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Professional associations of Balkan engineers until the First World War

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Abstract. The first stage of professional organizing of engineers in Balkan countries developed during the last two decades of the 19th century, when national associations were formed, largely based on the accumulated experience in Western countries. These organizations, in which civil engineers were predominant, upheld the interests of their members. Such associations were important for regulating engineering activities and raising the prestige of the profession. They were distinctly national in character and acted in the interest of local specialists against the competition coming from their foreign colleagues. A gradual differentiation took place within this professional group. According to the specific interests of separate sub-groups within the engineer community, various forms of separation occurred within, and outside, the framework of the associations - for instance, the separation of architects, mining engineers, electrical engineers, etc. The formation of national associations of engineers in the Balkans marked the end of the first stage of the professionalization of engineering in this region.

Keywords: engineers, engineering profession, professional associations, Balkans

Introduction

In the 18th and 19th century, in the course of the accelerated socio-economic developments occurring in Europe, a new phenomenon emerged: professionalization. A transition to new, modern professions took place, mainly through the transformation of old crafts. The three basic elements of the process of professionalization are practice, education, and the establishment of associations.

Engineering holds a particular place among modern professions; it developed under the influence of industrialization and advances in science and technology. It came to be one of the foremost emblems of a new era. As in other historical trends, the new profession started from the developed industrial states of the West, while the countries of the European southeast tried to follow their example using their accumulated experience.

The present article aims to present the organizing of engineers as part of the formation of this modern profession in the Balkans during the period preceding the First World War; in doing so, we take into account the specific conditions in the countries of this region, and particularly the local technical practice and education. We attempt to make a comparative study, devoting special attention to four nation states - Greece, Serbia, Rumania, and Bulgaria, while also considering the Balkan provinces of two multi-ethnic states - the Ottoman and Habsburg empires.

The Western experience

Despite differences in theoretical approaches to professionalization, it is almost unanimously accepted that associations are the most important agent for the establishment of any profession. As a rule, they unite the elite of a given profession and fulfil certain functions, of which the most important are:

1) to provide possibilities for exchange of knowledge and experience through publications or conferences, seminars, etc.;

2) to define who is a professional and who may (or may not) exercise the given profession;

3) to define the rules of professional conduct, in some cases by formulating an ethical code;

4) to exert influence on professional education through funding, control over study programs, etc.;

5) to assist in raising the status of the profession.

The history of professional associations in Europe up to the First World War indicates their emergence and development were determined by the political, social, and economic conditions in each country. The most eloquent illustrations of this were France and Great Britain, the states in which the modern profession of engineering first appeared. The two cases are fundamentally different. In France, a country with a powerful state administration and an established body of engineers, and where education in engineering had an early start, a national association of the profession - and only of private engineers at that - appeared rather late (in 1848). Societies of alumni of higher technical schools, etc., were also created (Grelon 2007). In a liberal state like Great Britain, where practice (machine building) played an important role, education in engineering developed late in time, but by contrast, a strong association was founded very early on (in 1771), and the influential *Institution of Civil Engineers* was established in 1818 (Buchanan 1989). In tracing the development of the professional organizing of engineers in other European countries, we find quite a few similarities but also serious differences determined by the specific conditions in each country.

The Balkans follow the example

The nation states that emerged and developed in the Balkans in the course of the 19th century were able to profit by the example of the technical services and educational systems of the developed European West as well as to send their young people to be educated in the engineering schools of France, Germany, Belgium and other states (Kostov 2015).

In using the experience of the Western countries, the Balkan states applied it with certain modifications due to the specificities of local conditions. Thus, in Greece, a *Corps of Engineers* (*Soma ton michanikon*) was created as early as 1833, but this was a military structure entrusted with civic tasks. French influence was felt in Rumania, where a technical corps was created in 1862[1], and in Serbia, in the organizing of technical services.

During the 1860s, a new stage in technical education began in the Balkan states. Based on their own past experience, and following the example of the West, engineering schools were established. Thus, in 1863, was founded the *Technical Faculty* at the newly opened *Higher School* in Belgrade. In Bucharest, in 1867, was founded the *School of Bridges, Roads and Mines (Şcoala de poduri, şosele şi mine)*.In the same year, in Greece, the *Industrial School* was opened, based on the *Technical School* (*Scholeion ton technon*) founded at the end of 1836.

After the 1870s, the socio-economic modernization of the Balkans accelerated. There was increased construction of roads, railways, and harbors. Under the influence of the developed West, advances were made, albeit on a limited scale, in industry and technology as well. The development of industry, construction and transport demanded more technical specialists, and at the same time, the requirements with regard to training and professionalism grew higher. The number of academically trained engineers increased considerably compared with the preceding period, and the governments encouraged their training in foreign countries, while local higher technical education also developed. After 1880, the existing schools in the Balkan countries were reformed. In Rumania, the previous engineering school was given a higher status and a new name: *National School of Roads and Bridges* (1881). In the 1880s, serious transformations took place in the *Industrial School* in Athens, which was recognized as a higher educational institution under the name *Metsovian Polytechnic* (*Metsovion Polytechneion*).In Serbia, the *Technical Faculty* in Belgrade was additionally developed, especially after 1896. Bulgaria was the only Balkan country in which, up to the First World War, no higher technical school was established; the local engineers were educated in the respective schools in West European states and Russia. In fact, until the end of the 19th century and the early 20th century, a considerable percentage of the engineers in Rumania, Serbia, and Greece were also trained in foreign countries, where, in addition to acquiring technical skills, they could become familiar with the professional organizations of their colleagues.

[1] Starting from 1866, it was named *Technical Corps of the Rumanian State*.

Western influence in creating technical services and schools in the Balkans was followed by the adoption of Western experience in the professional organizing of engineers.

The first attempts to form an association date from the early 1860s and the 1870s. Thus, in Belgrade in 1868, an *Association of Technicians* (*Tehničarska družina*) was created, which existed for a short time and was not particularly active. Its proclaimed goals were rather broad and consisted mainly in the dissemination of scientific and technical knowledge. According to its statutes, its main task was "the improvement and wider dissemination of technical knowledge in Serbia, and together with this, the development of crafts, trade and industry". The statutes also reveal that the Serbian engineers had no particular desire to separate themselves as distinct from other specialists in the field of science and technology. All technicians were eligible for membership in the Association, i.e., all who "work theoretically or practically in mathematics and the natural sciences" (Šolaja, Đurić-Zamolo, Vasiljević 1994).

Similar in kind was the *Association of Engineers and Architects*, founded in Rumania in 1872. Judging by the contents of its journal *Inginerul*[2], its main task was the dissemination of technical knowledge in the country.

A little later, however, a new and more serious attempt to create a genuine professional association of technical specialists was made in Rumania. In March 1876, the constituent assembly of the *Association of Engineers and Architects* was held in Bucharest. It was attended by 40 persons, and 71 persons were declared founding members. A considerable number of foreign engineers working in Rumania took part. At their insistence, the Association's journal, of which only two issues came out, was published in three languages - Rumanian, French and German. The Association did not yet set itself a clear goal and was unable to attract a large number of engineers and architects. Moreover, the timing of its creation was not favourable to its activities due to the on-going economic crisis in the country and the eruption of the war of 1877-1878 (Ionescu 1907, 9-11).

It was only after 1878, when intensive public construction works began, that Rumanian engineers became more active and set higher professional requirements. A strong incentive in this respect was the building of railroads in the country, which engineers looked upon not only as a means to economic development but also as an important national project. That is why they were among the most active supporters of the policy of nationalizing private railway lines created with foreign funding. Their discontent was fueled by the fact that, until then, Western companies had been mostly hiring foreign engineers.

At a meeting in October 1881, the proposal was made to reorganize the old Association. However, after discussions on the matter, a new *Polytechnic Society of Rumania* (*Societatea Politehnica din România*) was created. In all, 52 people were counted as its founders. According to its first statutes, only engineers with completed civic or military higher education could be accepted as members. Engineers without years of service, such as were, at that time, the graduates of the Bucharest technical school, could only be associated members. A similar

[2] Only 17 issues of the journal came out, from January to May 1873.

status was stipulated for scientists, entrepreneurs and military officers (Ionescu 1907, 12-19). The members of the Society were divided into four sections: 1) railways, bridges, roads and ships; 2) architecture, public construction and hygiene; 3) geology, drilling, mines and metallurgy; 4) agriculture and industry. The great majority of members, until the First World War, were in the first two categories.

The creation and activities of the *Polytechnic Society* in Rumania was important for the establishment of the engineer's profession in the country and for the protection of the interests of this socio-professional group. During the period before the First World War, its membership increased by several times. At first this growth was rapid, and from 135 members (116 regular and 19 associated) in 1885, the membership surpassed 400 persons in 1895; but in the following period, it grew in a wavering tempo and reached 464 persons in 1913 (BSP, 1885-1913).

Thanks to the strong positions held by engineers in political and public life, and to its active work, the *Polytechnic Society* was able to largely assert its ideas and win state support for the principles that generally defended the interests of its members. Data on the membership in the first years, and later, show the predominance of engineers and architects employed in the state and municipal technical services (see Table 1).

The Society's activity did not fully and equally meet the interests and expectations of all the separate specialties. In its practice, it quite naturally reflected above all the views and desires of the prevalent groups - the civil engineers (over the other specialties) and the civil servants (over private professionals and entrepreneurs). That is why the rest felt largely disregarded and sought protection

Table 1. Membership of the *Polytechnic Society of Rumania* at the end of 1885 and the beginning of 1913

Employment	1886		1913	
	number	%	number	%
The Ministry of Public Works (Technical Corps)	91	65.00	275	59.27
Other state institutions	10	7.14	24	5.17
Municipal firms and administrations	6	4.29	15	3.23
Private firms	2	1.43	32	6.89
Entrepreneurs and industrialists	1	0.71	51	10.99
Engineers and architects	20	14.29	37	7.97
Others	10	7.14	30	6.48
Total	140	100.00	464	100.00

Source: BSP, 2, 1886, 1, 84-89; 29, 1913, 1, 7-43.

for their specific interests in other associations. Thus, during the whole period of its existence, the Society was unable to attract many architects, few of whom became members. People in this profession soon became aware of the need to unite their efforts to defend their common interests. In 1891, they founded the *Society of Rumanian Architects* (*Societatea arhitecţilor români*) (Răduleț 2000, 134).

In 1893, mining engineers also created their own association[3].Their true motives, however, are indicated in the appeal of the initiators of this society: "Today, when other engineer corps in the country are organizing, when engineers in other specialties are taking great care to provide for a better future, we believe the time has come for us, the mining engineers, to also defend our destiny and prestige and the future of our colleagues" (BSII, I, 1897, 3). In addition to mining engineers, the Society included industrialists with interests in the extraction industry, some of whom had a higher technical education.[4]

At the end of the 19th century, another association of engineers was formed. In 1895, the *Association of Graduates of the National School of Bridges and Roads* (*Asociaţiunea amicala a absolvenţilor Şcole naţionale de poduri şi şosele*) was founded in Bucharest. Such alumni organizations were particularly popular at that time in France. The first of them was created by the graduates of the *Grandes Ecoles* and aimed to defend the interests of elite engineers. The Rumanian case was different. Here, the Association emerged as a kind of social resistance on the part of local engineers to foreign graduates, who practically had a monopoly on the leading positions in the state technical administration and in other spheres. When it was founded, the Association united a little over half the graduates of the National School of Bridges and Roads (AAA 1895, 1, 17-25).[5] What is interesting in this case is that the alumni were supported by the majority of teachers in the school, who themselves had a "foreign education".

In 1899, the graduates of Schools of Arts and Crafts in Rumania also formed an organization, whose headquarters was in Bucharest (*Asociaţia Generală a absolventilor scoalelor de arte şi meserii*). It declared its support for the above-mentioned schools[6].

Towards the end of the 19th century, due to economic advances, the situation of technical specialists in Serbia was changed. The idea to create a professional organization was maturing among engineers. Thus, things came to the establishment of the *Association of Serbian Engineers* (*Удружење српских инжењера*) in February 1890 in Belgrade. Its basic task, according to the founders, was the protection of the "material and moral situation and the progress of the engineer's profession" (STL 1890, 3-4, 37-40).

According to the statutes of the Association, its members were divided into two categories: active (regular and extraordinary) and inactive (corresponding,

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[3] *Society of Mining Engineers and Industrialists in Rumania* (*Societatea inginerilor şi industriaşilor de mine din România*).

[4] In 1897, 28 engineers and 20 industrialists were members of the Society.

[5] Out of the 159 persons who had graduated in 1871-1894, more than half (82) became founding members of the Association.

[6] In 1901, the status of the educational institutions in Bucharest and Iaşi was changed, and they then became *Higher Schools of Arts and Crafts* (*Şcoli superioare de arte şi meserii*).

honorary, and founding members). The basic criterion for enrolment in the organization was to possess the respective qualification. During the discussions held at its foundation, a proposal was made that, in addition to certified engineers, technicians could also participate in the Association. Ultimately, the majority imposed the rule that only technical specialists with a higher education could be members.

According to the adopted statutes, a regular member could be "any Serb or foreigner who is a Serbian subject, providing he has the qualification of graduate of the *Technical Faculty* in Belgrade or a foreign educational institution of the same rank; and also, any foreigner who is not a Serbian subject but has worked for at least five years in Serbia and has the above qualification". An extraordinary member can be any person who "is occupied in industrial activity in lands where Serbs live; and also, persons who, under the Serbian laws, have the right to perform construction-entrepreneurial activity, regardless of whether they exercise it or not; and also, state officials from different construction specialties as well as other technicians with lower qualification than that required for regular members".

At the start, and later, the Association was generally under the influence of state-employed engineers and architects, who were the majority of members. They enjoyed a number of privileges. Indicative in this respect is that, already at the convening of the constituent assembly, state employees were given a three-day leave and free tickets on the state railways granted to people working in the province.

At the end of 1890, the number of members grew to 101 persons, of whom 95 were regular members. The lists of members contain names of foreign engineers: Czechs, Germans, Austrians, Frenchmen, Croats, Montenegrins, etc. (STL 1891, 4, 51-52). The Association in fact encompassed a large part of the graduate engineers and architects in Serbia, whose number at that time was approximately 120 persons. The first honorary member of the Association of Serbian Engineers, elected in June 1892, was the famous inventor Nikola Tesla.

Until the First World War, the Association's activities passed through upswings and declines. After the title of architect was officially introduced in the Serbian state administration, the name of the organization changed in 1896 to *Association of Serbian Engineers and Architects* (*Удружење српских инжењера и архитеката*). The number of members grew, reaching 234 in 1911, of whom 200 were regular members (STL 1911, 19, 64). In that same year, the first woman was accepted as a regular member.[7] On the eve of the First World War, the Association already had 328 members (STL 1914, 1, 23-24).

From the start of its existence, the organization was active with regard to technical services and education in the country, the regulation and control of the engineer's profession, and defending the interests of the association's members.

In 1891, an association was created in the country's second largest city, Niš. The so-called *Local Niš Association of Serbian Engineers* (*Месно нишко удружење*

[7] This was Miss Milica Vukšičeva, a graduate in architecture.

српских инжењера) was part of the national organization, but its creation may be viewed as a response to the domination of Belgrade engineers. The local association had approximately 15 members in its first two or three years of activity (STL 1891, 5, 67-68; Istorija Niša 1984, 211).[8]

Until the First World War, other organizations were also created to protect the interests of different groups of "technicians". In 1906 the organization of alumni of the Military-artisanal School of Kragujevac was founded under the name *Club of Graduates of the Military-artisanal School* (*Клуб свршених ученика Војно-занатске школе*) (Spomenica 1913, 38), and in 1909, the *Club of Serbian Architects* (*Клуб српских архитеката*) (STL 1909, 8, 248) was established in Belgrade.

The professionalization of the engineer's profession in Bulgaria went through several stages. The organized advocacy of the technician's profession started in the middle of the 1880s. In May 1885, a group of Bulgarian and Russian military officers from the Danube flotilla in Ruse created the *Bulgarian Technical Association*. According to its initiators, the purpose of the Association was to disseminate technical knowledge, and its members could include not only military men but also "citizens with the qualification of an education in technology, and members who are interested in the questions of modern technology" (Bozhkov 1933, 144). The majority of its members were Bulgarian and Russian military engineers and technicians, but it included civilians as well. Its activity consisted mainly in giving several lectures; after the events related to the Unification and the Serbian-Bulgarian War in 1885, the Association ceased to exist.

After the end of 1880s, the increasing number of Bulgarian youths holding diplomas from foreign universities and higher technical schools led to a change in the attitudes of the ever-growing groups of engineers and architects. They began to increasingly raise important questions related to technical activities in the country. With their growing feeling of professional solidarity, the idea emerged among them to create an organization that would protect their rights and promote the progress of technology in Bulgaria. All the more so as they not only transferred technical knowledge acquired abroad, into Bulgaria, but assimilated the existing models of social organization in the countries where they had studied.

Guided by such motives, thirty or so engineers and architects created a professional association in 1892. In January 1893, the *Bulgarian Engineering-Architectural Association* (*BIAD*) (*Българско инженерно-архитектно дружество* (*БИАД*)) was officially established. Its first statutes were signed by 35 members (Ustavite 2007, 26-29).

One of the Association's main objectives was "to develop closer relations and solidarity between its members, to assist in their technical ventures and to generally defend the rights of technicians in Bulgaria". Its members were divided into several categories: regular, honorary, charitable, and corresponding members. Only persons in the first category had a voice in decision-making. According to the statutes, "every Bulgarian subject with a higher technical education" was

[8] It is later mentioned under the title *Association of Serbian Architects and Engineers in the City of Niš* (*Удружење српских архитеката и инжињера вароши Ниш*).

eligible for membership. Thus, from the very start, clear dividing lines were drawn, based on nationality (Bulgarians, as opposed to foreigners) and on education (the "academic" engineers and architects, as opposed to the other technical specialists). The statutes also defined the fields that allowed membership in the Association. These were: "a) architecture; b) engineering; c) mechanics and technology; d) mining engineering; e) electric technology". *BIAD* generally upheld these basic principles of activity until the First World War. The only more important change was made with the amendment of the statutes in 1897 that introduced a new category of members, called "auxiliary". It included "foreign subjects with a higher technical education, Bulgarian industrial-technical associations and Bulgarian subjects with secondary technical education" (Ustavite 2007, 30). In this way, the Association curtsied to the foreign engineers and architects working in the country, as well as to the "lower rank technicians" (assistants and conductors). The data show that, in the period prior to the First World War, comparatively few people from these categories took advantage of this possibility. Until the middle of 1914, only seven foreigners (engineers and architects who were non-Bulgarian subjects) and six Bulgarian "assistant engineers" and "conductors" were accepted as members.

At the end of the 19th and beginning of the 20th century, as the number of engineers in Bulgaria grew, so did the membership of the Association. At the end of 1903, it reached 175, of whom 168 were regular members. During the next five years, a slight stagnation in the number of members was registered, after which it began to grow again, reaching 201 persons (of whom 197 were regular members) at the end of 1909, 240 (236 regular members) at the end of 1913 and 284 (277 regular members) at the end of 1914.

The activity of *BIAD* was mainly pursued in several areas. Along with the purely technical problems, such as popularizing the latest knowledge and methods in various fields, the Association raised issues related to the establishment and defense of the engineer's profession in Bulgaria. One of the most important demands was for the introduction of a clear state regulation on engineering activities, whereby a priority would be given to academically trained specialists. Graduate engineers and architects fought for recognition of the importance of their profession and for the improvement of their material and social situation. They declared their opposition to the current practice that tolerated the professional activity of their chief "rivals", the foreign specialists (mainly those employed by the state and the municipalities) and the self-styled engineers (those without a diploma); in many cases, the two characteristics coincided.

BIAD tried to control the legalization of diplomas of engineers and architects and the granting of the right to practice the profession. After they won the fight against "foreigners" in state service, by 1899-1900, the members of the Association tried to limit their place in private activities as well. Architects strove to push their colleagues with a military specialty out of the activity of building facilities for the army.

In the last 4-5 years before the First World War, there was a tendency for certain categories in *BIAD* to try to separate themselves from the others. Although the Association pursued its general goals, there was an increasing need to protect the specific interests of separate technical specialties. Data on the

membership of *BIAD* at the end of 1910 show that it was numerically dominated by construction engineers; and in terms of place of employment, by state employees. It was natural for the Association to be interested mainly in the issues related to these groups. The others felt slighted and tried to create structures of their own.

Architects were the first to take a step in this direction when, in 1910, they created their own group with in *BIAD* (SpBIAD 1910, 13, 168). Three years later, electric engineers and machine engineers also created a group in *BIAD,* and in 1914, the group of mining engineers was formed (SpBIAD 1914, 51-52, 413).

At the start of the 20th century, attempts were made to create regional organizations. Thus, in February 1900, the newspaper *Slavyanin* (*Slav*) (in Ruse) announced the creation of the *Ruse Technical Society (Русенска техническа дружба)*; no further information is available about it. In December 1908, the *Varna Technical Society (Варненска техническа дружба)* was founded by a group of 18 engineers and architects in Varna; however, it remained within the framework of *BIAD* until the end of the period under study.

The data on the membership of *BIAD* show the clear predomination of engineers and architects holding government and municipal positions. At the end of 1910, for instance, they amounted to over 70% of the total number (see Table 2). In fact, this proportion mirrored the situation in the community of graduates in engineering and architecture in Bulgarian during this period.[9]

Table 2. Membership of the *Bulgarian Engineering-Architectural Association* at the end of 1910

Employed	**Number**	**%**
State civil service	151	64.53
State military service	9	3.85
Municipal service	9	3.85
Private firms	11	4.70
Entrepreneurs and industrialists	51	21.79
Engineers and architects	3	1.28
Total	234	100.00

Source: SpBIAD, 1910, 52, 640-643.

[9] In 1910, in terms of specialties, the largest share of members were construction engineers - 135 persons; architects were 49 in number, military engineers - 15, mining engineers - 11, machine engineers and chemical engineers - 15, electric engineers - 8, and there was one land surveyor.

As the number of private construction engineers increased, their specific demands for protection of their professional rights also grew. *BIAD*, dominated as it was by state employees, could not fully meet their needs. That is why they sought support from their colleagues who lacked a higher technical education. In the autumn of 1910, the *Union of Bulgarian Construction Entrepreneurs* (*Съюз на българските предприемачи строители*) was founded in Sofia. Engineers played a leading role in it. The organization declared its demand for the establishment of clear rules in public construction, and that the rules be respected. One of the rules in question was the prohibition for engineers and architects in state or municipal service to perform "any private work" (Predpriemach-stroitel 1911, 8, 4).

Compared with the other states in the region, Greek lagged behind with regard to the professional organizing of engineers. It was only in the late 1880s, after the changes made in the state technical organization[10], that Greek engineers displayed greater social activeness (Chatzis 2004, 3-23). Two journals were also published at that time, which not only acquainted specialists with important technical problems but also served as forums for the discussion of questions relevant to the professional community of engineers in Greece. But more time had to pass before the community united.

The first professional association of Greek engineers was founded only at the very end of the 19th century. The initiative for its creation belonged to a group of civil and mining engineers from Athens, who in 1898 voiced an appeal to their colleagues. Their basic motive was to distinguish themselves from the technical practitioners without diplomas and to raise the social status of engineers. The former motive led them to identify the important priority of enhancing the role of "applied and technical sciences" in the professional growth of engineers. That is why they saw mathematicians and physicists as natural allies. This determined one of the basic specificities of the first professional association of Greek engineers and architects, created at the end of the century. The *Greek Polytechnic Association* (*Ellinikos Polytechnikos Syllogos*) was founded in March 1899 by the constituent assembly convened in the building of the *Polytechnic*.

One of its goals was to serve as "a connection, mutual guarantee, assistant and arbiter" in the professional activities of its members. At first, the Association numbered 130 members divided into five groups, each of which united specialists in the respective field, namely: construction, mechanics, architecture, industrial chemistry, and physico-mathematical sciences. During the period up to the First World War, the number of members wavered, amounting to 166 persons at the end of 1906, 192 in 1912, and 177 in 1914. The possibility of internal conflicts was present from the very start, as the Association united alumni from the *Polytechnic*, from foreign engineering schools, and teachers of natural sciences, as well as "engineers-practitioners". Moreover, the different professional groups had different views about the Association's activities. Along with the state employees, who were a majority, it included engineers from private companies or with independent practices (see Table 3) (Antoniou 2004, 181-193).

[10] In 1878, a new *Corps of Civil Engineers* (*Soma ton politikon michanikon*) was created, which significantly changed the status of military engineers and their corps.

Table 3. Membership of the *Greek Polytechnic Association* at the end of 1906

Sector	Number
Regional services	30
Municipal services	21
Private companies	45
Freelancers	38
Other	18
Total	152

Source: Arhimidis 1907, 3, 9-12.

Despite the calls for unity and the declared commonalty of interests, serious antagonisms soon appeared between the members of the Association. Some of the significant problems arose in the course of discussions about the private *Commercial-industrial Academy* of Othon Roussopoulos in 1905. The engineers who had graduated from the *Athens Polytechnic* felt that this new school was unable to train good quality specialists and declared they were opposed to its recognition. They requested support from the *Greek Polytechnic Association*, but most members of the latter did not accept their demands. This led to a serious internal conflict (Antoniou 2004, 68-70).

The alumni of the *Athens Polytechnic* openly voiced their demand that the Association be reorganized, and declared their opposition to the participation of practical engineers and representatives of the physico-mathematical sciences. They believed that their school provided the needed level of technical competence and that professional representation should be "purified" by restricting membership to certified engineers. As the most numerous and best-organized group among Greek engineers, the alumni of the *Athens Polytechnic* strove to impose their views and interests. After failing to do so within the framework of the Association, they created a society of their own. Thus, the *Union of Engineers from the Metsovian Polytechnic* was created in 1906. It worked actively to further its goals, the chief of which was formulated in the statutes as "preserving the authority of the Polytechnic and the professional dignity of its alumni".

The alumni of the *Athens Polytechnic* were particularly active with regard to the "Roussopoulos case" and in opposing the right of the private "Technical Academy" to train technical specialists, granted by a decree of September 1908. With the support of the leadership of the state school, the campaign was ultimately successful and in December of that year, the decree for recognition of the diplomas issued by the *Academy* of Othon Roussopoulos was revoked.

It is interesting, and important, to compare the situation in the Ottoman and Austro-Hungarian Empires during the period under consideration. The creation of professional associations of engineers in the Balkan provinces of Austro-Hungary was similar to that in the nation states discussed above, but it was influenced by the example of the other parts of the Habsburg Empire. Thus, in the period 1848-1866, unions of Austrian, Czech, and Hungarian engineers

were formed - as a rule, jointly with architects (Mikoletzky 1995, 111-123; Sisa (ed.) 2016, 459).

Technical specialists in the autonomous region of Croatia and Slavonia also sought to consolidate themselves based on ethnicity and profession, and in 1878, the *Club of Engineers and Architects* (*Klub inžinira i arhitekata*) was created in Zagreb. In 1884, it was renamed *Association of Engineers and Architects in Croatia and Slavonia* (*Društvo inžinira i arhitekata u Hrvatskoj i Slavoniji*). In 1905, the *Club of Croatian Architects* separated from the Association and was established as an independent organization (Radić (ur.) 2003, 19-60). At the beginning of the 20th century, professional associations were created in the rest of the Balkan provinces of the Habsburg Empire: Dalmatia, the Slovenian lands, and Bosnia and Herzegovina (VHD 1912, 13, 23-24).

The engineers in the Ottoman Empire took a different path of professional organization. It was only after the Young Turk Revolution of the summer of 1908 that constitutional government was introduced in the country, which opened the possibility for free association and the publication of periodicals. As early as September of that year, the *Association of Ottoman Engineers and Architects* (*Osmanlı Mühendisve Mimar Cemiyeti*), was created in Istanbul; its founders were local engineers and architects, of whom only three were of Turkish origin (Martykanova 2010, 60-61; Baydar-Nalbantoglou 1989).

Conclusion

The first associations of engineers were founded in the Balkan countries during the last two decades of the 19th century; thus, the professionalization of this field of work was practically completed in that period. Due to political and social particularities in the Ottoman Empire and in some regions of the Austro-Hungarian Empire, such associations were created there later, in the beginning of the 20th century. In the creation of these national associations, the founders largely drew from the experience of the West. The professional associations in the Balkans were dominated by state-employed technicians with higher education. They upheld the interests of their members and were an important factor of the regulation of engineering activities and raising the profession's prestige. The associations were distinctly national in character and acted in the interest of local specialists competing with their foreign colleagues. Their actions often corresponded to the currently dominant political ideology in the respective region.

Soon after unification, however, a trend of differentiation appeared within the professional group. Separate sub-groups within the engineering community sought to defend their specific interests under various forms: as separate fractions based on specialty, or as regional divisions of the national associations (in Serbia and Bulgaria), or as separate associations (of architects and mining engineers in Rumania), and also, jointly with other professional groups (of construction entrepreneurs in Bulgaria, of mining industrialists in Rumania). Similar to the West, organizations of alumni of certain schools or of technicians without higher education were created in the Balkans. In these cases, they likewise demanded the regulation of the engineering profession according to their group interests.

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