

UKRAINIAN SCIENTIFIC EMIGRATION AND OPEN ACCESS

Vladimir Moskovkin

Doctor of Geographical Sciences,
Independent researcher, Vimperk, Czech Republic
<https://orcid.org/0000-0001-5587-4133>
researchoa52@gmail.com

Abstract

The sixth wave of Ukrainian scientific emigration, which began at the end of February 2022, and the formation of new structures in the Ukrainian scientific diaspora have stimulated research on the study and preservation of Ukrainian scientific heritage abroad. However, such research and measures to preserve this scientific heritage will not be effective if they are not based on the concept and technologies of Open Access. Therefore, the aim of our study is to show how such research should be conducted, using the example of the analysis of staff composition at the Ukrainian Free University and its publication activity in its first five years of operation, as well as what general measures are necessary to study and preserve the scientific heritage of all six waves of Ukrainian scientific emigration. The article deals with the following issues: periodization of the waves of Ukrainian scientific emigration; identification of Ukrainian scientific and educational organizations of the first wave of Ukrainian scientific emigration; brief history of the Ukrainian Free University; publication activity of the professors of the Ukrainian Free University (1921–1925) with the selection of works published in Open Access; linguistic biographical Wikipedia articles for the professors of the Ukrainian Free University (1921–1925); distribution of publications by professors from Ukrainian Free University through digital libraries and repositories; analysis of book marks using a case study; standards for describing works in electronic collections of rare and old publications; approaches to the development of the program “Open Access to the Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration”. Overall, the result of the study shows the importance of preserving the continuity of the traditions established by the first waves of Ukrainian scientific emigration, the new generation of Ukrainian scientific emigrants should maintain these traditions. In order to study and understand these traditions, it is necessary to study the activities of scientists of previous waves of Ukrainian scientific emigration, and in order to make the results of this study available to the wider scientific community, they should be digitized and made publicly available.

Keywords: Ukrainian Scientific Emigration, Ukrainian Free University, Open Access, publication activity, digital libraries, bookmarks.

УКРАЇНСЬКА НАУКОВА ЕМІГРАЦІЯ ТА ВІДКРИТИЙ ДОСТУП

Володимир Московкін

доктор географічних наук,
Незалежний дослідник, Вімперк, Чехія

Анотація

Шоста хвиля української наукової еміграції, яка розпочалася наприкінці лютого 2022 року, та формування нових структур в українській науковій діаспорі стимулювали дослідження з вивчення та збереження української наукової спадщини за кордоном. Однак такі дослідження та заходи зі збереження цієї наукової спадщини не будуть ефективними, якщо вони не ґрунтуватимуться на концепції та технологіях Відкритого доступу. Тому мета нашого дослідження — на прикладі аналізу кадрового складу Українського Вільного Університету та його публікаційної активності в перші п'ять років діяльності показати, як мають проводитися такі дослідження, а також які загальні заходи необхідні для вивчення та збереження наукової спадщини всіх шестих хвиль української наукової еміграції. У статті розглядаються такі питання: періодизація хвиль української наукової еміграції; ідентифікація українських наукових та освітніх організацій першої хвилі української наукової еміграції; коротка історія Українського Вільного Університету; публікаційна діяльність професорів Українського Вільного Університету (1921–1925 рр.) з виокремленням праць, опублікованих у відкритому доступі; лінгвістичні біографічні статті Вікіпедії про професорів Українського Вільного Університету (1921–1925 рр.); розподіл публікацій професорів Українського Вільного Університету через електронні бібліотеки та репозиторії; аналіз книжкових позначок на прикладі кейсових досліджень; стандарти опису творів в електронних колекціях рідкісних та стародруків; підходи до розробки програми «Відкритий доступ до наукових знань та культурної спадщини української наукової еміграції». Загалом, результати дослідження свідчать про важливість збереження тяглості традицій, закладених першими хвилями української наукової еміграції, які має продовжувати нове покоління українських науковців-емігрантів. Для вивчення та розуміння цих традицій необхідне дослідження діяльності вчених попередніх хвиль української наукової еміграції, а для того, щоб зробити результати цього дослідження доступними для широкої наукової спільноти, їх слід оцифрувати та зробити загальнодоступними.

Ключові слова: українська наукова еміграція, Український Вільний Університет, відкритий доступ, публікаційна активність, електронні бібліотеки, книжкові позначки.

Introduction

There are six waves of Ukrainian scientific emigration. In terms of content, the first waves of this emigration have been fairly well studied. For example, the scientific activity of the institutions and participants of the first wave of Ukrainian scientific emigration, which was triggered by the events of the First World War, the Revolutionary Events 1917–1921, is described in detail in the work of S. Narizhnyi (1942)¹.

A comprehensive study of the Ukrainian scientific emigration in interwar Czechoslovakia is made by N. Zavorotna (2019)², who analysed the activities of all

¹ Narizhnyi, S. (1942). *Ukrainian emigration. Cultural work of the Ukrainian emigration between the two World wars*. Prague: Knihtisk, Part 1. 367 p. (In Ukrainian). <https://diasporiana.org.ua/wp-content/uploads/books/2648/file.pdf>

² Zavorotna, N. (2019). *Scholars in exile: The Ukrainian intellectual world in interwar Czechoslovakia*. Toronto, Buffalo, London: University of Toronto Press. 249 p. <https://library.oapen.org/handle/20.500.12657/22477>

Ukrainian Scholarly and Professional Societies and Organisations, Libraries, Archives and Museums. At the same time, the leading role and importance of M. Shapoval, as a leader of the Ukrainian scientific emigration in Czechoslovakia, in the creation and development of most of these institutions is described by A. Savchenko (2023)³.

Considering the predominant share of historians among the members of the Ukrainian scientific diaspora and their important role in its formation and development, we should mention the works of T.M. Prymak (2001)⁴ and V. Polutnytskyi (2020)⁵.

The first paper describes the scientific activity of the most influential and prolific Ukrainian emigrant historian of the 20th century, D. Doroshenko, and it is noted that if we collect all his published works, their list would, perhaps, amount to close to the one thousand titles.

In the second paper, the methodology of Karl Mannheim's sociology knowledge to assess the contribution of a scientist to science, as well as the positioning of a generation of scientists, is tested on the example of two generations of Ukrainian emigrant historians of older and younger generations.

We should also mention Ch. Gilley's (2014)⁶ specific book, which provides a comprehensive analysis of Sovietophile movements among Ukrainian emigrants in the interwar period.

In order to study and preserve the scientific heritage of all waves of Ukrainian scientific emigration, it is necessary to conduct research on the representation in Open Access of information about their institutions and personalities, including their publication activity. Such work will make it possible to identify the part of that scientific heritage which is not represented in Open Access and to plan specific measures to digitize this part of the heritage and subsequently make it available in Open Access. By digitizing and providing Open Access to the works of researchers of the first waves of Ukrainian scientific emigration, the scientific contributions of past scholars are preserved and made available to current and future researchers.

³ Savchenko, A. (2023). Mykyta Shapoval as a leader of the Ukrainian emigration in interwar Czechoslovakia. *Ukrainian Studies: Historical and Philosophical Sciences*, 37, 16-22. <https://doi.org/10.26565/2227-6505-2023-37-02>

⁴ Prymak, T.M. (2001). Dmytro Doroshenko: A Ukrainian Émigré Historian of the interwar period. *Harvard Ukrainian Studies*, 25(1/2), 31-56. <http://www.jstor.org/stable/41036824>

⁵ Polutnytskyi, V. (2020). The contribution of Ukrainian emigration of the interwar period to the development of historical science research: Thematic, methodological and conceptual aspects. *Scientific Notes of Ostroh Academy National University. Historical Sciences Series*, 31, 98-104. (In Ukrainian). <https://doi.org/10.25264/2409-6806-2020-31-98-107>

⁶ Gilley, Ch. (2014). The "Change of Signposts" in the Ukrainian emigration. A contribution to the History of Sovietphilism in the 1920s. With a Foreword by Frank Golczewski. In A. Umland (Ed.), *Soviet and Post-Soviet Politics and Society*. Stuttgart: ibidem-Verlag. 455 p. https://www.academia.edu/1081136/The_Change_of_Signposts_in_the_Ukrainian_emigration_A_Contribution_to_the_History_of_Sovietophilism_in_the_1920s

This paper views Open Access not only as a technical or library practice, but as an object of scholarly inquiry in the fields of the history of science, Ukrainian studies, and digital humanities. Systematizing publication activity and its digital availability helps reconstruct the intellectual landscape of émigré scholars and assess how their work circulates in contemporary global knowledge networks. Therefore, the central research question is as follows: *To what extent is the scholarly heritage of the first wave of Ukrainian scientific emigration, as represented by the Ukrainian Free University (UFU), currently accessible in Open Access, and what measures can enhance this accessibility further?*

In other words, the research question can be formulated more succinctly as follows: *This study analyses the accessibility of the UFU's scientific heritage in the context of digital humanities, with the aim of assessing the contribution of open access to preserving the cultural memory of the diaspora and integrating it into global scientific networks.*

As an example of such work, we previously (Moskovkin, 2025)⁷ have conducted a systematic analysis of the statistics and demographics of the teaching staff of the Ukrainian Free University (UFU) and their publication activity in the context of Open Access during the first five years of the university's operation, and also studied in detail the student training programmes during the first years of UFU's operation in Vienna and Prague (1921–1922). For this purpose we used general works published by this university (Ukrainian Free University 1927⁸, 1931⁹; Universitas Libera Ucrainensis 2011)¹⁰, books by S. Narizhnyi (1942)¹¹, R. Holiat (1964)¹², and S.V. Vidnyansky (1994)¹³, other publications and internet sources. The tasks were to identify all professors and lectures who worked in 1921–1925, the availability translations of their biographical articles on Wikipedia and publications on the Internet, including full-text articles in Open Access, as well as to develop in general terms the program “Open Access to the scientific knowledge and cultural heritage of Ukrainian scientific emigration”.

⁷ Moskovkin, V.M. (2025). Research and Teaching Staff of the Ukrainian Free University and their Publications in 1921 — 1925 in the Open Access Context. *Nauka ta Naukoznavstvo [Science and Science of Science]*, 1(127), 50 — 75. <https://doi.org/10.15407/sofs2025.01.050> (in Ukrainian).

⁸ *Ukrainian Free University in Prague, in 1921–1926*. (1927). Prague: State Printing House. 236 p. (In Ukrainian). <https://diasporiana.org.ua/wp-content/uploads/books/22875/file.pdf>

⁹ *Ukrainian Free University in Prague, 1926–1931*. (1931). Prague: State Printing House. 200 p. (In Ukrainian). <https://diasporiana.org.ua/wp-content/uploads/books/20012/file.pdf>

¹⁰ *Universitas Libera Ucrainensis: 1921 — 2011*. (2011). Una Patzke, Mykola Szafowal, Roman Yaremko (Hrsg.). Ukrainian Free University. Series: Varia Bd. 56. Munich. 828 p. <http://diasporiana.org.ua/wp-content/uploads/books/3477/file.pdf>

¹¹ Narizhnyi, S. (1942).

¹² Holiat, R.S. (1964). *Short history of the Ukrainian Free University*. New York: Shevchenko Scientific Society. 33 p. <https://diasporiana.org.ua/wp-content/uploads/books/7728/file.pdf>

¹³ Vidnyanskyi, S.V. (1994). *Cultural, educational and scientific activity of the Ukrainian emigration in Czechoslovakia: Ukrainian Free University (1921 — 1945)*. Kyiv: Institute of History of Ukraine, National Academy of Sciences of Ukraine. 82 p. (In Ukrainian). http://history.org.ua/JournALL/Preprint/Preprint_1994_1/Preprint_1994_1.pdf

In conducting this study, we clarified the periodisation of all waves of Ukrainian scientific emigration, with a focus on the first wave, and identified all Ukrainian academic organisations within it. Having demonstrated the leading role of the UFU among these organisations, we summarised the outcomes of our prior research into biobibliographic analysis. We supplemented these findings with data on the distribution of publications by type and language, and highlighted the most significant open access publications, as well as those requiring digitisation and open access. Additionally, we examined the role of Wikipedia, traditional encyclopaedias, and their electronic counterparts in evaluating the importance of scientists within the context of the initial wave of Ukrainian scientific emigration. Furthermore, we advanced the concept of the programme “Open Access to the Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration”.

Recognizing the contribution of the Ukrainian diaspora to world science even through just one university is crucial for understanding the global nature of scientific progress and the diverse contributions that various cultural and national groups have made. It encourages a more inclusive view of scientific history.

Methodology

The logic of this study is as follows. At the beginning, based on the analysis of literary sources, six waves of Ukrainian scientific emigration are identified, as well as all the main scientific and educational organizations of the first wave of this emigration. The years of their activity and their locations are determined. As this wave saw the creation of the largest number of Ukrainian émigré scientific organisations, the most significant of which was the UFU (which has survived to this day), a brief excursion into the history of the UFU as the main centre of the Ukrainian scientific diaspora in Europe is provided. The publication activity of UFU professors and lecturers during the first five years of their work, studied in the work of V. Moskovkin (2025)¹⁴ based on data collected in December 2024, is presented in this study, which covers the first 16 individuals who published at least six papers during this period. We took into account the types of publications (books, brochures, articles) as well as their languages.

This simple bibliometric methodology, which is based on systematically counting publications and scientists, aligns with the field of statistical bibliography and its applications, which date back to the 1870s–1890s [Godin, 2006¹⁵; Danesh & Mardani-Nejad, 2020¹⁶].

¹⁴ Moskovkin, V.M. (2025).

¹⁵ Godin, B. (2006). On the origins of bibliometrics. *Scientometrics*, 68 (1), 109–133. doi:10.1007/s11192-006-0086-0

¹⁶ Danesh, F., Mardani-Nejad, A. (2020) . 1.1 A Historical Overview of Bibliometrics. In Ball, Rafael (ed.). *Handbook Bibliometrics. De Gruyter Saur*. pp. 7–18. doi:10.1515/9783110646610-003

The importance of the contribution of UFU professors and lecturers to science was studied not only on the basis of their publication activity, but also on the basis of the number of Wikipedia articles written about them in different languages¹⁷. The first 13 people are presented in this study, together with their scientific specialization, for whom at least five biographical articles have been written in different languages. By comparing the publication activity of the authors with the Wikipedia information about them, it is possible to plan new and improved old Wikipedia articles about them.

Many studies have examined the importance of Wikipedia in scientific research, given that the concept of Wikipedia requires all borrowed information and data to be referenced. Links to Wikipedia articles are regarded as equivalent altmetric to links to publications on social networks and blogs in contemporary scientometrics.

As C. Okoli et al. (2014)¹⁸ note, it is an important source of data for researchers and librarians. In this regard, they write:

“Scholars and librarians not only widely use Wikipedia themselves, but often even promote it as a valuable knowledge resource. Although such a positive attitude is by no means universal, it indicates that even the traditional gatekeepers of knowledge have come to terms with the significance and value of a publicly generated knowledge source in the dawn of the 21st century.”

To objectively assess the contemporary significance of scientists from past eras, it is proposed that their biographical articles in traditional encyclopaedias and encyclopaedic dictionaries be analysed alongside Wikipedia articles in different languages, demonstrating these scientists' international recognition in the present day.

Our study is not limited to biobibliographic or library tasks; rather, it addresses broader scholarly questions within the fields of history of science, Ukrainian studies, and digital humanities. The methodology is designed to explore how the legacy of émigré Ukrainian scholars is currently represented and circulated in the digital sphere, and how its accessibility can be improved through Open Access tools. In this sense, Open Access is approached as a historically conditioned and socially significant phenomenon that reflects the preservation, recognition, and transmission of intellectual heritage.

We also studied the distribution of OA publications across digital libraries and repositories, taking into account that one and the same publication could be represented by digitized copies placed in different electronic resources. When studying

¹⁷ Moskovkin, V.M. (2025).

¹⁸ Okoli, C., Mehdi, M., Mesgari, M., Nielsen, F. Å., & Lanamäki, A. (2014). Wikipedia in the eyes of its beholders: A systematic review of scholarly research on Wikipedia readers and readership. *Journal of the Association for Information Science and Technology*, 65(12), 2381-2403. <https://doi.org/10.1002/asi.23162>

different digitized copies, which were mostly copies of books and brochures, we paid attention to bookmarks. They allow us to trace the migration of a book and its fate. In our case, there was only one book with rich bookmarks (Shcherbakivskyi 1925)¹⁹, which were studied in detail in this paper. We counted the number of bookmarks in open access publications and noted their types (owner's inscriptions and stamps, library stamps, etc.).

Then standards for describing works in electronic collections of rare and old publications, in which it is recommended to include bookmarks, were studied. Recommendations for the implementation of such standards for the Ukrainian public digital libraries "Diasporiana" and "Chytyvo" are given.

The three issues discussed above, concerning the distribution of OA publications across digital libraries and repositories, the analysis of bookmarks, and standards for describing works in electronic collections of rare and old publications, were previously studied by us²⁰, but due to their importance, we decided to present their essence in an English-language publication.

Finally, considerations are given for the development of the program "Open Access to the Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration", which is necessary for the preservation of the scientific and cultural heritage of scientists of previous waves of Ukrainian scientific emigration and for the promotion of the scientific contributions of researchers of the current wave of this emigration.

Findings

Periodization of the waves of Ukrainian scientific emigration

There is no clear periodization of waves of Ukrainian scientific emigration, unlike waves of emigration in general (Petryk 2024)²¹. The first wave of Ukrainian emigration includes the economic emigration of ethnic Ukrainians in the period from the 1870s to the First World War. This was mainly the emigration of the rural population to North and South America and thus there was no significant scientific component.

At the same time, at the end of the first wave of general Ukrainian emigration, there was a small scientific component. By this time, there were already quite a few Ukrainian scientists, writers and students working and studying in Euro-

¹⁹ Shcherbakivskyi, V. (1925). *Main elements of ornamentation of Ukrainian Easter eggs and their origin*. Prague: Ukr. historian-philologist society. 34 p. <https://diasporiana.org.ua/wp-content/uploads/books/10813> (In Ukrainian).

²⁰ Moskovkin, V.M. (2025).

²¹ Petryk, M. (2024). Features of the Periodization and Classification of Ukrainian Emigration (Last Quarter of the XIX Century — 2023). *Ethnic History of European Nations*, 73, 104 — 115. (In Ukrainian). <https://doi.org/10.17721/2518-1270.2024.73.13>

pean countries. This scientific component of the first wave of general Ukrainian emigration smoothly transitioned into the first wave of Ukrainian scientific emigration.

The emergence of Ukrainian *scientific emigration*—defined here as the departure of individuals with formal academic or scientific training and continued engagement with scholarly or educational activities abroad—can be traced to the political upheavals following the collapse of the Russian Empire and the formation of several short-lived Ukrainian state formations (1917–1921), including the Ukrainian People’s Republic. During this period, many Ukrainian intellectuals and scientists fled abroad in response to political persecution, war, and repression. These processes paralleled similar developments in Russian scientific emigration; however, the Ukrainian case also had a distinct national and institutional dimension, marked by the founding of the Ukrainian Academy of Sciences (1918) and diaspora institutions such as the Ukrainian Free University (UFU).

The **first wave** of Ukrainian scientific emigration (1918–1939) thus coincided with the interwar period. Many prominent scholars left for Central and Western Europe, where they established or joined academic institutions, contributing to the development of Ukrainian Studies abroad.

The **second wave** (1939–late 1950s) was triggered by the Second World War and the ensuing political changes in Eastern Europe. Displacement due to war, as well as fears of Soviet persecution, led to the formation of Displaced Persons (DP) camps and the relocation of scientists to Germany, Austria, and eventually North America and Australia.

The **third wave** (mid-1960s to mid-1980s) coincided with the period of limited and often politically conditioned emigration from the Soviet Union. Although officially restricted, certain categories of individuals—including Jews, ethnic Germans, and dissidents—were able to emigrate legally under international pressure or bilateral agreements. Some of them were scholars, writers, and intellectuals who continued academic activity in exile. This wave is often associated with the “Generation of the Sixties” (*shistdesiatnyky*), a movement marked by cultural dissent and national revival, although its scientific expression was more limited in scope.

At present, an attempt has been made to strictly periodize the waves of Ukrainian scientific emigration after the collapse of the USSR, which has allowed us to identify three stages (Karmadonova 2023)²², which we will call waves and continue our numbering.

²² Karmadonova, T. (2023). The long way home: Migration trends of Ukrainian researchers in the modern world (1991–2023). *History of science and technology*, 13(2), 263–279. <https://doi.org/10.32703/10.32703/2415-7422-2023-13-2-263-279>

The **fourth wave**, the “post-Soviet period” (1991-2012), was marked by the initial dissolution of the Soviet Union and economic shocks. In 1991 the country had 1,344 organizations engaged in research and development (R&D), employing 295,010 researchers. By 2012 these figures had fallen to 1,208 organizations and 82,032 researchers (State Statistics Service of Ukraine 2016)²³.

This means that the number of researchers decreased by 3.6 times. It is difficult to say how many researchers went abroad, as Ukraine does not keep complete statistics on the emigration of researchers, but it can be assumed that most researchers changed their field of activity during the period under review.

The **fifth wave**, the “post-revolutionary period” (2013-2021), occurred during a period marked by profound political and social changes, including the Euromaidan revolution, the annexation of Crimea by Russia and the war in the eastern regions of the country. According to Ukrstat, the number of researchers was 115,806 in 2013 and 44,615 in 2023, i.e. 2.6 times less (State Statistics Service of Ukraine, 2024). It should be noted that the data for 2013 take into account scientific and educational personnel who did not participate in R&D, so they exceed the data of Ukrstat estimates for 1990-2015 (State Statistics Service of Ukraine 2016)²⁴.

The **sixth wave**, dubbed “Russia’s full -scale war on Ukraine”, began in 2022 and is currently ongoing. The all-out war in Ukraine has had a profound impact on the migration trends of researchers.

Recent estimates put the number of emigrating Ukrainian researchers at 22,000, or about a quarter of all researchers in the country (Gaind et al. 2022)²⁵. This estimate is for mid-2022, and the fact that the total number of researchers (around 90,000) here does not correspond to previous Ukrstat data is due to the fact that these data do not take into account the number of researchers at universities who are not officially engaged in R&D.

Similar results were obtained by G. de Rassenfosse, T. Murovana, & W.H. Uhlbach (2023)²⁶, who, based on a survey of about 2,500 Ukrainian scientists, showed that about 18.5% of the population of Ukrainian scientists had left the country by autumn 2022. As the authors note, these emigrating scientists were among the most

²³ State Statistics Service of Ukraine (2016). Naukovi kadry ta kil’kist’ orhanizatsiy [Scientific personnel and number of organizations]. (in Ukrainian). https://ukrstat.gov.ua/operativ/operativ2005/ni/ind_rik/ind_u/2002.html

²⁴ Ibid.

²⁵ Gaind, N., Abbot, A., Witze, A., Gibney, E., Tollefson, J., Irwin, A., & Van Noorden, R. (2022). Seven ways the war in Ukraine is changing global science. *Nature*, 607,440 — 443. <https://doi.org/10.1038/d41586-022-01960-0>

²⁶ de Rassenfosse, G., Murovana, T., & Uhlbach, W.H. (2023). The effects of war on Ukrainian research. *Humanit Soc Sci Commun*, 10, 856. <https://doi.org/10.1057/s41599-023-02346-x>

active researchers in Ukraine. However, a significant proportion of these migrant scientists are on precarious contracts at their host institutions.

As a result of the sixth wave of Ukrainian scientific emigration, a young scientific diaspora has emerged. Its members actively participate in programmes supporting Ukrainian refugee scientists and negotiate and renew contracts with academic organisations. They are trying to integrate more strongly into the global scientific community, establishing themselves in foreign academic organisations in the long term. They understand that there will be no prospects for employment or comfortable working conditions in their homeland for a long time. Future research will reveal the proportion of temporarily displaced Ukrainian scientists who will be able to establish themselves abroad.

Table 1 provides a concise overview of the waves of Ukrainian scientific emigration.

Table 1.

Periodisation of waves of Ukrainian scientific emigration

Wave number	Time interval	Causes
Wave 1	1918–1939	World War I, collapse of the Russian Empire, Civil War, aggressive policies of Russia and Poland
Wave 2	1939–late 1950s	Second World War and the ensuing political changes in Eastern Europe
Wave 3	mid-1960s to mid-1980s	Political motives and economic difficulties and restrictions on freedoms
Wave 4	1991–2012	The collapse of the USSR. Economic shocks
Wave 5	2013–2021	Profound political and social changes (Ukrainian Revolution of Dignity in 2014, annexation of Crimea, war in the Donbass)
Wave 6	Since 2022	Russia's full -scale war on Ukraine

This periodization is proposed not merely as a chronological typology but as a framework for studying the sociopolitical conditions, institutional contexts, and knowledge production of the Ukrainian scientific diaspora. The term scientific emigration is used here in an interdisciplinary sense, relevant to both the history of science and Ukrainian studies, as well as to digital humanities, which increasingly rely on open-access infrastructure to trace, preserve, and disseminate the legacy of scholarly migration.

Scientific and educational centers of Ukrainian scientific emigration of the first wave

Based on the works of S. Narizhnyi (1942)²⁷, V. Ulianovskiy and S. Ulianovska (1993)²⁸, K. Lisova (2015)²⁹, V. Popyk (2021)³⁰, V. Shelukhin (2024)³¹ and using various internet resource we identified almost all the main scientific and educational centers of the first wave of Ukrainian scientific emigration, their dates of existence and locations (Table 2).

Table 2.

**Ukrainian scientific and educational organizations
of the first wave of Ukrainian scientific emigration**

Name of the organisation	Years of operation	Location
Ukrainian Free University	1921	Vienna, Austria
	1921–1945	Prague, Czechoslovakia
	1945–present	Munich, Germany
Ukrainian Academy of Economics	1922–1935	Podebrady, Czechoslovakia
Ukrainian Technical and Economic Institute of Extracurricular Education	1932–1945	Podebrady, Czechoslovakia
	1945–1949	Regensburg, Germany
	1949–1979	Munich, Germany
	50s — 2009	New York, USA
Ukrainian Higher Pedagogical Drahomanov Institute	1923–1933	Prague, Czechoslovakia
Ukrainian Historical and Philosophical Society (UIFT)	1923–1945	Prague, Czechoslovakia

²⁷ Narizhnyi, S. (1942).

²⁸ Ulianovskiy, V., & Ulianovska, S. (1993). Ukrainian scientific and cultural emigration to Czechoslovakia between the two world wars. In D. Antonovych (Ed.) *Ukrainian culture: lectures*. (pp. 489-491). Kyiv. Appendices (In Ukrainian). <http://litopys.org.ua/cultur/cult25.htm>

²⁹ Lisova, K. (2015). Centers of research of history the state system of Ukraine are in emigration (1920–1945). *Gileya: scientific bulletin*, 101, 48-51. file:///C:/Users/user/Downloads/gileya_2015_101_12-1.pdf

³⁰ Popyk, V. (2021). Biography in publications of scientific and cultural centers of Western Ukrainian diaspora. *Manuscript and book heritage of Ukraine*, 27, 166-180. (In Ukrainian). doi:<https://doi.org/10.15407/rksu.27.166>

³¹ Shelukhin, V. (2024). Ukrainian Sociological Institute: Factional Politics, Research, and Intelligence Services in the Development of Ukrainian Sociology. *Sociology: Theory, Methods, Marketing*, 1, 110 — 157. (In Ukrainian) <https://doi.org/10.15407/sociology2024.01.110>

End of table 2

Name of the organisation	Years of operation	Location
Ukrainian Academic Committee	1924–1940	Prague, Czechoslovakia (Autonomous body of the UIFT)
Union of Ukrainian Doctors	1922–1935	Prague, Czechoslovakia
Ukrainian Law Society	1923–1933	Prague, Czechoslovakia
Ukrainian Society of Supporters Books	1927–1942	Prague, Czechoslovakia
Ukrainian Pedagogical Society	1930–1939	Prague, Czechoslovakia
Union of Engineers’ Organisations Ukrainians in Emigration	1930–1939	Podebrady, Czechoslovakia
Ukrainian Scientific Association	1932–1939	Prague, Czechoslovakia
Ukrainian Studio of Plastic Art	1922–1947	Prague, Czechoslovakia
Ukrainian Sociological Institute of M. Shapoval	1924–1939	Prague, Czechoslovakia
Ukrainian Institute of Sociology M. Hrushevsky	1919	Geneva, Switzerland
	1920	Prague, Czechoslovakia
	1921–1924	Vienna, Austria
Ukrainian Archive	1923–1945	Prague, Czechoslovakia
Museum of the Liberation Struggle of Ukraine	1925–1945	Prague, Czechoslovakia
Ukrainian Scientific Institute	1926–1945	Berlin, Germany
Ukrainian Scientific Institute	1930–1939	Warsaw, Poland
Ukrainian Military History Society	1920–1939	Warsaw, Poland

In Table 2, there are 20 scientific and educational organizations, including University — 1, Academy — 1, Institute — 6, Scientific Society — 5, Scientific Union — 2, Scientific Committee and Association — 2, Museum and Archive — 2, Studio — 1. All these organizations, in addition to their core activities, carried out research and scientific publishing activities.

These organizations were founded between 1919 and 1932, 12 of them in the first five years (1919–1924). Fifteen organizations were founded in Czechoslovakia, 13 of them in Prague. The remaining five organizations were founded in Austria (Vienna), Germany (Berlin), Poland (Warsaw) and Switzerland (Geneva).

The Czechoslovakia's leading role in the establishment of Ukrainian scientific organizations is linked to the Russian aid action of Czechoslovak President Tomáš Masaryk (Gousseff, 2024)³².

Most of these organizations ceased to exist in the late 30s and mid-40s of the 20th century. This was due to the economic crisis of the 1930s, the collapse of Czechoslovak President Tomáš Masaryk's Russian Aid Action (1921–1936) following his resignation from the presidency in 1935 and subsequent death in 1937, the signing of the Munich Agreement in 1938 and the subsequent occupation of Czechoslovakia and Poland by German troops in 1939, and the occupation of Czechoslovakia by Soviet troops in 1945.

Among the scientific and educational organizations of the first wave of Ukrainian scientific emigration, the leading one was the UFU, which is the only one that has survived to the present day (Table 2). Three major monographs (Holiat 1964³³; Vidnyanskyi 1994³⁴; Universitas Libera Ucrainensis 2011)³⁵ are devoted to the history of the establishment and development of this university. In this context, we will briefly characterise this university below.

A brief history of the Ukrainian Free University

The UFU was founded in Vienna on 17 th January 1921 by Ukrainian professors who had taught at universities in the Austro-Hungarian and Russian empires. The UFU was transferred to Prague, Czechoslovakia, in the autumn of 1921, where the government granted the UFU full academic accreditation and financial support. The UFU gained wide recognition for its significant and productive teaching, research and publications during its time in Prague (Vidnyanskyi 1994)³⁶.

The University's move from Vienna to Prague in the same year it was founded was due to the fact that, in that year, Austria ceased to be the center of Ukrainian scientific emigration. After the Soviet troops entered Prague in the spring of 1945, the University was destroyed and looted, which led to its relocation to Munich in 1945.

³² Gousseff, C. (2024). An Exceptional Welcome: The Russian Academic Exile in Prague (1920–1939)—State Policy and Experiences. In Dakhli, L., Laborier, P., Wolff, F. (eds). *Academics in a Century of Displacement. Migrationsgesellschaften* (pp. 29–46). Springer VS, Wiesbaden. https://doi.org/10.1007/978-3-658-43540-0_2

³³ Holiat, R. S. (1964).

³⁴ Vidnyanskyi, S. V. (1994).

³⁵ *Universitas Libera Ucrainensis: 1921–2011*. (2011).

³⁶ Vidnyanskyi, S.V. (1994).

On 16th September 1950, a ministerial decree of the Free State of Bavaria granted the UFU the right to award degrees. This academic privilege was subsequently confirmed by various Bavarian university laws and ministerial decrees (Vidnyanskyi 1994)³⁷.

Financial support from the German and Bavarian governments has contributed to worthy research, publication and teaching activities. The university has become a recognized Western European research center specializing in the study of Ukraine and the Ukrainian diaspora. Over the years, the university has evolved from a “university in exile” to a full-fledged, albeit highly specialized, European Union graduate school that still retains its Ukrainian uniqueness (Universitas Libera Ucrainensis 2011)³⁸.

It should be noted that the second most important academic centre of the first wave of Ukrainian scientific emigration was the Ukrainian Academy of Economics in Poděbrady (Table 1), which had very good ties with UFU, as many UFU professors and lecturers also worked at UAE. The UAE publishing house published two reference books about its activities in 1923 and 1959 (overview of UAE activities from 1922 to 1935), which will allow for a comparative biobibliographic analysis of both academic organisations at overlapping time intervals: 1922–1925 or 1922–1935.

Let us now move on to analysing the publication activity of professors and lecturers during the first five years of UFU’s existence, using the literary and internet sources described in the “Methodology” section.

Publications by UFU professors and lectures (1921–1925)

Our detailed analysis of the literary and internet sources mentioned above allowed us to identify forty-five professors and lecturers at UFU who published 235 works during the first five years of the university’s existence. Of these, 45.5% (107 publications) are now available through Open Access³⁹. These open access publications, represented by 175 files, and the digital libraries in which they are deposited, are available on the Zenodo website (Moskovkin 2024)⁴⁰.

Table 3 shows the top sixteen authors who have published at least six publications over a five-year period.

³⁷ Ibid.

³⁸ *Universitas Libera Ucrainensis: 1921–2011*. (2011).

³⁹ Moskovkin, V.M. (2025).

⁴⁰ Moskovkin, V.M. (August 10, 2024). Publications of professors and teachers of the Ukrainian Free University, placed in the Open Access. (In Ukrainian). <https://zenodo.org/records/13333508>

Table 3.

Publications by Ukrainian Free University professors (1921–1925)

Name	Number of publications		
	OA	non-OA	Total
Doroshenko, D.	6	19	25
Zalozetskyi, V.	1	17	18
Lototskyi, O.	3	11	14
Bidnov, V.	4	9	13
Antonovych, D.	8	4	12
Rudnytskyi, S.	10	2	12
Mitsiuk, O.	5	5	10
Lashchenko, R.	6	3	9
Lozynskyi, M.	7	2	9
Shcherbyna, F.	5	4	9
Loskyi, K.	6	2	8
Shelukhin, S.	2	5	7
Borodayevsky, S.	3	4	7
Mirchuk, I.	2	5	7
Dnistrianskyi, S.	5	1	6
Starosolsky, V.	6	0	6

The three authors with the most publication activity are Dmytro Doroshenko (1882–1951), Volodymyr Zalozetskyi (1884–1965), Oleksandr Lototskyi (1870–1939), but the three authors with the highest number of Open Access publications are different: Stepan Rudnytskyi (1877–1937), Dmytro Antonovych (1877–1945), Michael Lozynskyi (1880–1937).

First, let us provide an overview of what we consider to be the most significant works in the Open Access.

In 1923, S. Rudnytskyi published a large work in two parts, ‘Fundamentals of Ukrainian Geography,’ with a total volume of 529 pages, through the UFU publishing house. In the same year, the Ukrainian Word publishing house (Berlin) published two more of his works: “The Ukrainian question from the perspective of political geography” (282 p.) and “Overview of Ukraine’s national territory” (142 p.). In addition to these geographical works, two of his political and economic pam-

phlets on Galicia were published by the Ukrainian Flag publishing house (Vienna) in 1921.

On the subject of Galicia in 1921–1922, three books by M. Lozynskyi, with a total volume of 526 pages, were also published by various publishers, dealing with the occupation of Galicia by Poland.

In 1923, D. Antonovych published “A Brief Course in the History of Ukrainian Art” (340 p.) with the UFU publishing house, and in 1925, his fundamental work “Three Hundred Years of Ukrainian Theatre. 1619–1919” (272 p.).

In 1922, the Ukrainian Word publishing house (Berlin) published a three-volume monograph by D. Doroshenko entitled “The Slavic World in Its Past and Present”, and in 1923, the UFU publishing house published “An Overview of Ukrainian Historiography” (220 p.). In addition, the Ukrainian publishing house in Yekaterinoslav published his “A Brief Course in the History of Ukraine” (1923, 228 p.).

In 1923, S. Dnistrianskyi published two works with the UFU publishing house: ‘General Science of Law and Politics’ (Volume 1, 393 p.) and ‘Property Law’ (204 p.).

In 1923–1924, UFU published volumes 2 and 3 (in four issues) of K. Loskyi’s monograph “History and System of Roman Private Law”, while the first volume of this monograph was published in 1921 by the publishing house “History and Law” (Kyiv–Vienna). The total volume of these five issues was 604 pages.

In 1923–1924, V. Starosolsky published a fundamental monograph entitled ‘The State and Political Law’ in two parts, with a total volume of 1,063 pages, in the ‘Publishing House of the Ukrainian Economic Academy’ (Poděbrady, Czech Republic).

In 1922–1923, the same publishing house released two issues of F. Shcherbyna’s statistical work, totalling 153 pages (History of Statistics and Statistical Organisations; Territorial Statistics).

Now let’s list the works that we believe are important for digitisation and open access:

In 1921/1922, D. Doroshenko published two articles in the collection “Grain-producing Ukraine” (Vienna) devoted to the history of the Russes and notes on Ukrainian history in 1918;

V. Zalozetskyi published a large series of articles on the history and preservation of Ukrainian art monuments in the collections “Stara Ukraina” (Old Ukraine), the “Prosvita” society, and others between 1922 and 1925;

Lecture course on O. Eichelmann’s Encyclopaedia of Law (84 p.) was published in 1923 by the Publishing House of the Ukrainian Economic Academy (Poděbrady, Czech Republic);

In 1925, V. Lypynskyi published an article entitled “Enslaved Nations and Stateless Nations” (Narody ponevoleni i narody nederzhavni) in the first issue of the journal ‘Politics’ (Lviv).

Below are the works of UFU professors and lecturers that have been published by the university's publishing house.

Mirchuk published *Lectures on the History of Ethics* (Part 1: *Ethics of the Ancient World*, 40 p.) in 1922 and *Fundamentals of Greek Ethics* (30 p.) in 1923. In 1923, L. Chikalenko's doctoral dissertation 'An Outline of the Development of Geometric Ornamentation in the Palaeolithic Era' (49 p.) was published, as well as brochures by F. Shvets "Discovery of a New Species of Palm Tree in Ukraine, *Flabellaria nov. sp.*" (11 p.), V. Shcherbakivskyi "Painted Neolithic Pottery in Poltava Region: with an Appendix of Excavation Diary" (27 p.), and F. Shcherbyna "The Significance of Statistics as Scientific Expertise" (12 p.). In 1925, O. Kolesa published his work "Pivdenno-Volynske Gorodysche i Gorodyske Rukopisni Pam'yatnyky XII-XVI (South Volyn settlement and settlement manuscripts XII-XVI), Issue 4: Gorodyske Evangelie XII-XIII (Gorodyske Gospel XII-XIII). — P. 406-432." Issues 1–3 of this work were digitised and made publicly available by the Czech digital library "Kramérius", and later by the Ukrainian electronic libraries "Diasporiana" and "Chytyvo".

The distribution of 235 works by type of publication is as follows: books — 51/30; brochures — 27/41; articles — 29/57. The total is 107/128. The numerators show publications in Open Access, and the denominators show publications that are not in Open Access. According to international standards, a brochure is defined as a publication of up to 48 pages inclusive. The predominance of books in Open Access is due to the fact that when digitising old library collections, librarians give preference to large-volume fundamental works, i.e. books, while the predominance of articles that are not Open Access is due to the fact that Google Scholar focuses on indexing articles that are largely represented in "citation" status (data extraction from References) with incomplete metadata. Most of the Open Access articles were related to the digitisation of anniversary collections of scientific works by UFU, dedicated to Stanislav Dnistrianskyi (1923) and the Czech president, Tomáš Masaryk (1925).

All open access publications were presented in Ukrainian, with the exception of the article by A. Artymovič's "Symbolica critica ad Olbiopolitanorum decretum, quo honoratur Niceratus" (in Latin), published in 1925 in a collection of scientific works by the UFU dedicated to the President of the Czech Republic, T. Masaryk, as well as F. Shcherbyna's monograph (1921) "The Laws of Evolution and Russian Bolshevism" (in Russian), published in 1921 by the Russian bookstore of the publishing house "Russian Thought" in Belgrade (261 p.).

This study shows which publications by UFU professors and lectures are not in the Open Access, and their digitization and Open Access will make them available to current and future researchers, thus contributing to the continuity of the scientific traditions of the Ukrainian scientific diaspora. Note that the phenomenon of the rela-

tionship between diaspora and "cultural memory" was explored by Anh Hua (2005)⁴¹ in the section "Diaspora and Cultural Memory" of the book "Diaspora, Memory and Identity: Finding Home". She stressed the importance of preserving the memory that links the past and the present.

From analysing the publication activity of UFU professors and lecturers, we will move on to examining their biographical information. The work of most of these professors and lecturers has been well studied and is presented in the fundamental works and reference books of UFU mentioned above, as well as in the printed versions of Ukrainian encyclopaedias. However, in the context of the development of the information society, it is important to transfer this knowledge to an easily readable form on the Internet, as the new generation of the scientific community adheres to the principle that 'if it is not on the Internet, it does not exist.' In this regard, the global volunteer project 'Wikipedia' was launched in 2001. In our study, it was important for us to understand how fully the biographical articles of 45 UFU professors and lecturers were represented in Wikipedia in quantitative terms and what their linguistic diversity was, which had not yet been the focus of researchers of Ukrainian scientific emigration.

Wikipedia articles for professors of the Ukrainian Free University (1921–1925)

In addition to publication activity, the number of biographical Wikipedia articles in different languages can also be used to measure the importance of a person⁴². Table 4 lists UFU professors Wikipedia articles in at least five different languages.

Table 4.

Professors of the Ukrainian Free University, 1921—1925, and the diversity of their language articles on Wikipedia

Name and years of life	Field of knowledge	Number of language articles on Wikipedia
1	2	3
Ivan Horbachevskyi (1854–1942)	Chemistry	uk,ru,cz,de,en,fr,it,pt,pl,ar (10)
Stepan Smal-Stotskyi (1859–1938)	Ukrainian Philology	uk,ru,cz,de,en,fr,pl,ro,ar, eo (10)

⁴¹ Hua, A. (2005). Diaspora and Cultural Memory. In V. Agnew (Ed.) *Diaspora, Memory, and Identity: A Search for Home*. (pp. 191 — 208). University of Toronto Press. <http://www.jstor.org/stable/10.3138/9781442673878.2>

⁴² Moskovkin, V.M. (2025).

End of table 4

1	2	3
Dmytro Antonovych (1877–1945)	Art History	uk,ru,cz,de,en,fr,ar (7)
Roman Smal-Stotskyi. (1893–1969)	Comparative Slavic Linguistics	uk,ru,de,en,it,pl,ar (7)
Oleksandr Shulhyn (1889–1960)	World History	uk,ru,de,en,fr,pl,ar (7)
Oleksandr Lototskyi (1870–1939)	Church Law	uk,ru,de,en,pl,ar (6)
Fedir Shvets (1882–1940)	Geology	uk,ru,de,en,fr,pl (6)
Fedir Shcherbyna (1849–1936)	Statistics	uk,ru,de,pl,kk (5)
Viacheslav Lypynskyi (1882–1931)	History of Ukraine	uk,ru,be,de,en (5)
Dmytro Doroshenko (1882–1951)	History of Ukraine	uk,ru,de,en,fi (5)
Stepan Rudnytskyi (1877–1937)	Geography	uk,ru,de,az,ka (5)
Oleksandr Kolessa (1867–1945)	Ukrainian Philology	uk,ru,cz,de,pl (5)
Zenon Kuzela (1882–1952)	Ethnography	uk,ru,en,fi,ar (5)

Note: Language abbreviations are taken from ISO 639-1: uk — Ukrainian, ru — Russian, cz — Czech, de — German, en — English, fr — French, it — Italian, pt — Portuguese, pl — Polish, ar — Arabic, ro — Romanian, eo — Esperanto, fi — Finnish, kk — Kazakh, ka — Georgian, az — Azerbaijani.

This table indicates that publication output is not the only standard for notoriety, as those with the most publications are different professors to those with the most Wikipedia articles. The professors with biographical Wikipedia articles in the highest number of languages were Ivan Horbachevskyi (1854–1942) and Stepan Smal-Stotskyi (1859–1938), each of whom had Wikipedia articles written about them in ten different languages.

We can conclude that Wikipedia serves not only as a knowledge repository, but also as a tool of visibility and symbolic recognition. The number of multilingual articles about a person in Wikipedia can be seen as an altmetric indicator of their broader cultural and scientific relevance, especially for transnational or diasporic communities. Such visibility enhances not only the perceived value of the scholar's contributions but also facilitates access to their work by a wider international audience.

It should be noted that Wikipedia articles only existed for 38 out of 45 professors at the time this research occurred. Among the seven people for whom there were no such articles are the biologist Petro Andrievskyi (1880–1945), who worked as a pro-

fessor at the UFU for 10 years, and the lawyers Dmytro Koropatnytskyi (1879–1940) and Lev Yekh (1872 — between 1938 and 1943)⁴³.

At the same time, Ukrainian electronic encyclopaedias provide much poorer coverage of UFU professors and lecturers (1921–1925) than Wikipedia. For example, the Encyclopedia of Modern Ukraine (<https://esu.com.ua/>) does not contain articles on S. Smal-Stotskyi, R. Smal-Stotskyi, F. Shcherbyna, O. Shulhyn and F. Shvets, who appear in Table 4. The situation is even worse in the Great Ukrainian Encyclopedia (<https://vue.gov.ua>), which contains only articles about D. Antonovych and V. Lypynskyi from the list of persons in Table 4 (for the rest of the persons, there are either no articles or only brief mentions of them). Consequently, there is still a lot of volunteer work to be done to digitise biographical articles from the printed versions of these encyclopaedias into electronic form. We noticed that the electronic version of the Encyclopaedia Britannica does not include the names of UFU professors and lectures.

As representatives of the first wave of Ukrainian scientific emigration are poorly represented in Ukrainian electronic encyclopaedias, it is necessary to propose creating an electronic encyclopaedia of Ukrainian scientific emigration. This encyclopaedia should contain information about individuals, scientific works, academic organisations, scientific societies, and events.

There is also the issue of historicity and temporal contextual relevance to take into account here. These people predate Wikipedia — impact and importance are being measured by a modern standard — there is bias in that. Someone may have had a lot of impact and influence in their day but no longer be relevant now and not be on Wikipedia. This often holds true for certain types of practitioners / practice based scholars especially.

The objective significance of prominent scientists is determined by their inclusion in reputable encyclopaedias and encyclopaedic dictionaries. These publications have extensive editorial boards comprising leading scientists, who in turn have attracted other leading figures in their fields to contribute biographical articles. The comparative significance of scientists represented in these publications can then be determined by the content and size of their articles, as well as by references to their work and articles written about them by other authors. In principle, the authors of Wikipedia biographical articles should take into account the valuable experience gained from writing encyclopaedias and dictionaries through collective work on these articles. The altmetrics that we propose for the diversity of language versions of Wikipedia biographical articles demonstrate the current international recognition of scientists from previous eras.

All of this will allow us to outline a plan for improving existing Wikipedia articles and creating new ones. Let us now move on to analysing the distribution of electronic files of open access publications by UFU professors and lecturers across

⁴³ Ibid.

digital libraries and repositories. This distribution is due to the fact that the same publication may be digitised by different libraries and repositories.

Distribution of publications by digital libraries and repositories

As shown in the section “Publications by UFU Professors and Lecturers (1921–1925)”, there are 107 Open Access publications associated with this key period in the UFU’s history, represented by 175 files. This number of files was found from Table 5 using the following line-by-line calculations: $44 + 3 \times 17 + 2 \times 13 + 2 \times 11 + 2 + 4 + 3 + 3 + 3 + 2 + 2 + 2 + 2 + 1 + 1 + 1 + 1 = 175$. The most files of publications were found in the Ukrainian digital libraries “Diasporiana” (88), “Chytyvo” (44) and the Czech digital library “Kramerius” (32), while the first two libraries borrowed without declaration 43 files of publications from the Czech digital library “Kramerius” (Moskovkin 2024)⁴⁴, ⁴⁵. Thus, out of 175 publication files, 75 (43 + 32) are from the Kramerius Digital Library, which is 42.9%.

Table 5.

Distribution of publications by digital libraries and repositories

Digital libraries and repositories	Number of publications
Diasporiana	44
Kramerius, Diasporiana, Chytyvo	17
Kramerius, Diasporiana	13
Diasporiana, Chytyvo	11
Chytyvo	11
Kramerius	2
libarch.nmu.org.ua, Diasporiana, Internet Archive, Chytyvo	1
Diasporiana, Chytyvo, elib.nlu.org.ua	1
libarch.nmu.org.ua, Diasporiana, Chytyvo	1
libarch.nmu.org.ua, Diasporiana	1
libarch.nmu.org.ua, Chytyvo	1
Chytyvo, irbis — nbuv.gov.ua	1
elib.nlu.org.ua	1
libarch.nmu.org.ua	1
commons.wikimedia.org	1
Total	107

⁴⁴ Moskovkin, V.M. (August 10,2024). Publications of professors and teachers of the Ukrainian Free University, placed in the Open Access. (In Ukrainian). Ibid. <https://zenodo.org/records/13333508>

⁴⁵ Moskovkin, V.M. (2025).

Out of 175 publication files, 48 were without bookmarks or with fragmentary marks that do not allow us to identify the place of storage of publications. In addition to the 75 publication files stamped by Slovanska knihovna, the national library in Prague, there were publication files stamped by the University of Toronto Library (5 publications), Lviv Scientific State Library (4 publications), National Parliamentary Library of Ukraine (4 publications), University of Illinois Library, Urbana-Champaign (3 publications), etc.⁴⁶

In the next section, we will analyse the bookmarks in one of the publications that were presented in the most readable and comprehensive manner.

Analysis of bookmarks using a case study

The analysis of bookmarks is very important, as it allows us to trace the fate of each individual book, to see with which events and people it has been associated. The collection of publications studied was relatively poor in such marks, in a number of cases they were simply destroyed, which is considered bad practice in the preservation of books in electronic form⁴⁷.

In our case, there was only one book with rich book markings (Shcherbakivskyi 1925)⁴⁸. On the title page, we can see a gift inscription from the author to Prof. O. Shulhyn (1889 — 1960) and a square stamp of the Ukrainian Library of Symon Petliura in Paris (Bibliothèque Ukrainienne Symon Petlura).

On this library's website we read that the library was founded in 1926 and that «since 1927 the preparatory work was carried out by the library's Statutory Council, consisting of V. Prokopovych (chairman), I. Kosenko, I. Rudychiv, O. Udovychenko, O. Shulhyn», while the official opening of the library took place on 25 May 1929 (Bibliothèque Ukrainienne Symon Petlura 2024)⁴⁹.

It is clear from this that O. Shulhyn gave the book he had received from Shcherbakivskyi to the Symon Petliura Library.

Next we see a stamp with the inscription «Collection of Arkady Zhukovsky». We read about him in the work of S.I. Kot (2014)⁵⁰: «Arkadii Zhukovskyi (12 January 1922, Chernivtsi — 2 October 2014, Paris) was a Ukrainian historian, public and political figure. Full member of the Shevchenko Scientific Society (1972). ...A leading Ukraini-

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Shcherbakivskyi, V. (1925).

⁴⁹ Bibliothèque Ukrainienne Symon Petlura (2024). <http://bibliotheque-petlura.com/ua/>

⁵⁰ Kot, S.I. (2014). Arkadii Zhukovskyi (12.01.1922, Chernivtsi — 2.10.2014, Paris). Ukraine in international relations. In M.M. Varvartsev (Ed.) *Encyclopaedic dictionary-reference. Issue 5. Biographical part: A-M.* (pp. 163-164). Kyiv: Institute of History of Ukraine of the National Academy of Sciences of Ukraine. (In Ukrainian). https://shron1.chtyvo.org.ua/Varvartsev_Mykola/Ukraina_v_mizhnarodnykh_vidnosynakh_Entsyklopedychnyi_slovyk-dovidnyk_Vypusk_5.pdf?PHPSESSID=a6n8v0ms766s4norba21136715

anist in France for many years... In 1989-1995, he was president of the Symon Petliura Library in Paris and Member of the Metropolitan Council of the UAOC in Europe».

In this respect, we can assume that the book in question was in the collection of Arkadii Zhukovsky in the Symon Petliura Library.

On the title page of the book there is a stamp with the inscription «Бібліотека імені О. Ольжича. Вул. Грушевського 4» («O. Olzhych Library. 4 Hrushevskoho St.»), and it is known that this library was the first private Ukrainian library, founded in 1994 (Kucheruk 2003)⁵¹. Therefore, it can be assumed that Arkady Zhukovsky, after finishing his term as president of the Symon Petliura Library, transferred this book to the newly established Ukrainian library. From the article by M. Shlyakhtychenko (1978)⁵² on Oleh Olzhych (1907-1944) we learn that he attended lectures on archaeology by Professor V.M. Shcherbakivskyi at the Ukrainian Free University and the Faculty of Philosophy of Charles University (winter semester 1925).

This is what the bookmarks from a single book from a century ago, written by the famous archaeologist Volodymyr Shcherbakivskyi (1876-1957), who made a great contribution to the opening of the Ukrainian Free University in Munich, where he was the first rector, can tell us.

In the next section, we will examine the issue of correctly describing metadata in collections of rare and old books, including bookmarks in their lists, which we did not observe in leading digital libraries.

Standards for describing works in electronic collections of rare and old publications

When describing works in electronic collections of rare and old publications, it is crucial to follow certain standards in the form of metadata. First of all, the place of storage and the date of digitization of the work must be indicated. This can be seen, for example, in the Internet Archive and Google Books.

In Project Gutenberg, they also provide information such as credits (where and by whom the book was made available), release date (date the book was posted on the project's website), copyright status (for example, public domain in the US), and number of downloads.

In the Hathi Trust Digital Library, book collections are described according to the following parameters: subject, author, language, place of publication, date of publication, original format, original location.

⁵¹ Kucheruk, O.S. (2003). Library named after O. Olzhych. In: I.M. Dziuba, A.I. Zhukovsky, M.G. Zheleznyak [et al.] (Eds). *Encyclopaedia of Modern Ukraine*. Kyiv: Institute of Encyclopaedic Research of the National Academy of Sciences of Ukraine. (In Ukrainian). <https://esu.com.ua/article-41984>

⁵² Shlyakhtychenko, M (1978). To the biography of Dr Oleg Kandyba-Olzhych. *Ukrainian historian*, 01-03, 120-127 (in Ukrainian). https://chtyvo.org.ua/authors/Shliakhtychenko_Mykhailo/Dobiohrafii_d-ra_Oleha_Kandyby-Olzhycha/

For book collections in the European Digital Library (Europeana), in addition to the standard characteristics of a book, we see contributors, providing institution, aggregator, rights, identifier, providing country, collection name, date first published on Europeana, and date last updated by the providing institution. For rare books, such as incunabula, the provenance is also provided.

For collections of old books, we propose to introduce a parameter to describe bookmarks (library stamps, owner and donor inscriptions, etc.), which we have studied on the example of the works of UFU teachers. This can be easily implemented for the digital libraries «Diasporiana» and «Chytvo», for which we offer a minimum set of book characteristics that are not present in the description of books in these libraries: place of storage, date of digitization, description of bookmarks, copyright, number of downloads⁵³.

All of the above suggests the preparation of the programme «Open Access to the Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration», which will be described in the next section.

Towards the development of the programme «Open Access to the Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration»

Earlier, we showed that 45.5% of the publications of the UFU faculty in the first five years of its work (1921–1925) are in the public domain⁵⁴. We believe that a similarly low figure will be found for other centers of Ukrainian scientific emigration of the first wave.

This suggests that it is necessary to intensify the work on digitizing the relevant. For this purpose, a special Open Access program should be developed and launched, covering all centers of Ukrainian scientific emigration, including all five waves.

Within the framework of this program, in order to preserve and promote the scientific heritage of all waves of Ukrainian scientific emigration, we propose to develop a draft «Declaration on Open Access to Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration» and an «Action Plan» for it.

The main goal of this Declaration should be to create a single Open Access Repository or a network of such repositories in the main centers of the Ukrainian scientific diaspora, a single Open Access platform as a preprint server, as well as to convert scholarly journals related to Ukrainian studies to open access. This applies, for example, to the scholarly periodicals of the Slavic Institute (Prague), the UFU (Munich), etc. It is also possible to create a scholarly journal dedicated to the problems of Ukrainian scientific emigration or Ukrainian scientific diasporas.

⁵³ Moskovkin, V.M. (2025)

⁵⁴ Ibid.

The procedures for creating these Open Access repositories, Open Access journals and preprint server, as well as the electronic encyclopaedia of Ukrainian scientific emigration mentioned earlier, should be included in the Action Plan of the above-mentioned Declaration.

To promote the scientific heritage of Ukrainian scientific emigration on a global scale, the Open Access programme should facilitate the translation of the most significant and relevant works into English.

Our analysis of 107 Open Access publications by UFU professors and lecturers revealed that a brochure — *The Name of Ukraine: With Maps. Vienna: Franko Son & Co., 1921 (30 pp.)* — by the prominent Ukrainian jurist, publicist and social and political figure Sergiy Shelukhin (1864–1938) deserves to be translated. The brochure contains unique information on how the name 'Ukraine' was presented and described in the works of ancient geographers, as well as in Old Russian chronicles and on maps by Italian, French, Dutch, German and English geographers from the 16th–18th centuries. These maps were photographed in museums, archives and libraries in the Vatican, Paris and London. According to the author, he collected fragments from 50 old maps published between 1508 and 1831.

Translations of works can be published on the Zenodo server, as well as in the UFU collection of works.

All of the digital libraries and repositories we have identified (Table 4) provide open access to their content in the sense that it can be read, downloaded, copied, distributed, printed, etc. freely and without charge. This is in line with the definition and principles of Open Access set out in the Budapest Open Access Initiative. At the same time, these digital libraries and repositories, with the exception of the Internet Archive (Heritrix is the Internet Archive's open-source), do not use modern Open Access practices related to open-source software operating under the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) and implemented in Open Access repositories. As a result, keyword searches in Google Scholar or Google Books will not find the publications in these libraries and repositories, but only in their search engines.

Therefore, only when these libraries and repositories switch to open-source software will it be possible to talk about full open access to the publications of Ukrainian scholars in emigration, the content stored in digital libraries and repositories needs reliable metadata to be discoverable by internet search engines such as Google Scholar.

When searching for content related to the works of Ukrainian scholars in emigration, most users are unlikely to search individual specialized digital libraries and repositories. Therefore, indexing and high-quality metadata should comply with open access standards and with OAI-PMH, which will allow a wider audience to find and use archived content.

Creative Commons licenses play an important role in Open Access. But since they don't apply to old publications, we may be talking about copyright protection. It

is obvious that the copyright on many works of the first wave of Ukrainian emigrants has already expired.

The Open Access programme under consideration should also take into account the availability of infrastructure for the long-term preservation of journals, preprints, and collections of rare and old books, which can only be provided by large institutional actors or the state. The Ukrainian public electronic libraries Diasporiana and Chytyvo will not be able to ensure such long-term preservation of content. They could sign agreements with large digital libraries such as Europeana, Hathi Trust Digital Library or Google Books Library Project to store backup copies of documents with links to their original storage locations.

Unlike existing Open Access programmes and initiatives, the proposed programme aims to make both current journal publications and rare and old book collections freely accessible. Currently, open access is mainly associated with recent publications from commercial scholarly journal publishers. There are no leaders or representatives of traditional archives and museums among the signatories of open access initiatives. In our programme, «Open Access to Scientific Knowledge and Cultural Heritage of Ukrainian Scientific Emigration», we propose placing equal emphasis on open access to current journal publications, as well as on the digitisation and open access of rare and old publications for which copyright has expired. For museum and archival collections, we propose providing access to annotated catalogues at the very least.

In order to digitise rare library collections that preserve the printed heritage of Ukrainian scientific emigration, we propose connecting libraries that have such collections to the Google Books Library Project. Twenty years ago, Google set itself the goal of digitising and making available online all the world's significant book heritage since the time of Gutenberg. To this end, Google has entered into non-commercial agreements with major university and national libraries around the world. As part of this project, more than 40 million books have now been digitised. The Ukrainian Free University could initiate and drive the digitisation of rare book collections by Ukrainian scientific emigrants as part of the Google Books Library Project, which would significantly contribute to the programme's second mission of providing open access to rare and old publications.

In addition, when carrying out this second mission, it is proposed to take into account the experience of digitisation, collaboratively collecting, organising, preserving, communicating, and sharing the record of human knowledge, which has been accumulated in Project Gutenberg, Europeana and Hathi Trust Digital Library.

Now let us ask the question. Who can develop and launch a program of «Open Access to the scientific knowledge and cultural heritage of Ukrainian scientific emigration»?

Of course, Ukrainian academic organizations and ministries responsible for science, education, culture, information policy and media should be addressing this

issue in the first place. Unfortunately, the country has no state policy on Open Access, and only three Ukrainian organizations have signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities in the 21 years of its existence.

But as a result of the sixth wave of Ukrainian scientific emigration, which involved more than 20,000 Ukrainian scientists, we think there is a prospect of launching an Open Access program, as the Office for the Support of Scientists at the Council of Young Scientists at the Ministry of Education and Science of Ukraine has launched the «Ukrainian Scientific Diaspora» initiative. This program could in principle be supported by the UFU (Munich), which is the only official Ukrainian university abroad.

Conclusions

Thus, we show how to analyse the scientific heritage of the Ukrainian scientific diaspora and what measures are necessary to promote and preserve this heritage using Open Access tools. The analysis of the scientific heritage of the Ukrainian scientific diaspora is carried out using the example of the Ukrainian Free University in the first five years of its operation, and the measures for the promotion and preservation of the scientific heritage of all six waves of Ukrainian scientific emigration are proposed, which should be developed within the framework of the program «Open Access to the Scientific Knowledge and Cultural Heritage of the Ukrainian Scientific Emigration».

The methods used to analyse the UFU's staff, and their publications could serve as a model for other academic institutions and centers, and making historical research papers available through Open Access creates valuable educational resources.

Our interdisciplinary study, located at the intersection of the history of science, Ukrainian studies and digital humanities, shows the importance of preserving the continuity of the traditions established by the first waves of Ukrainian scientific emigration, the new generation of Ukrainian scientific emigrants should maintain these traditions. In order to study and understand these traditions, it is necessary to study the activities of scientists of previous waves of Ukrainian scientific emigration, and in order to make the results of this study available to the wider scientific community, they should be digitized and made publicly available.

And now there are good conditions for preserving the continuity of the traditions of the Ukrainian scientific diaspora in the context of Open Access. Ukrainian emigrant scholars are in the Western academic environment, which is the most open to the ideas of Open Access, are well-positioned to be agents of these ideas in Ukraine, where there is no state policy supporting Open Access.

Naturally, if Ukrainian emigrant scientists publish in Open Access journals and post their articles in the OA repositories of the research institutes and universities where they work, then their publications will be visible to scientists remaining in

Ukraine. It is important that these publications, especially those in the humanities, take into account the contribution of scholars from the first waves of Ukrainian scientific emigration.

We believe that the analysis of publications from the early 20th century in the context of Open Access can show how past research has influenced modern scientific developments. But this requires a separate study.

Overall, the result of study shows the importance of preserving the continuity of the traditions established by the first waves of Ukrainian scientific emigration, the new generation of Ukrainian scientific emigrants should maintain these traditions. In order to study and understand these traditions, it is necessary to study the activities of scientists of previous waves of Ukrainian scientific emigration, and in order to make the results of this study available to the wider scientific community, they should be digitized and made publicly available.

In conclusion, it should be noted that all sections of this study are subordinate to a single goal, namely, how Open Access can help preserve the cultural memory of the Ukrainian scientific diaspora and integrate it into global scientific networks, as well as reconstruct its intellectual landscape.

Limitations.

Without access to printed versions of Ukrainian encyclopaedias such as the Great Ukrainian Encyclopaedia, the Encyclopaedia of Modern Ukraine, the Encyclopaedia of History of Ukraine, the Ukrainian Soviet Encyclopaedia and the Encyclopaedia of Ukraine, German encyclopaedias and dictionaries such as the Deutsche Biographische Enzyklopädie, the Deutsche Literatur-Lexikon and the Meyers Konversations-Lexikon, and the Encyclopaedia Britannica, it was impossible to compare the information they contain with Wikipedia biographical articles. Such access would have enabled Wikipedia articles to be improved and missing articles to be written.

The lack of access to the UFU library and archive also prevented us from identifying the printed works of its professors and lecturers that are missing from our list. Identifying these works would enable UFU archivists and librarians to plan their digitisation and open access. Additionally, UFU reference books indicate that, due to frequent funding shortages, a sufficient number of works by UFU employees could not be published. It would be interesting to search for these works in the UFU archive to find out if they were published at a later date. If such works are found, they should also be digitised and made publicly available.

As the processes of digitising and making publications publicly available are dynamic, a repeat study will be necessary in about a year's time (at the end of 2025). Regular monitoring of open access publications by representatives of Ukrainian scientific emigration is also necessary in general.

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