

# NOTES ON THE EARLY HISTORY OF TECHNICAL HIGHER EDUCATION IN YASHI (IAȘI)

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*Abstract.* We perform a brief analysis of the economical and political context of establishing the first technical higher school in Romania. We urge for a revision of the current point of view on the educational level in Yashi (Iași) and Bucharest at the epoch, highlighting that these were, at the time, important academic centers we may not recognize or may not be aware of today. We also plead for a long due serious approach about the history of early modern education in Romania.

## 1. INTRODUCTION

The first aim of this brief paper is to recollect some less known facts from the early history of the higher technical education in Yashi, in the context of the general development of the region and of Romania. The inception of technical education is undeniably related to the “applied sciences” education, including applied mathematics, like spherical trigonometry used in geodesy and navigation. The teaching of applied physics (applied mechanics, applied hydrodynamics, applied optics) is also a sign of burgeoning technical education. Whenever to these classes one or several purely applied disciplines are added, we already can say that a technical education is born. It is why in these notes we pay a particular attention to the development of the education in applied sciences and applied mathematics at the Academies in Yashi, before the higher technical school of Asachi was born.

A note for the foreign reader: in English, the Romanian pronunciation of Iași is closer to Yashi; in French, it is closer to Iachy, while in German is closer to Iaschy – in all cases with the accent on the first syllable. It is unfortunate that the older French and Romanian maps aimed for French speakers used the transcription Iassy, and current maps aimed for English speakers use the transcription *Iași*, which is phonetically misleading. It is why we take the liberty in this paper to propose a (normal) phonetic transcription in English, that of Yashi.

## 2. A HISTORIOGRAPHICAL PERSPECTIVE

The list of volumes and articles devoted to the history of the Technical University of Iași is unexpectedly lengthy and surprisingly diverse for a rather

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young university. (References [1–5] represent a small selection of these writings.) However, most of these writings could disappoint the historian reader, because they are not truly historical in nature, but a mixed genre of memoirs – in the sense of “a narrative composed from personal experience”<sup>1</sup>, professional romance, political writing, and personalized history.

There is little to say about the history written by Professor Nicolae Irimiciuc [1, 2], except that it escapes in most instances to the historical writing patterns. Probably, the best characterization of the volumes due to Prof. Irimiciuc was made by the late historian and academician Gheorghe Platon, in the preface to the second of these volumes. Indeed, the set of volumes discussed are of interest mainly because of the feature Gheorghe Platon emphasized: these are somewhat memoir books, and, as such, are useful to see a viewpoint of someone who served during a long period of time as student, then as professor at the Technical University of Iași.

One of the most interesting parts in the third volume is constituted by the evocations of some of the former professors at the Technical University of Iași; while some portraits are mere reproductions of other authors’ writings, some other portraits include genuine, almost naïve recollections of the author about his former teachers. The glimpses on Cișman and on Mangeron, among others, are really nice. The reader should be averted that such portraits are not all appearing in the section titled *Marked Personalities of the Gh. Asachi Polytechnic* (pages 242–269, vol. 3, Irimiciuc). Unfortunately, while having many substantial merits, the structure of the volumes by Irimiciuc is quite erratic. A final proof that these volumes are not a historical monograph is constituted by the limited reference list (16 references only), which includes only books and only a few references on the history of technology and on the Technical University of Iași. Besides, the author looks rather unaware or uninterested by what other fellow historian and colleagues from the same university had written before him.

The volume [3] by the former Dean Ioan Bejan is definitely a memoir as much as an autobiographic writing. As such, the reader should not expect to find only bare facts and historical judgments, moreover should not expect that all persons and facts are dealt with as equally important. For instance, one can not find much on the dean who served before Prof. Bejan – associated professor Aurel Popovici, who has been, however, an assistant professor as early as 1941, and a lecturer starting from 1945 (according to Irimiciuc [3], page 295, vol. 3).

With such a diverse range of approaches found in the writings of the former professors turned into memorialists, and a scant range of papers or books of true history of the university, our personal conclusion is that the history of this university, as well as the history of technical higher education in Romania remains yet to be written, in a serious scientific approach. Most probably, an outsider

<sup>1</sup> Merriam Webster on line.

historian should be invited to write it, because until now, it seems, passions are still vivid inside the Iassensis polytechnic to allow an objective approach by insiders.

Further on, it is most regrettable that the recent volumes published on the history of the Technical University of Iași provide a declamatory, rhetoric view of the early developments related to Gheorghe Asachi. Beyond a few chronologic data, the interested reader can find no relevant analysis of those earlier times of development of technical education. In this brief paper, we try to contribute correcting this regrettable state of facts.

### 3. THE CONTEXT OF THE EARLY DEVELOPMENTS OF THE TECHNICAL EDUCATION IN YASHI

Looking back to the achievement of Gheorghe Asachi – at the time written Asaki, those who know the history of higher technical education in the world may be stunned: how was it possible that, in a principality like Moldova, considered at that time rather undeveloped, a technical education institution be established, before similar institutions appeared in the by far more developed countries like Belgium, Sweden, Denmark, Switzerland, U.S.A., or Portugal? Some may say that this institution has been too short-lived to be significant, but the fact that it succeeded bringing out to graduation after four years, one generation of engineers means that it counts as a fruitful, not an aborted initiative. Moreover, whatever short-lived it might have been, an explanation for it must be found – how was it made possible?

To understand why a higher technical education institution was established in Yashi as early as in 1813, we must carefully examine the economical, political and social frame of the Moldavian principality at that time.

At the end of the 18<sup>th</sup> century, the whole Eastern Europe was in a poor economical, social and political condition, much due to the decrepitude raging in the Ottoman Empire and to the incessant wars between the Turkish, Habsburg, and Russian empires, fought on the territories of the smaller or Turkish-subdued countries, like the principalities of Moldova (Moldavia) and Țara Românească (Walachia). At that epoch, both Bucharest and Yashi were small towns, with limited manufacturing facilities; yet, they were comparable in population to other small European towns, like some German ones, where universities were flourishing. A picture<sup>2</sup> of Yashi at 1832 shows a handsome, small but not insignificant town for the epoch, with some beautiful buildings, like churches and palaces (Fig. 1). Arguably, the capital of Moldova at the time was a very markedly oriental city, in culture and influences on the daily life. The picture in Fig. 2 fully proves this assertion. Therefore, the general context to start developing a purely

<sup>2</sup> Because the writings are scant from the early epoch, moreover because some may be unreliable, we will extensively use pictorial sources to base our analysis.

Western tradition of higher education in Yashi (and Bucharest) could not be but a mixture of growing commercial and cultural exchanges with the West, on one side, and an imported tendency, on the other side. In fact, it looks that during the whole 19<sup>th</sup> century, the developments in this part of Europe are due in the first place to a local elite that turned its eyes toward the West, because East apparently had nothing to offer except a decrepit empire – the Turkish one, and a heterogeneous underdeveloped empire – the Russian one, equally taking itself models from the tumultuous at the time development in the West. To these local conditions, the increasing interest of the western countries, like England and France, in the East Europe should have represented an incentive for change.

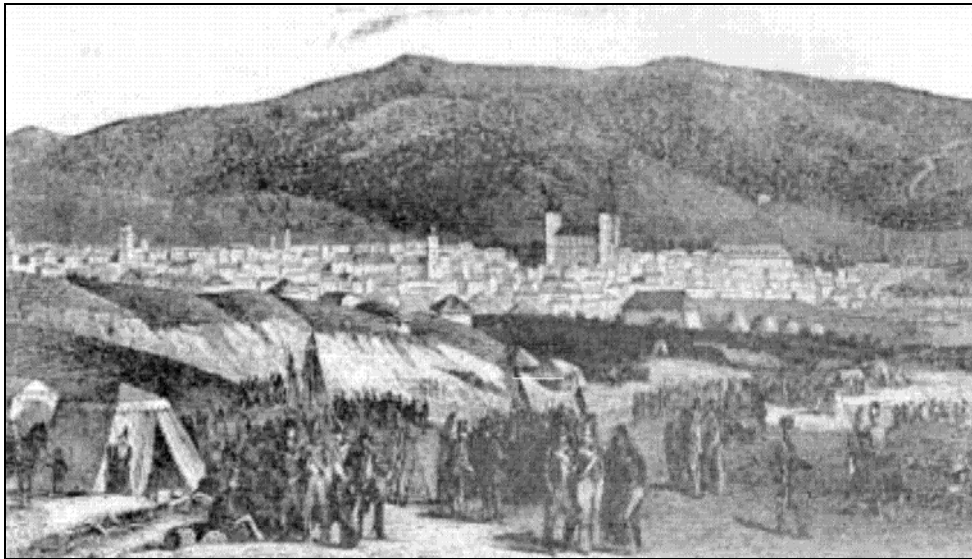


Fig. 1. – Yashi at 1932, during the military occupation by Russian troops. From the volume by N.A. Bogdan, originally an engraving published in the French journal *L'Illustration*.

But a mesh of conflicting interests between Ottoman, Austrian and Russian Empires, at the end of the 18<sup>th</sup> century and at the beginning of the 19<sup>th</sup> century, ultimately – and involuntarily – made possible an unexpected development of the principalities of Moldavia and Walachia, while cutting away parts of Moldova. Indeed, the strange and intricate Treaty of Küçük Kaynarca (1774), between Ottomans and Russia, gave to the latter some unclear rights of protection over the orthodox population under Ottoman Rule, while giving the Caliph of Istanbul some rights to protect Muslims in Russia (especially in the recently lost Ottoman territories). That treaty also provided for some liberty of commerce to all orthodox under Ottoman rule and gave an impetus to the commerce in the region. It may look as an irony of the history, but, while loosing huge territories (more than half

of the previously controlled surface) to both Habsburgs and Russians, the Moldavian Principality may have profited the wars fought by others on its territory, by developing its economy and the infrastructure needed by those wars. Armies need clothes, food, communication roads, and spend much money where they settle for some time (occupation periods: 1769–1774 – Russian; 1787–1791 – Austrian; 1788–1791, 1806–1812 and 1828–1834 – Russian). Moreover, it is conceivable that the fighting empires may have wished to attract the benevolence of the local population – it is known that the Ottoman grip was much milder during the discussed period, allowing Moldavians more liberties, including economic and commercial liberties, than in previous epochs.



Fig. 2. – Market in Yashi at 1845. From the volume by N.A. Bogdan, originally a lithography published by P. Muller in Yashi; drawing by I. Ray.

Notice that important economic changes must have occurred at the beginning of the 19<sup>th</sup> century in Moldova, due to a rapid development of the city and of the issued legislation, as described by N.A. Bogdan [5]. A new legislation was given in 1814 regarding the measurement system – a type of legislation that is, during the whole history of humanity, intimately related to economical and commercial developments; streets were improved by covering them with wood; nearby rivers and lakes were regulated and cleaned; several water collection points were opened, and water utilities established throughout the city. In 1815 a census was ordered – another measure that demonstrates modern trends, moreover an action associated

with a vivid economic development. New regulations for building were introduced – another measure showing that a fast development of the city was underway. Starting from 1815, only brick and stone buildings are allowed in Yashi. Specific regulations for depositories and stores were also given, allowing them to be built at the outskirts (“mahalale”) only, showing again a vivid commercial development, with a high increase in the volume of commercialized goods, and a crowded town. Areas in the city were nationalized in order to make room to new streets. That shows an effort of systematization and planning of the city – also a clear sign of fast economic and urban development. Fire and sanitary regulations were given in 1814 and respectively 1815, with orders to build hospitals and lazarettos. In 1803, an institution for caring the orphans was created, and enlarged at 1817. In 1837, the postal service was illustrated by Raffet (Bogdan, [5], p. 364) as an efficient, fast one. The upper society *salons* were perfectly similar to the ones in the Western capitals – see Fig. 3). Comparing the people in the street (Fig. 2) with those at the ruling prince court (Fig. 3), we derive the conclusion that the society was culturally fractured, with the upper levels living according to the western style, while the middle and lower levels still living according to the older oriental style (Fig. 2 and Fig. 3 are both depicting the Moldavian society around 1830–1840).

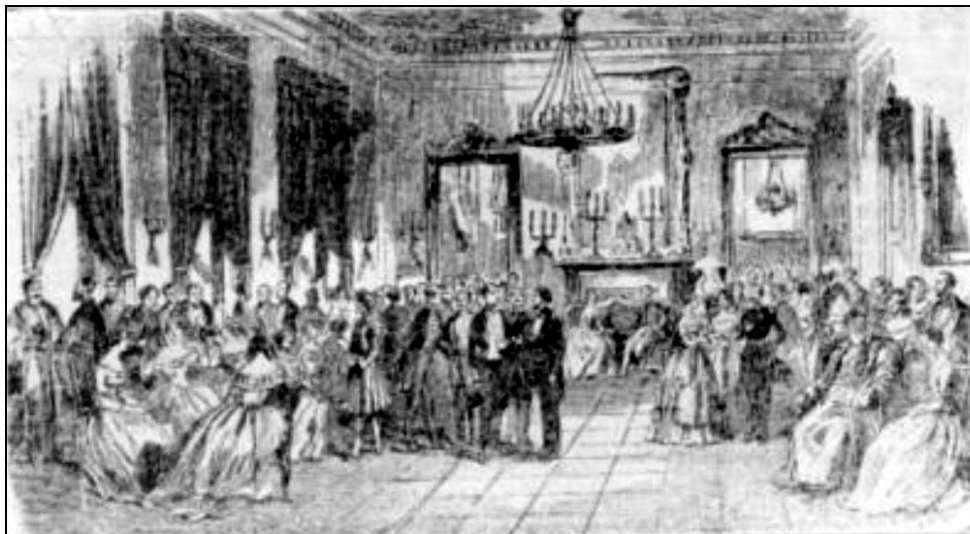


Fig. 3. – An audience day at the court of the ruling prince of Moldavia, around 1840, in Yashi.  
From the volume by N.A. Bogdan.

The dynamics of the city development is well reflected by elements like the change of the city stamp. Under “steady state” or slowly progressing institutions, a degree of stability is present in the symbolic. In contrast, during less than

50 years, from 1828 to 1862, we know at least four different official seals of Yashi (see Figure 4). This detail says much on the dynamics of Yashi organization and development at that epoch.

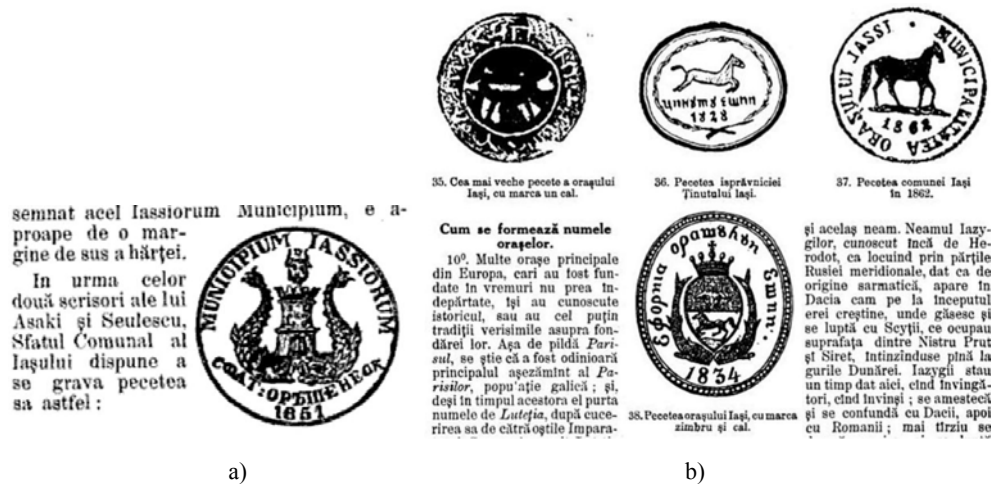


Fig. 4a) – The official stamp of Yashi at 1851, designed by Asachi and Saulescu. Notice that two alphabets are used in the stamp. From the volume by N.A. Bogdan. b) Several official stamps of Yashi during the late 18<sup>th</sup> and during the 19<sup>th</sup> centuries. The first stamp is written in Turkish, the second in Cyrillic (the ones at 1828 and 1834). From the volume by N.A. Bogdan.

From the above brief analysis, the rational conclusion is that Yashi was at the beginning of the 19<sup>th</sup> century a thriving, increasingly prosperous city, full of contrasts, while fighting to modernize, with a development stopped from time to time by adverse international conditions (second Russo-Turkish War during 1787–1792, the Greek Filiki Eteria lead by Alexander Ypsilantis at 1821, who mainly fought on the Moldavian soil, possibly some harsher conditions during the Russian occupations), but essentially with an economy and an organization rapidly gaining momentum.

Arguably, all these reforms would not have been prompted – and could not have been done without a significant level of economic and commercial development. While we do not have direct evidence through an economic census of the manufacturing facilities, farms, and commercial units, there are many pictorial and written evidences demonstrating a vivid economic activity, prompting fast social, yet probably unbalanced development.

These are the conditions that have created the need for an education that could help the economic development, as the school of Asachi was. It may be significant that one of the important peace treaties of the epoch, the so called “Treaty of Jassy”, between the Russian and Ottoman Empires, ending the Second Russo-Turkish War of 1787–1792, was signed at Yashi (written Jassy).

#### 4. THE LOCAL ACADEMIC TRADITION

Some readers less familiar with the epoch may be puzzled thinking that Asachi's school was born on an educationally virgin land. But that is totally untrue. Indeed, at the end of the 19<sup>th</sup> century, Yashi was, along with Bucharest (it seems, according to the literature, slightly more than Bucharest) one of the reputed academic centers in Eastern Europe. In Yashi, an excellent "Greek Academy" (higher school institution, at the level of western universities of the time, with education mainly in Greek language) has been active for a long time already<sup>3</sup>. In fact, Asachi organized the "School of topographic and civil engineers" in the Romanian language as a counterweight to the mainly Greek language Academy. The end of Asachi's higher school was much due to the opposition of the Greek academy of Yashi. Yet, Asachi was allowed to teach in the Greek Academy of Yashi after his engineering school had been discontinued. The Greek Academy was banned in 1821 by the Ottomans; nevertheless, it was one of the most prosperous intellectual centers in Eastern Europe, totally comparable to, and active among modern universities of the time. A most interesting remark is made in this direction in [7],

"The three Thessalian graduates from Universities in North and Central Europe shifted to **more prosperous centres** of Neo-Hellenic education. Stefanous Dougas taught at ... the Academy of Jassy from 1813 to 1816. Dimitrios Govdelas taught at the Academy of Jassy from 1808 to 1811 and from 1816 to 1821. This is the reason why they were able to **contribute towards establishing a German-inspired educational environment in Jassy** during the second decade of the 19th century. That the two had gravitated to Jassy was probably rather more a coincidence than the result of any intentional strategy." (our underlining) [7].

Numerous scientists have served at the universities of Yashi and Bucharest:

"Philippidis studied in Vienna and Paris and taught mathematics at the Academy of Jassy, at around 1801. He used the textbooks of A.R. Mauduit (1731–1815). Konstantas studied in Halle, Padova and Vienna. He taught mathematics in Bucharest (1782–1787) .... It is a known fact that he used French textbooks." [7].

As the quoted authors stress,

"At the same time, [around 1800] progressive attempts were also made at the Patriarchic School in Constantinople (Istanbul in Turkish) and at the **Academies of Bucharest and Jassy**". [7]

Other professors at the Yashi Academy were tributary to the French universities and used mathematical textbooks taught in French and Italian universities of the time:

<sup>3</sup> The Greek Academy was established in 1707. It has been ceased at the order of the Ottoman Empire, after the Greek Eteria national movement. A new Academy, the Michaelian one (Academia Mihăileană), was established in 1835, with education in Romanian, but employing some of the former professors in the Greek Academy of Yashi – including Asachi.



“The translation of Lacaille’s Arithmetic and Algebra was published in Venice in 1797, and the two translations of the Conic Sections were printed in Vienna in 1803. These volumes had not been chosen by happenstance, as they were of Western European origin and had already gained a foothold in Greece from 1776–77, Iosipos Moisiodax (1730–1800) had indeed drawn on Lacaille’s book<sup>4</sup> for his teaching of mathematics at the Greek Academy of Jassy in Moldavia. He had studied in Padova, continuing these studies in Vienna, just like Asanis. The fact that these two scholars had a similar educational background, and equally preferred Lacaille’s book, is certainly due to the status Lacaille’s work enjoyed in the scientific culture of Italy and Austria during the second half of the 18th century. It is noteworthy that Lacaille’s books were hugely popular in Italy, and had spread to Austria as well.” [...] [7]

Some modern readers might think that the Greek Academy in Yashi is not and should not be related to the local culture, but they are mistaken by the nowadays meaning of the word “Greek”. In fact, as Roudometof emphasizes, “Both the peasantry and the literate and urban Greek-Orthodox groups were “Greek” in the sense of being Orthodox. Millenarianism and Orthodox universalism were both common among the Ottoman Orthodox Christians.” [8]. There is no doubt that local scholars emerged from Walachia and Moldova, as there is no doubt that most students were from these principalities, moreover that these principalities were at the time more prone to the progress needed to maintain such higher schools – the only ones in the Balkan area of the time, except that of Constantinople.

In fact, Yashi was not the only center of culture of Moldova at that time; other cities are known to have had very good schools. In his paper, Gaina [10] says:

“Amfilohie Hotiniul, episcop of Hotin, was one of the teachers of mathematics, geography, astronomy and physics in Moldova. ... He was epithrop of a school in Hotin where he taught theology and natural sciences. In 1772–1775 he traveled to Italy where he bought books for his school, which he translated into Romanian and adapted for the conditions of the country. In 1795 he published “De obște gheografie” (“General Geography”) by Clod Buffie and “Elemente aritmetice arătate firești” (“The elements of arithmetics”) in Iași. Subsequently, in 1796, he wrote “Gramatica de la învățătura fizicii” (“The Grammar of Physics”) (Hotiniul, 1990) which was conserved at the Vernadsky Library in Kiev and at the Library of the Romanian Academy in Bucharest. ... [The book] has 4 chapters, including one dedicated to physics, the second to astronomy, the third to atmospheric physics and the final to geology. The first part deals with the Newtonian Mechanics, optics and acoustics. The second part includes cosmology, heliography, selenography, planetography, comets and stars. ... Amfilohie died approximately in 1800 ... near Iași.”

<sup>4</sup> La Caille, (or LaCaille, Lacaille), Abbé de (1713–1762), academician, mathematician, astronomer and explorer, he wrote several books in mathematics, among them *Calcul des différences dans la trigonométrie sphérique*. 1741, *Éléments d’Algèbre et de Géométrie*, *Traité de navigation*, par Bouguer et La Caille, *Leçons de Mathématiques*, 1741 ..... The Moon crater La Caille and the asteroid (9135) LaCaille are named in his honor. In this respect, the Al. I. Cuza University of Iasi and Gheorghe Asachi Technical University of Iasi have LaCaille among their potentially spiritual patrons.

With such academic traditions, it would have been surprising that studies in Romanian did not appear in Yashi. Under these circumstances, Asachi's higher engineering school can be understood as a natural development; moreover, the re-establishment of higher education in Yashi, in 1835, as the newly, all-Romanian language university named Michelian Academy, appeared to be fully natural continuations. In contrast, what appears astonishing is the modern negation of an intellectual tradition that Yashi (and Bucharest) gave up, by assertions of their historians that the first modern universities were established here at the middle of the 19<sup>th</sup> century. In fact, as far as *intellectual traditions* are considered, even technical education in Yashi should claim its origins at the end of the 18<sup>th</sup> century, through the science and applied mathematics courses taught by the above mentioned professors. After all, the *Traité de navigation* of Bouguer and LaCaille, and the book *Calcul des différences dans la trigonométrie sphérique*, by LaCaille, taught partly in Yashi, were largely intended for the use of engineers.

It is a pity that serious studies are not supported for the searching of established collections where documents on the Yashi (Jassy) and Bucharest Academies are maintained. We are aware, among others, of the Princeton University's Greek Collection where, definitely, documents on the Jassy Academy are preserved. In the paper [9] "The Modern Greek Collections at Princeton University", by Rebecka Lindau, the name of Jassy is mentioned along with other famous centers of the epoch: "..., Odessa, Moscow, and Jassy. The Graphic Arts Division houses..."<sup>5</sup> Also, Patiniotis [11] emphasizes: "Generally speaking, the works we examine in this study were printed in various European cities: Venice, Vienna, Bucharest, Bologna, Jassy, Jena, Constantinople, Leipzig, Paris, Moscow, Trieste, Halle etc. However, the large majority of Greek scientific textbooks published during the eighteenth century (actually 84% of them) were printed in just four cities: Venice, Vienna, Leipzig and Moscow." Notice that both Bucharest and Yashi are named among the centers diffusing knowledge – in Greek – all over the Europe of the time.

Yashi should be proud of its tradition of more than 300 years of higher education, this being an undeniable fact. Surprisingly, in 2007, no credit and recognition to the earlier higher education was given, and no festivity celebrated the first 300 years of academic development in Yashi, in 2007.

Turning back to Asachi's initiative, we must stress that the school of Asachi might have had, beyond the very Greek Academy of Yashi, the Italian model of technical higher schools, rather than the French Polytechnique<sup>6</sup>. In fact, the first

<sup>5</sup> The abstract of that paper mentions: "Princeton University has one of the most extensive collections of materials on Hellenic Studies in the world. It is particularly strong in modern Greek studies which serves the university's Program in Hellenic Studies. Library holdings in the field have been expanded over the years and now encompass many different formats and disciplines.)"

<sup>6</sup> Most technical higher education institutions in Italy focused on civil engineering and navigation topics, while the French École Polytechnic was aimed by its founder, Napoleon, toward military engineering.

engineering schools in the world were those in Italy; moreover Asachi lived and had some education in Italy, not in France. We must also note that the school created by Asachi was about the 20<sup>th</sup> of its type in Europe<sup>7</sup>. But it preceded schools in Vienna, Rome, Sweden, Denmark, Belgium, USA, or Greece<sup>8</sup>.

## 5. CONCLUSIONS

Far from having appeared out of nowhere, Asachi's engineering higher school, and ten years later, the Mihailean Academy, represent stages in a long process of academic developments, extant already for more than a century before Asachi. At the middle of the 18<sup>th</sup> century and until 1820, Yashi were one of the poles of the Enlightenment and of respected academic life in Eastern Europe. The greatest merits of Asachi, who was a multi-talented scholar and artist as well as an excellent organizer consist – in the domain we discuss – of having had the intuition of the need of purely engineering higher education and of having proposed that engineering education be taught in Romanian. The analysis of local economical and political conditions shows that the engineering higher school was needed by the Moldavian Principality and especially by the city of Yashi. While not lasting, the higher school of Asachi nevertheless represents, if not at the organizational and institutional level, the precursor of the Technical University of Iași. Not entitled to say that it inherits the former, the latter still can invoke the moral rights that may give a tradition of almost 200 years of technical education in Yashi.

As a side conclusion, the regrettable state of historical analysis of the higher education in Yashi, specifically of the technical higher education, requires due

<sup>7</sup> After Scuola di Artiglieria e Fortificazioni, Turin (1739), École des Ponts et Chaussées, Paris (1748), Bergakademie, Chemnitz (1763), Bergakademie, Freiburg (1765), Ecole Royale des Ingenieurs Constructeurs de Vaisseux, Paris (1765), Bergakademie, Berlin (1770), Scuola di Architettura, presso l'Accademia di Brera (1773), École du Génie Militaire, Mézières (1775), Polytechnic, Budapest (1782), Ecole des Mines, Paris (1783), École Polytechnique, Paris (1784), Gabinete de Maquinas, Madrid (1792), Conservatoire des Arts et Métiers, Paris (1794), Bauakademie, Berlin (1799), Technische Hochschule, Charlottenburg (1799), Escuela de Caminos y Canales, Madrid (1802), Escuela Técnica Superior, Madrid (1802), Böhmischer Technischer Institut, Prague (1806), Scuola di Ingegneria, Naples (1811), Technische Hochschule, Graz (1811) [6].

<sup>8</sup> (Technische Hochschule, Wien, 1815), in Rome (Scuola di Ingegneria, Rome, 1817), in Sweden (Högre Artilleriläroverket och Artilleri och Ing. Högskolan, Marieberg, Sweden, 1818; Tekniska Högskolan, Stockholm, 1827), in Karlsruhe (Technische Hochschule, Karlsruhe, 1825), in Munich (Technische Hochschule, Munich, 1827), in Dresden (Technische Hochschule, Dresden, 1828), in Göteborg (Chalmers Institute, Göteborg, 1829), in Denmark (Polytechnic, Copenhagen, 1829), in Russia (Polytechnic, Moscow, 1830), in Belgium (École des Ponts et Chaussées, Ghent, 1831; École des Mines, Liege, 1831, École Royale Militaire, Bruxelles, 1831), and in Greece (Polytechnic, Athens, 1836). In USA, the oldest technical university is Rensselaer Polytechnic Institute (RPI), founded in 1824 ("Rensselaer is the nation's oldest technological university" – see web page <http://www.rpi.edu/about/history.html>).

attention and efforts not only from the involved institutions and local authorities, but at the Romanian national level too. The Romanian Academy could extend its support to this important cultural task.

**Notes.** The views expressed herein are tentative and partly speculative. The reader is urged to notice that this paper reflects the author's personal views, not those of the institutions to which the author is affiliated. By no means is this a point of view of the leadership of the Technical University "Gheorghe Asachi" of Iași.

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