

Ukrainian university in spirit and a European university in model. Retrospective and prospective approach of 'fifth freedom' adoption in the European Union

La universidad ucraniana como espíritu y la universidad europea como modelo. Una aproximación retrospectiva y prospectiva a la adopción de la "quinta libertad" en la Unión Europea

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Abstract: In this article, I evaluate that the values and traditions of higher education in Ukraine, inherited for centuries, remain competitive and thrive (by investing in quality education and training, knowledge management, knowledge sharing, network building, and synergy in education). Besides the conventional scholarly research methods (synthesis, analysis, analogy, generalization), other research methods were used in this article, notably data analysis, historical, statistical, and comparative, to assess the trajectory of universities in Lviv development notwithstanding geopolitical influence and infringement of human rights (right to education, to work) based on discrimination on gender, or

Resumen: En este artículo, evalúo que los valores y las tradiciones de la educación superior en Ucrania, heredados durante siglos, siguen siendo competitivos y prosperan (al invertir en educación y capacitación de calidad, gestión del conocimiento, intercambio de conocimientos, creación de redes y sinergia en la educación). Además de los métodos convencionales de investigación académica (síntesis, análisis, analogía y generalización), se emplearon otros métodos, en particular el análisis de datos, el análisis histórico, el estadístico y el comparativo, para evaluar la trayectoria de las universidades en el desarrollo de Lviv, a pesar de la influencia geopolítica y la vulneración de los derechos humanos (de-

ethnic, religious and linguistic background. After an introduction, fixing retrospectively and prospectively the 'fifth freedom' – the free movement of research, innovation, knowledge, and education, the article is divided into two parts dedicated to the development of Lviv University (1661) and Lviv Polytechnic (1844), since their foundation in the early modern period finishing in the top-10 Ukrainian universities in the 21st century.

Keywords: freedom of movement and establishment, university, women's higher education, knowledge management, European Union, Lviv, Ukraine.

recho a la educación y al trabajo) por discriminación de género, origen étnico, religioso y lingüístico. Tras una introducción que define retrospectivamente y prospectivamente la «quinta libertad» —la libre circulación de la investigación, la innovación, el conocimiento y la educación—, el artículo se divide en dos partes dedicadas al desarrollo de la Universidad de Lviv (1661) y el Politécnico de Lviv (1844), desde su fundación a principios de la Edad Moderna, situándose entre las 10 mejores universidades ucranianas del siglo XXI

Palabras clave: libertad de movimiento y de establecimiento, universidad, educación superior de las mujeres, gestión del conocimiento, Unión Europea, Lviv, Ucrania.

Introduction

Recently, Enrico Letta, the former Prime Minister of Italy (2013-2014), a former member of the Italian Chamber of Deputies (2021-2024), and President of Jacques Delors Institute (since 2016), spoke with Horizon Magazine regarding his strategic report "Much more than a Market"¹. He presented this report to the European Council on April 18, 2024, the necessity to adapt the EU Single Market to contemporary challenges worldwide, and the benefits of investing in research, innovation, and education to maintain and develop Europe's competitiveness on that market. The original and fundamental 'four freedoms' concept had been legally guaranteed as a cornerstone of the European Single Market since 1986 and finalized in the TFEU (Articles 20-24, 45-66)² and enable EU citizens to travel, reside freely, receive diplomatic protection, vote, and stand as candidates at elections, petition to the European Union institutions, choose places to work, study, retire, trade, and do business wherever they wish (but within the EU). And now, they should be amended by adding the 'fifth freedom' – the free movement of research, innovation, knowledge, and education. To further boost transnational learning (researching and teaching) mobility, filling skills and labour market gaps, and leveraging all its opportunities is essential, fostering collaboration between (non)academic institutions.

¹ Enrico Letta, *Much more than a market – Speed, Security, Solidarity. Empowering the Single Market to deliver a sustainable future and prosperity for all EU Citizens*. Report presented to the European Council on April 18, 2024. Delors Institute. 2024. 147 p.

² Consolidated Version of the Treaty on the Functioning of the European Union (<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12012E/TXT:en:PDF>)

The implementation of 'fifth' freedom is not a very new idea since it was present in Europe for centuries, since both trade and (higher) education, and therefore migration, were activated, transforming the internal economic and social landscapes of many European countries, enhancing cross-border (transnational) mobility of researchers and innovators, and prioritizing development opportunities within the European Union and beyond to provide a globally connected, highly-skilled scientific community and academic network, fostering a sense of European identity and solidarity.

To start with, let's get a brief and sharp look at the history of the creation of universities in Europe. The first universities appeared in the XII - XIII centuries in Western Europe. The earliest university was founded in Bologna, Italy (1088). Following the successful example of Bologna, other European universities were established - in England (Oxford University, 1163), in France (Paris, Sorbonne, 1170, 1259), in Spain (Seville, 1254), and so on. *Alma mater*, notion came down to us from the Middle Ages when graduates called so their educational institution. After all, the university guaranteed its students the proper rights and protection of their interests before the authorities, creating conditions for living and studying. The Renaissance was marked by many newly founded higher schools, particularly in the Slavic nations. The oldest are the universities in Prague (1348) and Kraków (1364), Vienna (1365). Subsequently, there were universities established in Germany: Heidelberg (1386), Cologne (1388), Leipzig (1409), and Wittenburg (1502), Strasbourg (1567). A few years later, centers of science and education appeared in Austria and Poland: Graz (1586), Lviv (1661), and Innsbruck (1672). Above 50 new universities were founded in Western and Central Europe later during the XIII and XVIII centuries³.

Religion and ethnic background often influenced the foundation of higher educational institutions (ranked as universities) and their activity on Ukrainian soil during the XVI - XXI centuries following the religion (i.e., Zıncırlı medrese in Bağçasaray in Crimea in 1500 for Muslims⁴, Kyiv-Mohyla Academy⁵ in 1632 in Kyiv for Orthodox⁶, etc.). We focus predominantly on

³ *A History of the University in Europe*. Cambridge University, General Editor Walter Rüegg, Vol. I, Universities in the Middle Ages, Edited by H. DeRidder-Symoens, Cambridge University Press 1992. pp. 62-64.

⁴ Gulnara Abdulayeva. *Istoriya Krymu. Korotka opovid'welykoho szljakhu*. (Vikhola, 2024)

⁵ Yaryna Moroz Sarno, "The Kyiv-Mohyla Academy: Historical notes of the European education in Ukraine", *Annali di storia delle università italiane*, 27, n. 2 (2023): 3-16, <https://doi.org/10.17396/109385>

⁶ The Kyiv-Mohyla Academy was founded in September 1632 following the merger of the

Lviv University (modern Ivan Franko National University)⁷ and Lviv Polytechnic (modern Lviv Polytechnic National University)⁸, founded in 1661 and 1844, respectively, and have been active since that (but briefly terminated in 1939 and from 1942 to 1944 following the Soviet and nazi German occupations of Lviv). Other widespread and long-lasting universities and polytechnics of modern Ukraine were found later (Kharkiv, 1805 and 1885; Kyiv, 1834 and 1896; Odesa, 1865 and 1918; Chernivtsi, 1875, etc.)⁹.

We aim to distinguish both universities in Lviv (known as *Lwów* in Polish, *Lemberg* in German, *Leopoli* in Italian, *Leópolis* in Spanish), which scored highly in QS World University Rankings 2026 (Lviv Polytechnic is ranked 4th among eleven Ukrainian universities and 1001-1200 among 1500 universities from 105 countries worldwide; Lviv University is in 8th place and 1201-1400 respectively)¹⁰. According to the available and accessible statistical information, already in 2024, 33 702 students (bachelor, master, and Ph.D.) are studying at Lviv Polytechnic¹¹ and 25 671 at Lviv University. Furthermore, Lviv University currently has 19 classical mono-specialty faculties (i.e., applied mathematics and informatics, foreign languages, physics, philology, philosophy, law)¹², while Lviv Polytechnic comprises 18 old-fashioned, but renamed, and newly established multi-specialty institutes (i.e., public administration, governance, and professional development; architecture and design; geodesy; computer science and information technologies; applied mathematics and fundamental sciences; law, psychology, and innovative education)¹³.

The irreversibility of Ukraine's course to join the EU was fixed at the constitutional level at the beginning of 2019 by amending the Preamble to the current Constitution of Ukraine (1996): *'The Verkhovna Rada of Ukraine, on be-*

Kyiv Fraternal School (1615) and the Lavra School and named after Metropolitan Petro Mohyla (1596-1647) of Kyiv. The educational system in the academy was organized based on the Jesuit educational institutions' model (but Orthodox). In 1918, the academy was closed and reopened with freshly enrolled students only in 1992, after the restoration of Ukraine's independence.

⁷ For more information: <https://lnu.edu.ua/>

⁸ For more information: <https://lpnu.ua/>

⁹ Dorena Caroli, "History of higher education in Ukraine between Sovietization, linguistic discrimination and internationalization (1890-1972)". *CIAN-Revista de Historia de las Universidades*, 27, n. 2 (2024): 129-136. <https://doi.org/10.20318/cian.2024.909>

¹⁰ <https://www.topuniversities.com/world-university-rankings>

¹¹ Report of Yurii Bobalo, Acting Rector of Lviv Polytechnic, at the University Staff Conference on January 30, 2025 (<https://lpnu.ua/news/konferentsiia-trudovoho-kolektyvu-nationalnoho-universytetu-lvivska-politehnika>)

¹² For more information: <https://lnu.edu.ua/>

¹³ For more information: <https://lpnu.ua/>

*half of the Ukrainian people - citizens of Ukraine of all nationalities confirming the European identity of the Ukrainian people and the irreversibility of the European ... course of Ukraine ... adopts this Constitution —the Fundamental Law of Ukraine*¹⁴. Therefore, we (in Ukraine) should apply all the essential legal frameworks and relevant case law following the development of the concept of freedom of movement (and establishment) within the EU (following the decision by the European Council declared on December 14, 2023 to open accession negotiations with Ukraine and its possible opening in Autumn 2025¹⁵).

*Litteris et Artibus*¹⁶: from the origins of universities in Lviv to modernity

Lviv (Львів) was founded in 1253 as the capital of the pre-Ukrainian Kingdom of Galicia and Volhynia (1250-1340). Later, as *Lwów*, it was part of the Kingdom of Poland (1340-1569) and the Polish-Lithuanian Commonwealth (1569-1772). The First partition of Poland (1772) resulted in territory changes, and now *Lemberg* became capital of the Kingdom of Galicia and Lodomeria as a part of the Austrian (later Austro-Hungarian) Empire (1772-1918). After the First World War ended, the idea of Ukraine's reunion after centuries of partition appeared in 1918, but was not fulfilled in the Treaty of Saint-Germain-en-Laye (1919): *Lwów* was occupied again by Poles (1918-1939). During and after the Second World War, it was occupied by the Soviet Union (included in the Ukrainian SSR, 1939-1941) as *Lvov* (Львов), and by Nazi Germany (1941-1944) as *Lemberg*, and again by the Soviet Union (as part of the Ukrainian SSR, 1944-1991) as *Lvov* (Львов). Following those territorial changes, the linguistic, ethnic, and religious environment in the city changed and mixed for centuries, predominantly because of in- and out-of-city migration.

The oldest fraternity in Ukraine was the Stauropegic fraternity in Lviv, and its school was established in Lviv earlier in 1586, but it was more likely gymnasium level education. By the mid-XVII century, there was no higher education in Ukraine, so people (from now what is modern Ukraine) had to

¹⁴ Constitution of Ukraine (1996, rev. 2019) https://www.constituteproject.org/constitution/Ukraine_2019

¹⁵ Since June 2022, Ukraine has been granted the status of a candidate for accession to the EU.

¹⁶ This motto in Latin means "Letters [Sciences] and Arts". It is engraved on the pediment of the main building of Lviv Polytechnic, officially opened in 1877 and constructed specifically for this polytechnic by Julian Oktawian Zachariewicz-Lwigród, an architect born in Lviv of Armenian descent, who later (after building construction) served as Rector of Lviv Polytechnic two times: in 1877/1878 and 1881/1882.

receive higher education at Kraków and other existing European universities. Following the Treaty of Hadjach (1658) between Ukraine and the Polish-Lithuanian Commonwealth, two universities (with the same rights that Jagiellonian University in Kraków had) were to be founded next on Ukrainian lands: one in Kyiv and the other in any appropriate place. On January 20, 1661, Polish King Jan II Kazimierz signed a charter to grant the school, founded in 1608 and functioned by Lviv Jesuit Collegium, '*the honor of the Academy and the title of the University*'. The newly established institution received the right to teach all 'university' subjects and to confer degrees of bachelor, licentiate, master, and doctorate. Nevertheless, after signing the charter briefly, Jagiellonian University in Kraków and some influential officials strongly opposed its foundation. Despite the obstructions, the studies at Lviv University were conducted using the model of other European academies. Almost one century later, in 1758, Polish King Augustus III reconfirmed the founding charter issued previously by Polish King Jan II Kazimierz on January 20, 1661¹⁷.

However, from its foundation in 1661 till 1773, Lviv University was entirely under the control of the Jesuit Order of the Catholic Church, and it was wholly subordinated to Rome. Therefore, at its foundation, Lviv University comprised two departments (faculties): philosophical and theological. During the XVIII century, specific changes occurred in the university's educational process: for example, the department for mathematics was added (in 1744). Furthermore, after the dissolution of the Jesuit Order in 1773, Lviv University was closed. In 1772, after the First partition of Poland, Galicia became part of the Austrian Empire. Following the governmental charter of June 17, 1784, Lviv University consisted of four faculties: philosophical, law, medical, and theological (until 1894).

Firstly, studies at Lviv University were conducted in German and Latin and lasted five years -philosophy (in Latin, Polish, and German and four years)- in law, medicine, or theology)¹⁸. Already in 1801, the department of chemistry was founded at Lviv University. Later, following scientific development, it became essential to differentiate classical university from polytechnic. Most students who studied at Lviv University paid for it (only for students of theological faculty it was free of charge). In addition, students paid for the ceremonial acceptance as students, for exams, colloquiums, seminar classes

¹⁷ Henryk Ditchen, *Geschichte der Universität Lemberg zwischen Absolutismus, Totalitarismus und Nationalfragen* (Stuttgarter Beiträge zur Wissenschafts- und Technikgeschichte, Band 12, Logos Berlin, 2018)

¹⁸ Ann Sirka, *The Nationality Question in Austrian Education: The Case of Ukrainian Galicia 1867-1914* (Frankfurt am Main, Bern and Cirencester: Peter D. Lang, 1980) 137-139.

(tutorials), and the right to use the library. There were also student scholarships and dormitories, but not enough places (rooms) reserved for students.

In 1867, when Galicia acquired autonomy, Lviv University became step by step Polonized: firstly, Polish became the university's internal administration language (1871) and primary language of instruction in learning and teaching (1879), which is why the vast majority of courses were taught in Polish, and the appointment of Ukrainians to docent positions and further academic careers was obstructed. Ukrainians constituted a minority of students (and graduates, respectively), while Poles and Jews remarkably prevailed until the Second World War ended: Galicia was incorporated into the USSR, and students and academicians from other regions of the Soviet Union (and different ethnicities and nationalities) migrated to study and resettled in Lviv. Finally, preparation for the matriculation examination, the exam itself, and university education itself were expensive and not affordable for everyone.

In the Austro-Hungarian Empire, women were abandoned to enjoy the right to education and to study at the university¹⁹. Still, they could sometimes attend free courses (without a degree or diploma). Notably, they searched for an option to get higher education abroad, i.e., in Zurich. For example, Sofia Okunewska-Moraczewska, born near Ternopil, graduated from Zurich University, where she studied medicine, received a doctorate in 1896, and became the first woman doctor in the Austro-Hungarian Empire²⁰. However, in Poland, she was not qualified to practice because of gender prejudices. Since 1903, she practiced in Lviv, and only after the First World War she was allowed to run her private medical practice in therapy and oncology.

Remarkably, based on a ministerial decree at Lviv University in 1897, women were allowed to be enrolled to study at the Faculty of Philosophy and later, in 1900 – at the Faculty of Medicine and the Department of Pharmacy²¹.

Basic entry requirements included citizenship (Austro-Hungarian Empire subjects), age (18 years old), and educational level (passed a matriculation examination in the state-owned gymnasium)²². However, still, they faced

¹⁹ Women's in-country higher education in the Russian Empire was also banned, it resulted in migration abroad (for example, to Zurich) to receive it. Remarkably, Maria Kovalyk, from Chernihiv (now capital of the North-Eastern region of Ukraine, back then part of the Russian Empire), successfully graduated in 1878 from ETH Zurich (Federal Institute of Technology Zurich).

²⁰ Yevheniia Khlanta, Valentyna Delenko. "Development of Women's Higher Education in Galicia (Late 19th – Early 20th Century)", *Visnyk of the Lviv University. Series Pedagogics*. No 40 (2024): 72-79. <http://dx.doi.org/10.30970/vpe.2024.40.12236>

²¹ Martha Bohachevsky-Chomiak. *Feminists Despite Themselves: Women in Ukrainian Community Life 1884-1939* (Edmonton: University of Alberta Press, 1988).

²² *Ibid.*

discrimination and inequality. Ethnically, women's engagement in university education at Lviv University corresponded to general conditions: predominantly girls of Polish and Jewish origin (only 50 ladies of Ukrainian origin graduated from 1897 to 1910)²³. There was severe discrimination regarding nationality, ethnicity, religion, and gender to study or to get (serve) a post, so we have not observed any Ukrainian woman being elected/appointed to lead a faculty²⁴ or serve as a Rector of any university in Lviv (recently, at the end of XX – begin of XXI centuries we had only a few Madams Vice-Rectors)²⁵. Both universities in Lviv recently faced, in March- April 2025, Rector elections, where among the candidates to obtain this post were listed prominent female academicians in computer science and pedagogy; finally, Prof.Dr.hab (computer science), Full Professor Nataliya Shakhovska has been appointed to lead Lviv Polytechnic for the next five years.

The first person ever to receive the title of *Doctor Honoris Causa* from Lviv Polytechnic (and, at the same time, unfortunately, the only woman till now) was Maria Salomea Skłodowska-Curie, the first woman to win a Nobel Prize, the first person to win a Nobel Prize twice, and the only person to win a Nobel Prize²⁶ in two scientific fields (Physics, 1903; Chemistry, 1911). She gave an inaugural lecture in the chemistry building in 1912. Since the Soviet occupation in 1939, this tradition at Lviv Polytechnic was interrupted and resumed only in 1995 (at Lviv University, it was introduced much later, in 1997)²⁷.

The successively established polytechnics across Europe (Paris, 1794; Glasgow, 1796; Prague, 1806; Vienna, 1815; Karlsruhe, 1825; Warsaw, 1826; Dresden, 1828; Stuttgart, 1829; Krakow, 1834; Madrid, 1842; Zurich, 1855; Budapest, 1856; Munich, 1868; Berlin, 1879; Wrocław, 1910) adopted the concept of multi-directional studies based on mathematical and natural sciences, but only with time they moved away from a general technical program with narrower specializations to a university-style reform forming separate faculties, where the foundation in precise sciences was adapted to the specificity of particular faculties and provided from the beginning within

²³ *Ibid.*

²⁴ However, much later after Second World War and Sovietization, Dr. Tetyana Bujnytska, Germanist, served as Dean of the Faculty of Foreign Languages (1968-1980) in Lviv University

²⁵ Jadwiga Suchmiel. *Działalność naukowa kobiet w uniwersytecie we Lwowie do roku 1939*. Częstochowa: Wydawnictwo Wyższej Szkoły Pedagogicznej w Częstochowie, 2000. ss. 369, S. 68.

²⁶ Jean-Marie Lehn, a French scientist, is the second person who, in co-authorship, received the Nobel Prize in Chemistry (1987) and was later awarded the title of *Doctor Honoris Causa* from Lviv Polytechnic (2012)

²⁷ Roman Kuzmyn, Yulia Kurdyna. *Doctores honoris causa Lwiws'koi Politekhniky: do 200-littja Lwiws'koi Politekhniky*. (Lviv: Vyd-vo Lwiws'koi Politekhniky, 2016) 63-66.

them. Regarding Lviv Polytechnic, it is believed that its origin dates back to 1844 when the Austrian government formed the Technical Academy with six departments (mathematics, physics, mechanics or engineering, construction or architecture²⁸, chemistry, and practical geometry or geodesy) in Lviv. More than three thousand people of different ethnic and religious backgrounds studied at the Lviv Polytechnic in seven years (1851).

However, Lviv Polytechnic was not established as a newly created institution for higher education since this reestablishment and structural reorganization was based on the existing Real-Trade Academy, founded earlier by the decree of the Austrian Emperor Franz I under No. 78, which was issued in Milan on March 7, 1816²⁹. The origins of its foundation are rooted even earlier, on September 4, 1810, based on an extraordinary royal committee report, which corresponds to the popularity of technical higher educational institutions established in Europe at the beginning of the XVIII century. Its opening in 1816 aimed to meet the educational needs of the local people in Kingdom of Galicia and Lodomeria of Austrian Empire. The educational process was based on existing German educational programs adapted to specific local requirements³⁰. During the following years, it was reorganized a few times (in 1825 and 1835), and finally, in 1844, the polytechnic was established. In 1877, following the educational reform in the Austrian and Hungarian monarchy, it received the status of a higher educational institution. Lviv Polytechnic influenced the foundation of a few other polytechnics in Poland and technical higher educational institutions in Ukraine (seriously collaborated with them).

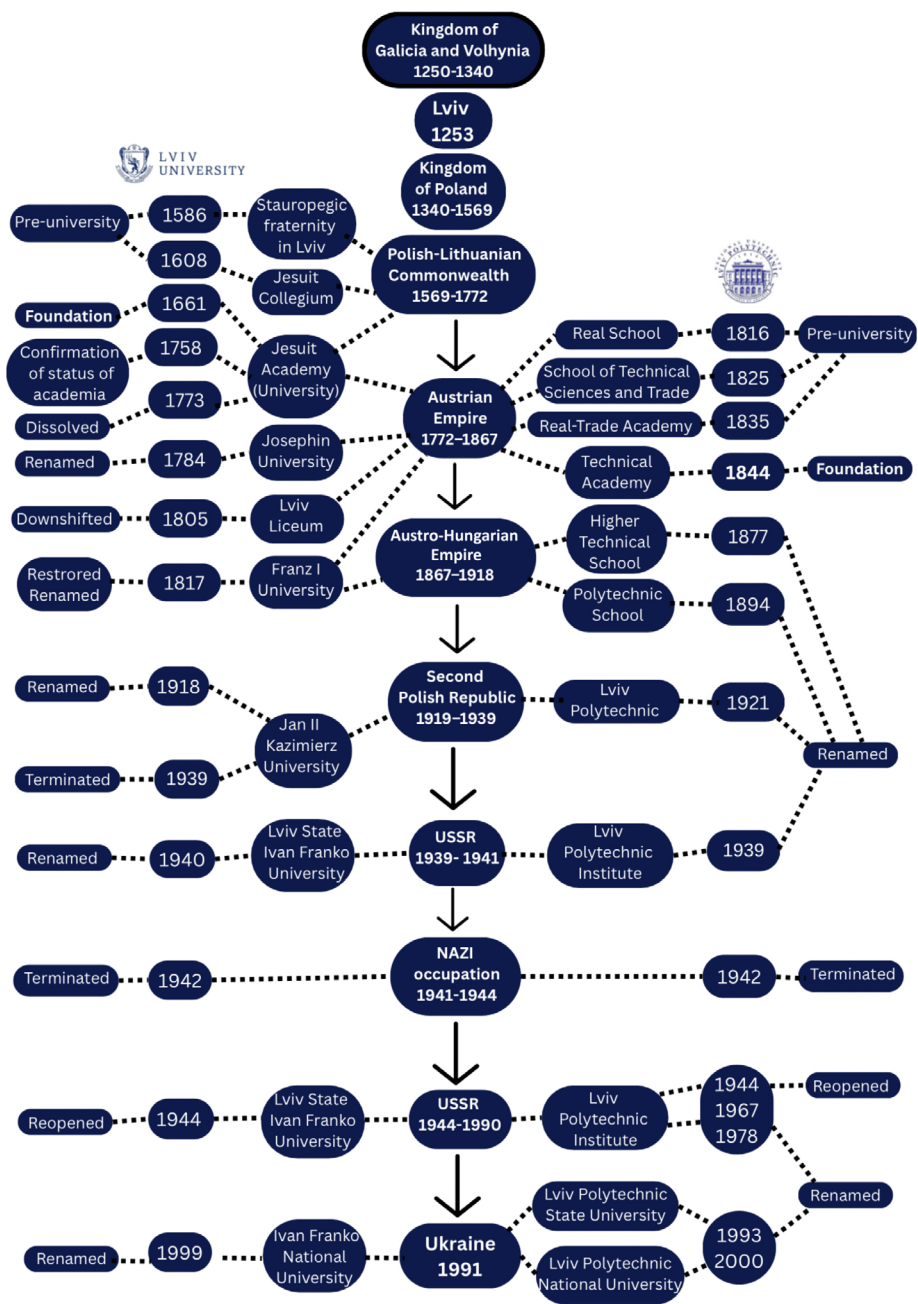
The distinct situation regarding knowledge management in both universities in Lviv resulted from state and regional politics in the Austro-Hungarian Empire (later, after 1918, in Poland). After the Ukrainian-Polish War in Galicia (1918-1919) and the Polish gradual occupation of eastern Galicia, Polish authorities abolished Ukrainian chairs and docent positions at Lviv University: following the order of September 14, 1919, only those persons who had served in the Polish army and were Polish citizens were eligible for admission i.e. to Lviv University. Therefore, during Second World War, following a few waves of Soviet and nazi German occupation of Lviv, do-

²⁸ Even so, the architectural specialty in Lviv is the oldest one in Ukraine and was opened in 1730 at Lviv University.

²⁹ *Politechnika Lwowska : jej stan obecny i potrzeby* (Wydano staraniem Grona Profesorów, Lwów: 1932)

³⁰ Henryk Ditchen, *Die Politechnika Lwowska in Lemberg: Geschichte einer Technischen Hochschule im multinationalen Umfeld* (Stuttgarter Beiträge zur Wissenschafts- und Technikgeschichte, Band 7, Logos Berlin, 2015)

Table 1 Timeline of both universities in Lviv since 1586 till now.



zens of members of academia, primarily of Polish and Jewish descent, were arrested, expelled from the universities, murdered (i.e., in ‘*massacre of Lviv professors*’ in 1941), or deported after 1945.

Lviv University was closed after the nazi German occupation in 1941 and reopened only in October 1944 with nine faculties following re- occupation by the Soviet army (which lasted till 1991). Lviv University’s faculties, curricula, and programs changed following the Soviet model. It was severely re-structuralized: the theological faculty was liquidated (evident for the secular and communist Soviet Union), the medical faculty was separated, and a medical institute was created as a separate (newly established) educational entity; five faculties existed at Lviv University: history, law, philology, physics³¹ and mathematics, and natural sciences. After the Second World War, most new members of academia came from other regions of Ukraine and other newly established Soviet republics; therefore, an entire life of academia became Russified, and Russian became the language of instruction and administration³².

Such an artificial linguistic situation lasted till 1990 when both universities received democratically elected new pro-Ukrainian Rectors (fellow physicists): Lviv University in late 1990 (even so, Ivan Vakarchuk was born in Moldova but of Ukrainian origin) and Lviv Polytechnic in 1991 (Yurii Rudavsky was born in Lviv). Afterward, mass Russification in academia in Lviv decreased (following the restoration of independence in August 1991 and adoption of the Constitution of Ukraine in June 1996) and, in a decade, completely vanished from universities. Since September 11, 2000, due to presidential order № 1059/2000, it has been finally re-named Lviv Polytechnic National University.

*Patriae decori civibus educandis:*³³ *an applied and challenged gift from Lviv for humanity*

In the light of fifth freedom application, both universities in Lviv have advanced traditions of forming an effective academic ecosystem, sharing research,

³¹ Andriy Rovenchak, Olena Kiktyeva. “Physics at the University of Lviv since the 17th century until the second world war: Addenda to the bibliography”, *Studia Historiae Scientiarum*, 15 (2016): 47-73. <https://doi.org/10.4467/23921749SHS.16.004.6147>

³² Ivan Lazarenko, 300 lit *Lvivs'koho universytetu* (Lviv, 1961)

³³ This motto in Latin means “Educated citizens decorate the Fatherland” and is engraved on the pediment of the main building of Lviv University, constructed for the Galician Regional Parliament (*Sejm Krajowy Królestwa Galicji i Lodomerii wraz z Wielkim Księstwem Krakowskim*) by architect Juliusz Karol Hochberger in 1877-1881. In late 1918, the Galician Regional Parliament was terminated, and its building was gifted to Lviv University in 1923.

and internationalizing the educational process while teaching foreign languages³⁴, studying abroad, and returning to alma mater to use gained skills, and managing knowledge there. This might lead to a richer understanding of how members of academia of both universities in Lviv reflected on developing science (law, mathematics, architecture, engineering, mechanics, medicine, etc.) worldwide and the impact and contributions made by their graduates throughout the 20th century. They contributed highly to developing the chosen field of science (law, mathematics, geodesy, or engineering), notwithstanding their ethnical and religious background, nor (geo)political challenges and territorial changes in the 20th century (First World War (i.e., first Russian occupation in 1914-1915)³⁵, Second World War and ethnical cleansings, and mass deportation, even death).

Lviv was and remains famous for its law, mathematics, and architecture schools. Therefore, many young people desired to enroll in Lviv University and Lviv Polytechnic (however, keeping in mind quotas). At the same time, some prominent representatives (and academicians) in law, medicine, mathematics, architecture, and engineering from different regions of Europe searched for a workplace there, enjoying the previous matrix of freedom of movement of people (and research, innovation, knowledge, and education) and cross-border education in Europe.

The inflaming of the Second World War to the East threw Lviv academicians into cruel times and inhuman conditions because several occupations 'proposed' (eventually forced to seek) different modes of survival when the worst outcome would be death (notwithstanding in concentration camps or alike the '*massacre of Lviv professors*'). Some Lviv academicians survived Second World War and continued working but fled Ukraine, migrated to Western Europe and the USA, or were deported from Lviv to Poland (Lviv was occupied by the Soviet Union in September 1939, by nazi Germans on June 30, 1941).

³⁴ For example, the French Philology Department (where you can also study Italian, Spanish, Portuguese, etc.) was founded in 1897 within the Faculty of Philology of Lviv University. However, the English Philology Department was established only after the Second World War. The foundation of the German Philology Department is rooted in 1784, and the Polish Philology Department in 1817 (should remember that German and Polish were languages of instruction in learning and teaching and administration replaced by Russian after the Second World War. Now, all those languages are foreign).

³⁵ Piotr Rataj. "Sprawozdanie Maksymiliana Thulliego z sytuacji w C.K. Szkole Politechnicznej (politechnice) we Lwowie w czasie rosyjskiej okupacji Lwowa w latach 1914-1915", *Kwartalnik Historii Nauki i Techniki*, Tom 68, Numer 2 (2023): 175-184 <https://doi.org/10.4467/0023589XKHNT.23.019.17881>

Group of them was killed by nazi German occupation forces in July 1941 (so-called '*massacre of Lviv professors*'). The principal motive for their detention and execution was related to their prior declaration of loyalty to the regime ruling in the USSR or active cooperation with Soviet powers (some even visited Moscow in 1940, others were enlisted for municipal elections previously, during the Soviet occupation). The participation of the *Nachtigall* Battalion in the '*massacre of Lviv professors*' is a Soviet fake, propaganda and disinformation³⁶. In the '*massacre of Lviv professors*' in July 1941, a special operative command of Nazi security services (Gestapo) imprisoned and killed dozens of prominent academicians and practitioners in law, literature, mathematics, mechanics, medicine, economics, and engineering³⁷. Some of them are enlisted in the table below.

Table 2. Graduates of both universities in Lviv, fated to be prominent out-of-country

Person	Place/date of birth	Education	Occupation/ Famous for	Lifetime
Oswald Marian Balzer	Khodoriv near Lviv, 1858-1933	Lawyer, studied at Lviv University and Jagellonian University; received habilitation at Lviv University (1885)	Served as Rector of Lviv University 1895/1896; represented Galicia in <i>Morskie Oko</i> boundary dispute (1902)	
Antoni Wereszczyński	Rohatyn near Lviv, 1878-1948	Lawyer, graduated from Lviv University, received there a doctorate (1901)	Served as last Rector of Lviv Polytechnic (1939) ¹ before the Soviet occupation of Lviv	After Second World War resided in Poland
Kasper Weigel	Lviv, 1880-1941	Surveyor, graduated from Lviv Polytechnic (1903), received there a doctorate (1909) and habilitation (1911)	Served as Rector of Lviv Polytechnic 1929/1930; Vice-Rector of Lviv Polytechnic 1930/1931	Arrested by Nazi German occupation forces on July 4, 1941, and murdered in the ' <i>massacre of Lviv professors</i> '

³⁶ Andrii Bolianovskiy. "Rozstrily pol's'kykh profesoriv u Lwovi w lypni 1941 roku: istoryczni fakty, jurydyczni zwynuwaczennja, polityczni insynuatsiji", *Ukraine Poland: Historical Heritage and Public Consciousness*. 3-4 (2010-2011): 107-146

³⁷ Andrii Bolianovskiy. *Ubywstwo pol's'kykh profesoriv u Lwovi u Lypni 1941 roku: fakty, mify, rozsliduwannja* (Lviv, Vyd-vo Lwiws'koji Politekhniky, 2011) 188

Person	Place/date of birth	Education	Occupation/ Famous for	Lifetime
Otto Nadolski	Sambir near Lviv, 1880-1941	Hydraulic engineer, graduated from Lviv Polytechnic (1909)	Served as president of city Lviv (1928-1930), Rector of Lviv Polytechnic (1926/1927, 1933/1936)	
Kazimierz Władysław Bartel ²	Lviv, 1882-1941	Engineer, graduated <i>summa cum laude</i> from Lviv Polytechnic (1907), earned his doctor of technical sciences (1909) and received habilitation there (1912)	Served as Poland's Minister of Railways 1919/1920, Religious Beliefs and Public Enlightenment 1926-1928, member of Polish sejm 1922-1930, 15 th , 17 th , and 19 th Prime Minister in 1926, 1928/1929, 1929/1930, Rector of Lviv Polytechnic 1930/1931, <i>Doctor Honoris Causa</i> at Lviv Polytechnic (1935), the Senator of Poland (1937-1939)	Persecuted and arrested by Nazi German occupation forces, was murdered on July 26, 1941, shortly after the 'massacre of Lviv professors' ended
Roman Longchamps de Bérier	Lviv, 1883-1941	Lawyer, graduated from Lviv University, received there a doctorate in civil law (1906) and habilitation (1916)	Served as Vice-Rector of Lviv University (1934/1935, 1937/1938); last Rector of Lviv University (1939) before the Soviet occupation of Lviv	Arrested by Nazi German occupation forces on July 4, 1941, and murdered in the 'massacre of Lviv professors'
Ludwik Ehrlich	Ternopil, 1889-1968	Lawyer, graduated from Lviv University, received there a doctorate (1912) and habilitation (1920); received from Oxford University <i>bachelor of letters</i> (1915)	Served <i>ad hoc</i> judge at the Permanent Court of International Justice in the Hague (1927-1928); worked as a Dean of Law Faculty at the Lviv University (1934-1937)	Arrested by Nazi German occupation forces in 1940, 1943; after Second World War resided in Poland
Stanisław Mieczysław Mazur	Lviv, 1905-1981	Mathematician, studied at the Lviv University, became a Doctor of Science (1935), received there habilitaion (1936)	Served as member of Polish sejm (1947-1952)	After Second World War forcibly relocated to Poland (1946)

Person	Place/date of birth	Education	Occupation/ Famous for	Lifetime
Stanisław Marcin Ulam	Lviv, 1909-1984	Mathematician, graduated from Lviv Polytechnic, received Master of Arts degree (1932), became a Doctor of Science (1933)	Contributed to E. Teller's breakthrough idea of thermonuclear weapons (hydrogen bombs); <i>Teller-Ulam design</i> (1951), <i>Fermi-Pasta-Ulam-Tsingou (FPUT) problem</i> (1953), invented the <i>Monte Carlo method</i> of computation (1949)	Migrated to the USA following the invitation of John von Neumann (1935), become a naturalized U.S. citizen (1941), participated in the <i>Manhattan Project</i> in Los Alamos (1943-1947)

Names of some of the killed academicians appeared in the table to show the real war price we might face now, three and a half years after the February 24, 2022, fully-fledged Russian invasion of Ukraine, when academicians have almost the same 'toolkit' to survive, even so, human life is priceless. The aspirations and expectations of the modern academic community in Lviv, with respect and gratitude to the previous generation of academicians, are well known to everyone - to be a Ukrainian University in spirit and a prestigious European University in model (in 2011, Ivan Vakarchuk (1947-2020), late rector of Lviv University (1990-2007, 2010- 2013), my rector having been a student and a member of academia, made a such declaration during the celebration of the 350th anniversary of Lviv University). All our activities continue to create, preserve, and develop Ukrainian spiritual culture, traditions, and secure identity. We aim to protect our academic traditions and freedoms (rooted long ago in the XVI century for Lviv University) - the fundamental values of all European universities. Modern knowledge management and academic mobility in the XXI century demand the preservation of Ukrainian heritage and experience while producing up- skilling/cross-skilling educational pathways and bringing up global competitiveness, developing a new framework for the academician profile following the free movement of research, innovation, knowledge, and education within the European Union.

Conclusions

Reshaping technological singularity, as discussed by John von Neumann and Stanisław Marcin Ulam after the Second World War as an 'accelerating pro-

gress of technology and changes in human life,' all the made transformations (i.e., AI, VR/MR, and blockchain technologies development in everyday life) popularized by Vernor Vinge back in 1983 and predicted in Ray Kurzweil's book 'The Singularity Is Near: When Humans Transcend Biology' in 2005, the widespread COVID-19 pandemic (2020-2023)³⁸, fully-fledged invasion of Russia into Ukraine of long-lasting war (started in 2014) demand urgent reviewing of the core value-oriented issues like the rule of law, democracy, human rights and freedom of movement.

War is a massive cruel forcing power people to move, to find safer places to reside, study, and work (do business); otherwise, a state regime will choose mandatory on your behalf (i.e., territory partition, people's forced relocation, or imprisonment). We experienced that and severely suffered after the First and Second World Wars. Now, after more than three years of a war and occupation of 18% of Ukrainian soil, more than 4 million Ukrainians have been forced to flee Ukraine and settled in the EU member-states (majority in Germany, Poland, Czechia, Spain, Romania, Italy, Slovakia, Netherlands, and Ireland)³⁹ following the reactivation of the Temporary Protection Directive 2001/55/EC⁴⁰ (valid until March 4, 2027).

We do not want to lose those citizens of Ukraine who became refugees as a result of the Russian full-scale invasion and acquired the status of "temporary protection" in the EU member-states and in the future (short, medium, or long term perspective), having fulfilled all the necessary prerequisites, will become naturalized citizens of the state of residence, even persons with dual citizenship. Those citizens are unlikely to pose a threat to Ukraine's national security; however, the issue of loyalty (the narrative of fleeing to a "safer haven" during the ongoing war to wait out the hardships and return to a destroyed, depopulated, and demoralized Ukraine) and trust in results of their subsequent voting in-country or extraterritorially (in the case of dual nationality) will constantly arise (worry). Ukraine's accession

³⁸ European Education and Culture Executive Agency: Eurydice, *The European higher education area in 2024 – Bologna process implementation report*, Publications Office of the European Union, 2024, <https://data.europa.eu/doi/10.2797/483185>

³⁹ Sergio Carrera, ed., Meltem Ineli-Ciger, ed. *EU responses to the large-scale refugee displacement from Ukraine – An analysis on the Temporary Protection Directive and its implications for the future EU asylum policy*, (European University Institute, 2023) 526

⁴⁰ Council Directive 2001/55/EC of 20 July 2001 on minimum standards for giving temporary protection in the event of a mass influx of displaced persons and on measures promoting a balance of efforts between Member States in receiving such persons and bearing the consequences thereof. OJ L 212, 7.8.2001, p. 12-23.

to the EU is the most apparent motivating and plausible factor for the return home of war refugees and labor migrants who have settled in EU member-states. And cooperate with non-returnees, who prefer to stay in the host EU member- states and enjoy freedom of movement and establishment.

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