hands of the same people. Thus, positions in the Serbian Royal Academy, committee for the Museum of Serbian Lands, and Main Educational Council were frequently held by a small circle of scholars.

At the Grand School and the University, this circle of earth scientists held some of the highest positions in the administration. Jovan Žujović was a rector in 1896/97, Jovan Cvijić in 1906/07 (pro-rector in the following year), Sava Urošević in 1904/05, and 1908-1910, while Svetolik Radovanović was the dean of the Faculty of Philosophy

between 1906-1908. Jovan Žujović was the head (*starešina*) of the Natural-Scientific Department in 1891, 1894, and 1896. Sava Urošević was holding a similar position of the head of the Faculty of Philosophy between 1899 and 1901, having Radovanović as his deputy head in 1899-1900, and who was at the same time being at the helm of the Natural-Chemical Council 1899-1901.

At the Serbian Royal Academy, Žujović was performing intermittently, but for many years, the role of the temporary secretary (1887-1889, 1895-1903), then role of the secretary (1903-1906), and the secretary for natural sciences (1895-1896, 1906-1911). He was succeeded in the last position by Jovan Cvijić. Cvijić was as well a member of the Ethnographic Board of the academy (1901-1905). Urošević and Radovanović did not have at that time any particular roles in the academy, other than being its members. The already mentioned committee for the Museum of Serbian Land was since its inception led by Žujović and Urošević (1897), and only later joined by Radovanović and Pavlović (1899-1905), which made it a project fully directed by earth scientists.

In the period between 1863 and 1912, elections of professors to lecturing positions at the Grand School and the University were a result of negotiations between the academic councils of the institutions, the Ministry of Education, and the Monarch. At the beginning of the process, the Ministry and the Monarch exerted considerable power in the decision making about appointments. However, the academic councils were supposed to evaluate the qualifications and recommend the candidates for the appointments to the authorities. Candidates had to prove that they had a doctoral degree and demonstrate their publications in order to prove that they have experience with scientific research. The requirements for the tenured university professors and associate professors were demanding and required serious demonstration of scientific skills. The docents, the lowest of the professorial staff, were required to have at least a doctoral

degree. However, the University hired several professors without the doctoral degree, like Žujović and Urošević, who held only a licence degree from France. Nonetheless, both of them fulfilled the other requirement – they conducted research and had a number of publications to present in addition to being members of foreign scholarly societies.¹³⁰

Educational qualifications were an instrument of bargaining, but were not a decisive criteria for recognition of expertise. Several other factors were involved. The social environment in which scholars of that time worked was small and was closely connected with political and administrative elite and personal contacts. An individual had to be able to prove her/his ability to conduct scientific research through regular presentations and publications. But, as well, expertise depended on the international recognition and ability to present results to an international audience. In the following chapters I will address the conditions that situated institutional development of geography, geology, mineralogy, petrography, and palaeontology. In the contexts of Serbia's social and political environment and of international scientific discourses, the process of negotiation within fields of expertise allowed certain actors to gain higher social and political status. Expertise in certain fields of science was determined through several different networks of communication – from the smallest ones at the higher education institutions, between scholars who belonged to different disciplines, and between professors and students, then in the state's administrative-political apparatus where expertise had to be proven in order to secure resources for scientific and educational labour, and finally on the international level where scholars established their expertise through communication and negotiation with foreign scholars.

While the scientific environment remained opened for communication and followed the foreign disciplinary trends, after 1908 the University, the Museum, and the

130 "Zakon o Univerzitetu" [The Law on the University], in Baralić, 180-183.

Institute, were considered fully qualified to produce knowledge and grant certificates which would prove the level of expertise to scholars seeking knowledge in earth sciences. Foreign education was no longer considered valuable and support and connections with professors and other administrators within the earth sciences themselves became more important for gaining employment. In the 1880s Žujović was considered an expert in all earth sciences and had to employ his knowledge to teach in all the fields of earth sciences. His students divided the field and established their own expertise in individual disciplines, adapting to structural necessities of education and institution building.

Any completion of a professional training in earth sciences, whether it was a doctorate or not, provided an opportunity for the establishment of a new institution. From the perspective of scientific practices employments at scientific institutions were not necessarily decisive. Many scholars researched and published while working in schools or state offices. School teachers on all levels of education were the basis of scholarly activities since the 1840s, publishing articles and writing translations and textbooks. Their role did not substantially diminish by the beginning of the twentieth century, particularly because they still existed as a network of sufficiently educated who were willing to collaborate on scientific projects. However, the professors of the Grand School and the University became the core of the Serbian Royal Academy and primary and secondary school teachers became more detached from scholarly work.

3. Scientific Circles and Everyday Production of Politics

3.1. Private and Public

The environment in which scholars lived enabled easy connections between educated men and the highest members of the state hierarchy. The politics of academic life were intertwined with the interests of political factions, and the ministers and monarchs frequently meddled in scholarly affairs. The central figure in the establishment of earth sciences in Serbia had particularly strong ties with political circles, while other actors made similar connections during their careers.

During the 1980s and 1990s, theories of modernisation influenced Serbian historiography, as scholars tried to explain the social and political changes of the past two centuries. This trend focused on studies of elites and peasants, education and urbanisation, and political ideologies and practices, and tried to evaluate the reasons for Serbia's slow development, social and cultural backwardness, and nationalism. The transformation of an Ottoman society into a European one offered contemporary historiography a way to demonstrate the process of modernisation. In this approach, urban elites of Belgrade were contrasted with the mostly illiterate peasant population of Serbia. Trgovčević's study on the organised education of students abroad was part of this trend.¹ Studies by Marković and Stojanović on the modernisation and urbanisation of Belgrade demonstrated the negative reactions to this process by the peasant majority.

1 Trgovčević, *Planirana elita*.

Plans which were devised by experts were not always understood, and the decision makers frequently hesitated and backed down when it came to realisation of projects.² Stojanović, Milosavljević, and Perović criticized egalitarian ideologies, which they identified as a principal trademark of Serbian anti-modern world views. The idea of equality was thus advanced as the main obstacle to the creation of a Serbian elite which would guide the state through the process of modernisation. The idea was not devised in order to counter an existing aristocracy or bourgeoisie, but to preserve existing conditions.³

These evaluations, along with the majority of the work done in studies of Serbian modernisation, do not go beyond acknowledgement of the facts that the economy was underdeveloped, that the country struggled with illiteracy, that the society was highly polarized due to growing cultural differences between rural and urban life, and that the political elite was recruited from the limited number of educated men belonging to the newly created citizen class. While the facts stand correct, modernisation as an explanatory concept remains inadequate to explain the multifaceted social transformation of Serbian society during the nineteenth century. It remains bound to the notion of progress, or observation of the lack thereof, in which progress is identified as transfer of culture and technology from the West, while the explanation for slow development, lags,

2 Peđa J. Marković, *Beograd i Evropa 1918-1941: Evropski uticaji na proces modernizacije Beograda* [Belgrade and Europe 1918-1941: European Influences on the Process of Modernisation of Belgrade] (Belgrade: Savremena administracija, 1992); Dubravka Stojanović, *Kaldrma i asfalt: Urbanizacija i Evropeizacija Beograda 1890-1914* [Cobbles and Asphalt: Urbanisation and Europeanisation of Belgrade 1890-1914] (Belgrade: UDI, 2009).

3 Olivera Milosavljević, "Elitizam u narodnom ruhu" [Elitism in the People's Costume], in *Srbija u modernizacijskim procesima 19. i 20. veka. 3: Uloga elita*, 125. Latinka Perović, "Mogućnosti i ograničenja modernizacije" [Potentials and Limitations of Modernisation], in *Između anarhije i autokratije: Srpsko društvo na prelazima vekova (XIX-XXI)* [Between the Anarchy and Aristocracy: Serbian Society at the Turns of the Centuries (19th-21st)], ed. Latinka Perović (Belgrade: Helsinški odbor za ljudska prava u Srbiji, 2006), 20-28; Idem, "Patrijarhalan odgovor na izazov modernizacije" [Patriarchal Response to Challenges of Modernisation], in *Između anarhije i autokratije*, 30; Dubravka Stojanović, "Recepcija ideala slobode, jednakosti i bratstva kod srpske elite početkom 20. veka" [The Reception of Ideals of Freedom, Equality, and Brotherhood among the Serbian Elite of the Early 20th Century], in *Iza zavese: Oglеди iz društvene istorije Srbije* [Behind the Curtain: Experiments in the Social History of Serbia], ed. Dubravka Stojanović, (Belgrade: UDI, 2013), 59-101.

and backwardness is sought in patriarchal culture and social and political polarisation. Social and cultural dynamics that determined the processes of interaction of transfers from the West with the patriarchal culture of Serbia thus remain undefined and are presented of the level of mere events.

Dubravka Stojanović stated that in societies without aristocracy, industry, and large capital, in which the bourgeoisie consists of state clerks, army officers, small artisans and merchants, the political elite is at the same time a social and intellectual elite. She thus recognised political elites as generators of modernisation and transformers of an insufficiently mobile society, which because of their political orientation bound social and cultural development to the political sphere. As the most educated layer of the society, intellectuals and members of “free trades” were for this reason bound to enter politics, thus separating them from their professional engagement.⁴ Starting from Stojanović’s observation, I will expand on the reasons why the educated layer of society was “bound to enter politics.” However, I will not adhere to modernisation theory, and therefore I will not consider political elites as “generators of modernisation.” Furthermore, I will not consider the relations between the political elite on one side and the social and intellectual elite on the other side in such an overdetermined way. Instead, I will observe the power dynamics that were behind the relations of the political, social, and intellectual elites, in what Besnier called the “everyday production of politics.”⁵ I will examine the social and political change as action created through advancement of personal interests of individuals, and their negotiation with other members of community.

The roles and positions that Serbian scholars occupied varied during their lifetimes, as they were advancing in their careers, their social and political positions were

4 Dubravka Stojanović, “Partijske elite u Srbiji 1903-1914; Njihova uloga, način vladanja, način mišljenja” [Party Elites in Serbia 1903-14; Their Role, Style of Governing, Style of Thinking], in *Iza zavesa*, 15-17.

5 Niko Besnier, *Gossip and the Everyday Production of Politics* (Honolulu: University of Hawai’i Press, 2009).

shifting, mostly due to the unstable political situation. While the formation of scientific circles can be associated with the growing urbanisation of Serbia and the change in life style and world view, the overall character of the population was still rural. The newly emerging Serbian elites were formed generally from two easily distinguished groups. They were either 1) migrants or descendants of migrants from the Habsburg Empire, who had filled the highest administrative positions since the early years of autonomy, or alternatively, 2) they were descendants of the local leaders of the insurgency and came from rural families. In either of case, the members of the elites were most commonly descendants of the rural population, and still had close association with the village life. Close connections between the newly forming urban elites and their rural background still determined the dynamics of the society, so that it was difficult to distinguish when one environment ended and the other one begun. Towns were still dependent on the agricultural production and were in most aspects hard to distinguish from the villages. Yet the rift between the village and the town was growing, as the latter possessed the instruments of political and financial power.

People who wore uniforms (tax clerks and policemen) were treated in the rural environment with derision and enmity. This was the fate of all representatives of the government that oppressed the peasants. Intrusions by representatives of power were usually not welcomed by villagers, and from taxing to policing, this resentment affected education policies. The poverty in the rural areas was striking and the changes in the society were more beneficial for the upper class, thus creating a stronger rift between rural and urban. This resulted in a couple of uprisings during which the primary targets were policemen and state clerks. The Timok Rebellion (*Timočka buna*) in 1883 and “narodni odisaj” in 1887 were the most apparent examples. Even the Radical ideology

about local self-governance was developed to counter the influence the central authority.⁶ Therefore, the teachers and generally the learned men were treated in the rural areas as members of the urban elite that possessed power. All the changes that were designed in Belgrade were most commonly seen as instruments of oppression and means for the rich to get even richer and the poor even poorer. The peasants generally did not have understanding for educational programs, since they feared that education would take their children away from farm work, and thus reduce their potential income. Yet, among the members of the Serbian intelligentsia, the concern for the benefits of the poorest peasants in the country was wide spread, particularly among the educated layers that subscribed to the socialist ideas of Svetozar Marković.

3.1.1. Between Socialism and Conservatism

I will demonstrate in this chapter how Jovan Žujović due to his family ties had easy access to the highest political circles during the 1890s. He got close to the members of the royal family and established political alliances with the highest circles of society. Publicly he tried to represent himself as an apolitical intellectual, but that image was not sustainable in reality. His position as a confidant of Queen Natalija and an openly socialist attitude made him easily identifiable on the political stage of that time. This made his life difficult during the era of influence of King Milan. Eventually he was exiled from the country in 1899 for a whole year, only to be reinstated into his earlier position once the influence of King Milan declined. After 1901 he abandoned apolitical pretence and joined the Radical Party. Eventually, he became one of the leaders of the

⁶ Ana Stolić and Nenad Makuljević (eds.), *Privatni život kod Srba u devetnaestom veku: Od kraja osamnaestog veka do početka Prvog svetskog rata* [Private Life among Serbs in the Nineteenth Century: From the End of the Eighteenth Century until the Beginning of the First World War] (Belgrade: Clio, 2006), 73-74.

independent radicals, the second strongest party in Serbia in the first decade of the century. In this chapter I will analyse the effects of the small environment of Serbia on the relationship between political and academic elites and the vague separation between the two.

As already mentioned in the previous chapter, his family belonged to the rural patriarchal administrative elite of the country. At the time he was born, Žujović's father was the chief of Rudnik county. Mladen Žujović was at the time serving under the Karađorđević regime, but his loyalty to the dynasty of Obrenović could be traced long back. Žujović's ancestors supported the Obrenovića and were perceived by the community as members of the circle which stood behind the ruling dynasty. In 1842, Mladen Žujović was demoted from the position of the Mayor of Belgrade, arrested and sentenced to prison, after the Obrenović dynasty was removed from the throne and Aleksandar Karađorđević came to power. Under the new rule, Mladen managed to exonerate himself and reach the position of head of Rudnik county, but his position strengthened when the Obrenovića returned in 1858. In 1860, Mladen Žujović became the head of the Main Military Administration, and during the reign of prince Mihailo Obrenović, became one of the state councillors. The family had generated a considerable social and political capital. Žujović and his brothers were secured with sufficient money for education and all attained high positions in society, becoming physicians and lawyers.⁷

While his father's family had the reputation of loyal servants of the Obrenović dynasty, on his mother's side, Žujović inherited even stronger political connections. Through his mother's family he was related to the Danić family, whose political and social influence in the 1890s was considerable. Milutin Garašanin, the leader of the

7 Aleksandar Grubić, "Jovan M. Žujović," 295.

Progressive Party, the conservative party in Serbia, was his cousin on his mother's side.⁸ Finally, Rista Bademlić, the mayor of Belgrade (*načelnik beogradske varoši* 1896-1900) was his uncle. These family ties predetermined his initial position. Social networks of his family provided him with a considerable social capital, which came with certain expectations: he was supposed to be the loyal servant of the Obrenović dynasty and close to the Progressive Party.

There were three common political features in the habitus of Serbian scholars of that era: socialism, nationalism/patriotism, and professed detestation of politics. These were inherently contradictory positions, as they frequently negated each other. The professed apolitical stance of the scholars frequently worked against the very essence of the patriotic principle, which demanded that scholars serve their country. While politics was considered dirty and scholars tried to distance themselves from power struggles, any activity in the academic sphere that aspired to any kind of influential position had to involve political activity, as the negotiations over academic positions included members of the government. Even the monarchs participated in the decision making when it came to appointments in the Royal Academy and in the Grand School/University. Socialist leanings among the youngest generation of scholars were incompatible with their declared apolitical stance, and frequently collided with the national-patriotic agenda that made them loyal servants of conservative and oppressive regimes. However, scholars like Žujović and Cvijić embedded these inherent contradictions into the habitus they shared by the Serbian intelligentsia, and participated in the discourses about the future of the state. I will argue that these political ideas presented a part of the habitus of intellectual circles: being a socialist was a status symbol in the same way as the national-patriotic

8 Their mothers Jelena and Sofija Danić were sisters.

narratives were an inevitable part of the discourse through which the most important social and political issues had to be discussed.

3.1.2. Socialism, Sciences, and Peasants

In the life of Jovan Žujović, domestic, academic, and political spheres overlapped, and his experiences in one sphere often involved simultaneous experiences in the other spheres. During his youth, Jovan Žujović was close to Jovan and Rista Danić, his cousins on his mother's side. In their youth, both of the brothers were socialists. Actually, Žujović described Jovan Danić as a socialist and a Darwinist, and he ascribed Rista as a communist. Under their influence Žujović became a socialist and got the idea to study in Zurich. While he was in Zurich (1872-73), where he went to study at the Polytechnic School,⁹ The Danić brothers introduced Žujović to Mikhail Bakunin, early after his arrival in 1872. Žujović was not that impressed with Bakunin and instead got under the influence a young Radical thinker Pera Todorović,¹⁰ whom he befriended. Under his influence, he got acquainted with the ideas of Svetozar Marković. He got excited with ideas of the reform of the Serbian society, and under the influence of Marković's ideas he pondered of imminent need to transform Serbian society and work for the benefit of the peasants.¹¹ For this reason, he concluded that studying at the Polytechnic School would consume too much of his time, and that it would be the best if he could start studying at a Zurich school of agriculture, which would offer him more time to devote to political matters. His studies at the Polytechnic were not going well

⁹ Present day ETH Zürich (Eidgenössische Technische Hochschule).

¹⁰ One of the Serbian students in Zurich who studied at the same time as Jovan Žujović. He was one of the founders of the Radical Party. After he left that party he became influential through his daily newspapers *Mali Žurnal*. He was one of the significant public figures during the 1890s and is remembered today for his criticisms of the Radical Party.

¹¹ Jovan Žujović, *Dnevnik* [Diary], vol. 1 (Belgrade: Arhiv Srbije, 1986), 38-39.

anyway. His father was not pleased with his change of heart, and allegedly told him that if he is willing to study agriculture, there was plenty to learn in their home village – Nemenikuće.¹² When he returned to Serbia, he became active in the circle of Marković's followers in the organisation of manufacture workers. Svetozar Marković allegedly persuaded him that he should study sciences, because any political improvement depended on education.¹³

While during the 1870s, Žujović shared with both Danić brothers enthusiasm for leftist ideas, in the following decades their positions diverged. Both Jovan and Rista Danić changed their attitudes in later years and became active members of conservative circles. They both became members of the Progressive Party. Rista Danić became a diplomat and a person politically closely tied to Queen Natalija. His wife was a lady in waiting in the company of the queen.¹⁴ Though Žujović maintained a leftist stance in politics, he was as well closely connected with Queen Natalija, mostly through the connection he established through his wife, also a former lady in waiting of the Queen.

In 1894, fourteen years after he became a professor at the Grand School, Jovan Žujović decided to return to the estate he inherited from his father and engage in farming. In that moment, he was already an esteemed scholar, known in political circles, and regularly welcomed in the royal court. At the same time, he did not abandon his academic career, and his life in Belgrade remained more dominant. His biographers, Petrović and Sarić, distinguished three different aspects of his life and work: scientific, political, and

12 Aleksandar Grubić, "Jovan M. Žujović," 296-297.

13 Đurić, *Srpski intelektualac u politici*, 17-18.

14 Jovan Žujović, *Dnevnik* vol. 1, 35-39; Slobodan Jovanović, *Vlada Aleksandra Obrenovića* [The Reign of Aleksandar Obrenović] vol.1 (Belgrade: Geca Kon, 1934), 237-238.

agricultural.¹⁵ Over the course of his life, these three aspects took greater or lesser significance in his life, always overlapping, and shaping his role in the society.

His return to his home village was filled with enthusiasm and with plans to make a vineyard, develop a large estate, and build a villa. Upon his arrival on 13 June 1894, he recorded that along with his tools he brought a nail, a mirror, a spade, a hoe, and his own books.¹⁶ Bringing books with himself, he created his own isolated environment in the village, where he took time to read. In Nemenikuće, he received news of the death of his “fellow agnostic” Thomas Henry Huxley, whose works he was reading at the time. Although he initially intended to make this estate an oasis where he would develop an exemplary farm which would produce quality products, where he would find a peaceful place to read and remember his deceased wife, the cruel reality of peasant life hit him hard, since from the very beginning he had to deal with the constant theft, cheating, and dishonesty of his fellow villagers.¹⁷

Nemenikuće became one of the locales from where Žujović contrived his academic life. His diary regularly reports on the books he was reading while he was there. Many of his publications and letters to other scholars were written in the village. Most of all, the village itself became the place where his acquaintances and friends regularly travelled to visit him. His colleagues, Svetolik Radovanović and Petar S. Pavlović, were his regular guests.

The village Nemenikuće is situated beneath Kosmaj hill, in relative proximity to the capital. This relative proximity enabled frequent visitations from Belgrade by his colleagues, and by scholars who were starting longer journeys from Belgrade, and found

15 Miloje R. Sarić and Aleksandar Ž. Petrović, “Hronika Vilistana Jovana Žujovića” [Chronicles of the Vilistan of Jovan Žujović], in Jovan Žujović, *Dnevnik iz Nemenikuća: Memento Oblomovke* [The Diary from Nemenikuće: Memento Oblomovka], eds. Miloje R. Sarić and Aleksandar Ž. Petrović, (Belgrade: Srpsko društvo za istoriju nauke, 2003), p. VII.

16 Žujović, *Dnevnik iz Nemenikuća*, 15.

17 Ibid., 40.

it appropriate to use travel routes which would allow small detours towards Nemenikuće to visit Žujović. In the long list of his visitors, the most frequent visitor was Petar S. Pavlović, and then Svetolik Radovanović, while Jovan Cvijić came only once.¹⁸ These visits were not always of academic nature and were sometime a leisure activity, which involved hiking.¹⁹ For example, in 1897, a son of a county chief, who was at the moment a student of palaeontology in Vienna, came to visit him. This young student was Vladimir K. Petković, who used this trip as an opportunity to deepen ties with Žujović.²⁰

The closeness of Belgrade and to southern travel routes led many travellers to pass through the area. The area of Kosmaj attracted the royal family, where in 1895 King Aleksandar decided to organise a journey with his suite. Because Žujović was around, he was invited to join them, about which Žujović made several reports.²¹ Žujović's diaries reveal that he evidently had a personal communication with the King, and that on this field trip he met Draga Mašin. Although the content of the recorded conversation is not entirely trustworthy, as Žujović had a habit of writing down the full course of the conversation, word for word, it is highly probable that during the hiking tour on Kosmaj, he met and spoke with the King and the members of his suite.²²

The position in which Žujović found himself, being in a subordinate position towards the members of the royal family, and generally towards the members of the political elite of the country, can be contrasted with his dominant position towards the peasants in his home village, who regarded him a person of social and political power. His diaries partially reveal what James C. Scott called “hidden transcripts,” and can

18 Ibid., 42. The record of Cvijić's visit is scarce. He mentioned that they travelled together for two days until they reached Nemenikuće. Cvijić stayed overnight, and left the next morning. On the way towards Kosmaj, Cvijić was regularly measuring the height by barometer, and measuring the temperature of water springs.

19 Ibid., 22, 64, 97, 115, 155, 286, 442.

20 Ibid., 87.

21 Ibid., 38.

22 Žujović, *Dnevnik*, vol. 1, 57.

demonstrate the type of communication and power relations between the subaltern and the dominant layers of the Serbian society of that era. On one side, Žujović recorded conversations and events that echo his subordinate position in the face of political power, show his dissatisfaction, frustration, and resignation as he criticised others and asserted his position as having a just cause and ultimately representing him as a moral winner of every discussion. On the other side, his diaries reveal him as a target of covert actions from peasants who were politically powerless. While Latinka Perović in her analysis of Žujović's political diary stressed the "egalitarian" and "collectivist" character of Serbian society, and used it to explain the conflicts in the social and political dynamics behind Žujović's activities, I believe that if we subscribe to Scott's approach and treat the same social dynamics through the prism of inequality and acknowledge the subaltern social status of the peasantry, these contradictions would disappear and we would be able to explain the conflicting and changing attitudes of Žujović towards political engagement.²³

Scott's research on the ways Malayan peasants undermined the dominant position of the political and economic elite of the village demonstrated the importance of hidden actions of subalterns against the dominant classes. This approach stresses the difference between public actions and utterances, when members of all layers of society are present, and anonymous communication between members of the same social circles. By using this approach, Scott stresses the contrasts and similarities between deceitful and cover actions of individuals, belonging both to higher and lower classes, against the members of the opposing layers of the society in order to either maintain the dominant social position, in case of the powerful, or to undermine the hegemony, in case of the subaltern. However, he focuses primarily on the "relatively powerless groups" and identifies their

²³ Latinka Perović, "Naučnik i političar: Jovan M. Žujović" [A Scientist and a Politician: Jovan M. Žujović], *Tokovi istorije*, no. 1-2 (1993): 58; James C. Scott, *Domination and the Arts of Resistance: Hidden Transcripts* (New Haven: Yale University Press, 1990), 1-44.

“ordinary weapons” of social action as: “foot dragging, dissimulation, desertion, false compliance, pilfering, feigned ignorance, slander, arson, sabotage, and so on.”²⁴

Subsequently, Scott theorises about inherent difference between what he called “public transcripts” which represent the official version of social relations and legitimise the status quo, and what he called the “hidden transcripts” which consists of clandestine activities and conversations, performed among the circles that belong to the same social layers. What he stresses is that the *public transcript* puts pressure on both layers, and that even the layers that exert relative hegemony in the society feel pressure to abide according to the norms. In certain occasions, the subaltern could even put pressure on the members of the dominant layers to act in certain way in order to preserve the pretence. This notion will be essential for the understanding the position of Žujović in the power dynamics of the Nemenikuće village. Scott emphasizes that the dominated layers of society feign compliance in order to preserve the little they have. The price for direct and explicit disobedience is too risky and could compromise the sustenance of their families. In this way Scott diverts investigation from rebellions to everyday forms of resistance and the creation of politics through everyday action.²⁵

Nevertheless, this approach must come with a caveat. Scott himself cautioned against taking his generalisations too strictly and warned that his theory involves certain approximations that treat structures of power in different societies as if they were equal. The relationship between dominant and dominated is generalised from various historical and contemporary evidence that assumes the existence of a common denominator between different power structures in different societies.²⁶ Susan Gal criticised him for this reason and pointed out that such covert and indirect speech acts could take different

24 James C. Scott, *Weapons of the Weak: Everyday Forms of Peasant Resistance* (New Haven: Yale University Press, 1985), xvi.

25 Scott, *Domination and the Arts of Resistance*.

26 Scott, *Domination and the Arts of Resistance*, 20-22.

meaning in different social settings, thus producing different effects in different social and ideological environments. She considers that Scott took the distinction between the dominant and the subordinate too broadly, in a way that neglects all the social and cultural differences. She also pointed that his notion of “public” was undertheorised. Finally, she pointed that his research is out of step with contemporary research in linguistics and stressed that he failed “to grapple with grammatical and pragmatic complexity,” thus ignoring the specific contexts in which they could be applied.²⁷ Thus any application of Scott’s framework would have to consider local social and cultural circumstances and adapt to adequate power relations.

While taking observations from both Scott and Gal, my intention is to consider the social relations in Serbia of nineteenth century as non-egalitarian. While clearly defined classes in the Serbian society of that era, were not established forms of dominance-subordination relations could definitely be identified. The central authority represented by the state administration and economic elite, overseen from Belgrade, could be contrasted by poor and illiterate peasantry of the provinces. Although this distinction was clearly identifiable in Serbian historiography and noted in many studies, these contradictions were often interpreted as obstacles in the process of modernisation that central authorities had to overcome. In a small sample of social dynamics of the relations between the intelligentsia and the peasantry, I will disclose the anxieties that Serbian intellectuals had in the presence of peasantry. Influenced by socialist ideas of Svetozar Marković, Serbian scholars, Žujović and Cvijić included, were motivated to resolve the rampant poverty of the peasants. Nonetheless, their urban demeanour and affiliations with the governing strata of the country associated them, in the eyes of the peasantry, with the ruling elite. This conditioned conflicting relations between the

27 Susan Gal, “Language and the ‘Arts of Resistance’,” *Cultural Anthropology*, vol. 10, no. 3 (1995): 409.

scholars, such as Žujović, with his compatriots, who sought the attempts to reform as threats to their existence.

Between 1894 and 1914 Žujović kept a diary which recorded everyday accounts with the villagers, financial records of items purchased or sold, his movement between Belgrade and Nemenikuće, and various political comments on the condition of the state, and the impact of politics on the village life. This diary had a subjective interpretation of events, which can make the reader sceptical about his perpetual perception of himself being the victim of the villagers and his own workers. At the same time, the diary showed his engagement in the transformation of the village and willingness to help people find their way out of poverty. His everyday encounters with the villagers demonstrated strong separation between him and his neighbours, which can be attributed to developing class difference.²⁸

The yearly cycle of Jovan Žujović involved regular journeys between Belgrade and Nemenikuće, in between obligations at the Grand School and the University, obligations at various political and scholarly venues, obligations in the Senate, in the Government as the minister, and regular inspections of the farm work that needed to be done. Regularly, between 1894 and 1911, Žujović would normally arrive to the village sometime in March. His retirement in 1912 changed that routine, as he spent more time in the village (partially because of three consecutive wars). His first notes after his arrival in the village were usually comments on the theft of the hay, corn, vine, wood, and rakija, which was done during his absence, and about the wrongdoings of his workers who did not fulfil his orders properly and misused his resources. The workers on his farm were regularly his fellow villagers who struggled with poverty and who did not possess enough land to maintain their own estate. Over time, Žujović was registering every year

28 Jovan Žujović, *Dnevnik iz Nemenikuća: Memento Oblomovke, passim*.

the growth of their estates, which he attributed to regular thefts from his own baskets. Over the years, the labourers changed, but his reports continued recording misuse of his property and theft.²⁹

The antagonism between him and the villagers grew over the years as Žujović was rising in the political hierarchy and gaining wealth. His close affiliations with the political elites and both of the royal dynasties, distanced him from his neighbours, earn him the reputation of a *gospodin*, lord of the manner. Nonetheless, the antagonism could be more easily explained by the growing difference in wealth, as he was using his income from the various state positions to expand his lands. The villagers learned over time that Žujović was willing to give them loans without any interest rates, and that in case those loans could not be paid, they could work on his estate as workers and repay the debt in this way. In some cases the debtors avoided paying the debt by avoiding meeting with him, or as he reportedly noted, pretended that they have no knowledge about it. This complicated his relationships with the peasants because he personally knew all the thieves and all the debtors.³⁰

The nuances of his social status in the society and the multiplicity of different social statuses he attained could be expressed in one 1906 remark Žujović recorded in his diary. Apparently, some of the villagers from Vlačka were mocking him for wanting to be a *gazda* and a *gospodin* at the same time. Allegedly, they claimed that he was trying to avoid the ministerial positions more than he was avoiding the manual labour at the farm. The word *gazda*, can have multiplicity of meanings. It can mean *boss*, *owner*, but as well *landowner*, or someone rich, in the most general terms. In this particular case, the villagers most probably ascribed to it the meaning of landowner.³¹ It is evident that social

29 Žujović, *Dnevnik iz Nemenikuća*, *passim*. There is high amount of testimonies about the theft, misuse, and malice. His diary is over-abundant with such events.

30 Ibid., *passim*.

31 Ibid., 138.

differences between the different strata in the village existed and that in the division between the common peasants and the *gazda*, Žujović belonged to the latter, along with the position of *gospodin*, i.e. someone who belonged to the city scape and was an outsider among the village social dynamics. Žujović's resentment towards the peasants grew over time, because he felt that his return to the village in 1894 provided to the poorest of the peasant some kind of income from the daily work they could have on his farm. He expected gratitude and respect, which he felt he was not receiving.³²

Social tension in the village grew. At one point, in 1911, he got into argument with the local socialists, who told him that in a couple of years there would be “blood and strife” in the village and that Žujović would be forced to emigrate. Žujović thought that they would burn his house eventually, to which they said they would not, but there would be others who would. “You are not a clerk like others are,” allegedly said one of the peasants, “you bring your income here, and you let us earn something.”³³ It seems that being a *gospodin* was considered worse. Žujović recorded one case where one peasant refused to send his children to school because he hated the *gospoda*.³⁴ By staying in the village, and actively participating in field work, he shared part of the peasant and the *gazda* identity. This feud is demonstrative of the antagonism between the peasants and bureaucracy. Žujović was spared of more explicit violence for not being “a clerk like others are.” His reputation in the village largely benefited from his ability and willingness to assist the villagers when they were persecuted by the police authorities. In addition, he was for some the only employer and a number of families depended on the labour they performed for him (in addition to regular borrowing and pilfering).

³² Ibid., 288.

³³ Ibid., 288-289.

³⁴ Ibid., 284.

The village possessed its own hierarchy, which was inimical to external authorities. Being a professor at the university, occasionally a state senator, and a government minister, made him an outsider, someone possessing power which was external to the power structures of the village. His aspirations to establish any kind of authority in the village were usually in vain, as he struggled regularly to even persuade the villagers to stop trespassing through his lands, grazing their cattle on his grass fields, or even to start using the four gates to enter the yard when they come to take water from the well, instead of going over the fence. His diary regularly expressed his resignation over the lack of response to his requests, and frustration over regular pilfering of his property. At the same time, he acquiesced to the immutability of the situation.

Žujović regularly reported feuds with the local bosses (*gazde*) who in pursuing their own agendas clashed with his plans to organise the estate. Although, certain scepticism towards Žujović's accounts of the events may be deserved, his perception of the continuing clashes over land ownership demonstrate the power dynamics of the village in which the local bosses manipulated the poverty stricken peasants in order to obtain their land. Many of Žujović's land purchase deals were broken because participants manipulated the purchase to their own benefit and prevented him from buying the land he wanted.³⁵ In addition, the local political authority was not in his favour, and although he attained relatively good connections with the political elites of the state, this provided little support in relationships with the local political leaders – such as with kmet (later president), who was head of the local policing authority.³⁶

(12 December 1911): The day before yesterday the answer of Steva[n] Miloš[evi]ć³⁷ was published in “Pravda” in which he makes an allusion about an independents' leader³⁸ who is cutting trees in Kosmaj, allegedly poles for his vineyard and is actually making the fence

35 *Dnevnik iz Nemenikuća*, 85, 86, 91.

36 *Ibid.*, 51 (Part of his land was taken by the kmet for the bridge, without any compensation), 86 (the kmet broke the land purchase deal), 110 (the kmet was hoping Žujović's early retirement).

37 Stevan Milošević was the kmet and the president for most of the time period during which Žujović kept his diaries.

around his alley. Because he can! - This demonstrates the spirit he has towards the Žujovičs for whom, he once regretted that they were not all killed. Now he is angry that I have found a loan for Borikić, which prevented him for snatching the land of his son-in-law Mirković. - Before that, he was angry because he was not able to take the land of the Lazičs for a trifle, which in the end I sold him, but after [that land] got a decent price after the auction. [...] The bosses (gazde) do not like me because I raised the price of the land and they cannot take them from the wretched people. The poor do not like me, because they are envious of any owner.³⁹

Nevertheless, his status in the society of the village was of a person of power and influence, one who could twist the regulations in his favour, and help them violate the law and avoid justice when they faced authorities. Žujović regularly reported peasants asking him to write their litigations, to urge pleas with authorities, to influence the various state institutions to make decisions in their favour,⁴⁰ which he rarely was able or wanted to do. While not possessing much power within the village, he was considered influential in the state administration, which was only partially true.

Žujović tried over the years to improve the agricultural techniques in the village, by bringing new ploughs and new scythes to the village. The most paradigmatic theme in his writings would be that the new plough or new scythe would be broken during the first use by his workers.⁴¹ Nonetheless, over time, the new techniques and new tools were eventually accepted. His efforts to develop his own farm involved import of new sorts of seeds which offered greater yield, or new breeds of cattle and pigs. These changes were sometimes welcomed by the villagers, who were open for changes which would bring

38 Leader of the Independent Radical Party (Samostalna radikalna stranka). This was referring to Jovan Žujović.

39 Žujović, *Dnevnik iz Nemenikuća*, 306. The text written in italics was originally written in the Latin alphabet, but the rest of the text was written in Cyrillic alphabet. My assumption is that the secretive parts were written in Latin alphabet, because he assumed that there were not too many literate persons who could read Latin alphabet in the village.

40 For example: On 9 September 1898, one of the peasants was imploring him beg the police captain not to arrest him for illegal wood cutting, *Dnevnik iz Nemenikuća*, 111. On 9 September 1910, one of the peasants asked him to urge with the minister Jaša Prodanović, to do something about his coal mine in Rekovac. Ibid, 256. During the times of war (1912-1914), many of the peasants, on several instances implored him to influence decisions related to conscription or leave of absence.

41 Žujović, *Dnevnik iz Nemenikuća*, 38 (scythe broken), 48-49 and 60 (plough broken).

them more yield. Peasants cooperated with Žujović for the chance to interbreed their animals with his specimens, or buy the offspring directly from him.⁴²

The most radical, however, were his attempts to transform the village society were his agitations for the formation of agricultural associations (communes), commonly known in the Serbian language as *zadruga*. This idea could be traced back to his socialist experiences in Zurich. Later, he personally met Marković and further developed his ideas about the *zadruga*. The institution itself existed in the traditional patriarchal society in the Balkans, and the nineteenth century was the period when the institution slowly died out. Despite the decline, Svetozar Marković thought that the agricultural associations were the model which would be the most suitable for a socialist transformation of the society. Serbia lacked factories and the dependence on the agricultural production determined the course of social transform. In Nemenikuće, Žujović provided active support for one such agricultural association (*zemljoradnička zadruga*).⁴³ He offered them seeds, sold them land, and provide connections with centrally governed association.⁴⁴ This *zadruga* was founded by the local school teacher, who shared the socialist ideas with him.

Although, Žujović frequently claimed that his life in the village made him disillusioned with ideas of socialism, he was regularly leaning towards such ideas. His major disappointment was actually with peasants and not directly with socialism. This arose from the realisation that the peasants, for whom the ideology was developed, were not interested in the changes the socialist thinkers envisioned. They were not interested in establishing a commune, they did not want women suffrage, and they were against atheism. Over time the declarative socialism of Žujović became replaced by the notion of *radical democracy*, which he held as his professed ideology. Eventually, this got him in

⁴² Ibid., 89.

⁴³ Ibid., 284.

⁴⁴ Ibid., 309.

the circles of the Radical party, where he professed universal suffrage and republican ideology.⁴⁵

This declarative socialism could be even more pronouncedly observed in the case of Jovan Cvijić. His nationalist orientation in his political and academic texts was underlined by professed socialism of his youth. In addition, Cvijić was openly distancing himself from political sphere, even though he was deeply involved with political agitation on many levels. During his childhood, Loznica was plagued by political strife that made life in the town dangerous. Cvijić's recollections about his childhood reveal turbulent situation in which dynastic affiliation played a significant role.

During my childhood in Loznica dynastic and political struggles were at peak. The town was divided in two-three camps. [...] There were fights and murders. My father entered those fights, and once some hired men attacked our house and broke the windows with large pebbles from Drina, not hitting anyone. During those fights my father ended up in jail twice, once because of the distribution of some anti-dynastic pamphlets, second time because of ordinary politics.⁴⁶

Considering that Jovan Cvijić was born in 1865, at the time when prince Mihailo Obrenović was in power, Todor Cvijić was most likely jailed for distribution of anti-dynastic pamphlets under the Obrenović regime. This does not mean necessarily that his father was a supporter of the Karađorđević dynasty, but rather that in the strict police regime of the Obrenović monarchs of the 1860s and 1870s, Cvijić's father was considered potentially dangerous for the regime. Unlike his father, Cvijić's mother Marija disliked political life and taught her children to avoid it. He ascribed his proclivity towards science to her desire to send him to school. In a similar way, he claimed that he avoided politics because of her advice.⁴⁷

⁴⁵ Žujović, *Dnevnik iz Nemenikuća*, 289.

⁴⁶ Jovan Cvijić, *Autobiografija i drugi spisi* [Autobiography and Other Texts], Vladimir Stojančević (ed.), (Belgrade: Srpska književna zadruga, 1965), 13.

⁴⁷ In original this expression literally meant "to give him onto science" (*da ga da na nauke*).

For the most part, he stayed away from political action. However, Cvijić did have certain leanings towards politics. In his recollections of his youth he remembered that he was impressed by the writings of Svetozar Marković and Pera Todorović. According to Cvijić, during his secondary school days socialism was popular among youth and many of his colleagues belonged to what he called a “socialist-radical movement.”⁴⁸ Vasa Čubrilović recorded that when he spoke with Cvijić, when he was still a student in 1920, that he heard from Cvijić that he considered himself a socialist. But, according to Čubrilović, in practice this was limited to occasional references of Svetozar Marković.⁴⁹ Even though Cvijić considered himself a socialist, this was more of an instrument of identification of belonging to a circle of men who admired ideas of Svetozar Marković, in a similar way Žujović was using it during the 1880s and 1890s.

At the same time, one of his most influential teachers was Vladimir Karić, a staunch nationalist and a progressive politician, who disliked socialist-radical ideas. He took Cvijić under his wing and pushed him towards geography. At the moment when Cvijić lost the stipend from the Municipality of Loznica, Karić offered a solution and suggested him to take a stipend for the study geography.⁵⁰ Cvijić ascribed more to the influence of Karić than to the influence of Žujović in his choice to study geography and over the years he perpetually expressed gratitude to him for influencing his choices. Karić’s approach to geography had a strong nationalist and political taste, something that was easily identifiable in the writings of Cvijić.⁵¹

3.1.3. The Progressive Party

48 Ibid., 16.

49 Vasa Čubrilović, “Život i rad Jovana Cvijića,” 99.

50 Vojislav Radovanović, *Jovan Cvijić*, 25.

51 Milorad Vasović, *Jovan Cvijić*, 21.

The intellectual projects of state building achieved their aim in 1878, when the autonomous Serbian principality gained independence. Nonetheless, once the official status of an independent state was achieved, dreams about an ideal state were still far from realisation. The Progressive Party envisioned Serbia developing into a modern state under the supervision of an intellectual elite who would assume the best possible route and transform the rural patriarchal society. Peasants were considered illiterate and not capable of understanding the proper needs of the state. Such attitudes were conformed with the interests of the political and economic elites of the late nineteenth century, and in particular, with the politics of the Obrenović dynasty. Milutin Garašanin, was one of the most prominent figures of the regime of King Milan Obrenović⁵², being a Minister of Interior, Minister of Foreign Affairs, and the Prime Minister during his regime. During the 1890s, Garašanin was the leader of the Progressive Party and the main editor of their journal *Delo*. At one point, in 1893, he was accepted as the member of the Serbian Royal Academy.

Because of the constitutional change in 1888, the Progressive Party lost most of its political power during the 1890s. They were known for being the monarchical party, and they did not have popular support. The constitutional changes of 1888 allowed peasants better suffrage, and popular support became necessary for gaining political power. At the time, the Radical Party, left leaning party, had around 80% of the popular vote, succeeding at the same time in mobilizing most of the youngest intellectuals. However during the 1890s it was losing power mostly because it had fallen out with the crown. During King Aleksandar's 9 May 1894 coup d'état the 1888 constitution was revoked, and the constitution of 1869 was reinstated. This changed the balance of power in favour of the crown and stripped the Radical Party of power. Because the popular vote did not

52 Prince from 1868 to 1882, then king between 1882 and 1889.

matter that much any more, this created a situation which enabled political machinations and court politics to take over.⁵³

In July 1895 Stojan Novaković, the leader of the Progressive Party formed a government. This government lasted until December of 1896 and it coincided with the academic advance of Jovan Žujović. The balance of power which brought and maintained this government was quite peculiar. The Progressive Party as the party of conservative intellectuals was not able to get sufficient popular vote to get even one representative into the National Assembly (in 1888, they had had one representative). During the 1880s they were labelled as King Milan's personal party which usurped its power to persecute its political opponents, making them unpopular in the 1890s. Popular support was not even in their political ideology, which was a mixture of liberal and conservative ideas. However, their affiliations with the dynasty created their reputation as reliable defenders of the crown against the Radical movement. During the 1890s they were a party which owed its loyalty to Queen Natalija, and King Milan began favouring the Liberal Party instead. Even on this level of high politics, personal acquaintanceships were more important for political alliances and state appointments were more important than ideologies. Loyalty and reliability to persons of power was the currency that enabled individuals ascent to high social positions and power.⁵⁴

One particular feature of the Novaković government was that it consisted of men strongly supported by Queen Natalija. During the late 1880s, King Milan and Queen Natalija fell into a dispute over mostly personal issues, which continued during the 1890s, this time accompanied by their still unresolved divorce.⁵⁵ In, 1888, King Milan voluntarily abdicated in favour of his under-aged son Aleksandar. This complicated

⁵³ Slobodan Jovanović, *Vlada Aleksandra Obrenovića*, vol. 2, 1-21.

⁵⁴ Slobodan Jovanović, *Vlada Aleksandra Obrenovića*, vol. 2, 90-171.

⁵⁵ Officially abolished in 1892, but the spouses remained in conflict during the entire 1890s.

political life during the 1890s because both spouses still exerted strong influence on their son, who tried to please both parents and was perpetually caught between them. During this dispute between the spouses, Progressive politicians, and most of all, Rista Danić, Milutin Garašanin and Stojan Novaković, stood behind Queen Natalija and by 1895 gained reputations as her supporters. Nevertheless, because of the political struggle that was happening at the time, Natalija was working on getting the Radical Party closer to her son King Aleksandar. Between 1895 and 1897 Queen Natalija had more influence on her son than his father had, and this period is considered as period when her word mattered. Actually, the entire period of the government of King Aleksandar was characterised by periods during which he was under influence of his father, mother, or his wife.⁵⁶

When Stojan Novaković was forming the progressive government, he faced a difficult situation in which his party lacked popular support and was gradually losing its strength even among intellectuals. While the ideology of this party was based on the assumption that intellectuals would lead the country in the transformation, by the 1890s this party was gradually losing support among the scholars as an increasing number of intellectuals became left oriented, if not fully supporting the radicals. Novaković was afraid that the Radicals would manage to win over Jovan Žujović, and he tried to persuade him to join the ranks of the Progressive Party and contribute to the development of the state. In the same way his cousin Rista Danić abandoned his socialist ideas and embraced the program of the Progressive Party, Žujović was supposed to follow his familial ties in politics and join the Progressives. He was supposed to be a parliamentary representative and the Minister of Interior Affairs in Novaković's cabinet.⁵⁷ Queen Natalija was particularly supportive of the idea of Žujović becoming a minister in this

⁵⁶ Slobodan Jovanović, *Vlada Aleksandra Obrenovića*, vol. 2, 90-97

⁵⁷ Žujović, *Dnevnik*, vol. 1, 59-63.

government and urged him to accept the invitation. This way, the men who were loyal to Natalija would find themselves in that government.⁵⁸ Jovan Žujović ascribed the invitation to join Novaković's government with his family relationship with Milutin Garašanin, and thought that Novaković tried to recruit him because he thought he could be converted to ideas of the Progressive Party.⁵⁹ While this observation is most likely true, one additional observation needs to be made: at the time the party was losing support and any young intellectual worthy of the cause was good enough for Novaković. In addition, he was part of the circle that Natalija trusted. The problem was that Žujović was openly leftist in his views for more than a decade and shared no similar point of view with Novaković. The conservatives in Serbia lacked intellectual support in the 1890s. Actually, they were a dying party whose political influence belonged to the past. Žujović was not publicly announcing his political affiliations with the Radical Party, but he was declaring himself a socialist and a supporter of radical democracy. The Radicals were the party that was ideologically closest to him, but he was not supporting them yet. In the end, this government did not last long and Žujović avoided aligning himself with a faction that had lost its political strength, and ultimately avoided being the target of the radicals. In an odd distribution of political influence, Stojan Novaković found himself during his mandate deprived of support from both King Aleksandar and his mother. Personal relations played a crucial role in his downfall. None of the members of the royal family still living in the country offered him public support, and at the same time, he did not have any popular support. This was the last gasp of a dying party.

58 ASANU, 14556/1134/9. Collection of Dragoslav Stranjaković, Transcripts of personal documents of Natalija Obrenović.

59 Žujović, *Dnevnik*, vol. 1, 59-63.

The predominant role of personal connections in the political life overshadowed ideological and political affiliations. Particularly during the reign of King Aleksandar, it was more important for political actors to find alliances among the members of the royal family than to gather around party lines. Though sometimes these affiliations overlapped, King Aleksandar successfully managed to create a rift within party structures of all three parties. Loyalties to his parents also played a role in political strife, and after his marriage with Draga, political loyalties largely depended on whether an individual approved of the royal marriage or not. Thus, private affairs often determined the outcomes in the public sphere and blurred the borders between private and public.

3.1.4. Marriages and Family Connections

In the case of the circle around Žujović, for some of the actors, personal connections (marriages and kinship) marked their social and political status. Particularly because of the strong presence of Žujović among the social and political elites, the entire circle around him was affected by his affiliations, which at times helped institutional development and employment opportunities. Žujović's wife Stana Bučović was a court lady, in the company of Queen Natalija. This marriage could exemplify his considerable social capital. Initially, Natalija opposed Stana's marriage with Jovan.⁶⁰ The two women were close and confided with each other. Stana died in 1889 when she was still twenty five years old, which had a strong impact on Jovan Žujović. He never married again and spent significant time building a memorial to her in his home village Nemenikuće. Queen Natalija eventually accepted him in her inner circle and the Belgrade public looked upon him as one of her confidential advisers. The relationship of trust transferred from Stana to

60 ASANU, 14556/921/30. Collection of Dragoslav Stranjaković, Transcripts of personal documents of Natalija Obrenović.

him, and the queen started regular correspondence with Žujović in which she discussed with him her private and daily political matters. This included opinions about appointments of ministers, actions of King Milan, and political alliances of King Aleksandar. Despite Žujović's public stance as an apolitical person, such discussions with the queen mother demonstrate his active participation in political life, just channelled through the private sphere, communicated outside the view of the public.⁶¹

Nonetheless, the public witnessed Žujović's frequent visits to the queen. Even in the most difficult situations for her, he was at her disposal. When she was forcefully evicted from Belgrade in 1891, by the order of the government and with the insistence of King Milan, Žujović was present at the scene, standing below her window together with his cousins Rista and Jelena Danić, and receiving her messages and providing support.⁶² The gathered crowd witnessed his political siding with the queen, and despite his refusal the commit to official party lines and participate in the work of the government, he was publicly identified as a member of the clique around Queen Natalija.

Žujović's election to the position of Rector of the Grand School in 1896 happened at the time when she exerted great political influence on the young king. His embedding in court affairs in that period is apparent, as he was regularly visiting the Queen and discussing political and academic issues with her. She even suggested he take a place in the government. Žujović's affiliation with Queen Natalija and Novaković contributed to his rise in the academic hierarchy and coincided with the rise of political influence of both figures. Academic appointments were not isolated from the political sphere. The testimonies about his conversations with Natalija are preserved in his memoirs and are confirmed with preserved invitation cards he received from Queen Natalija. All the

61 Jovan Žujović, *Dnevnik iz Nemenikuća: Memento Oblomovke*, passim. The monument was a villa which he called Vilistan, which was a play on words: Villa Stana, but could mean as well – the house of fairies. Also see the correspondence preserved and transcribed by Stranjaković, ASANU, 14556/921, 14556/990, 14556/991, 14556/1134. Collection of Dragoslav Stranjaković.

62 Ana Stolić, *Kraljica Draga* [Queen Draga], Master thesis (Belgrade: 1996), 37.

preserved cards were written by the Queen's lady in waiting – Draga Mašin. Historian Dragoslav Stranjaković preserved several letters from Natalija to Stana and Jovan Žujović. A few of these letters are originals, but the majority are his transcripts from originals and should be treated with caution.⁶³

Marriage enabled entrance into the highest social and political circles to Sava Urošević as well. He was married to Nikola Hristić's daughter Kleopatra, which made him the son-in-law of one of the politically most powerful persons in the state. Hristić was considered one of the most loyal men to the dynasty of Obrenović. A policeman by profession, he was credited for being called into service to be the prime minister of the state every time a political crisis occurred and the ruler was in doubt, and as such he was one of the most influential men of the Serbian politics. Such a connection provided Sava Urošević entrance into the higher circles of state political and administrative elite. His advancement into a position of a professor was quick and he remained there without any problem during his entire career. Like in the case of Žujović, his lack of doctorate was not an obstacle for his career. He secured his position at the university as the second professor of earth sciences, when Žujović was the only person with same qualifications, established his own chair and remained there for several decades.

Svetolik Radovanović's marriage did not make him so well connected, but he managed to attain necessary political ties. While he was still studying in Vienna in 1891, he married Milica Popović, the daughter of Rista Popović, a merchant from Golubac, and one of the founders of the Radical Party. This marriage made him closer to the leadership of the Radical Party, which was not always an advantage during King Aleksandar's rule. Potentially, these ties could have made his advancement more difficult. However, in 1891 the Radical Party was in power. Instead at the Grand School, he was employed in the

63 AS, Fund Jovan Žujović, JŽ-195, JŽ-253, JŽ-271, JŽ-290. Žujović, *Dnevnik*, vol. 1, 55-56, 59.

state administration as the state geologist. With the change of the dynasty, in 1903, the Radicals became the most powerful political party and dominated the political scene until 1912. Eventually, Radovanović became involved in their work and, as already mention, in 1905 became the Minister of Economy. In the interwar period Radovanović entered into mining business ventures with the radical leader Nikola Pašić. These close ties with the leadership of the Radical Party secured his status in the society after 1903 and remained stable through the interwar period.⁶⁴

In the case of Dimitrije Antula and Petar S. Pavlović, they were born in families with strong social ties, and members of their families occupied high positions in the state and military administration, as already mentioned in the previous chapter. While Dimitrije Antula's marriage with Ljubica Milenković did not establish him stronger social ties with members of the higher circles, through the marriages of his relatives he was connected with the Danić family (relatives of Žujović, see above) and Marko Leko, one of the first chemistry professors at the Grand School.⁶⁵ Pavlović is a peculiar case, because his relations with Draga Mašin. His family was certainly close to that branch of the Lunjevica family. Alegedly, when King Aleksandar proposed Draga in 1901, anticipating the event, Draga went into hiding in the home of her aunt Lena Pavlović, Petar's mother. This was one of the breaking moments in the political history of Serbia and part of it transpired in the home of the Pavlović family.⁶⁶ This overlapping between the public and private made the borders between the two spheres obsolete and actors who limited their activities to academia, like Pavlović, were unwillingly parts of events.

The borders between the public and the private have frequently been criticised in recent scholarship. Such distinctions are usually created for the purposes of delineating

⁶⁴ Aleksandar Grubić, "Svetolik Radovanović," 115-129.

⁶⁵ Aleksandar Grubić, "Dimitrije Antula," 126-130.

⁶⁶ Stolić, 110.

the sphere of influence of the dominant male elite, thus restricting the role of women to a constructed domestic sphere. This perception is unsustainable due to regular intrusions of the private sphere into the public sphere, and the reverse, but more importantly because both notions are constructed provisionally, and are usually a manifestation of ideological incursions in the explanations of social reality.⁶⁷

In their homes, in schools, on the street, in the parliament, or in the ministry, scholars faced a wide diversity of intersections between private and public. This conditioned their social positions, their family matters, their scholarly activities, and their political actions. In a situation in which a marriage could have political implications, as in the cases of Urošević and Žujović, or in the case where a sensitive political/emotional drama occurs in the private household, as in the case of the Pavlović family, the borders between private and public seem obsolete. Yet, I will continue to use these terms, in the most commonsensical use of the words, in order to emphasize the difficulty of distinguishing the difference between the public and private and their tentative lines of possible separation.

3.1.5. Gossip and Rumours

In the small environment of the late nineteenth century Belgrade, the town's elites established relations and alliances in private conditions of homes and coffee houses. Such a small community enabled easy connections between members of the different layers of the elite, who for the most part knew each other well and met regularly. In such a

67 Jane Fishburne Collier, "Women in Politics," in *Woman, Culture, and Society*, edited by Michelle Zimbalist Rosaldo and Louise Lamphere, (Stanford, CA: Stanford University Press, 1974), 89-96; Susan Gal, "A Semiotics of the Public/Private Distinction," *Differences: A Journal of Feminist Cultural Studies*, vol. 13, no. 1 (2002): 77-95.

situation informal ways of gathering and conveying information functioned along with the public means, which were at the time mostly limited to newspapers. This type of facilitation of information in a private atmosphere was one of the primary means of learning about the world. This way of conveying information inherently consisted of rumours and gossip, means through which individuals advanced their personal agendas and through which power relations were challenged and formed. Though not all information gathering I will describe in this chapter could be subscribed as gossip and rumours, I will use these two words as proxies for any form in informal facilitation of information in a private environment between small number of individuals. The reason for such treatment lies in difficulty of discerning at which point a privately disclosed information turns into a gossip or a rumour, particularly because such notions depend on the number of repetitions and interpretations by other individuals who further disclose the information in the public.

The purposes of gossip and rumours have been the subject of research for several decades in international scholarship, but have never been seriously treated in Serbian historiography so far. Considering that gossip constituted an apparent social habit of all strata of Serbia's society, it dramatically influenced some of the events in the political history of the country. Thus Serbian historians frequently rely in their work on recorded rumours about the background of this or that event, but so far the issue of gossips themselves has not been addressed. My goal here will not be to establish a general theory of gossips and rumours in Serbia of that era, but solely to demonstrate their role in the power dynamics that conditioned the establishment of a scholarly circle, in relation to various levels of its members' inner and outer communication.

Anthropological studies of gossip made a turning point with Max Gluckman's article in which he emphasized the cohesive function of gossip for community building

through scandal, thus pertaining an inherent function to control behaviour within the community and sanction inappropriate or diverging tendencies within.⁶⁸ This opinion was subsequently criticised for ignoring the agency of individuals in the creation and distribution of rumours and gossip in order to promulgate their own interests against other members of their society. James C. Scott included gossip in his studies of the political practices of the powerless in the covert subversion of the dominance of the ruling classes. In this view, gossip functions as a power of the weak, spoken against the members of the dominant classes in order to passively disrupt their power.⁶⁹ Luise White hinted that gossip could be used as a source for historical subjectivities, a testimony of suppressed sentiments and perspectives that cannot be found in public records.⁷⁰ However, these activities are not limited to the poor, and elites could use such tools for advancement of political interests. Even the dominant classes use gossips for attacks against opponents and control of the subordinates. Tolga Esmer's study on the role of gossip and rumours in the facilitation of information and advancement of personal political agendas among the high military and administrative layers of the Ottoman Empire demonstrated how this type of information management was intentionally made public and designed to influence high end politics of the empire. His study demonstrates how decision making process in the Ottoman imperial administration was caught in the dynamics of violence and coercion between official authorities and local rebellious leaders and their use of informal channels of communication to disseminate and ascertain information.⁷¹

68 Max Gluckman, "Gossip and Scandal," *Current Anthropology*, vol. 4, no. 3 (1963): 307-316.

69 James C. Scott, *Weapons of the Weak*.

70 Luise White, "Between Gluckman and Foucault: Historicizing Rumour and Gossip," *Social Dynamics*, vol. 20, no. 1 (1994): 80-81.

71 Tolga U. Esmer, "Notes on a Scandal: Transregional Networks of Violence, Gossip, and Imperial Sovereignty in the Late Eighteenth-Century Ottoman Empire," *Comparative Studies in Society and History*, vol. 58, no. 1 (2016): 99-128.

Drawing upon Scott's work and of his critics, Niko Besnier claimed that the "politics 'happens' where one may be led to least expect it – in the nooks and crannies of everyday life, outside of institutionalised contexts that one ordinarily associates with politics."⁷² Besnier's study of the political practices among the habitants of the Nukulaelae atoll revealed ways in which power struggles occur outside the socially designated places, among circles of the officially powerless people. His primary focus is on the ways information is created and distributed, and how this process was used for the creation and control of political processes from below. This process does not limit itself to the political actions of the poor, but as Besnier demonstrated, it is one of the rare arrows in their quiver. Gossips could be detrimental for targeted individuals whose reputation in the society could be ruined, who could lose their position, be apprehended, or even lose life. More powerful are more affected by it, and people who are among the lowest layers of social strata are less affected by could be also completely immune to it.⁷³

One other aspect about rumours and gossip could be added to these. Beside being used as an instrument of political struggle, such informal ways of facilitating information could be seen as a means through which individuals make sense of the world. Krista Van Vleet treated gossip "as a social activity and as a type of 'personal' or 'living' narrative through which people make sense of relationships and events, creating order and coherence from the complicated and contingent occurrences of everyday experience."⁷⁴ The ambiguity of ascertained information could force individuals to recreate their own reality by retelling themselves narratives of their own lives and of their surroundings, thus making their way through unknown circumstances that affect their life. In the absence of certainty or explanation about the situation and the events that transpired,

⁷² Niko Besnier, *Gossip and the Everyday Production of Politics*, 11.

⁷³ Niko Besnier, *Gossip and the Everyday Production of Politics*.

⁷⁴ Krista Van Vleet, "Partial theories: On gossip, envy and ethnography in the Andes," *Ethnography*, vol. 4, no. 4 (2003): 492.

individuals create what Van Vleet called “partial theories,” whose purpose is to explain relationships and events.⁷⁵ This narration thus becomes a tool of understanding our own reality. “We come to know ourselves as we use narrative to apprehend experiences and navigate relationships with others.”⁷⁶

In the context of the late nineteenth century Serbian urban environment of Belgrade, the uses of gossip and rumours could be set within these parameters, already established in the scholarship. Indeed, gossip was used with purposes of community building and controlling the socially acceptable behaviour. Individuals used it for advancement of personal agendas. Finally, it was a means through which individuals made sense of the world and constructed their perception of reality. Particularly during the 1890s and 1900s, the role of gossip in the construction of social and political reality in the public opinion was significant. During the regime of King Aleksandar, personal relationships and private life became increasingly important in the construction of social and political reality, influencing political decisions and affecting power relations within the county. King’s temperamental shifting of allegiances between his parents was the primary condition of political life until 1900, when he decided to break his loyalties with both of them and marry his mother’s lady in waiting, Draga Mašin, despite public disapproval of the marriage.

The most paradigmatic case about the blurry border between the public and private, and about the influence of gossip on the political life could be seen in the story about the marriage between Draga and Aleksandar. This marriage revealed the underlying public networks of gossiping that scrutinised the private behaviour of public persons. The small environment of Belgrade was well familiar with Draga Mašin and her

⁷⁵ Van Vleet, “Partial theories,” 492-494.

⁷⁶ Elinor Ochs and Lisa Capps, “Narrating the Self,” *Annual Review of Anthropology*, vol. 25 (1996): 19-43.

past, or at least they thought so. While she was still identified in the society as the King's consort, public opinion did not consider their relationship scandalous. Nonetheless, when the young king decided to ignore political arrangements about his marriage with a princess from the German nobility and marry his consort instead, the public outcry against the act endangered the whole political system. The government fell and the majority of king's political allies abandoned him. After three years it ultimately led to the fall of the dynasty and assassination of the royal couple.

Though not sufficiently researched, the role of gossiping in the downfall of the last monarch from the Obrenović dynasty could be verified easily. Slobodan Jovanović noted already in the beginning of the twentieth century how much gossiping was involved in the creation of the public opinion and how much it motivated the military conspirators to act against the king and the queen. Ana Stolić emphasized the role that gossip played in creating a bad image of Draga Mašin. The urban elites of Belgrade were quite familiar with Draga's life story, her marriage with the engineer Svetozar Mašin, his early death, and the years she spent in poverty as a widow, trying to find means of sustenance and a new husband. The situation in Serbia was not favourable for widows and the only way out of the poverty she managed to find, as a woman from a reputable family was the position of the Queen Natalija's lady in waiting. In this position, she met the young king. While the public observed their love affair as something of a temporary interest of the king, Draga did not suffer any apparent consequences in the public opinion. Nonetheless, after the marriage, the royal couple faced themselves with fierce disapproval from the public, who gossiped about their private life and chastised Draga as an immoral woman. She was labelled as infertile widow who would ruin the dynasty and the country in the pursuit of her own ambition. Ana Stolić verified large scale gossiping activity, particularly among the women of higher strata that put considerable pressure on

the political decisions in that period, which ultimately inspired the military coup and the assassination.⁷⁷

The story of Draga and Aleksandar is significant for this thesis for it is an exemplary case on how the private and informal facilitation of information outweighed the formal ones, which were under control of the government. Draga was so unpopular that active public propaganda in her favour through newspapers and public announcements only managed to aggravate things and make the public resentment of her even worse. At the same time, the authoritarian nature of Aleksandar's regime and his questionable political decisions overlapped with the public issues of his marriage, thus overwriting the borders between public and private. Jovan Žujović, who personally knew both Draga and Aleksandar, and was one of the first witnesses of their relationship in its early days, participated in these public attacks against them through his articles in *Odjek* and even welcomed the assassination after the event.⁷⁸

In the period after 1903, the conspiracy itself created an environment that bolstered the secretive and informal channels of political activity. Military circles that organised the assassination of Draga and Aleksandar formed an alliance with the new king from the Karađorđević dynasty and controlled political life from the background. In such an environment, Žujović, Radovanović, and Cvijić entered political life actively. The conspirators dominated in domestic and international politics, influencing the political decisions, particularly foreign policy. Žujović and Cvijić were involved in the international activities in this era, and Žujović even privately and politically with the conspirators.

77 Slobodan Jovanović, *Vlada Aleksandra Obrenovića*, vol. 3, 3-68; Ana Stolić, *Kraljica Draga*, 58-64, 142.

78 For further detail, see below.

With this broader story about private and public relations to gossip and rumours, I would like to depict the environment in which the development of scientific circles occurred. Scientist had to act within the wider social context with issues that stemmed from the social and political conflicts that polarised the society. The importance of rumours and gossip for the creation of their understanding of the events and the formation of their stance in the political reality was counterweighted by their own struggles in the establishment of inner hierarchy in the academia itself. Political alliances thus played a role in academic appointments. Aligning oneself with people in power within academia or from the political and economic establishment was a means for an individual to gain position in the society. However, the constant changes in political alliances created problems for scholars who had to adapt to unfortunate circumstances and act accordingly.

The abundance of evidence about Žujović would put an uneven balance on him in this chapter. Because of his active involvement in politics, but also because he left three detailed diaries behind, leave a large number of testimonies about his involvement in politics. Nonetheless, a large number of other actors pass through the scene and let us see the glimpse of their experiences in the political life of academia of that era.

3.1.6. The Lozanić Affair

In the spring of 1897, the rumour was that the king was angry with the professors because Sima Lozanić was not elected in the way he promised Lozanić would be. Žujović heard this rumour from his colleagues Aca Borisavljević, Dragiša Mijušković, and Sava Urošević. They claimed that the king ordered the Minister of Education to send

several professors in retirement.⁷⁹ The Minister of Education apparently refused to do this, which enraged the king and incited him to suggest the abolishment of the Grand School, which the minister refused as well. Jovan Žujović was mostly troubled by the rumours that, according to Borisavljević, the king was angry with him more than with anyone else. After all, he was the rector who presided the academic assembly which voted down Lozanić's accession to the rank of professor with the salary of a state councillor. The circumstances seemed troubling and Žujović had every reason to be concerned for his position. Mijušković claimed that the person behind these intrigues was Andra Đorđević⁸⁰, one of the king's confidants and one of the previous ministers of education.⁸¹

Sima Lozanić, a professor of chemistry at the Grand School, suspended his status as a lecturer 1894 and served for several years as a “neutral” Minister of People's Economy in the governments of Đorđe Simić and Nikola Hristić. After serving the country for years, King Aleksandar promoted Lozanić to the status of a state councillor as a reward for the service. As such he was entitled with a high monthly income that was far greater than the wage of a professor. Nonetheless, Lozanić's return to the Grand School with that status complicated the administrative and financial plan for him and the Grand School had to vote on his official status. The academic assembly still had the final word and they disagreed with the king.

The issue with Lozanić's appointment was that the king envisioned that Lozanić should have returned to the Grand School from his ministerial position with the salary of a state councillor. The king already issued a similar order in 1895 when two professors were returned with the salaries of state councillors (Milenko Vesnić and Gliša Geršić),

⁷⁹ At the time, the minister was Andra Nikolić.

⁸⁰ Minister of Education in 1894, and 1897-1900.

⁸¹ AS, Fund Jovan Žujović, JŽ-39/28, Handwritten note.

but the law which prevented this was devised in 1896.⁸² What the king attempted was from that perspective illegal. No professor could have had the salary of a state councillor. In addition, this was not only an issue of legality, since the school did not have the money to pay Lozanić that kind of salary as the budget for wages was limited.⁸³ The request was not legal and the school had no money to afford it.

Regardless of the veracity of this rumour, this conversation reveals an environment in which borders between science and politics were blurred. The dynamics of this rumour-based distribution of information were dependent on the closeness of the scholarly circles with the political elites. At the same time, it is in accordance with Besnier's understanding of gossip as a means to advance personal political agenda. Particularly, as a tool of the weak, whose options in responding to power pressure were limited.⁸⁴ Scholars were regularly at the disposal of the government and were treated as state clerks, frequently taking political assignments as part of their service to the state. They shared the same space and personally knew each other. In the streets of Belgrade their paths intersected, they attended same events, went to same schools, and some even shared close family ties. Belgrade was a small town and rumours were easily distributed; something even the members of the royal family were part of. The scholars were aware of the intrigues played at the court, particularly because they were involved in some of them, and their speculations on what the king's and ministers' actions stemmed from their personal experience with them.

Nikola Hristić was the prime minister of the government in which both Sima Lozanić and Ljubomir Klerić⁸⁵ were ministers. The former was the Minister of National

82 Zakon o izmenama i dopunama u Zakonu o ustrojstvu Velike škole od 24. septembra 1863. godine, od 22. oktobra 1896. [Law about the changes and improvements of the Law on the constitution of the Grand School from 24 September 1863, made on 22 October 1896], Article XI, in Baralić, 79.

83 AS, Fund Jovan Žujović, JŽ-39/28, Handwritten note.

84 Besnier, *Gossip*.

85 Ljubomir Klerić was a professor of mathematics and in several governments a minister. By vocation he was a mining engineer and supervised mining projects across Serbia.

Economy and the latter the Minister of Education. Urošević conveyed something that Žujović considered reliable information. Apparently, Urošević heard from his father-in-law, Hristić, that the king promised to Sima Lozanić and Ljubomir Klerić that they would come back to the school from their ministerial duties with higher salaries⁸⁶ as professors with the wage of a state councillor, and that the refusal of the collegium made him angry. Personal involvement in the politics and court intrigues seemed to be an inevitable feature of scholarly life at the time. The further the conversation went, Žujović recorded more bitterness and resignation among his colleagues, who expressed dissatisfaction with the way they were treated. Such rumours were easily transmitted in the family circles. The overlap between the political and academic circles in Serbia provided enough rumours for this kind of gossiping and slandering, while at the same time enabling access to scholars to high political positions.

Old political affiliations and family ties still mattered, even between the families living in Serbia since the insurgency. Dragiša Mijušković held a grudge against both Klerić and Lozanić due to his family loyalty to the Obrenović dynasty. Mijušković claimed that his family was suffering under the regime of the Karađorđević's because of their loyalty to the cause of the Obrenovićs. He smeared the family of Lozanić, stating that his family was shifting sides, while siding more with the Karađorđević dynasty. There was a rumour that he lost his position in the state administration because the Madžaron (Ljubomir Klerić) was slandering him as anti-dynastic. The insult Madžaron was reserved for the Serbs in the Habsburg administration who supported the Hungarian official politics in the Dual Monarchy. Klerić's family came from Vojvodina, and he was himself born there, but he grew up and was educated in Belgrade. Ethnically, he was

⁸⁶ I have found no mentioning of Ljubomir Klerić's status in this affair, and I cannot confirm his involvement in the quarrel between the king and the school. He was the Minister of Education in the Government of Nikola Hristić and possibly a similar candidate for a professorship with a salary of the state councillor, just at the Technical Faculty of the Grand School.

German and his original name was Julius Kléry. This sentiment expressed the resentment towards the migrants felt by those who were born from ethnically Serbian families. This was a way of forming alliances according to family lines, particularly with the expression of loyalty to the dynasty and shunning the newcomers for not having such family ties.⁸⁷

From these testimonies it can be inferred that intellectuals were expected to be affiliated according to their family ties. Novaković considered Žujović loyal to the Progressive Party and to the Obrenović dynasty because of his family ties. Similar attitude can be found in Mijušković's claim about his families generational ties to the Obrenović dynasty and his condemnation of the Lozanić family, despite Sima Lozanić's confirmed service to the kingdom as a minister. Consequently, Klerić was not able to demonstrate such family ties, because of his German origins.

In addition, Klerić and Lozanić were accused of intrigues. The positions of power, both political and academic, overlapped. The opinion of the political elites still mattered when it came to academic appointments, and any attempt to advance in career needed to appease the authorities. In this particular case, King Aleksandar attempted to promote his favourites into positions which did not exist at the time. This infraction of the law was exemplary of the era of King Aleksandar. During his reign he made several abrupt constitutional changes and schemed in a number of occasions to avoid legal limitations that hindered his goals.

The topic of the conversation between Žujović, Mijušković, Urošević and Borisavljević was the session of the Academic Council of the Grand School, held on 8 May 1897 in order to elect the rector and the deans, along with the election of the committee for the making of a new law on education, and discussion on the promotion of the two professors to the status of tenured professors (*redovni profesor*). Žujović was

⁸⁷ AS, Fund Jovan Žujović, JŽ-39/28, Handwritten note.

during this session re-elected on the position of rector⁸⁸ and Lozanić was denied the exceptional status. According to the voting record, Lozanić had twenty six votes against, four were sustained, and nine voted for his election.⁸⁹

This case may be exemplary of the dynamics of the networks in which the intellectuals were involved. Personal acquaintanceship with the members of the highest political hierarchy were common. Actually, because the common road through which most intellectuals advanced in their careers was from positions in schools to positions in the state administration; the everyday political engagement and academic work constituted an environment in which the power dynamics between various office holders regulated the advancement in the career or loss of the position. The rumours about the intrigues at the court were important for the academics as they secured information about their status. Personal ties, such as the link between Urošević and Hristić enabled such distribution of information. This was the way the young scholars received their education, gained approval, and attained positions. Consequently, many of them engaged in active politics, becoming leaders of political parties, ministers, state councillors, and senators.

Entry into state politics was open to the Grand School professors. The earth scientists, in the focus of this dissertation, had the opportunity to engage in high level politics if they wanted. For Jovan Žujović, the road of political advancement was opened even before he expressed any desires to engage in politics. Being experts in earth sciences made them, in the eyes of the public, qualified for state service.

The episode with the dismissal of Sima Lozanić's request did not end there. Žujović described in one of his biographical notes his own personal experience with the

⁸⁸ However, he did not take this position again in 1897/98. He resigned because of his participation at the International Geological Congress in Russia. See below.

⁸⁹ AS, Fund Jovan Žujović, JŽ-39/30-31. Records of the Academic Assembly of the Grand School, held on 8 March 1897; also AS, Fund of the Grand School, 1897.416. 22 April 1897.

king in this matter. On the 18 May 1897, he paid a call on the queen mother for an afternoon tea with her. Around 7 pm, the king entered, and according to Žujović's testimony, pretended to be surprised at his presence in her room. At first, Aleksandar refused to shake hands with him and started the conversation with his mother – asking her what she thought of his new hat, which he had just bought. Eventually, he addressed Žujović, telling him: “How are you doing in school? I have not congratulated you yet on your election to the position of rector.”⁹⁰ The king then shook hands with him, kissed his mother, and left. After his departure the queen felt she should tell him that Aleksandar was dissatisfied that the collegium of the Grand School did not meet the request of Lozanić. Žujović then explained to her the reasons why the council rejected the request and as he claimed, she concurred with him and told him that she had told the king the same: “But, what can you do when all the ministers are trying to please him and cannot hardly wait to get along with his thoughts. The king claims that the whole world is backing someone, why would not he support someone if he wanted to?”⁹¹ According to Žujović, he said that the king should support the law and not individuals, saying that he had had no problem with the king awarding someone from his own treasury, but that he had objected when he was using the state funds.⁹²

This entire conversation was described in Žujović's diary. His retelling of the story in such detail with explicit quotations of who said what could not be explicitly treated as “hidden transcript,” as Žujović intended to preserve his memory of the event in order to be published one day. However, it does preserve how the talk in the background, among the members of the same circle looked like. In the shifting power relations between him and the king, as a person of less power he used this transcript as a way to

90 Ibid.

91 Ibid.

92 Ibid.

preserve his version of the story and emphasize his position of defiance to the king. In order to establish the primacy of his narrative, he presented it as a detailed transcript of the conversation, which in his interpretation ended as him being the victor. The grotesque depiction of the king demonstrating his new hat to his mother had an intention to banalise king's authority and stress the dominance of his mother. At the same time, it was supposed to represent him as a morally superior man who defied the authority of the king by abiding to law and academic principles.

3.1.7. Jovan Žujović and King Milan

At the same time, while being in good company with Natalija, his relationship with King Milan was deteriorating. Jovan Žujović had enough political naivety in his several encounters with King Milan to openly declare to him his socialist leanings. Žujović owed to Milan his position in the Academy.⁹³ At the same time, King Milan disliked socialist and Žujović's open attitude about it may have cause him problems.

In 1893, the two men met in Paris. King Milan invited Žujović along with couple of other scholars residing in Paris at the time for a lunch and a drink. The lunch was held at the Eiffel Tower and the king treated his company by paying the bill for everyone. They spent time in an informal conversation about politics and academic appointments. Milan said that he never meddled with academic affairs, which Žujović questioned as he experienced situations in which people called upon King Milan's authority. The report is striking as a testimony on how personally acquainted was the king with even the lowest members of the academia of that era. The king personally knew the professors from the

93 AS, Fund Jovan Žujović, JŽ-62/4, Notes about Stojan Novaković; Žujović, *Dnevnik*, vol. 1, 46.

Grand School and was eager to comment on their abilities. Žujović noted that Milan told him that he [Žujović] would be capable of writing political satire.⁹⁴

Because of the complex relationship between the king mother and the king father, the politicians and generally the atmosphere in the country did not allow for both of the king's parents to be in the country at the same time. Their bad relationship, unsettled divorce (which was legally settled and then suspended), and in addition some odd legal (and financial) arrangements made in 1892 which forbade King Milan from returning to the country, created tension between the king's parents which affected the political situation in the country. Though his return to the country was restricted by law, Milan managed to outmanoeuvre the government and the parliament with the help of his son. This was mostly because of the pressure Aleksandar exerted on the government. Nevertheless, Milan was still not willing to be in the country at the same time as Natalija.

The change occurred while Žujović was still rector. While Natalija was away on holiday in December 1896 and 1897, Milan used the opportunity to come for a month to Serbia. Novaković's government fell in December 1896 and was replaced by a "neutral" government of Đorđe Simić consisting mostly of Radicals. During this short stay, Milan decided to visit with his son an academic celebration organised by students.⁹⁵ Mihailo Kr. Đorđević, the Minister of the Interior, warned Žujović that he would be legally responsible if any of the students made trouble and provoke King Milan during his visit. Žujović took the warning seriously and before the celebration sought the student organisers and spoke with them about the event. In a friendly manner he explained to them that he would be arrested if any of them said anything insulting to King Milan and asked them to behave properly, according to the official protocol. Fortunately for

94 AS, Fund Jovan Žujović, JŽ-196, Invitation letter and notes about the meeting with Milan Obrenović. 1 July 1893.

95 AS, Fund Jovan Žujović, JŽ-220, Letters from vice-colonel L.H. Solarović, adjutant of the king, 13 January 1897.

Žujović, the students were not willing to send their rector to prison and the minister did not encounter problems during the event. Žujović registered in his memoirs that Milan upon his arrival refused to approach him and shake hands with him, though he acknowledged his presence in the room with a nod. It is noteworthy that Žujović expected that the king should address him, and judging from their experience in Paris in 1893, such an expectation would not have been unsubstantiated.⁹⁶

The tension that was expressed between the king father and the rector during that short encounter in January was a sign of a much deeper disagreement that existed between the two. By the end of January 1897, Milan left Serbia again and Natalija returned. Žujović did not foresee the troubles that were coming and as the summer was arriving he unwittingly got entangled in higher politics. The already mentioned events regarding Lozanić's return to the Grand School happened between March and May 1897. Although in his diary he was trying to diminish his involvement in politics, his regular communication with Queen Natalija positioned him politically as part of her interest group. By May 1897, in the affair with Lozanić's academic position, he managed to get on the wrong foot with King Aleksandar.

What seemed to be a quite innocent experience, such as the revealing of the monument to the deceased professor Josif Pančić, turned into a highly tense political event. In May of 1897 the monument to Pančić was revealed in the presence of King Aleksandar, the Mayor of Belgrade, Nikola Pašić, many other members of the political establishment, and among others two prominent professors who came to represent their institutions – Emil Tietze and Spiro Brusina. Jovan Žujović, as a rector of the Grand School and Pančić's former student, gave a speech at the ceremony. From the perspective

96 AS, Fund Jovan Žujović, JŽ-39/23, Notes.

of the participants, nothing significant transpired during those couple of hours and everyone soon forgot about the whole thing.⁹⁷

Then the summer recess came. Jovan Žujović gained permission to travel to St. Petersburg to the meeting of the international congress of geologists, 16-23 August, and after the congress to make an expedition to Ural and Caucasus mountains in September.⁹⁸ He was absent during most of July, August, and September. Queen Natalija was still the main influence on King Aleksandar and King Milan was abroad. While he was still in Russia, he received letters from his brother Jevrem, who sent several newspaper articles by post informing him about the writings of the Serbian press. The press was discussing the display of the monument to Pančić and starting a campaign against Jovan Žujović for not inviting King Milan to the event.⁹⁹

The tone of the articles directly implied a plot, cunningly devised by Žujović not to invite King Milan to come from Vienna to the opening of the monument. The accusations suggested that he deliberately eluded several people close to Milan just in order to prevent his appearance during the event. The articles praised King Milan for his contributions to the building of the monument and chastised Žujović for being ungrateful to Milan and Pančić for the things they did to help him attain all he achieved in his career. Two of the articles were in the form of the letter to the editor, written by a lawyer Milan Mostić, who claimed that he was the person who was supposed to be carrying the information about the event and that Žujović purposefully eluded him by telling him that he already informed and invited King Milan about the unveiling of the monument.

97 "Pančićev spomenik" [Pančić's Monument], *Srpske novine*, no. 105, 13 May 1897.

98 AS, Fund of the Grand School, 1897.223. 24 February 1897. Letter from the Ministry of Education and Church Affairs to the Rector of the Grand School.

99 AS, Fund Jovan Žujović, JŽ-138, Letter from Jevrem Žujović to Jovan Žujović, 8 August 1897.

Finally, a short letter from Vienna from King Milan himself was published, which supported the claim of Mostić and implied dishonesty on the part of Žujović.¹⁰⁰

Because Žujović was away, he was not in a position to reply to the accusations. From his perspective, somebody made a deliberate intention to smear his name. In a reply to the newspapers he accused the writers for defamation. He suspected that somebody deliberately chose to publish those articles precisely at the time when he was away, not able to reply, and so many months after the event happened. Finally, the organiser of the event was the Belgrade Municipality and not the Grand School. As a rector, he was himself invited to the event and had nothing to do with the organisation, particularly not with the list of the invitees.¹⁰¹

King Milan was abroad during this time (since January 1897) and his arrival in the country depended on the permission of the government. Inviting him to an unveiling of a monument to a professor would have been a complicated move and involve a lot of political negotiations. Furthermore, the articles appeared during summer, at the time when Milan was preparing his way back to the country and was lobbying with his son to return. Žujović had no knowledge of this. It is possible that the attacks against Žujović were part of the preparation for Milan's return to Serbia and that he was chosen as a target of that attack because of his close connections with Queen Natalija.

In October 1897, Milan finally got back to the country, and the period of strong political influence of Queen Natalija on her son ended. She left the county to spend her vacation in Biarritz. King Aleksandar used the vacation time to reconnect with his father and cunningly return to Serbia with King Milan as his companion. This arrival marked a change in politics of Serbia. The era of King Milan's influence started. Until 1900 King

100 "Još nešto o otkriću Pančićevo spomenika" [Something More about the Revealing of the Pančić' Monument], *Dnevni list*, 12 July 1897. "Gospodine Uredniče" [To Mister Editor] - Letter from Milan S. Mostić, *Dnevni list*, 15 July 1897. "Gospodine Uredniče" [To Mister Editor] - Letter from Milan S. Mostić, *Dnevni list*, 26 July 1897.

101 AS, Fund Jovan Žujović, JŽ-254, Reply to newspapers.

Aleksandar was under his strong influence and the course of the everyday politics largely depended on his decisions. Natalija remained abroad and never returned to Serbia again. Žujović, being affiliated with Queen Natalija on one side, and with both the Progressive Party and the Radical Party on the other side, was in disfavour, and the smearing in the newspapers were just the beginning.¹⁰²

Because of his trip to Russia and his late arrival to Serbia, Jovan Žujović resigned his position of a rector. He felt that he would not be able to fulfil his duties properly in case of his trip to Russia and surrendered his duties because of it. His records do not register big upsets during 1898 and his work in academia continued peacefully after he returned to his duties of an ordinary professor. However, because of the political turmoil that occurred in June 1899 after the Ivanjdan Assassination attempt on King Milan, he found himself targeted by the political elites.

3.1.8. “Partial Theories” of Žujović’s Exile

The period during Milan’s return was filled with political tension. Both Milan and Aleksandar had shown autocratic tendencies. After the assassination attempt King Milan blamed the Radical Party for the organisation of the assassination and incited the prosecution of all of his political enemies. Even though the involvement of the Radicals in the Ivanjdan Assassination was never actually proven and evidence against some of the members of the party were fully circumstantial, the entire party was considered guilty and everyone from its political elite was accused of conspiring against the Obrenović dynasty. People were arrested not only for what they publicly said, but also for things written in their diaries. Anyone who had ever got into any form of disagreement with

¹⁰² Slobodan Jovanović, *Vlada Aleksandra Obrenovića*, vol. 2, 245-249.

King Milan was on the line. Some people were arrested, some officially expelled from the country.¹⁰³

Jovan Žujović belonged to the latter category. On 23 July 1899 his brother Jevrem came to Nemenikuće and announced that Jovan had been retired. The information seemed more of a rumour than an official decree, but then he found out on 26 July that he was officially retired on 21 July and had to step down from his professorial position, but that he was still member of the Academy. Apparently, both kings were behind his retirement, and the Minister Đorđević tried to resist their order.¹⁰⁴ What he heard as an unofficial order was that he had to leave the country. His uncle Rista Bademlić, who was the mayor of Belgrade told him that he had to leave the country as soon as possible or he would be arrested. This information came as a favour from his uncle.¹⁰⁵ He had to move out from Belgrade immediately, and Bademlić even forbade him to walk down Terazije square. If any of the kings saw him, he would be arrested. In the following couple of days, Žujović prepared his departure and settled the agricultural affairs in his home village of Nemenikuće. At the same time he was trying to determine what he had done to deserve such treatment. His notes keep records of his information gathering. He pondered the possible causes and asked people about what they thought might be the reason. He was certain that he did nothing to underwent such treatment.¹⁰⁶

One of the most troubling issues was that his uncle Rista Bademlić turned against him, chastising him for his “Zurich spirit,” implying with it that he approved the assassination attempt as a socialist.¹⁰⁷ His student and a colleague professor Sava Urošević was most helpful in wrapping up his affairs at the university, but his uncle was

103 Slobodan Jovanović, *Vlada Aleksandra Obrenovića*, vol. 2, 406-418.

104 Žujović, *Dnevnik*, 99. He heard this from Sava Urošević, who spoke with the minister.

105 Ibid., vol. 1, 98; AS, Fund Jovan Žujović, JŽ-100. Letter from Jovan Žujović to Rista Bademlić and his reply on the same paper. 29 July 1899.

106 Žujović, *Dnevnik*, vol. 1, 98-102. AS, Fund Jovan Žujović, 4. Decision of the Main Control about retirement of Jovan Žujović, professor of Grand School, 26 August 1899.

107 Ibid., 100.

not. On the other side, Bademlić behaved as if the exile was a favour to him because of the close ties he had with him and that he deserved a far bigger punishment. Apparently, Bademlić was protecting him for too long and Žujović just did not appreciate the circumstances that enabled him to speak freely against the dynasty for so long.¹⁰⁸

On 28 July, in the vineyard of his brother where he was temporarily exiled, Žujović wrote down the possible theories of his eviction. This attempt at making sense of the reality could exemplify how gossip and rumours had an influence on an individual's understanding of reality. Not sure of the actual cause, he had to jot down all the possibilities. Thus rumours and gossip helped him making sense of what was unknown. One version suggested that he was arrested because at some point he said something out loud, "You know Jova, he likes to say it!" (Bademlić was the source). Žujović never discovered what was the thing he allegedly said. Another information suggested that the government wanted to eliminate all the socialists from the Grand School and that his persecution was because of his political ideals (Rector Stamenković was the source). The Minister of Education explained the retirement by ascribing the decision to both kings. From the Liberals he heard two theories: one suggested that he helped one of the Radicals who was a fugitive to get a passport and escape to Bulgaria (he dismissed this), and the other one that this was because the Academy officially did not pay a visit to the kings (but this would have affected other members of the academy, too). Also, he heard that he was an intermediary in the correspondence between Queen Natalija and Nikola Pašić. Sava Urošević told him on 29 July that he heard from his father-in-law Nikola Hristić, who was at the dinner with both kings, that they are both in a very bad mood and

108 AS, Fund Jovan Žujović, JŽ-139, Letter from Jevrem Žujović to Jovan Žujović, 10 August 1899. JŽ-140, Letter from Jevrem Žujović to Jovan Žujović, no date.

that Žujović should leave the country as soon as possible. They would not need evidence to convict him.¹⁰⁹

One version suggested that it was because of his closeness to King Alexander's consort, Draga Mašin. When he wrote down this theory, Jovan Žujović immediately dismissed it as being the product of "the female circles." Apparently, during a ball in Belgrade, Draga Mašin approached Jovan Žujović and asked him to entertain her. His description of the event emits stiff restraint in the presence of King's consort and the former Queen's court lady. He did make her laugh, right at the time when Aleksandar approached them. Somebody observed this and concluded that King Aleksandar was jealous of Žujović, which Žujović dismissed as pure nonsense.¹¹⁰

While the last theory can be easily dismissed as unlikely, something in the discussion presented by Žujović hints at a closer connection that existed between him and Draga. Žujović was frequently in the company of Queen Natalija and this could have affected his acquaintance with Draga Mašin. While the jealousy of King Aleksander can be dismissed, it could be said at least that for Draga Mašin, Jovan Žujović was considered a friendly face. His presence in the circles of Queen Natalija certainly repaired his relations with King Aleksandar through the influence of Queen Draga. Actually, preserved invitation cards Žujović received from Natalija were written by the hand of Draga Mašin. While they all contain formal invitation for a visit, one of them (8 February 1897) reveals a more personal tone. After expressing Natalija's desire to see Žujović, Draga added a personal message on her own: "With joy that on that occasion I will be able to see you as well [...]."¹¹¹

¹⁰⁹ Žujović, *Dnevnik*, vol.1, 102.

¹¹⁰ Ibid., 103.

¹¹¹ AS, Fund Jovan Žujović, JŽ-290, 8 February 1897. Invitation from Queen Natalija. Quoted from the facsimile published in *Balkan* on 12 February 1924.

Whether Žujović actually said something that angered the kings, it really did not matter. The rumours and gossips reached the ears of the men in power, and once they reached, they created opinions according to them. Belgrade was small and being seen on the street was easy. Walking was the most common means of transportation and even if one was using carriages, it was still easy to be seen on the street. There was a reason why Bademlić asked Žujović to stay clear of the Terazije square, the central square of the town. Politicians and academics shared the same streets with the rest of the citizens and in this aspect they were equal. Men such as Stojan Novaković, Sima Lozanić, and Ljubomir Klerić belonged to both circles. As already mentioned, the main body from which the politicians were recruited consisted of scholars, along with lawyers and army officers. Furthermore, close family relationships were easily established between them, so that it would be difficult to establish clear difference between the political and academic elite. In this environment Žujović managed to establish relationship with all members of the royal family. While Queen Natalija was in the country she kept him in a relatively good position in the eyes of King Aleksandar. Unfortunately for him, King Milan detested him and through his influence on Aleksandar he expelled Žujović from the country.

The reason why Žujović was retired and evicted is still uncertain. Whether rumours or simply disliking on the part of the kings caused it, Žujović never learned. During that year, a number of political opponents of Milan got either arrested or evicted from the country and Jovan Žujović was only one among the many. Žujović's listing of all possible explanations for his eviction had a double purpose. First, it was a way for Žujović to explain his own life events, his relationships, and his position. Multiple narratives constructed around it where all possible variants of his life story where a product of the absence of reliable information about what actually happened. Second,

with the multiplicity of offered explanations, Žujović tried to exonerate himself. As those narratives mutually exclude each other, and most are presented as obvious lies, Žujović tried to ridicule the very idea about his guilt.

In 1899, after almost two decades of work in academia, because of his political views and bad reputation with both King Aleksandar and King Milan, he was expelled from the country and forced into exile in Paris. During his exile at Collège de France, he reached the peak of his scientific work, working on the analysis of the rocks from Cordillera Mountains. During that time Sava Urošević took the leadership of the department and the Geological Society and continued with the work in Žujović's absence. Urošević maintained contact with Žujović while he was in Paris and informed him about the activities of the society.¹¹² After the amnesty of all the political convicts by King Aleksandar, he returned to Serbia in July of 1900. Everyone who was accused and convicted during the persecutions related Ivanjdan Assassination was acquitted and among them Žujović found his way back to Serbia. Upon his return, he was even invited to the royal court, and in November 1900, he was reappointed again to his old position at the Grand School. The Ministry of Education officially confirmed his appointment in March 1901, but he did not remain long in this position. In autumn of 1901, he became a senator, leaving for a while his academic duties and devoting his life to politics fully.¹¹³

3.2. Scholars as State Clerks

The state needed scholars for its institutions. Right after the Serbian principality gained its autonomy and the newly forming administration felt the need for educated and skilled men who would guide and execute its work according to the needs of the prince.

¹¹² AS, Fund Jovan Žujović, JŽ-227/13-18. Letters from Sava Urošević to Jovan Žujović.

¹¹³ Đurić, *Srpski intelektualac u politici*, 44-45.

By the 1890s the state still needed skilled and educated servants who would devote themselves to the crown and to the national cause. Existing political elites were enlarging themselves by accepting scholars into their ranks. Advancement in career from the position of a school teacher to the position of a state clerk and even to the position of a minister in the government became common. Furthermore, expanding family ties brought many scholars of peasant origin close to political elites. The closeness of the political and academic elites made these two circles difficult to separate.

Josif Pančić arrived in Serbia with the intention of working as a physician, a profession that was in high demand. As a foreigner who spoke the similar vernacular and had good education, he was readily welcomed among the members of the elite. Instead of remaining in the position of provincial physician, mostly because of his private interests in botany, he became professor at the highest educational institution in the principality and thus an inevitable figure in any history about the foundations of natural sciences in Serbia.¹¹⁴ Over the years, he was a teacher to a large number of members of the country's political, economic, and academic elite. As an outsider to Serbian political struggles, he did not align himself with any of the forces that competed over power. This apolitical stance eventually granted him reputation. Because he was a professor, he was well known and respected by the members of the town's elite.

The story about Pančić's appointment to the position of state councillor, one of the highest political functions at the time is particularly telling about the position of scholars in the political sphere. Žujović learned about it from his cousin (*braca*) Milutin Garašanin, who was the person who nominated him for this position. Allegedly, Garašanin was responsible for the candidate for the open position in the State Council. The competition was highly contested and Garašanin was pressured to nominate a

¹¹⁴ Nikola Diklić, "Josif Pančić," 6-11.

member of the Progressive Party. One evening, Garašanin looked through the window of his office and noticed the figure of Josif Pančić, who was returning from his field expedition with a large botanical box with samples. Seeing him like that, he realised that he had found the perfect candidate for this position and immediately wrote and signed his nomination.¹¹⁵

Garašanin knew that nobody would object to Pančić's appointment. His reputation was such that the majority respected him as a former professor, he had no political affiliations, and there was no chance anyone would object or be offended by his appointment. The political value of scholars lied precisely in their social recognition as experts in their field. They were well educated, better than most politicians and their hiring had a hint of impartiality of the government who sought experts for political assignments. The sight of Pančić carrying a large botanical box was paradigmatic of the representation of a scholar in the public. It was a symbol of his expertise and his independence from the affectations of the political strife in the country. Hence, an apolitical stance was useful for a scholar in gaining his reputation in the society as a politically unblemished expert. This made them also desirable in the eyes of the political actors in situations when political appointments created conflict and invitation of someone who was had a reputation of an expert could have resolved the conflict.

Employment also depended on political factors. In addition to professional qualifications, personal connections and loyalties served as a guarantee that appointments would go to politically suitable individuals. For example, Svetolik Radovanović was hired by the Radical governed Mining Department of the Ministry of National Economy to work as the official state geologist, or as the appointment was officially named – custodian of the Museum of Geology and Mining, geologist of the 5th class,¹¹⁶ a position

115 AS, Fund Jovan Žujović, JŽ-62/9. Notes on Stojan Novaković.

116 Which was the lowest class.

that did not exist before. In the absence of verifiable sources, it is not certain how much his marriage actually connected him with the Radical Party. The scarce evidence show that he was well connected with their leadership. His advancements usually occurred when the Radical Party was in power.¹¹⁷

Eventually, he managed to find his way into the Grand School. Even though he was the first person who had a doctorate in earth sciences in Serbia, he did not get an appointment at the Grand School immediately. Earlier Jovan Žujović had become a professor at Grand School immediately, even though he did not have a doctorate, while Jovan Cvijić achieved that status immediately after his doctorate in 1893. After several years of falling out of grace with King Aleksandar, with the return of Queen Natalija into country, the Radicals were again in favour of the king. Furthermore, during 1896 and 1897 Radovanović's mentor Žujović was enjoying full support from Queen Natalija. These circumstances were favourable for Radovanović who became a member of the Serbian Royal Academy in 1896, and then the professor at Grand School in 1897. Because both happened during the time when Queen Natalija was the main influence in the country and when the Radical Party had support from the dynasty, the possibility that Radovanović's advancements in career were associated with his affiliation with the Radicals could not be easily dismissed.

3.2.1. Žujović's Political Engagement

The political changes of 1900, when King Aleksandar finally decided to marry Draga Mašin, shattered the political system in the country. The majority of formerly loyal politicians abandoned the king and took a strong stance against him. Aleksandar struggled to find capable and reputable men for the government. The former court lady to

¹¹⁷ Grubić, "Svetolik Radovanović," 114.

Queen Natalija became the queen of Serbia and replaced both of the king's parents in the position of the most influential person in the county. For Žujović this meant that a period of her strong influence began and that he was not among the blacklisted in the court any more. Nevertheless, he joined the opposition and chastised the monarch.¹¹⁸

From 1901 Žujović engaged more explicitly in politics, abandoning all the apolitical pretence. He actively worked as one of the contributors of the newspaper *Odjek*, which formed around the independent radicals. This was one of the few opposition newspapers that criticised the King and the Queen, though in a covert way, as they were working under strong censorship.¹¹⁹ His notes from this period are rare and few notes that are preserved do not reveal the reasons why he suddenly changed his mind. He had a strong political position and he was not ready to make concessions. It is possible that he was revolted by the authoritarian nature of Aleksandar's regime.

Even though the Radicals were ideologically closest to Žujović, this was not what he wanted from politics, and until 1901 he was not willing to join them. The Radical Party was divided between two groups. One decided to make an agreement with the Progressive Party, and along with that agreement support the politics of King Aleksandar. This group was called the Fusionists, and the agreement itself – the Fusion. Those who opposed this agreement and remained in the opposition towards the king all during his remain from there on became known as the Independent Radicals. The regime pressed strongly for the constitutional change and in 1901 a new constitution was made with the agreement of the Fusionist Radicals and the Fusionist Progressives with the king. In this atmosphere Jovan Žujović joined the opposition faction, the Independent Radicals, and by 1903 became one of the most active leaders of this political movement.¹²⁰

118 One registered official invitation to come to the court and visit the king: AS, Fund Jovan Žujović, JŽ-281.

119 Stolić, 201.

120 For example, Žujović was the creator of the protest note against the government of Dimitrije Cincar-Marković. AS, Fund Jovan Žujović, JŽ-50, Announcement of the Independent Radicals on 19 March

Žujović became the elected senator of Vranje County, which was a position he held until 1903. He was the only senator representing the opposition, who managed to get into the Senate, and he achieved that through popular vote. At the time, the Senate consisted of thirty members promoted to that position by the king for life, and eighteen members who were elected by popular vote. In addition, he was its youngest member, thus assigned to be a secretary. In addition, he was a member of the board of education of the assembly. During the sessions of the Senate, he was one of the most vocal speakers, publicly opposing the authoritative policies of the regime. Ultimately, he was even sued in 1903 for some of his texts, but the trial never started as the regime fell in the meantime.¹²¹

The intertwining of academic and political worlds could be seen in the circumstance that they shared the same space. The sessions of the Senate were held in one of the classrooms of the Grand School. Because the preparations for the first session were not organised well enough, before the opening ceremony the senators realised they did not have a portrait of the king in the room. The president of the senate asked Žujović if he could obtain a portrait somehow from the offices of the Grand School, which Žujović manage to do, borrowing the picture from the academic society “Obilić.”¹²² This short episode could be another testimony on how close were political and academic circles. Žujović, as a state senator represented the Vranje county in one of the classrooms in the same school from which he was teaching. Due to shortage of public space, the senate had to resort to using the classrooms of the Grand School.

Despite his open opposition to monarchy and clearly expressed socialist and republican ideas, Žujović kept advancing in his career. Because his social capital was

1903.

121 Đurić, *Srpski intelektualac u politici*, 46-55.

122 Žujović, *Dnevnik*, vol. 1, 104.

considerable and ideology was comparably insignificant compared to personal relationships, Žujović had a lot of leeway in his *modus operandi*. Eventually, he openly confronted the politics of King Aleksandar and became one of the leaders of the opposition. He authored a proclamation against the government of General Dimitrije Cincar-Marković in which he challenged the legitimacy of the state measures.¹²³

3.2.2. Science and Politics During the Regime of King Petar I

The military coup of 29 May 1903 ended the Obrenović dynasty. Both King Aleksandar and Queen Draga were assassinated, and with King Milan dead in 1901, the only remaining member of the family was Queen Natalija, who was in exile and had no rights to the throne. The conspirators offered the throne to Petar Karađorđević, who accepted their conditions to respect the constitution and the law. This conditioning of the new monarch to obey the laws was a joint demand by both the conspirators and the politicians who negotiated his ascension. Such a demand was made in fear of another authoritarian leader, and over the course of the years, the new ruler was forced to remain within the strict confine of the constitution. The politics of frequent coups and abrupt and radical changes in the government of King Aleksandar were over.¹²⁴

Instead, court intrigues permeated the political scene. The power of the conspirators from the army was strong, as they exerted a strong influence on King Petar. International community condemned the assassination of the royal couple and demanded the punishment of the assassins, which became the main issue in international politics until 1906. The conspirators were well protected by the king and several governments

123 AS, Fund Jovan Žujović, JŽ-50. The announcement of the independent Radicals against elections organised by the government of Dimitrije Cincar-Marković; Žujović, *Dnevnik* I, 112. 3 May 1903.

124 Dragoljub R. Živojinović, *Kralj Petar I Karađorđević: U otadžbini 1903-1914. godine* [King Petar I Karađorđević: In the Fatherland 1903-1914] (Belgrade: Zavod za udžbenike Beograd, 2003), 21-28.

struggled to enforce even the retirement of only a part of their highest members. Even though the consequences of the assassination were welcomed by the majority of politicians, they did not feel at ease with the act itself. Until 1914, most of the governments tried to counter the influence of the conspirators in politics and remove them from high ranking positions. Intrigues surrounding the conspirators influenced the decisions of the king, who frequently acted according to their desires. Even though some of the highest members of the conspiracy were retired in 1906, their influence on the political life was still not receding and it continued well into the war period.¹²⁵

With the change of dynasty, the dynamic of political life stabilised. The parliament gained more political power and the government became more independent from the king. Because the suffrage was expanded, the voice of the peasants became more prominent and ultimately led to domination of the Radical Party. The split between the Fusionist and the Independent Radicals continued. Although the two groups worked on reunification of the Radical Party for a short while, by 1904 the split between them was definite. Nonetheless, the split did not affect the domination of the Radicals during the 1903-1914 period. Those two parties took most of the seats in every session of the parliament until 1914, with the slight dominance of the [Fusionist] Radical Party. The National (Liberal) Party, even though they took part of the conspiracy, was of a minor significance. The Progressive Party reformed under the leadership of Stojan Novaković in 1905 and even though they failed to gain popular support, they managed to play a notable role in the Serbian politics of that era, mainly due to Novaković's reputation of a reliable and capable statesman, which made him a prime minister in one grand coalition government of 1909.¹²⁶

¹²⁵ Ibid., 233-286.

¹²⁶ Dubravka Stojanović, *Srbija i demokratija 1903-1914: Istorijska studija o "zlatnom dobu srpske demokratije"* [Serbia and Democracy 1903-1914: A Historical Study about the "Golden Era of Serbian Democracy"] (Belgrade: Udruženje za društvenu istoriju, 2003), 255-273, 301-314.

The major change in the political life was the absence of dynastic struggle. While in the previous period the loyalties to the Obrenović or Karađorđević dynasties constituted a significant part of the political orientation, with the death of the last Obrenović king, the Obrenović faction lost its major reason for existence. King Petar had no reason to persecute the men who were known previously as loyal to the Obrenovićs, and in the same way, the closest circle of the Obrenović supporters could only acknowledge the present state of affairs. The idea of a republic was still highly unpopular, and foreign noble houses had no support among the citizens of Serbia.

The change in the political sphere affected the sphere of science. While the person who was mostly visible on the political scene up to 1903 was Jovan Žujović, Petar S. Pavlović had more concerns about being affected by the change of dynasties. During the military coup, Queen Draga was killed with her husband, but the conspirators did not spare her family either. Because there were rumours that her brothers might come into the line of succession, both her brothers, Nikola and Nikodije Lunjevica, were considered a threat by the conspirators. Although, these were just rumours and an ambition of Draga, there were no viable sources which could confirm that Aleksandar accepted any of her brothers as his successors. During the night of the coup, both of the Lunjevica brothers were assassinated. Draga's sisters were forced into exile where they remained for the rest of their lives. Petar S. Pavlović, being Draga's cousin, could have been treated in the same way. However, there is no certainty if any of these events seriously affected him.

In 1903, Pavlović was a temporary director of the Museum of Serbian Lands, which was the name for the natural history museum of Serbia. He ascended to this position in 1901, during the time when Draga was the Queen of Serbia. Initially he was only an interim director, but he remained in this position until 1925, when he was named director only a year before his retirement. Even though his ascension to that position

happened in 1901, Pavlović had been a part of the museum project since 1893, when his cousin was still a lady-in-waiting of Queen Natalija. The project of making a natural history museum gained its main impetus in 1897, when Mihailo Valtrović, the custodian of the National Museum, began his initiative with authorities to allocate the house of the deceased politician Stevča Mihailović to the new museum. Pavlović was part of this initiative from the beginning and his appointment as temporary director should not be surprising.¹²⁷

There are not too many testimonies about what happened with Petar S. Pavlović during the transition between the regimes. From what we know today, he had to sign a declaration of loyalty to the new regime in 1903, but beyond that, there is not much known about his political involvement during the transition between two regimes. Considering how violent the process of transition was, it seems unlikely his family was not affected by this. Nonetheless, there are no surviving testimonies about any persecution. His further career during the regime of Karađorđević dynasty seemed unobstructed and in that respect cannot be distinguished from the careers of his peers. He became a member of the Royal Academy and was decorated several times by the state.¹²⁸ From 1901, the development of the Museum of Serbian Lands was under his charge and though he was regularly struggling with systemic difficulties due to lack of funds, qualified personnel, and materials for the museum, he managed to overcome most of the issues with the cooperation of the Ministry of Education. He frequently complained about the lack of support for the museum, even from the ministers who were well acquainted with the issues. Apparently, even Jovan Žujović was not able to help when he was the minister.¹²⁹

¹²⁷ Ibid., 157-161.

¹²⁸ Ibid., 186; "Petar S. Pavlović", *Politika* (7 August 1938), 6.

¹²⁹ Pantić and Vesić, "Petar S. Pavlović," 158-170.

Earth scientists became more visible on the political scene during the new regime. Svetolik Radovanović and Jovan Žujović became ministers in several governments, and Cvijić acted as an envoy in one diplomatic mission with Great Britain. People with high academic qualifications were in demand for state service. Due to the growing power of both radical parties, this placed them on a list of the most desired candidates for ministerial positions. Radovanović developed close ties with the leadership of the Radical Party and due to his experience of a mining geologist he was considered qualified for governing the state economy. Žujović, on the other hand was one of the founders and leaders of the Independent Radical Party who was by 1914 present in their main governing committee.

Radovanović was the Minister of National Economy in the coalition government of Sava Grujić and in the government of Nikola Pašić (21 January 1904 – 16 May 1905). Because he was officially a minister at the time when the University was constituted, he was not among the initial professors. After he stepped from the office, Jovan Cvijić wrote a recommendation for him, and Radovanović was appointed a professor of geology and palaeontology at the University of Belgrade in October 1905.¹³⁰ Soon, he became the Dean of the Faculty of Philosophy, which was the position he held until 1908. Such connections with the Radical Party can show how much these political ties influenced Radovanović's advancement in career. His initial appointment in the Ministry of National Economy got him connected with the mining endeavours, with whom he fell out during his 1902 leadership of the Mining Department, but provided sufficient knowledge and reputation for Sava Grujić and Nikola Pašić to appoint him a minister in their governments. By 1913 he entered a joint mining businesses venture with Nikola Pašić with whom he remained close business ties until 1920s.¹³¹

¹³⁰ Grubić, "Svetolik Radovanović," 120.

¹³¹ Žujović, *Dnevnik II*, 35.

3.2.3. Jovan Žujović during the reign of Petar I

Žujović, on the other hand belonged to the other faction of the Radicals. He joined the Independent Radicals at the time when they openly opposed the regime of King Aleksandar and was himself an outspoken critic of the regime. After the 1903 assassination of the royal family and the putsch that brought Petar Karađorđević to power, the regime he criticized was gone and he had to adapt to the new situation. Three days after the assassination, during the session of the National Assembly on 1 June 1903, he spoke about the coup in these words: “The first and the most difficult crisis, which the day before yesterday seemed desperate and unresolvable, was the crisis with the monarch. That crisis was resolved by the army in a manner known to all.”¹³² However, with this comment, he moved his topic away from the assassination. His most immediate concern was the legality of the transition process and demanded a discussion about the constitution, arguing for the reintroduction of the 1888 constitution. His devotion to the principle of radical democracy and parliamentarism made him an opponent of the Obrenović kings, but in the new constellation of power, he was one among the many who propagated a constitutionally organised parliamentary rule, based on popular vote.¹³³ Nonetheless, when on the next day the Senate voted for the official election of the new monarch, Žujović, as the senator of the Vranje County, was absent from the assembly, because the army surrounded the building of assembly in order to force its decision. In this way, he avoided being part of the legal process that exonerated the conspirators and enthroned the new ruler on the throne.¹³⁴

¹³² AS, Fund Jovan Žujović, JŽ-47, Speech of Jovan Žujović, Assembly representative during the session of the National Assembly regarding the coup of 29 May. 1 June 1903.

¹³³ Ibid.

¹³⁴ Đurić, *Srpski intelektualac u politici*, 51; Grubić, “Jovan M. Žujović,” 308.

Žujović decided it was time to make a step away from politics and focus more on his scholarly activities. In his letter of 9 June 1903, he announced his withdrawal from the governing committee of his party and summarised his opinions about the regime of King Aleksandar and his intentions:

King Aleksandar was murdered by the army after our *Odjek* already killed him morally with our fire. The constitution of 1888 was restored back to life, after we demanded it and defended it, even in these critical days. Now we have to adopt a different set of practical goals, maybe even a different tactic, and probably even a different tone. Which and what kind? - that should be your call. I feel it is my duty to step down from the governing committee of the Independent Radicals, so that the committee can make new decisions without my influence, and I can be released from the obligations of those new decisions.

By stepping down from the committee, I implore you to acknowledge, that I still remain in service of the army of radical democracy and as an ordinary soldier, I will gladly do whatever is in my abilities. For example, if you ask me for an opinion – I will sincerely share it with you; if you would consider it useful to use my pen – I would borrow it to you [i.e. I will write for you]; if you would in any list of candidates by chance miss a name and a surname for a qualified representative – maybe I will serve you with mine, although I am now feeling discomfort with the upcoming assembly sessions.¹³⁵

This letter and this moment show how much Žujović was hesitating about politics. Up to 1901, his official attitude was that he did not want to be involved in politics. Yet during that time he was regularly expressing his socialist and republican ideas in the public. He regularly encountered members of the government and the royal family, and shared his thoughts with them. From 1901 his active engagement got him into the position of a senator and a leader of the most vocal opposition party. After the May assassination, he tried to step back and move away from responsibilities. However, as it can be seen from the letter, his withdrawal was not complete, as he left an open space for new appointments and duties. In the following years, he became the state councillor, a member of the parliament, and a minister in two governments. Eventually, not only that he did not withdraw from politics, but he actually became more involved than before.

¹³⁵ AS, Fund Jovan Žujović, JŽ-113, Announcement to the Independent Radical Party that he will step down from the governing board of the party. 9 June 1903.

In the transition between the governments, Žujović was active in the assembly, being one among the many who argued for the reinstatement of the constitution of 1888. This proposal was ultimately adopted, as there was a consensus among all factions of the Radical, Liberal, and Progressive politicians about it. After several modifications to the 1888 constitution, the final version became known as the constitution of 1903. The new king was conditioned that he must adopt and obey the new constitution.¹³⁶

The new regime made some surprises for Žujović right at the beginning. The new constitution reintroduced the State Council (*Državni savet*) as an advisory body and Jovan Žujović was appointed for one of its initial members under the new organisation, where he remained until 1905.¹³⁷ This appointment is a good example of Žujović's position in the political environment of Serbia of that time. His appointment to the State Council happened without his knowledge. He complained that nobody asked for his approval for it.¹³⁸ The appointment of Josif Pančić to the same position happened in a more or less the same way. Žujović thus attained a position that his father once had held as well. His ambiguous and hesitant attitude towards politics and his latent desire to focus solely on science and his estate were frequently countered by offers he was not always willing to decline. His leanings towards politics were strong. As it was demonstrated in the previous section, since the 1890s, various political circles had been relying on his expertise and reputation, trying to persuade him to join the government and take responsibility for a sector of governing. Something similar happened in 1903. His opinion was not considered in his appointment to the position of state councillor, but he complied with it and performed the duty.

136 Žujović, *Dnevnik* I, 116; Živojinović, *Petar I*, II, 22-27.

137 Živojinović, *Petar I*, II, 44.

138 AS, Fund Jovan Žujović, JŽ-37, Geological Institute and biographical notes about Jovan M. Žujović, notes by Dr. Đorđe Žujović.

In his memoirs and notes, he recorded a number of conversations with members of the political elite of that time. Most of his recordings were reflections on the current situation and were generally expressing dissatisfaction over the way this or that issue was dealt with. He enjoyed offering his opinion and criticising other people's decisions and actions. In that aspect, his involvement in politics and separation from it were never entirely devoted. However, his opinions about political issues are not an object of this investigation in this case. My intention is more to bring attention to the social status to which he belonged and the social connections which determined his position in the society and the impact he and his colleagues earth scientists had on decision making in the state. Even when he was not in high positions, Jovan Žujović participated in discussions and offered his opinion about matters of state importance. Many of his colleagues were in a similar position. Žujović was respected for his expertise and often considered qualified to handle matters of state importance. However, Žujović was not certain about his qualifications as others were about them and frequently declined offers.

He receive one such offer in September 1904, when Milovan Milovanović, a high ranking Radical politician, wrote to him about the possibility of becoming a minister in the new government. He informed him that he had a conversation with his brotehr Jevrem Žujović about this. They discussed a possibility of Jovan Žujović taking the position of the Minister of National Economy. Jevrem was certain that Jovan would consider himself unqualified for that kind of duty. Because Jevrem expressed doubt that Jovan would accept a role in any ministry, let alone the Ministry of National Economy, the new Prime Minister, General Sava Grujić, offered this ministry to Svetolik Radovanović.¹³⁹

¹³⁹ AS, Fund Jovan Žujović, JŽ-197, Letter from Milovan Đ. Milovanović to Jovan Žujović, 9 February 1904.

Due to Independent Radicals' increasing popularity, their party managed to secure participation in several governments and even lead independently one of them. In the 1905 government of Ljubiša Stojanović, Jovan Žujović was appointed first as the Minister of Education, and later as the Minister of Foreign Affairs – appointments that he accepted. While Radovanović served as the Minister of National Economy because of his previous involvement in the Mining Department and in general because of his exhibited expertise in mining, Žujović was hired for his more general set of skills. His position of the Minister of Education stemmed from his experience of a Grand School professor and his participation in the organisation of the Grand School and the Academy. The decisive skill for the position of the Minister of Foreign Affairs was that he spoke English.

3.2.4. Scientists, Conspirators, and International Relations

There was a small number of people in Serbia who spoke English, and Jovan Žujović and Jovan Cvijić were two of them. In 1905, this knowledge was on high demand. The assassination was not well received internationally and particularly not well in Great Britain. The matter that aggravated the international reputation of Serbia was that none of the conspirators who participated in the murder the royal couple was punished for that deed. To make the situation even more problematic, they were actually promoted and some became part of the inner circle of King Petar's advisers and his military escort. Great Britain ceased all relations with the Kingdom of Serbia in a sign of the protest for the absence of any punishment for the conspirators. The resolution of this issue lingered for years and many governments struggled to remove the conspirators from the highest positions. Consequently, Žujović's primary assignment as the new

Minister of Foreign Affairs was to restore normal diplomatic relationships with Great Britain.¹⁴⁰

Both factions of Radicals agreed that the conspirators should be punished. Actually, the conspirators did not have large support in the public opinion, but they had the support of the most important person in this case – the king. Žujović's opinion did not differ from the majority of politicians'. For him, the matter was simple: in order to restore good international relations, the officers should be removed from the highest ranks of the army and from the company of the king. By 1905 it was hard to imagine any form of punishment for the conspirators; for that reason the negotiations discussed only their retirement and withdrawal from the army. When Žujović became the minister in 1905, his attitude towards this was simple: they had to be retired and he needed to agree about this with the British authorities.¹⁴¹

Nevertheless, this process was not as easy as he imagined. Žujović was not fully informed about British demands. He needed assistance from the Italian Minister of Foreign affairs, whom he persuaded to act as a negotiator with the British government.¹⁴² While negotiating with the British Kingdom was difficult, that side had a clear vision of what they demanded – retirement of the army officers who lead the conspiracy and the removal of the conspirators from the positions of political power. Žujović was ready to send the officers to retirement and he believed that there would be no obstacles to that solution. How naive was his attitude could be seen in his communication with the king. King Petar I simply refused to do it.¹⁴³ Frustrated because of the king's lack of

140 AS, Fund Jovan Žujović, JŽ-298, Jovan Žujović's speech in the National Assembly, 11 October 1905.

141 Živojinović, *Petar I*, II, 263-265.

142 Ljiljana Aleksić-Pejković (ed.), *Dokumenti o spoljnoj politici kraljevine Srbije 1903-1914 vol. 1 no. 4/I: 1/14. juli – 30. septembar/13. Oktobar 1905. godine: Iz fondova Arhiva Srbije i Arhiva Jugoslavije* [Documents about the Foreign Policy of the Kingdom of Serbia 1903-1914 vol. 1 no. 4/I: 1/14 July – 30 September/ 13 October 1905: From the Funds of the Archive of Serbia and the Archive of Yugoslavia] (Belgrade: SANU, 2014), Document 147, p.441; Document 159, p.464-465.

143 Živojinović, *Petar I*, II, 263-265.

cooperation, he wrote a letter of resignation and submitted it to the king. He openly blamed him for the failure to compromise with Great Britain. Žujović gave his word to British diplomats and now the king was refusing to accept a simple solution for a considerable diplomatic issue. For Žujović, his honour and reputation were at stake.¹⁴⁴

A day later, King Petar changed his mind. He accepted the retirements and Žujović withdrew his resignation. Nonetheless, this agreement lasted for a day. The king did nothing regarding the request and in effect, he rejected it again. For this reason, the very next day, Žujović submitted another resignation, this time permanent.¹⁴⁵ These two resignations made Žujović look bad in the eyes of the public, which resulted in public mockery for his two resignations. The real reasons for both resignations were not known to the public and the journalists speculated about the possible connections with the loan the government was applying for.¹⁴⁶

Final resolution of the dispute with the British over conspirators eventually fell to Cvijić. Until the coup d'état in May 1903, Jovan Cvijić stayed away from any kind of political activity. He was dissatisfied with the regime of King Aleksandar, like the majority of professors at the Grand School, but he did not express it publicly. However, after the assassination, he wrote a letter to Vatroslav Jagić, dated 3 June 1903 in which he explained the circumstances that led to the assassination and expressed his own unease with the cruelty of the murders and at the same time approval for what the army had done.

You shouldn't be surprised by the latest Belgrade events. They are horrible, executed according to Balkan notions, but they were an inevitable necessity. The poor young king was doing everything to generate the worst possible ending. And no one could have stop him on that road. [...] This had to happen. If the army had not executed it [the coup] now, the mass [people] would have had executed it with a far greater number of victims and a number of other miseries. Officers conducted it [the coup] with exceptional courage,

144 AS, Fund Jovan Žujović, JŽ-2, Resignation letter of Jovan Žujović, 28 November 1905.

145 AS, Fund Jovan Žujović, JŽ-132, Resignation letter of Jovan Žujović, 30 November 1905.

146 "Dakle ipak," *Večernje novosti*, 2 December 1905; *Štampa*, 1 December 1905.

precision and a gift to coordinate, and in addition they maintained order in such a firm way, that they prevented every, even the slightest excess from the people.¹⁴⁷

Jagić published this letter in *Neue Freie Presse* in Vienna in order to inform the Austrian audience with the Serbian version of the events, to which Cvijić expressed his gratitude. From these newspapers, the letter was reprinted in other European newspapers. He was glad that his letter found a way to foreign readers and he hoped that through it he managed to explain the events in a manner that were not unfavourable for Serbia.¹⁴⁸ There was little sympathy towards the murdered royal couple and a majority of people felt relieved that they were gone. In the eyes of the international audience it was an obviously cruel act. In this letter one can see the atmosphere that was in Serbia following the assassination. By the public opinion, the assassinations were legitimate. Cvijić shared the feeling with his compatriots that the international audience did not understand the situation.

From this moment, Cvijić became more engaged into political matters. Today he is mostly known for his pamphlets written at the beginning of World War I, which will not be the subject of this investigation. Through a number of anthropogeographical, geographical, and ethnographical works, he managed to establish himself as an expert on matters of settlements, population, and geopolitics. There were rumours that he was at one point offered a ministry in 1904, but he was not willing to take any position. While Cvijić was one of the most prolific promoters of Serbian national program in his scientific work, his detest for party politics made him awry of engaging political career. National ideology was at the core of his research and he committed to the public service only as much as he found it necessary for the national goals. In that respect he was no exception among Serbian intellectuals. However, being a geographer, his scientific work

147 AHAZU, Documents of Vatroslav Jagić, Letter of Jovan Cvijić to Vatroslav Jagić, 3 June 1903, quoted from Čubrilović, "Život i rad," 101-102.

148 Čubrilović, "Život i rad," 102.

touched upon topics that were explicitly relevant for the politics of expansion of Serbia which made the political elite concerned about his writing.¹⁴⁹

First real political assignment was offered to him in February 1906. Because of his extensive research of Macedonia and Bulgaria, and knowledge of English language, he was chosen to be an envoy at the meeting of the Balkan Committee regarding the Macedonian question. At the same time, he was supposed to work on renewal of diplomatic relationship between Great Britain and Serbia.¹⁵⁰ This was the same issue Žujović was working on while he was the Minister of Foreign Affairs, because of which he resigned in 1905.

During the dinner organised by the secretary of the Royal Geographical Society, John Scott Keltie, Cvijić almost made an incident when he brashly criticised the behaviour of the British government and the King in regard to the May events. However, this convinced Keltie to assist him setting up a meeting with representatives of the British government and find a way to reach Edward VII. He spoke with a representative of the British government about the restoration of the diplomatic relationships and for as much as we know, the conversation went well. Later that year diplomatic ties were restored, but it is uncertain how much of it was Cvijić's contribution.¹⁵¹

The conspirators remained a significant influence in the politics of Serbia up until World War I. Even though the public opinion and the majority of newspapers were writing against them and they had no support among political parties, their influence in the army and with King Petar was still not diminishing. Foreign powers were strongly against them and this caused problems with international relations of the country. Nikola Pašić succeeded in sending to retirement five conspirators, and restoring the diplomatic

149 Ibid.

150 Cvijić, *Dnevnik*, 166.

151 Cvijić, *Dnevnik*, 167.

relationship with Great Britain, to which Jovan Cvijić had some participation.¹⁵² Despite his effort, they still represented a powerful faction in the army and continued to plot their plans about Serbia's future.¹⁵³

Even though the retirement removed some of their highest members from the army, they still exerted a considerable influence on the king. Their role in the society created another issue, this time within the Serbian society. The conspirators got on bad terms with the heir to the throne, Prince Đorđe, mostly because of his impertinent behaviour, which was at points directed explicitly towards some members of the officers' court. Also, Prince Đorđe's behaviour became a matter of serious concern among the members of the government and of the political elite. There was fear that once he becomes the king, he would act in the same way and cause even more problems than King Aleksandar did. This concern troubled the conspirators too and they deliberated about replacing the Karađorđević dynasty with some foreign ruler. Žujović was in contact with the conspirators and knew about their intentions, because he was considered a possible envoy who would go to Great Britain and search for a prince of royal blood who would inherit the Serbian throne instead of the members of the Karađorđević dynasty. Although, Žujović was against such endeavours and argued for peace, he agreed that the Karađorđević dynasty was nearing its end.¹⁵⁴

The conspirators believed that King Petar already betrayed them in 1906 by retiring some of their leaders. In addition, they were convinced that none of Petar's sons had the qualities necessary for a new ruler. This persuaded some of the conspirators that they should make another coup and demote the Karađorđevićs. Jovan Žujović became involved in the communication between the government and the conspirators. In his

¹⁵² See below.

¹⁵³ See Živojinović, *Petar I*, II, 233-285.

¹⁵⁴ Ibid., 373-383.

memoirs he recorded conversations with several members of the conspiracy and recorded their threats to the Karađorđevićs. He conveyed the messages and expressed concerns about the future of the country, but he received little attention from the king. The king believed there was no danger from another coup.¹⁵⁵

Contrary to his experiences with the Obrenović family, Žujović left considerably less testimonies about his conversations with the members of the ruling dynasty. His encounters with King Petar I were rare and of a formal nature. On the other side, his memoirs are full of discussions made in private conversations with various political leaders on every level. Most of the recorded conversations were with other leaders of his party – Ljubomir Stojanović and Jaša Prodanović, with whom he cooperated on a number of occasions.

In 1906, Žujović observed deterioration of his communication with King Petar. Every year, when Žujović was celebrating *Slava* of his family, the king was sending an adjutant to congratulate him the holiday. However, in 1906, the envoy was amiss. This concerned Žujović for he believed that one of his speeches held during Independent Radical rallies caused indignation from the king.¹⁵⁶ Nonetheless, couple of weeks later he was invited, along with his party members, to attend the king's celebration of his *Slava*. During the celebration, Petar I had a polite conversation with him and Jaša Prodanović, which Žujović took as a sign of improvement in their communication.¹⁵⁷

The ghosts of his past were still haunting Žujović. Through private channels, he managed to ascertain the opinion of the king about him. In a conversation with colonel AntoniĆ, he learned that Petar I expressed his view of Žujović in the following words: “Žujović is the most dangerous man in Serbia. He is fatal even for the Radical Party to

¹⁵⁵ Ibid., 381-383.

¹⁵⁶ AS, Fund Jovan Žujović, JŽ-55, Note for 8 November 1906.

¹⁵⁷ AS, Fund Jovan Žujović, JŽ-55, Note for 27 November 1906.

which he belongs.” Why? Even though this information reached Žujović through an intermediary, he had reason to believe it. He was still a good friend of Queen Natalija, who detested Petar I (for a good reason), which was in the eyes of the Karađorđević dynasty an explicit sign of anti-dynastic proclivities. In addition, his speech during the rally of the Independent Radicals in September 1906 directed against the king convinced the circles around Petar I and the conspirators that Žujović could be potentially anti-dynastic in his views.¹⁵⁸ By 1907, Žujović was openly expressing his loyalty to Queen Natalija, stressing that he was loyal to her during the times when she was dismissed, divorced, exiled, and rejected by both her husband and her son.¹⁵⁹ His expression of loyalty to the previous monarch did not represent an obstacle in his career. Natalija did not represent a threat for Karađorđevićs, and while it seems that Žujović’s ties with here were an issue, he suffered no immediate consequences for it.

Even though, he was not on good terms with Petar I, he managed to establish good communication on a private level with one member of the royal family – Prince Đorđe Karađorđević. Prince Đorđe’s behaviour became a matter of nationwide attention by 1909. While he was known for impertinent behaviour since 1903, the events of 1909 radically changed his position in politics. Žujović recorded one conversation with him in 1906, where he discussed with him the rumours about his inappropriate behaviour.¹⁶⁰ Officers in his company and his tutors complained about his perpetual misdemeanour. Nonetheless, his professor of mathematics, Mihailo Petrović Alas developed a good relationship with prince Đorđe and allowed him to use his time with him creatively. It seems that Đorđe was on good terms with his teachers, but not with any other figures of

158 Žujović, *Dnevnik I*, 131-132.

159 Ibid., 137.

160 Ibid., 131.

authority. He was on bad terms with army officers, but it appears that university professors, such as Alas and Žujović were on good terms with him.¹⁶¹

3.2.5. The Annexation Crisis

While the political struggles were tearing the Serbian elite apart, during 1908 all major differences were annulled by the annexation of Bosnia and Herzegovina by the Habsburg Monarchy. Although political parties differed on various ideological and personal issues, there was a common theme which united all political factions, parties, professors, army officers, and monarchs – nationalism. Annexation of Bosnia and Herzegovina resonated in Serbia strongly. All political forces mobilized against the annexation, trying to find the solution for the crisis. Bosnia and Herzegovina were considered Serbian lands and on the long perspective of the unification of all Serbian lands, this region was treated as naturally belonging to Serbian sphere of influence and had to be *liberated* from foreign governance. Diplomatic struggle over “Serbian lands” which belonged to either Ottoman or Habsburg Empire culminated in 1908, when one of the empires declared Bosnia and Herzegovina their territory.

Intellectuals became a part of the initiative to make the Serbian claims of Bosnia internationally known. Jovan Cvijić participated in this with his scholarly work. On the other hand, Jovan Žujović became a part of the diplomatic initiative. On 4 October 1908 Žujović was offered a diplomatic position in London. He declined it for private reasons, saying that there are people who are more qualified and willing to take it, among whom he named Jovan Cvijić as a possible candidate for that position. His refusal of this appointment did not mean that he was absent from diplomatic initiative.¹⁶²

¹⁶¹ Živojinović, *Petar I*, II, 342-352.

¹⁶² Žujović, *Dnevnik I*, 150-151.

Žujović was chosen to go together with a delegation to Russia whose goal was to find a way to alleviate the consequences of the annexation. Together with Prince Đorđe and Nikola Pašić, they discussed with Count Alexander Izvolsky,¹⁶³ Russian Minister of Foreign Affairs, possible diplomatic solutions for the crisis. In a conversation with them Žujović expressed an opinion that Serbia is in a position that it has to risk conflict, hoping that Bosnian people would start an insurrection. In the discussion, they addressed the issues of Serbia's pretensions to Bosnia, Sandžak, and Macedonia, where Žujović represented official Serbia's claims towards these regions.¹⁶⁴ During these negotiations, Prince Đorđe had an explicit order not to exert any inflammatory rhetoric. However, despite clear instructions, he made explicitly aggressive public statements which argued for war. This damaged diplomatic negotiations of Serbia.¹⁶⁵

On 10 December 1908 Milovan Milovanović was getting ready to resign his post as the Minister of Foreign Affairs and suggested Žujović to take his office. Pašić was the proponent of the same idea. As many times before, Žujović declined the offer. He believed that Milovanović's policy was good and that he would not deviate from it if he was the minister. At the same time, it is understandable why he did not feel at ease with taking that ministry at the moment of such international crisis. Pašić and the Radical Party wanted to replace their own minister, Milovanović, with Žujović, who, with his party colleagues, offered his support to Milovanović.¹⁶⁶

One of the ideas was that this even could be used as an opportunity to take the Sandžak region from the Ottoman Empire. Žujović shared the opinion with most of the Serbian politicians that Montenegro and Serbia should divide Sandžak between

163 Christopher Clark, *The Sleepwalkers: How Europe Went to War in 1914* (New York: Harper Collins, 2012), 35-36. Apparently, the annexation was Izvolsky's idea. He even privately forewarned the Serbian government that Russian government won't contest the annexation.

164 Žujović, *Dnevnik I*, 158-161. Sundhausen, *Istorija Srbije*, 234-235.

165 Živojinović, *Petar I*, II, 220-221.

166 Žujović, *Dnevnik I*, 158-161.

themselves. Such deliberations about Sandžak were common in 1908 and consequently led to the division of Sandžak in 1913, after the First Balkan War. However, they were afraid that if they enter Sandžak, Bulgaria would enter and claim Macedonia. Furthermore, one of the decade long dreams of Serbian intellectuals was the aspiration towards the sea coast and politicians considered if any of the compensations for Bosnia could involve access to sea. Situation was such that the politicians seriously considered war with the Ottoman Empire.¹⁶⁷

After the Bosnian crisis was over and Serbian government backed down with its claims, a new crisis emerged, this time at home. To no avail to all the pleads, the heir continued with his reckless behaviour, which ultimately led to a murder. The investigation of the death of the prince's servant Kolaković showed that he was beaten to death by Prince Đorđe. The public outcry forced him to sign abdication from the position of the official heir of the throne, which was then transferred to his younger brother Aleksandar. In years that followed, Đorđe attempted to find a way to revoke his resignation and become the heir again. Nonetheless, with his behaviour he managed to create a considerable number of enemies. His father detested him and his brother formed a camarilla around him which contained a number of officers previously associated with the conspiracy.¹⁶⁸

While Žujović never expressed any sign of loyalty or affection towards Prince Đorđe, he recorded several private conversations he had with him. After 1909, when Đorđe lost most of his political influence. The prince felt he could confide in Žujović and ask for his opinion. Inadvertently, Žujović turned into Prince's defender in the eyes of the public. When the government was discussing means to punish Prince Đorđe for his

¹⁶⁷ Žujović, *Dnevnik I*, 158-161.

¹⁶⁸ Živojinović, *Petar I*, II, 353-361.

behaviour, Žujović stood strongly against exile, giving his own experience as an example:

I still feel terror when I recall my own exile. I will confide into you one of my intimate feelings: then I made my inner sentence for King Aleksandar: the man who exiled me from my fatherland has to be removed from the throne, dead or alive. I do not have a soul of a villain, and neither have I been involved in the murder of King Aleksandar; but even though he is dead now, I still cannot forgive him for the thought that went through my head during the exile.¹⁶⁹

As a former exile, Žujović expressed a lot of understanding for the discarded prince. Although he generally agreed that Đorđe's behaviour required some form of punishment, he was against his exile. In the same way he found an ally in Queen Natalija, being at her side during her forceful expulsion from the country in 1891, he stood in protection of Prince Đorđe. Even though he did not show any positive views of the prince, he still felt the need to defend him. His allies among the members of both dynasties were their outcasts.¹⁷⁰

3.2.6. The Reluctant Politician

In October 1909 Žujović became the Minister of Education and Church Affairs in the new coalition government of the two Radical parties. He remained in this position until 16 August 1910, when he resigned the position. In a long letter of resignation, Žujović expressed his dissatisfaction over bad conditions for culture in Serbia. Instead of helping him find buildings for the National Library, Serbian Royal Academy, museums, and schools, the state obstructed his effort. One of the biggest issues of that time was the ownership of the land on which the new buildings were supposed to rise. Although initially that land was owned by the state, at some point it was declared a property of the

¹⁶⁹ Žujović, *Dnevnik* I, 191.

¹⁷⁰ Ibid., 191-192.

Belgrade municipality, which prevented the ministry from building the state owned institutions on city property. Žujović was infuriated by the lack of understanding for the development of cultural and scientific institutions. Furthermore, he complained that he lost all the authority over school teachers because the State Council was regularly overturning his decisions, even though that was not their responsibility.¹⁷¹

For a short while, in July and August 1910, Žujović was an interim Minister of Foreign Affairs. His stay in this office was dissatisfying and part of his resignation involved circumstances that occurred in that ministry while he was in charge. There is a preserved a draft version of his resignation which contains a segment which he later removed from the final version. In that segment he elaborated on attempts of the Serbian Consulate in Istanbul to protect a Serbian citizen from being expedited by Ottoman authorities back to Serbia. When he learned that this citizen was charged for murder and wanted by the police in Serbia, he questioned the motives of the consulate and immediately informed the Ministry of Internal affairs and issued orders to the consulate to stop protecting that man. He felt frustrated by irresponsible and disorganised manner in which the government worked. This section of his resignation was probably removed in order to avoid public accusations against the government and the ministry that they were protecting fugitives.¹⁷²

After he left the ministerial positions, Žujović was officially considered a minister on the disposal to the government. At first he was offered to take a diplomatic appointment in a consulate abroad.¹⁷³ By November he was tired of politics and wished for a peaceful working environment of academia. In a conversation with his party

171 AS, Fund Jovan Žujović, JŽ-3, Resignation of Jovan Žujović on the position of Minister of Education and Church Affairs, 16 October 1910.

172 AS, Fund Jovan Žujović, JŽ-56/52, Draft version of the resignation of Jovan Žujović.

173 Žujović, *Dnevnik* I, 204.

colleague Ljubomir Stojanović, he expressed his exasperation over his political involvement:

My career was in the University, and since it was interrupted, I feel broken. I was appointed to the [State] Council without being asked. I was not able to find my space in the Council, once the space opened at the University. I entered the Ministry of Education under the pressure of [my] party. Even You scatted from the Ministry of Education too with a cry: not to ever step inside the Ministry of Education. - I am not well prepared for diplomacy, and it is too late to get trained. If I entered the Ministry, according to party needs, there is no need for me to be in the embassy. Beside that, I cannot go anywhere abroad to represent our politic, until that politic is determined.¹⁷⁴

On 10 November 1910 he visited Nikola Pašić, at the time the Prime Minister and demanded a retirement from him. Žujović recorded that his brother Jevrem told him that he disproved his decision for retirement. Jevrem did not believe that Jovan Žujović was capable of returning back to geology. He was not in a position to return to the University, because his seat was already filled. At the same time offers for appointments in diplomatic mission abroad kept coming, but Žujović was determined he wants to go to retirement. Paris, Vienna, Constantinople – these were all offers for his appointments, but he still declined to go. Even though he lacked knowledge of a trained diplomat, he was considered qualified for his knowledge of languages and experience as a minister.¹⁷⁵

This feeling was not new. Žujović had expressed it in the past. He was alternating between his academic career, his political career, and the work on his estate. In that process, he had to frequently combine roles. He was lured by politics and even though he proclaimed occasionally that he was not willing to get involved, he kept going and actively participated in some of the most difficult periods of the Balkan history. From 1901 he was more involved in politics than in science, but his activities kept overlapping, as he was not willing to abandon neither of the assignments. For this story, it is interesting how he managed to integrate science and politics together.

¹⁷⁴ Ibid., 205.

¹⁷⁵ Ibid., 207-209.

Žujović became the professor in 1905, as one of the original eight professors of the University. In May 1905 he became the Minister of Education and his position at the University was first filled by Petar S. Pavlović, and from October 1905 by Svetolik Radovanović, who returned from his ministerial duty.¹⁷⁶ In December of 1905 he had to resign his position of the Secretary of the Serbian Royal Academy, because he had to go on a medical leave to Abbazia (Opatija). Because he already spent two months there in the previous year, he did not want to leave the post unattended.¹⁷⁷ Žujović's was known in public for being half-heartedly involved in politics. His frequent refusals to take political position and eagerness to resign from them made him a reputation of a hesitant politician who was avoiding responsibility. In 1906, after Žujović resigned from his ministerial duties, Vladan Đorđević,¹⁷⁸ made a cynical comment that Jovan Žujović used the issue with the conspirators to get rid of his ministerial assignment and go to Abbazia (Opatija) to rest.¹⁷⁹

After he resigned at the position of Minister of Foreign Affairs at the end of 1905, Žujović returned to the University for only a short while. In the previous chapter I addressed the issue with Professor Lozanić who was returned back to the Grand School with an increase in salary which was at the level of a State Councillor, which was at the time forbidden by the law. In the case of Žujović's come back in early 1906, he made an arrangement in which he was officially a minister at the disposal to the state, while he was teaching at the University for free.¹⁸⁰ In agreement with the Faculty of Philosophy (actually with Svetolik Radovanović) he taught a course in geology. Nonetheless, there

176 AS, Fund Jovan Žujović, JŽ-40/66-67. Jovan Žujović academic diary. Entries for 1905.

177 AS, Fund Jovan Žujović, JŽ-129. Letter from Jovan Žujović to Serbian Royal Academy, 16 December 1905.

178 He was the Prime Minister of the government between 1897 and 1900. During his time Žujović was sent into exile.

179 Živojinović, *Petar I*, II, 267.

180 AS, Fund Jovan Žujović, JŽ-5, Certificate of the Ministry of Education and Church Affairs, 12 July 1906.

was no place for him in the budget of the faculty, he agreed to teach for free. On the long run it did not matter to him, as long he had an opportunity to teach.¹⁸¹

In between science, politics, and agriculture Žujović had to stretch his time plans in order to accommodate all. Being engaged in politics made the time dedicated to science suffer. In 1906, Jaša Prodanović, his party colleague, invited him to join the meeting of the Independent Radical Party in order to discuss some important issues. However, Žujović declined the participation with an explanation that he needs to participate the session of the Geological Society. Because Jovan Žujović did not come, Prodanović protested. The subsequent Žujović's explanation was that the club of the Independent Radicals met every day, saying that he was only one of the fifty participants¹⁸² in their discussions. At the same time, the Geological Society gathered once a month and he was regularly one of the four or five participants in the discussion. This made the priority in favour of the scientific society.¹⁸³

This often led to frustration for Žujović. When Milovan Milovanović offered him in October 1908 to be a state representative in London, he told him that if it turns out that he does not like the job or the climate, he can withdraw from it later.¹⁸⁴ Ljubomir Stojanović told him that he had to accept this offer because he had considerably lost his *Pflichtgefühl*. This comment angered Žujović: "This is not true. I lost *Pflicht*, job, object of living. For several years already I work without enthusiasm a thing that is not for me, and of course I cannot demonstrate any diligence. I lost my goal before, and now I am doing this new thing."¹⁸⁵

181 AS, Fund Jovan Žujović, JŽ-40/67-68. Jovan Žujović academic diary. Entries for 1906 and 1907.

182 Ljubomir Stojanović corrected him and said it was forty seven.

183 AS, Fund Jovan Žujović, JŽ-207, Letter of Jaša Prodanović to Jovan Žujović, 10 November 1906, and the subsequent note of Jovan Žujović from 11 November 1906.

184 Žujović, *Dnevnik* I, 150.

185 Ibid.

In the light of such feelings he expressed in 1906 and 1908, we can better understand the motivation behind his request for retirement in 1910. Even though his interest in politics was strong since his short venture in Zurich, he chose a different path and his primary interest was in science. Nevertheless, the itch to say precisely what he thinks about political issues troubled him for years. Even though he publicly tried to define himself as an apolitical person, focused solely on science and his estate, his demeanour was of someone intricately connected with the highest circles of power. He shared family ties with some of the most powerful people in the country and was in proximity to members of the royal family. While his openly socialist affiliation by the end of the 1890s got transformed into what he called *radical democracy*, the effect it produced on the regime of King Aleksandar was strong enough to be considered an opponent of the regime. This “apolitical” attitude got him into exile, which ultimately excluded him from the academic community.

He did not make recollections about what happened in 1901 that made him enter political life, so it is uncertain what made him finally join the Radical Party and compete for the position of senator. From 1901 his involvement in politics became open and he was actively engaged as an opposition senator. With the change of the regime he considered that it was time to withdraw from politics, but, as he recalled, he was elected a member of State Council without being asked. Eventually, the plan to withdraw from politics got scrapped and his engagement became stronger than before. These hesitations and desire to fall back and enjoy a peaceful scientific life reappeared every now and then. However, it cannot be said that he did not want political engagement, because he continued taking assignments and became a minister on three occasions. After all, he was one of the leaders of the Independent Radical Party and his disdain for politics should not be taken too seriously. Members of his party considered him highly qualified for many

political duties, even though he never had any political or diplomatic training. Being an expert in geology and petrography, it is understandable he did not feel at ease with things he did not know. Stojanović's accusation that Žujović lost his *Pflichtgefühl* could shed some light on the reasons for which Žujović entered politics in the first place. Despite what Stojanović said, Žujović did have a sense of duty, as would his activities much later, during the First World War show. His exasperation over his inability to control things during his ministerial assignments stemmed from his sincere desire to responsibly conduct his duty. The letters of resignation reveal his feeling of indignation over the immutable lack of responsibility and organisation in state affairs.

Notwithstanding his sense of duty, there was one feeling which Žujović himself did not acknowledge, which was emanating from his memoirs. Vladan Đorđević briefly touched upon it with his comment on the easiness with which Žujović resigned from the Ministry of Foreign Affairs in 1905. Žujović was afraid of responsibility. Even though he had a lot of curiosity for politics, and enjoyed challenging the people in power, he did not want to compromise himself through political action. Politics were not considered an honest profession. Science seemed like a safer place where he was certain of his expertise and qualifications. One conversation he had with Prince Đorđe indicates that Žujović's was known for his unease with responsibility. Although, we cannot take Žujović's testimony of the conversation as accurate, mostly because it was set down in a direct speech form, I believe that there is some credibility that can be drawn from it. Đorđe criticised Jovan Žujović's character for being reckless, hesitating, indifferent, distrustful, lacking persistence, and afraid of critique and responsibility. "You are afraid of success. Even in science you are escaping from it; I believe that you would escape even from a scientific research, if you would notice that it is leading you to a great discovery."¹⁸⁶ In

¹⁸⁶ Žujović, *Dnevnik II*, 47.

his defence, Žujović said that he wanted to work for the society and contribute. When he felt that he was not contributing, he was withdrawing from the society. Hence, his inconsistency. He claimed that his conscience did not let him continue.¹⁸⁷

The new faze in which Žujović was withdrawing from state responsibilities began with his resignation from the position of minister in November 1910 and his subsequent demand for retirement in December. Pašić delayed his retirement and kept him waiting for two years. However, this was another half a step back, as Žujović was still participating the party politics. Independent Radical Party was falling apart because of the inner divisions regarding their involvement in the government. At one point, one of his colleagues suggested to Žujović that he should found his own party and that he would find a lot of dissatisfied Independent Radicals who would join him. He replied that he would have preferred to be a professor of Geology.¹⁸⁸

Eventually, the government under Milovanović responded positively to his demand and the retirement was officially announced on 15 February 1912.¹⁸⁹ Žujović's life at that moment consisted mostly of teaching at the University and the village life on his estate. He was still active member of his party, but he was declining the offers to be a candidate for the Assembly during elections. Then came the war. On 25 September 1912 (8 October, Gregorian calendar) the First Balkan War started and found Jovan Žujović dissatisfied again with his role in the society. "Since the beginning of the war I feel shame for not doing something more."¹⁹⁰ At the time when the country needed it, he was "only" teaching and organising labour on his estate. He demanded from the army for any duty could assign him to, but he was not considered capable for any war duties. Having

¹⁸⁷ Ibid.

¹⁸⁸ Žujović, *Dnevnik* I, 229. Actually, he was teaching from 1911 again and he did found a new party in 1920.

¹⁸⁹ AS, Fund Jovan Žujović, JŽ-301, Retirement decree, 15 February 1912. Decree was officially signed on 11 February, but announced later.

¹⁹⁰ Žujović, *Dnevnik* II, 6.

no other idea what would he do, Žujović decided to offer money to the government, hoping that this could help the war effort.¹⁹¹

However, the war and the absence of civic duty gave him the right kind of duty he wanted in science. The newly conquered territories were still unexplored and he finally had a scientific project to work on. This did not last for long, as World War I started and Žujović abandoned his scientific projects again and took another diplomatic duty again.

3.3. Conclusion

Political affiliations of that time had more to do with personal acquaintanceship than with political ideology. Academics shared the same space with politicians and in the communication between them they shared views about the most important issues. Their education made them qualified in the eyes of the public opinion for the state assignments. At the same time, the shared apolitical stance gave the scholars a reputation of reliable non-partisan actors. Pavlović and Žujović were born in families who had strong ties with the current political elites. However, men such as Cvijić and Radovanović entered those circles through their academic engagements and marriage. Considering that the number of people available for civic duties was limited, it should not be surprising that professors at the Grand School and University were offered ministerial positions and diplomatic missions. This became a practice and earth scientists were not an exception to it.

The small environment in which the political and academic life occurred created a situation in which secrecy behind decision making and practices was resolved through background channels of information management. Such a situation enabled gossip and rumours to become one of the dominant means of transferring information. Not only that

¹⁹¹ Ibid., 6-8.

it served the purpose of information gathering, but it also served as an instrument for political propagation of individual's interests. Žujović's diaries reveal the means through which these background channels of communication functioned. In these informal networks of information exchange the powerless used gossip and rumours to preserve their position, establish inner hierarchy, and battle the oppression that was coming from the higher centres of power. While the peasants managed to hinder the plans for land acquisition of the local landowners, in a similar manner academia resisted the pressure of the central authorities that meddled in academic appointments and funding of the institutions. Because of the perpetual interaction between political and academic fields, scholars and politicians were frequently occupying the same space. The power dynamics of the political sphere affected the development of academic circles as the former frequently felt the urge to recruit the latter for its purposes. The members of the academic circles were not innocent in this power struggle, as they gained opportunities to advance their own goals, negotiate over resources and open new employments from the state budget. The significance of political engagement of scholars thus becomes apparent as such appointments enabled access and personal contacts with persons in the highest political positions.

The success of Žujović's project in establishing a functional scholarly circle that oriented towards earth sciences largely depended on his good connections with members of the elites. Considering that his approach to political alliances lacked a pragmatic attitude and that out of principle he regularly found himself aligned with the losing side in the political struggle, he was regularly trying to assume an apolitical pretence of a disenchanted intellectual. Despite being in disagreement with people in power, Žujović had a lot of political capital to get appointed to high functions. While Radovanović and Cvijić managed to convert their academic capital to political capital, their initial position,

due to lack of familial ties, was weaker. Nevertheless, the apolitical stance and engagement in politics came hand in hand for scholars, the latter usually happened due to personal connections with the members of the political elite rather than due to active political activities. For this reason, Žujović amassed a large amount of political capital even though he was afraid of it and tried to evade responsibilities.

4. Imperial Earth Sciences in the Balkans

4.1. On the shores of the “great German sea”

Since the time of Ami Boué and his journeys around the Balkan Peninsula, the centre of all knowledge about the Peninsula was in Vienna. For several decades all the knowledge about the land, the mineral riches, and about the mines of the country depended on that external centre. Ami Boué, along with his collaborator, Visquenel, provided the groundwork for future research on the Balkan Peninsula, and from there on, Austrian scholars occasionally ventured into the region and published reports on what they had seen. For Austrian and German scholars, this remained a foreign land. Too familiar to the rest of the European land, it was not sufficiently different to be considered exotic, and due to its small size, it remained only a stopping point on their way to the “Orient.” Travellers who occasionally traversed the small Serbian principality usually examined interesting features already noted by previous travellers and continued to other regions of the Ottoman Empire. This region was ideal for expeditions which sought new discoveries. Franz Toula even called the Balkans a true geological *terra incognita*. Surveyors had an opportunity to discover previously unexplored regions and achieve glory for themselves and their nations.¹

Because of the absence of any functioning laboratories in the principality, all the scholars examining the ores in Serbia had to rely on the expertise of Viennese earth

¹ Franz Toula, “Materialien zu einer Geologie der Balkanhalbinsel”, *Jahrbuch der k.k. Reichsanstalt*, vol. 33, no. 1 (1883): 61.

scientists. From the 1850s until the 1890s, they frequently sent samples to Vienna for analysis. For a long while, Boué's work on the geology of the Balkan Peninsula was the major source of authoritative knowledge. In 1869 Ferdinand von Hochstetter passed through the Balkan Peninsula, crossing the southern part of the territory that in the 1878 became part of Serbia. After him, Emil Tietze and Franz Toula completed several surveys in the 1870s and 1880s, making new observations about the land formations. Tietze explored the Majdanpek mines and their surroundings in north-eastern Serbia in 1870. Toula was in turn focused on the Timok valley and the area around Pirot, which was the area that was incorporated with Serbia only after 1878. During the 1870s scientists from the Geologische Reichsanstalt (GRA) in Vienna took over the leading role in the geological research of Balkan lands, including Serbia. Another representative of Habsburg scholarship who researched in Serbia was József Szabó, professor at the University of Budapest, who conducted three surveys during the 1870s, mostly searching for the trachytes, which was his particular focus of research. Several publications of Ferdinand von Hochstetter, Emil Tietze, József Szabó, and Franz Toula generated a new base for studies, which renewed the interest in the Balkans and built further on the works of Boué and Visquenel.²

- 2 Ferdinand von Hochstetter, "Die geologischen Verhältnisse des östlichen Theiles der europäischen Türkei: nebst einer geologischen Karte in Farbendruck" [Geological Conditions of the Eastern Parts of the European Turkey: Along with a Geological Map in Colour], *Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt* vol. 20 no. 3 (1870): 365-461; Idem, "Die geologischen Verhältnisse des östlichen Theiles der Europäischen Türkei" [Geological Conditions of the Eastern Parts of the European Turkey], *Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt* vol. 22 no. 4 (1872): 331-388. Emil Tietze, "Geologische Notizen aus dem nordöstlichen Serbien" [Geological Notices from the Northeastern Serbia], *Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt* vol. 20 no. 4 (1870): 567-600. Franz Toula, "Geologische Untersuchungen im westlichen Theile des Balkans und in den angrenzenden Gebieten. I. Kurze Uebersicht über die Reiserouten und die wichtigsten Resultate der Reise" [Geological Studies in the Western Parts of the Balkans and the Neighbouring Regions. 1. Short Overview over the Journey Route and the Important Results of the Journey], *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften Mathematisch-Naturwissenschaftliche* vol. I no. 72 (1875): 488-498; Idem, *Eine geologische Reise in den westlichen Balkan und in die benachbarten Gebiete: unternommen im Spätsommer 1875: topographische Schilderungen* [A Geological Journey in the West Balkans and the Neighbouring Regions: Undertaken in the Late Summer of 1875: Topographical Depiction], (Vienna: 1876); Idem, "Geologische Untersuchungen im westlichen Theile des Balkan und in den angrenzenden Gebieten: 3. Die sarmatischen Ablagerungen zwischen Donau und Timok" [Geological Studies in the Western Parts of

Viennese earth scientists were interested in a much wider scope than mere research of the Balkan Peninsula which extended far to the east and south, and Serbia definitely represented a small portion of their research interests. For example, during his career Hochstetter was researching in Russia the Ural, while Tietze explored Persia, Lycia and the Taurus Mountains, and Toula explored coast of the Sea of Marmara, Carpathian Mountains, and western Asia Minor. During the nineteenth century, many of the Habsburg scholars explored Asia Minor, Egypt, Syria, Palestine, Sinai, and Sudan.³ Even in the Balkans, their interest in Serbia was comparatively small. Karl Peters visited Dobruja in 1864. There was comparably more research in Bulgaria, where Tietze and Toula conducted most of their research. In 1875-76, Viennese geologists organised one of the biggest expeditions to the southern parts of the peninsula, with Melchior Neumayr, Alexander Bittner, Friedrich Teller, and Leo Burgerstein exploring regions around Chalkidiki, Olympus, Thessaly, and north Greece. After 1878, Austria-Hungary got Bosnia and Herzegovina into their possession, which spurred massive research of these areas that were now under control of the empire. In the decades following 1880, Greece, Montenegro, Albania, Bulgaria, Aegean islands, and Macedonia became subject of geological and geographical research of many Austrian scholars.⁴

Melchior Neumayr and Edmund von Mojsisovics founded a journal in 1882, *Beiträge zur Paläontologie Österreich-Ungarns und des Orients*, whose mission was to combine palaeontological research of their home country with that from the “Orient.” The scholars from the Habsburg Empire had enough material resources that they could

the Balkans and the Neighbouring Regions. 3. The Sarmatian Deposits between Danube and Timok], *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften Mathematisch-Naturwissenschaftliche* vol. I no. 75 (1877): 113-150; Szabó József, “Magyarország és Serbia néhány jelleges vulkáni közetének mikroskopi tanulmányozása” [Microscopical Study of Some Typical Volcanic Rocks in Hungary and Serbia], *Földtani közlöny*, vol. VI, no. 1 (1876): 1-15.

3 Alexander Tollmann, “Das geologische Wirken der Wiener Schule im osmanisch-türkischen Raum,” *Österreichische Osthefte* vol.38 Heft 3 (1996): 370.

4 Franz Toula, “Die im Bereiche der Balkan-Halbinsel geologisch untersuchten Routen,” *Mittheilungen der kais. königl. Geographischen Gesellschaft in Wien*, vol. 26 (1883): 28-31.

afford such expansion of focus. The Imperial Academy of Sciences (Kaiserliche Akademie der Wissenschaften) was in the late nineteenth century investing in various types of research in the lands towards the east: philology, history, archaeology, and geology were at the top of the list. Franz Toula stressed how essential the funding he received from the Academy was for his explorations of Bulgaria in 1875 and 1880. Eventually, the expansion of the research in the “Orient” led to the foundation of the *Gesellschaft zur Förderung der naturhistorischen Erforschung des Orients* in 1895, at the initiative of Theodore Fuchs, which promoted natural scientific research in these areas. This all made Vienna the centre of knowledge production in all natural-historical studies on the Balkan Peninsula.⁵

In that aspect, the Balkan Peninsula was still an insufficiently explored region whose natural history was still mostly unknown. For European scholars, this was a veritable *terra incognita*, and this quality of being insufficiently researched made it attractive for many scholars in the late nineteenth century. This was a time of great expansion of scientific research into unknown areas of the world. The regular supply of information that European scientific explorations provided for the scholars in the European centres of knowledge production was a means for both the scholars and the centres to establish their primacy in the specific fields of research. Expeditions to far reaches of the world were usually multidisciplinary, focused on gathering of samples and information about rocks, plants, animals, and peoples, that were later represented in the European museums, zoos, and botanical gardens. Since the mid-eighteenth century many of the European states recognised the practicality of investing in the reputation of their academic centres, and by the late nineteenth century, science became an instrument of imperial policies. Cook’s three expeditions and Joseph Banks’s scientific projects are

5 Alexander Tollmann, “Das geologische Wirken der Wiener Schule im osmanisch-türkischen Raum,” 363; Franz Toula, “Materialien zu einer Geologie der Balkanhalbinsel,” 61.

particularly paradigmatic as endeavours that served the imperial policies of Britain. These projects were inseparable from military and commercial endeavours, as scientific expeditions were usually accompanied by more pragmatic political and economic goals that drove European expansion in the late nineteenth century. Eventually, the accumulation of data from colonial enterprises was used as a demonstration of scientific achievements of British, French, German, Dutch or any other European scholarly institutions, and thus scientific research became a tool of legitimisation of the claims of cultural superiority. While unknown regions existed on the maps of many other continents, the Balkan Peninsula represented one such region within Europe itself, and thus represented a destination for potential new research.⁶

In recent decades, many studies have been made on colonial and imperial science, and also on scientific colonialism and scientific imperialism. Science was one of the instruments of European domination over the colonised peoples, and scientists participated in the construction and legitimisation of imperial policies that exerted military and economic domination over colonised lands. The employment of science for political purposes was a result of a growing belief in the “creed of science” in European educated circles, as Roy MacLeod has dubbed it. This was a conviction that science and technology demonstrated the triumph of progress and political and cultural superiority of European nations.⁷ Science thus became an instrument of imperial culture and of cultural imperialism. In the tension between the image of international cosmopolitan, objective

6 John Gascoigne, *Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution*, (Cambridge: Cambridge University Press, 1998), 169-178; Patrick Petitjean, “Science and the ‘Civilising Mission’: France and the Colonial Empire,” in *Science across the European Empires 1800-1950*, ed. Benedikt Stuchtey, (Oxford: Oxford University Press, 2005), 107-128; Sverker Sörlin, “Ordering the World for Europe: Science as Intelligence and Information As Seen from the Northern Periphery,” *Osiris*, vol. 15, Nature and Empire: Science and Colonial Enterprise (2000): 54-55.

7 Roy MacLeod, “The ‘Bankruptcy of Science’ Debate: The ‘Creed of Science’ and its Critics, 1885-1900”, in *The ‘Creed of Science’ in Victorian England*, by Roy M. MacLeod, (Aldershot: Ashgate, 2000), III, 1-22.

science as an ideal type, and the image of utilitarian and imperial science that served national and state goals, scientific mobilisation across the continents created networks of cooperation that functioned under both premises. The dynamics of centre and periphery relations between those who collect and create data in the field and those who process and synthesise them in the centre determined the power relations between the actors.⁸

Even in countries that were not colonial powers, such as Sweden and Denmark, information gathering through organisation or participation in scientific expeditions was recognised as valuable currency in the international scientific market. Sverker Sörlin noted in his analysis of the eighteenth century research endeavours of Swedish and Danish scientists that scientific results were valuable goods and that their international trade determined a great deal of country's international reputation. He demonstrated how Karl Linnaeus mobilised a network of his acolytes who served as scientific experts on many research expeditions conducted by other countries. While working and publishing as experts for other countries, his students were supposed to demonstrate the expertise of Swedish science. At the same time, they had a mission to send the gathered information and specimens, whenever possible, back to Sweden, for the benefit of their home country. Sörlin emphasized how Linnaeus envisioned Sweden and Uppsala as centres of international scientific production that would exemplify the greatness of Swedish nation. The aim was patriotic and was supposed to compensate for the loss of Swedish imperial power in the previous century. In this way, the Linnaean enterprise was not in pursuit of territories, nor natural resources, but attempted to use science as a substitute for imperial power. The takeaway from this study on Swedish and Danish scientific expeditions, applied to the scientific relations between Austria-Hungary and Serbia, would be that

⁸ Benedikt Stuchtey, "Introduction: Towards a Comparative History of Science and Tropical Medicine in Imperial Cultures since 1800," in *Science across the European Empires 1800-1950*, ed. Benedikt Stuchtey, 16-21, (Oxford: Oxford University Press, 2005).

scientific research was employed as a means for constructing national consciousness. The goal was to raise the symbolic value of information gathering and represent it as a demonstration by national scholarly circles of civilisational achievement in the eyes of international audience.⁹

4.1.1. The Earliest Earth Sciences in Serbia

When Jovan Žujović returned from Paris in 1880, his work initially largely depended on the expertise of Viennese scholars. The majority of written work on the region originated elsewhere, outside Serbia, and the closest reliable laboratory for mineral analysis was in Vienna. He started building his own research of the Balkans by relying on the studies made in Vienna. For almost a decade, he was the only scholar in Serbia who researched the earth, and the development of institutional grounds for earth sciences depended largely on his initiative.

Despite some work of Josif Pančić, his mentor and colleague, Žujović was almost alone in his field and during the next ten years worked on finding an adequate network of collaborators in Serbia who were interested in knowledge about the earth. In the early years, qualified experts could have only been found abroad. In Serbia, Žujović was trying to mobilize high school teachers and his students to conduct research in their neighbouring regions, make excursions and gather specimens. Until 1889, when Sava Urošević returned from Paris, the entire institutional establishment of earth sciences at the Grand School depended on Žujović's initiative. His starting point was to examine the

9 Sörlin, 61-68.

work done by Boué, Vicquesnel, Hochstetter, Tietze, and Toula, and then build further upon their work.

His appointment to the position of lecturer of geology and mineralogy at the Grand School made him the chief authority on the issues of earth knowledge in the country even though he was still young and inexperienced, lacking collaborators and mentors who would help him in his work. The entire initiative on the development of the study groups, field work, and laboratory work depended on his vision of future development of research and his ability to recruit students who would work with him. Furthermore, his face was supposed to represent the entire state of affairs of earth sciences in front of the international audience. From the very beginning, it was a matter of reputation and prestige.

His inaugural address at the Grand School, held on 16 December 1880, contained his first ideas about the future development of earth sciences in Serbia, the development of a national school of geology, and its place in the international network of scholars. In this initial stage, Žujović wanted to assert Serbia's place among the civilized countries. Serbian scholars had long felt uncomfortable over the Ottoman past of their country, and they strove to prove that Serbia belonged among the European countries. It became a matter of national pride.

Dear students, do not ever forget that Serbia is a civilized country not only because there is constitutional rule governing and because it is decorated with telegraphic wires, but as well because it can demonstrate to the foreign world its expert scholars in botany, chemistry, mathematics, history, philology, etc. We should work to make its position among cultured countries more respectable than it is now.

I have the impression that even in a small nation a strong class of serious scholars could develop, and I believe that a nation with such a class is capable of preserving its independence and preserving its future, even if comes to a clash with a greater and more cultured nation.¹⁰

10 Jovan Žujović, *Pristupno predavanje Jovana Žujovića, suplenta Velike škole, držano 16. decembra 1880* [Accession Lecture of Jovan Žujović, the Suplent of the Grand School, Held on 16 December 1880] Reprinted from *Prosvetni Glasnik* (Belgrade: 1881), 20.

Žujović here revealed one of the most common fears of Serbian intellectuals of that era – that Serbia did not belong to the ranks of civilized European nations and that it would be overpowered by some foreign state which would not dominate Serbia only in matters of military power and politics, but subdue it in matters of culture as well. Regarding his field of expertise, he was concerned that foreign scholars would take over the geological and petrographical research on Serbia. Considering that most of the relevant research on Serbia at that time was in Vienna, as a centre of calculation for all the knowledge about the Balkans, his concern about “a clash with a greater and more cultured nation” was most likely a reference to the Habsburg Empire. The political aspirations of its neighbour were of considerable interest to the Serbian intellectual elite, particularly after 1878, when Serbia gained independence from the Ottoman Empire, and Austria-Hungary gained control over Bosnia and Herzegovina, and those two countries signed a secret treaty which placed Serbia under the sphere of influence of the Habsburg Empire. The politics of King Milan Obrenović favoured a good relationship with Austria-Hungary and relied on its diplomatic and financial assistance. Though Serbian public opinion was not aware of these close political and diplomatic ties, the influence and interference of the northwestern neighbour was observable, and intellectuals in Serbia feared that, having managed to gain independence from the Ottomans, they would gain another foreign ruler in the Habsburgs.

From the scientific perspective, the domination of the more advanced neighbour had to be prevented. As a young scholar largely responsible for earth sciences in Serbia, Jovan Žujović had to make decisions that would protect his own sphere of expertise from foreign incursions:

Let us all rally around the assignment we have been given as the Serbian intelligentsia. Let us all do whatever we can, follow our inclinations and abilities. - We, geologists, let us wander through our wonderful fatherland, look around the surface and go deep into the depths of the earth that bears us. Let us examine how the landscape of our country of

origin changed through various epochs of the earth's development, when and what formed and happened in it, when certain [features] rose and what they contain, what seas covered this land and where were their borders, and what sorts of animals lived there [...] Before the Sava and Danube appeared to reach its [Balkan's] foot, the waves of a Tertiary sea broke on its shores, like even today the waves of the great German sea are rushing to flood all of the Balkan peoples. Just as our heart is determining our patriotic duty to suppress this onslaught on our country, so the science demands from us to investigate what was happening here before us.¹¹

The metaphor of the “great German sea” flooding the Balkan peoples was not accidental. Žujović connected the perceived threat of the Austrian and German scholarship with the geological and palaeontological research in the Balkans. The transformation of the argument from purely scientific observations about the geological past of the land into the encroachment of German culture into the area of the Balkan peoples demonstrates the level of ideological connectedness between science, culture, and politics. Consequently, becoming the first to discover unknown features of the land became a matter of priority. Foreigners had been traversing the land and discovering new geological features since 1836, and Serbian scholars had little to contribute until the 1880s. Žujović was well aware that all the knowledge of geology, geography, palaeontology, mineralogy, and petrography of Serbian lands was gathered, sorted, stored, and presented elsewhere, predominantly in the Austrian and German scholarly centres.

The only means through which he saw the way to counter the “great German sea” was through hard work and cooperation. Diligence was the tool with which Serbian scholars could compete and present their work to foreign scholars.

With every step in our homeland we can find objects worthy of our attention; and everything we correctly note and examine here will be received with interest in the foreign scientific world, which considers Serbia an unknown land.

Let us work diligently, because work is a moral duty of every man, let us develop the notion of social solidarity and [experience] the greatest satisfaction for everyone accustomed to work. Even though the circumstances for scientific work [in Serbia] are not

11 Ibid., 20-21.

favourable, one can find excellent examples on how we can achieve great results with energy and patience.¹²

In his vision of scientific work in 1880, it was essential presenting results to an international audience. It was a matter of virtue, diligence, and patriotism. In that respect, cooperation with Viennese scholars was beneficial only if the Serbian academics could prove their independence from them. Žujović was well aware that Vienna was the centre of calculation and held the primacy on research of the Balkans, admitting that he largely depended on their results and their good will to help him. At the same time they were his main allies and main competitors.

4.1.2. Serbia's Dark Continent

While the intellectual preoccupation with the national goals was mostly concerned with the irredentist speculations about the size and the composition of the Serbian population, concerns about the land were gradually gaining political attention. Learned men in Serbia were aware of possible economic benefits of geological land surveys since the time of Herder's and Boue's expeditions. From scientific-methodological perspectives, foreign surveyors had no reasons to treat the territory of the Serbian principality separately from the rest of the Balkan Peninsula. However, for Serbian intellectuals the apprehension of economic benefits which could be located within the borders urged them to find means to secure the knowledge and gain independence from foreign researchers. For this reason, motivating students to study new topics became one of the primary goals of the intelligentsia.

¹² Ibid., 21-22.

In January 1891 Jovan Žujović drafted notes for the last lecture of his course on geology at the Grand School. In an attempt to motivate his students to continue with geological pursuits, he reminded them of “the moral obligations towards Serbian science,” stating:

You have trained yourself in the geology of Serbia and seen that our understanding of it is full of empty spaces (*puno proplanaka i praznine*). In each of the lectures you observed me putting question marks on this or that thing. Would you permit these emptinesses? Or would you surrender yourself to the pleasure one experiences after discovering an answer to a puzzling question?

Making a detailed geological map of Serbia is still in the draft phase. As with other scientific endeavours, this one – unfortunately – won’t be finished before you step into the field of work. You can improve it if you have the will for it.

The expansion of the National Museum is planned with the establishment of the Geological Museum of the Balkan Peninsula, whose modest inception can be found in this room above us.

Even if you do not consider dedicating yourself to geology, you can considerably help the quicker and better compilation of [the collection of] that Museum. Because wherever your service may take you, you will find objects worthy of inclusion.

Do not forget, gentlemen, the Serbian “dark continent,” which expects light from Serbia. Its land belongs to the sphere of labour of Serbian geologists. This was my deep conviction, when I dared to bring this pretentious program of “Geological Annals of the Balkan Peninsula” into the Serbian scientific literature. I dared because I had faith in one part of the youth, in one part of my students. I hope that within your ranks [we] will find someone who will strengthen this part. “Geological Annals” will make the space for our scientific works; later you will maybe wish to stand under some taller banners. So, I wish you luck. My “Geological Annals” will be happy if they make out of you the candidates who will be distinguished members of the Serbian university and Serbian Academy.¹³

The reference to “dark continent” in his speech, while used as an allusion of distant exotic lands from which European powers extracted resources, actually pertained to much closer territories. Žujović’s involvement in official state politics, at one point even as a Minister of Foreign Affairs, contributed to the ongoing overlap of political and scholarly fields. In the interplay between the political goals, independence from Ottoman rule and building of the state structure, and intellectual goals, the idea of national unification and the promotion of education, ideas about national territory nested in questions about the land. The “empty spaces” to which Žujović referred, described the lack of systematic geological surveys and general absence of knowledge about the earth’s

13 AS. JŽ-39/2-3. Draft of a speech. January 1891.

structure within the kingdom. Nonetheless, he went a step further and instigated his audience to expand the notion of scientific sphere of influence from state territories to those claimed by the Serbian national program as being settled by Serbs. The “dark continent” whose “land belongs to the sphere of labour of Serbian geologists” was in his lecture a reference to the Balkan Peninsula.¹⁴

Žujović wanted to present the work in Serbia to an international audience. Reaching out for contacts and presenting them with findings from Serbia was only one means to do it. On the other hand, persuading foreign researchers to publish in Serbia was a more difficult task. One means to achieve this was the founding of the scientific journal – *Geological Annals of the Balkan Peninsula*, which became a starting point for the international representation of geological work in Serbia. Žujović’s ambitious attempt to present *Geological Annals of the Balkan Peninsula* as the primary scientific publication dealing with the peninsula was partly responding to Austria’s dominant position in the field, and partly resonating with contemporary political interests which were readily searching for means to delineate Serbian national territory. Austrian scholars were invited to publish in the journal, along with Bulgarian, Romanian, Croatian, German, and French scholars. The idea was to create an internationally recognised publication that would place Belgrade at the centre of knowledge production.

To begin with, his choice of the name of the journal and its subject of research was ambitious, considering that he was the only qualified scholar of earth sciences in Serbia at the time and the whole organisation relied on him. The Balkan Peninsula was a region that largely surpassed the borders of the small Serbian principality and as a territory represented a larger body of insufficiently researched lands. From the beginning, the publication contained a broad overview of the research on the Balkans. Instead of

¹⁴ Ibid.

focusing on research about Serbia's lands, the journal encompassed the Romanian, Bulgarian, Croatian and Dalmatian, Montenegrin, Bosnian, Macedonian, Greek, Albanian, and Turkish territories, thus exceeding the borders both of the Serbian Kingdom and of the Serbian national project. Serbian national ideology made claims over significant portions of the Balkans, intruding into Dalmatia, Bosnia, Albania, Macedonia, and Bulgaria, which were owned at the time both by the Ottoman and Habsburg Empires. Such imperial, or for that matter – irredentist aspirations of the nationalist intellectual elite of Serbia were quite common and definitely played a significant role in the formulation of the territorial interests of the Serbian scholars. However, even by the most expansionist standards of Serbian irredentism, and even by the ideas of the Yugoslav national project, the Balkan Peninsula was too big for any territorial aspirations of Serbia. Borders of scientific imperialism were different than nationalist, and were driven by different kinds of ambitions.

Expansion of the area of activities of Austrian geologists might have created serious concerns for Žujović, for the idea of scientific spheres of influence existed in Austria as well. In particular, Franz Toula, professor at the Technische Hochschule in Vienna, who had already established his scientific reputation by surveying the Serbian principality, had set ambitious goals for Austrian geology in 1890, which might have caused a stir among scholars in Belgrade:

Natural sciences (*Naturforschung*) do not ask about political boundaries, but they aim at peaceful conquest, without paying any particular attention to the distribution of the states. In this sense one can just as well talk about scientific spheres of interest (*wissenschaftlichen Interessensphäre*) of this or that nation, without having to worry about being misunderstood, and in this noble sense one can in the same way identify the location of the entire Balkan Peninsula within the natural scientific sphere of interest of Austria, which still extends itself far into Southeast, and as a matter of fact, it does not occur probably to anyone to doubt the validity of the claim that the Orient is the natural working space of the Austrian natural scientists and geographers, and if somewhere the principle of division of tasks is appropriate, then it is appropriate in respect to this

question. All those however, who operate in the attempt to prevent a fragmentation of our strengths in the world and who endeavour to direct attention purposefully to the natural operating area of the Austrian researchers, deserve for that reason nothing but gratitude.¹⁵

The explicit way in which both Žujović and Toula set the claims over the Balkan Peninsula suggests competing attitudes (political and epistemic) between the two academic centres. Toula saw the Orient as a natural working environment of the Austrian scholars and argued for “peaceful conquest” through scientific research. The idea of scientific spheres of interests existed both in Serbia and Austria, delineating the same unresearched areas in the Balkans as objects of scholarly competition. For Jovan Žujović, cooperation with Viennese scholars was crucial in the establishment of geological practices in Serbia. In some of the first issues of the *Geological Annals* he published translations of Boué's and Toula's works on Serbia. Cooperation with Toula became one of the crucial elements in the affirmation of the *Geological Annals of the Balkan Peninsula*, as the Viennese professor was one of the first contributors with his articles.¹⁶

From the perspective of the movement for national revival, the reliance on foreign knowledge about their own land was not perceived in a favourable light by Serbian intellectuals, and it was taken as a sign of deficiency. The review of the first, 1889 edition of the *Geological Annals of the Balkan Peninsula*, published in *Letopis Matice Srpske*, expressed regret that Serbian scholars were not more engaged in international endeavours undertaken in Serbian lands:

As supporters of progress we have to sincerely rejoice at all those scientific, wonderful and useful examinations which were recently made in Serbian lands and in the Balkans in

15 Franz Toula, “Reisen und geologische Untersuchungen in Bulgarien,” *Schriften des Vereines zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien*, vol. 30 (1890), 3f, quoted from Tollmann, “Das geologische Wirken der Wiener Schule,” 365.

16 Franz Toula, “Pregled formacija na centralnom Balkanu i u severnom mu podgorju” [An Overview of Formations in the Central Balkans and its Northern Foothills], in *Geološki anali Balkanskog poluostrva*, vol.1 no.1 (1889):131-143. German version of the same article was published in no. 2 of the same year. Idem, “Geološka građa Balkanskog poluostrva: Iz predavanja Profesora D[okto]ra F. Tule (Držanog 1891. god[ine] na IX. geograf[skom] skupu u Beču)” [Geological Structure of the Balkan Peninsula: From the Lecture of Professor Doctor F. Toula (Held 1891 at the 9th Geographical Assembly in Vienna)], in *Geološki anali Balkanskog poluostrva*, vol. 4 (1893): 1-12.

general, yet it was impossible not to feel hurt by the fact that our intellectuals (*umovi*) took almost no part in all that commendable work, because it was all a product of foreign effort and wisdom. The Balkan lands became a field of research where mostly foreign scientists gain glory, while we Serbs stand aside from all true endeavours, even though in Serbia among the experts (*pozvani*) there is an inherent belief that surrendering even one of the fields to the foreign power would lead to a complete conquest in all other fields.¹⁷

The voice against the “complete conquest” came from the other side of the border. The review was published in a scholarly journal from Novi Sad in Austria-Hungary. The duality of the Serbian cultural space performed a decisive role in the establishment of the Serbian intellectual circles, since from the very beginning of the national movement they functioned in an international community. The peculiar thing about this comment is that in the publication from Habsburg territory, the Austrian-Hungarian scientists were mostly referred to as “foreign scientists”, and the fear from the “complete conquest in all other fields,” was actually referring to the overwhelming contribution of the Habsburg geologists to the knowledge about the lands of Serbia. However, it is not surprising that a Serbian journal, albeit from Austria-Hungary, would side with the scientific aspirations of the Serbian principality. Austrian-Hungarian intellectual scene was far from being monolithic and allowed enough space for diversities in opinion. Growing national ideologies created heterogeneous intellectual movements that often clashed with the state advertised vision of the nation.

Toula's understanding of the “Orient” as a natural environment for Austrian geologists resonated with the overwhelming domination of Austrian academia over the knowledge of the region. It was a way for scholars from Austria-Hungary to establish a knowledge authority over a region which was still not taken by the growing colonial enterprises. Because of its position, the Balkan Peninsula could not have become a

17 Mita Petrović, “Geološki anali Balkanskog poluostrova. Uređuje J.M. Žujović. Knjiga I” [Geological Annals of the Balkan Peninsula. Edited by J.M. Žujović. Volume I], *Letopis Matice Srpske* 160 (1889): 116-117.

colony, but it was not recognised as a part of Europe either.¹⁸ If Austria-Hungary did not have colonies, Toula suggested that there was a means to establish a sphere of influence through science.¹⁹ Politically, the reign of Prince (and later King) Milan Obrenović was characterised by strong alignment of the Serbian principality with the Habsburg Empire. From the independence in 1878 until his abdication in 1888, Milan Obrenović maintained strong reliance on the Habsburgs. His son later tried to distance himself from them and establish closer relations with Russia, but the immediate neighbour of the Serbian Kingdom retained its influence. From an intellectual perspective, even patriotically oriented Serbian intellectuals could not deny that most of the scientific accomplishments in the Serbian territories (both imagined and real) were achieved by Austrian scholars. Mita Petrović, the author of the afore-quoted review, acknowledged that, while aware that any future scientific work in Serbia needed to rely on previous work performed by foreign scholars. The cooperation with them was essential for the establishment of Serbian science. Jovan Žujović knew that Franz Toula was the major authority when it came to knowledge about the geology of Serbia and worked on connecting him with the *Geological Annals of the Balkan Peninsula*.

From the outset, Žujović, as the main editor, included studies about the entire territory of the Balkan Peninsula. Even when they lacked scientific articles about the whole region, Žujović tried to compensate by publishing book reviews which covered books that dealt with the entire region. For example, the territory of Greece was not part of the research of Serbian scholars at the time, yet in the journal there was a considerable coverage of all the contemporary studies of the Greek territories. Overviews of the international literature were devised for the audience in Serbia, so they could keep track of what was happening abroad. For the international audience, Žujović devised a separate

18 Maria Todorova, *Imagining the Balkans*.

19 Toula, "Reisen und geologische Untersuchungen in Bulgarien," 365.

second volume of the *Geological Annals* in which they published articles in French and German language. This volume was designed for foreign authors who wanted to publish in it, and for Serbian scholars to translate and represent their own achievements to international audience.

4.1.3. Svetolik Radovanović at the University of Vienna

Žujović's work on the expansion of the network of scholars required more collaborators both from the inside and the outside. There was a good reason why Žujović's student Svetolik Radovanović went to the University of Vienna. He was supposed to establish contacts with the most eminent earth scientists who taught there. During his entire stay, he was reporting back enthusiastically to Žujović with details, and asking for instructions on how to proceed.²⁰ Radovanović found the environment in Vienna friendly and open for a foreign student, and he did not restrict his contacts to people from the university. Emile Tietze from the Geologische Reichsanstalt, and Franz Wähner from the Kaiserlich-Königliche Hof-Mineralien-Cabinet told him that their libraries were opened for him and that he could come any time he wanted and ask for any book. By wandering among these institutions, he managed to establish professional contacts with many Viennese earth scientists and gain access to various resources.²¹

Radovanović's doctoral thesis was a work on fossils in eastern regions of Serbia,²² under the guidance of Melchior Neumayr. He consulted extensively with Victor Uhlig, Emil Tietze, and, after Neumayr's death in 1890, with Wilhelm Waagen and Eduard Suess. Because Radovanović was tied with obligations in Vienna, he implored his former

20 AS, Fund Jovan Žujović, JŽ-212/1-3, 6-7. Letters of Svetolik Radovanović to Jovan Žujović, Vienna 12 November 1886, Vienna 2 February 1887.

21 AS, Fund Jovan Žujović, JŽ-212/14-17. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 7 May 1887.

22 He worked on specimens from Rgotina, Dobra, and Crnajka.

teacher to send him fossil specimens from the eastern Serbia to Vienna, so he could study them at the university in peace. Žujović actually preselected the specimens for his former student, which considerably facilitated Radovanović's research.²³ From there on, through laboratory work he conducted a comparative research with fossil specimens brought by Viennese palaeontologists from all over the world, which would have been unavailable to him in Belgrade.²⁴

Over time he focused on Lias fossils and narrowed his interest to the northeastern region where most mining took place. This region had been particularly interesting for geologists since the time of Herder and Boué, because there was an assumption that it was a continuation of the layers from the Banat and that the mountains in Serbia were a continuation of the Carpathians and therefore presumably had similar structure. To Radovanović's surprise, Neumayr was well acquainted with fossil assemblages in eastern Serbia and asked him about different localities. The type of Lias he was researching had already been documented in the Carpathians, Alps, Caucasus, and on the southern shore of the Caspian Sea in Persia.²⁵

The close cooperation between the University of Vienna and the Geologische Reichsanstalt provided Radovanović with an opportunity to spend a considerable amount of time in the laboratories of the GRA, in close proximity to Tietze and Toula. The research of both men was important for Radovanović, since he was in a position to compare his own specimens with Tietze's and Toula's. Toula surveyed the neighbouring Ottoman territories for several years, and his findings in Bulgaria on the eastern and southeastern borders of Serbia were particularly interesting for Radovanović. Because

23 AS, Fund Jovan Žujović, JŽ-212/4-5, 8-9. Letters of Svetolik Radovanović to Jovan Žujović, Vienna 15 January 1887, Vienna 15 February 1887.

24 AS, Fund Jovan Žujović, JŽ-212/1-3. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 12 November 1886.

25 AS, Fund Jovan Žujović, JŽ-212/18-19. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 27 June 1887.

Toula already examined sections from the Lias group in the valleys of Timok and Nišava, around Pirot and Bela Palanka, which after 1878 became part of Serbia, Radovanović tried to find correlation between Toula's findings and his from Rgotina.²⁶ Also of interest for comparison were the specimens Tietze brought from Banat in order to establish possible connections with the Banat layers and the Carpathians. However, due to unanticipated conflict between Emil Tietze and Dionýs Štúr, another geologist from GRA, he was not able to access them. Tietze and Štúr apparently had an argument over the interpretation of Lias in the Banat. In the aftermath of that debate Štúr locked all of those specimens and restricted access to the collection. Professor Viktor Uhlig told Radovanović that Štúr declared all of those specimens lost and that up to that moment nobody had the chance to seriously examine them. In any case, he was restricted access to the collection because of the interior conflicts within GRA, not because scientists at GRA felt such access should not be granted to him. This small episode could testify as well on how different motivations constituted dynamics of scientific research and that in this particular case sustaining of an Austrian sphere of interests was an inconsistent enterprise, even within the borders of the Austria-Hungary.²⁷

Neumayr was supportive of his student and offered in 1888 to publish the results of his research in the *Beitrage zur Paläontologie*. Because such publications required participation of artists who would draw sketches of the fossil specimens, in this case – new types of shells which Radovanović discovered, the printing was not affordable for this young student. Neumayr offered to pay for the artists and for printing by himself. Radovanović was grateful for such a generous offer, but when he got an offer from Žujović to print the same article in Belgrade, in the first volume of the *Geological*

²⁶ Ibid.

²⁷ AS, Fund Jovan Žujović, JŽ-212/36-37. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 6 May 1888 (Gregorian calendar).

Annales of the Balkan Peninsula, he changed his mind, declined Neumayr's offer, and decided to print that article in the new Serbian scientific journal. Besides Neumayr, Viktor Uhlig offered as well to publish his work in *Jahrbuch der k.k. Geologischen Reichsanstalt*, but Radovanović considered leaving that for later.²⁸

This was a time when Radovanović experienced financial troubles which made his last two years of studying in Vienna more difficult. He was denied a full scholarship from the Serbian Ministry of Education right at the time when he was supposed to publish his article in Belgrade. He did not have money to pay the artists in Vienna for the sketches of the fossils and the profiles of the cross-sections. He devised a plan with Žujović that these images would be paid by the Serbian Academy, as the principal publisher of the *Geological Annals*.²⁹ Nonetheless, to his dissatisfaction and to mount his financial troubles, the Academy refused to pay for the artwork and left Radovanović to pay them by himself.³⁰ Publishing in Serbia had all the disadvantages and Radovanović would have had a better experience if he had accepted Neumayr's offer. This work was subsequently published in German in three parts in two volumes of the *Geological Annales of the Balkan Peninsula*.³¹

His preference towards the newly established Serbian publication could be explained by his patriotic/nationalist leanings. On the other hand, he was aware that his job prospects were most likely in Serbian academia, and his long and detailed correspondence with Jovan Žujović reveals an ambitious investment in a good

28 AS, Fund Jovan Žujović, JŽ-212/28-31. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 13 February 1888 (Gregorian calendar).

29 AS, Fund Jovan Žujović, JŽ-212/32-33. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 15 March 1888 (Gregorian calendar).

30 AS, Fund Jovan Žujović, JŽ-212/36-37. Letter of Svetolik Radovanović to Jovan Žujović, Vienna 6 May 1888 (Gregorian calendar).

31 Svetolik Radovanović, "Beiträge zur Geologie und Paläontologie Ost-Serbiens. I. Die Liasablagerungen von Rgotina," *Geologški anali Balkanskog poluostrva*, vol. 1 no.2 (1889): 1-106; idem, "Beiträge zur Geologie und Paläontologie Ost-Serbiens. II. Der Lias von Dobra. III. Ueber die geologische Verhältnisse der Umgebung von Crnajka (mit besondere Beruechtsichtigung der hier auftretenden Klausschichten)," *Geologški anali Balkanskog poluostrva*, vol. 3 no.2 (1891): 17-64.

relationship with his old teacher. While it would have been hard for him to find serious recognition and a job in German speaking institutions, earth sciences were still developing in Serbia and any new posting would have been open for him. Maintaining good relationship with Žujović and giving priority to his journal was an investment in a job in Belgrade.

Neumayr died in 1890 and consequently the supervision of Radovanović was taken over by Wilhelm Waagen and Eduard Suess. This caused a delay in Radovanović's research, but he still managed to finish his thesis in 1891.³²

From this Radovanović's experience in Vienna, one could observe several levels of dependence of Serbian scholars on the work of Viennese scholars. 1) From a methodological perspective, Serbia was in a geological position where several different stratigraphical lines converged in its territory. Only the ending sections of the Balkan geological formations converged on Serbia's territory, which did not allow the researchers to assess the full information. For the researchers, it was necessary to conform their findings from Serbia with findings from all the neighbouring regions. Radovanović had a strictly methodological necessity to conform his findings with those of Tietze and Toulia. Otherwise, his study would have been incomplete. 2) The majority of specimens for comparison were in Vienna, at the university, at the Reichsanstalt, and in the Hof-Mineralien-Cabinet. 3) Vienna was the closest scientific centre which possessed technical requirements both for analysis (laboratories and instruments) and for printing of profiles, maps, and sketches of the specimens.

4.1.4. Technical and Methodological Cooperation, Reliance, Dependence, and Rivalry

32 Archiv der Universität Wien, Philosophische Rigorosum Akten, Ph.Ra.657.8. Svetolik Radovanovic.

Geological maps were the main sites of collaboration with Vienna. Jovan Žujović started his work on the geological map of Serbian in 1882 and published the first outline of it in 1884, which was republished in 1886 in a German article, and then republished again as part of Vladimir Karić's *Srbija*.³³ This map was improved and expanded and later published in the 1889 edition.³⁴ Those maps were developed and printed in Vienna with technical assistance of scholars from GRA. This cooperation was necessary because there were no means nor knowledge to prepare and print Žujović's map in Belgrade. Actually, in 1882 Franz Toula had already published a geological map of Balkan Peninsula, which according to Kosta Petković contained some of Žujović's preliminary work on geology of Serbia.³⁵ However, Toula's map of the Balkans and Žujović's map of Serbia differ. The identified formations on the map are not corresponding to each other and in essence demonstrate different images of geological structure of the Serbian territory (see figures 4, 5, 6, and 7). While technical expertise was the stronger side of earth sciences in Austria-Hungary, Serbian scholars were at least in a position to provide data from the field. The geological map would have been the foundation for any further research and Žujović had every reason to make it the first priority.³⁶ Nonetheless, serious research required time and Žujović was aware that his initial map was incomplete and imperfect, and he continued his work on the geological map in the next couple of

33 Jovan Žujović, "Građa za geologiju kraljevine Srbije: 1° Prilog za geologiju jugo-istočne Srbije" [Material for the Geology of the Kingdom of Serbia: 1° A Contribution for the Geology of Southeastern Serbia], *Glasnik Srpskog učenog društva* vol. 55 (1884): 164-268, annex. Also, same map was published in: idem, "Geologische Uebersicht des Königreiches Serbien", *Jahrbuch der k.k. geologische Reichsanstalt*, vol. 36 ni.1 (1886): 71-126, annex; idem, "Skica geološke karte Kraljevine Srbije" [An Outline of a Geological Map of Serbia], in *Srbija: Opis zemlje, naroda, i države* [Serbia: Description of the Land, the People and the State], by Vladimir Karić, Reprint from 1887, (Belgrade: Kultura, Pravoslavna reč, 1997), 64-65.

34 Jovan Žujović, "Osnovi za geologiju kraljevine Srbije" [Foundations for a geology of the Kingdom of Serbia], *Geološki anali Balkanskog poluostrva* vol. 1 no. 1 (1889): 1-129, annex.

35 Franz Toula, "Geologische Übersichtskarte der Balkan-Halbinsel", *Dr. A. Petermanns Mittheilungen aus Justus Perthes' Geographischer Anstalt* vol. 28 (1882): 361-368, annex; Kosta Petković, *Geologija Srbije*, 44.

36 See above, quotation from his speech in 1891.

decades. The incomplete status of his map project in 1891 became a matter of a bitter argument with Vienna.

While Radovanović's and Cvijić's time in Vienna could testify about the improvement of cooperation between Belgrade and Vienna circles of earth scientists, 1891 was the year when the relationship deteriorated as well. Franz Toula gave a lecture during the congress of German geographers in Vienna on the current conditions of research of the Balkan Peninsula, embellishing the achievements of the Austrian and German scientists. While his assessment may have been a reasonable evaluation of the accomplishments of geographers and geologists made in Bosnia and Herzegovina, Greece, Bulgaria, Montenegro, and Ottoman Empire, he explicitly avoided giving any evaluation of the state of geological maps done by Serbian and Romanian scientists.³⁷

During his research surveys in Bulgaria, Toula received a considerable amount of assistance from the Bulgarian chief geologist of that time, Georgi Zlatarski, and Toula did not forget to express gratitude where it was due. In the same manner, in this speech, Toula mentioned the work of Matei Drăghiceanu on mapping the westernmost part of Romania, and mentioned the work of Jovan Žujović on the mapping of southeastern Serbia and the way he provided him (Toula) with materials for his geological map of the Balkan Peninsula, thus giving both Drăghiceanu and Žujović credit for their explorations. Particularly, I would like to stress that Toula gave Žujović credit for his research in the past decade. Actually, in his article from 1883, Toula credited both Pančić and Žujović for their work and their assistance in his own work. These comments in both the speech and the article were accompanied with a moderate praise in their achievements, expressed in the similar way he praised the work of Austrian geologists. Thus, Toula did

³⁷ Franz Toula, *Der Stand der Geologischen Kenntnis der Balkanländer: Ein Vortrag gehalten auf dem IX. Deutschen Geographentage in Wien im Jahre 1891*, Sonder-abdruck aus den Verhandlungen des IX. D. Geographentages in Wien 1891, (Berlin: W. Pormetter, 1891), 94.

express appreciation of Žujović's work, particularly considering that in 1883 Žujović really did not have much to show for.³⁸

Nonetheless, most of the praise was awarded for the Austria-Hungarian endeavours in Bosnia-Herzegovina and this mapping project was, in Toula's words estimated as the most successful of all. Though he praised the Austrian maps of Thessaly and Chalkidiki, he put particular praise in the Bosnian endeavour. When it came to Romanian and Serbian maps, he refused to give any evaluation, though he noted that on the border, along the flow of the Drina river, there existed discrepancies between the Austrian maps of Bosnia-Herzegovina, and the map of Serbia, adding that an inspection by one and the same researcher could be sufficient to correct these discrepancies. Similarly, Toula noted that there were discrepancies between the Austrian maps of the Danube straits banks between Moldova and Orsowa, but that he managed to resolve them in the company of his dear friend and colleague from Belegarde, Jovan Žujović, in the company of large audience, after they conducted a joint survey of the gorge and resolve the uncomformities on the Serbian side.³⁹ In the similar way he gave credit to the assistance Zlatarski was providing him in Bulgaria, Toula gave credit to Žujović for his assistance, not only in Serbia, but in the northern Albania and Macedonia.⁴⁰ Finally, it should be noted that in the long list of maps of the Balkan Peninsula, Toula listed two of the Žujović's maps of the peninsula from 1884 and 1886 along with all other maps of the peninsula published by that time.⁴¹

Avoidance of recognition provoked a rather rancorous response from Radovanović. The mentioning of the incongruities between the Austrian and Serbian maps made Radovanović angry. In a journal article, Radovanović attacked Franz Toula,

38 Toula, *Der Stand der Geologischen Kenntnis der Balkanländer*, 94; idem., "Die im Bereiche der Balkan-Halbinsel geologisch untersuchten Routen": 31-32.

39 Toula, *Der Stand der Geologischen Kenntnis der Balkanländer*, 94.

40 Ibid., 105.

41 Ibid., 109-110.

accusing him of deliberately omitting the achievements of Serbian geology and overemphasising the accomplishments of Austrian scholars. According to Radovanović, there was only one discrepancy in the Danube straits and he was the one who resolved it, before Toula and Žujović went on their field survey in the Đerdap gorge. He admitted the obvious discrepancies between Austrian and Serbian maps along the Drina border, but claimed that in the mean time it turned out that some are the consequence of the nature of the terrain itself, and that Toula, Mojsisovics, and Tietze made more mistakes than Žujović when they were mapping. Furthermore, he accused Toula of not being able to produce original work, saying that his speech repeated the same thing he was publishing in several of his articles, over and over again (naming his writing *Balkaniade*). The part of Toula's speech that outraged Radovanović most was the section where Toula evaluated the condition of research on the Balkan Peninsula by proposing that the quickest way to give an estimation would be to examine the condition of geological mapping in certain areas. In that estimation, Toula said that he was not sufficiently familiar with the publications of the Serbian and Romanian scholars, so he estimated only the Austrian and the German accomplishments.⁴²

The focus of that geographical congress was on geographical and geological maps, and the organisers presented a map exhibition in cooperation with the publishers. Because the other focus of the congress was the Balkan Peninsula, it seemed appropriate to exhibit a historical overview of all maps of the Balkan Peninsula. Therefore, it does not seem surprising that Toula decided to talk about geological maps in his overview of research on the Balkan Peninsula. While the topographical map of the Serbian military

42 Svetolik Radovanović, "Odgovor g. prof. dr. Francu Tuli, povodom članka mu der Stand der geologischen Kenntnis der Balkanländer." [Response to Mr. Prof. Dr. Franz Toula, in Occasion of his article The Condition of the Geological Knowledge in the Balkan Lands] *Prosvetni glasnik* vol. XIII no.1 (1892): 57-58.

received due attention, the absence of geological maps was a silent judgement that the research in this sphere was still not complete.⁴³

Radovanović was well aware that Toula knew the condition of the Serbian earth sciences all too well, and he assumed that Toula deliberately omitted speaking about them. The detailed geological map of Serbia was still a work in progress and up to that point depended solely on the work of Žujović. Radovanović felt that Toula's choice of criteria for evaluation was unfair, because it omitted all other achievements of Serbian geology.

When Mr. Toula already decided to talk about the condition of geology in Serbia, why he did not mention at all, that there is a professional geological journal, "Geological Annales of the Balk[an] Peninsula," with which he was all too familiar, and which improves with every year, and which received appraisal from many reputable geologists abroad? For a report on Balkanology he should not have only his own "Balkaniade,"⁴⁴ but to know as well: 1) our entire geological literature; 2) that we have two geological museums, in which geology of Serbia is better represented than geology of Bosnia and Herzegovina is represented in the collections of Sarajevo and Vienna, which he praised as the best; 3) that we have chemical, mineralogical, petrographical, and geological institutes with professional libraries in which we can examine our own minerals, rocks, fossils, etc.; 4) that the importance of geological research was realised by the Serbian state as well, by establishing the position of the state geologist, whose assignment is systematic geological examination of earth and developing of detailed geological maps, after which it would be unnecessary to have foreigners wandering around Serbia, and to show [around] Europe in their "sketches" how Serbia, due to their work, is ceasing to be a "dark freckle on a clean face of Europe;" geological outline of Serbia is already finished, and we today, in the name of God, begin with detailed research, and this is, perhaps, the best evidence that Serbia does not stand, in geological sense, behind other regions of the Balkan Peninsula.⁴⁵

This tirade in defence of Serbian geology misrepresented couple of facts about the state of research up to that point. Up to 1880 there was no systematic research in earth sciences done by Serbian scholars and most work was conducted by foreigners who set the groundwork for these disciplines. Between 1880 and 1889, Jovan Žujović was practically alone working on his projects, with helpful assistance of several willing high

43 Jovan Cvijić, "Deveti skup nemačkih geografa" [The Ninth Congress of German Geographers], in Jovan Cvijić, *Govori i članci* [Speeches and Articles], *Sabrana dela* [Collected Works] vol. 5 (Belgrade: SANU, 1989), 86-87.

44 This is how Radovanović was referring to Toula's many time repeated narrative about his research in the Balkans.

45 Svetolik Radovanović, "Odgovor g. prof. dr. Francu Tuli": 58.

school teachers. Sava Urošević became a fully qualified participant during his studies in Paris during the late 1880s, and Svetolik Radovanović himself was the third person who in 1891 could have carried out research in this field. Consequently, these “achievements” were a list of institutions (institutes, museums, libraries) that Jovan Žujović managed to establish during a decade of work, with a considerable help of foreign scholars. The statement that they “begin with detailed research” was giving a more realistic evaluation of the current state of affairs.

Serbian geological literature was actually not that extensive at the time and Toula was certainly familiar with what was published in German and French language. The geological journal was founded only two years before this argument started. The two museums were both small and were representing collections adjoining the Faculty of Philosophy of the Grand School and the Mining Department of the Ministry of Economy. While the condition of the laboratories at the Grand school considerably improved in the previous two decades and enabled chemical and mineralogical analyses in Belgrade, the state of scientific instruments was still far from being respectable. All the divisions lacked storage space for the instruments and specimens. Finally, Radovanović’s referral to the official position of a state geologist was actually a reference to his own job position which was created by the Mining Department just for him in the very same year (1891).

The stakes were much higher than mere national pride. Toula’s appraisal of the accomplishments of Austrian research in the Balkans probably did not aim to diminish the accomplishments of Serbian, or for that matter Romanian geologists, but to inspire nationalist sentiments about Austrian scientific achievements. Radovanović’s response was similarly motivated by nationalist sentiments, but he had an additional motive for such a response. The scientific credibility of his colleagues was on the line, since he was

afraid that their research would be overshadowed by Austrian scholars who possessed more resources for their work. Hence he wanted to show that Serbia was part of the European scientific community and could contribute in an equal manner. He wanted to show that by default, Serbian scholars should be more familiar with the geology of Serbia than any foreign scholar could ever be, and that they could be relied upon for the matters of their own territory. Assuming the role of being part of Europe involved being able to scientifically examine one's own territory.

Perhaps because Mr. Toula does not believe our results, even though we visited every corner of our own house, [but] he would prefer seeing another god-given and "for the sphere of scientific interests of Austria" [...] excited Austrian geologist rushing through Serbia [...], just so he could issue another "stamp." Mr. Toula is wrong if he believes that we have to tolerate him, while he is explicitly insulting us. [...] [Look] at the "road network" that Žujović made, with which he connected every village and every hill in Serbia, surpassing the "road network" of Austrian geologists in Bosnia and Herzegovina, and whose map Mr. Toula, even though he had never been there, and even though they [Austrian scholars] had not agreed with themselves, still ranked as first. But, what can you do, when Mr. Žujović writes only about things he saw and experienced, when he is collecting for years materials for his "Geology of Serbia," without publishing series of preceding short notices, like Mr. Toula does on Bulgaria, which all together when compiled say the same thing that his main work would later claim!⁴⁶

If Austrians would question scientific credibility of Serbian earth scientists, Serbian scholars would find themselves in an inferior position, dependent on evaluation from Vienna. This is why Radovanović identified the threat in the "sphere of scientific interests of Austria." This could have affected international scientific audience, who would not rely on findings of local geologists in Serbia, or for that matter, just simply prefer Austrian publications and consume only the findings published in Austria and Germany. This was the reason why *Geological Annals* had the second volume with publications in French and German. But, if the international audience relied on Austrian journals, the whole effort was lost. Radovanović was well aware that Viennese scholars possessed better resources and were internationally better connected and recognised. If

46 Svetolik Radovanović, "Odgovor g. prof. dr. Francu Tuli": 58.

their primacy in research on the Balkans would continue, his own work and the work of his colleagues would be in question. They transferred the idea of political sphere of interest into science, and Toula, Žujović, and Radovanović tried to establish primacy in the sphere of research.

One could notice the means through which he attempted to disqualify Toula on the ground that he published more works than Žujović. His claim was that Toula was superficial and continuously publishing the same reports over and over again, thus creating a large number of similar articles without making a substantial contribution to science. This was in part a way to exculpate the only representative of the Serbian geological scene who published up to that moment. Žujović did not have a comparable body of publications with which he could represent the Serbian school of geology in front of international audience.

And the way we work gives us unfaltering hope that the carriers of western culture have to finally admit that Serbia is truly geographically close to the border of European scientific labour, but is not outside of it. We are capable of working independently, too, and they can be assured that even the small contribution we offer to the scientific treasury of European geology will be worth more than any foreigner's [contribution] who just arrives to probe our geological features, while we know them all in details, and who just rushes through our country at best, while we are always here. Our publications are becoming more detailed, theirs could only be easy to read. Those, who talk about "Austrian scientific sphere" to our face, and [who] represent themselves as our collaborators, should go to Albania if they do not want to sit at home and look what they could do with alpine geology.⁴⁷

The territorial claim for the scientific field of research could not have been more clearly expressed. Radovanović wanted Austrian scholars to stay out of his yard. Nationalist sentiments definitely determined the scope of his argument. However, his justification was formulated in a manner to emphasize the scientific benefits of reliance on the work of Serbian scholars in their own territory. It was important for him to argue that no Austrian scholar could ever be more familiar with Serbian landscape than Serbian scholars could become. In his defence of Serbian geology he was making an argument

47 Svetolik Radovanović, "Odgovor g. prof. dr. Francu Tuli": 58.

for the future rather than defending what had already been done. He carefully narrowed his argument only against achievements of Austrian geologists on the Balkan Peninsula, but did not make reference about their achievements in general.

At the time when the congress happened, Jovan Cvijić was still studying in Vienna and was personally present during the congress, about which he wrote a report in *Prosvetni glasnik*. His opinion about what transpired was significantly less dramatic than Radovanović's. Nonetheless, he did express an objection about the choice of topic for the congress. In his view, it was odd that a congress of German geographers discusses solely the topics of one geographical area, which was up to that point reserved solely for polar regions.

One could find an explanation in the streams that are dominating in the geographical and natural historical circles of Vienna. It is well known, Viennese scholars travelled the Balkan Peninsula even before and they did a lot for the knowledge about it. That endeavour was not interrupted, even though there was a strong (so called) African current, which produced many Viennese travellers around Africa. [...] Different views on what is the scientific sphere of interest of Austria, whether distant continents (in which Austrians still have no interest) or the East, were the cause of much turmoil which influenced elections and falls of many administrations in the Geographical Society. A professor of the physical geography at the university [of Vienna], Penck, held a lecture on the goals of geography in Austria-Hungary, where he rose against voyages of African travellers and called for a closer and more natural "sphere of Austrian scientific interests", towards the East. This has been repeated in different variations by Prof. Toula. The stream enveloped the Geographical Society too, which could be easily seen in their journal in this assembly of German geographers. Viennese Academy of Sciences keeps working on this endeavour.⁴⁸

Even though Cvijić felt less threatened in his point of view, he still expressed concerns about Austrian-Hungarian frequent expeditions on the Balkan Peninsula. This attitude towards Austrian scholars was slowly becoming more common among Serbian savants who began perceiving their peers as competitors in the research of the Balkans. Cvijić expressed similar disparaging comments about Toula's research, stating that he kept repeating same results over and over again without presenting new revelations.⁴⁹ We

⁴⁸ Cvijić, "Deveti skup", in *Govori i članci*, vol. 5, 86-87.

⁴⁹ Ibid.

should not forget that Cvijić was at the time still a student at the University of Vienna and had the above mentioned Albrecht Penck for his supervisor. In the following years, their relationship would grow and by the end of the 1890s they became close friends.

While the rivalry between two scientific centres involved a certain amount of professional resentment, political issues made them more difficult. Daily political interests of their respective states were becoming increasingly inimical, which indirectly affected the relations between the two groups. Good relations between Serbia and the Habsburg Empire of the King Milan era were deteriorating during the 1890s as King Aleksandar was reorienting his politics towards alliance with Russia. At the same time the political aspirations of Serbian foreign policy were encountering serious conflicts in Macedonia and Kosovo. Scholars were not disinterested actors in debates about foreign policy and were close to political circles, as demonstrated in one of the previous chapters. Serbian pretensions towards Bosnia and Herzegovina and increasing interest towards territories in the south were a direct product of intellectual debates which attempted to find historical and ethnological means for expansion of Serbian territory. At the same time, they were aware of territorial pretensions of their northern neighbour towards them. In that context, territorial aspirations of earth scientists, both Habsburg and Serbian, were not propagated in a vacuum of scientific principles. Serbian scholars were in this contest afraid that their voices were not going to be heard. They had no means to compete.

However, who was their audience? The two articles were published in Serbian, in *Prosvetni glasnik*, an official state journal about education in Serbia, which was at the centre of all debates on educational reforms on all levels of education, from elementary school, to higher education. The audience who read this journal were generally primary and secondary school teachers, and various state clerks who monitored teaching institutions. Therefore, neither Toula, nor any of the Austrian or German earth scientists

was in a position to read them. In the same way the two lectures Žujović held in 1880 and 1891 addressed a narrow audience which included only Serbian scholars, and these articles were reinforcing the views on the goals of Serbian earth sciences. The goals to make Serbian earth sciences independent and self-reliant was still far from realisation and such dreams guided the formation of all scholarly disciplines. Nevertheless, Serbian earth sciences were not autochthonous and only those scholars who had some form of active engagement with Austrian and other scholarly networks had any chance of achieving these nominal goals.

This debate provoked resentment towards foreign scholars and it seemed that some were openly treated as unwelcome. Wilhelm Götz, the professor of geography at the Technische Hochschule in Munich, was one of the victims of this dispute. He was interested in the Balkan Peninsula and conducted research on the Kopaonik mountain and ethnography of Macedonia. He did not deliver his lecture on Kopaonik during that 1891 congress of German geographers, even though he was scheduled to present. Although he did not participate in what transpired during the congress, he was still a member of the same circle of German geographers. Similar to Penck, over the years he developed a good relationship with Cvijić and maintained correspondence with him, exchanging ideas and views. He was determined to learn the Serbian language and read scholarly articles in Serbian. He even wrote letters to Cvijić in Serbian.⁵⁰

One of his concerns in 1899 in correspondence with Cvijić was whether he would be welcomed to come to Serbia. He was afraid that he could be considered a “meddling foreigner” (*einmischender Fremder*) again, as Žujović once labelled him. At first, the dispute over the sphere of influence was between Toula and Radovanović, but this generally affected relationships between scholars. I have found no evidence of direct

50 ASANU, Fund Jovan Cvijić, 13484.265 Letters of W. Götz to Jovan Cvijić.

confrontation with Götz, and it is possible that Žujović's resentment towards him was a consequence of him being a German scholar who was researching the Balkans. Although the two of them made peace in 1897 during their meeting at the congress in Russia, memories of the argument with Žujović made him weary. He felt uneasy about Žujović and his possible comments as he had bad experience with them. At the same time his relations to Cvijić was developing over the years. He found a kindred spirit in him and strongly supported his studies of Macedonian Slavs.⁵¹

51 ASANU, Fund Jovan Cvijić, 13484.265 Letters of W. Götz to Jovan Cvijić. Letter 265.1. München 1899.04.22.; Letter 265.8. München 1911.07.03.



Figure 4:

Franz Toula, *Der Stand der Geologischen Kenntniss der Balkanländer: Ein Vortrag gehalten auf dem IX. Deutschen Geographentage in Wien im Jahre 1891*, Sonder-abdruck aus den *Verhandlungen des IX. D. Geographentages in Wien 1891*, (Berlin: W. Pormetter, 1891). Notice contours of Žujović's map in the middle.

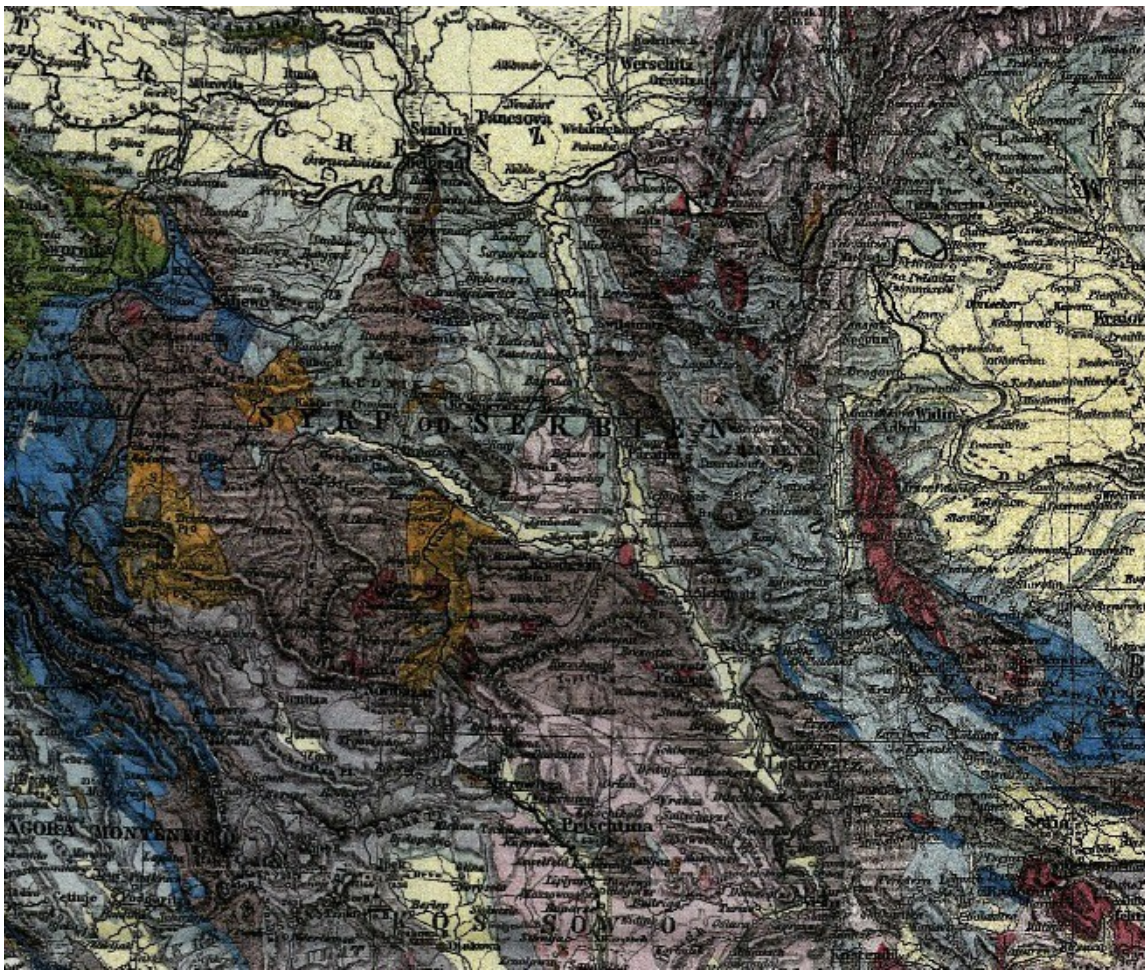


Figure 6: Same map. Focus on Serbia.

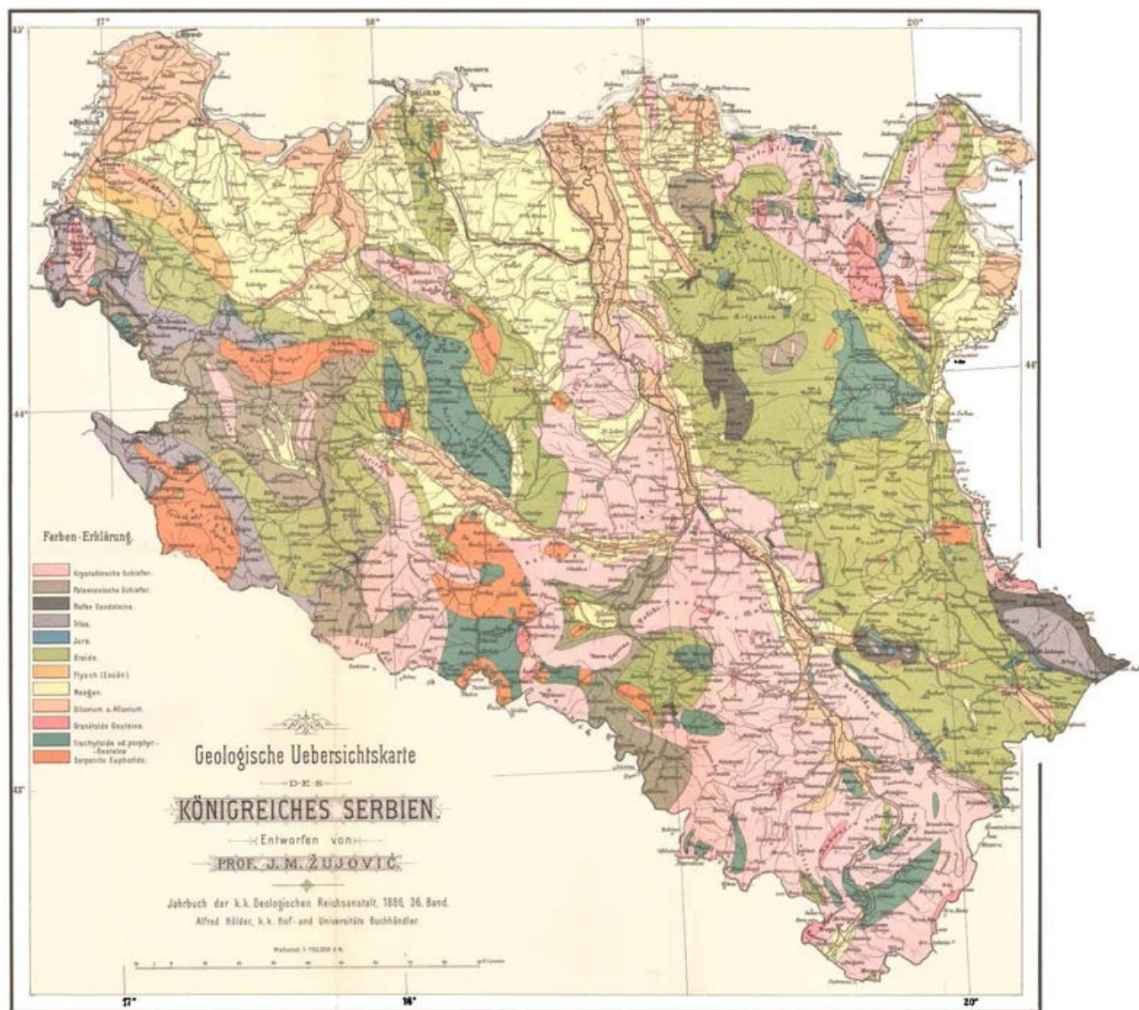


Figure 7:
Jovan Žujović, “Geologische Uebersicht des Königreiches Serbien,” *Jahrbuch der k.k. geologische Reichsanstalt*, vol. 36 no.1 (1886): annex.

4.2. Nationalism and Geography

While geography and cameral studies had overlaps in the German case, emerging from the historical, economic, mathematical, and natural historical practices, the Serbian emulation of those models attempted at directly appropriating the already existing narratives and methodology. The first practices of scholarly work dealt mostly with language and history and including in itself a lot of folklore related materials. Writing geography in the Serbian case meant building from that historical and literary work. It is no surprise that in the early geographical work, the aspects of the *human geography* come first into prominence.

Various visions on the Serbian national program delineated at different times different borders for an independent Serbian kingdom ranged from minor corrections of the contemporary border after the Berlin Congress which aspired to territories generally inhabited by the population of ethnically identifiable Serbs of the Ottoman Empire, to more grandiose national projects which involved aspirations towards Montenegro, Old Serbia, and Macedonia, then territories of Bosnia and Herzegovina, and Dalmatia, which in the widest possible aspirations constructed the notions of the *Greater Serbia*, making the claims on the territories belonging to the Habsburg Empire, Ottoman Empire, and Montenegro. In the utmost expansionist view of the Serbian state it envisioned a Yugoslav country which encompassed all the south Slavic population of the Balkans.⁵²

Intellectual plans about territorial expansion of Serbia encountered a serious defeat with the resolution of the Berlin Congress. Even though Serbia gained

⁵² According to research of Charles Jelavich, the last idea had popular grounding among the Croatian and Serbian geographers in the Habsburg Empire, but did not have a corresponding support in Serbia. Charles Jelavich, *South Slav Nationalisms: Textbooks and Yugoslav Union before 1914* (Columbus: Ohio University Press, 1990).

independence, which was part of the dreams of the Serbian elite since 1804, and even though Serbia gained new territories (Niš, Leskovac, Vranje, and Toplica), by general plans of Serbian intelligentsia, independence and expansion came at a cost. Aspirations for “national unification” as devised by the *Načertanije* of Ilija Garašanin, and many other visions of future Serbia, envisioned the country expanding towards Bosnia and Herzegovina and parts of Bulgaria. In many variations of these views, Serbian intellectuals were searching for populations which could be considered Serbian and over time this included both the present day Bulgarian and Croatian populace.

By the decisions of the Berlin Congress, the Bulgarian principality was formed and Austria-Hungary occupied the territory of Bosnia and Herzegovina, establishing its rule over this territory. Both decisions were considered a threat for the future development of Serbia. Austrian occupation of Bosnia and Herzegovina took one of the principal territories out of the scope of the Serbian national program. The outcry for the lost Serbian lands followed for the next couple of decades as Bosnia was idealized as the core Serbian land. On the other hand, for the matters of Serbian national cause the formation of Bulgaria presented an obstacle towards further expansion towards the east and the south and mobilization of potentially future Serbs.

4.2.1. Patriotic Geography

The search for potentially Serbian territories required the involvement of geographers. In that field, during the 1860s, 1870s, and 1880s geographical books were in particular demand as patriotic literature shifted from historical and literary emphasis to descriptions of the lands. In that effort Vladimir Karić, Cvijić’s geography teacher from the Šabac Gymnasium was one of the most prominent authors. The other important

author was Milan Đ. Milićević. Both were involved in the plans for the foreign policy over territories to the south.

Even though these authors address the issues of earth sciences, geographical work was mostly considered related to history, cameral sciences, statistics, and included a large quantity of cultural data which could be classified as ethnographical or ethnological. This trend continued and the overlap between earth sciences and human sciences remained with a stronger emphasis on the latter. The audience required more knowledge about the population and tradition, reiterating the nationalist narrative about Serbian distinctiveness. In such environment, the space opened first for the most basic overviews of the mineral deposits, and only indirectly with the narratives about the earth's content, about the structure of earth and the stratification.

The goal of these works was to inspire patriotism and provide knowledge, while at the same time propagating the Serbian national ideology to the Slavic populace in the south and to an international audience. From the perspective of national ideology, presenting a good argument in front of the international audience was a means to argue for diplomatic interference, which was for Serbia quite handy during the 1876-78 wars with the Ottoman Empire. Serbia lost the first war against the Ottomans and was saved through diplomatic initiative, and even gained independence and territories during the Berlin Congress.

Patriotic knowledge was at the disposal of the local and international audience, arguing for the expansion of the new state. Over time depictions of the earth included physical descriptions of the shape of the earth and enumerations of the mountains, plains, valleys, gorges, and rivers existing in Serbia. It was a matter of pride and detailed descriptions about the shapes and beauty of the landscape became inherent part and purpose of the narratives. In that respect, the work of Milan Đ. Milićević and Vladimir

Karić had the strongest impact. When Karić's *Serbia* was published, it became immediately one of the most important publication for anyone interested in science. Radovanović, Žujović, and Cvijić circulated and promoted the book. Actually, Žujović was one of the contributors to it.

Milan Đ. Milićević (1831-1908) never worked in schools or scientific institutions. He was a researcher, however, or at least thought about himself in this way. His career was strongly associated with the administration of the Serbian principality and the National Library of Serbia. He studied at the Belgrade Orthodox religious school (Bogoslovija) from 1846 until 1850, and after that he worked in several courts and ministries as administrator, as a librarian in the National Library, and consequently gaining political prestige by becoming a state councillor in 1897. He performed many important social tasks, such as being the initiator of the publications of one of the significant scholarly journals – *Godišnjica Nikole Čupića*, and being one of the founders of the *St. Sava Society* which was engaged in the promotion of Serbian education in the Ottoman lands, and such part of the Serbian national propaganda in Macedonia and Kosovo.⁵³

His publications from 1876 – *Kneževina Srbija*⁵⁴, and its addendum written in 1884 – *Kraljevina Srbija: Novi Krajevi*,⁵⁵ had major public impact and made publicly available materials from the earth sciences. Milićević sought to amass a large quantity of information about Serbia and present the data to the public in order to educate and incite patriotic feelings. Both books were organised according to contemporary administrative

53 Vladimir Stojančević, "Milan Đ. Milićević i njegovo delo Kneževina Srbija i Kraljevina Srbija: Pogovor uz novo fototipsko izdanje" [Milan Đ. Milićević and His Work the Principality of Serbia and the Kingdom of Serbia: Afterword to the New Facsimile Edition], in Milan Đ. Milićević, *Kingdom of Serbia: New Areas* [Kraljevina Srbija: Novi Krajevi], Reprint from 1884 (Belgrade: Radiša Timotić, 1972), I-II.

54 Milan Đ. Milićević, *Principality of Serbia* [Kneževina Srbija], Reprint from 1876 (Belgrade: Sloboda, 1973).

55 Milan Đ. Milićević, *Kingdom of Serbia: New Areas* [Kraljevina Srbija: Novi Krajevi], Reprint from 1884 (Belgrade: Radiša Timotić, 1972).

divisions of Serbia. Each county was represented in its entirety, beginning from geographical overview of the mountains, waters, mineral treasure, and then history, poetry, population, and statistical data about the people and the economy. The reason why the endeavour was divided into two separate publications was the territorial expansion of Serbia and its independence after the Berlin Congress in 1878. The new publication included the sections on the new territories in the same manner it was presented in the former publication, without repeating any previous work.

Milićević wanted to make a comprehensive overview of all the counties and districts and relied on the data he personally found. In practice, his focus was mostly directed towards history and poetry. He gathered a lot of stories about historical events and people he considered important for Serbian history. At the same time, his study included a large collection of folk poems from each of the districts. On the other hand, natural history, even though represented, took only smaller part of his writings.

While the amount of historical and statistical data helped him quantify his assertions about the society in Serbia, his approach to natural history was mostly aesthetic. One of the most common features in his narratives were depictions of the sights that can be seen from the viewpoints at the top of mountains. His descriptions of the mountains, valleys, and rivers were mostly aiming at emphasizing the beauty of the regions, while at the same time enumerating all the known landscape features of the region. Because he visited most of the locations, he frequently depicted his personal impressions about the landscape, admiring the beauty of nature and pondering on how unappreciated it was.

Knowledge about earth constituted the part of his study only in the sections about mineral treasure of the regions (sections were labelled by the term *rudno blago*). Here, the interest in the exploitation of earth's treasures introduced part of the knowledge about

nature into a work mostly oriented towards society, culture, and the state. Because he was borrowing from the approach of cameral sciences towards natural history, Milićević's concern was mostly economic. While his work was systematic and detailed in sections related to history and culture, parts about the products of earth were brief and for some regions reduced to a comment that the knowledge about the mineral riches of was still unknown, but that there were some indications that certain ores could exist, because of the presence of historical data about mining.⁵⁶

While his approach to the main features of the Serbian landscape was mostly aesthetic, his approach to knowledge about ores was mostly historical. In the section about the ores that could be found in the Avala hill, in the vicinity of Belgrade, he gathered his conclusions from history and even myth. Similar historical inferences were quite common and used in several sections, referring sometimes to the mining operations during the time of the Romans, at one point dating the excavations to the stories heard from the locals about an uncertain emperor Constantine, or identifying the late excavations during the Ottoman government.⁵⁷ His research depended largely on what he managed to ascertain from other people. Consequently, he compiled available information from the works of Josif Pančić, Sigismund von Herder, and Ami Boué. As a result of it, the representations of earth structure were haphazard, sometimes detailed and sometimes lacking data.

Hence, methodological and theoretical approaches did not belong to natural sciences, as its intention was not to produce scientific work, but rather to incorporate scientific information into a mostly patriotic study about the lands belonging to Serbian state. Milićević mostly reported on the availability of ores, which were most frequently lead and copper, but as well silver, iron, and gold. As well, he reported on the all known

⁵⁶ Milićević, *Principality of Serbia*, 131 and 422; Milićević, *Kingdom of Serbia*, 177 and 351.

⁵⁷ Milićević, *Principality of Serbia*, 63; 305; 649-50; 830-31.

coal deposits and quarries with marble and gypsum. Certain data about the mountain structures can be found, mostly in addition to the information about ores and other materials which could be potentially used for economic benefit. For example, he identified the Jurassic deposits in the Krajina County, with limestone, schist, and the intrusive, eruptive porphyry.⁵⁸ However, this mention was more of an exception. While the reports in the second publication were usually crude and for two out of four counties almost completely lacking data (Piroć and Toplica counties)⁵⁹, the information about Vranje County was surprisingly rich in details, and particularly informative about the layering of different rock formations.⁶⁰

The popularity of the Milićević's work lay in the richness of historical and ethnographic materials, and is today still republished and considered one of the most valuable collections on traditional Serbian society in nationalist circles. Similar work, yet more geographical and less aesthetic in approach came from the pen of Vladimir Karić (1848-1894), whose engagement in geography teaching in secondary schools in Serbia was accompanied by intensive political and nationalist engagement in the promotion of education in Serbian in the Ottoman provinces. Karić may be the person who incited Jovan Cvijić to study geography in Vienna, but, his own engagement in the discipline, even though mostly pedagogical and promotional in character, contributed significantly to the beginnings of the earth sciences in Serbia. His work was considered essential for several decades, and Žujović, Radovanović, and Cvijić considered his *Serbia* a crucial publication for their disciplines.

Karić finished the Faculty of Law at the Belgrade Grand School in 1868. Mihailo Vojvodić has emphasized his “self-education” as part of his personal success in career.

58 Ibid., 948.

59 Milićević, *Kingdom of Serbia*, 177 and 351.

60 Ibid., 281-283.

While his school education led him to legal studies, his personal interests led him into geography.⁶¹ This emphasis on self-education became one of the common narratives in the Serbian culture and is still frequently employed in the appraisals of certain historical figures. His engagement in geography and particularly his career of secondary school professor in Šabac, Požarevac, and Belgrade (1870-1888) can only be explained by his personal interests in the field. Although, his success in the career of a secondary school geography professor was conditioned by the lack of educated staff for schools, such stories were not uncommon in nineteenth century Europe. He began working in the administrative positions in the government in 1888. From 1889 until 1891 he was a consul in Skopje, engaged in diplomatic and nationalist-educational agenda. In the political sphere he was known and active until his death, frequently criticising Serbian policies in Macedonia and attacking the failings of the educational system, particularly the Grand School, where he failed to find employment as a teacher.⁶²

He published several versions of geography textbooks. One was published in 1879, and one in 1885. His nationalist-educational work engaged him into bringing in 1882 the book called *Serbian Lands (Srpska zemlja)*⁶³ and in 1887 the publication called *Serbia: Description of the Land, the People, and the State*.⁶⁴ The last one attracted a lot of attention from the audience, and similarly to Milićević's publications still represents a valuable book in the Serbian nationalist canon. Because of its popularity and intention to address the masses this book probably made a more significant impact on the public perception of the earth sciences in Serbia than his textbooks on geography.

61 Mihailo Vojvodić, *Stojan Novaković i Vladimir Karić* [Stojan Novaković and Vladimir Karić] (Belgrade: Clio, 2003), 28.

62 Vojvodić, 166-168.

63 Vladimir Karić, *Srpska zemlja: sa jednom kartom* [Serbian Lands: With a Map] (Belgrade: Štamparija Zadruga štamparskih radnika, 1882).

64 Vladimir Karić, *Srbija: Opis zemlje, naroda, I države* [Serbia: Description of the Land, the People and the State], Reprint from 1887 (Belgrade: Kultura, Pravoslavna reč, 1997).

While Milićević had a primarily historical and aesthetic vision of Serbian geography, Karić was fully engaged in the natural sciences and aimed at meticulous representation of the already made research as he asserted that “the examination on the scientific and critically organised explorations of Serbia, made today in domestic and foreign literature [*književnosti*] and which are enumerated by the explorations of the author itself. There will be even strong sections [*i jakih odeljaka*], based on the research of those materials, which lay, still today unpublished, around the archives of various offices.”⁶⁵

This declarative statement in itself contained indications of his reliance on secondary sources and absence of primary research. The “strong sections” were based on the archival materials from the Serbian state administration, and not so much on the field work. However, he admitted that he intended his work to be for a wider audience.

The people who know, if they browse through this work, will easily notice, if this is a mere compilation or a product of a serious study. They will know too, what effort and what persistence had to be invested to find, gather, and organise this many materials, found in so many different acts, bound long time ago in folders and verdicts, so that they never see the eyes of the Serbian world, even though, the “statistical department” is already living with us for ten years. And what to say about the pictures? It is certain, that many years will pass before someone again endeavours to build a collection of pictures, so rich and selected, as one could find in this book.⁶⁶

What is striking here is the absence of the notion of field research. Karić made research in the archives, and made a reference on the lack of initiative of the statistical department to investigate such documents. The statistics and history were considered valuable aspects of research and not field trips. Climbing to the top of the mountain and seeing the beautiful view from it was a matter of aesthetic admiration for the nature. The knowledge, however, arrived from the written material, studies in the libraries and archives.

⁶⁵ Ibid., “Introduction.” n.p.

⁶⁶ Ibid., “Introduction.” n.p.

4.2.2. How to Find Serbs on the Map?

Cvijić's interest in human geography thus comes as a no surprise. Foreground for it could be found in the literary and historical orientation of Serbian intelligentsia of the 1850s and 1860s. It was inspired by his professor Karić, but at the same time it received considerable motivation from his Viennese professor Wilhelm Tomaschek who taught him anthropogeography. The connections between human geography and earth sciences established a link which logically connected the patriotic science of geography with earth sciences. While in his research and publications Cvijić endeavoured considerably into ethnography and ethnology, his interest in earth guided him towards geomorphology. Such trends in connecting anthropogeography and geomorphology has been already popular in Europe, with Ratzel, Penck, and Götz as the most identifiable influences on Cvijić. Through the conversation with Penck and Götz, Cvijić received a lot of encouragement for his studies on the anthropogeography, ethnography, and ethnopsychology of the Balkan Peninsula. This, however reflected in his geomorphological research too.

Connecting the land formations in Serbia with the neighbouring regions had its epistemic necessities. Analysing the land formations from the Palaeozoic and the Mesozoic made little sense if perceived isolated in Serbia. The country was on the periphery of several mountain ranges and had many diverse elements that were not possible to study in isolation. It was on the edge of the Pannonian Basin, and the Dinaride chains, while the Carpathian-Balkan chain was only passing through it. This motivated Serbian earth scientists to be on the lookout for information in Romania, Bulgaria, Macedonia, and Kosovo, in search for corresponding regions which would

provide a better overview of the geological structure, orogeny, petrology, and palaeontology of the Balkan Peninsula. Research on the geological structure of the entire peninsula had led them visit the territories which were in the scope of the most nationalist aspirations of the Serbian intellectual circles. It is hard to say which one of these had greater priority, but they all certainly took time to give sufficient attention to both.

Cvijić, with his focus on Macedonia, Kosovo, and Albania, was playing in a field where nationalist politics was being made. His work became known for studies of glaciation of Rila mountain in Bulgaria and Treskavica in Bosnia, where he found the first traces of ice age on the Balkans. This work of his was building on the ice age theory developed by his professor Albrecht Penck, with whom he collaborated on his findings. At the same time he was conducting limnological research of Macedonian lakes, and the Lake Skadar, bordering Montenegrin and north Albanian regions.⁶⁷ While conducting surveys in the field, he was making notes on the local population. Consequently, in addition to his geomorphological and limnological studies, he was publishing ethnographic research, usually under the scope of anthropogeography and ethnopsychology. This research explicitly engaged delineation of territories settled by ethnic Serbs. However, Cvijić went a step further.

In the aftermath of the Berlin Congress, setting the claim for the territories became a patriotic duty for Serbian scholars, and earth scientists were no exception to this. Cvijić perceived the Berlin Congress as detrimental to Serbian national interest. Serbia was at the centre of the Balkan Peninsula and was a point of connection of Central

67 Jovan Cvijić, "Über Gletscherspuren in Bosnien u. Hercegovina," *Verhandlungen der Gesellschaft für Erdkunde zu Berlin*, vol. XXIV, no. 8-9 (1897): 479-480; idem, "Tragovi starih glečera na Rili" [Traces of Old Glaciers on Rila], *Glas Srpske kraljevske akademije nauka*, vol. LIV (1897): 1-105; idem., "Das Rila-Gebirde und seine ehemalige Vergletscherung", *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, vol. XXXIII (1898): 201-253; idem, "Glacijalne i morfološke studije o planinama Bosne, Hercegovine i Crne Gore" [Glacial and Morphological Studies of Mountains of Bosnia, Herzegovina, and Montenegro], *Glas Srpske kraljevske akademije nauka*, vol. LVII (1899): 1-196; idem., *Jezera Makedonije, Stare Srbije i Epira* [Lakes of Macedonia, Old Serbia, and Epirus], ten maps (Belgrade: Serbian Royal Academy: 1902).

Europe with the rest of the peninsula. He argued that Serbia had an open border to Central Europe which made its ties with Europe much stronger and diverse than any other Balkan nation had. Although he considered this position a benefit from the point of view of economic and cultural exchange, he deemed Serbia's faith to be an obstacle to the expansion of "Central Europe" which placed his homeland in a perpetual conflict with "Central Europe." For him Serbia was a defence wall that prevented "Central Europe" [Austria-Hungary and Germany] from protruding towards Thessaloniki and in this way protecting "Western Europe" [Great Britain and France] from Central European expansion towards east.⁶⁸

Position was the key factor. He valued the routes of communication between regions as the main principle which affected political, cultural, and economic development, which indirectly identified Serbia on a geopolitical map as a territory towards which political aspirations were made or from which the same aspirations were made. This was in congruence with ideas of Ratzel's anthropogeography. His studies insisted on position and regularly estimated the positions of trade routes which could help the development of regions. In his view development of a region, or nation for that matter, was always directional, and implicitly expansionist.⁶⁹

At the time, the region south of the Serbian border was commonly known among the Serbian intellectuals as Old Serbia (*Stara Srbija*) and it entered scholarly literature as a name for the all the territories between Bosnia, Montenegro, Albania, Macedonia, and Serbia. In practice, Serbian scholars delineated with this term the territories of the Sandžak of Novi Pazar, Kosovo, and Metohija. Sometimes, it included Macedonia in it. However, Old Serbia was not clearly defined, much in the same way as Macedonia had

68 Jovan Cvijić, "O nacionalnom radu" [On National Endeavour], in Jovan Cvijić, *Govori i članci* [Speeches and Articles] vol. 1 (Belgrade: Napredak, 1921), 58-59.

69 Jovan Cvijić, "Glavne osobine centralnih oblasti Balkanskog poluostrva" [Main Characteristics of the Central Areas of the Balkan Peninsula], in idem, *Govori i članci* [Speeches and Articles] vol. 1 (Belgrade: Napredak, 1921), 93-147. Originally published in *Srpski književni glasnik* in 1904.

unclear meaning. Delineation of regions on the Balkans became an active means of participating in the local nationalist discourse, particularly when historical or ethnological principles were employed. In the most explicit way scholars were arguing for historical borders that were once occupied by various Serbian medieval states. Alternatively, searching for the potentially Serbian population on the map was a convincing means of persuading one's audience that a certain territory should belong to Serbia. For that matter, the use of the term Old Serbia presupposed Serbian claims over the territories right from the outset. Historical evidence was abundant and regularly employed by various scholars, but the ethnological evidence did not support Serbian expansion to those territories and Serbian scholars were fully aware of it. The public opinion in Serbia of that time was that the entire Slavic population of Old Serbia and Macedonia was Serbian and publicly no one was ready to admit that Bulgarians lived in those areas too.⁷⁰

For this reason, Cvijić's approach to the studies of the Balkan Peninsula considerably widened the range of argumentation that could have been used in setting the nationalist claims. His regular use of situatedness of lands in the analysis, their connectedness with neighbouring regions, and particularly with insistence on the importance of open trade routes, created possibilities for making the claims to territories where Serbian population presented a minority, or was even found in traces. Cvijić focused his narrative on the studies of valleys, particularly emphasizing their ability to connect different regions. For example, the valley of the Morava river, particularly the valley of Southern Morava was naturally connected with the valley of Vardar river, which was on the other side connected towards the west with the Kosovo region and the river valleys in the Raška region.

⁷⁰ Clark, *The Sleepwalkers*, 25.

Yet the great importance of the geographical position of Macedonia and Old Serbia is tightly related and to a large extent depends on the geographical position of Serbia. They [Macedonia and Old Serbia] have the greatest value of [their] geographic position only if connected with Serbia; in reverse, the geographical position of Serbia can have its full value only in connection with these lands; because the extraordinary importance of these lands is in their central position and because the Morava-Vardar communication runs through them."⁷¹

On the other side, he argued that Bulgaria had poor communication with Macedonia, obstructed by high mountains. "Bulgaria has natural, and very solid political border with Macedonia. Those are the biggest mountain ranges of the Balkan Peninsula: Osogov, Rila, and Rodopi." His studies implied natural geographical belonging of Old Serbia and Macedonia to the Serbian sphere of interest, and in the same way natural separation of Bulgaria from these regions. Independent from any ethnological studies of these regions, he found arguments that were grounded in geography – natural features of the land which affected political, economic, and cultural aspects of state development. In his estimation, Macedonia and Old Serbia were regions towards which only Serbia could expand and rightfully benefit. Any other arrangement would be detrimental for development of all regions of the Balkan Peninsula.⁷²

In this way, he was moving the argumentation away from the traditional nationalist narratives and getting closer to an imperialist stance. While the majority of scholarly work argued for Serbian ambitions towards Old Serbia and Macedonia by invoking historical testimonies from the medieval times, and by setting the arguments through various linguistic and ethnographic studies which would determine the local population to be Serbian, intellectuals of the late nineteenth century were fully aware that the majority of the population in what they called Old Serbia and Macedonia did not

⁷¹ Cvijić, "Glavne osobine centralnih oblasti Balkanskog poluostrva," 133.

⁷² Ibid., 139.

qualify to be Serbian according to the parameters they had set themselves. Nonetheless, they were not willing to publicly make such statements.⁷³

Stojan Novaković and Vladimir Karić, who were actively working on the propagation of the Serbian interests in Macedonia since 1886, were fully aware that the majority of the local population did not have Serbian identity. Their joint long stay as consuls in Istanbul and Skopje gave them opportunity to actively work on the promotion of Serbian language through elementary schools.⁷⁴ This initiative to promote Serbian interests through elementary schools was devised by the government of Milutin Garašanin in 1885. This was a generation of progressive politicians who devised their nationalist policies during the reign of King Milan. Novaković and Karić thought that through the propagation of the Macedonian national identity they could lure the population away from the Greek and Bulgarian influence. Mihailo Vojvodić reveals in his work that Stojan Novaković devised a plan to write books in the Macedonian vernacular in a way to approach the local population. However, he did it in a way that he was gradually introducing Serbian words in order to make that vernacular more similar to Serbian and more different from Bulgarian.⁷⁵

Examples of intellectual construction of national identity could be easily found in the works of both Novaković and Karić. Finding Serbs on the map and at the same time creating them in the field was part of the process in which intellectuals as state clerks actively engaged. In this endeavour Serbian scholars were not reaching a generally approved agreement about which territories were inhabited by Serbs. Thus, Karić experienced criticism from his colleagues and from state officials for his 1882 book about Serbian lands, because the Serbian territories he delineated were not sufficiently

⁷³ See below, Žujović's testimonies as a minister.

⁷⁴ Stojan Novaković was a consul in Istanbul 1886-1891. Vladimir Karić was a consul in Skopje 1889-1892.

⁷⁵ Vojvodić, *Stojan Novaković i Vladimir Karić*, 9-10, 24, 57-61.

large, as he had given parts of Macedonia to Bulgaria.⁷⁶ While territorial aspirations were definitely not lacking, it was becoming increasingly difficult to defend territorial claims on ethnic grounds. Even though Karić was a staunch proponent of territorial aspirations of Serbia in the Balkans, he was aware that ethnological research was not fully supporting those claims. “An entire overview of Serbia, clearly shows that, with its present borders, it does not encompass what geographically, or naturally belongs to it.”⁷⁷ What naturally and geographically belonged to Serbia was the valley of Morava, the longest and most efficient communication line on the peninsula. Serbia required natural borders that would support the capacity of the state to defend itself with a valley that would connect its inner territories and mountains that provided defensible borders. The logic of Karić’s assertion had more to do with imperialism than with nationalism, as ethnic distribution of the peoples on the peninsula became less significant, and geographical factors became the main explanatory drive of the expansionist rhetoric.⁷⁸

The reality of the newly acquired regions after 1878 showed them that even the regions that were not inhabited by Serbs could be easily inhabited or assimilated. For example, in his 1887 book *Srbija*, Karić asserted that before the Berlin Congress, the population of the Toplica region was almost entirely Albanian. “But after the New Regions were allocated to Serbia, Albanians, some willingly and some forcefully, moved out to Kosovo or the neighbouring regions.”⁷⁹ The desolate province was quickly inhabited by Serbs coming from poor and undeveloped areas. Thus, Karić claimed that in the town of Kuršumlja their Albanian population was quickly replaced with Serbs. One thousand Albanians left, and one thousand Serbs arrived.⁸⁰

⁷⁶ Vojvodić, *Stojan Novaković i Vladimir Karić*, 40-41.

⁷⁷ Karić, *Srbija*, 5.

⁷⁸ Ibid., 5-7.

⁷⁹ Ibid., 758.

⁸⁰ Ibid., 762.

Serbian foreign policy towards the southern regions thus envisioned an initiative based on elementary school education which would propagate the Serbian language. While Stojan Novaković was devising a plan for a speller in Macedonian which would include a significant portion of Serbian words, Vladimir Karić got an assignment in 1888 with the Ministry of Education to coordinate the activities of Serbian schools on the territory of the Ottoman Empire.⁸¹ Karić's promotion to the position of consul in Skopje in November 1889 got him closer to the field in which he was propagating Serbian interests, and Branislav Nušić was assigned to his position in the Ministry of Education. Mihailo Vojvodić provides enough evidence on how the propaganda of Serbian state was consciously constructing Serbian national identity among Macedonian Slavs. Nušić actively propagated colonization of Serbian artisans in the vicinity of Skopje in order to promote Serbian language and identity. Karić used topographical geography in order to promote Serbian agenda, because historical and religious matters were too suspicious for Ottoman censors. However, Vojvodić in his study still implicitly maintains that Serbian national identity was rightfully defended from Bulgarian influence and supports Veselinović's and Novaković's idea that the "Macedonian dialect" [sic] was transitional between the Bulgarian and Serbian languages.⁸²

4.2.3. How to Make Territorial Claims?

As I maintained in one of my previous chapters, personal connections between Serbian scholars and politicians were close. They belonged to the same circles and shared the same personal and ideological ties. In respect of foreign policy and the agenda of the

81 Vojvodić, *Stojan Novaković i Vladimir Karić*, 59-61; *Bukvar za narodne škole u Otomanskoj carevini* [Speller for National Schools in the Ottoman Empire] (Istanbul: 1889).

82 Vojvodić, *Stojan Novaković i Vladimir Karić*, 71-79.

Serbian national program, some of the most relevant intellectuals in the matters of propagation of Serbian expansion on the ground of Serbian nationalism were closely tied with the first generations of earth scientists. Milutin Garašanin and Stojan Novaković had a strong influence on Jovan Žujović, and Vladimir Karić strongly influenced Jovan Cvijić. Consequently, it should not be surprising to see both Žujović and Cvijić at the forefront of diplomatic initiatives that supported Serbian claims before an international audience.

Nonetheless, the course of their engagement in foreign policy and propaganda was not straightforward. The Macedonian question presented a moral problem for some scholars as they collected clear evidence in the field that Macedonians were not Serbs. Among those who publicly announced this was Jovan Cvijić himself, with his 1903 study on Macedonian Slavs. To his knowledge, Macedonian Slavs were an undefined, nationally ambiguous group which clearly could not belong to either Bulgarian or Serbian ethnicity.⁸³ This study received a strong response from the international audience. Wilhelm Götz expressing interest in the Macedonian question due to Cvijić's work. He was so impressed by the approach that he congratulated him on maintaining a balance between Serbian patriotism and Bulgarian claims.⁸⁴ Cvijić was, on the other hand, heavily criticised by Serbian public opinion for not openly stating that Macedonian Slavs were Serbs, and this haunted him well into the interwar period.⁸⁵ Still Cvijić was considered a major expert for Macedonia, for which reason he represented Serbian interests in London and Paris during World War I. Žujović thought that Cvijić was the

83 Jovan Cvijić, "Das makedonischen und altserbische Problem" [The Macedonian and Old Serbian Problem], *Die Zeit* no. 175 (25 March 1903); idem, *Geografski položaj i opšte geografske osobine Makedonije i Stare Srbije* [Geographical Position and General Geographical Characteristics of Macedonia and Old Serbia] (Belgrade: Štamparija Svetozara Nikolića, 1904); idem., *Promatranja o etnografiju makedonskih Slovena* [Observations on Ethnography of the Macedonian Slavs] (Belgrade: Geca Kon, 1906).

84 ASANU, Fund Jovan Cvijić 13484.265.4. Letter from Wilhelm Götz. Munich 12 February 1905.

85 "Naivna kombinacija" [Naive Combination], *Večernje novosti*, year XXI no. 44 (8 December 1918).

most qualified expert for the question of Macedonia, but also that he was not suitable for a diplomatic position.⁸⁶

In a sense, Cvijić was more moderate in his nationalist views than the public opinion expected. He defended himself from such accusations, claiming that he was not distorting the truth. His main stance was that a scholar has to be patriotic, but that he must not be a chauvinist, and identified chauvinism as a plague that distorted scientific research. Therefore, he explained that his treatment of Macedonian Slavs was a sign of his refusal to succumb to chauvinist tendencies in Serbian academia.⁸⁷ Actually, his student Petar Janković made same observations about the Macedonian Slavs, presumably under the influence of Cvijić and suffered similar criticism, from which Cvijić was trying to defend him.⁸⁸

Nonetheless, close analysis of his writings reveals that while he was adjusting ethnographic principles for making claims over Macedonia, he was using geographical arguments about connectedness of valleys to argue for Serbian appropriation of these territories. He still maintained that the Slavs of Macedonia were an ethnically ambiguous group, but this time, instead of ethnic maps which could not be easily defended, Cvijić provided an argument which strived towards delineation of lands which was based on geopolitical arguments – analyses of communications between regions, trading routes, availability of resources, and possible strategies of development. While he was acknowledging that the population of Macedonia and Old Serbia was ethnically not Serbian, he was setting the argument which would set the Serbian claims over those regions despite the absence of Serbian ethnic groups.⁸⁹

86 Žujović, *Dnevnik* vol. 2, 20-21, 86, 130.

87 Jovan Cvijić, "O nacionalnom radu" [On National Endeavour], in idem, *Govori i članci* [Speeches and Articles] vol. 1 (Belgrade: Napredak, 1921), 65.

88 Cvijić, "Petar Janković", in *Govori i članci*, 241.

89 Cvijić, "Glavne osobine centralnih oblasti Balkanskog poluostrva," 95-142.

After his patriotic deviations with his 1903-1906 studies on Macedonia, he got a chance to redeem himself during the Annexation Crisis of 1908. After Bosnia and Herzegovina was annexed by the Habsburg Empire, Cvijić joined the outcry of Serbian intellectuals, this time applying his geopolitical arguments in order to provide evidence for Serbian claims in a different region. His writings reintroduced the geopolitical arguments about geographic connectedness of regions and Serbian need to expand into neighbouring regions, while at the same time re-asserting that Bosnia was the core territory of Serbia. He was returning back to the argument that the Berlin Congress seriously damaged Serbian interests. The formation of Bulgaria restricted the expansion of Serbia toward the east and the occupation of Bosnian and Herzegovina by the Habsburgs interfered with plans for gathering all core Serbian lands around the Serbian kingdom.⁹⁰

According to Cvijić, since the Berlin Congress, Austria-Hungary had the opportunity to hinder economic or cultural development of Serbia at any given moment, even without appropriating any part of the territory of Serbia. The opportunity for Serbia to territorially connect with Montenegro was lost with the Habsburg entrance into the Sandžak of Novi Pazar was lost. In this way, according to Cvijić, Serbia received unnatural geographical, ethnographical, and political borders which denied it its access to the Adriatic Sea, which was the extension of the Serbian space. From an economic perspective, the loss of access to the Adriatic was particularly damaging, because this meant that Serbia lost direct access to all of its exporting routes. According to Cvijić, Serbia got hermetically sealed as all its traditional trade routes got closed. The only

90 Jovan Cvijić, "Aneksija Bosne i Hercegovine i srpsko pitanje" [Annexation of Bosnia and Herzegovina and the Serbian Question], in *Govori i članci*, vol. 1, 205-208.

solution was to distribute goods through its border with Austria-Hungary, which made his state dependent on it.⁹¹

The strength of the argument in this text did not depend on the principles of national unification of all Serbs or Yugoslavs. Although he reiterated that the “central part of the Serbian people” was placed under foreign rule, and that the annexation was violating international agreements, the main argument was focused on geographical ideas. He carefully outlined the arguments towards the geographically entrenched principles of state development which emphasised importance of trade routes and connectedness of regions. Cvijić argued that after the Berlin Congress Serbia lost connections with the natural trade routes with which it was able to export goods to international markets. After the Annexation, he evaluated that these trade routes were completely lost for Serbia as the valley in Herzegovina got under the direct rule of its powerful neighbour. Sandžak was under occupation as well and Serbia was not able to connect with its natural ally and with whom they strived to unite – Montenegro.⁹²

Though Austria had effectively ruled Bosnia and Herzegovina since the Berlin Congress, at least on a legal grounds that province was still Ottoman. Annexation did not explicitly affect Serbia, as the territory was not theirs to begin with. Nevertheless, the expansionist plans of the Serbian elite were seriously damaged by the Annexation. What radically changed was the balance of great powers on the Balkan Peninsula, since the Habsburgs damaged the interests of Russia and Great Britain, and it directly took the territories from its legal owner – the Ottoman Empire. The Serbian position in this diplomatic crisis resembled those of the great powers. The Serbian government protested for the infringement of the international diplomatic agreement and acted as if its state

91 Jovan Cvijić, “Aneksija Bosne i Hercegovine i srpsko pitanje,” 207-208.

92 Ibid., 205-208.

interests were damaged in the process, openly expressing its interests in Bosnia and Herzegovina.

As I have mentioned in one of the previous chapters, both Cvijić and Žujović were engaged in diplomatic missions and had to be familiar with the official positions of the government during negotiations. In Cvijić's case, the knowledge of anthropogeography and his familiarity with German *geopolitik* offered him an efficient tool with which he was able to make an argument which was presentable to an international audience. He was using intellectual tools that geographers in Germany and France used in order to establish discussions about territorial expansion of European states. In that sense, the language of Serbian expansionism towards the territories in the Balkans was using the same or similar notions used by great powers in their claims. This language had more similarities with the assertions of German national expansionism towards its neighbouring lands.

One of the prime arguments of Cvijić in his patriotic agenda was the notion of the economic and geographical necessity for a country such as Serbia to have access to the sea. While in the afore mentioned argument during the Annexation Crisis he argued for Serbian unification with Montenegro which would enable the unified country to have access to the Adriatic Sea, as the ambitions of the Serbian intellectual elite adapted to the new situation, the access to the sea was supposed to be achieved through the Adriatic coastline in the north of Albania. Cvijić argued for the Serbian appropriation of the north Albanian shoreline on the grounds of geopolitic necessities of that expansion.

In December 1912 he published an article in *Petermanns Mitteilungen* in which he presented an argument for Serbian access to the Adriatic Sea. In this article, he openly argued against ethnographic evidence. He was aware that northern Albania, even in the vicinity of the lake Skadar was inhabited by Albanian population, and he even publicly

acknowledged that. He mentioned that while he was conducting research in northern Albania he encountered only few Serbs. However, this acknowledgement was not without invocations of historical evidence which he used to argue that even though Albanians lived in that region in his present, this region was historically a place where both Serbs and Albanians influenced each other and lived on the same territory and that even though they presented mostly Albanian ethnic group, he argued that historically speaking they must have been under strong influence of Serbs and that they must be mixed.⁹³

Nonetheless, his main argument claimed that despite the absence of ethnic Serbs in the field, on the ground of geopolitical necessities of the Serbian state, this territory should belong to Serbia, rightfully, because without it Serbian state would not be able to develop. For that purpose, he argued that ethnic principles of state borders should be abandoned for more important reasons.

Because of the afore-mentioned assimilation and migration processes, Albanians in the last centuries achieved a lot in the ethnographic sense, and this is the reason why the population in the part of Northern Albania occupied by the Serbian army is mostly Albanian. However, Serbia has to get access to the Adriatic Sea and a part of the Albanian shore in order to maintain its economic independence; therefore it has to occupy a part of the region inhabited by Albanians and which it previously occupied.

This means, therefore, occupying one truly ethnographically foreign region, but of the kind that has to be taken for its extraordinary important economic interests, particularly for necessities for survival. This kind of occupation could be called *antiethnographical necessity*, and in such form it is not against the principle of nationality. In this case this is even more legitimate for the Albanians of the Northern Albania originated from the amalgamation of Albanians and Serbs and because one can still find traces of Serbian population among them.⁹⁴ [...]

One closed and economically almost suffocated state formation is struggling for years for its economic independence and during that bloody and expensive war conquers an exit to Albanian shore of the Adriatic Sea. It was not able to access the sea in any other direction, because the other shores of the Adriatic Sea were occupied either by its allies, Greeks and Bulgarians, or Austria-Hungary. The Adriatic coast, which Serbia conquered, makes a geographical unity with Kosovo and Metohija, and it was tightly connected with it over long historical times.⁹⁵

93 This article was later reprinted as: Jovan Cvijić, "Izlazak Srbije na Jadransko more" [The Expansion of Serbia towards the Adriatic Sea] *Glasnik Srpskog geografskog društva*, vol. 2 no. 2 (1913): 192-204.

94 Cvijić, "Izlazak Srbije na Jadransko more", 202-203.

95 Ibid., 203.

For Cvijić, a nationalist narrative which strived towards the unification of all lands inhabited by Serbs was only as good as the higher purpose it served, defending and expanding the Serbian state. His work with anthropogeography and geopolitics convinced him of the higher needs of states and he applied the same measures for the development of Serbia. Even though he spent most of his career tracing Serbs and other South Slavs across the Balkan Peninsula, in most cases for the purpose of finding the argument for the unification of all the Serbs and South Slavs in one state, the nationalist motivation for his research had transformed over time and the ethnographic principles became less relevant in the large scale foreign politics of the Serbian “national state.” He was acquiring the argumentation of the intellectuals from the imperial states and adapted the argumentation for the international audience that corresponded with the current imperialist tendencies of the great powers. For that purpose, he estimated that geographical arguments seemed more useful than ethnographical. This message had to be conveyed to the foreign audience and the scholars who could assist in the legitimization of the Serbian imperial claims: “The other direction of activity is outside of our environment. About our national questions we have to inform the scientific circles and public opinion in the world. A man often does not realise how much we can accomplish by doing this.”⁹⁶

4.2.4. The Ministry of Foreign Affairs

While the work of most intellectuals was usually limited to writing, directly or indirectly related to professional or political matters, Jovan Žujović had an opportunity to actively engage in foreign politics. While his works in the earth sciences were intended to

⁹⁶ Cvijić, “O nacionalnom radu,” 65.

make an impact on international scientific discourses and improve the reputation of the Serbian academia, his service in the office of the Minister of Foreign Affairs gave him an opportunity to have an active role in the foreign relations of his country. His engagement as the minister in this office in its full mandate in 1905 and as a substitute minister in 1910 could testify both about the international aspirations of the Serbian foreign policy and about Žujović's personal involvement in international aspirations of Serbia.

During his service as the Minister of Foreign Affairs, Jovan Žujović was involved in the creation and execution of policies which aimed at propagating Serbian claims in Old Serbia and Macedonia. In Old Serbia (Sandžak of Novi Pazar, Kosovo and Metohija) their plans were encountering opposition from the strong Albanian national movement, and the warring local tribes, whose conflicts were plaguing the region, causing instability and disrupting Ottoman rule. The Ottoman territory of Macedonia was in the late nineteenth and early twentieth century claimed by three neighbouring nation states: Serbia, Bulgaria, and Greece, and even Romania declared its own interests there.

At the time when Žujović took over his ministerial duties these four states aggressively propagated their claims over the land and the population of Macedonia with Ottoman authorities and international audience. Armed bands stormed the region waging an undeclared war between which could only vaguely could be described as Bulgarian, Greek, Serbian, and Albanian populace. The lack of strong Ottoman government which would keep the regions under control enabled armed bands to take control over small areas and act independently from the central state power. Initially, such conflicts had little to do with national movements and the rebellious bands followed their own local interests, very often because they were struggling for survival. In such an atmosphere, mobilization of these bands for the nationalist project became an opportunity for all the emerging nations. Supporting the military conflict was in the interest of Serbian foreign

policy and the organisation of para-military troops and their supply with weapons and ammunition was in the immediate concern of the Ministry of Foreign Affairs. Consequently, the concerns that Žujović had about knowledge domination over the Balkan Peninsula, got its more explicit content from 1905, as he became responsible for the organisation of armed troops in the region.

Since the 1880s, Serbian foreign policy was actively working on two fronts: 1) the already mentioned ecclesiastic-educational strategy, devised and organised by Stojan Novaković, and supported by Vladimir Karić, which actively worked on the development of a network of priests and teachers who were supposed to propagate Serbian national identity through religion and language, and 2) the support for the Serbia para-military bands (Chetniks) which engaged with local Albanian and Bulgarian troupes of the same sort. The official explanation for their organisation was that they were mobilised and funded for the defence of the local population against the attacks of the local bands. When Žujović took the office in May 1905 he had to examine whether he would continue with the already set strategies.

At the moment when he took over the office he expressed concerns over these already implemented strategies. His biggest qualification was that the Austrian consul in Belgrade, Constantin Dumba was married to one of his sisters-in-law, which provided a more personal contact with the most important foreign representative in the country. He was new to diplomacy and lacked expertise, which he was well aware of. At the beginning of his office, he organised a meeting with all the current political advisers who were currently or previously engaged into matters in the region and asked for their opinions on how to proceed. One of the initial matters was the question of schools on the Ottoman territories. He was faced with an issue that the whole school project was presenting a serious financial burden without providing results. The educational plan

expanded and schools covered a large territory and employed a large number of teachers. Nonetheless, Žujović observed that some schools had an unsustainable rationale. It was a common situation that some schools had only two students with one teacher, or that they were founded in villages where there were no ethnic Serbs. Schools were not well equipped and lacked textbooks. Furthermore, they were not fulfilling their political and propaganda purpose as they were not founded in the regions inhabited by Serbs. Žujović's problem was how to address this issue. The general estimation of the ministry was that these schools were still necessary for "psychological reasons."⁹⁷ He opened the question for discussion on whether the school project should be abandoned if it was too costly, and even though his initial suggestion was towards the closure of the whole project, the council concluded after the discussion that the school project should be continued: "That the organisation of our schools and work in them are organised in a way to represent our cultural superiority over our competitors; new schools should be opened only where we have legal grounds for it and where it is required by propaganda."⁹⁸

The organisation of schools had a direct connection with the propaganda. Education and religion were seen as main instruments of cultural propagation, and were used in a similar manner by both Bulgarian and Greek national movements in recruiting peasants. The whole idea of demonstrating "cultural superiority" resonated in the intellectual construction of national identity, and from that perspective scholars had an important role in the demonstration of it. However, this was not the only reason. Žujović had another motive to maintain the network of school teachers in Kosovo and Macedonia.

97 "Ministarstvo inostranih dela Kraljevine Srbije – Beograd: Zapisnik konferencije diplomatskih poslanika na strani, držane 22-25 julija 1905 god." [Ministry of International Affairs, Kingdom of Serbia, Belgrade: Minutes from the Conference of Consuls Abroad, Held 22-25 July 1905], Pov.Br. 2606, 22-25.07./04-07.08.1905, in *Dokumenti o spoljnoj politici kraljevine Srbije 1903-1914* vol. 1 no. 4/I: 1/14. juli – 30. septembar/30. oktobar 1905. godine., 157-183.

98 Ibid., 178.

Operating the armed bands on the territory of the Ottoman Empire was difficult, and the Serbian government had to develop a system through which it would have the opportunity to distribute weapons and organise troops. The network of schools provided a good opportunity to legitimately send agents which would represent interests of the state in the field. School teachers, together with Orthodox priests, managed the transportation and distribution of weapons and managed contacts with locals. During his stay in the office, Žujović was regularly receiving notes about the weapon smuggling, difficulties of the transportation, and the embezzlement of the weapons by local agents who sold the weapons to Albanians instead of giving them to Serbian peasants.⁹⁹

Organisation of the weapon supplies and Chetnik bands was part of Žujović's duties, which he inherited when he took over the office. At the beginning, he pondered the reasons for the abandonment of the para-military bands. From the perspective of international politics, supplying weapons to bands in Ottoman territories represented a serious breach of international laws and was as an act of enmity from the Ottoman perspective, causing problems in the plans of great powers to establish peace in the region, and in addition it was causing stir among its neighbours. The support of Bulgaria, Greece, and Serbia to armed groups in the region were covert and all three states officially denied they were supporting any armed insurgents on the Ottoman territory.

99 "Stojan Dajić, učitelj u Domorovcu – Beograd, Šefu konzularnog odeljenja Ministarstvu inostranih dela Kraljevine Srbije, Jovanu M. Jovanoviću – Beograd" [Stojan Dajić, Teacher from Domorovac, Belgrade, to the Head of the Consular Department of the Ministry of Foreign Affairs, Jovan M. Jovanović, Belgrade], Pov.Br. 2511. 03./16.08.1905., in *ibid.*, 199-200; "Načelnik Sreza kosaničkog – Kuršumlija, Ministru inostranih dela Kraljevine Srbije Jovanu M. Žujoviću – Beograd" [Head of the Kosanica District, Kuršumlija, to the Minister of Foreign Affairs, Jovan Žujović, Belgrade], Poverlj.Br. 154., PP Br.4597, 24.09./07.10.1905, 09./22.10.1905, in *ibid.*, 327-329; "Konzulat Kraljevine Srbije – Priština, Ministarstvu inostranih dela Kraljevine Srbije – Beograd" [Consulate of the Kingdom of Serbia, Priština, to the Ministry of Foreign Affairs, Kingdom of Serbia, Belgrade], PP Br. 1088, PP Br. 4487, 29.09./11.10.1905., 01.10./14.10.1905. in *ibid.*, 339-341. Priština 26.10./08.11. "Konzulat Kraljevine Srbije – Priština, Ministru inostranih dela Kraljevine Srbije Jovanu M. Žujoviću – Beograd" [Consulate of the Kingdom of Serbia, Priština, to the Ministry of Foreign Affairs, Kingdom of Serbia, Belgrade], PP Br. 1182, 26.10./08.11.1905., in *Dokumenti o spoljnoj politici kraljevine Srbije 1903-1914 vol. 1 no. 4/II: 1/14. oktobar – 31. decembar 1905/13. januar 1906. godine. Iz fondova Arhiva Srbije i Arhiva Jugoslavije* [Documents on the Foreign Politics of the Kingdom of Serbia 1903-1914 vol. 1 no. 4/II: 1/14 October – 31 December 1905/13 January 1906], ed. Ljiljana Aleksić-Pejković, (Belgrade: SANU, 2014), 434-436.

However, this decision was not up to Žujović, as the whole government was directing the project.

Mobilizing and sending Chetniks across the border was not only one of the key strategies for the propagation of state interests in the Old Serbia and Macedonia, but as well a line of defence, deep into the Ottoman territory, against the foreign policies of Austria-Hungary, Bulgaria, and the growing national movement of Albanians. My intention here is not to offer judgement on motivations of Serbian foreign policy in the organisation of armed troops in the neighbouring Ottoman provinces, but rather to depict the world view of Serbian intelligentsia which participated in the formulation of foreign policies which situated Serbia in international relations. The Balkans were an unstable region and the central government of the Ottomans did not have the ability to control its peripheral regions. Everyone wanted a piece of the Ottoman territories and aggressive movements exploited an already unstable situation in the field. From the perspective of Serbian political and intellectual elite, Serbs in the Ottoman provinces were in danger from the bands composed of other ethnic groups. Although, it was not easy to clearly define different ethnic groups at the time, these amounting conflicts were contributing to clearer ethnic identifications of peasants.

During the discussion on the guidelines for the foreign policy in July of 1905, most participants at the conference were against abandonment of para-military operations. The discussants emphasised the need to defend Ottoman Serbs from Albanians and Bulgarians and fear that the Serbian population would be forced to adopt a different national identity. Although, some of the participants argued for the full closure of the border, as weapon transports could have compromised the international position of Serbia, the fear of the Albanian and Bulgarian actions in the region was still stronger. In the words of Svetislav Simić:

Abandoning now the labour with these results would be a mistake, hindering its way would be a shame. Matters must continue developing the way they began, even more that the situation, created with the work of these bands could be used as a dilatory means to bring the Bulgarians to their senses. Before they thought they could eradicate us with one Night of St. Bartholomew; now they know that we are not helpless there (*da mi tamo nismo tikva bez korena*), but a factor they have to be reckoned with, if they mean good for themselves. The whole strategy is to organise help in a way that the Royal Government could not be reasonably reprimanded. For this reason, this entire task should be outside the Ministry, in the hands of people of utmost trust, through which the Government would always have its initiative. Otherwise this movement should be assisted as it was up till now, and even more than before. The Macedonian question outgrew its ecclesiastic-educational phase; today it is a purely political question.¹⁰⁰

When Žujović took office, the general opinion among the political elite was that the para-military mobilisation in Old Serbia and Macedonia should not be abandoned. While the ecclesiastic-educational project was suffering from lack of organisation and apparent absence of Serbs in the region, the support of the Chetnik bands was growing. The Serbian elite was afraid of the influence that Austria-Hungary had with Albanians, and of the Bulgarian mobilisation of the Macedonian population. In 1905, enemies and allies were considered among all sides, but what they agreed upon, and this was explicitly expressed by Milovan Milovanović, was that in that constellation of power, any plan had to address the plans of Austria-Hungary. From their perspective, they had to either work with their powerful neighbour, or against it.¹⁰¹

The great powers worked on neutralizing the para-military activities in the Balkan provinces and through diplomatic initiative they managed to secure disarmament of the region. However, the Balkan Wars started shortly after disarmament began. In 1910, when Žujović was performing the duty of the Minister of Education, he was for a short period substituting as the Minister of Foreign Affairs. At the time, the disarmament of the para-military bands in the region was underway. From the perspective of Serbian foreign policy, this was a good deal because they were certain that Serbian troops were the least

100 "Ministarstvo inostranih dela Kraljevine Srbije – Beograd: Zapisnik konferencije diplomatskih poslanika na strani, držane 22-25 julija 1905 god.," 172.

101 Ibid., 160-161.

armed and had the oldest weapons. This implied disarmament of the bands that Serbian authorities were most afraid of, and from whom they were losing the competition in the previous years. Though Žujović stayed in that office shortly, from July until October 1910, he was involved in the disarmament process, receiving feedback on the peasants surrendering their weapons to Ottoman authorities. While he was organising the distribution of weapons to peasants in 1905, Žujović was observing their disarmament in 1910.¹⁰²

The school project, however, remained. Policies devised during the last decades of the nineteenth century were made in collaboration between scholars and politicians. People like Stojan Novaković, Ljubomir Stojanović, Milan Đ. Milićević, Vladimir Karić, and Jovan Žujović worked in a space that was in between the political sphere and academia. Scholars devised policies towards Old Serbia and Macedonia. These matters were a topic of conversations on the streets, in the cafés, shops, and salons. International recognition of Serbia depended on the successful assertion of its cultural belonging to “civilisation” and Serbian intellectual elite intensively worked on the transformation of a peasant patriarchal society of an Ottoman province into a European state. While education was by the 1910 still in a development phase in Serbia, still struggling with insufficient number of schools, teachers, and books, foreign policies demanded action which would propagate Serbian national identity on the same grounds as it was done in the home country. In that state of mind, organising networks of elementary schools and sending armed bands to the Ottoman territory to preserve the little Serbs there was had the aim of establishing a sphere of interest where legitimate claims could be propagated

102 Ljiljana Aleksić-Pejković and Klimen Džambazovski (eds.), *Dokumenti o spoljnoj politici kraljevine Srbije 1903-1914 vol. 4 no. 2/I: 1/14. juli – 30. septembar/13. oktobar 1910. godine. Iz fondova Arhiva Srbije i Arhiva Jugoslavije* [Documents on the Foreign Politics of the Kingdom of Serbia 1903-1914 vol. 4 no. 2/I: 1/14 July – 30 September/ 13 October 1910], (Belgrade: SANU, 2015), 224-483.

before an international audience – European states to whom they tried to prove their “cultural superiority” over their neighbours.

The consequences of these policies culminated in the two Balkan Wars which ultimately divided the European territory of the Ottoman Empire. The very same territories Serbian political and intellectual elite aspired to were finally conquered and Serbia got a considerable share of territories in which it propagated its interest over the course of several decades. Both Old Serbia and Macedonia were acquired and of the desired territories only north Albania and access to the sea were not gained. Even before the wars ended, the Serbian intelligentsia had to face the consequences of its strategies.

Žujović was present during the meeting of the Independent Radical Party in December 1912, where policies and organisation for the newly conquered (“liberated”) territories were discussed. He was part of the discussion and recorded the issues that bothered the leaders of his party and him. The most obvious question they had to deal with was the realisation that in the newly conquered territories only a quarter of the population was ethnically Serbian. Their concern was how to make the non-Serbs feel like Serbian citizens, and how one could make them feel like Serbs in the years to come. Žujović interrupted the discussion with a comment: “We conquered other people’s lands.”¹⁰³

Considering the troubling political history of Serbia of early twentieth century, it was difficult for any scholar in the country to stay away from politics. It was considered their patriotic duty and it was expected from them to show this fervour in their scientific work too. Žujović’s involvement in the politics during the first decade of the twentieth century got him away from science, but he was still in everyday contact with his colleagues, working in academia, and teaching at the university. Žujović, Radovanović,

¹⁰³ Žujović, *Dnevnik* vol. 2, 14-15.

and Cvijić shared the same *habitus* with the political elite of Serbia. They inhabited the same places, argued about the same political issues, and shared the same patriotic fervour that was driving the intellectual and political endeavours on the strengthening of the Serbian position in the Balkans.

During the several international political crises, from the illegal support to the warring bands in Macedonia, through the Bosnian Annexation crisis, and finally through two Balkan Wars, Žujović and Cvijić actively argued for the Serbian position. When in 1914 World War I started, all the scholars were mobilised for the national cause. By that time both Cvijić and Žujović were trained on what to say and how to behave. Both represented Serbian interests in London and Paris as diplomatic envoys and during the course of the war participated in negotiations about the creation of Yugoslavia. Žujović acted more as a trained diplomat than as a scientists. In his diplomatic work, earth sciences played almost no role. However, Cvijić heavily exploited his research and his credibility as a scholar to argue for Serbian, and later, for Yugoslav claims. His use of his anthropogeographical and ethnographical work was accompanied by his claims of geographical necessities. Where ethnography and history proved to be weak points, geography was supposed to strengthen the argumentation. Between 1914 and 1920, both of them actively participated in political agitation for their state, and in this process, Cvijić gained considerable reputation, both during his exile days in France where he used his position as a lecturer at Sorbonne to promote his interpretation of anthropogeography of Balkan Peninsula, and particularly later when he became the chief expert of the delegation of the Kingdom of Serbs, Croats, and Slovenes.

4.3. Conclusion

While scientific fieldwork was driven by different motivations in respect of choice of topics and areas, scientists shared the same world view in which territories and topics were interpreted as spheres of interest of both individuals and scientific communities where authority and expertise over them had to be claimed locally and internationally. In that aspect, a matter of patriotic knowledge was not only the knowledge that was supposed to be distributed within the nation, in schools, libraries, ministries and other government sites, but in the international sphere, too. Knowledge about the land was necessary for the purpose of the cultural and economic development of the state, and the state had to possess its own scholarly centre, in which the knowledge about the land would be produced. In the interaction between the internal demands of the Serbian intellectual and political scene, and international, cosmopolitan views of objective scientific research criteria, four different spacial scopes of research surfaced:

- 1) research scope determined by the state borders,
- 2) ethnic borders that were constructed by the Serbian or Yugoslav nationalist-irredentist programs,
- 3) research scope motivated by scientific imperialism,
- 4) research scope that was motivated by an objective epistemic necessity and scientific curiosity.

Each of these spatial scopes represents a different motive for research of a specific region. These motives were not mutually exclusive, nor contradictory and on the Balkan Peninsula they easily overlapped, particularly among Serbian scholars. Because the Serbian territory consisted of very diverse formations that were only a minor part of much larger land systems who spread in all directions away in foreign lands, scholars were forced, out of mere epistemic necessity to expand the narrow Serbian perspective

on geological structure of the landmass. This epistemic necessity was not in collision with nationalist motives that inspired scholars to travel to areas requested by the national program. At the same time, the polycentric nature of scientific networks provided them with an opportunity to claim the entire peninsula as their domain. The desire to get international recognition inspired a series of research surveys of the state and around peninsula that depended on detailed and meticulous recording in the field. Presenting these results to international audience demanded establishment of regular means of this representation, which motivated institutionalisation of scientific research. Žujović's plan envisioned Belgrade as the centre of research of Balkan Peninsula, an area that was still a geological *terra incognita* of Europe, and in this aspect he wanted to compete for this central position with Vienna. This form of scientific imperialism may have set out different borders from how it was envisioned by the nationalist-irredentist programs. However, all the four motives played at times together as determining factors for the determination of the spacial scopes of scientific work.

Politically turbulent times affected the relations from the inside and from the outside. This was the time when the Serbian national movement was at its peak and delineation of national interests involved a good deal of territorial planning. Intellectual embeddedness into political elite of Serbia, particularly in political decision making and diplomacy, affected the spacial scope of scientific research and motivated many research surveys that went into the areas required by the Serbian national program. Such research choices affected the internal scientific recognition, within Serbian society, but were at the same time talking to international audience in order to validate Serbian presence, political or epistemic, in those areas.

In the light of the discordant relations with Austria-Hungary, reliance on foreign scholars, particularly if those scholars were Austrian, was a sign of weakness which

hindered internal development and international reputation of the country. It became a matter of national pride to possess an independent and self-reliant school of earth sciences. In front of foreign nations, Serbian geologists and geographers wanted to demonstrate their knowledge and ability to produce reliable results. In this situation, they were fully aware that their technical and systemic abilities were not at the same level as of their neighbours. However, collaboration with the Habsburg scholars was the means for them to get scientific recognition.

5. How to Establish a Reputation from the Periphery

Establishing the reputation of new scientific institutions depended a great deal on international recognition. Knowledge production on the periphery was thus determined by the dynamics of the centre-periphery relations, where the centres of knowledge production had the privilege of allocating attention to the periphery according to their need. Scientists on the periphery were thus conditioned to seek attention and recognition for their work from the scientists working at the centres, while at the same time aspiring to become centres themselves. They could contribute by sending specimens and writing reports for the centres. The centre determined how to interpret these specimens and reports.

In the organisational structure that was forming around the earth sciences in Serbia since the 1880s, the division of labour allocated several actors to leading positions. From the beginning of the process Jovan Žujović was the central figure, responsible for all assignments, trying to establish a network of collaborators who would send specimens to him. As the network was developing, the division of labour and professionalisation led to growing recognition of expertise of certain actors. This led to the formation of specific fields of power where the recognition of one's expertise would establish a person's reputation in the hierarchy of knowledge production. In this process international recognition played a significant part, but the scholarly circle that was forming around Žujović began creating its own demands and its own dynamics, which determined the recognition of scholars who participated in its work.

In the period between the 1840s and 1880s, intellectual life in Serbia formed around the Serbian Learned Society and the Grand School, which performed a central role in the mobilisation of scholars. The primary and secondary schools that started appearing around small provincial towns and villages performed the peripheral role and provided the first jobs for most young scholars. In practice, educational goals were dominant and the understanding of science was based on the idea of a compact transmittable knowledge conveyed in the classroom and employed in everyday life. As I have demonstrated in the first chapter, division of labour was motivated around these educational goals, where the transfer of knowledge became the instrument of transformation of the peasant patriarchal society upon Western European models. Independent of whether they were working as school teachers or clerks in state administration, scholars actively participated in dissemination of scientific knowledge. Scholarly publications were mostly oriented on research of language, literature, and history, and work on natural and technical sciences mostly consisted of translations, textbooks, and manuals. Fields of expertise were not clearly defined and one scholar, by mere fact that possessed some kind of education, could have legitimately engaged in production of scholarly texts.¹

Most of these scholars had only secondary school degrees and Grand school degrees, with vaguely defined specializations. Mathematics and *jestestvenica* were epistemic fields within which scholars could become experts in several sciences and had the authority to teach and research in each of them. Frequent shifts of employment affected scholarly output and most scholars did not engage in scholarly work for a long period. Administrative and political appointments were more prestigious than work in education, which made most scholarly engagement periodic and inconsistent.

1 Please see chapter 1.

Josip Pančić changed that. His orientation towards field research, collection, classification, and examination of specimens changed his students' perception of scholarly work. Translation and dissemination of knowledge were separated from active production of new knowledge, and with it, the role of teacher was separated from the role of scientist. This attitude was adopted by Žujović and further transmitted among his students. However, the new understanding on what scientific practice meant did not eliminate the educational values from the work. When Žujović took the position of professor at the Grand School, his primary role as a teacher encompassed all duties previously set by the state's educational system and he found himself in the position of leading expert for the advancement of education in primary and secondary schools. This involved more than simple participation in educational boards and inspections. For a scholar interested in field research, collection, classification, and examination of specimens, this became an opportunity.

5.1. Creation and Division of Scientific Fields

Setting up contribution as a goal and establishing quantitative and qualitative output of data as a criteria determined the demands from the community of scholars. The circle that Žujović started forming around himself was guided by a set of goals that was both empirically and epistemologically focused on collection of reliable data, their organisation, classification, interpretation, and presentation, thus overcoming the initial broad educational goals of the Serbian intelligentsia that in the first decades envisioned scientific work as primarily oriented towards summaries and translations of the knowledge produced elsewhere. Žujović, Urošević, and Radovanović saw Serbian scholars as producers of knowledge. In that aspect, their understanding of scientific work

was largely inspired by the empirical-historical traditions in earth sciences. Their goal was to produce a large number of studies which analyse specific regional features, classify them under internationally standardised geochronological strata, and identify the minerals, fossils, and rocks. The final products were contributing to geological maps that located the areas according to layers found on the stratigraphical column. For foreign audience, this was new knowledge that could be incorporated into already existing corpus of studies. Their goal for research was simple: finding areas that were still not explored and examining in details the features of that area.

In the previous chapters I presented the social and political networks that secured Žujović's position in the social and political scene of Serbia at that time. From the outset this position gave him considerable credibility in the eyes of state authorities and enabled him to actively and passively exploit the administrative apparatus of the country for research. The Ministry of Education was at the centre of all educational and scientific projects, and its resources, both financial and human, were essential for their realisation. Žujović's first steps in the organisation of networks for collection of rock specimens were facilitated by the ministry's own educational projects aimed at improvement of secondary education, which connected Žujović with professors of secondary schools and enabled him to implore the local administration to assist him with his projects. A number of provincial administrators and clerks, engineers, and physicians offered assistance and provided materials. Transportation of rock samples from the provinces to Belgrade was difficult, and local authorities, post offices, and railway clerks provided logistical support for their part, quite often free of charge. The collection of rock specimens involved a number of actors who had nothing to do with science, and yet who were by their position forming a network that collected and transported the specimens from the periphery to the centre.

Initiatives to create collections of mineral and rock specimens existed before Žujović began his work. When he took the post in 1880 he inherited a small collection gathered in the previous decades by Josif Pančić and Felix Hofmann. Along with the specimens, Žujović inherited their networks which supplied the natural history cabinet with specimens. Pančić had several initiatives to secure rock and mineral specimens from the mining sites and contacted engineers who were sending him the most interesting samples. He urged the Ministry of Education to secure the regular collection of “oryctognostic and geognostic” specimens from the Majdanpek mines and for the cabinet of natural history, suggesting that they could be potentially used for international exchange. The collection Žujović found contained a number of gifts from Baron Herder, Janko Šafařík, Emilian Josimović, Mihailo Rašković, József Szabó, and some other locally influential scholars, who due to their partial or full interest in earth sciences obtained specimens and donated them to the school. Pančić tried to make such donations more regular and urge the mining endeavours to cooperate with the school, but by the time Žujović took over the duties, such exchanges were sporadic.²

5.1.1. Network for the Collection and Distribution of Specimens

In the first decade of his job as a professor, Žujović was generally working alone. Most of the specimens he collected himself during the excursions he organised with his students for the seminars in geology. This was a way to secure quality specimens and explain to his students on the spot what consisted geological fieldwork. Students who were at the moment attending his courses were frequently bringing specimens from their own field trips, often conducted in the vicinity of their home environment, which was

² Jovan Žujović, “Izveštaj za god[inu] 1880-1888” [Report for the years 1880-1888], *Geološki anali Balkanskog poluostrva*, vol. 2 no. 1 (1890): 85-87.

frequently part of their seminar assignments. Most of his students did not pursue geology as a profession later, but some of them started practising field research later in their careers. Among those who continued collaboration after they graduated, the majority worked as school teachers and occasionally published in scholarly journals. Consequently, they were the reason why some schools continued sending specimens to Belgrade for identification, because they regularly conducted field trips in the areas in the vicinity of schools and accrued materials needed in Belgrade. His former students and later secondary school professors such as Aleksa Stanojević from the Čačak Gymnasium, Đura B. Dimić from the Zaječar Gymnasium and the 1st Belgrade Gymnasium, Živan Mihailović from the Aleksinac Lower Gymnasium and Kruševac Gymnasium, Cvetko Petković and Đorđe Melentijević (both from Pirot Gymnasium) were regularly sending their collections of fossils from wherever they were posted, continuing this way their interest in research.³

In 1882, the Ministry of Education initiated an official project of collecting rock specimens to which it assigned Jovan Žujović as the main expert. The goal of this project was to assemble rock and mineral collections for teaching purposes in the lower and

3 AS, Fond Jovan Žujović 40. Work Diary: September 1894: M. [Đura?] Dimić from the 1st Belgrade Gymnasium brought some limnoquartzite from Orlovo, a piece of marble from Vrnjačka Banja, and an opal-jasper from Vrnjci. 8 September 1894: Ž. Mihajlović* [Živan Mihailović?], a geologist from Aleksinac, reported about the existence of Tertiary layers near Mali Drenovac, and said that lias from Sv. Stefan does not contain belemnites, and in order to prove that he sent shale clams (kongerije) for which Vitković believed they were belemnites. 22 October 1894: The collection of Cvetko Petković – lias from Koprive – was given to Lj. Stojanović to determine them. 25 November 1894: Živan Mihailović*, a professor in Aleksinac [Aleksinac Lower Gymnasium] sent a collection of clams (kongerije) from Šumatovac, schists with fossils from Kraljevo, and some archaeological relics from Stubline. 25 January 1896: Pirot Gymnasium sent several specimens, with some Gossau [Gossau interstadial complex] fossils from Sukovo. 18 February 1896: Đorđe Melentijević [Pirot Gymnasium] brought his collection of fossils from the Pirot County. 7 October 1898: Cvetko Petković brought his collection from Pirot. 12 December 1898: Žujović determined 30 samples of rock sent to him by the 3rd Belgrade Gymnasium. 18 February 1903: Stev. Radovanović, a school teacher from Veliki Popović sent teeth of a mammal in lignite. Jovan Žujović, “Izveštaj za god[inu] 1889” [Report for the Year 1889], *Geološki anali Balkanskog poluostrva*, vol. 3 (1891): 117-121. This report mentions contributions from professors of secondary schools from Požarevac (Miloš Dinić, M. Kandić), Čačak (Aleksa Stanojević), Veliko Gradište (Dragutin S. Petrović), Kragujevac (Petar Ilić, Panta Milanović), Zaječar (Đura Dimić), and Aleksinac (Milutin Vitković). Idem., “Izveštaj za godinu 1890-91” [Report for the years 1890-91], *Geološki anali Balkanskog poluostrva*, vol. 4 (1893): 163-169.

higher secondary schools in Serbia. The main collection of rocks and minerals was at the time with the Mining Department of the Ministry of Finance and the Ministry of Education requested from the Ministry of Finance to make this collection available for educational purposes. The first choice for the project was the rock and mineral collection of the Mining Department and the mining experts who worked there. The idea was to use the already existing collection instead of creating new collections. The Ministry of Education had proposed the project already in December 1880, but there was no response from the Ministry of Finance until July 1882. When the Ministry of Finance finally responded, they refused to participate by saying they did not have enough employees for that assignment. They suggested that the question should be redirected to the professor of geology and mineralogy at the Grand School if he might have “a faster and more direct way of doing it.”⁴ In 1880, for the Ministry of Education Žujović was not the first option for the project. The Ministry of Finance had the largest collection of minerals at the time, but, for whatever reason, they were unwilling to cooperate on this matter.

This shifting of authority between offices is illustrative of the transformation of understanding of geological research from purely utilitarian interest of state administration in earth sciences into purely scholarly interests. Academic activity was inseparable from the utilitarian employment of these sciences, on which the scholars and scientific research itself built their relevance in the society. The shift from the Mining Department to the Grand School as the main authority for the knowledge about rocks and minerals did not happen overnight, yet this gradual shifting of authority established the central scientific authority of the Grand School.

Subsequently, the Ministry of Education issued a general order to all high schools that all qualified teachers should begin collecting rock specimens for their schools. The

4 AS, Velika škola 1882.108.1. Letter from the Ministry of Education and Church Affairs to the Rector of the Grand School. 08 July 1882.

specimens were supposed to be sent to Belgrade to Žujović, whose duty was to identify them and send them back to the school of origin. Teachers from elementary schools were considered unqualified and thus not engaged in the process. The ministry hoped that mining experts, as much as their time allowed, would find a way to also cooperate on this task.⁵ Although its main purpose was to establish quality selection of specimens for secondary schools, this was an opportunity to establish regular correspondence between Žujović and regional school teachers who taught *jestastvenica*. However, the response was poor. Not all teachers responded promptly, and some did not respond at all. Žujović complained that he was not receiving enough response as only ten schools sent the specimens. Even those who did respond were not sending materials that had scientific value, often too small, damaged, impossible to identify, or without notes about the location. He entreated the ministry to request specimens of better quality, after which “even the first order was forgotten.” The tension between support and lack of interest is noticeable in this case. Žujović considered the whole project a failure, but even after the project ended, some schools were still sending specimens to Belgrade.⁶

Not everyone involved in the network was engaged in the collection of specimens; some of the state institutions facilitated the postal transport of specimens and enabled Jovan Žujović to employ some of the state clerks, like teachers, municipality officers, and railway station managers, to store and transport specimens he collected himself. It is possible that similar arrangements existed before the official order of the Ministry. In July 1882, Žujović was making surveys in the eastern Serbia and asked the director of the secondary school in Negotin to expedite a shipment of rocks to the Grand School.⁷ In the following years he made more similar arrangements. The director of the

5 AS, Velika škola 1882.108.3. Letter from the Ministry of Education and Church Affairs to the Rector of the Grand School. 18 December 1882.

6 Žujović, “Izveštaj za god[inu] 1880-1888”: 111.

7 AS, Velika škola 1882.111.1,3. Letter from the Ministry of Education and Church Affairs to the Rector of the Grand School 15 July 1882 and Letter from Jovan Žujović to the Rector of the Grand School 17

Kragujevac secondary school had the same arrangement with Žujović in 1885. Žujović left a package with fossils in the school and the director expedited it to the Grand School and implored the Rector to give it to Žujović.⁸ Similarly, Žujović requested the authority of the Knjaževac County to send two boxes with the collection of rocks from Knjaževac to the Grand School in June 1886.⁹ The County of Azbukovac expedited a nosebag full of ores which Žujović asked them to send to Belgrade in 1890.¹⁰ The Senj mine did him a similar favour when they shipped the collection of conglomerates and stalactites he collected when he visited the mine in 1891.¹¹

In January 1885 Žujović returned to the Ministry of Education a shipment the ministry had sent from the Pirot County. He determined the types of rocks and minerals as requested.¹² The Šabac Gymnasium sent their shipment of rock samples for determination in January 1889, which Žujović examined and determined within a month's work on the collection. Schools were sending the shipments to the Ministry of Education which were afterwards forwarded to the Rector of the Grand School where it was handed over to the professor in charge. After he had identified the specimens and sorted the collection to be usable for teaching, Žujović returned the specimens to the school of origin.¹³ The same communication with the Požarevac Gymnasium was

July 1882.

- 8 AS, Velika škola 1885.84.1. Accompanying shipping document from the Director for the Rector of the Grand School for the fossil collection for Jovan Žujović 19 June 1885.
- 9 AS, Velika škola 1886.103. Accompanying Shipping Document from the Authority of the Knjaževac County Accompanying the Collection of Ores from the Knjaževac County 10 June 1886.
- 10 AS, Velika škola 1890.168. Accompanying shipping document from the Authority of the Azbukovac County 01 June 1890.
- 11 AS, Velike škola 1891.142. Accompanying shipping document from the Senj Mine 03 September 1891.
- 12 AS, Velika škola 1885.6.1. Letter from Jovan Žujović to the Rector of the Grand School 10 January 1885.
- 13 AS, Velika škola 1889.9. 1,3. Accompanying shipping document from the Ministry of Education and Church Affairs to the Rector of the Grand School 24 January 1889 and Letter from Jovan Žujović to the Rector of the Grand School 28 February 1889.

conducted in the August of 1889,¹⁴ and with the lower gymnasium in Čačak in May 1890.¹⁵

By the 1890s Žujović was regularly receiving shipments of rocks and fossils from teachers from all around the country. School teachers were the most represented in the reports about donations as their names appear in the yearly reports most prominently.¹⁶ In the same way, when he was making surveys himself, he used these people for storage and shipping of his specimens. For example, during the summer recess of 1894, to the address of the Geological Institute at the Grand School several shipments arrived and the summary of them looked like this:

- 1) two boxes of specimens from the Crna Reka County that Žujović sent himself,
- 2) Žujović's collection of rocks from the Crmnica ravine near Paraćin,
- 3) the collection which Sava Urošević gathered in Podrinje,
- 4) a box with jars from Brasina,
- 5) a box with sand from Loznica,
- 6) a box with snails from Drina sent by certain Mr. Trojanović,
- 7) a box with fossil clams (*kongerije*) from Košutnjak near Kragujevac, from Mr. Lazarević, a second year student from the Department of Philosophy, and
- 8) the collection of M[ihailo] Živković [professor in the Čačak Gymnasium] from Lenovac, Bela Reka.¹⁷

Over the years, the number of collaborators and contributors grew and in Žujović's reports on acquisitions one can find men belonging to the upper political and

14 AS, Velika škola 1889.96. Letter from Jovan Žujović to the Rector of the Grand School 19 August 1889.

15 AS, Velika škola 1890.131. Letter from Jovan Žujović to the Rector of the Grand School 22 May 1889.

16 Žujović, "Izveštaj za godinu 1890-91": 163-169. Jovan Žujović, "Izveštaj za školsku godinu 1891-92" [Report for the School Year 1891-92], *Geološki anali Balkanskog poluostrva*, vol. 5 (1900): 204.

17 AS, Fond Jovan Žujović 40. Work Diary.

administrative establishment, among whom the name of King Milan himself stands out.¹⁸ Many local politicians and administrators sent boxes with specimens from the provinces to Belgrade.¹⁹ Even some public appointees, such as one chief of the Belgrade Railway Station and some tax officers,²⁰ and army officers²¹ gave donations in specimens. Particularly interesting for this case is that some of the consuls who were appointed abroad decided to donate samples of local curiosities to Belgrade school, such as Branislav Nušić, who sent specimens of mollusc fossils from Kosovo while he was working in Priština,²² or consul Mihailo G. Ristić who sent from Skopje a box with samples of sand in it.²³ Not surprisingly, some professors who performed political duties made active contributions to the collection, such as Lazar Dokić, Sima Lozanić, and Ljubomir Klerić.²⁴ Since the early days, mining engineers, who had most access to samples and possessed the expert knowledge, were regularly donating specimens to the

18 Žujović, "Izveštaj za god[inu] 1880-1888": 102.

19 AS, Fond Jovan Žujović 40. Work Diary: 11 June 1897: an Azbukovac tax official sent a piece of quartz he found on Bobija. 21 April 1898: Paja Todorović, a secretary in the Ministry of Economy [privreda] sent a sample of gypsum from the vicinity of Smederevo. 21 December 1898: From Pera Velimirović, they received a collection of carboniferous plants from Slani Potok in Mustapić [Kučevo municipality]. Žujović, "Izveštaj za god[inu] 1889": 121. County chiefs Proka Knežević (limestone from Staničenje) and Danilo Stefanović (specimens of *Ostrea* and *Conus* from the vicinity of Golubac). Žujović, "Izveštaj za školsku godinu 1891-92": 204. County chief Cerović sent an ammonite from Grošnica and *Trochus* from Pridvorica, near Čačak.

20 AS, Fond Jovan Žujović 40. Work Diary: 24 April 1896: received a fossil fish from Popovac from Milovan Kostić, chief of the Belgrade Railway Station. Jovan Žujović, "Izveštaj za god[inu] 1889": 121-122. Officers of the tax authority Drag. Jovanović (a rock hammer from Bastav), and D. Mihailović (ores from Ripanj) donated specimens to the department.

21 Žujović, "Izveštaj za god[inu] 1889": 121. Colonel S. Davidovac from Zemun (Habsburg officer?) donated ammonites from Alps. Žujović, "Izveštaj za godinu 1890-91": 164. Lieutenant colonel Petronije Tešić gave horse teeth, and lieutenant Đ. Đorđević gave stalactite plate to the collection.

22 AS, Fond Jovan Žujović 40. Work Diary: 3 May 1895: Branislav Nušić gave to samples of Paludini [type of molluscs/snails] from Mihaljića (Mijalić) at the confluence of Lab into Sitnica.

23 AS, Fond Jovan Žujović 40. Work Diary: 18 February 1896: A box of sand arrived from Skopje, sent by Mihailo G. Ristić, the consul in Skopje.

24 AS, Fond Jovan Žujović 40. Work Diary: 18 May 1898: Ljubomir Klerić sent a sample from Tilva Roš, near Brestovac for microscopic examination. Pyrite with gold. 24 November 1898: Ljubomir Klerić brought for examination one "Jegel" from Velakonje. Cypris, and *Limnocardium*

school's collection.²⁵ At one point, Žujović acquired specimens from a peasant from Lasovo, near Zaječar, who sold him a collection of fossils.²⁶

Finally, a considerable number of contributions arrived from the students of Grand School and local secondary schools who brought from their home environment specimens upon instructions from their professors. Such school assignments represented a considerable opportunity for young students to make an impression on Žujović. If any of them was interested in the earth sciences, bringing quality specimens to Žujović could have given them a good recommendation for stipends and employment. Žujović needed collaborators, and from what he could find, between secondary school teachers, diplomats, mining engineers, and other types of officials, the obvious route for him was to organise his own followers. Specimen collection was the first task. He organised the collections for the first two decades and during that time several students participated. Among them we can find Radovanović, Cvijić, and Jelenko Mihailović. Many among the students did not pursue scientific careers, but they belonged the same circles in which intellectual endeavours received a new impulse. Žujović proceeded with Pančić's initiative and specimen collection became an occupation for some of the educated men in Serbia. From 1880s, Žujović's scientific network largely depended on the widening of the circle of collectors. Because the process of collecting required a certain amount of knowledge in order to be conducted properly, this was used for initiation in the close circle around Žujović.²⁷

25 AS, Fond Jovan Žujović 40. Work Diary: 29 December 1898: mining engineer Stepanović sent them a piece of limestone with crinoids from Marića Stena near Krupanj. % 16 February 1895: Žujović sent geological journals to the authorities of the mines in Podrinje with the request to send a collection of minerals, rocks, and fossils. Jovan Žujović, "Izveštaj za god[inu] 1889": 121. Svetozar Gikić (several fossils), Jefta Stefanović (orbitolite limestone), and Felix Hofmann (coral limestone). Žujović, "Izveštaj za školsku godinu 1891-92": 204. Miner Petar Ilić sent sandstone and crinoid limestone from Likodra and Zavlaka.

26 AS, Fond Jovan Žujović 40. Work Diary: December 1896: Žujović paid for a collection of Gossau fossils from Boljevac to Milovan Živković, a peasant from Lasovo.

27 AS, Fond Jovan Žujović 40. Work Diary: 10 November 1895: student Milorad Popović brought a piece of mammoth tooth from Svileuva. 3 December 1898: Kosta Marinković, 7th grade student of the Realka in Belgrade gave them a piece of the Soko Banja meteorite. 16 January 1899: Miloš Jovanović,

The amount of acquired specimens was growing faster than Žujović was able to process them. When Sava Urošević joined the work of the department, he had a considerable amount of samples for analysis. Students at the department often received assignments to analyse individual collections and publish an article with results of their findings. These assignments were mostly designed for the students interested in petrography and mineralogy, but those interested in palaeontology had as well plenty to work with. Svetolik Radovanović thus obtained a large collection of fossils for his doctorate in Vienna. Žujović had sent him a large collection he was accumulating for years, as he needed a person willing to take the specimens for analysis.²⁸

Over time the collection in the department became rich with locally specific samples and many were over-represented. The specimens that were abundant in Serbian landscape were accumulated in such large numbers that they could be used for trade. Regular exchanges of specimens with foreign scholarly centres were essential for the work of the new geological-mineralogical department at the Grand School and Žujović particularly insisted on acquiring specimens that were unobtainable in Serbia. The economy of this exchange largely depended on the interest foreign scholars shared in rocks from Serbia. Žujović needed diversity of specimens in his collection and this was impossible to acquire solely from the local sources. Nonetheless, his first goal was to identify the already assembled materials and because he was for the most part working alone, this inquiry took time. He was sending specimens for identification and analysis to Fouque and Michel-Levi in Paris, to Fuchs in Vienna, and to Brusina and Gorjanović to

a student of the Technical Faculty gave them a piece of iron ore from Borovac, near Zaječar. 3 November 1904: Risto Dedićer sent 4 or 5 pieces of hipurit limestone from Bosnia. Žujović, “Izveštaj za god[inu] 1889”: 121. Žujović, “Izveštaj za godinu 1890-91”: 163-164, Žujović, “Izveštaj za školsku godinu 1891-92”: 204. Lists of several students of Grand School who brought specimens. Among them is Jelenko Mihailović.

28 See the part about Radovanović's studies in Vienna. Also see: Miloš St. Dinić, “Eruptivne stene u okolini Sofije” [Eruptive Rocks from the Area around Sofia], *Geološki anali Balkanskog poluostrva*, vol. II, no. 1 (1890): 121-168.

Zagreb. During the seminar exercises with his students, among whom were initially been Radovanović, Cvijić, and Pavlović, Žujović examined some of the specimens in order to demonstrate the methods.. His decision was that the department will exchange only the already identified and studied specimens, which consequently slowed down the process.²⁹

5.1.2. The Economy of Meteorite Exchange

One of the items Žujović identified as missing in his report of 1890 were meteorites. He complained that the school did not possess enough specimens. Through the exchange with foreign academic centres Žujović obtained several specimens for the department that could be used for teaching. However, very soon the situation radically changed and instead of a deficiency, meteorites turned into economic advantage for the Belgrade school of earth sciences.³⁰

In November 1889 a large meteorite appeared in the sky above the mountain Jelica in the vicinity of Čačak, exploded while it was still in the air and dispersed in pieces around the area. The event itself was first investigated by the police and one local secondary school teacher – Aleksa Stanojević. The noise that accompanied the fall of the meteorite alerted local officials who requested further investigation. Žujović claimed that he actually heard the explosion in his own house,³¹ but because he was not able to explain the origin of the sound he forgot about it. Later in the evening, he received a letter from the Ministry of the Interior about the message they received from the county officer from

29 Žujović, "Izveštaj za god[inu] 1880-1888": 94, 101-102.

30 Žujović, "Izveštaj za god[inu] 1880-1888": 89.

31 Either in Belgrade, or in Nemenikuće. Both are considerably far away from the place of the fall.

Jagodina about a possible meteorite fall.³² Žujović requested from the ministry to send an inquiry to all counties if they observed similar occurrences.³³

Before he received any new information from the ministry, Žujović got a letter from Aleksa Stanojević, the professor of the Čačak Gymnasium, who informed him about an explosion of a meteorite in the village of Ježevica. This was the first precise information about the location of the fall. Žujović prepared and went to Čačak, accompanied by two students of geodesy. Right before his departure, he received three messages from the Ministry of Interior, sent by county officials from Čačak, Kragujevac, and Čuprija, responding to the ministry's inquiry and sending them confirmation about the observation of a fall.³⁴

When Žujović arrived to Čačak, he learned that Stanojević already went into the field together with the chief of the Čačak County (M. Rajković) and his colleague from the Čačak Gymnasium, Sima Trajković, and collected several specimens. The Ministry of the Interior already possessed developed mechanisms for collecting information and Rajković as the county chief was their representative responsible for ascertaining of any relevant information from the county. Together with Stanojević, they both traversed the villages and interviewed people. Stanojević and Trajković possessed the expert knowledge about rocks, and Rajković possessed resources he could mobilize in the field. After Žujović arrived the already started search was continued under his leadership. However, Žujović and Stanojević continued further without Rajković and Trojanović.³⁵

Because the meteorite dispersed over a large area, they had to make a survey around the mountain and visit all villages hit with the shards. Because of it, they were not able to name it after any of the villages and consequently the meteorite was named after

³² Jagodina is considerably far away from the site of the fall.

³³ Jovan Žujović, "Jelički meteorit" [Jelica Meteorite], *Geološki anali Balkanskog poluostrva*, vol. 2 (1890): 177-178.

³⁴ Ibid, 178-180.

³⁵ Žujović, "Jelički meteorit": 180-182.

the mountain – *Jelica*. The survey was prolific as they found a large number of specimens which amounted to around thirty kilograms.³⁶

Around the time the Jelica meteorite fell, several new meteorites also fell on the territory of Serbia. A meteorite called Sokobanja fell before Jelica, and another, called Guča, fell after Jelica in 1891. They were all named after the locations where they hit the ground, which was according to international regulations about the meteorite names. In the latter case, the participation of the local administration in the investigation and gathering of samples was crucial. Sima Trojanović who was present during the Jelica search, was conducting the entire search in this particular case and found the meteorite and its smaller pieces. This meteorite was heavy around two kilograms. Trojanović collected it, made interviews with the local inhabitants and conducted the first analysis of it. The scientific study was in this way fully conducted by a local secondary school teacher and the knowledge about the meteorite was produced before the specimens, data, and his analysis reached scholars in Belgrade.³⁷

These meteorites proved to be highly valuable from the perspective of specimen exchange. The meteorites were in demand abroad and the pieces the Geological Department owned were large enough to be divided into small pieces and exchanged for large number of rocks and minerals that Serbian scientists needed. Stanislas-Étienne Meunier, the leading expert when it came to knowledge about meteorites, analysed the Jelica meteorite and presented his findings in the *Geological Annals*.³⁸ Žujović saw the opportunity and tried to capitalise on it. With those three meteorites the quantity became considerable. Žujović carefully divided the several dozen kilograms of samples into

36 Žujović, “Jelički meteorit”: 177-190.

37 Petar S. Pavlović, “Gučki meteorit” [Guča Meteorite], *Geološki anali Balkanskog poluostrva*, vol. 4 (1893): 179-185. AS, Fond Jovan Žujović 40. Work Diary.

38 Stanislas Meunier, “O sastavu i poreklu jeličkog meteorita” [On the Composition and the Origin of the Jelica Meteorite], *Geološki anali Balkanskog poluostrva*, vol. 4 (1893): 3-21.

smaller pieces and sold or exchanged them on the market by gram. These items went to St. Petersburg (Mining Institute), Vienna (Aristides Brezina), Berlin, and Rochester.³⁹

The Department of Geology had considerable problems in securing basic working conditions and such exchanges were a means to avoid asking for funding from the Ministry of Education. Securing funds from the state resources required a lot of administration and explaining, while negotiations over specimen or instrument exchanges with other scholars were simpler and more lucrative. The negotiators knew the value of traded goods; for what reason they wanted to avoid any kind of external meddling with their business. One such example could be found in the trade that Žujović managed to establish with Lazarus Fletcher from the British Museum, who purchased a large specimen of Jelica for their meteorite collection.⁴⁰

Žujović approached the British Museum in February 1890 suggesting trade or exchange for meteorite specimens Geological Institute possessed.⁴¹ Fletcher replied and expressed interest in purchase, which suited him more than any exchange. He considered the purchase more simple than exchange.⁴² After the initial agreement, Žujović directed Fletcher to address Mr. Böhm in Vienna, whom he contracted as exclusive seller of their specimens.⁴³ However, Fletcher encountered an unpleasant surprise when he learned that Böhm possessed monopoly on the trade of Žujović's specimens and offered 660 gr. of the Jelica meteorite for 100 pounds. This offer shocked Fletcher as he considered the offer preposterous. The matter was not in the amount of money, because he offered to pay 100 pounds for whatever quantity Žujović considered worthy of that amount. He wanted to

39 AS, Fond Jovan Žujović 40. Work Diary. See entries under: 18 October 1894, 18 November 1894, 2, 21 April 1895, 11 April 1896, 16 October 1897, 2, 3, 16 December 1897, 22 January 1898, 12 February 1898, 1 March 1898, 30 October 1898, 6 July 1901, 12 January 1903, etc.

40 AS, Fond Jovan Žujović 230. Letters from L. Fletcher, British Museum. 6 February 1890 – 24 April 1890. NHM, DF 1/16: 523-528. Letters from Jovan Žujović, Geological Institute. 2 February 1890 – 30 April 1890.

41 NHM, DF 1/16: 523. Letters from Jovan Žujović, Geological Institute. 2 February 1890.

42 AS, Fond Jovan Žujović 230. Letters from L. Fletcher, British Museum. 14 February 1890.

43 NHM, DF 1/16: 524. Letters from Jovan Žujović, Geological Institute. 10 [22] February 1890.

check if Böhm truly has a monopoly on the trade. “If so, you lose all the benefit for your institution of the dealer's profit, and at the same time put us entirely in the dealer's power.” He suggested to Žujović to cut the middle man from their deal as this was damaging the science. “For instance Böhm offers me a piece weighing 660 grams at the enormous price of £100: probably he has paid your institution nothing like that amount. It seems cruel to put the scientific world under the thumb of the dealer, more especially if the dealer is to pocket the excess due to his monopoly.”⁴⁴

From the correspondence, it seems that Žujović was unaware of the all implications of his deal with Mr. Böhm. He immediately withdrew his initial offer and accepted Fletcher's suggestion to make an agreement directly. His only concern was to prevent Böhm from learning that he was circumvented, so he asked Fletcher if he could keep this a secret until July.⁴⁵ From there on, the deal was satisfactory for both sides. Žujović expedited a complete piece, 1570 grams heavy, and asked 3000 francs for that, for which Fletcher paid 120 pounds.⁴⁶ The communication with Fletcher was a good lesson for Žujović on the manner the specimen trade and exchange worked. His naive trust in the negotiating skills of a merchant was working against his interest. Nonetheless, he possessed something that was highly valuable for the British Museum, and he was fortunate enough to cooperate with Lazarus Fletcher, who was experienced enough to recognise that the deal suggested by Böhm was damaging for both sides. After he received the piece of Jelica, Fletcher expressed his satisfaction with the meteorite. It was an interesting piece and the deal worked for both of them well.⁴⁷

The Belgrade school of earth sciences during the 1880s and 1890s was on the periphery of the scientific world. Nobody in Belgrade possessed enough scientific

44 AS, Fond Jovan Žujović 230. Letters from L. Fletcher, British Museum. 4 March 1890.

45 NHM, DF 1/16: 525. Letters from Jovan Žujović, Geological Institute. 13 March 1890.

46 AS, Fond Jovan Žujović 230. Letters from L. Fletcher, British Museum. 26 April 1890. NHM, DF 1/16: 526. Letters from Jovan Žujović, Geological Institute. 24 March 1890.

47 AS, Fond Jovan Žujović 230. Letters from L. Fletcher, British Museum. 11 April 1890.

authority to represent the school on the international scene, and their main role in the scientific world was to contribute with empirical research. Žujović knew that their main task was mapping of the area, meticulous recording of the localities and identification of the rocks and strata, and naturally, collection of specimens. The role of the periphery was to provide specimens interesting at the centre, and Žujović knew that his international reputation would mostly depend on the quality of the empirical evidence he and his students manage to present to foreign scholars in Vienna, Berlin, Paris, or London. For this reason, the fall of several meteorites proved highly valuable for his endeavour and put his institution on the map of international exchange.

This position of scientists working on the periphery of international scientific community created a specific self-perception among Žujović and his students about their role in science. Žujović, Urošević, Radovanović, Pavlović, and Antula understood their scientific work primarily as an empirical enterprise in which the collection of data and their public representation was the primary goal of science. Whether this collection of data involved laboratory work and meticulous analysis of gathered specimens, or fieldwork with detailed observation of rocks and strata, collection of specimens, and creation of representable collection of rock and mineral samples, they all identified their primary role as data collection. Meteorites were desired items, rare and highly valued in international scientific circles. People like Fletcher needed suppliers of such items from the periphery, and for Belgrade scholars it was a way to get recognition for their work.

A similar dynamic could be observed in the relations Belgrade scholars had with their own periphery. Žujović, being the centre of rock and mineral collection, used the networks of secondary schools and local administration to obtain specimens he was not able to collect himself. Even though it had been considered small, the Serbian kingdom was still big enough to make quick specimen collection difficult and Belgrade scholars

had to rely on the local enthusiast willing to go out in the field and get samples. The cases of the Jelica and the Guča meteorites show how secondary school teachers and local county clerks participated in this activity. The expert knowledge in the field was primarily the knowledge of secondary school teachers, whose education determined the initial first stages of specimen collection, right after the fall. Aleksa Stanojević and Sima Trojanović collected the samples and made first interviews with the local population, made first analyses and informed Žujović about what happened. The specimens they collected became part of international knowledge about meteorites. Their items were presented internationally, traded or exchanged, and departed far from the initial environment where the meteorites fell. For this reason, Žujović relied on the networks for specimen collection and tried to organise and maintain them over the years. His students, future elementary and secondary school teachers, or local county officials, who were expected to work in Serbian provinces, were supposed to possess sufficient knowledge to be able to identify interesting rocks and to professionally assess their value and content in order to supply the centre established at the Department of Geology at the Grand School with relevant data about what could be found in the field. Although these collaborators did not always provide quality data from the field, their role was nevertheless essential for the work of the department. The civil and police administration of the country, even though in their nature non-scientific possessed was a well established network for the collection of information. In events such as meteorite falls, the information was quickly distributed to the centre. Žujović knew what he had to do once he received the data. For the benefit of his own academic centre, the information had to be passed on further, to Vienna, Paris, Berlin, or London, placing Belgrade in this was on the map of scientific research.

5.1.3. Textbooks Instruction Books and General Overviews

In order to establish a network of skilled and knowledgeable collaborators, Žujović had to develop means to train them. In 1880, the task of organising the Department of Mineralogy and Geology was solely in his hands, and he had to adapt to the environment in which he was working. Scholarly traditions up to that moment relied heavily on educational and patriotic goals. Raising the level of knowledge in the country was the main plan of his contemporaries, which made the whole system oriented towards publishing of school textbooks and translations of foreign books that were regarded as providing the most general overview. I have already addressed the atmosphere in which the scholarly environment formed around educational and practical goals in the first chapter. This scholarly environment was in demand for the most elementary overviews, intended for various levels of professional specializations. Textbooks and overviews were published for elementary and secondary school children, but for adults who wanted to learn more, too.

This environment set the parameters according to which any future scientific discipline had to emerge in Serbia. The demand for textbooks and overviews was a consequence of the types of readers that existed in Serbia, but also on the types of writers, who were not oriented towards scientific research. In the first years after his return from Paris, Žujović's aim to write textbooks and general overviews was largely influenced by this trend in contemporary academia. On the other hand, in the first decade, he did not have much at his disposal and writing textbooks and overviews seemed like a logical first step towards scientific work.

While he was still in France, Žujović published a study on the igneous and metamorphic rocks from the South American Andes he encountered in Paris. This was a genuine laboratory research, that can show Žujović's sincere interests. Many years later he returned back to research of igneous and metamorphic rocks of Serbia, but right after his return to Serbia, the conditions were still not set for a research of that kind.⁴⁸ When he returned to Serbia his immediate publications were popular science which he published in the major journal on education in the country. His articles were introducing the sciences to general audience, mostly school teachers. In those articles the readers could learn what were the goals and interests of mineralogy, geology, and palaeontology.⁴⁹

Because he was the first trained geologist working as a professor at the highest educational institution in the country, Žujović understood his role as the role of a founder and acted that way. From the beginning of his work in the 1880s, his goal was to write the most general overviews and summaries from all fields of earth sciences that would set the groundwork for the future scholars and to present the state of Serbian geology to foreign audience, trying to find a place for it in the international discourses. Such general overviews were a characteristic element of his career. While his students were conducting research in their own respective individual scientific fields, Žujović felt obliged to take on the duty of writing general overviews, summaries, and textbooks. From the early overview of the geology of the Kingdom of Serbia (1886), where he presented geology of Serbia in a Viennese journal,⁵⁰ he later continued making such summaries to Serbian audience with *Osnovi za geologiju Kraljevine Srbije* [Foundations for the Geology of the Kingdom of Serbia](1889), *Geologški sastav Balkana* [Geological Composition of the Balkans] (1891), and *Grada za geologiju Stare Srbije* [Materials for Geology of Ancient

48 J[ovan] Jouyovich, *Note sur les roches éruptives et métamorphiques des Andes* (Belgrade: 1880).

49 Jovan Žujović, "Naučni pregled. Mineralogija. Geologija" [Scientific Overview. Mineralogy. Geology], *Rad: list za nauku i književnost*, vol. I, no. 1 (1881): 73-79; vol. II, no. 1 (1882): 140-144.

50 Jovan Žujović, "Geologische Uebersicht des Koenigreiches Serbien," *Jahrbuch der kaiserlich königlichen geologischen Reichsanhalt*, vol. XXXVI, no. 1 (1886): 71-126.

Serbia] (1891). For the international audience he prepared short summaries in French in his own journal and in the journal of the French Academie des Sciences: *Sur la distribution des roches volcaniques en Serbie* (1891), and *Sur les terrains sédimentaires de la Serbie* (1893) and *Sur les roches eruptives de la Serbie* (1893). These general overviews were summing up knowledge about the various aspects of geology of Serbia and of the Balkans, in which Žujović had to leave a lot of ground uncovered and admit lack of sufficient empirical data.⁵¹

Such overviews become more rare over time, but he was still the person who was writing them. In his career Žujović conducted many field and laboratory researches, and published a considerable number of research publications, but in his expanding circle of geologists, he was the one who took the responsibility for writing capital syntheses that functioned as textbooks. These were his grand projects with which he tried to establish the ground for teaching all disciplines of earth sciences, except geography and geomorphology. He started with a work on petrographic mineralogy in 1887, then he wrote a two volume book on petrography, published separately in 1889 and 1895, finally to end it all with his capital two volume work on geology, published in 1893 and 1900 (see fig. 8).⁵² With these books, Žujović intended to set the ground for future studies of earth sciences; textbooks to which could serve as reference points for future Serbian

51 Jovan Žujović, “Osnovi za geologiju Kraljevine Srbije” [Foundations for a Geology of the Kingdom of Serbia], *Geološki anali Balkanskog poluostrva*, vol. I, no. 1 (1889): 1-129; idem., “Geološki sastav Balkana” [Geological Composition of the Balkans], *Geološki anali Balkanskog poluostrva*, vol. III, no. 1 (1891): 145-176; idem., “Sur la distribution des roches volcaniques en Serbie,” *Geološki anali Balkanskog poluostrva*, vol. III, no. 2 (1891): 96-122; idem., “Građa za geologiju Kraljevine Srbije”; idem., “Sur les terrains sédimentaires de la Serbie,” *Comptes rendus hebdomadaires des séances de l’Académie des sciences*, vol. XCVI, no. 1 (January-June 1893): 1308-1311; idem., “Sur les roches éruptives de la Serbie,” *Comptes rendus hebdomadaires des séances de l’Académie des sciences*, vol. XCVI, no. 1 (January-June 1893): 1406-1408.

52 Jovan Žujović, *Petrografska minereralogija* [Petrographic Mineralogy] (Belgrade: Kraljevska srpska državna štamparija, 1887); Jovan Žujović, *Petrografija: I. Eruptivne stene* [Petrography: I. Eruptive Rocks] (Belgrade: Kraljevska državna štamparija, 1889); Jovan Žujović, *Petrografija: II. Stratifikovane stene. III. Meteoriti* [Petrography: II: Stratified Rocks. III. Meteorites] (Belgrade: Kraljevska državna štamparija, 1895); Jovan Žujović, *Geologija Srbije: I. Topografska geologija* [Geology of Serbia: I. Topographic Geology] (Belgrade: Srpska kraljevska akademija, 1893); Jovan Žujović, *Geologija Srbije: II. Eruptivne stene* [Geology of Serbia: II. Eruptive Rocks] (Belgrade: Srpska kraljevska akademija, 1900).

scholars. In that respect he was acting according to demands of educational goals, set by Serbian scholars since the 1840s.

Žujović was merely fulfilling the educational goals of the Serbian intelligentsia. The fulfilment of educational tasks was seen as a goal of national development, a road that has to be taken in order to transform a patriarchal society of an Ottoman province into a European society. His students were following similar principles. His first acolyte, Sava Urošević, took the same role of publishing the textbook on mineralogy. This was one of the ways he was asserting his authority in the public. However, this was a big project and, as with Žujović's textbooks, this was a two volume work that took several years to publish (1903 and 1910).⁵³ However, Radovanović, Žujović's second acolyte, did not undertake such endeavours and did not leave any textbooks behind him.

What was new about their capital syntheses was that they did not double as secondary, or primary school textbooks. For example, Jelenko Mihailović wrote secondary school textbooks in physics, but he did not write any textbooks in earth sciences. Žujović and Urošević, as the first two trained scholars in earth sciences, wrote these syntheses on specific branches of earth sciences, but their students who joined them with their scientific work did not engage in such writing. Writing of textbooks was the task for those who had the highest reputation, those who could take the responsibility for it and guarantee that the syntheses will provide certified knowledge for future generations. It is not surprising that Žujović dealt with this assignment more than others. He considered himself the founder and such assignments fell in his area of duties he had to fulfil. Urošević, as the first authority on mineralogy, took the responsibility of writing a textbook on mineralogy.

⁵³ Sava Urošević, *Mineralogija: I. Geometrijska kristalografija* [Mineralogy: I. Geometric Crystallography] (Belgrade: Državna štamparija Kraljevine Srbije, 1903); idem., *Mineralogija: II. Fizička kristalografija. III. Hemijski karakter minerala. IV. Minerogenija* [Mineralogy: II. Physical Crystallography. III. Chemical Character of Minerals. IV. Minerogeny] (Belgrade: Državna štamparija Kraljevine Srbije, 1910).

Even though Jovan Cvijić took the role of the founder of geography, anthropogeography, and geomorphology as sciences in Serbia, he was not inclined towards writing of such syntheses. His approach was more oriented towards devising instructions for research in the field, rather than textbooks. Geography textbooks were present on the market since the 1840s. Many Serbian scholars, not trained in geography, felt qualified to write textbooks and capital syntheses in Geography. The two-volume works by Milan Đ. Milićević and Vladimir Karić on geography of Serbia, that were published during the 1880s, filled the demand for such publications. Cvijić did not feel the need to write books of that kind until the wars started. In France, he used his lectures at Sorbonne as the basis for his two volume synthesis on the Balkan Peninsula. Because of the political connotation of its origin, this work was not originally directed towards a Serbian audience and had no educational purpose. However, there was no synthesis on geomorphology in Serbian. Cvijić's synthesis on Geomorphology was not much different to what Žujović and Urošević did, except that he began his work on it much later, and published it after World War One, in two volumes, separately published in 1924 and 1926.⁵⁴

These syntheses were no longer translations, nor overviews intended to give the most basic information about science, nor designed for secondary school curricula. These books were designed for profession training that surpassed the initial educational initiatives of the early intellectual circles of Serbia. Although their publication was welcomed by the wider intellectual audience, the real use for them was limited to narrow circle of specialists who required professional training. Those who engaged in scientific research were mostly part of the network around Žujović, Urošević, Radovanović, and Cvijić, and they needed such books for reference. Outside of this circle, these volumes

⁵⁴ Jovan Cvijić, *Geomorfologija* [Geomorphology] vol. 1 (Belgrade: Državna štamparija, 1924); Jovan Cvijić, *Geomorfologija* [Geomorphology] vol. 2 (Belgrade: Državna štamparija, 1926).

served as items of intellectual achievement, national pride, and milestones that marked progress set by the nationalist goals. Outside of scientific circles, there was more attention to these instruction books than to short scientific articles that presented new discoveries. Nevertheless, the international scientific community did not care much about such syntheses. Research publications received much more attention abroad and the reputation of Serbian scholars depended considerably more on them.



Figure 8: Jovan Žujović, *Geologija Srbije: II. Eruptivne stene* [Geology of Serbia: II. Eruptive Rocks]. (Belgrade: Srpska kraljevska akademija, 1900): Atlas, sveska 2: T.I. Photo by D.L. (in the University Library "Svetozar Marković"). 1: Amphibole-andesite (Timazite) from Gamzigrad. Polarised light. 2: Amphibole-andesite (Timazite) from Gamzigrad. Ordinary light. 3: Dacite from Mali Šturac. Polarised light. 4: Biotite-andesite from Navad. Polarised light. 5: Hypersthene-andesite from Lipovica. Half on ordinary light, half on polarised light. 6: Augite-andesite from the Moscow Road. Polarised light.

5.1.4. Contribution as a Goal: Mineralogy

In the eyes of the international audience, the scientific results they expected were based on a different set of criteria for recognition from how the enlightened circles of the Serbian scholarship envisioned. Far from informative and comprehensive compilation of knowledge, field and laboratory research demanded discoveries, new knowledge, unknown in the centres of knowledge production. A desire to be informative and comprehensive dominated the reasoning of Serbian scientists. Their awareness that the community of educated men and women required textbooks and translations of the most relevant publications from abroad guided their understanding of scientific work. From Pančić to his students, a new set of academic goals was promoted, whose fulfilment required a slightly different strategies. Going in the field and exploring the environment became a means of acquiring data, which demanded scholars capable of producing scientific knowledge by themselves.

Scientific practices in geology of that era set out two different sets of goals for researchers. Rachel Laudan divided those goals into what she called *historical* and *causal* geology. In the general scientific distinction between theory and empirical evidence, earth sciences during the course of the late eighteenth and early nineteenth century developed a specific understanding of the relation of theoretical and empirical work. Because the methodology of geological research was so multifaceted and divided between various scientific disciplines developing during that time, Laudan noted that in geology it was not a distinction of fact gathering versus theory, but rather how the relationship between theory and facts should be construed. Causal theoretical research faced serious problems during the nineteenth century as many competing theories of

origin of earth struggled over the primacy. There was no definite way to establish consensus. For some geologists, the solution was to resort to relentless empiricism which would establish certainty in scientific work. George Bellas Greenough was particularly keen on enumerative induction and one of the staunchest proponents of empiricism in geology. Laudan noted that pure empiricism in earth sciences was never truly possible, since the gathering of data in the field involved a chronological component that identified the specimens on a stratigraphical column. For this reason she created the distinction between two mutually supportive types of geological research. The historical branch of geological research which aimed at identification of rock strata and correlation of data gathered across the globe in order to establish proper chronological sequence of rock strata. The causal geology aimed at more speculative work oriented towards explanations of the processes that led to consolidation, horizontal and vertical movements, and erosion of rock formations.⁵⁵

The most obvious way to get international recognition was by collecting reliable empirical data and participate in the correlation of data collected across the globe. In this way, the historical-empirical approach to geological research had its appeal as the data sent from the periphery would find its place in the internationally organised correlation of data. Žujović and Urošević, as petrologists and students of Michel-Levi and Fouquet, were inclined towards empirical studies, which either included field surveys that involved collection of samples, or laboratory examinations of the same. Žujović and Urošević transferred this attitude to their students. In their mind, meticulous empirical accumulation of data was the only means through which research could be conducted and by the quantity and reliability of information provided, a scholar's work could had been judged. This attitude of Žujović and Urošević set the goal for earth sciences in Serbia: to

55 Rachel Laudan, *From Mineralogy to Geology: The Foundations of a Science* (Chicago: University of Chicago Press, 1987), 2-15, 222-223.

identify everything on a location, bring as many interesting specimens as possible, and locate all accessible cross-sections. This empirical goal, based on precise identification of strata and rocks put them on the periphery of European science, as those who supplied information for the scholars that worked at the centre. Whether they were presenting their data to earth scientists in Vienna, Paris, Berlin, or London, the aim was to gather enough reliable data that could be used in the centre. Consequently, the scientific goal of the Serbian scholars became the contribution to the empirically reliable knowledge that was scientifically produced in the academic centres of Western Europe. In the previous chapter I explained their desire to make Belgrade one of the scientific centres, particularly the centre of research about the Balkan Peninsula. However, the dynamics of the centre-periphery relations put them in a position in which their peripheral position was only maintained through their regular communication of data to other academic centres.

When Jovan Žujović began his research, in the first few years, he focused on the petrographical identification of types of rocks in Serbia, their classification, and their precise and meticulous mapping. Following steps of Boué, Herder, Vicquesnel, Tietze, and Toula, he intended to make a detailed survey of geological properties of Serbia. He combined laboratory research with field surveys. His publications were short articles, or presentations and lectures, about his investigations of specific rock types, archaeological findings (then dubbed as palaeontological) compiled over the years in the collections of the Grand School. Some of his early articles seemed like presentations of random items found around Serbia. From the title of his 1883 article I take the word “contribution” to describe the notion of presentation of data, found in nature, located, classified, catalogued, identified, named, or analysed in a laboratory.⁵⁶ With his students, he started

56 Jovan Žujović, “Prilozi za paleontologiju srpskih zemalja” [Contributions for the Palaeontology of the Serbian Lands], *Prosvetni glasnik*, vol. IV, no. 11 (15 June 1883): 443-447; Idem., “Građa za geologiju

making field trips into areas of interest, from which he gathered more samples and more stratigraphical information. As already demonstrated in the previous section, he rallied a wide network of collaborators, willing to supply him with specimens. The collections of rocks he collected himself during school excursions, through donations of students and various other contributors was growing. Over time, Žujović was gradually examining the specimens, batch by batch, but he was not able to reduce the amount of materials he was receiving and eventually had to employ students for their analyses.⁵⁷

Because of the amount of knowledge about the Serbian land and neighbouring regions was limited, he had to build on previous work by foreign authors, and then add his own findings to previous research. The absence of detailed geological surveys resulted in Žujović's need to address the mapping issue first. In the eyes of the international audience, this absence was an opportunity for more surveys into unexplored territories, which was precisely the thing Žujović was trying to prevent. In one of his early international publications he had to resort to general summary of all previously done research and map the stratigraphical zones and rock types identified in Serbia. This affected his initial goals.⁵⁸ In his studies of lamprophyres (1890) and euphotites [gabbro] (1891), Žujović mapped the zones in which those types of rocks could be found. He defined the characteristics of rocks and then noted locations of their discovery in Serbia. These articles are paradigmatic of the kind of research he considered necessary in the first two decades of his work. At same the time he was occupied with the project of detailed geological map of Serbia and with this kind of research he tried to fill the gaps in the map.⁵⁹

Kraljevine Srbije," 164-268.

57 AS, Fond Jovan Žujović 40. Work Diary.

58 Jovan Žujović, "Geologische Uebersicht des Königreiches Serbien."

59 Jovan Žujović, "Les Lamprophyres de Serbie," *Annales géologiques de la Peninsule Balkanique*, vol. 2 no. 2 (1890): 76-108; idem, "Eufotiti u Srbiji" [Euphotites in Serbia], *Geološki anali Balkanskog Poluostrva*, vol. 3 no. 1 (1891): 206-215.

Considering that the laboratory research largely depended on the types of obtained specimens, and because of the haphazard nature of their accretion, the available collections determined the material and geographical scope of the initial research. Žujović, Urošević, and their students would select rocks from the collections according to their location and then examine the entire batch, presenting in this way the content of this particular location. The aim of such research was to analyse the specimens in the laboratory and to publish the results of chemical and crystallographic findings. This type of inquiry was facilitated when Žujović brought with him from Paris a polarisation microscope, a piece of equipment necessary for mineralogical research. Previously, foreign reserchers conducted microscopic research on the minerals and rocks of Serbia, because there were no resources for that in Belgrade.⁶⁰

The main work in the laboratory was after 1889 taken over by Žujović's first student who decided to follow his track. Sava Urošević's approach was empirical analysis and representation. In his work, Urošević was strictly a mineralogist and a petrographer, oriented foremost on the laboratory research. His early work in the 1890s was focused on analyses of minerals and rocks he found in the collection of the department, mostly oriented towards crystallography. In his work, one can note mostly descriptions of specimens and their verbal and graphic representations. In its essence, Urošević's research was based on idea of meticulous analysis of items found in the field, without engaging into any theoretical or speculative work, limiting his research to irrefutable empirical findings. In this aspect there was an understanding between him and Žujović. While Žujović addressed a wide variety of topics existing in earth sciences and tried to fill the gaps of missing parts, Urošević narrowed his research on two narrow

60 Vidojko Jović, "Jovan Žujović – Od petrografije do petroarheologije" [Jovan Žujović – From Petrography to Petroarchaeology], in *Jovan Žujović – Život i delo: Povodom stopedesetogodišnjice rođenja i sedamdeset godina od smrti* [Jovan Žujović – Life and Work: On the Occasion of One Hundred and Fifty Years since his Birth and Seventy Years since his Death], ed. Vidojko Jović, SANU, Naučni skupovi vol. 128, (Belgrade: SANU, 2010), 22.

specialized fields. Mineralogy and Petrography became Urošević's fields of expertise and until 1914 he retained full authority in those two fields.

When Urošević began his work at the Grand School, he had large collections of specimens waiting for analysis at his disposal. From early on, he started working on the expansion of this collection. Similarly to Žujović, he organised school trips with students during which he collected specimens for the department.⁶¹ Urošević's good political connections in Serbia facilitated international exchange. He managed to use his influence to obtain one collection of Russian minerals from the Mining Institute in St. Petersburg. This was obtained with the help of Colonel Ljubomir N. Hristić, his brother in law. The institute was receiving shipments from many sides. Collections of minerals were brought from France, Macedonia, Norway, Turkey, and Bulgaria (the latter two were from a collection of Viquesnel). Although these gifts were intended for diversification of the scope of the research, scholars working in the institute, Urošević included, remained mostly oriented to materials from Serbia.⁶²

The outcomes of such unremitting empirical approach were two of Urošević's breakthroughs. His most renowned scientific discovery was detecting of a new type of twinning of biotite.⁶³ Two years later, he discovered a type of pseudomorphosis of asbestos

61 The Cer mountain excursion: Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 56. zbor, vol. VII, no. 1 (10 October 1897), in *Zapisnici Srpskog geološkog društva* [Minutes of the Serbian Geological Society], vol. I 1897-1900 (Belgrade: Državna štamparija, 1900), 1-2; The excursion on the terrain of Venčac, Bugulja, and Vagan, excursion on Boranja: Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 68. zbor, vol. IX, no. 1-2 (10 February 1899), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900, 1-4.

62 Jović and Karamata, "Sava Urošević," 71; Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 57. zbor, vol. VII, no. 2 (10 November 1897), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900, 3-4; Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 72. zbor, vol. IX, no. 5-6 (10 October 1899), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900, 3; Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 75. zbor, vol. IX, no. 7-8 (10 January 1900), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900, 6; Sava Urošević, "Granitoidne stene i kristalasti škriljci iz Rumelije i Bugarske (Zbirka A. Viquesnel-a)" [Granitoid Rocks and Crystalline Schists from Rumelia and Bulgaria (Collection of A. Viquesnel)], *Geološki anali Balkanskog poluostrva*, vol. 6, no. 1 (1903): 227-271.

63 Sava Urošević, "Nov način bližnjenja biotita," [New Way of Twinning of the Biotite], *Glas Srpske kraljevske akademije*, vol. LIV (1897): 209; Sava Uroschewitsch, "Eine neue Art der Zwillingsbildung des Biotits," *Zeitschrift für Kristallographie und Mineralogie*, vol. 29, no. 3 (1898): 278-279.

on biotite.⁶⁴ These two findings made him briefly noticed in the international circles, but their impact was at the same time limited. These discoveries were both published as short notices in the *Zeitschrift für Kristallographie und Mineralogie*. Nevertheless, both notices were approximately page length texts. While his work was prolific, his goal was mainly to identify, describe, and situate investigated samples. Such type of research was systematic, it added more to the knowledge about terrains and specimens, but for the same reasons provided haphazard results that did not yield many internationally interesting findings. Two discoveries he made with biotite did not bring more weight to his international credibility. In practice, he was compiling results that were contributing to Žujović's goal of making a detailed geological map of Serbia.

For anyone interested in empirical research, the most important form of activity was at the Geological Society. Sessions of the Geological Society were a place where Žujović, Urošević, and Radovanović gathered various interested collaborators. Along with students to school teachers, they would sit and listen to presentations every tenth of the month. During these sessions participants presented the work they conducted in the previous months and this became the principal way of presenting one's own work. Reports from these lectures were published later as short summaries of lectures and presentations during those meetings. Most of the results of Žujović, Urošević, Radovanović, Antula, and Pavlović were presented during those sessions and later published as summaries, which represent the largest part in the bibliography of their work.

For Urošević, sessions of the Geological Society were the principal place where he presented his work. Beside the already mentioned two notices in *Zeitschrift*, all his

⁶⁴ Svetolik Radovanović (ed.), "Sitzungsberichte der Serbischen geologischen gesellschaft," LXIX Sitzung (10 March 1899), *Geološki anali Balkanskog poluostrva*, vol. 5 no. 2 (1900): 55-56; Sava Uroschewitsch, "Über eine Pseudomorphose von Asbest nach Biotit," *Zeitschrift für Kristallographie und Mineralogie*, vol. 31, no. 4 (1899): 389.

other publications were in Serbian academic journals, but even in this case the majority were summaries of his presentations at the society. This type of publications could have given him only local credibility, within Serbia. In essence, Urošević was building his scientific reputation in Serbia, in the small circle that was gathering as the Geological Society, while his international role remained through his entire career peripheral. The basic form through which he was presenting his results, sessions of the society, limited the audience that could hear him. His basic understanding of scientific work was contribution: research work which would quantitatively add more knowledge to already existing knowledge about specific localities, strata, minerals, and rocks. Together with other scholars who participated in the work of the society they were creating a detailed overview of all earth features of Serbia and collating them with international results.

It was a custom during the sessions of the Geological Society for the professors and members to present the most recently published foreign articles and books, relevant for the geology of the Balkan Peninsula. The members were kindly asked to make presentations of their work for each session, and that included findings from field trips, acquired donations, laboratory research, or findings published in foreign journals. The benefits were in shared knowledge and discussion.⁶⁵ The participants were usually the same: a few people gathered around Žujović, Urošević, and Radovanović, among whom Pavlović, Antula, and Stevanović, were the most regular participants, making these meetings look like small but formal gatherings of friends. Such gatherings were reminiscent of the work of the Society of Serbian Letters and the Serbian Learned Society, with presentation and translation as typical kind of activities. Informing the audience about scientific knowledge from abroad was part of the educational strategies of the Serbian intelligentsia of that time and the Geological Society did not divert much

⁶⁵ Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 64. zbor, Vol. VIII, no. 5 (10 October 1898), *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900, 1.

from that goal. Each of the members who were present in Belgrade would skim through foreign publications in search of something valuable that could be shared with other members. The membership included primary and secondary school teachers, and clerks who either presented their work, or donated books and specimens to the society, and often non-scientific members participated in the session of the society, listening to the most recent findings abroad and in Serbia.⁶⁶

5.1.5. Contribution as a Goal: Centre and Periphery

Because the majority of the surfaces in Serbia were geologically unknown, adding to overall knowledge by contribution was the basic means propounded from Belgrade, which summoned all sorts of contributors to go in the field and gather something new. The already discussed network for the collection of specimens that sent their items to Žujović, collaborated in the activities of the Geological Institute and the Geological Society. Consequently, a number of presentations were made in the society with the same intentions to quantitatively add more knowledge about the Serbian lands and help the mapping project. Such contributions were only means for young scholars, but anyone interested as well, to enter the close circle of Žujović. Choosing a region or a locality and then making a detailed report on it was the principle guide for future researchers. The notion of a contribution with a detailed report on all items found in the field was the

66 Full list of presentations can be found on the pages of the minutes of the Geological Society: *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900 (Belgrade: Državna štamparija, 1900); *Zapisnici Srpskog geološkog društva* [Minutes of the Serbian Geological Society], vol. II 1901-1902 (Belgrade: Državna štamparija, 1902); *Zapisnici Srpskog geološkog društva* [Minutes of the Serbian Geological Society], vol. III 1903-1905 (Belgrade: Državna štamparija, 1905); *Zapisnici Srpskog geološkog društva* [Minutes of the Serbian Geological Society], vol. IV 1906 (Belgrade: Državna štamparija, 1908); *Zapisnici Srpskog geološkog društva* [Minutes of the Serbian Geological Society], vol. V 1907 (Belgrade: Državna štamparija, 1909); *Zapisnici Srpskog geološkog društva* [Minutes of the Serbian Geological Society], vol. VI 1908 (Belgrade: Državna štamparija, 1912); *Zapisnici Srpskog geološkog društva za 1949. godinu i delove godina 1910, 1913 i 1941* [Minutes of the Serbian Geological Society for 1949 and Parts of the Years 1910, 1913, and 1941] (Belgrade: Srpsko geološko društvo, 1953), 59-70.

principal guide for any newcomer in earth sciences. The goal was bringing indubitable information which would stand under any scrutiny.

For those who were not in Belgrade, sending specimens, letters, and reports was a means of participating in the work of the society. For example, Cvetko Petković, a professor of the Pirot Gymnasium was participating in the work of the Geological Society for years by sending the reports and specimens he acquired in the vicinity of Pirot, and who over the years expanded his area and generally acquired in all parts of eastern Serbia. Later he moved with his teaching post to Jagodina, but he continued to participate with his specimens and reports. His role in the work of this circle was peripheral, however necessary for their existence.⁶⁷ Todor Bušetić, an elementary school teacher (*učitelj*) from the village of Poljna in central Serbia, was one of the most common contributors in the work of the geological society, regularly sending reports and specimens from that area. Though he was not present during the sessions, his letters were regularly read during the meetings and his specimens were discussed. The amount of data received in Belgrade from that village increased when his colleague Stanoje M. Mijatović joined the initiative and started sending his specimens too. At one point in 1906, the amount of data incited Pavlović to go to that village and see for himself the area they received a lot from in Belgrade.⁶⁸

67 Cvetko Petković, "Geološke beleške iz jablaničkog sreza" [Geological Notices from the Jablanica County], *Geološki anali Balkanskog poluostrva*, vol. 4, no. 1 (1893): 230-236; Svetolik Radovanović (ed.), *Zapisnici Srpskog geološkog društva*, 64. zbor, vol. VIII, no. 5 (10 October 1898); *ibid.*, 72. zbor, vol. IX, no. 5 i 6 (10 October 1899): 1; *ibid.*, 76. zbor, vol. X, no. 1 (10 February 1900): 1; *ibid.*, 77. zbor, vol. X, no. 2-3 (10 March 1900): 1, in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900 (Belgrade: Državna štamparija, 1900).

68 Contributions from Todor Bušetić could be found in many of the recorded sessions in *Zapisnici Srpskog geološkog društva*: 57. (1897), 63., 64. (1898), 80. (1900) in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900 (Belgrade: Državna štamparija, 1900); 86., 88. (1901), 92., 93., 94., 95., 96., 98. (1902), in *Zapisnici Srpskog geološkog društva*, vol. II 1901-1902 (Belgrade: Državna štamparija, 1902). 99., 104. (1903), 106., 109. (1904), 116., 118. (1905) in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905 (Belgrade: Državna štamparija, 1905); Stanoje M. Mijatović's contribution was presented during the sessions: 64. (1898), 92. (1902), and 100. (1903). Petar S. Pavlović presented his observations from Poljna: Dimitrije Antula (ed.), *Zapisnici Srpskog geološkog društva*, 125. zbor, vol. XVI, no. 3-8 (10 May 1906): 18, in *Zapisnici Srpskog geološkog društva*, vol. IV 1906 (Belgrade: Državna štamparija, 1908).

But the real reputation and career was awaiting those who were actually present in Belgrade during those meetings. Sitting in during those sessions or presenting during them was a way for them to secure their place close to Žujović, Urošević, and Radovanović. Svetolik P. Stevanović had an early start in the Geological Society as a student and later he continued as a teaching assistant. He was making presentations about foreign research and presenting his own laboratory findings during the sessions, acting as an assistant to the already established scholars. These assignments were minor duties for the members. Žujović was performing the role of the overseer who guided everyone about the tasks that had to be taken. Everyone in the society, from Žujović to Stevanović, was taking the duties of translators and presenters of work published in foreign languages. When they were ready with their research, everyone would get an opportunity to present some of his laboratory or field results. This was what the beginning of any career looked like. Among the Serbian scholars of earth sciences Stevanović built a reputation by making such presentations. Urošević and Žujović acknowledged his knowledge and skills, which helped him gain reputation that got him scholarships for studying abroad. After he received his education in Munich, Stevanović returned as a doctor of science, but his reputation in Belgrade still depended on his status within the Geological Society and the role he performed in the network of Žujović and Urošević. Between 1903 and 1905, Stevanović was the editor of the *Zapisnici Srpskog geološkog društva*, where he recorded all the presentations in the society.⁶⁹

Dimitrije Antula replaced Stevanović at the position of the editor of *Zapisnici*. It is interesting that despite the authority that Žujović and Urošević had in the society, the academic titles they held were not on the same level as their students'. Svetolik P.

⁶⁹ Presentations of Svetolik P. Stevanović were recorded during the sessions: 58. (1897), 65. (1898), 70. (1899) in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900 (Belgrade: Državna štamparija, 1900); 95. (1902), in *Zapisnici Srpskog geološkog društva*, vol. II 1901-1902 (Belgrade: Državna štamparija, 1902); 102., 105. (1903), 108. (1904), 116. (1905), in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905 (Belgrade: Državna štamparija, 1905).

Stevanović used the opportunity as the editor of the journal to add “Prof. dr.” to his name, which was later reduced only to “Dr.” This was the title Antula was holding as well, and Stevanović recorded it in *Zapisnici* in the same way. Žujović and Urošević were recorded only with their names and with no titles, but their influence in the society was far greater than Antula’s and Stevanović’s. Nonetheless, younger scholars had to build their reputation through such activities in the society, under the supervision of the founding members.⁷⁰

One of the young men who gained his reputation through regular contributions to the society was Vladimir K. Petković. He started by presenting work of foreign scholars. Later, while he was working as a school teacher in the Serbian Gymnasium in Skopje, he was sending specimens from that neighbourhood and writing reports about things he observed. Even though he was not present during the early sessions, his samples and his reports were presented and read during the meetings. When he moved to Thessaloniki, he continued with his distant participation.⁷¹ His return back to Serbia provided him with the opportunity to personally come to these meetings and actively participate in the society’s work. Over the years, Petković established good communication with Radovanović, who mentored him during his doctorate in Belgrade. But, he started his career as a contributor from Skopje, who was sending interesting samples to the society.⁷²

By allocating numerous minor assignments to aspiring younger scholars, professors from the Grand School were redistributing their scientific duties among men

70 102., 103., 105., zbor, vol. XIII, no. 1-7 (1903), in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905 (Belgrade: Državna štamparija, 1905); 121. zbor, vol. XVI, no. 1 (10 January 1906): 1, in *Zapisnici Srpskog geološkog društva*, vol. IV 1906 (Belgrade: Državna štamparija, 1908).

71 Presentations and contributions of Vladimir K. Petković: 59., 64. (1898), 72. (1899), 78., 79., 80. (1900), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900 (Belgrade: Državna štamparija, 1900); 86., 87. (1901), 97., 98. (1902), in *Zapisnici Srpskog geološkog društva*, vol. II 1901-1902 (Belgrade: Državna štamparija, 1902).

72 Presentations and contributions of Vladimir K. Petković: 110., 112. (1904), 118., 120. (1905), in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905 (Belgrade: Državna štamparija, 1905); 126., 128. (1906), in *Zapisnici Srpskog geološkog društva*, vol. IV 1906 (Belgrade: Državna štamparija, 1908); 141. (1908), in *Zapisnici Srpskog geološkog društva*, vol. VI 1908 (Belgrade: Državna štamparija, 1912).

whose ambition to pursue science full time could not be met adequately under current conditions. This division of labour lent itself to the creation of professional specializations during the nineties. Urošević became the authority for the track that addressed the mineralogy and petrology branches, getting Stevanović into that track as the young aspiring scholar. Radovanović became the authority for palaeontology, choosing eventually Vladimir Petković for his acolyte. The common ground that they all shared was understanding that the information scholars ascertain in the field or the laboratory had to be reliable and empirically demonstrated to their peers.

The very principles that demanded precision and detail were limiting the nature of the output of the scholars. One of the reasons that mineralogical and petrographical research did not yield sufficient international recognition in that period (though it did not lack in quantity and reliability) was that it was limited by its own goals and means of representation. Sava Urošević and Svetolik P. Stevanović did not attain enough public attention because their discoveries did not reach large audience. They presented one mineral and rock after another, accruing the amount of individually identified and located information in the field. The idea behind it lay in a quantifiable accumulation of specimens and their cataloguing and mapping. Žujović supported this mission, as he considered such goals the true nature of science. The aim was to merge fieldwork with laboratory science and establish a reliable quantity of data that will be indubitably approved by a community of scholars.

However, in the case of researchers of mineralogy and petrography, this community was a narrow circle around the Geological Society and the Geological Institute, and they were not getting much attention from abroad. While their work was useful to scientists elsewhere, it was not presented in a way that was accessible to them. The limited international impact of these fields of science was a consequence of

Urošević's decision to use sessions of the Geological Society as the primary means of presenting his work, where only a minor circle was listening to them. Stevanović's international activity was slightly more intensive than Urošević's. In the period that was following his dissertation, he had several publications in *Zeitschrift für Krystallographie und Mineralogie*, mostly concerning copper ores, but he stopped publishing there after 1908. He was fortunate that his mentor, Paul Groth, was the editor of this journal, but over the years he seemed to have lost interest in further pursuing of research. In the end, his overall output as a scholar was not prolific.⁷³

5.1.6. Contribution as a Goal: Palaeontology

This empirical/historical approach to scientific work yielded more results in palaeontological research. Building of the stratigraphical column was one of the major international tasks for earth sciences and this endeavour made every contribution unique. The layers from the eastern Serbia proved particularly promising for palaeontological research. The circumstances were favourable because the Iron Gate on the Danube (Đerdap Gorge) offered a large number of clear cross-sections that connected the Serbian and Banat ranges of mountains. Areas around Golubac, Dobra, and Donji Milanovac were particularly abundant with specimens. Towards the south, the areas around Bor and Majdanpek were sites with large mining excavations, rich in diverse mineral deposits and fossils. They were also full of accessible open cross-sections as the mining operations

73 Svetolik Stevanović, "Ueber einige Kupfererze und Beiträge zur Kenntniss der Zirkongruppe," *Zeitschrift für Krystallographie und Mineralogie*, vol. 37, no. 3 (1903): 235-256; idem., "Chemisch-krystallographische Untersuchungen," *Zeitschrift für Krystallographie und Mineralogie*, vol. 37, no. 3 (1903): 257-266; idem., "Ueber die Farbe des Zirkons," *Zeitschrift für Krystallographie und Mineralogie*, vol. 37, no. 6 (1903): 622; idem., "Auripigment von Allchar in Macedonien," *Zeitschrift für Krystallographie und Mineralogie*, vol. 39 (1904): 14-18; idem., "Zur Kenntniss einiger künstlich dargestellter Verbindungen," *Zeitschrift für Krystallographie und Mineralogie*, vol. 40 (1905): 321-331; idem., "Covellin (Kupferindig) und Enargit von Bor in Serbien," *Zeitschrift für Krystallographie und Mineralogie*, vol. 44 no. 4-5 (1908): 349-354; idem., "Eine Kupferglanzpseudomorphose," *Zeitschrift für Krystallographie und Mineralogie*, vol. 45, no. 1 (1908): 60-62.

around these areas offered another opportunity for scholars. Finally, in the valleys of local rivers, particularly Pek and Timok, earth scientists found ample deposits of fossils, which were noted already by first foreign researchers. These sections were examined many times since Herder and Boué passed through those areas, and once the mining operations started the number of acquired specimens was growing each year due to regular inspections of mining engineers.

From the Đerdap Gorge of Danube, southward upstream of Pek and Timok and their tributaries, all the way to river Nišava, earth scientists were expanding their routes, revisiting the previously examined locations and searching for new ones. Already Žujović found this area interesting for his research, but Radovanović was the one who exploited the richness of this area fully. Others came later, discovering new areas rich in fossils. Dimitrije Antula, while working at the Department of Mining, had access to all discoveries made during mining operations conducted in those areas. Vladimir K. Petković, similarly to his mentor, Radovanović, oriented himself to researching the eastern Serbia, establishing himself firmly in palaeontology and stratigraphy of those regions.⁷⁴

The diversity of Mesozoic layers in Serbia attracted many of the early researchers to start their palaeontological research particularly in eastern Serbia. Žujović in his early publications summarised the already known stratigraphical layers and Mesozoic received a prominent position in them. Layers identified in Europe were distinguishable in Serbia: Lias, Dogger, and Tithon (Malmö?) for Jurassic, and Neocom, Gault, Cenoman, Turon, and Senon, for Cretaceous.⁷⁵ Internationally, these strata were known long before Serbian scholars began working on them. The work in this area started with first investigations of

⁷⁴ Predrag Nikolić, "Vladimir K. Petković," 382-383.

⁷⁵ Jovan Žujović, "Geologische Uebersicht des Königreiches Serbien."

Boué, and was continued with Tietze and Toula, upon whose overviews were Serbian scholars building their studies.⁷⁶

This does not mean that Cenozoic layers were disregarded. Because Serbia was covered with marine, brackish, and lacustrine deposits from the Paleogene period, there was a sufficient amount of fossils for palaeontologists to find. As more recent period of geological development, during Cenozoic there were more deposited remains than during previous eras. In a similar manner, fossil remains of the mammoths were found in several locations. Discoveries that belong to this geostatigraphical era were often found accidentally during excavations that were unrelated to science.⁷⁷

After street reconstructions, digging of wells, or various other surface excavations, interesting fossil fragments appeared. The networks of state administration were informing the Grand School upon such discoveries and scientists were asked to come and investigate the sites. Žujović particularly profited from such accidental findings. It was part of his duties to respond when summoned by the government and such occasions offered him exclusive access to interesting specimens. Though not as interesting as Mesozoic layers, newer strata still offered public recognition for discoveries. For example, digging of the foundations for the new railway station in Belgrade in 1904 revealed two mammoth teeth, which were delivered to Žujović for examination. That was the third evidence of mammoths in the Belgrade Diluvium. First one was found during the construction of the Weifert brewery, and the second during the reconstruction of the Cetinje street.⁷⁸

⁷⁶ See chapters 1 and 4.

⁷⁷ M. Milićević, a priest from Varvarin reported on discovery of mammoth teeth, and Jovan Žujović on teeth and bones of a mammoth he found near Višnjica: 57. zbor, vol. VII, no. 2 (10 November 1897), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900, 1-2; Žujović on *Labrax elongatus* found near Popovac, 60. zbor, vol. VIII, no. 1 (10 February 1898).

⁷⁸ Žujović on discovery of two mammoth teeth found during construction of the railways station in Karaburma: 110. zbor, vol. XIV, no. 4-5 (10 May 1904), *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905, 10.

Radovanović built his scientific reputation while working on Mesozoic layers of eastern Serbia, particularly on Lias and Dogger layers. His dissertation was on Lias in eastern Serbia, but he continued working on this subject long after he finished his dissertation. His thesis was just a start of his years long interest in Mesozoic of eastern Serbia. Even though he had an opportunity to publish in Austrian journals, he continued to use their own publication *Geološki anali Balkanskog poluostrva* as the main journal for presentation of his results. Furthermore, the sessions of the Geological Society were for him as well a place where he reported on his findings to that small circle of Žujović's acolytes. Between 1897 and 1900 he was responsible for writing the minutes of the sessions and he consequently edited their subsequent publication. His primary interest was to present his findings in Serbia, leaving the international representation as an additional task.⁷⁹

While he was studying in Vienna, Radovanović experienced how the discovery of new fossils should look like. His intention was from the beginning to study Triassic, Jurassic, and Cretaceous fossils, because from his knowledge those layers were "the most developed in Serbia and for palaeontology the most interesting."⁸⁰ Melchior Neumayr was excited when he saw the shipment of fossils Radovanović received from Serbia. He immediately found a number of interesting ammonites and belemnites and directed Radovanović on how to proceed with his study. There was a number of catalogues he needed to consult for identification, and not all of them were easily available in the

79 Radovanović, "Beiträge zur Geologie und Paläontologie Ost-Serbiens. I. Die Liasablagerungen von Rgotina,"; idem, "Beiträge zur Geologie und Paläontologie Ost-Serbiens. II. Der Lias von Dobra. III.; Ueber die geologische Verhältnisse der Umgebung von Crnajka"; idem., "Beiträge zur Geologie und Palaeontologie Ost-Serbiens. IV Ueber die Fauna der Kelowayschichten von Vrška Čuka," *Geološki anali Balkanskog poluostrva*, vol. IV, no. 2 (1893): 133-146; idem., "Ueber die unterliassische Fauna von Vrška Čuka in Ostserbien," *Geološki anali Balkanskog poluostrva*, vol. V no. 2 (1900): 60-70; Radovanović's report on the profile of a Jurassic field on Vrška Čuka, on the Lias profile near Vratarnica, 90. zbor, vol. XI, no. 8 (10 December 1901), in *Zapisi Srpskog geološkog društva*, vol. II 1901-1902, 2-3.

80 AS, Fond Jovan Žujović, 212/1-3 Letters from Svetolik Radovanović to Jovan Žujović. 12 November 1886.

libraries and institutes. After consulting several of the catalogues, Radovanović was convinced he discovered several new species of shells, but Neumayr did not allow him to make hasty conclusions before checking all books on the matter.⁸¹ In the end he had to dismiss one of the discoveries, as it turned out that those fossils were previously identified.⁸²

In order to conduct proper palaeontological studies, scientists had to rely on extensive consultation with previously conducted research. Identification of the earth strata largely depended on the comparison with the work of scientists from around the globe. Particularly, identification of fossils depended on relentless comparisons, where each specimen had to be located in catalogues for all registered appearances, located in the right geological epoch, in the identified localities, and in the Linnaean taxonomy. Such activities were not possible in isolation. While this could be said for all other scientific branches, palaeontological work was almost impossible without international cooperation. Serbian palaeontologists needed international knowledge and the international community needed contributions from Serbia.

This experience made international networks necessary and ultimately made the learning process bound to comparative examinations of fossil records and strata. After Radovanović finished his studies in Vienna, Antula, Pavlović, and Vladimir K. Petković took the same road and went for training in geology and palaeontology. However, Pavlović and Petković stayed there for only one year. In the late 1890s, it was apparently considered sufficient to send scholars for a short training, rather than full degree.

Dimitrije Antula had shown interest in palaeontology, and he certainly entered the field with high ambitions, but was diverted later into a slightly different direction. While

81 AS, Fond Jovan Žujović, 212/4-31 Letters from Svetolik Radovanović to Jovan Žujović. 15 January 1887 – 15 February 1888.

82 AS, Fond Jovan Žujović, 212/36-37. Letters from Svetolik Radovanović to Jovan Žujović. 6 May 1888.

he was doing his doctoral studies in Vienna, he had the opportunity to work on Cretaceous fossils from the Caucasus, which was a rare case for a Serbian geologist to work on samples that were not from the Balkans. Occasionally, during the meetings of the Geological Society, he presented his research in this field.⁸³ However, because of his job in the Department of Mining, Antula was in a position to dedicate only as much time to this topic as it overlapped with his mining related investigations.

The training that Pavlović received had narrowed his focus on the palaeontology of molluscs, which provided him with sufficient amount of objects for research, considering that the fossils of molluscs were among the most abundant in the area. In Vienna, he was instructed by Wilhelm Waagen and Theodore Fuchs, and advised to go for specialisation to Zagreb where Spiro Brusina could give him better training in malacology. The year spent in Zagreb formed his scientific profile more than time spent in Vienna. His training made him narrowly specialised in a specific branch of palaeontology, in addition to his training in museology. For a scholar oriented towards palaeontology his subsequent job as the temporary director of the Museum of Serbian Land provided him excellent environment for research as he found himself at the centre for collection of specimens and thus had access to wide variety of resources.⁸⁴

The early start of Pavlović's career was that of a contributor to the Geological Society. He was one of those scholars who collaborated with Žujović for years and for whom Žujović secured a position in his small circle of scholars. His assignments in the first years included translations, but he was publishing articles as well.⁸⁵ Quite like other

83 On Barremian Cretaceous faune around Donji Milanovac: *Zapisnici Srpskog geološkog društva*, 101. Zbor, vol. XIII, no. 1-7 (10 March 1903), in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905, 7-8; Thesis: Dimitrije Antula, "Ueber die Kreidefossilien des Kaukasus mit einem allgemeinen Ueberblick ueber die Entwicklung des Sedimentaerenbildung des Kaukasus," *Beitrage zur Palaeontologie und Geologie Oesterreich-Ungarns und des Orients*, vol. 12, no. 2 (1899): 53-102, and no. 3 (1900): 103-159.

84 Pantić and Vasić, "Petar S. Pavlović", 155-156.

85 Pavlović's translations: P. Lenderfeld, "Koralski sprudovi" [Coral Reefs], *Prosvetni glasnik* 13 (1892): 551-558. M. Najmajer, "Paleontološka metoda za odredbu starosti zemljišnih slojeva" [Palaeontological Method for Determination of Age of Strata], *Prosvetni glasnik* 13 (1892): 772-777.

contributors, he worked as a school teacher in one of those provincial towns, examining the area, collecting specimens, and then sending them along with reports of findings to Belgrade, to Žujović, or to Geological Society. First independent encounter with fossils for Petar S. Pavlović was in the Timok valley early in his career, when he was posted as a school teacher for one year in the Zaječar Gymnasium (1887/88). There, in the eastern Serbia, one of the richest areas for palaeontology, was his induction into earth sciences. For his school cabinet of natural sciences, he was gathering specimens in the field, in the Timok valley, and there he encountered fossils of the Pecten shells for the first time. Over the years, his career took him to other localities and institutions, but he began as a secondary school teacher who was exploring the vicinity of his posting and gathering specimens for the school collection. When he moved to Belgrade, he continued with the same kind of contribution, just this time orienting himself to the fossils from Višnjica, village on the outskirts of Belgrade, where he conducted research that resulted his first scientific publication.⁸⁶

Pavlović's return back to Belgrade improved his ties with scholarly circles, particularly with Žujović and Radovanović. His good relations with the latter were particularly significant for the palaeontological research of the Timok valley. Together and separately, Radovanović and Pavlović examined the Tertiary formations from that region, examined the Upper Miocene Sarmatian strata and determined the Maeotic stage in the Timok region. The amount of newly discovered fossils enabled a reputable amount of new data supplied to academia, which was in accordance with Žujović's mission. Pavlović was mostly oriented on the vicinity of Belgrade (Višnjica and Vrčin) and the Timok valley. In his work, Pavlović correlated different stratigraphical results from

86 Pantić and Vasić, "Petar S. Pavlović", 155-156, 171-177. Petar S. Pavlović, "Mediteranska fauna u Rakovici" [Mediterranean Fauna in Rakovica], *Geološki anali Balkanskog poluostrva*, vol. 2, no. 1 (1890): 9-60.

foreign research with his findings, using palaeontological data to identify layers according to their geostatigraphical epoch.⁸⁷

By comparison, Mihailo Živković, one of the aspiring scholars from the Žujović circle, also wrote a study on the Tertiary of the Timok Valley, building his research mostly on Toula's and Žujović's work.⁸⁸ During the 91st session of the Geological Society, Pavlović led the discussion about the collection of specimens that Živković collected in Lenovac, a village in the Timok Valley. Pavlović identified the specimens as part of the Gault segment and identified each of the fossils individually. At the time, Živković was a professor at the Valjevo Gymnasium, teaching Serbian language, geography, chemistry, and physics, while Pavlović was employed by the Gymnasium Vuk Karadžić in Belgrade, and serving as the custodian of the Geological Institute and teaching assistant to Radovanović. The difference in their locations, and type of employment demonstrates the relevance of Belgrade as the centre of academic activity. By moving from Zaječar to Belgrade, Pavlović radically improved his connections with the circle of scholars around Žujović and became a recognised member of the Geological Society. Živković was not in the position to provide explanation for his own collection, sent from his position at the periphery, which let Pavlović be the interpreter for him.⁸⁹

Contributors who were at the moment not present in Belgrade, had a way of presenting their findings at meetings of the Geological Society. Other than sending specimens (and having them explained by someone else), scholars could have written reports and had them read during the meetings. The already mentioned Cvetko Petković

87 Pantić and Vasić, "Petar S. Pavlović", 176-177; Petar S. Pavlović and Svetolik Radovanović, "Ueber die geologischen Verhältnisse des Serbischen Theiles des Unteren Timok-Beckens," *Geološki anali Balkanskog poluostrva*, vol. IV, no. 2 (1893): 89-132; Svetolik Radovanović, "Meotska etaža (Novi kat tercijerne formacije)" [Maeotic Level (New Strata of Tertiary Formation)]. *Prosvetni glasnik*, vol. XII, no. 4, 5, 6 (April, May, June 1891): 185-189, 254-258, 315-320; Petar S. Pavlović, "Horizontat s Spaniodon Barbotii. Stuck" [Horizon with Spaniodon Barbotii. Stuck], *Geološki anali Balkanskog poluostrva*, vol. IV, no. 1 (1893): 296-302.

88 Mihailo Živković, "Tercijer srednjeg dela Timočkog Basena" [Tertiary of the Middle Section of the Timok Basin], *Geološki anali Balkanskog poluostrva*, vol. IV, no. 1 (1893): 37-117.

89 91. zbor, vol. XII, no. 1 (10 January 1902), in *Zapisnici Srpskog geološkog društva*, vol. II 1901-1902.

and Todor Bušetić were regularly participating at the meetings only with their written reports. Mihailo Živković resorted to that as well. In 1904, while he was working at the Užice Gymnasium, he wrote a report on the gastropod genus *Pyrgulifera*.⁹⁰ However, in 1906, Pavlović was again making a report to the society about Živković's findings, as they were published in the publication of Užice Gymnasium.⁹¹ On the other side, Pavlović was regularly present at the meetings of the Geological Society, and regularly published in the *Geological Annals*. His frequent and numerous publications made him an important member of the Žujović circle. Like Radovanović, he published articles in German in editions of *Geological Annals*, but he did not make much effort to publish in foreign journals. Because his strong ties with Brusina and Zagreb, he chose to publish in Croatian scholarly journals, but outside of Croatia, he had shown no ambition to publish.⁹²

If the transfer with the job position to Belgrade helped Pavlović build his career, that can be even more so said about Vladimir K. Petković and his career path. His teaching positions in Skopje and Thessaloniki (1897-1903) had both the educational and patriotic/nationalist component. He was serving the state by propagating Serbian national identity through education. However, while working there, he used opportunity to investigate the surrounding areas and send written reports and specimens to Belgrade. During the sessions of the Geological Society, Petković's findings were presented. In this aspect, he was one of the most prolific contributors to the society, published in the *Geological Annals* and certainly even before his return to Belgrade, gained a significant

90 112. zbor, vol. XIV, no. 7 (10 December 1904), 2-3, in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905.

91 123. zbor, vol. XVI, no. 3-8 (10 March 1906), 4-5, in *Zapisnici Srpskog geološkog društva*, vol. IV 1906.

92 For example: Petar S. Pavlović, "Korali is drugomediteranskih slojeva u Srbiji" [Corals from the Second Mediterranean Layers in Serbia], *Rad Jugoslovenske akademije znanosti i umjetnosti*, vol. 175, Matematičko-prirodoslovni razred vol. 44 (1908): 81-86.

reputation.⁹³ After his return to Belgrade, he was appointed teaching assistant in geology and palaeontology, right at the time when the Grand School was in the process of transformation to a university. His good connections with members of the Geological Society, particularly with Radovanović, who took him as his assistant helped his career, which will in the interwar period made him the primary expert in the fields of geology and palaeontology, when was his primary period of scientific endeavours.⁹⁴

Petković entered the scientific discourse with his regional studies which addressed stratigraphical, palaeontological, and tectonic questions in the areas he visited. Several decades later, Petković was credited by his acolytes for being the founder of regional geology in Serbia. This was a consequence of his practical attitude towards research where he intended to explore everything that was available in one specific region and talk about it in its entirety. During the period before the First World War, these two regions were Macedonia, where he spent time working as a teacher, and areas in eastern Serbia around Knjaževac where he spent most of his childhood, and ultimately, areas around Belgrade. Some of these regions overlapped with Radovanović's field of interest. This was an outcome of specialisation that relied on the idea of thorough field surveys and thorough observation of a designated area of research.⁹⁵

Petković addressed both the geological and palaeontological topics in his research. In this aspect, he was inclined towards general earth sciences, in the same way Žujović devised his field of operations. The difference was that Petković narrowed his interest into localities that were yielding a large number of scientifically relevant data,

93 Presentations and contributions of Vladimir K. Petković: 110., 112. (1904), 118., 120. (1905), in *Zapisnici Srpskog geološkog društva*, vol. III 1903-1905 (Belgrade: Državna štamparija, 1905); 126., 128. (1906), in *Zapisnici Srpskog geološkog društva*, vol. IV 1906 (Belgrade: Državna štamparija, 1908); 141. (1908), in *Zapisnici Srpskog geološkog društva*, vol. VI 1908 (Belgrade: Državna štamparija, 1912); Vladimir K. Petković, "Gološki odnosi Ljubotena na Šaru i njegova podnožja" [Geological Relations of Ljuboten with Šara, and its Foothills], *Geološki anali Balkanskog poluostrva*, vol. 6, no. 1 (1903): 190-213.

94 Predrag Nikolić, "Vladimir K. Petković," 382-383, 398.

95 Ibid.

which he interpreted and presented to the scientific community. His doctoral dissertation, done under Radovanović's supervision, "Tupižnica i njeno podnožje" (1908), was a detailed stratigraphical, palaeontological, and tectonic analysis of the mountain Tupižnica and its surroundings. In the area, Petković found red sandstones of the Permian era, rocks from the Upper and Lower Cretaceous, and then remains of Tertiary, and Quaternary strata.⁹⁶

Slightly different was the study on Gault layers in Serbia (1913). Here his intention was to correlate all regions in Serbia where Gault was identified, thus summarising the previous discoveries by his peers. In a synthetic attempt Petković connected with this study areas around Belgrade (discoveries of Cvijić and Pavlović) with eastern Serbia (Lenovac, Gornja Bela Reka, Gamzigrad, Knjaževac, discoveries of M. Živković and Žujović) and extrapolated a geological-historical conclusion about the transgression of the sea on these regions of Serbia. He found that the sea transgressed from the northwest at the beginning of Gault covering the area around Belgrade and only by the end of Gault it reached the eastern Serbia. End of Gault represented the end of transgression.⁹⁷

With these studies Petković entered the same fields of expertise that Radovanović and Žujović occupied. In this period, before the war, Petković was not as prolific with his publications or contributions in the Geological Society, as most of his peers. However, his engagement with empirical-historical geological works, particularly those that attempted to synthesise the studies in specific regions, or specific geological eras, made him recognised in the circle around Žujović. Perhaps most telling part of his work in this period would be that he did not have any internationally published works. If Urošević

96 Vladimir K. Petković, "Tupižnica i njeno podnožje: s geološkom kartom, jednom tablom profila, trima tablama fosila i dvadeset osam slika u tekstu" [Tupižnica and its Foothills: With one Profile Table, Three Fossil Tables and Twenty Eight Pictures in the Text], in *Spomenik SKA*, vol. 46 (1908): 8-165.

97 Vladimir K. Petković, "Golt u Srbiji" [Gault in Serbia], *Glas SKA*, vol. LXXXIX (1913): 33-143; Predrag Nikolić, "Vladimir K. Petković," 403.

and Radovanović focused mostly on presenting their research to the small circle of scholars in Belgrade, and if Pavlović was even more inclined towards presenting in the same circle, Vladimir Petković completely avoided presenting his findings to international community. This is somewhat peculiar, considering that he spent a year studying in Vienna with Suess.

With Petković, the pre-war Serbian earth sciences moved away from international cooperation. As already mentioned, the plans for development of the university resulted ultimately in their independence in the production of academic degrees. The circumstance that Vladimir K. Petković was the first scholar who got his doctoral degree at the university coincided as well with his lack of interest in presenting his work internationally. The empirical orientation of Žujović's understanding of scientific work had its primary purpose to make the process of collection of data and their presentation internationally recognised. For Žujović, international recognition of Serbia's scientific competence was a sign of its progress and sign that it is a member of "civilised nations." The whole purpose of the *Geological Annals* was to enable transfer of international knowledge production to Serbia, and at the same time facilitate the opposite transfer and present Serbian earth sciences to international audience. However, the momentum slowed down in the 1900s as the publications of the *Geological Annals* became less frequent. This coincided with Žujović's absence from academia and his focus on politics. From 1899, after Žujović's exile, Radovanović took the lead, which benefited scholars who maintained close contacts with him.

In his own way, Radovanović intended to present himself as the founder of palaeontology as a discipline. While palaeontological research was part of the many activities Žujović addressed, Radovanović narrowed his field of expertise to this discipline. Radovanović chose palaeontological studies because he recognised its

potential role for the international recognition of Serbian science, but also because there was no one specialised in this field in Serbia. At the time, it was a useful part of the mapping project that Žujović started. The main goal was designing a detailed geological map of Serbia and palaeontological research was a means to achieve it. The idea of setting groundwork for palaeontology as a new epistemic field was for Radovanović a way of putting himself on the same level as Josip Pančić and Jovan Žujović, as he put in an 1897 lecture:

There are still not enough collaborators on our scientific independence. And this is apparent in many other sciences, not only in natural history (*jestastvenica*). The only country on the Balkan Peninsula in which our profession managed to gain independence is Serbia. The foundations for flora and fauna were set by Pančić, and the foundation for geology was set and the geological map was made by Žujović. The undertaken business should be continued and this scientific independence has to be maintained. Beside further investigation of flora and fauna, we should commence as well with the production of the detailed geological map. And particularly in the latter task we need a lot of collaborators, in which Palaeontology would be more than necessary. The leverage of our scientific independence in natural history (*Jestastvenica*) lies in flora and fauna, and in the detailed geological map, with all the issues related to them. Even though we are not capable to send scientific expeditions to far away regions and prove with them that we conduct tasks of cultured nations, we still put effort that we could accompany the general scientific movement of our age by independently giving contributions to the overall scientific treasury of humanity from our own homeland. And Serbia is a wonderful land for naturalists.⁹⁸

This statement summarized how in practice the scientific work was contrived. The goal was to make contribution to overall scientific knowledge (*the overall scientific treasury of humanity*). In the same way Žujović and Urošević saw international and local collaboration, Radovanović saw contribution as a major goal of scientific research. The goal was patriotic, at least in its declarative form, as it was to place Serbia among the “civilized” nations with its prolific scientific output, while at the same time providing international and local recognition for scholars from Serbia. While they worked on establishment of Belgrade as the centre of scientific knowledge about the Balkan

98 Svetolik Radovanović, “Uvod u palaeontologiju: Pristupno predavanje, 8. oktobra 1897” [Introduction to Palaeontology: Accession Lecture, 8 October 1897], *Delo: list za nauku, književnost i društveni život*, vol. IV, no. 16 (1897): 85.

Peninsula, they were fully aware that such recognition largely depended on the amount of produced materials from Belgrade and their relevance of the international scientific community. Palaeontology was in that respect essential because it set groundwork for stratigraphy and mapping, and was indirectly related to botany and zoology through analyses of the fossils. In the words of Radovanović, it provided “leverage” for their “scientific independence.” Accumulation of such type of data was supposed to be an evidence that scholars of Serbia are capable of conducting such “tasks of cultured nations” and be part of the European science.

With the growth of the circle around Žujović and the diversification and narrowing of their specialisation, Žujović’s students started forming their own fields of power where they could establish themselves as experts. While Žujović remained the towering father/teacher figure, his students took over narrower fields of expertise and established their primacy in them. The circle formed at the Geological Society received and processed all the data sent by the scholars from the periphery. Being in Belgrade and participating in the work of that society represented one of the key elements in establishment of one’s expertise. Discussions held among the small circle of associates influenced building of their scientific reputations. School teachers and local administrators from the provinces were in a position to send contributions from afar and be credited for them, but in such cases their expert knowledge was subject to scrutiny of the scholars in Belgrade, present at the meeting. Similar dynamic of the centres and peripheries could be observed in the relations of the Belgrade scholars with international academic centres. Sending specimens to Paris or Vienna had a similar impact. While the international audience had interests in learning about the findings of the local Serbian scholars, the re-interpretation of the data belonged to the centre that was able to synthesise the copious amount of data coming from all kinds of peripheries. In this

dynamic, the specialisation into specific branches of science helped establishment of narrower fields of expertise, where scholars like Urošević and Radovanović could establish their primacy and be the authorities who oversee knowledge production. Institutional support that came with the opening of new job positions at the university, the museum, or Department of Mining, put each of them in positions of power that sometimes hindered the advancement of younger scholars. Thus many of the scholars who participated in the work of the Geological Society remained employed in primary and secondary schools. These contributors from the periphery managed to overcome the obstacles in some cases and raise into higher academic positions. Vladimir K. Petković would be a good example of such advancement. However, his career progress testifies on how important were the ties with scholars in Belgrade, and how international contribution became a matter of less importance.

5.1.7. Expertise under Public Scrutiny

While internationally the reputation depended on the production of verifiable data, in the inner social-political environment of Serbia, the practical demonstration of one's expertise had more weight in the eyes of the public. The choice for scientific research depended largely upon personal interests and requirements set from the scientific community, but the community had their own demands from the experts. In the period between 1880 and 1914 three questions troubled public opinion of Serbia that demanded expertise in the field of earth sciences. The first one was inherited from the 1830s and this was the issue of mining and ore prospecting. The second became actual during the 1890s after the first serious earthquake alarmed the public opinion, which initiated a perfunctory initiation of seismological research that staggered for almost a

decade. And finally there was the issue of water supplies which became part of the public discourse during the 1890s in which the capital's water supplies got into focus, but which raised more general debates about the water quality.

When Svetolik Radovanović became the official state geologist in the Department of Mining, he ascended to a new function in an already several decades established practice. The role of a mining geologist did not suit him well. Between 1894 and 1898 he conducted research on the locality of Misača near Arandelovac. However, the results of his fieldwork were not favourable. He gave a wrong estimation of the amount of coal deposits in Misača, thus recommending the beginning of the excavations where the deposits were not yielding. This resulted in a big scandal that even threatened the government. Soon after, Radovanović got a position at the Grand School, and left mining geology.⁹⁹

His position was filled by Dimitrije Antula, whose research interests were diverse up to that point. The position of the state geologist determined the profile of his research, thus making his career oriented towards mining and ore surveys. If in those years the division of assignments said something about fields of power, in this case the job position delineated Antula's designated space for scientific work. Even though his corpus of publications encompassed many of different fields of earth sciences, because of his job position, the majority of his work was related to mining, and it was considered his field of scientific authority.¹⁰⁰

Even though mining was essentially related to earth sciences, the construed division of scientific fields of expertise worked against Antula's interests, as if academic community did not allow strong entanglements between them. From the position of a state appointee in the Department of Mining, a geologist had to address a number of

99 Aleksandar Grubić, "Svetolik Radovanović": 127-128.

100 Aleksandar Grubić, "Dimitrije Antula," 131-146.

assignments that were specific to surveying and cataloguing of data necessary for mining operations. Those assignments were not divorced from activities of geologists in their operations as scientific labourers. Field surveys, collection of samples, maintenance of collections, publication of field and laboratory results, those were all activities that were common for both groups of scholars. However, the experiences of the scholars in either position were different. Omission during a field survey, such as the one Radovanović made, could have resulted in misdirected excavations (and in his case it did) that would cause financial troubles for the entrepreneurs. This placed the scholars in an inferior position to their employers to whom they owe responsibility for their findings. In academia, this type of responsibility did not exist. Any omissions, could have been easily corrected afterwards upon later inspection.¹⁰¹

Public attention to earthquakes arose in 1893 when a ruinous earthquake occurred in the Resava region, damaging several towns (Svilajnac, Despotovac), which prompted response from the Geological Society, which was at the time in its early formation. Žujović organised a special session of the society about the earthquakes in order to organise a committee that would start collecting data about earthquakes. This committee was devised upon the similar Austrian institution, existing with the academy of sciences in Vienna. They required testimonies from the field. Witnesses willing to describe the earth tremors. Nonetheless, the work of that committee lasted as long as the aftershock shaking lasted and as long as the audience lost their interest in it.¹⁰² This field of expertise

101 Kosta Petković, *Geologija Srbije I*, 47-48; Aleksandar Grubić, "Geologija u Srbiji tokom druge polovine XIX veka" [Geology in Serbia during the Second Half of the 19th Century], in *Nauka i tehnika u Srbiji druge polovine XIX veka 1854-1904.: Referati sa naučnog skupa održanog 7. i 8. maja 1996.* [Science and Technology in Serbia in the Second Half of the 19th Century 1854-1904: Presentations from the Workshop Held on 7th and 8th May 1996], (Kragujevac: Univerzitet u Kragujevcu, 1998), 81-83.

102 Deborah Cohen, *Earthquake Observers: Disaster Science from Lisbon to Richter* (Chicago: University of Chicago Press, 2013), 141-161; Jelenko Mihalović, "Seizmološki zavod u Beogradu": 16.

that eventually became the sphere in which Jelenko Mihalović was the leading authority was constructed through the initiatives and involvement of Žujović and Radovanović, in which the latter took the role of the founder of seismology, leaving Mihailović in the chair as the administrative and scholarly authority on the subject. Nevertheless, the beginnings of seismological research was not easy and it took time before the scholarly community organised institutional support for it.

After the tremors passed, the public's attention drifted and the organisation disintegrated. After couple of years the committee surrendered its duty to the meteorological observatory which conducted the recording of tremors in Serbia through its network of meteorological stations. Nevertheless, this idea was not realised professionally. The observatory in Belgrade was in a wrong position and it used instruments that were not adequate for its task. In addition, the meteorologists were not giving enough attention to the recording of the tremors, to which Radovanović objected. Eventually, he began an initiative to remove the seismological observatory from meteorological institutions. In his letters to Cvijić, he complained extensively about the lack of professional attitude of Milan Nedeljković, head of the observatory and argued with the ministry of education that a separate institution should be founded for seismological research.¹⁰³

This was a time when on an international level there was an initiative for systematic seismological studies to which all states would be obliged. The issue that occurred in Serbia was that some were challenging the necessity of the recordings beyond the mere statistical interests. After the earthquakes had passed, the public opinion lost interest in earthquakes. Mihailović even thought that Austria-Hungary's activities in seismological recordings could endanger the position of Serbia's science. Radovanović's

103 ASANU, 13484 Jovan Cvijić, 1061.2 Letters of Radovanović to Cvijić. 25 December 1907; Jelenko Mihalović, "Seizmološki zavod u Beogradu": 17.

initiative eventually gave results and in 1906, the seismological observatory was founded as part of the Geological Institute of the university.¹⁰⁴

While this process was an institutional and organisational struggle, it was at the same time a struggle with public opinion and at the same time a delineation of a field of expertise. While at point the public's attention was focused on the issues with earthquake, their interest was difficult to hold. Radovanović had troubles taking away that field of expertise from Nedeljković, an astronomer by profession, to his own circle of practitioners. This process involved a lot of political negotiations with clerks in the government, but also luring the qualified and interested individuals into that circle. Jelenko Mihailović, a long time assistant to Nedeljković, thus changed his allegiance and moved to the new institution, founded by Radovanović. The new seismological service was promptly connected with the international network of seismologists. In 1907, Serbia joined the international seismological convention at the international seismological congress in the Hague.¹⁰⁵

The question of water supply became particularly intriguing for the public sphere during the 1890s. At the time the city of Belgrade was organising its water supplies and the experts were invited to participate in the debates about the new capital's water supplies, following the 1889 investigation of Makiš water by Oscar Smrecker, and engineer that designed water supply systems of Milan and Manheim. The new water system was opened in 1892. However, already in 1893 the research by Kosta Jovanović, chemist from the laboratory of the Department of Mining, revealed that the water was contaminated. This incited a long political debate over water quality. For this endeavour,

¹⁰⁴ Jelenko Mihalović, "Seizmološki zavod u Beogradu": 17.

¹⁰⁵ ASANU, 13484 Jovan Cvijić, 1061.2 Letters of Radovanović to Cvijić. 25 December 1907; Jelenko Mihalović, "Seizmološki zavod u Beogradu": 17.

the city officials needed three kinds of experts: physicians, chemists, and geologists. While the involvement of Milan Jovanović Batut, Kosta Jovanović, Sima Lozanić, and Marko Leko as physicians and chemists was immense, geologists participated in the debates too and some were even held at the geological society. Even though earth sciences dealt specifically with earth, or rocks, to be more specific, the interest in water was part of their field of expertise.¹⁰⁶

The demand for better water supplies of the Serbia's capital became the subject of public debate during 1894 and 1895. Svetolik Radovanović, at the time working as the state geologist, led the part of the project that was related to geology, while Marko Leko and Kosta Jovanović led the chemical debate. During the 32nd session of the Geological Society, scholars from three different spheres of scientific expertise gathered to discuss the issues related to the contamination of the new water supply centre at Makiš. This debate became publicly known, being published in the official state newspapers *Srpske novine* in 1895. This was one multi-disciplinary debate, where questions of mineral compositions and bacterial contamination of different underground water streams in the Makiš area became tied with identification of different layers of sand and clay and their ability to divert water streams.¹⁰⁷ However, the debate lasted for several years and eventually became entirely a political issue directed against Marko Leko and Milan Jovanović Batut. Chemical and medical issues were of primary concern and the participation of geologists was peripheral.¹⁰⁸

I would like to stress here that the research of water was part of the domain of research of earth scientists. The principal geological publication, *Geological Annals*, was used since its inception for publication of various chemical analyses closely related to

106 Dubravka Stojanović, "Kaldrma i asfalt," 141-147.

107 XXXII Zbor Srpskog geološkog društva, (10 December 1894), printout from *Srpske novine*. Also see *Srpske novine*, no. 44, 46, 48, 50, 54, 57, 61, 70, 72, 77, 82, 84, 87, 88 (26 February – 21 April 1895).

108 Stojanović, "Kaldrma i asfalt," 144-147.

mineralogical or water research. The chemists that participated in the debates of water quality regularly published their findings in the *Geological Annals*.¹⁰⁹ While the attention of the public was still on the issues of water, this was an opportunity for many earth scientists to address the issue with their studies on the water quality of the local communities. Hydrogeological research provided necessary context for chemical and bacterial water testing. By organising examinations of soil and bedrock, geologists examined the flow of underground water and possible sources of water in wells. Thus studies of wells became a preoccupation of earth scientists. In the circle of Žujović's collaborators early studies on wells in Serbia were conducted by Živojin Jurišić and Jelenko Mihailović.¹¹⁰

With the development of the Serbian bourgeoisie, tourism emerged as one of its characteristic activities that instigated interest in spas and medical qualities of water. As part of the regular intellectual exercises, plans for opening of new spas became customary among the intellectual circles.¹¹¹ The discourse was trying to address both the notions of economic prosperity that could potentially come from tourism with the opening of new spas and at the same time address the notion of public health and medical benefits that could come from treatment in spas. Investigations of the Serbian spa water was sometimes subject of conversation during the sessions of the Geological Society. For example, Dimitrije Antula studied the water source of the Niška Banja (1898) and thermal sources of Vrnjačka, Mataruška, and Brestovačka Banja (1902).¹¹²

109 Sima Lozanić, "Analize voda" [Analyses of Water], *Geološki anali Balkanskog poluostrva*, vol. II, no. 1 (1890): 79-83; Milorad Z. Jovičić, "Analiza Bele Vode i Smrdan Bare" [Analysis of Bela Voda and Smrdan Bara], *Geološki anali Balkanskog poluostrva*, vol. III, no. 1 (1891): 113-114; Milan J. Bajić, "Analize nekih voda" [Analyses of Certain Waters], *Geološki anali Balkanskog poluostrva*, vol. VI, no. 1 (1903): 287-289.

110 Živojin Jurišić, "Nešto o bunarima u Mačvi" [Few Things about Wells in Mačva], *Geološki anali Balkanskog poluostrva*, vol. II, no. 1 (1890): 193-195. Jelenko Mihailović reported on three wells in Belgrade (10 April 1891); Jovan Žujović, "Izveštaj za [godine] 1890-1891" [Report of Years 1890-1891], *Geološki anali Balkanskog poluostrva*, vol. IV, no. 1 (1893): 176.

111 Stojanović, "Kaldra i asfalt," 327-328.

112 Antula's reports on spa water during the sessions of the Geological Society: 66. zbor, vol. VIII, no. 7 (10 December 1898), in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900; 98. zbor, vol. XII, no.

The research methods were usually simple measurements of water temperature and collection of water samples, which accompanied the observation of the local geological environment. Žujović recorded in his diary Cvijić's methods of water research. During their journey in 1895 from Belgrade to Žujović's estate in Nemenikuće, Cvijić stopped during the journey seven times as they were climbing the Kosmaj hill in order to measure the temperature of water springs, after which they continued their journey.¹¹³

One of the rare recorded cases of contention among the scholars in the circle around Žujović occurred about the results of Radovanović's study on the geothermal gradient in the area around Mladenovac. Radovanović used the measurement of the temperature of artesian water wells around Mladenovac to estimate the geothermal gradient according to which the temperature of earth was rising with the increase of depth. Such studies were used in order to estimate the possible changes in the surface levels during the more recent geological history and Radovanović made one such estimate during his detailed analysis of artesian water wells in that region. His results had shown that the temperature of the earth was rising more rapidly than was common elsewhere. Because the terrain was not volcanic, which would be the most common explanation for such a rapid increase of temperature of the earth, Radovanović concluded that this was happening because of the chemical influence of coal deposits present in the area.¹¹⁴ However, Antula challenged his use of ordinary thermometers instead of specially calibrated geological thermometers and, subsequently, his interpretation of the ascertained data, though he did not question the measurements or calculations themselves. The gradient was apparently anomalously small and Antula did not consider

8 (10 December 1902), in *Zapisnici Srpskog geološkog društva*, vol. II 1901-1902.

113 Jovan Žujović, *Dnevnik iz Nemenikuća*, 42.

114 Svetolik Radovanović, "O geotermskom stupnju tercijernog terena kod Mladenovca" [On the Geothermal Gradient near Mladenovac], *Glas SKA*, vol. LIV (1897): 229-252.

the chemism [*hemizam*] of the coal deposits to be the viable explanation.¹¹⁵ This discussion did not get very far because Žujović interrupted it by saying:

Searching for some finesse of observation, which were not expected even for some data entered in the textbooks of Geology, is too much. Raising doubts in someone's results without providing new facts and convincing reasons is unjustified. We have to be satisfied when someone, in addition to official business, does not miss an opportunity to collect data, like the ones Radovanović collected, particularly when we consider the negligence that usually occurs and when we remember how many diggings, how many tunnels had been cut out through our hills, and the responsible did not observe in them anything, nor made any profiles, nor did they make collections. Further I believe that it is good that this polemic happened in this society, in which we should present all critiques and reports before they go out in the big public, where there are less competent referees than in a society of experts.¹¹⁶

My intention here is not to get into detail in the debate on Radovanović's work on geothermal gradient, but rather to observe how the actors behaved in the event of contention of one's scientific work. While Radovanović and Antula intended to argue about the causal explanation of the results, Žujović was not willing to allow them to further continue with it. His short speech epitomised his goals and revealed his professional fears. He dismissed the "finesse of observation" and spoke against questioning of colleagues' results. For his understanding of scientific work and in respect of the current state of geological research in Serbia, any definitive empirical contribution was welcomed, while the causal interpretation of the data may have caused misapprehension. Žujović was afraid that in the "big public" may misrepresent the state of affairs in Serbian earth sciences. His small circle of experts was dependant on each other's support and any contention between them that could reach the public and possibly damage the reputation of his school.

115 Dimitrije Antula, review of "O geotermskom stupnju tercijarnog terena kod Mladenovca," by Svetolik Radovanović, *Glas SKA*, vol. LIV (1897): 229-252, *Pregled geografske literature o Balkanskom poluostrvu za 1895., 1896. i 1897. godinu*, vol. III (1898): 91. Discussion about Radovanović's results about the geothermal level near Mladenovac, 60. zbor, vol. VIII, no. 1 (10 February 1898): 2-4, in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900.

116 Discussion about Radovanović's results about the geothermal level near Mladenovac, 60. zbor, vol. VIII, no. 1 (10 February 1898): 2-4, in *Zapisnici Srpskog geološkog društva*, vol. I 1897-1900.

The administrative process of division of assignments required from the government or local communities to consider the available human resources and the amount of professional expertise for the given assignments. At the time when the number of professionally trained men and women who worked in administration was limited, the choice to address the Grand School or the university for experts was a reasonable solution. Whether the ministry wanted to organise school collections of specimens, mining surveys, or water supplies for towns and cities in Serbia, there was a limited number of available experts. If they did not contact someone from abroad, as was done for decades when they needed mining experts, the other solution was to look among the already employed civil servants for the state and among the school teachers and in administrative offices few could have been found, though probably not fully trained for the exact assignment they needed. Thus, demanding from the professors of the Grand School to respond to any specific assignment seemed like a viable option that would secure certified experts for any assignment they need. Considering that members of the state administration and professors at the school occupied the same space, and often personally and privately knew each other, were engaged together on same political assignments, and shared family ties, the choice to rely to each other was conditioned by the social-political environment of Serbia of that era.

The fact that Radovanović performed poorly as the state geologist may be explained by the lack of his training in the specific field. Though he transferred blame on the bad drilling results that allegedly misinformed him, out of the many mining surveys that were conducted in Serbia, his was one of the rare ones that was mistaken. By the 1890s the Ministry of Economy had long experience with mining experts that were hired from abroad (Theodore Fuchs, Felix Hofmann) or locals who were trained for the same tasks abroad (Mihailo Rašković, Ljubomir Klerić, Svetozar Gikić) and they performed

similar surveys on many occasions. For professors at the Grand School and their assistants and students, such duties, wrapped in the notion of patriotic service, represented a means for social recognition of their fields as valid and useful for the society. While understanding of expertise among the narrow circle of practitioners was governed under rules that were mutually understood among them, the public opinion shared a level of disinterested attention to events that were remotely related to them. Public's attention to earthquakes lasted until the tremors had passed, after which the debates on the organisation of the seismological survey became part of the inner circles, negotiations between the scholars and the state administration. Water examinations were, however, a matter of longer and wider attention that made scholars occasionally address this issue. These kinds of assignments brought scientists better social recognition of their expertise and through them they got socially positioned as experts in certain fields of power.

5.2. Cvijić's Strategy of Unoccupied Fields

In his career, Jovan Cvijić undertook researches in several different scientific (geographical) fields, many of whom only recently appeared as disciplinary subjects. The beginning of his career coincided with transformation of the fields of research and opening of new approaches to study of earth and human society. His chosen field – geography, was still not clearly defined. Science which encompassed both the natural scientific and social-historical fields offered wide range of research topics which Cvijić was addressing simultaneously. Over the years, his work diversified from geomorphological studies of karst land formations to research about glaciation on the Balkan Peninsula, then to theories of the origins of the mountains. During this time he

was simultaneously working on the establishment of limnology as a new scientific field of study as one of the first researchers in that field in the world, and dedicating a significant amount of time to anthropogeographic studies. For him, a field trip to Macedonia was an opportunity to research karst land formations, lakes, mountain structure, and ethnology at the same time. Cvijić tried simultaneously to work in different fields and to produce as many studies as possible. Such diversification enabled him to establish reputation in several emerging fields and be recognised as one of the leading scholars in the world in those fields. In this chapter, I will demonstrate how Cvijić strategically chose wide variety of insufficiently researched topics, from poorly researched regions, to new disciplinary approaches in order to establish himself as a pioneering scholar on an international level in several fields.¹¹⁷

5.2.1. International Discourse on Karst and Cvijić's Voice on the Periphery

From the very outset of his career, Cvijić was fortunate to choose an appropriate topic for research that brought him his first international recognition. Karst geomorphology was at the time in its inception and although the research had been going on for half a century, the field was still not fully defined. The abundance of carbonate rocks in Serbia was observed by many previous researchers, such as Herder, Boué, and Viquesnel. Cvijić's choice to address the issue of karst was partially a consequence of his early engagement with the research of the carbonate rocks in Serbia and the growing interest in their research in Austria at that point. While still a student in Vienna, Cvijić used opportunity to publish in Žujović's journal his first works on karst. The first one was in 1891 about the Prekonoška cave near Svrlijig in eastern Serbia, and the second one was

¹¹⁷ Jovan Cvijić, "Antropogeografski problemi Balkanskog poluostrva" [Anthropological Problems of the Balkan Peninsula], *Srpski etnografski zbornik*, vol. IV, Naselja i poreklo stanovništva, (1902): i-iii.

about the mountain Kučaj in 1893.¹¹⁸ This research accompanied his work on karst for his doctoral thesis, which was mostly focused on the karst regions of Austria-Hungary (see fig. 9 and 10).

Adolf von Morlot's research on the Istria, Dalmatia, and Kranjska/Krain in 1848 introduced the word “Kras” into international scientific vocabulary.¹¹⁹ Initially, the word Kras was referring to a coastal region of Slovenia and Italy, today known as the Karst Plateau. This region was at that time one of the Habsburg lands. The Slovene word “Kras,” or the Italian “Carso” was Germanized into “karst” and as such it is still used today.¹²⁰ Morlot used the words “Karstregionen,” “Karstplateau,” and “Karstkalk” to depict a specific type of land formations consisting mostly of barren limestones which were subject to corrosion and erosion, abundant in sinkholes and caves.¹²¹ In the following years the topic was receiving more attention by scholars. Ami Boué registered karst formations (caves and fields) already in 1840 in his study of the European part of the Ottoman Empire, but he first used the word “karst” when he addressed the issue again in his study in 1861.¹²²

This early research was mostly concerned with the origin of certain formations, the role of hydrology, and the influence of physical and chemical erosion on the formation of caves, sinkholes, and troughs. One of the key issues in the early research was the explanation of the creation of karst. The researchers wanted to explain the

118 Jovan Cvijić, “Prekonoška pećina” [Prekonoška cave], *Geološki anali Balkanskog poluostrva*, vol. III (1891): 272-279; Idem, “Geografska ispitivanja u oblasti Kučaja” [Geographical Examinations in the Kučaj Region], *Geografski anali Balkanskog poluostrva*, vol. V (1893): 7-172.

119 Adolf von Morlot, “Ueber die geologischen Verhältnisse von Istrien mit Berücksichtigung Dalmatiens und der angrenzenden Gegenden Croaziens, Unterkrains und des Görzer Kreises” [On the Geological Conditions of Istria with Consideration to Dalmatia and the Bordering Areas Croatia, Lower Krain, and the Gorizian District], *Naturwissenschaftliche Abhandlungen*, vol. 2 (1848): 259-285.

120 Further on the introduction of the word “karst” in science, see: Andrej Kranjc, “The Origin and Evolution of the Term ‘Karst’,” *Procedia Social and Behavioral Sciences*, vol. 19 (2011): 567-570.

121 Adolf von Morlot, *Ibid.*: 259-285.

122 Ami Boué, *La Turquie d'Europe*, vol. 1, 42-45; Idem, “Über die Karst- und Trichterplastik im Allgemeinen” [About Karst and Funnel Plastic in General], *Sitzungsberichte der Mathematisch-Naturwissenschaftlichen Classe der kaiserlichen Akademie*, vol. XLIII no.1 (1861): 283-293. (X Sitzung vom 11. April 1861)

mechanism of the erosion of the limestone, which was related to the issue of the ground water in the karst fields. It was commonly known that calcium-carbonate does not dissolve in water under normal conditions. This condition created specific situations in which the surface water was eroding the limestone, carving specific shapes (*Karren / Limestone pavement*), creating caves and sinkholes. As a consequence, water was sometimes flowing in underground rivers or accumulates in underground lakes. Furthermore, karst landscapes frequently consisted of large basins which formed in between mountains and their origin was difficult to explain. Mojsisovics noted in 1880 that the whole process seemed to have been inherent to the process of mountain building, a horizontally acting displacement of rocks. Even though he believed that the erosion of the limestone was accompanying the folding of the mountains, he had given less emphasis on the role of erosion and insisted more on the role of orogeny.¹²³ Reyer went a step further and analysed the role of tectonic movements in the origin of caves and sinkholes.¹²⁴

The interest for karst in the Habsburg Empire was growing. Karst was abundant in Carniola, in Istria, in Dalmatia, and in Slovakia. Adolf Schmidl wrote about the Krain karst caves in 1854,¹²⁵ Guido Stache conducted research in the Krain and Istria during the 1850s and 1860s,¹²⁶ while Dionýs Štúr performed research in Slovakia about earthquakes caused by collapsing of the underground karst formations.¹²⁷ In 1873, Emil Tietze was

123 Edmund Mojsisovics von Mojswár, "Zur Geologie der Karst-Erscheinungen" [Towards the Geology of the Karst Phenomenon], *Zeitschrift des Deutschen und Oesterreichischen Alpenvereins* (1880): 111-116.

124 Eduard Reyer, "Studien über das Karst-Relief" [Studies of Karst Relief], *Mitteilungen der k.k. Geographischen Gesellschaft in Wien*, vol. 24 (1881): 76-86, 101-107.

125 Adolf Schmidl, *Zur Höhlenkunde des Karstes: Die Grotten und Höhlen von Adelsberg, Lueg, Planina und Laas* (Vienna: Wilhelm Braumüller, 1854).

126 Guido Stache, "Die Eocengebiete in Inner-Krain und Istrien," *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 10 (1859): 272-331; Idem., "Die Eocengebiete in Inner-Krain und Istrien: Zweite Folge," *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 14 (1864): 11-115; Idem., "Die Eocen-Gebiete in Inner-Krain und Istrien: Dritte Folge: VIII. Die Eocen-Striche der Quarnerischen Inseln," *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 17 (1867): 243-290.

127 Dionýs Štúr, "Das Erdbeben von Klana im Jahre 1870," *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 21 (1871): 231-264.

researching karst in Croatia and Dalmatia, and wrote one of the most influential articles on karst in which he was addressing mostly the issues of erosion.¹²⁸

After the 1878 occupation of Bosnia and Herzegovina, Austria-Hungary obtained another region rich in karst formations. For Austrian earth scientists there was a new task at hand – the mapping of Bosnia and Herzegovina. In a joined effort, Mojsisovics, Tietze, and Alexander Bittner published an article in 1880, consisting of three parts which summarised the results of their survey of Bosnia and Herzegovina.¹²⁹ In this publication, Mojsisovics contributed with his assessment of karst fields in Western Bosnia and “Turkish Croatia.”¹³⁰ In the same issue of the same journal, Tietze published another article in which he analysed the development of karst formations and challenged Mojsisovics on the primary cause of the evolution of karst shapes. Tietze considered collapsing of the underground structures crucial for the karst formations, while Mojsisovics believed that they were just accompanying the tectonic processes. He believed as well that Mojsisovics put too much emphasis on the erosion as a cause for the appearance of sinkholes.¹³¹

Franz Kraus was at the time researching the caves of the Habsburg Monarchy. He became well acquainted with limestone caves during his speleological field trips. His investigations of caves led him on the path of investigation of karst. During the 1880s, he

128 Emil Tietze, “Geologische Darstellung der Gegend zwischen Carlstadt in Croatien und dem nördlichen Theil des Canals der Morlacca: mit besonderer Rücksicht auf die hydrographischen Verhältnisse jener Gegend und die Karstbildung im Allgemeinen” [Geological Portrayal of the Surroundings between Carlstadt (Karlovac) in Croatia and the Northern part of the Morlacca Channel (Velebit Channel): With Special Regard to the Hydrographic Conditions of the Area and the Formation of Karst in General], *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 23 (1873): 27-70.

129 Edmund v. Mojsisovics, Emil Tietze, and Alexander Bittner, “Grundlinien der Geologie von Bosnien-Herzegovina: Erläuterungen zur geologischen Uebersichtskarte dieser Länder” [Outlines for the Geology of Bosnia-Herzegovina: Explanation of the Geological Survey Map of these Lands], *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 30 no. 2 (1880): 159-492.

130 Edmund v. Mojsisovics, “Grundlinien der Geologie von Bosnien-Herzegovina: I. West-Bosnien und Türkisch-Croatien” [Outlines for the Geology of Bosnia-Herzegovina: I. West Bosnia and Turkish Croatia], *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 30 no. 2 (1880): 167-266.

131 Emil Tietze, “Zur Geologie der Karsterscheinungen” [On the Geology of Karst Formations], *Jahrbuch der k.k. Geologischen Reichsanstalt*, vol. 30 (1880): 729-756.

was concerned with the problem of flooding in the Carniola region and tried to instigate further investigation of karst because the contemporary research did not provide useful information which would help flood prevention.¹³² His research was mostly oriented towards practical aspects of the karst phenomena, and (up to that point) he did not make a study which dealt with systematisation of the karst features.

Despite growing interest in the field, a systematised survey of all the karst formations was still missing. In the absence of such systematisation, Cvijić offered in his doctoral thesis an overview of all observed karst features with categorization and explanation of their origin. *Das Karstphänomen* was the study which first synthesized all contemporary knowledge about karst formations in one place. While from the theoretical and explanatory perspective he did not bring many things new, his contribution was in the establishment of clearly defined categories and precise nomenclature of all features. For example, he introduced a differentiation between the full karst or what he termed – the *holokarst*, and partial karst or the *merokarst*. While he was frequently credited for introducing Slavic terminology in the categorisation of karst forms, most terms of Slavic origin were already in use: *ponor*, *uvala*, *jama*, and *polje*.¹³³ The first three terms were used to define special types of sinkholes, while *polje* was used to define karst basins in between the mountains. However, *polje*, and *ponor* were already in infrequent use at that time, and he merely asserted their precise meaning in geomorphological discourse. For example, Mojsisovics used the word “Polje” alongside the German word “Becken.”¹³⁴

Even though the field of research was already established in the mid nineteenth century and the notion of karst was used by geologists, until Cvijić's publication the

132 Franz Kraus, “Die Karstforschung” [The Research of Karst], *Verhandlungen der k.k. geologischen Reichsanhalt* (10.04.1888): 143.

133 Jovan Cvijić, “Das Karstphänomen: Versuch einer morphologischen Monographie,” *Geographische Abhandlungen*, vol. V no. 3 (1893): 1-114.

134 Mojsisovics, “Zur Geologie der Karst,” 112.

phenomenon was not fully addressed in a synthetic manner.¹³⁵ His thesis was internationally well received and according to Cvijić's wife, Cvijić was surprised by the amount of attention he got. His thesis was published and became one of the foundation works on the geomorphology of karst. Two of the most prominent earth scientists of that time, Sir Archibald Geikie and Ferdinand von Richthofen, complimented him for the quality of his work.¹³⁶

While receiving a lot of praise and attention for his *Das Karstphänomen*, Cvijić opened the topic for further discussion. A series of publications about karst followed his thesis, all revising Cvijić's work. Considering the complexities of the karst studies and the multitude of aspects that karst formations could take, which were all subject of research of Cvijić and his peers, my intention here is to point to the effects that his work produced in the international scholarly circles and the recognition he received from his peers: Žujović, Penck, and others. Many of his claims were challenged, but more important for the present study is that he managed to enter an international discourse and become a recognised actor in the determination on the origins and evolution of the karst formations. The response to his thesis was quick. Already in 1894 Franz Kraus wrote a book on speleology – *Die Höhlenkunde*, in which he summarized his long experience in the research of caves, where he challenged some of Cvijić's claims.¹³⁷

The topic itself was interesting for his supervisor, Albrecht Penck, who personally engaged in the research of karst several years later. William Morris Davis, one of the most renown names in the establishment of geomorphology as a discipline, visited the

135 Ivan Gams, "Razvijenost krasologije u vreme Jovana Cvijića i danas" [The Development of Karstology at the Time of Cvijić and Today] in *Naučno delo Jovana Cvijića: Povodom pedesetogodišnjice njegove smrti* [Scientific Work of Jovan Cvijić: On the Occasion of Fifty Years of His Death], eds. Radomir Lukić, Milisav Lutovac, Dušan Nedeljković, Petar Stevanović, SANU Naučni skupovi vol. IX, Predsedništvo vol. 2, (Belgrade: SANU, 1982): 175-185.

136 Ljubica Cvijić, "Dnevnik," 160.

137 Franz Kraus, *Die Höhlenkunde: Wege und Zweck der Erforschung unterirdischer Räume: Mit Berücksichtigung der geographischen, geologischen, physikalischen, anthropologischen und technischen Verhältnisse* (Wien: Gerold: 1894).

Balkan Peninsula in 1898 in order to examine the karst formations which can be found there. Penck and Davis made a joint field trip around Bosnia and Herzegovina and examined a number of karst formations. The cooperation between Penck and Davis resulted in two separate studies in which both scholars presented their similar views on the issues. After this journey with Davis, Penck wrote his study of karst in 1900, which was largely influenced by Davis' ideas of cyclical development of landscape. Penck believed that karst was originally formed by fluvial erosion, after which the formation of karst on that terrain happened. He dated the fluvial phase to Miocene period, while the formation of karst happened during Pliocene, affected by the tectonic movements. One year later, Davis wrote his assessment on karst formations, where he supported the idea of the primary fluvial erosion.¹³⁸

Alongside these two publications, another Cvijić's study of karst appeared in 1900. There, he modified some of his views, partially under influence of Davis' cyclical theory of land formation. Unlike Penck, he insisted that genuine fluvial erosion did not partake in the formation of karst, but that the effects could be rather attributed to atmospheric water. Because the atmospheric water created large number of fissures in the terrain, this eventually led to formation of weak water streams and further erosion. Thus poljes, in his explanation originate from the long term erosion of the terrain and are essentially a type of peneplains. Although this study originally appeared in Serbian, in the local publication of the Serbian Royal Academy, it was translated and re-published again in German next year in order to appeal to the international audience, with which he tried to become an equal actor in the international discourse.¹³⁹

138 Josip Roglić, "J. Cvijić i polja u kršu" [J[ovan] Cvijić and Polja in Karst], in *Naučno delo Jovana Cvijića*, 120-121. Albrecht Penck, "Geomorphologische Studien aus der Herzegowina," *Zeitschrift des Deutschen und Oesterreichischen Alpenvereins* (1900): 25-41; William Morris Davis, "An Excursion in Bosnia, Hercegovina, and Dalmatia," *The Bulletin of the Geographical Society of Philadelphia*, vol. 3 no. 2 (1901): 47-50.

139 Jovan Cvijić, "Karsna polja zapadne Bosne i Hercegovine" [The Karst Polje of the Western Bosnia and Hercegovia], *Glas SKA*, vol. LIX (1900): 59-182.; Jovan Cvijić, "Morphologische und glaziale Studien

Although Cvijić's thesis attracted a lot of attention from geomorphologists, being both praised and criticised, he was still a scholar working at the periphery. While with his thesis, Cvijić attained the central position in the discourse on karst, he managed to maintain that central position only for a short while, shifting gradually towards periphery. His attempts to retain the central position in the discourse could be seen in his subsequent publications. Yet, his subsequent work revealed his actual peripheral position in the research of karst that made him one of the main participants in the discourse, but not a central figure. This can be easily observed in the circumstance that Davis visited and conducted research with Penck, and not Cvijić. Penck maintained the central position in European geomorphology and Davis held a similar position in the United States. The two of them made a joint overview of the karst processes and made a joint evaluation that set a new course in studies of karst. Penck and his students set the tone of the discourse on karst, and Cvijić, as one of them, was in a position in which he had to follow the discourse and respond to reviews of his previous work.

One of the Penck's students, Alfred Grund, expanded further on Penck's idea of fluvial erosion and constructed the notions of karst ground water (*Grundwasser des Karstes*) and karst water (*Karstwasser*). The former notion was describing the water that was permanently inhabiting the crevices, while the latter described the transient surface water that depended on precipitation. This model overruled Cvijić's concepts and became dominant explanation of the erosion process. In 1904 Penck revisited the topic with an attempt to reconcile the positions of his two students, though supporting Grund in his view. He noted that Cvijić gave morphology, and Grund the hidrography of karst. Penck

aus Bosnien, der Hercegovina und Montenegro, II theil: Die Karstpoljen" [Morphological and Glacial Studies of Bosnia, Hercegovina, and Montenegro, II part: The Karst Polje], *Abhandlungen der k.k. Geographische Gesellschaft in Wien*, vol. 3 no. 2 (1901): 1-85.

maintained his position that poljes were products of tectonic activity, rather than erosion.¹⁴⁰

In 1909, Friedrich Katzer revisited the topic and specifically addressed the karst hydrography. He questioned Grund's notion of karst ground water, claiming that water ran through underground channels that formed independently and that water could be accumulated only by impermeable layers. However, Katzer did not consider the erosion forms of karst to be any different from any other type of erosion and rejected Davis' ideas about cyclical development of karst formations.¹⁴¹ Cvijić's 1909 study of the Dinaric peneplains built further on this Katzer's work in attempt to challenge Penck's and Grund's ideas of fluvial erosion and tectonic origins of poljes. In his work, Cvijić insisted on the gradual effect of erosion on the levelling of the karst poljes. He believed that tectonic movements ceased before the Miocene began and that the Dinaric polje's originated through a long term erosion that lasted all through the Pliocene. However, under Katzer's influence, he accepted his findings about tectonic movements in the more recent times. Eventually, Grund modified his views and accepted the erosion as additional explanation for the formation of poljes, though more under the influence of Katzer than Cvijić.¹⁴²

Many of Cvijić's claims were attacked and disputed by researchers who wrote in response to him. His classification of the karst formations became the basis upon which further discussions were built. However, while Davis, Penck, Grund, and Katzer were

140 Alfred Grund, "Die Karsthydrographie: Studien aus Westbosnien," *Geographische Abhandlungen*, vol. 7 no. 3 (1903): 1-200; Albrecht Penck, "Geomorphologische Studien"; Idem., "Über das Karstphänomen," *Vorträge des Vereins zur naturwissenschaftlicher Kenntnisse*, vol. XLIV no.1 (1904): 1-36; Josip Roglić, "J. Cvijić i polja u kršu", 121-122.

141 Friedrich Katzer, *Karst und Karsthydrographie*, Zur Kunde der Balkanhalbinsel, Heft 8 (Sarajevo: Daniel A. Kajon, 1909); Josip Roglić, "J. Cvijić i polja u kršu", 121-122.

142 Alfred Grund, "Beiträge zur Morphologie des Dinarischen Gebirges" [Contributions for the Morphology of Dinaric Mountains], *Geographische Abhandlungen*, vol. 9 no.3 (1910): 1-203; Jovan Cvijić, "Bildung un Dislozierung der dinarischen Rumpffläche" *Petermanns Geographische Mitteilungen*, vol. 55 no. 6 (1909): 121-127, vol. 55 no. 7 (1909): 156-163, and vol. 55 no. 8 (1909): 177-181; Friedrich Katzer, *Karst und Karsthydrographie*; Josip Roglić, "J. Cvijić i polja u kršu", 123-125.

determining the course of the debate about causal explanations of the origins of karst formations and its hydrography, Cvijić managed to participate in it from his position on the periphery. Eventually, over the years Cvijić was modifying his opinions, responding to contemporary research. He returned to the issues of the origin of karst in 1901, in 1909, and in 1918, each time revising his views.¹⁴³

Beside general theoretical work, Cvijić also engaged in regional studies of karst, particularly describing various karst fields, caves, sinkholes, and mountains. In the Balkans, karst regions were abundant and under-researched which put him in an advantageous position. His frequent field surveys led him to the karst abundant regions of Bosnia and Herzegovina, Dalmatia, Montenegro, Macedonia, Albania, and (naturally) Serbia. This gave him a wide variety of examples for his theoretical work, but as well gave an opportunity to describe a large number of specific localities.¹⁴⁴

Cvijić's passion for field surveying led him to numerous expeditions across the Peninsula, in which he was unsurpassed among his colleagues. The sheer number of excursions he made gave him an opportunity to cover a wide variety of topics. Although, most of these surveys were at the beginning designed in order to investigate karst geomorphology, these travels gave him an opportunity to expand his research and address other topics, such as hydrology and anthropogeography. The question of erosion of karst led him to connect research on caves with underground hydrology which made him

143 Jovan Cvijić, "Bildung und Dislozierung der dinarischen Rumpffläche"; Idem., "Hydrographie souterraine et évolution morphologique du karst," *Recueil des travaux de l'institut de géographie alpine*, vol. 6 no. 4 (1918): 375-426.

144 Jovan Cvijić, "Geografska ispitivanja u oblasti Kučaja" [Geographical Examinations in the Kučaj Region], *Geološki anali Balkanskog poluostrva*, vol. V (1893): 7-172; Idem., "Karsna polja zapadne Bosne i Hercegovine"; Idem., "Suva planina i karst Valožja" [Suva Planina and Karst of Valožje], *Glasnik Srpskog geografskog društva*, vol. 1 (1912): 92-99; Idem., "Petnjička pećina" [Petnica Cave], *Glasnik Srpskog geografskog društva*, vol. 1 (1912): 105-109. Idem., "Hadži Prodanova pećina u selu Raščićima kod Ivanjice" [Hadži Prodan Cave in the Village of Raščići near Ivanjica], *Glasnik Srpskog geografskog društva*, vol. 3-4 (1914): 216-219; Idem., "Pećina Obod i izvor Crnojevića Rijeke" [Obod Cave and the Spring of Crnojevića Rijeka], *Glasnik Srpskog geografskog društva*, vol. 3-4 (1914): 221.

converge those approaches and widen his interests.¹⁴⁵ Later he expanded hydrological research, finally focusing on studies of lakes.

5.2.2. Glaciation and Limnology

While in the first years of his career, Cvijić was mostly concerned with karst and limestone formations, as he was researching the landscape of the Balkans, he gradually discovered more interesting features and expanded his interests. During his surveys on the mountains of Bosnia and Bulgaria Cvijić encountered first evidence of glaciation in this region. This discourse was relatively recent in contemporary research in earth sciences. In the decades after Louis Agassiz proposed a theory of glaciation, geologists around the world discovered traces of glaciers and speculated about their origin and effect. Among the key questions were when did these glaciations happen and how many of them were there. James Croll was speculating with cosmological explanations about the origins of ice ages, which required geological confirmation. Cvijić's Viennese professor Albrecht Penck, was at the time researching for evidence of glaciation and devising a theory, together with Eduard Brückner, about four episodes of glaciation in Europe (Günz, Mindel, Riss, and Würm), based on their joined findings in the Danube basin. Their research was conducted from around 1880s until 1910s, which coincided with the beginning of Cvijić's career and his discoveries of glaciation in the Balkans. European scholars were at the time searching for the outlines of the distribution of

¹⁴⁵ Jovan Cvijić, "Pećine i podzemna hidrografija u Istočnoj Srbiji" [Caves and Underground Hydrography in Eastern Serbia], *Glas SKA*, vol. XLVI (1895): 1-101; Idem., "Izvori, tresave i vodopadi u Istočnoj Srbiji" [Springs, Peat Bogs, and Waterfalls in Eastern Serbia], *Glas SKA*, vol. LI (1896): 1-122.

glaciers which made Cvijić's findings interesting and made him a part of the international discourse on ice ages in Europe.¹⁴⁶

Cvijić's first discovery of glacier traces was on Rila in Bulgaria in 1896, Šar Planina in Macedonian and on Treskavica in Bosnia. This discovery was particularly significant for European scholars as it moved the estimated distribution of glaciers further to the south, offering new suggestions on the distribution of ice (see fig. 11 and 12).¹⁴⁷ Cvijić managed to capitalise on this discovery, particularly as he found evidence in the regions which were already surveyed by geologists who did not observe them. He surveyed the region and found plenty of evidence for his claims. His findings were challenged by many and as soon as his first articles were published, European researchers arrived to further investigate his reports.¹⁴⁸

Even though there were doubts about his findings, confirmations of his work were coming from surveyors who investigated the mountains afterwards. Kurt Hassert, docent at the University of Leipzig, was in 1898 surveying in Montenegro, and although he did not observe traces of glaciers, he extrapolated later (to much of Cvijić's satisfaction) from Viquesnel's findings that they must have been present.¹⁴⁹ But in his later travel in 1900, he succeeded in finding them. Cvijić did not fail to mention that Hassert did not see traces where he observed them, but that Hassert later confirmed his findings after he revisited the area. Kurt Oestreich reported on existence of traces of glaciers in Macedonia

146 David R. Oldroyd, *Thinking about Earth: A History of Ideas in Geology* (London: Athlone, 1996), 148-155.

147 ASANU, 13484.265. Correspondence of Jovan Cvijić, Letters from Götz.; Cvijić, "Das Rila-Gebirge"; Idem., "L'Époque glaciaire dans la Péninsule des Balkans," *Annales de Géographie*, vol. IX no. 46 (1900): 359-372; Idem., "Morphologische und glaciale studien aus der Bosnien, Hercegovina und Montenegro, I. theil: Das hochgebirge und die canonthäler," *Abhandlungen der k.k. Geographischen Gesellschaft in Wien*, vol. II no. 6 (1900): 1-93 (144-237).

148 Jovan Cvijić, "Das Rila-Gebirge"; Idem., "Über Gletscherspuren in Bosnien und Hercegovina"; Jovan Cvijić, "Neue Ergebnisse über die Eiszeit auf der Balkanhalbinsel," *Mitteilungen der k.k. Geographische Gesellschaft*, vol. 5 no. 6 (1904): 149-195. Jovan Cvijić, "Morphologische und glaciale studien."

149 Kurt Hassert, "Streifzüge in Ober-Albanien," *Verhandlungen der Gesellschaft für Erdkunde zu Berlin*, vol. XXIV (1897): 529-544; Idem., "Wanderungen in Nord-Albanien," *Mitteilungen der k.k. Geographischen Gesellschaft*, vol. XLI (1898): 351-379.

on Perister and Jakupica. Among the researchers who became interested in this occurrence was Albrecht Penck, who investigated Bjelašnica and Orjen together with Davis, during their joint explorations of the Balkans. His professional orientation towards investigation of precise dating of ice ages made him interested in the traces of glaciation in the Balkans perhaps more than others. Cvijić's work was particularly important for Penck, who had professional interest to continue cooperation with him.¹⁵⁰

After initial surveys that followed Cvijić's findings have confirmed that there are evidence of glaciation in the Balkans, more geologists followed in hope to find similar evidence themselves. Paolo Vinassa de Regny followed Hassert's steps in Montenegro finding more moraines around Kolašin and in the canyon of Cijevna. Friedrich Katzer found evidence of glaciers on Vratnica in Bosnia, which confirmed existence of glaciers after Cvijić and Penck already discovered them. Soon after Katzer, Alfred Grund arrived to the region and examined Vratnica glaciers more thoroughly. But not everyone was as fortunate. Wilhelm Götz spent his research on Jumrukcal and Krivine without finding any traces whatsoever. In Bulgaria, Stefan Bonchev joined the research by examining reports of erratic boulders found on several locations. In this surge of field researchers, one of the students of Cvijić, Petar Janković, contributed to this discourse after his research on the Pirin mountain, where he found more traces of glaciers.¹⁵¹

According to Cvijić's observations, glaciers on the peninsula were usually smaller and usually of a cirque type, rarely reaching into the valleys. Furthermore, he found them on lower altitudes in the western regions and closer to the sea shore, which implied that they were more developed in those parts of the peninsula. From this, he extrapolated that

150 Cvijić, "Neue Ergebnisse über die Eiszeit auf der Balkanhalbinsel," 151-153; Milan Šifrer, "Cvijićeva glaciološka otkrića na balkanskim planinama" [Cvijić's Glaciological Discoveries on the Balkan Mountains], in *Naučno delo Jovana Cvijića*, 111-113.

151 Cvijić, "Neue Ergebnisse über die Eiszeit auf der Balkanhalbinsel," 153-157.

there has to be a connection between the Adriatic Sea and the size of glaciers during ice ages, which made him assume this was because they received more precipitation from the sea.¹⁵²

Cvijić's research became part of the Penck's and Brückner's theory of ice ages, as he was trying to identify to which of the four Penck's and Brückner's glaciations could his findings belong. Traces of moraines Cvijić found convinced him that there were two different glaciation, but he was uncertain whether he could locate them to Mindel, Riss, or Würm in Penck's classification.¹⁵³

When François-Alphonse Forel (1841-1912) proposed at the sixth congress of geographers in London in 1895 the formation of a new science – limnology. Because the lakes were masses of water separated by landmass from the seas and ocean, he considered it natural that they be examined as a branch of geography. Forel identified it as already existing branch of natural sciences, as the collection of facts, observation, description, and experimentation already existed in practice in the research of lakes. Limnology generalised, compared, and explained, connecting with the research in hydrology, chemistry, optics, and biology, thus reaching the scientific stage where it could be considered a science. According to his suggestion, the new science was supposed to build on the already existing research in other sciences and combine the methods to deliver results. It's main scope as part of geography was to address individually different natural-scientific aspects of hydrography, geology, petrography, hydrology, climatology, chemistry, thermodynamics (*thermique*), optics, and biology. In essence, Forel suggested building the new science on former research of lakes, though

152 Milan Šifrer, "Cvijićeva glaciološka otkrića na balkanskim planinama" [Cvijić's Glaciological Discoveries on the Balkan Mountains], in *Naučno delo Jovana Cvijića*, 112-113.

153 Šifrer, 114.

such research was not dubbed as limnological nor had devised methodology of limnology.¹⁵⁴

This proved to be a good opportunity for Cvijić to step into one other uncharted field. What is common for both karstology and limnology was that Cvijić had an opportunity to establish the groundwork for future research. Forel differentiated the research of lacustrine basins from research of lacustrine waters. In the way that he had envisioned the new discipline, it had to depend on geomorphological studies which would explain the origins of lacustrine basins.¹⁵⁵ Considering that the theories of origins of lake basins were at the time speculating with glacial, tectonic, and karstic theories of formation, this field would not had been unknown to Cvijić. In the absence of any specific methodology of research, Cvijić resorted to already familiar geomorphological methods. He combined the geomorphological research he conducted about the origin of karst and research on glaciation with the regular measurements of the depth of lakes he researched.¹⁵⁶

Most of the focus in this field Cvijić directed to studies of the Balkan lakes that could have been found in between the Adriatic Sea and the Aegean Sea, a group of lakes between Shkodër and Serres. Initially, he traversed the area, mapping the lakes and measuring their depth. The first publication that resulted from this research was a collection of maps which presented all the lakes he visited in this region. First atlases of the French lakes were published in 1892 and atlases of Austrian lakes in 1895. Cvijić's atlases of the Macedonian lakes and the lakes of Epirus in 1902 copied the models of the

154 François-Alphonse Forel, "La Limnologie, Branche de la Géographie," in *Report of the Sixth International Geographical Congress, Held in London 1895*, (London: John Murray, 1896), 593-596.

155 François-Alphonse Forel, *Handbuch der Seenkunde: Allgemeine Limnologie* (Stuttgart: J. Engelhorn, 1901), 1-10.

156 Stevan M. Stanković, "Cvijićev doprinos razvoju limnologije u Jugoslaviji" [Cvijić's Contribution to the Development of Limnology in Yugoslavia], in *Naučno delo Jovana Cvijića: Povodom pedesetogodišnjice njegove smrti*, 211-218.

predecessors.¹⁵⁷ His thorough field surveys provided large quantity of data. The material was interesting for many foreign researchers, which made him internationally well connected. For example, Sir Archibald Geikie was interested in his work and asked Cvijić if he could send him the copies of the maps and books he published about Macedonian lakes.¹⁵⁸

Cvijić's further studies, however, combined the geomorphological research on the development of grabens on the Balkan Peninsula with his studies of lakes. In this research he tried to reconstruct the geological structure and history of the Aegean and Pannonian basins and distribution of water surfaces and land, and the subsequent formations of the Aegean Sea and the Pannonian Plain. In this reconstruction, the Macedonian lakes acted as the crucial evidence in his theory of the great Aegean Lake, which according to his belief existed on the surface of the Aegean Continent (hypothesis of Neumayr and Philippson) during the Pliocene period. This great freshwater lake existed, according to him, on the territory that occupied the whole region of the present day Macedonian lakes.¹⁵⁹ However, his hypothesis was disproved with later explorations in the region, as it was discovered that the sediments remaining from that era point to a saline and brackish character of the water that covered area, and was similar to the waters of Paratethys.¹⁶⁰

Furthermore, this discourse enabled Cvijić to transcend the narrow focus of the Balkan Peninsula and expand his theories on a grander scale. His studies on the historical distribution of the Pannonian, Pontic, and Aegean basins expanded the reach of his studies, pointing to a larger Euro-Asian implications of the tectonic movements on the

157 Jovan Cvijić, *Jezera Makedonije, Stare Srbije i Epira* [The Lakes of Macedonia, Old Serbia, and Epirus] (Belgrade: Srpska kraljevska akademija, 1902).

158 ASANU, 13484-237-1, Letter of Archibald Geikie to Jovan Cvijić. 16.03.1904.

159 Jovan Cvijić, "L'ancien lac Égéen," *Annales de géographie*, vol. XX no. 111 (1911): 233-259.

160 Petar Stevanović, "Cvijićev doprinos geološko-geomorfološkom proučavanju potolina na Balkanskom poluostrvu" [Cvijić's Contribution to Geomorphological Graben Studies in the Balkan Peninsula], in *Naučno delo Jovana Cvijića*, 67.

Balkans. When he investigated the extension of shores of the Pannonian Sea in the Šumadija region, in central Serbia, through the research of the lake landscape and terraces on which they lay, Cvijić derived conclusions about its shores, which was later disproved after stratigraphical investigations, conducted much later.¹⁶¹ He was examining the connectedness between these basins, speculating on possible flows of water between them, assuming that the Pontic basin extended deeply into the territory of the contemporary Serbia up to Bagrdan and Grdelica valleys. Cvijić assumed that somewhere in the Kosovo valley, and down Kuršumlija-Prokuplje valley one could find former straits that connected the Pontic and the Aegean basins and possibly the Pannonian basin. These theories were highly speculative and Cvijić corrected himself in his subsequent work, and many of the researches after him disproved his conclusions, although not in their entirety.¹⁶²

Cvijić achieved an even wider, European perspective in his short overview of cryptodepressions, where he presented a comparative study of this type of lakes in Europe. Incidentally, the best examples of this kind of lake were on the Balkan Peninsula. Lake Shkodër, as the greatest cryptodepression in Europe was for a long time Cvijić's object of study, and from there on he investigated the entire type of lakes and made a comparative overview of them. The central position of his argument was that the cryptodepressions could be found in regions where glaciers were wide spread during the ice age. In this comparison were the lakes of the Balkan Peninsula, and in particular the map of the Lake Shkodër. In this way he raised importance of the studies of the Balkans

161 Jovan Cvijić, "Jezerska plastika Šumadije" [Lake Plastic of Šumadija], *Glas SKA*, vol. LXXIX (1909): 1-94; Petar Stevanović, "Cvijićev doprinos razvitku nekih prirodnih nauka" [Cvijić's Contribution to Development of Several Natural Sciences], in *Naučno delo Jovana Cvijića*, 18.

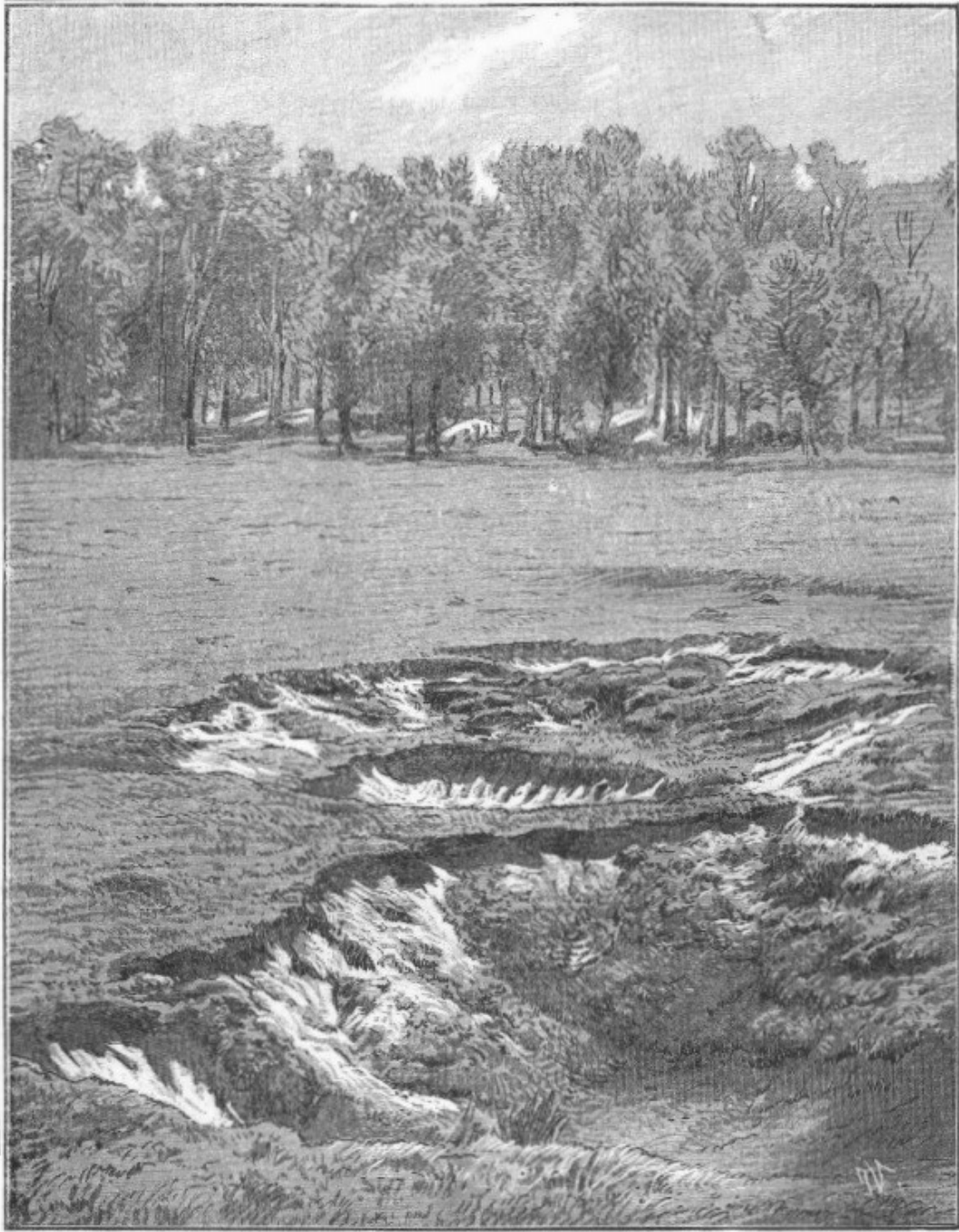
162 Cvijić, "L'ancien lac Égéen," 242-246; Stevanović, "Cvijićev doprinos geološko-geomorfološkom proučavanju potolina na Balkanskom poluostrvu," 64-68.

in the overall geographical studies of Europe, putting more importance to his discoveries in the Balkans than to lakes in Scandinavia or Great Britain.¹⁶³

Such speculative work made Cvijić an active participant in international discourses on karst, glaciation, and limnology. Many of his conclusions were challenged and disproved over the years and he also revised some of them himself, but this still made him a recognised expert in his chosen fields. While his international reputation was growing, such speculative work was not welcomed among all of his colleagues from the Geological Institute. Cvijić had his own circle of geographers among whom he propagated his methods, and although he frequently cooperated with with Serbian geologists and petrographers, he was not receiving full recognition for his work from them.

Cvijić frequently entered uncontested fields of research where he could have actively participated in the establishment of methodology and terminology. His early accomplishments in karst research put him in contact with many relevant figures in earth sciences. From there on, he engaged in new fields where there was more to discover and present to international audience. The interest coming from abroad for his work was a consequence of expanding new fields which were forming in the rest of the Europe at the same time.

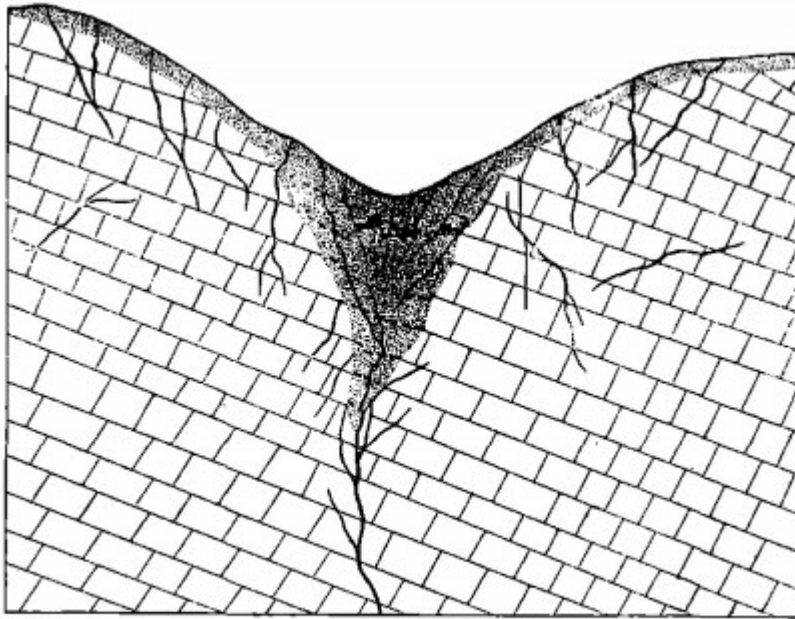
¹⁶³ Jovan Cvijić, "Les Crypto-dépression de l'Europe," *La Géographie: Bulletin de la Société de Géographie*, vol. V (1902): 247-254.



Alluviale Dolinen mit scharfen Contouren aus dem Kučajgebirge Ost-Serbien.

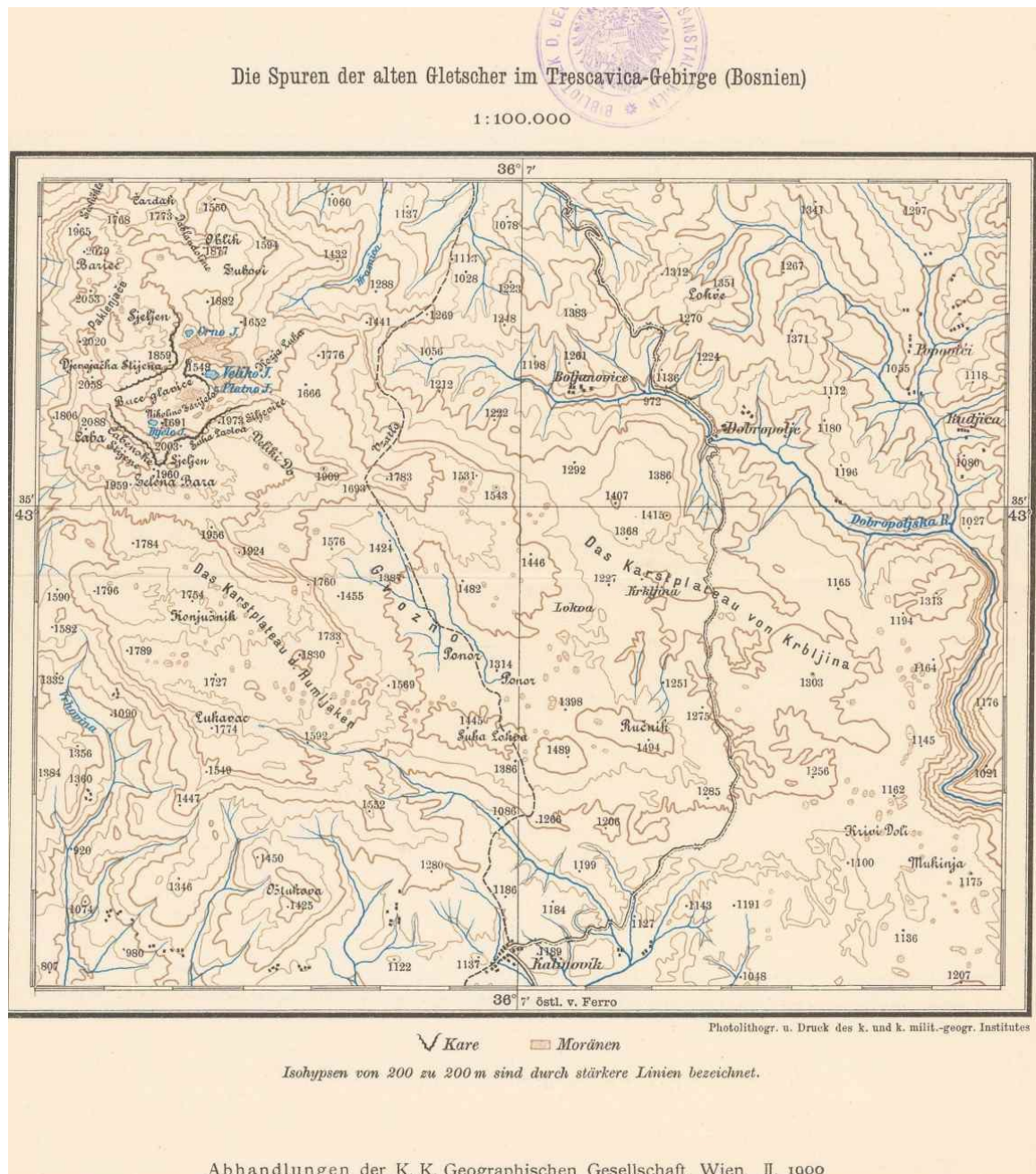
9: Jovan Cvijić, "Das Karstphänomen: Versuch einer morphologischen Monographie," *Geographische Abhandlungen*, vol. V no. 3 (1893): 252(36).

Figure



Durchschnitt einer 3 m tiefen Doline mit Unterlage.
Unterloitsch in Krain.

Figure 10: Jovan Cvijić, "Das Karstphänomen: Versuch einer morphologischen Monographie," *Geographische Abhandlungen*, vol. V no. 3 (1893): 259(43).



Figure

11: Jovan Cvijić, "Morphologische und glaziale studien aus der Bosnien, Hercegovina und Montenegro, I. theil: Das hochgebirge und die canonthäler." Abhandlungen der k.k. Geographischen Gesellschaft in Wien, vol. II no. 6 (1900): 1-93 (144-237). Tafel I. Notice the brown areas marked with moraines and black lines marking limestone pavement (Kare).

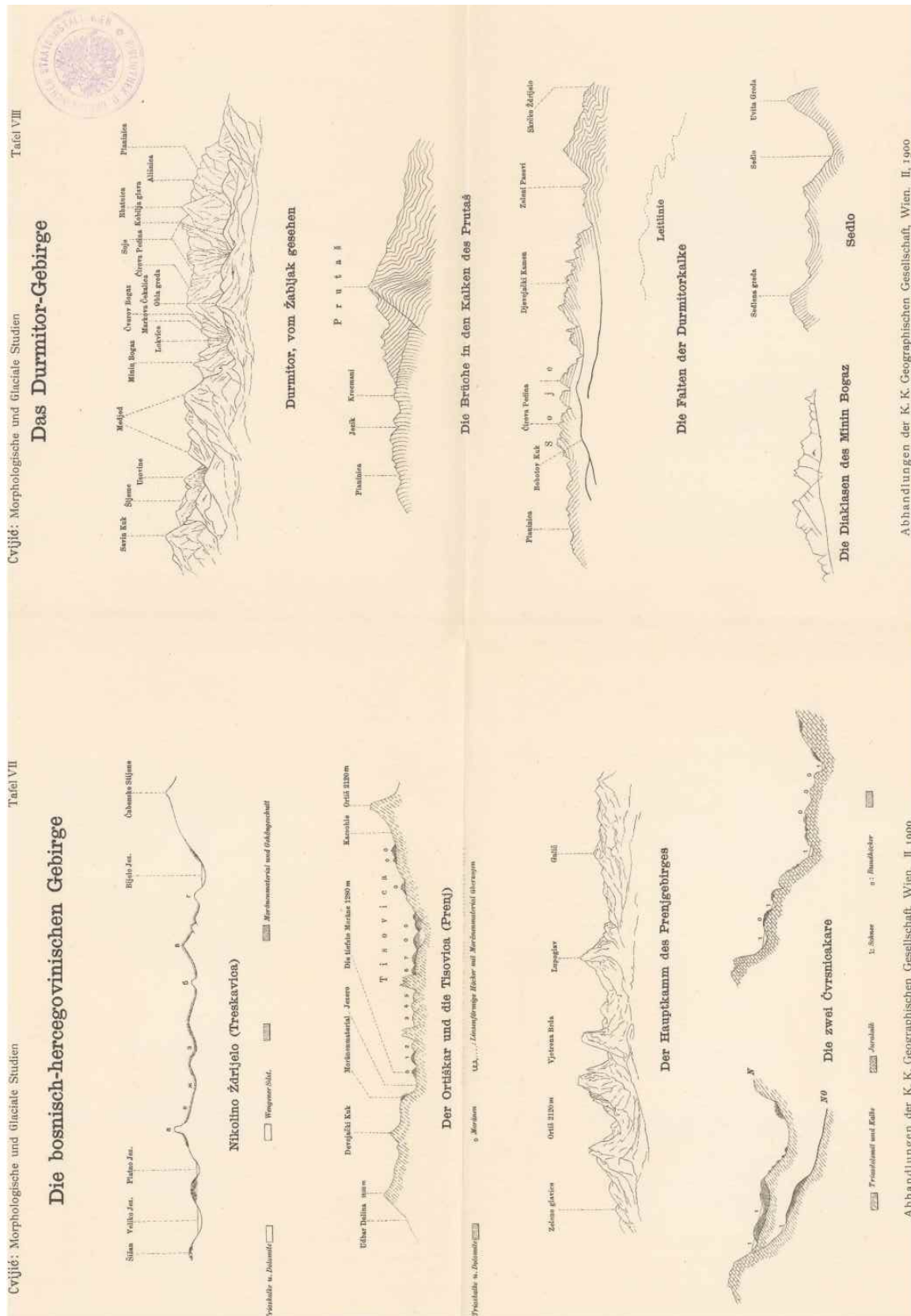


Figure 12: Jovan Cvijić, "Morphologische und glaziale studien aus der Bosnien, Hercegovina und Montenegro, I. theil: Das hochgebirge und die canonthäler." Abhandlungen der k.k. Geographischen Gesellschaft in Wien, vol. II no. 6 (1900): 1-93 (144-237). Tafel VII-VIII.

5.2.3. Rivalry between Žujović and Cvijić

Jovan Žujović was not comfortable with such speculative work which produced a considerable number of easily disprovable theories. Oriented more towards empirical fieldwork and laboratory work, he was in frequent correspondence with Viennese geologists from the Geologische Reichsanhalt who frequented around the Balkan peninsula and conducted similar kind of empirical research on the territory of Serbia. In this tension between empirical research and theoretical research a conflict arose between Cvijić and Žujović. On one side, Žujović wanted to present reliable empirical evidence which could not be challenged by his Viennese colleagues, which made him critical of Cvijić's work. However, on the other side, because of the mere quantity of research and data, and large number of internationally recognised publications that Cvijić provided, Žujović acknowledged his results, as he represented Serbian earth sciences internationally better than any of his other students.

The actors involved in the establishment of epistemic borders between the disciplines built the environment around them in a way that they became themselves the centres around which the expertise was established. Narratives about Žujović and Cvijić as forefathers of the Serbian geology and geography did not appear by accident. Both strived towards establishing their respective disciplines around their own work and their own students. However, while coming from two different schools, and different disciplines, each had little regard for what the other was doing.

Institutional development of earth sciences depended after 1880 on the students of Žujović at the Grand School. Consequently, Žujović set the directions for his students to follow, which determined the education of the first generation of his students. Sava

Urošević and Svetolik Radovanović followed his instructions and pursued studies of earth sciences in Paris and Vienna, respectively, and later advanced in their careers with his support. On the other hand, Jovan Cvijić, even though his student, credited Vladimir Karić, his high school teacher for persuading him to engage in studying geography. While Karić himself maintained various administrative and political positions during his life, his scholarly activity was generally limited to his postings as secondary school teacher. Nonetheless, his activities involved several publications which promoted geography and at the same time advanced patriotic and nationalist goals which contributed to the creation of a national geographical narrative. Consequently, Cvijić was in his intellectual ties much closer to Karić than to Žujović, which contributed to his regular falling out with his teacher from the Grand School.

Another difference in influences between the two can be identified. Žujović was educated at Sorbonne under the supervision of Auguste Michel Lévy, François Antoine André Lacroix and Ferdinand André Fouqué, thus specializing in petrography and mineralogy. Inherited practices from Paris made Žujović mostly empirical in aspect and focused on the analysis and identification of rocks and layers. Cvijić, was on the other hand, a student of Penck, Suess, and Tomaschek. While Penck introduced him to geomorphology, Tomaschek introduced him to anthropogeographical studies. Through his work on the theory of glaciation, Penck encouraged him to engage in theoretical deliberations in geomorphology, while the influence of Suess, at the time one of the most influential theoretician when it comes to geology and the theory of orogeny, strengthen that approach in Cvijić. Later, one of the major reason for the fall out between Žujović and Cvijić was the discrepancy between the empirical and theoretical approaches to earth sciences. Žujović never really appreciated Cvijić's work and was tacitly approving his

results in public, even though in private he expressed dissatisfaction over the manner Cvijić engaged in scientific pursuit.

The rivalry between the two scholars started early on. Cvijić managed to secure quick assent into the academic environment, being the only qualified geomorphologist and geographer in Serbia. However, Žujović, who was already established scholar at the Grand School, presented a far more established authority in the academic community at the time. Having high ambitions, Cvijić wanted to make geography a new science respected across the academic fields, thus requiring changes in the curriculum which would allocate more space for geography as an encompassing scientific field, useful for many scientific disciplines and engineering. For the power structure on the late 1890s academia, this posed a problem and he had to battle with the unwilling colleagues to include geography in a more encompassing curriculum.

Over the years, Žujović marked in his diary concerns over the nature of the work which Cvijić performed. Žujović was strongly against theoretical assumptions which did not have sufficient empirical backing. Cvijić's work, on the other hand was considerably rich in theoretical conclusions which Žujović found insufficiently substantiated. In the struggle of theory against empirical research, two different streams in academia formed, and although at the beginning Žujović exerted more influence, Cvijić managed to establish himself as a dominant authority, mostly because of Žujović's integration into political hierarchy.

I should stress here that this theoretical division between them was not conditioned by disciplinary approaches of geology or geography. Suess, Cvijić's professor, was the most renowned geological theoretician of his time and himself experience criticism from his colleagues from the Geologische Reichsanstalt in Vienna for his speculative work. The division between empirical and theoretical orientations cut

across the disciplines and mobilised geographers and geologists on both sides. Žujović was thus more in communication with scholars from GRA, ascribing to the same methodological principles. Cvijić in this was found a strong ally in Svetolik Radovanović, himself a student of Suess.

Cvijić's regular annual field surveys around the Balkans can be sharply contrasted with post 1900 disappearance of Žujović from scientific work. Žujović got actively involved in politics, which radically disrupted his scientific output. Over the years, he complained that he was not willing to abandon science, yet that he was forced into politics, which he took responsibly. Between 1900 and 1912, he was not performing field surveys and had no relevant scholarly publications. During that time, Cvijić was regularly making surveys within the Serbian territory and abroad. The conflict over the curriculum which occurred between them happened while Žujović was a rector and still actively involved in science.¹⁶⁴ However, after the exile, Žujović was removed from the Grand School, thus limiting his activity to Serbian Royal Academy and Geological Institute. Moreover, since 1901 he was regularly present in the Senate and in the Assembly as the representative, thus distancing himself from science. Even though he was not actively engaged in research, he was following what was happening in the scene and frequently discussed the issues with his colleagues. If his dislike towards Cvijić appeared during the time when he was professor at the Grand School, during his political period, his dissatisfaction grew stronger, partially because of Cvijić's prolific work and mostly because of Cvijić's ambitious proclivity towards theorising.

Cvijić gained his reputation early in his career with his doctoral thesis about karst, and with his subsequent theoretical engagements he tried to repeat his first success entering the causal theoretical debates. Despite his peripheral position, Cvijić succeeded

¹⁶⁴ See chapter 2.

in gaining a lot of attention from international audience, even though his theories were often challenged and disproved. This comes as no surprise today as geological theories at the time generally failed to achieve consensus and the field was generally contested by frequent speculations which did not come to full congruence until the second half of the twentieth century. For Žujović, the speculative nature of Cvijić's work was a problem and he considered such attempts risky and unnecessary, which could damage the reputation of a scientist if proven wrong. Žujović was a positivist and such speculations were for him unsound. It seems that even Cvijić was aware that his conclusions were sometime rash and unsupported. Allegedly, during one dinner in Moscow, in December 1912, Cvijić admitted to Žujović that his theory of Sub-Balkan River was a fantasy.¹⁶⁵ In later discussions Žujović used this statement in several occasions to discredit Cvijić for his tendency to make conclusions which are not sufficiently supported.

In his memoirs, Žujović recorded this statement, which he allegedly made in the conversation with Prince Đorđe Karađorđević in 1812:

I have to admit, that being the first professor of geology, because of this role of the first I brought into the program only the positivist (*pozitivnu*) geology, the establishment of the facts, their classification, the accumulation of the knowledge of the new land, unknown to science, and avoidance of making shiny and pretentious, though insufficiently supported hypotheses. I liked watching others toiling and boasting, reading about their great success “abroad” [quotation marks in the original], and live to see those colourful balloons deflated and falling on the ground, like those hypotheses about Albanische Scharungen for which three German geologists claim they are unsubstantiated, then the origin of the Danube Gorge, and the imagined Sub-Balkan River...¹⁶⁶

Cvijić's theories received international criticism. For example, in June of 1915, Žujović received a visit by Emmanuel de Martonne, while he was in Paris. This meeting was generally made for political purposes, but during the discussion they touched upon Cvijić's research. In the conversation, two issues came to the surface: Cvijić's theory about the origin of the Djerdap gorge (Iron Gates of Danube), and the question the

¹⁶⁵ Jovan Žujović, *Dnevnik* vol. 2, 10.

¹⁶⁶ Jovan Žujović, *Dnevnik* vol. 2, 47.

existence of *nappe de charriage* in the eastern Serbia. De Martonne said that he befriended Cvijić after he disproved his theory of the origin of the Djerdap gorge, and that Cvijić was still denying the existence of the *nappe de charriage*, even though he regularly invited him to observe the formations in Tekija. Žujović refused to take sides in the latter dispute, though he admitted that he had seen photographs which confirm the existence of *charriage*.¹⁶⁷

Leaving the theoretical speculations aside, the problems with empirical results presented another issue. Žujović wanted to limit the exploration to empirical evidence – proper identification of rocks, minerals, layers, and fossils, with detailed and precise presentation of the landscape and land formations. The troubling issue with Cvijić's research was that among his colleagues he was not considered credible. Radoslav Vasović claimed that Cvijić had a reputation of not being able to properly measure strike and dip, and that his publications had a significant amount of wrong rock identifications.¹⁶⁸ Without engaging in the evaluation of his actual abilities, I would like to underline that Žujović recorded all the complaints about Cvijić's inability to conduct proper field research and emphasize only that Žujović himself considered Cvijić unreliable regarding some of his empirical findings:

I have never engaged myself into criticisms and argumentations without the big necessity for it. I have defended myself every time when somebody attacked me. Cvijić treated me with enmity for years, and he publicly declared his opinion about me, which would probably create challenge to my criticism. Since he climbed Olympus, he could barely see us in the molehills, and he had left me alone. He displays attention towards me by inviting me to some festivities. He even had enough condescension to tell me that his Sub-Balkan River is a fantasy. [...] I have treated as geopoetry (*geopoezija*) his Albanian Scharungen, and Dalmatian Plates Rumpflächen, and his history of Djerdap, for which he received a lot of complaints in the recensions, to which he – wisely – never replied. [...] I am paying attention to him only as necessary as to prevent geologist from making research in the Old Serbia (Stara Srbija) and Macedonia, where they would inadvertently have to correct Cvijić regularly; and I direct new surveys to Sandžak which is less known and where Cvijić had no engagement yet.¹⁶⁹

167 Jovan Žujović, *Dnevnik* vol. 2, 110.

168 Jovan Žujović, *Dnevnik* vol. 2, 21.

169 Ibid., vol. 2, 21.

Even though he was considered Cvijić's findings unreliable and overly theoretical, Žujović was not publicly criticising him. One reason was, as he revealed in his conversation with Vasović, that despite all the alleged failing of some of Cvijić's results, he was studiously conducting research and publishing books and articles. For the purposes of the development of earth sciences in Serbia, Žujović considered even such findings useful, and he even claimed that despite all the possible mistakes that could be found in Cvijić's publications, they would have been easily corrected during some future research. In conversation, he defended Cvijić in front of their colleagues, for he produced more reliable data than any of their contemporaries and because despite certain unreliable information that their colleagues discovered in his work, Žujović valued Cvijić's contribution for the mere quantity of reliable data which could have been found in his work.¹⁷⁰

From the perspective of Žujović, Cvijić's failed theories were a nuisance he had to deal with in silence, without any public announcements. His memoirs record many moments of dissatisfaction with Cvijić's publications and at the same time acknowledgement for his industrious labour. At the time there was no better connoisseur of the Macedonian geography, and despite all the criticism Cvijić received from his colleagues, Žujović found himself in a position to defend him in the absence of better work produced by Serbian scholars.

In Cvijić's memoirs one could hardly find any mention of Žujović. In all Cvijić's recollections, any note on Žujović is missing. However, in one speech on scientific methodology, which he held as the rector, during the St. Sava celebration at the university, Cvijić proclaimed his understanding of scientific work which on one side

¹⁷⁰ Ibid., vol. 2, 20-21.

supported the goal of collection of specimens, but also implicitly criticised strict positivism of Žujović's circle.

Scientific work of natural and social sciences begins with collecting and processing of materials. This is about knowing and identifying the objects and phenomena, a useful endeavour, which would not be exhausted soon, particularly not in our field. Its result – those are the materials from which talented architects will build a big scientific building. When such materials are grouped and classified, then we would be able to see all the weak points and the emptiness of the overall scientific building. [...] Scientific labour of this sort could be done by all diligent people who had education; for this reason there are too many workers here, often uninvited. The last, weak workers practice science like those artisans, who follow the pattern: they do not see outside the narrow scope of objects, they do not look around, often do not notice even the obvious connections, in short they get stuck in one cycle and though engaged with scientific objects, they think very little in scientific terms; for most it could be truly said that they do not think anything that others did not think up before them.¹⁷¹

Although the reference to scientific workers who do not see beyond their objects could refer to many of the collaborators that supplied the Belgrade scholars with data. After all, Cvijić implied that anyone with any kind of education was qualified to do that. However, in the context of Žujović's explicit criticism of Cvijić's causal theoretical work, it is possible that this was an indirect response to Žujović, particularly in the following sections in which Cvijić started praising the search for causal explanations and looking for connections between objects and phenomena:

The higher form of scientific labour begins with deep observations, which often contain explanation of facts and phenomena within, and frequently imply or point to bigger connections. From such observations hypotheses are born, often just working hypotheses, [...] The mentioned hypotheses of the higher order could be made in the field, by observing geographical or geological maps, in museums, institutes, or laboratories. For this kind of more difficult and rarer observations even those who have less talent could be trained.¹⁷²

Finally, Cvijić spoke about the most important part of scientific research for him – imagination.

Imagination is, therefore, of the utmost importance for creative scientific work, or, should I rather call it scientific imagination, that arrives from deep observations, truthfully from a small number of such observations. Speculations without any foundations or fantasies are a

171 Jovan Cvijić, "O naučnom radu i o našem Univerzitetu" [On Scientific Labour and Our University], in *Govori i članci* [Speeches and Articles] vol. 1 (Belgrade: Napredak, 1921), 26.

172 Jovan Cvijić, "O naučnom radu i o našem Univerzitetu," 27.

completely different thing, because they do not arrive from facts or arrive from wrong facts, from which true imagination does not have significance.¹⁷³

In Laudan's terms, the question of theory and facts is more about their relations, rather than a choice of either or. Cvijić could exemplify such attitude, at least in his declarative, programmatic stance towards it. Žujović criticised him for his hasty interpretations of the evidence in the field, which Žujović himself was unwilling to make. On the other side, for Cvijić's understanding of fieldwork implied constant search for causal relations between items found in the field. While Žujović limited the speculative side of science to identification of specimens and location of layers on the stratigraphical column, Cvijić attempted to develop more complex geochronological explanations, attempts in which he sometimes failed and got criticised for.

5.3. Conclusion

The way the organisation of scholarly work was socially construed, each new field of expertise was a designated area where a different scholar was to establish his/her expertise. After the time of Pančić, who had to cover the entire field of Jastarnia as one unique field and deal with problems of natural historical sciences together, came the time when Žujović had to address all the earth sciences all together and perform all kinds of social and political duties related to them. Nonetheless, their students began narrowing their fields and specialising in specific scientific branches. Urošević took over all the duties related to mineralogy and petrology, taking Stevanović as his student and assistant to perform research in this field. Radovanović took over the duties in the field of palaeontology, and later the duties in the general field of geology, after Žujović withdrew

173 Jovan Cvijić, "O naučnom radu i o našem Univerzitetu," 28.

from science. Petković joined Radovanović's work as his student and assistant and consequently inherited the chair of geology and palaeontology. Mihailović performed that role in the field of seismology. If Žujović built his own network around him, Urošević and Radovanović did the same. They each took their own field of expertise and built a network of loyal collaborators that depended on them. Antula became a designated expert for mining geology, and was in this way pushed out of the mainstream geology, but maintained dominance within that specific specialisation, while Pavlović worked as the director of the museum, specialised in the malacology and museology.

This entire network was part of the social circle Žujović created. Socially and academically, the earth sciences revolved around him between 1880 and 1914. Žujović maintained his authority even though during the 1900s he withdrew from academia because of his strong social and political influence. He was the professor of everyone involved in the earth sciences and his political importance loomed over the entire scientific sphere. During this time, he maintained his teaching duties, thus occupying this post until the beginning of the war. His work was diverse and he wrote textbooks everyone used for their courses and as a reference for their work. When the government wanted to consult an expert in earth sciences, they were writing to Žujović, and he was redirecting them to other experts. His closest associates, Urošević, Radovanović, and Pavlović, gained highest positions in academic hierarchy mostly due to timely connections with him. They managed to attain high positions early and to maintain those positions. In that process, academic degrees were not the most decisive criteria. Those who were first had considerable advantage over younger students. The number of job positions in academia was limited, but the formation of the Geological Society enabled contributors of all kinds to become a part of knowledge production. What made the difference between them was the amount and type of academic work they performed.

Maybe Stevanović was better qualified than Urošević, his mentor, but he still produced a considerably less amount of scientific research than Urošević. At the same time, Stevanović had more international publications than Urošević, while the latter had his work strategically presented in the close circle of the Geological Society, where in the inner zone of Serbian experts his work would be valued.

However, Žujović's students started building their own scholarly authority. Radovanović established his own authority as the professor that taught both geology and palaeontology and was able to push his own student (Petković) as his inheritor at this posting. Cvijić was in this case the most significant defector from the circle of Žujović's associates. Since he took the posting as the professor of geography at the Grand School, Cvijić started building his own reputation, as a geographer, geomorphologist, anthropogeographer, and limnologist, which all evaded Žujović's fields of authority.

The basic Žujović's principle of scientific work – contribution to overall knowledge about something by submitting reliable and quantifiable scientific data, Cvijić over-ruled as he was under influenced of different scientific authorities in Vienna from whom he learned to aspire towards more causal explanatory forms of scientific work. Žujović insisted on the quantity and quality of empirical data, that would be presentable to the international audience. His primary desire was to present definitive data that would be respected by his peers in the west. Toula and Tietze, as main explorers of the Balkan Peninsula, were abiding to same empirical principles as Žujović. Their position contrasted the theoretical, speculative approach to earth sciences, espoused by Eduard Suess and Albrecht Penck, professors who taught Cvijić.

One of the principal points of dissension between Žujović and Cvijić was the latter's abandonment of Žujović's principle of empirical contribution to larger studies published in the West, to explicit contribution to theoretical speculations about the

outcome of the research. Where Žujović wanted to provide reliable empirically testable data and avoid any uncertainties, Cvijić departed to speculative arguments, entering international professional discussion about the origin of earth formations. Cvijić wanted to speculate, give an interpretation on what he observed in the field, among the empirical evidence that anyone could agree upon. These speculations did not give him enough credibility among the small circle of friends that was surrounding Žujović and his students, however he received much wider international recognition instead. Even though he was supposed to belong to Žujović's circle, considering that he was his student, Cvijić acted independently and worked without approval of his former teacher. Žujović disagreed with many aspects of Cvijić's work, but he still decided to remain silent and express disagreement privately, outside of international scientific discourse. Cvijić had a far grater scientific output and better international reputation than all other Žujović's students.

On the other hand, Žujović's most loyal followers, Urošević, Radovanović, and Pavlović, were more interested in presenting their discoveries within their own narrow circle. Sessions of the Geological Society became the primary place where scientists presented their findings. Because of the very nature of the presentations and limited audience, this was practical for reputation building among Serbian scholars, but it did not reach, in most cases, international audience. The relations of centre and periphery were reproduced between the Belgrade scholars from the society and their correspondents from the provincial towns and villages. The school teachers in Belgrade who were present during the sessions of the Geological Society had greater influence than those who were sending their reports and specimens from the provinces. In this way, around Radovanović and Urošević, a network of collaborators emerged that largely depended on the power dynamics of the local Belgrade circle and less dependant on international

networks of knowledge production. This bolstered independence in production of academic degrees and strengthened cohesion and loyalty among students and professors. Belgrade became the centre of knowledge production in the earth sciences in Serbia, but its international role remained peripheral.

Conclusion

The everyday practices of scientific disciplines form from an interplay of mutually supporting scientific methods, activities, principles and instruments, as well as of social and political elements that constitute the environment in which institutions are formed and function. These social and political elements should not be considered a mere conjuncture in which the scientific activities are happening. As scholars interact with people from their surrounding, they engage in a number of negotiations over material resources, employment, and socio-political status that both influence the sciences and are at the same time affected by the scientific activities. Away from the main European centres of knowledge production, the establishment of a circle of scientific practitioners at the periphery requires considerable mobilisation of resources and the establishment of new social roles that interfere with already existing power dynamics.

In the preceding chapters I have demonstrated the interrelatedness of nineteenth century Serbia's scientific circles with the social and political elite of the country. The everyday production of politics in the society conditioned the establishment of earth sciences as scientific disciplines with their institutions, research practices, and educational programs. Earth scientists succeeded in establishing themselves as a class of educated men, positioned high in the social hierarchy, among the administrative and political elite of this young state. Through negotiations with actors from the highest academic and political circles in the country, and with foreign scholars and scientific institutions, they managed to distinguish themselves as experts in their respective scientific fields and position themselves as savants. in society. Because of the

interconnectedness of academic and political circles, their activities influenced political events, most notably, they actively participated in the formation of international relations of Serbia (as in the cases of Žujović and Cvijić).

The influence of romanticism on the Serbian intellectual elite was considerable, which determined the focus of interest of scholars, who formed a rather aesthetic understanding of scholarly activities. For this reason geography, because of its historical and ethnological aspects, appeared relatively early in the nineteenth century as a subject of scholarly production in Serbia. The Serbian national movement drew its inspiration from western nationalisms and appropriated models for construction of identity, in which geography played a considerable role. In the absence of qualified experts, many educated men filled the gaps as dilettantes by writing first books of geography. Nonetheless, these initial interests had highly educational and political aspects that focused attention more on human geography, allocating less attention to physical geography (as seen in the works of Gavrilović and Spasić, and later, Milićević and Karić).

Over the years, the transfer of knowledge and ideas from the West took the form of translation and adaptation of mostly German and French scholarship into the Serbian language, where the primary concerns were educational. The Serbian Enlightenment lasted well into the late nineteenth century, as Serbian society struggled with illiteracy and lack of education that hampered state development. The authoritarian regimes of the Obrenović rulers invested in schools that were providing for their state administration. In such an environment, science and research did not have a priority as the state struggled with basic requirements for administrative postings that primarily demanded legal and medical studies. Most of the scholarship from the 1840s until the 1870s was more concerned with the promotion of science than with actual research. Such endeavours

were culturally accepted as scientific activity, which created a rather educationalist understanding of science.

National ideology, in its most general and ambiguous form, put pressure on scholars to contribute to the national cause and help the state's building goals. These goals mobilized all the Christian population of the Serbian principality, which included the majority of the Vlach population of the principality, to the Serbian national cause. The construction of the Serbian national identity was at the same time under the influence of Western models, which were frequently adopted and promoted by non-Serbian scholars who migrated to the principality in search of employment. The absence of properly trained locals made these imported intellectuals highly influential, as they found their role in the open hierarchy of the Serbian elite. Serbian nationalism was oriented towards state building that drew its ideology from scholarly circles of many European capitals and recruited some of its principal actors from the Habsburg Monarchy.

In this sense, talking about science in nineteenth century Serbia inevitably involved nationalism and state building, which dominated the intellectual discourse of that century. At the same time, national ideologies of the Enlightenment and Romanticism were intertwined with world views that constructed the relations between nature and human society. The idea of unity of science was present all through the first half of the nineteenth century and connected the human experience of nature through rationality, sensibility, and sentiments with the long forgotten origins of their natural surroundings. Such views coincided with the emergence of nationalism. Going out of a city and exploring nature became one of the demonstrations of patriotism. Knowing the land was a sign of intellectual prowess and a contribution to economic development of

the country.¹ Originating in the intellectual thought of the Enlightenment, which in some instances treated society as the saviour of humanity from nature, the intellectuals of Romanticism considered society a natural occurrence, organically unified, from which nationalism derived its driving force of historical rootedness of nations as bound natural communities.² The idea of interconnectedness of human society with nature further developed under the influence of Comte's positivism, striving to establish the unity between humans and nature through empirical observations. Comte's ideas went along with the contemporary development of scientific research which was already at the time focused on empirical evidence.

The early stages of the Serbian national movement did not lead to its continuous formation. In its early days, during the Enlightenment, the movement formed in the Habsburg Monarchy. The ideas of that era placed strong emphasis on education, which inspired the works of Atanasije Stojković, Pavle Solarić, and Pavle Kengelac, who all attempted to promote learning as an essential part of the nation building. Nations required educated people who would lead it, and the earliest intellectuals recognised the significance of reproduction of an intellectual elite that would lead the young nation. However, scholars like Stojković were also propagating formation of an intellectual social strata that would be able to produce scholarly work in the Serbian language.

In respect to scientific practices, the early scholarship in the principality was in the first couple of decades focused on history, literature, and law, thus neglecting the natural sciences from the outset. The only interest in them stemmed from practical economic interests from which investigations of possible mining endeavours could be initiated. Nevertheless, this interest was not systemic and early researchers did not

1 Philips, *Acolytes of Nature: Defining Natural Science in Germany* (Chicago: University of Chicago Press, 2012); Jessica Riskin, *Science in the Age of Sensibility: The Sentimental Empiricists of the French Enlightenment* (Chicago: University of Chicago Press, 2002).

2 David Bloor, *Knowledge and Spacial Imagery* (Chicago: University of Chicago Press, 1991), 62-63.

manage to make the authorities understand the significance of their work. Thus, Herder's report was left in a drawer for a decade without getting any attention. The local elite did not manage to capitalise on mineral resources of the country before the late 1840s, and even after that, the complexity of mining operations was overwhelming as the infrastructure was not developed to support them.

The beginning of mining operations did not immediately lead to establishment of earth sciences in Serbia, even though it motivated initial field research and the formation of first mineral and rock collections. But it did not provide sufficient social and political initiative to mobilize the state administration to invest into further education and research of earth. Regardless of a surge of specimens that mining surveys introduced to Serbian scholarly environment, this was not sufficient for the beginning of scientific research of earth. The scientific knowledge and practices from western Europe were available, but the transfer usually depended on individuals who were able to translate and, critically, employ the practices. Therefore, the establishment of scientific circles did not depend that much on available knowledge, but rather on the initiatives of individuals who would establish scientific community around them and promote the practices of science. The research conducted by Herder, Boué, and Viquesnel, did not mark the beginning of scientific practices in Serbia. Austrian scholars conducted significant surveys, yet their impact was limited to international scholarship and did not draw sufficient attention in Serbia until the 1880s.

Scientific research of natural history in Serbia began with the hiring of Josif Pančić as professor at the Lyceum, and it continued with the hiring of Žujović. As professors at the most prominent school in the country, they were in a position to promote new practices to the emerging intellectual elite. Žujović's social and political position facilitated the establishment of a circle of scholars around him, whose goal was

the promotion of earth sciences. Žujović's students became the promoters of scientific practices in several academic and professional environments, expanding the understanding of the notion of expertise on their own respective fields.

This process did not happen in a vacuum. The social and political environment already relied heavily on education. Aspiring young men who sought employment or advancement in their careers had an already established route through education, built in the previous decades, but had their routes of social advancement limited to state administration. State administration provided the most remunerative job positions, and youngsters from the elites of the country (as well as those from the lower layers) had a designated route to success. Initially, the positions in education were only a stepping stone to more lucrative positions in the state administration. Thus scholars who started teaching in secondary schools or in the Lyceum or the Grand School often found it more profitable to seek employment in the state administration.

The administration and the education emulated both French and German models. This emulation established the educated elite as state servants who had to attend to formal and informal obligations of the state hierarchy. Thus seeking employment in state hierarchy became a necessity for any scholar. Social recognition was associated with state apparatus, as the majority of financial support in the country depended on the governmental support. Scholarly activities were for the most part devised to be in service to the government and the realisation of the national goals (whatever they may have been at any particular moment). This dependence on state funding created a tension between academic independence from, and patriotic alliance with the government (though, this was not limited only to Serbia). While over the years the highest political authorities, including the kings, interfered with decisions about academic postings, the members of the academic elite strived towards independence. As I have demonstrated in the previous

chapters, the independence of scholarly positions often confronted the authoritarian nature of the Obrenović and Karađorđević dynasties. Žujović experienced particular difficulties by trying to stay true to his opinions and at the same time be a loyal citizen of the monarchy. Because teaching appointments were treated as state administrative appointments, decisions about them were made by political appointees, which consequently made teaching positions politically contentious.

The initial purpose of education was the reproduction of a skilled and educated elite that was supposed to lead the administrative apparatus. Nonetheless, the whole process was often not congruous with state plans, since political opposition to authoritarian regimes was quite common among the educated members of the society. These were most notably school teachers who were frequently punished by state authorities for their public opposition to government by frequent relocation to remote areas. Despite this, educational authorities were not in a position to risk dismissing teachers from state service, as they lacked qualified personnel to run schools. This was equally valid for any other state appointments. Such conditions seriously challenged authoritarian regimes, as large scale confrontation with the opposition could have resulted in a paralysis of the state apparatus. This can explain why during the 1880s and 1890s Jovan Žujović managed to remain relatively close to high political circles, despite his open political disagreement with state policies, open socialist and republican ideas.

Formation of any scientific institution depended on the will and the budget of the state administration, and earth sciences were no exception. State authorities expressed interest in mining from the 1830s and 1840s, but there was not much attention given to earth sciences before the time of Pančić. His own initiative was limited, because he had a different scientific inclination, but he educated a new generation of scholars with inclination towards scientific methodology and principles. However, it took time before

the practical aspects of knowledge became realised. Herder, Viquesnel, and Boué were recognised as experts, but their knowledge was not used for administrative purposes. Žujović was able to recognise their value, consult their findings, and build further upon them. Their works were the reference point for any new research and for decades Žujović and his acolytes credited Herder, Boué and Viquesnel as for their accomplishments in the field.

In an atmosphere where only a few recognised the significance of science for the benefit of the state and the society, the process of negotiation over the resources had to be closely tied with political power. While the society was still being transformed from a provincial Ottoman patriarchal society into a European urban one, social stratification allowed upward mobility of the peasant and lower administrative strata as state building required expansion of the administrative apparatus. The power dynamics of political administration were closely tied with education, which provided capital for the formation of the higher strata. The diversification of the types of capital that enabled this upward mobility was manifested in the formation of a distinct natural-historical scholarly strata that grew from the students of Grand School, largely influenced by Pančić. The science became an instrument of social diversification, and individuals participating in establishment of scientific disciplines also created fields of power in which they were recognised as experts and thus established a form of cultural power in them. The most exemplary manifestation of this process could be seen in the formation of new positions and new institutions, such as chairs, departments, institutes, or museums, negotiated with the government by the scholars. Such negotiations were politically encumbered and involved actors outside the academic sphere who had to recognise the expertise and value of the new appointee and the new institution.

Žujović, as the principal actor in the establishment of earth sciences had good starting position for this kind of negotiations. He was desired by many of the already existing political forces as reputable young scholar, belonging to the right kind of family. His social capital, combined with his educational capital, facilitated the negotiations over academic resources. The state budget was limited, and the country was amassing debt. In such an environment, asking for state funding for academic institutions required political negotiation that had to prove the benefits of scientific research. Žujović enjoyed the most success during the 1895-97 period, when he was an influential person in the court, as a confidant to Queen Mother. This was the period of institutional development when most job positions opened, and Žujović managed to assign his acolytes to state administrative and academic positions.

Even though the small circle around Žujović strived towards independence from political struggles of that time, they were inevitably involved through their personal ties with members of the political elite. A declarative apolitical attitude may have helped for a while, but it became unsustainable in an atmosphere of perpetual political strife. Scholars were state servants and academic positions belonged to state administration. Following the institutional development, power relations in the small environment of Belgrade elite created growing conflicts among the members of the elite. The power dynamics of the elite depended on informal channels of communication. Everyday politics largely depended on organisation of networks of support which frequently manipulated their power through rumours and gossip. Sometimes these everyday politics manifested themselves through division of labour within academic institutions, where social and scientific authority overlapped. The early conflict between Žujović and Cvijić about the allocation of geography within the Faculty of Philosophy could demonstrate a kind of power struggle that occurred because of different vision of epistemic borders

between sciences. Cvijić demanded wider course assignments for geography, which would have enabled him more courses, more students, and greater influence in the school. Žujović was among the scholars who prevented Cvijić's expansion, but only temporarily. With the growth of higher academic institutions, struggles over resources were usually temporarily suppressed.

However, power dynamics on occasion got a more serious form, when academic activities overlapped with high politics of the country. Žujović's bad experience with the Obrenović dynasty resulted in his expulsion from the state. The close overlapping between public and private environments made academic life politically sensitive. Žujović had regular communication with members of the royal family, which eventually got him involved in their political strife. His experience during the process of expulsion made visible the informal channels of information distribution through which he was ascertaining explanations for his sudden fall into disfavour. Different versions of the events demonstrate various ways rumours could tarnish a reputation of a scholar and compromise them in the eyes of authorities. On one side, rumours influenced the image of him among the members of the executive elite, which in this case included the monarchs. He was suspected to be a potential traitor or collaborator in the assassination attempt on King Milan. Whatever the rumours reached the monarchs, their impression of Žujović was highly negative. On the other side, same or similar informal information channels helped Žujović gain knowledge of his possible accusations.

Dynamics of the political field affected practices in the scientific field. Scholars, being servants of the state, had the duty to represent the state internationally and demonstrate results of Serbian science in the relations with scholars abroad. One of the primary goals of the initial research was the exploration of Serbian lands. In the narrowest meaning of that sentence, it implied research of the territory of the Serbian

state. However, in the wider meaning, it implied a research of territories currently belonging to the Habsburg and Ottoman Empires, and Montenegro, towards which Serbia had growing aspirations. Such goals required cooperation with foreign scholars, but at the same time caused tension because of the overlapping research territories. In the case of geography, particularly with the ethnological studies that Cvijić conducted, territorial aspiration of Serbian intellectuals determined the territorial scope of research and geographers like Cvijić actively participated in intellectual discussions about the potential size of the future Serbian territory.

International cooperation, on the other side carried with it more elaborate methods of social and political recognition. Since the early days of his academic work, Žujović was faced with the problem that the main centre of the research of the Balkans was in Vienna. He initiated cooperation, as without the knowledge ascertained in Vienna, its laboratories and museum collections, he would not had been able to build his own research and expand the network of scholars interested in similar topics. Žujović was not in a position to work on the geology and petrography of Serbia without consulting the works of Viennese scientists like Boué and Toula, who had created the basic structures upon which the knowledge about the Balkans was built. On the other hand, this posed a problem for him as the centre of knowledge production was outside the country.

One of the means for scientists to establish reputation was through international cooperation, where international community was certifying the qualifications and expertise of a scholar who aspired in local hierarchy. At the same time, international cooperation was a means through which specimens and instrument were distributed. Its benefits were obvious and scholars in Serbia tried to maintain contact with foreign scholars, exchange specimens, further their education, and make joint publications. From the outset, it was apparent that science cannot happen in isolation. Seeking recognition

among the international community and ambitious nationalist program went hand in hand as the national reputation was built through this recognition on an international level. Žujović recognised this as an opportunity to establish Belgrade as the centre of knowledge production. Because the Balkan Peninsula was not sufficiently explored by European scholars, it was an opportunity for him to build his own network of collaborators through which specimens and discoveries would be sent to Belgrade for processing. It would have been an opportunity for Serbia to build national reputation with scientific achievements and be recognised among European nations as a “civilized” country.

Such goals overlapped with national territorial aspirations. While attempting to advance the idea of national liberation and unification, establishment of a centre of knowledge production of the Balkan Peninsula surpassed the nationalist territorial claims with its epistemic claims about a cohesive research territory. Not every aspect of research of earth that was conducted outside the state was motivated by nationalist territorial claims. The very nature of research demanded investigation of land formations that were connected to those occurring in Serbia. Thus Cvijić’s expeditions to the Rila and Rodopi mountains merely aimed at examining the oldest rock formations on the peninsula and follow the chain of mountains extending from the Carpathians through Serbia into Bulgaria. Serbian intellectuals, Cvijić included, had certain territorial ambitions towards Bulgarian lands, and these ambitions went hand in hand with epistemic factors that motivated the research. At the same time, Žujović’s ambition to establish Belgrade as the centre of knowledge production included in its territorial scope lands that were never included in the Serbian national program, nor for that matter represent an object of research interest of Serbian scientists. Becoming the centre of knowledge production required far broader scientific borders and resources in order to accomplish that goal.

For Žujović, it was important that he had his students become recognised as skilled and knowledgeable scholars on whose results the international community could rely. His desire to establish Belgrade as the centre of knowledge production stemmed from his awareness of its peripheral position. Practices of earth sciences were at the time largely influenced by empiricism of the positivist thought, and proponents of it were highly represented in Vienna, among the scholars of the Geologische Reichsanstalt who researched the Balkan Peninsula. This ultimately led Žujović to advocate meticulous recording of empirical data and collection of specimens, to which he tried to mobilise many willing and properly trained participants. Thus, Belgrade scholars were supposed to be suppliers of reliable data to other academic centres and thereby establish their reputation through reliability of ascertained information. This was also a means by which they would overcome their own peripheral position and be recognised as one of the centres. This required time, a large number of local collaborators, and cooperation and exchange with other academic centres.

In practice, Žujović's students were the carriers of this project. Some of them joined Žujović at the Grand School and the University, or found employment in the recently found museums or institutes, in the Department of Mining, or ultimately as secondary school professors waited for opportunity to advance to a higher academic position. While Belgrade was on the periphery of European science, similar centre-periphery relations were established within Serbia. From the practices of the Geological Society, it can be seen how significant it was to be in Belgrade in order to properly present research during the sessions of the society. Those who managed to find a job as secondary school teachers in Belgrade had more chances for advancement in career than those who worked in the provinces. The educated men from the provinces supplied the

Belgrade scholars with specimens and data, which were later processed and analysed in Belgrade.

However, seniority was in practice largely depending on the time of completion of studies. To put it simply, those who finished their studies first occupied the first job positions, and younger students, even when they had better qualifications, had difficulties advancing in their careers. The case of Stevanović could be exemplary of the difficulties the younger generation of Žujović's students faced. Here, Žujović's plans to establish Belgrade as the centre of knowledge production encountered difficulties. The Geological Society became the primary centre of activities in the country and efforts of young scholars thus became oriented towards representation during the meetings of the society and in domestic publications. Radovanović and Urošević, the two leading scholars who took over the leadership of the society did not invest their energies to publish their research abroad. By 1900s, state stipends for studies abroad were limited to professional training, rather than full degrees. The job market was limited and students largely depended on the support of their professors. Eventually, international recognition was becoming less relevant for the advancement in the career, and local connections and recognition in the narrow circle of the Geological Society of Serbia became more essential. In this way, Radovanović chose Vladimir Petković as his successor and trained him in Belgrade in order to appoint him as professor of the University, and Cvijić chose Pavle Vujević, while scholars who had degrees from the schools abroad remained on the periphery.

These power dynamics intersected several spheres of power relations. On the socio-political level, scholarship interacted with state administration and political power structures. Scholars had to demonstrate their usefulness to the state by working as state clerks in various committees and delegations, ministries and schools. Their participation

in the political life of the country was conditioned by the blurry borders between political and scholarly circles, as they were frequently connected through family ties or because they attended same schools. These close encounters made private life strongly connected to the public, which made the power dynamics ties to informal channels of communication. On the other hand, scientific circles had their own power dynamics that intersected the socio-political sphere of power relations. They possessed their own means for establishment of reputation based on degrees, practices, results, methodological and theoretical positions, networks of cooperation, but also on personal and political influence.

Dynamics between international and local reputations largely depended on the networks through which scholars cooperated. Personal and professional connections with scholars abroad enabled transfers of knowledge, specimens, and instruments, and facilitated expansion of institutions. While the ideals that drove scholars towards international cooperation had their roots in the very nature of scientific practices, these networks were also a guarantee of a scholarly reputation and were used for negotiation. Žujović, for example, became appointed as one of the initial members of the Serbian Royal Academy, due to his already existing membership to many other scientific associations.

At the same time, rivalry between scholarly centres was used as a point of dispute over territories. These territorial disputes had their roots in epistemic concerns. Land formations did not follow state borders, forcing investigators to take larger territories into account in order to ascertain knowledge about them. Disputes of this kind sometimes occurred among members of the same scholarly circle (like the Toula/Štúr dispute) and were motivated by personal or scholarly reasons. However, in the case of the dispute that occurred because of the speech that Toula gave during the congress of geographers,

motives lay primarily in the political sphere. By stirring the debate, Radovanović created a political quandary that reflected the nationalist/imperial ambitions over the Balkan lands, but at the same time promoted a cause that sought international recognition of Serbian geology. The goal of Radovanović was more to get attention from the Serbian audience, as his attack was written in Serbian. This was a means for him to promote scientific research in Serbia, as a means through which Serbian science would show its achievements and become recognised as a progressive, civilized country. But, at the same time, this was a way to demonstrate the practicality of earth sciences for the advancement of the national cause and establish himself as one of its defenders and promoters.

When it came to promotion of Serbian territorial aspirations, geographers were more successful, since their research involved ethnological studies along with studies of land formations. Cvijić's role in the promotion of national interests of Serbia became quite prominent after the 1908 Annexation Crisis. His role in international politics reached its peak during the First World War, when he became a member of the official delegation at the peace conference. His geographical argumentation about routes and communications was implemented for the advancement of territorial expansion of the Serbian state. The practicality of his work brought him good political reputation, and made him one of the crucial ideologists of Serbian nationalism, extending his influence all the way to the twenty-first century.

Žujović and Cvijić shared the same environment, and as professor and student they researched together. However, they experienced a methodological fallout after Cvijić's experience in Vienna. Under the influence of Penck and Suess, Cvijić was more open to theorizing and did not limit his findings to pure observations. The tension between the empirical collection of data and theorising about the results in geology was a subject of many epistemological debates all through the nineteenth century. Many earth

scientists were reluctant to engage in unfounded speculations about the course of earth's history. Cvijić's hypotheses were not always successful, and over the years, many of his theories were disproved. On the other hand, his teacher in Belgrade was reluctant to risk making far-fetched assumptions. In the end, Žujović's strategy was not as successful as Cvijić's, who despite his frequent misinterpretations of the results still participated in international scientific discourses and gained a name in the international scientific community. While his founding role made Žujović the most prominent figure in earth sciences in Serbia in the first couple of decades, Cvijić strategically developed his work in order to position himself as a useful contributor in both the international and local Serbian spheres. In the end, his output surpassed the works of all other scientists.

Žujović tried to establish an international reputation for the Serbian scientific community by organising networks for the accumulation and examination of specimens. His goal was to produce reliable results that could be presented internationally, which would help to promote the Serbian scientific reputation. Nonetheless, his students were not always following this road. Radovanović was quarrelling with the Viennese geologists over the validity of Serbian research, thus damaging the links that could have expanded the network. The circles that Urošević and Radovanović were forming around them were more oriented towards presenting research in Serbia and building a reputation within those small circles of earth scientists. Their scientific research aimed at the production of empirically reliable data, but their international impact was limited because they were more invested in presenting their results in Serbian publications.

By the time the wars started, the scholarly circles of earth scientists had developed their own power relations, established positions and practices, and formed the means of their own reproduction. From one unified field of natural history, Žujović separated geology and mineralogy as one separate field. His students continued dividing

earth sciences into separate fields of expertise. Based on methodology and practices, but also on the formation of institutions and official administrative positions within academia and the state administration, in the interaction with social and political transformation of the society, scholars determined epistemic borders within which they established themselves as experts. Professors of the University of Belgrade had the highest status and planned further distribution of appointments.

The entire project of establishing the earth sciences was not solely dependent on the transfer of knowledge and practices, instruments and materials from the West to Serbia. The foundation of science did not go without social and political implications. Žujović's plan to create "a strong class of serious scholars" which would lead earth sciences of the country stemmed from his full awareness that scientists were a social stratum whose work depended on their position in the society. International recognition for their expertise and contribution to international scientific discourses was one of the crucial elements in the establishment of reputation of individual scholars and academic centres. After all, Serbian scientists had to receive some kind of formal education in Western countries in order to get recognition as experts in their own fields. However, the power dynamics of everyday politics of Serbia and inner politics of academia had a significant impact on the role of a scholar in society. Between international and local, and epistemic and political, the experience of this new scholarly circle in Europe testifies about the power dynamics that lay behind the formation of new centres of knowledge on the periphery of international scientific communication.

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