

Tetiana Boriak

MAPPING THE HOLODOMOR USING GIS TECHNOLOGIES: THE MODULE «TESTIMONIES» (MAPA PROJECT)

Тетяна Боряк

КАРТОГРАФУВАННЯ ГОЛОДОМОРИ ЗА ДОПОМОГОЮ ГІС-ТЕХНОЛОГІЙ: МОДУЛЬ «СВІДЧЕННЯ» (ПРОЄКТ «МАПА»)

Harvard Project MAPA began to be created in the beginning of 2010s as a resource for representation of statistical (demographic, economic) data. Later the project was broadened to inclusion of Holodomor oral history. The goal of the article is to reveal with the help of statistical methods of Holodomor oral history in the database, located on a spacial map in the module «Testimonies» of the MAPA Project. Methods: cartography, classification and generalization. The author selects five thematic rubrics: confiscation of food and livestock; cannibalism; survival strategies; resistance; feeding in the collective farms. The researcher concludes that there were similar processes during the Holodomor in various regions of UkrSSR.

Keywords: GIS, Holodomor 1932–1933, Holodomor eye-witnesses, MAPA Project, Ukrainian Research Institute (Harvard University), oral history.

Гарвардський проєкт «МАПА» створювався на початку 2010-их рр. як ресурс для відображення статистичних (демографічних, економічних) параметрів. Згодом проєкт було розширено до включення усної історії Голодомору. Мета дослідження: представити за допомогою статистичних методів дані усної історії Голодомору в базі даних, накладеної на просторову карту в модулі «Свідчення» проєкту «МАПА». Методи: картографічний, групування та узагальнення. Авторкою було виділено п'ять тематичних рубрик: конфіскація їжі та худоби; канібалізм; опір; стратегії виживання; годування в колгоспах. Головний висновок полягає в подібності процесів, які мали місце під час Голодомору, у різних регіонах УСРР.

Ключові слова: геоінформаційні системи, Голодомор 1932–1933, очевидці голоду, проєкт «МАПА», Український науковий інститут Гарвардського університету, усна історія.

Contemporary development of digital technologies has resulted into usage of GIS in administration and sciences (agriculture, geodesy, sociology and demography). History has not stood aside modernization processes. As a result, historical GIS projects began to be elaborated. As of 2012, there were not more than hundred of them. These are thorough historical atlases of countries and empires, as well as thematic atlases (Maya settlements, famine in Ireland) (Боряк & Сосса, 2012, с. 31–32). The majority were of demonstrative type. Therefore, they could be qualified as mostly educational resources, not research ones.

Relevance of the topic is caused by implementation of GIS technologies into the research of various topics of Ukrainian history, in particular the Holodomor. The most profound integrative resource by now is the Project «MAPA Digital Atlas of Ukraine»

(thereafter – MAPA Project). One of its modules has been constructed on the basis of usage of oral history of the Holodomor survivors. It was elaborated by the author.

Historiography. Technological approaches to transformation of notions and numbers into interactive maps are left outside this article. We will focus on the GIS projects in Ukrainian humanitarian sphere.

Mapping of historical events in Ukraine found practical realization in the project of the Ukrainian Institute of National Memory (2008–2010). This was one of the first projects that visualized space parameters of the famine. It was elaborated as part of the «National Memory Book of the Holodomor Victims» (19 volumes; 2008). The project tried to combine data about dead of starvation borrowed from both oral history and official documents (death registry cards). The goal was to create an electronic map of the

famine with the names of starved to death and binding to a name of a settlement. Part of functions was not implemented in this project. About 450,000 of famine victims were added to the database. Political changes of 2010 stopped the project, although its demo-version could be found in Internet and is supported by the developer (Візіком, 2023; УІНП)¹. In mid of 2000s the project was transferred to the National Museum of Holodomor-Genocide².

From the mid of 2010s GIS project found its development on the basis of this Museum. Five thematic blocks had been selected where the search can be made on the level of a settlement (НМГГ). The project of «Mass Burial Places Map 1932–1933» has been selected as a priority one. Now it is on the first stage: visualization of data about the places of mass burial of victims; on the next stage the documents, oral history, audio- and video-materials are planned to be add to the database (the map correspondingly) (НМГГ).

Lviv department of the Institute of Ukrainian Archeography and Source Study Named After M. S. Hrushevsky of the National Academy of Sciences of Ukraine has also elaborated a GIS-Atlas. It consists of five modules on regional history of XVth –XXth centuries; but only the first and the last modules have been completed (ЖБИУАТД, 2017).

National Museum of History of Ukraine in the Second World War has been working on the GIS project since 2014. Interestingly enough, Holodomor losses (taken from above mentioned National Memory Books) were also selected for inclusion in the database (Златанов, 2018, с. 19). This would enable contemporary analysis. But this module is still in the process of elaboration (НМІУДЦВ, 2023)³.

The author proposes the result of her many-year research on the module «Testimonies». The latter is the part of the MAPA Project (2010s –). The database was compiled on the basis of oral history of the famine. It represents five rubrics tied to the genocide mechanism and experience of survival.

The goal of the research is to reveal the methods for representation of oral history data about the Holodomor as part of the GIS-Atlas.

The tasks of the research: to reveal the project on the Ukrainian history implemented with the help of

GIS-projects; to illustrate content of the GIS projects on the Holodomor; to outline content of the MAPA Project module «Testimonies».

Main part. The first operative GIS resource on the Holodomor history was a thorough Harvard project called MAPA. This is a digital atlas of Ukraine, whose one basic module is built on the ground of Holodomor oral history sources. The project was initiated by the famous historian Serhii Plokhyy, a professor of the chair of Ukrainian history named after M. Hrushevsky and the director of the Ukrainian Research Institute at Harvard University (Cambridge, MA, USA) (URI HU, 2017, 2022). Initially an agreement was signed with the Institute of history of Ukraine of the National Academy of Sciences of Ukraine in 2012. Later Institute of Demography and Social Researches named after M. V. Prukha of NAS of Ukraine joined the project as well as certain specialists (Боряк & Сосса, 2012, с. 30). URI specialist Kost' Bondarenko has secured program-technological side of the Atlas.

Initially the project MAPA had a goal to visualize the results of the historical demography of the Holodomor research. It is much easier to integrate quantitative indicators into the project in comparison to other data borrowed from historical sources on the topic, especially oral history. Such topics were included in the maps: Holodomor losses, ethnic composition of UkrSSR population, collectivization etc. (URI HU, 2017).

Gradually integration of statistical, source, literary, oral history data began into cartography data array in one data platform (Боряк & Сосса, 2012, с. 31).

Today MAPA consists of various sections. These are the copies of traditional maps; maps from the gallery with the data of already implemented projects; maps-history on various topics; interactive maps (Головінський, н/д). Four modules were united in the section «Historical Atlas» («The Great Famine» being one of them), ten – «Contemporary Maps» (URI HU, 2022).

Let's take a look at the module «Testimonies» of the interactive map «The Great Famine in Ukraine» (Boriak, 2021). It was prepared in 2013–2021 with some brakes. 3451 survivors told their stories that

¹ Unfortunately, a reader will not find explanations using given addresses regarding history of the project, its goal and quantitative parameters; this basically levels profound work done by its initiators and developers.

² The authors is grateful for consultations to the deputy head of the Ukrainian Institute of National Memory Volodymyr Tylishchak.

³ The project makes available data of more than 44,5 thousand of settlements.

took place in 1962 settlements. It was elaborated on the basis of 17 collections of oral history on the Holodomor and two e-resources (Ukrainian Canadian Research and Documentation Center (www.holodomorsurvivors.ca) and «Famine 1932–1933 Kharkiv oblast» (www.golodomor.kharkov.ua). Here are some examples of the collection of testimonies: «Famine 33: People's Book-Memorial» (comp. L. Kovalenko ta V. Maniak, 1991): 10 volumes of «Ukrainian Holocaust 1932–1933: testimonies of those of survived» (compl. Father Yu. Mytsyk, 2005–2014); two volumes of «Memory of People» (compl. O. Veselova) and several regional collections.

Five sections included in the module consist of 25 subsections⁴:

1) confiscation: of food (including the term «everything»); of possessions; grain reserves; non-grain reserves; spoiling of cooked food; of cattle.

2) Cannibalism. We included the cases verified by a survivor; rumors were not included.

3) Resistance: individual; organized; armed; murder; sabotage. Often data of this category are absent in the official documents. Thus such data from oral history are of extremely importance since allow seeing attempts of the peasants to resist even during the famine.

4) Survival strategies: leaving or entering a collective farm; escape from a village; exchange of clothes for food; sending away of children; outside help (family, relatives, teachers, neighbors, authorities); a cow.

5) Feeding in the collective farms: allotment of grain; non-grain reserves; feeding in a collective farm or in a school; feeding of a working collective farm member or his/her family or a permission to take food home; feeding of everyone in a village, including individual peasants.

Importantly enough, the modules that touch the family itself (confiscation of food, survival strategies, feeding) mostly reveal data about personal survival of an eye-witness family. While two other categories – cannibalism and resistance (except for individual resistance) mostly describe not the case, but rather recalling of this event in the village, describing not personal but experience of other peasants in a native or another village. So here we deal with two layers of memory about family and village collective survival during the Holodomor.

Obviously, data of oral history sources seem to lose the battle to statistics in terms of «objectivity» – let's say, ethnic compositions of a certain region, taken from census. Yes, human experience of surviving the genocide cannot be evaluated as one number, like the given above example. At the same time proposed material allows looking at the Holodomor through the prism of human experience of evaluation of the reasons and conditions of genocide implementation. The latter are: confiscation of non-grain reserves, survival strategies, place and role of the authorities in these strategies from the point of view of manipulation of the help after total confiscation of food reserves etc.

Unfortunately, insufficient level of oral history «passportization» reasonably slowed down formation of the data array for the GIS project because often it turned out that data provided by an interviewer or by a compiler of the book collection do not coincide with the narrative of a survivor: for instance, he or he was in another village that differed from an indicated in the text. This factor often did not allow verification of a corresponding village. Therefore, big data array remained outside the frames of the database.

Data are included according to the administrative-territorial division till 2020. Unproportionally reasonable amount of testimonies in the cities does not mean that the majority of survivors lived there. During the famine we rather talk about the villages located not far from the cities and later included as part of the cities.

Tables of other settlements of a certain rajon are tied to a certain settlement. This allows getting information simultaneously on several settlements of one rajon.

Because of a big square of geographical objects involved (territory of UkrSSR) and correspondingly, variety of human experience of living through the famine, there are numerous combinations of separate types of food, survival strategies, reaction of the authorities etc. Therefore, it is impossible from the technical point of view to represent content blocks included to the module as separate layers. Representation of data takes place on the level of a settlement.

It is important to stress that data presented touch only period of the Holodomor (1932–1933). Previous years of collectivization had been also accompanied

⁴ All further estimations are made by the author on the basis of the database (Boriak, 2021).

by confiscation and starvation. But our research focuses only on the period of the famine as a final stage of the process of subjugation and salvation of Ukrainian question. If the date of armed resistance, for instance, took place in unknown period of time; or when grain was confiscated before the famine in the end of 1932, we did not include such data in the table. So GIS module «Testimonies» reveal only events that happened during mostly during 7–9 months (end of 1932 – first half of 1933).

Evaluation of the module quantitative parameters shows that the majority of oral history data has been revealed regarding confiscation of food (2100) and strategies of survival (1859). These parameters are present in overwhelming majority of oral history sources and points at artificial nature of the famine: in the result of confiscation of grain and non-grain reserves of the peasants they faced death of hunger; therefore, they had to search ways of survival.

Rubrics toward confiscation of food, without detailing of confiscated types (1261), as well as of grain reserves and seeds (1348) are the most numerous (541 cases of non-grain reserves confiscation). Two rubrics of confiscation of food (K and M, 1802) in various combinations is more than extortion of non-grain reserves (L, 1384). This means that out of 2100 of oral history sources in this category there are 3470 cases of extortion of food reserves – more than amount of respondents (3451).

Out of 848 oral history about the cannibalism (a bit less than ½ of villages) more than 1/3 (326) mentioned cases of corpse eating; while cases of cannibalism – 1052.

About 150 of oral history sources with the testimonies about the resistance, 102 deals with individual resistance. Such rather small amount confirms the researchers' conclusion that ability to mass resistance had been broken by the system during the previous years of dekurkulization, deportations and repressions. Only 1/5 of cases fell down at organized (34) and armed (31) resistance.

After confiscation of food, the next biggest block tells about survival strategies (1859). The majority of the cases (756) touches outside help (from neighbors, teachers, village council administration, escape from a village (654) and exchange of clothes/belongings for products (609). 441 respondent survived thanks to a cow (sometimes a goat or a sheep).

There are mentions of 171 children left in the cities as a strategy to save their lives. Out of 1962 villages included in the database, we have testimonies of

respondents from 106 villages where such survival strategies were selected.

Correlation of mentions about leaving of a collective farm as form of resistance and entering it to survive looks like 1:5 (24 vs 118 cases).

The last block (890) concerns organization of nutrition by the state. Here the majority of cases is tied to nourishment of children (almost half, 412). 149 cases touch upon feeding during the spring sowing or other campaign. There are 65 cases about nutrition in the collective farms; to the contrary, almost 1/3 (294) stressed that only able to work on a collective farm field received food. There are only 131 mentions that food could be taken home or by other family members (out of 1962 villages this comprises 6,7 % of villages), confirming official instructions to secure nutrition only for working members of the collective farms. Only 23 respondents mentions that everyone in their village was fed. Such cases indicate about human factor when a village council head took a decision to save everyone in the village.

Let's take a closer look at some parameters in the perspective of the rajons. We have randomly selected two rajons of Cherkasy oblast: Kanivs'ky (11 villages) and Korsyn-Shevchenkivs'ky (20 villages). We have selected rubrics K (food, «everything», clothes); L (grain reserves, seeds) and M (non-grain reserves, destruction of prepared food). There are such numbers: 6K, 3L and 3M cases (total 12 cases) and 8K, 7L and 3M (total 18 cases) correspondingly. As we see, almost all respondents mentions confiscation of various types of food and the term «everything». Cases of confiscation of grain reserves are mentioned less often.

However when it comes to Zhytomyr oblast (Popilnians'ky (13 villages) and Ovryts'ky (6 villages) rajons), level of confiscation increases: 10K, 7L and 6M (total 23 cases) vs 4K, 1L and 1M (total 6 cases) correspondingly. Two rajons (Synelnykivs'ky, 11 villages and Porkovs'ky, 10 villages) of Dnipropetrovs'k oblast show similar to Zhytomyr oblast high rates: 10K, 4L, 2M (total 16 cases) and 9K, 14L and 2M (total 25 cases) correspondingly.

Again, the majority of testimonies mentions confiscation of food and «everything», often together with personal belongings (K). In all six rajons of three oblasts one can see that confiscation was total and usually did not omit a household.

Let's take a look at distribution of cases in three selected above oblasts in three parts of Ukraine:

Northern (Zhytomyr), Central (Cherkasy) and Southern (Dnipropetrovs'k).

In Zhytomyr oblast (99 villages) there are 58K, 45L and 25M (total 128). There are 37 oral history sources about cannibalism and 5 – about resistance. Such low numbers might indicate about wider variety of survival strategies, including natural resources; but the number of cases of cannibalism are between Cherkas'ka and Dnipropetrovs'k oblasts (see below). The block on survival strategies reveals, in particular, such data: leaving the village (13AA), selling/exchanging of personal belongings and valuables (22AB), sending children away (7AC), outside help by children, relatives, neighbours, co-villagers etc. (30AD). There are only two cases of feeding in a collective farm.

In Cherkasy oblast (174 villages) we have 71K, 101L and 47M (total 219 cases). There are 89 oral history sources about cannibalism and 11 – about resistance. The block on survival strategies reveals, in particular, such data: leaving the village (50AA), selling/exchanging of personal belongings and valuables (40AB), sending children away (7AC), outside help by children, relatives, neighbors, co-villagers etc. (42AD). Finally, only 10 cases of feeding on a collective farm.

In Dnipropetrovs'k oblast (248 villages) there are 142K, 119 L and 60 M (total 321). There are 80 sources about cannibalism and 19 – about resistance. Other rubrics: leaving the village (69AA), selling/exchanging of personal belongings and valuables (44AB), sending children away (15AC), outside help by children, relatives, neighbors, co-villagers etc. (72AD). There are only 7 cases of feeding on a collective farm mentioned.

Database allows us comparing correlations of cases from various spheres to the amount of villages where such an event took place. Amazingly enough, we get even the same arithmetic means for various oblasts (NB!). Confiscation of food, grain and non-grain reserves in three selected oblasts (Zhytomyr, Cherkasy and Dnipropetrovs'k ones) gives us the same amount of 13 cases per 10 villages in all three oblasts. This is an indicator of relatively similar state politics toward deprivation of peasants of food reserves all over Ukraine.

Similar arithmetic means of the cases regarding four survival strategies in three selected oblasts were received: 8 cases per 10 villages in Cherkasy and

Dnipropetrovs'k oblasts, and 7,3 – in Zhytomyr one. Estimations of arithmetic means for cannibalism goes in a row: from 3 cases per 10 villages in Dnipropetrovs'k oblast, 4 cases per 10 villages in Zhytomyr to 5 cases per 10 villages – in Cherkasy one.

Conclusions. We now know about three institutions that actively integrate GIS technologies in their historical projects: National Museum of Holodomor-Genocide, Lviv Division of Archeography Institute and National Museum of History of Ukraine in the Second World War. Part of the projects has been completed; the other part is still in progress.

In collaboration with Ukrainian and American researchers of Ukrainian history a thorough project has been initiated – MAPA project «Digital atlas of Ukraine». One of its components is the module «Testimonies» as the part of «Historical Atlas».

There are three shortcomings of the module. Firstly, selected for the representation five blocks do not provide statistically verified data (for instance, several peasants could mention one case of cannibalism or arson in their village). Secondly, selected data cannot involve all available spectrum of survival: who provided outside assistance; search for food outside the borders of UkrSSR; detailed description of resistance types etc. Thirdly, unlike demography or statistical sources, it is impossible to integrate all available types of oral history sources in the database since there are more than 112,000 of sources of personal origin on the famine.

Received arithmetic means for confiscation of food reserves (13 cases per 10 villages) impress with their unanimity, pointing at similar state politics toward extortion of food. Similar are the rates of implemented survival strategies (7 and 8 cases per 10 villages). Cases of cannibalism are also located close to one another.

Despite usage of quite small part of oral history, the selected for the project sources still cover all contemporary 17 oblasts of the Holodomor territory (and the majority of rajons), various categories of witnesses, testimonies from various years. The sources represent both thematic variety of Holodomor experience and geographic variety. Therefore, they can claim certain representativeness and certain regularities could be made on the basis of data collected.

ДЖЕРЕЛА ТА ЛІТЕРАТУРА

АТ «Візіком». (2023). *Український інститут національної пам'яті працює над створенням карти Голодомору*. Візіком. <https://api.visicom.ua/uk/posts/golod>

Боряк, Г. В., & Сосса, Р. І. (2012). ГІС-Атлас Голодомору в Україні 1932–1933 рр. Л. Г. Руденко (співголова), Р. І. Сосса (співголова), А. І. Бочковська та ін. *Національне картографування: стан, проблеми та перспективи розвитку. Збірник матеріалів V Всеукраїнської науково-практичної конференції «Національні атласи у формуванні глобального інформаційного простору»* (с. 30–35). Національний комітет географів України; Українська картографічна асоціація; Інститут географії НАН України; Державне науково-виробниче підприємство «Картографія».

Головінський, Т. МАПА: Цифровий атлас України (МАПА: Digital Atlas of Ukraine). *Енциклопедія історії України*. Готується до друку.

Златанов, З. (2018). Електронно-картографічний проект «Місця пам'яті про Другу світову війну на мапі України»: потенційний джерельний контент. *Військово-історичний меридіан. Електронний науковий фаховий журнал*, 4 (22), 14–24. https://vim.gov.ua/pages/_journal_files/05.02.2019/pdf/VIM_22_2018-14-24.pdf

Львівське відділення Інституту української археології та джерелознавства імені Михайла Грушевського Національної академії наук України. (2017). *Інтерактивний Атлас України*. <http://map.archeos.lviv.ua/maps/1>

Національний музей Голодомору-геноциду. *Карта поховань 1932–1933*. <https://map.memorialholodomor.org.ua/golodomor-1932-1933/>

Національний музей історії України у Другій світовій війні. (2023). *Друга світова на мапі України*. <https://mapsearch.warmuseum.kyiv.ua/>

Український інститут національної пам'яті. *Голодомор 1932–1933 рр. [Електронна карта: проект Українського інституту національної пам'яті]*. <http://victimsholodomor.org.ua/home.html>.

Boriak, T. (2021). *Testimonies (module)*. Interactive map «The Great Famine in Ukraine in 1932–1934». МАПА: Digital Atlas of Ukraine. Ukrainian Research Institute, Harvard University. <https://harvardcga.maps.arcgis.com/apps/webappviewer/index.html?id=f7592aad617f486390d086f91bb24be3>

Ukrainian Research Institute, Harvard University. (February 27, 2017). *Проект «МАПА. Цифровий атлас України» – Вікно у новітню історію України*. <https://huri.harvard.edu/news/проект-«мапа-цифровий-атлас-україни»-вікно-у-новітню-історію-україни>

Ukrainian Research Institute, Harvard University. (2022). МАПА: Digital Atlas of Ukraine. About МАПА. <https://gis.huri.harvard.edu>.

REFERENCES

АТ «Vizikom». (2023). *Ukrainskyi instytut natsionalnoi pamiati pratsiue nad stvorenniam karty Holodomoru. [Ukrainian Institute of National Memory works over creation of the Holodomor map]*. Vizikom. <https://api.visicom.ua/uk/posts/golod> [in Ukrainian].

Boriak, H. V., & Sossa, R. I. (2012). HIS-Atlas Holodomoru v Ukraini 1932–1933 rr. [GIS-Atlas of the Holodomor in Ukraine 1932–1933]. L. H. Rudenko (spivholova), R. I. Sossa (spivholova), A. I. Bochkovska ta in. *Natsionalne kartohrafuvannia: stan, problemy ta perspektyvy rozvytku – National mapping: state, problems and development prospects. Proceedings of the 5th All-Ukrainian scientific and practical conference «National atlases in the formation of the global information space»*, (pp. 30–35). Natsionalnyi komitet heohrafiiv Ukrainy; Ukrainska kartohrafichna asotsiatsiia; Instytut heohrafiiv NAN Ukrainy; Derzhavne naukovo-vyrobnyche pidpriemstvo «Kartohrafiia» [in Ukrainian].

Holovinskyi, T. МАПА: Tsyfrovyy atlas Ukrainy [МАПА: Digital Atlas of Ukraine]. *Entsyklopediia istorii Ukrainy – Encyclopedia of the history of Ukraine*. Hotuetsia do druku [in Ukrainian].

Zlatanov, Z. (2018). Elektronno-kartohrafichnyi proekt «Mistsia pamiati pro Druhu svitovu viinu na mapi Ukrainy»: potentsiinyi dzherelnyi kontent. [Electronic-cartography project «Places of memory about the Second World War on the map of Ukraine»: potential source content]. *Viiskovo-istorychnyi merydian. Elektronnyi naukovyi fakhovyy zhurnal – Military-historical meridian. Electronic scientific journal*, 4 (22), 14–24. https://vim.gov.ua/pages/_journal_files/05.02.2019/pdf/VIM_22_2018-14-24.pdf [in Ukrainian].

L'vivske viddilennia Instytutu ukrainskoi arheohrafiiv ta dzhereloznavstva imeni Mykhaila Hrushevskoho Natsionalnoi akademii nauk Ukrainy. (2017). *Interaktyvnyi Atlas Ukrainy [Interactive atlas of Ukraine]* <http://map.archeos.lviv.ua/maps/1> [in Ukrainian].

Natsionalnyi muzei Holodomoru-henotsydu. *Karta pokhovan 1932–1933 [Burial Map 1932–1933]*. <https://map.memorialholodomor.org.ua/golodomor-1932-1933/> [in Ukrainian].

Natsionalnyi muzei istorii Ukrainy u Druhii svitovii viini. (2023). *Druha svitova na mapi Ukrainy [Second World War on the map of Ukraine]*. <https://mapsearch.warmuseum.kyiv.ua/> [in Ukrainian].

Ukrainskyi instytut natsionalnoi pamiati. *Holodomor 1932–1933 rr. [Elektronna karta: proiekt Ukrainskoho instytutu natsionalnoi pamiati – Electronic map: the project of the Ukrainian Institute of National Memory]*. <http://victimsholodomor.org.ua/home.html> [in Ukrainian].

Boriak, T. (2021). *Testimonies (module)*. Interactive map «The Great Famine in Ukraine in 1932–1934». МАПА: Digital Atlas of Ukraine. Ukrainian Research

Institute, Harvard University. <https://harvardcga.maps.arcgis.com/apps/webappviewer/index.html?id=f7592aad617f486390d086f91bb24be3> [in English].

Ukrainian Research Institute, Harvard University. (February 27, 2017). *Proekt «MAPA. Tsyfrovyyi atlas Ukrainy» – Vikno u novitniu istoriiu Ukrainy [Project «MAPA. Digital Atlas of Ukraine» – Window to new history of Ukraine]*. <https://huri.harvard.edu/news/proekt->

«mapa-tsyfrovyyi-atlas-ukrainy»-vikno-u-novitniu-istoriiu-ukrainy [in Ukrainian].

Ukrainian Research Institute, Harvard University. (2022). *MAPA: Digital Atlas of Ukraine. About MAPA*. <https://gis.huri.harvard.edu> [in English].

Боряк Тетяна Генадіївна, кандидат історичних наук, доцент, дослідник, історичний факультет, Вільнюський університет, м. Вільнюс, Литва.

Boriak Tetiana, PhD in history, associate professor, researcher, Faculty of History, Vilnius University, Vilnius, Lithuania.

ORCID: <https://orcid.org/0000-0002-7472-0014>

E-mail: tetiana.boriak@fulbrightmail.org

Одержано 14. 04. 2023