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Potential of Databases for Research and Culture of Remembrance Using the Deportation of Jews under the Nazi Regime as an Example

Abstract: Online information sources are influencing our knowledge more and more. However, the insights we can gain from the various online portals on Nazi history are limited by the range of information available, and its quality and format. This is clearly demonstrated in relation to the deportation of Jews under Nazi-rule: Most of the transports, as well as the fate of the majority of the deportees can be reconstructed online. However, the information is stored disparately and is inconsistent. In this article, various examples of databases on the history of National Socialism will be used to show how their potential can be better exploited in the future, if information is clearly identifiable and, above all, better interlinked.

Introduction

The future is digital! This statement has become a truism not only since the coronavirus crisis, but also in the field of Holocaust research and the culture of remembrance. With the temporary closure of reading rooms and the limited admission of users, the need for access to digital sources of information has once again risen sharply.

In addition to archives, educational institutions and private initiatives in particular have set up online portals on the history of National Socialism in recent years, some of them extensive. The information they contain usually offers less access to primary sources than to formatted data – published in the form of memorial books or prisoner databases for example. Powerful databases often lie behind these offerings, which not only reconstruct the history of those people who became victims of Nazi tyranny, but also bring places of remembrance of Nazi history back into public memory¹ or name perpetrators². The provision of de-

¹ See for example Federal Agency for Civic Education: “Datenbank Erinnerungsorte”. Available at: <https://www.bpb.de/geschichte/nationalsozialismus/erinnerungsorte/>. Last accessed: 12.01.2022.

tailed information in these knowledge clusters, which are easily accessible to anyone at any time, offers countless research opportunities, the potential of which academics are exploiting more and more to formulate and answer both new and old research questions.

Especially where there are consistent database applications, these can be used in historiography to substantively support analytical results with empirical findings. Most of these are research projects with a regional focus.³ However, where a higher-level evaluation is aimed at and complex requests to various databases are necessary for this purpose, corresponding inputs often fail in advance due to a number of hurdles. Whilst it is true that earlier problems with the compatibility of different programs can now be largely solved by standardizing export interfaces, the information in the various databases is available in different densities, and is not structured and formatted in a consistent manner. Many databases have grown and expanded over the years, with much of the information stored in them only as full text, and not in the form of uniquely identifiable values, so-called entities.

This can lead to considerable problems with identifying places, institutions and people. However, a subsequent restructuring of the information is time-consuming and out of the question for many projects, if only for cost reasons. The use of artificial intelligence will make it increasingly possible to rise to these challenges in the future, but its use is currently still expensive and not widespread. Apart from technical and content-related problems, data protection and personal privacy requirements in particular often represent obstacles that are difficult to overcome. The fundamental question of whether it is justifiable not only to collect data on those people who were persecuted and murdered by the Nazis, but also to interlink it – i.e. the ethical and moral problems of data collection – is, however, only referred to here; it is not the main focus of this paper.

In addition, many institutions have still not recognized the additional value of sharing information both for themselves and their projects, and have therefore invested few or no resources in exchanging information with other projects, interlinking their data or even providing open access to it. In Germany and Austria

² See for example Hamburger Behörde für Schule und Berufsbildung: “Datenbank online. Die Dabeigewesenen”. Available at: <https://www.hamburg.de/ns-dabeigewesene>. Last accessed: 12.01.2022.

³ For Munich, see for example Maximilian Strnad: *Privileg Mischehe? Handlungsräume “jüdisch versippter” Familien 1933–1949*, Göttingen: Wallstein, 2021; Katharina Bergmann: *Jüdische Emigration aus München. Entscheidungsfindung und Auswanderungswege (1933–1941)*, Berlin: De Gruyter Oldenbourg, 2022.

in particular, this also often conflicts with fundamental considerations, for example, concerns that right-wing extremists could misuse the data, or that the data could be used in an inappropriate way due to the loss of control associated with their wide accessibility. The opportunities offered by open-source access, for example, through crowdsourcing for cataloging, reviewing and expansion, or as part of hackathons,⁴ as in the case of the Marbles of Remembrance⁵ or Visualization of Jewish Life in Berlin projects,⁶ are often shelved in light of these concerns.

Databases are created for a unique purpose. In the area of Nazi history, this is usually based on the culture of remembrance and is usually subject to the content-related and geographical focus of the driving institution. However, many users have additional or different interests in terms of knowledge and use and would be keen to use the data for their own research. However, due to the obstacles described above, the potential for higher-level queries to databases that could provide significant new insights for regional comparisons and generalizations, for example, has barely been exploited to date.

In this paper, I will use the deportations of Jews under National Socialism as an example to analyze the potential that using databases offers researchers, and the challenges they face. This analysis is performed from a dual perspective: Firstly, as a member of staff at the Munich Institute for Urban History and Remembrance (IfSE), I am involved in the development of one of the databases examined. Secondly, I always refer back to the relevant databases as knowledge clusters in my own publications.⁷ In a second step, the analysis is followed by an attempt to show where there is a need for action, and how new insights

4 For Coding Da Vinci, the first German hackathon for open cultural data, see German National Library et al.: “Coding Da Vinci”. Available at: <https://codingdavinci.de/en>. Last accessed: 12.01.2022.

5 See German National Library et al.: “Marbles of Remembrance”. Available at: <https://codingdavinci.de/de/projekte/marbles-remembrance-murmeln-der-erinnerung>. Last accessed: 12.01.2022. See also the chat bot that resulted from the project: Arolsen Archives: “Get to know Jewish children of the Nazi period with an app”. Available at: <https://arolsen-archives.org/en/learn-participate/initiatives-projects/marbles-of-remembrance/>. Last accessed: 12.01.2022.

6 See German National Library et al.: “Visualisierung jüdischen Lebens”. Available at: <https://codingdavinci.de/index.php/de/projekte/visualisierung-juedisches-lebens>. Last accessed: 12.01.2022.

7 For example, in Maximilian Strnad: *Zwischenstation “Judensiedlung”: Verfolgung und Deportation der jüdischen Münchner 1941–1945*, Munich: Oldenbourg, 2011; *ibid.*: “Die Deportationen aus München”, in Alan Steinweis (ed.): *Münchner Beiträge zur jüdischen Geschichte und Kultur*, 2, 2014, 76–96. Available at: https://www.jgk.geschichte.uni-muenchen.de/muenchner-beitraege/2014_2/2014_2.pdf. Last accessed: 12.01.2022.

can be generated for research through better formatting and interlinking of information. Using the example of the online memorial to the victims of National Socialism planned in Munich, the paper concludes by illustrating the important momentum that this can provide for research, and in the culture of remembrance.

Comparison of Five Online Portals

This paper was inspired by the outcomes of the round table discussion at the *Deportations in the Nazi Era – Sources and Research* conference in November 2020.⁸ At this conference, representatives from five institutions addressed the question of what potential their databases and online portals hold for research on the deportations of German Jews, and what challenges they expect in the coming years.⁹ These are the *Memorial Book. Victims of the Persecution of Jews under the National Socialist Tyranny in Germany 1933–1945* in the Federal Archives;¹⁰ the Yad Vashem Holocaust Deportation Database *Transports to Extinction*;¹¹ the *Statistik und Deportation der jüdischen Bevölkerung aus dem Deutschen Reich* website;¹² the *Biografisches Gedenkbuch der Münchner Juden 1933–1945* web portal¹³ and the Arolsen Archives online archive¹⁴.

8 I would like to thank Tanja von Fransecky, Sarah Grandke, Thomas Freier, Cornelia Shati-Geißler, and Giora Zwilling for the stimulating discussions, as well as the editors of this omnibus volume, Henning Borggräfe and Akim Jah, for their important input.

9 Like the round table discussion at the conference, this paper is also limited to the geographical area of the ‘Altreich’ and to the deportation of Jews. Apart from a few regional memorial books in which Sinti and Roma are also mentioned and the memorial book by Jan Parcer there is currently no higher-level database available on Sinti and Roma who were persecuted during the Nazi era. See Jan Parcer: *The Gypsies at Auschwitz-Birkenau*. Munich: Saur, 1993; for the mention of Sinti and Roma in regional memorial books see, for example, Erinnerungswerkstatt Augsburg: “Sinti und Roma”. Available at: <https://gedenkbuch-augsburg.de/sinti-und-roma>. Last accessed: 12.01.2022.

10 Federal Archives: “Memorial Book. Victims of the Persecution of Jews under the National Socialist Tyranny in Germany 1933–1945”. Available at: <https://www.bundesarchiv.de/gedenkbuch/introduction/en>. Last accessed: 12.01.2022.

11 Yad Vashem: “Transports to Extinction: Holocaust (Shoah) Deportation Database”. Available at: <https://deportation.yadvashem.org/>. Last accessed: 12.01.2022.

12 Thomas Freier: “Statistik und Deportation der jüdischen Bevölkerung aus dem Deutschen Reich”. Available at: <https://www.statistik-des-holocaust.de/>. Last accessed: 12.01.2022.

13 Munich Municipal Archives: “Biografisches Gedenkbuch der Münchner Juden 1933–1945”. Available at: <https://gedenkbuch.muenchen.de/>. Last accessed: 12.01.2022.

There are two different types of online databases in particular that are important in terms of the deportations of Jews. These are, firstly memorial books that follow a biographical approach, and secondly, subject-specific portals. The Memorial Book in the Federal Archives belongs to the first category. It is one of the oldest and most widely used tools for personal research on Jewish victims of Nazi persecution in Germany. The data it contains are based on extensive research and include written sources from various provenances. The key biographical data and details of persecution are documented, including information on imprisonment, emigration and deportation. On the subject of deportation, the online database includes details on the “place from which the deportation train departed, including departure date and destination, as well as any other transports, including date and destination”¹⁴. Using the advanced search function, it is not only possible to search for individual people, but also to generate lists of results on various topics, such as date of departure, place of departure, and destination of the deportations. These lists can also be exported as a CSV file, a facility that is not to be underestimated, especially for the construction and extension of own research databases, but also for data reconciliation. However, the formation of differentiated clusters is only possible to a limited extent as search terms across several categories can only be stated in a general search field and can only be combined with a search in date fields. For example, although it is possible to search for people who were deported from a specific city on a specific day, combination searches of people born in one city and deported from another return unreliable results because the combined search queries both fields for both terms. As no further search or filter functions are available for the search results, it is also not possible to further limit search results and search for people, for example, who were first deported from their hometown to a ghetto, and from there on to an extermination camp at a later date.

Now, by definition, the Federal Archives’ online memorial book is designed primarily to locate individual people. However, cluster functions would be particularly helpful for social history research, especially since the memorial book, with its over 175,000 personal records, is the most comprehensive source of information on murdered German Jews. From a technical point of view, it is comparatively easy to provide such search and filter functions, since the corresponding information in the underlying database is structured in individual

¹⁴ Arolsen Archives: “Online Archive”. Available at: <https://collections.arolsen-archives.org/en/search/>. Last accessed: 12.01.2022.

¹⁵ Federal Archives: “Introduction”. Available at: <https://www.bundesarchiv.de/gedenkbuch/introduction/en>. Last accessed: 12.01.2022.

fields, and is available in a standardized format. Another obstacle to further research on the deportations is the fact that the memorial book is a book of commemoration for those who died (also for data protection reasons). Survivors of the deportations cannot be found in this book. Therefore, the results do not reflect the full extent of the deportations.¹⁶

There is also another problem: Because of its huge volume, the database is not always up to date in spite of consistent and highly research-intensive editing. Let us take the first transport from Munich as an example. According to the current body of information in the Munich Municipal Archives, a total of 997 Jews were deported to Kowno on November 20, 1941 and murdered there on November 25.¹⁷ In the Federal Archives memorial book, however, a corresponding search yields 1,003 hits to be assigned to this transport.¹⁸

On a subpage of its website, based on the relevant literature, the Federal Archives provides, as an extra source of information, an overview of the chronology of all deportations from the German Reich, including Austria, the Protectorate of Bohemia and Moravia, and the German Sudeten regions, as well as from Belgium, France, the Netherlands, and Luxembourg.¹⁹ For researchers and individuals interested in history, this is an important source of information in terms of the course and extent of the deportations. However, the data correspond to the state of research as it was around 20 years ago. Some users are also missing a function that, proceeding from the chronology, lists all the people included in the memorial book, who were deported on the respective transport. Corresponding lists of results could be stored comparatively easily by linking the various chronology entries with the corresponding database fields ‘place of departure’, ‘date of departure’ and ‘destination’.

16 The list of residents, which is not accessible online, documents the personal details of all approx. 600,000 people who lived in the ‘*Altreich*’ between 1933 and 1945 and were persecuted for being Jewish. Cf. essentially Nicolai M. Zimmermann: “Was geschah mit den Juden in Deutschland zwischen 1933 und 1945? Eine Dokumentation des Bundesarchivs”, in ZfG, 64, 2016, volume 12, 1045–1058.

17 Cf. Munich Municipal Archives: “Am 22.11.1941 nach Kaunas (Welle I, Transport 379) deportierte Personen”. Available at: https://gedenkbuch.muenchen.de/index.php?id=gedenkbuch_transport&ddat=20.11.1941&ziel=Kaunas. Last accessed: 12.01.2022.

18 Search for place of departure and place of deportation Kowno Munich in conjunction with deportation date 11/20/1941. Eleven people are wrongly assigned to this transport (for example, Manfred Rosenbaum, born on April 26, 1928, in Munich), three are missing (for example, Ilse Sohn, born on March 1, 1921, in Karlsruhe).

19 Cf. Federal Archives: “Deportation chronology”. Available at: <https://www.bundesarchiv.de/gedenkbuch/chronology/view.xhtml?lang=en>. Last accessed: 12.01.2022.

Some of these functions are offered by the *Biografisches Gedenkbuch der Münchner Juden 1933–1945*, one of the oldest and most comprehensive regional memorial book projects, which also provides further information and short biographies on many people. The memorial book, a first version of which went online in 2012 and was relaunched in November 2020, currently contains 5,026 entries.²⁰ The editing and deep cataloging of around 5,000 data records is much easier to achieve than with the Federal Archives' memorial book, not least because of its regional focus. It is also possible to search the individual fields separately in the Munich memorial book, and thus create unique clusters. However, in contrast to the Federal Archives' memorial book, searching for imprisonment, emigration and deportation, or according to the place of departure or further deportations, is not possible at present as the corresponding fields in the database have not yet been activated in the online portal. The useful CSV export function is also missing.

In contrast to the memorial book website of the Federal Archives, there is also a separate list for the deportations from Munich, which documents not only the extent of the deportations, but also their composition.²¹ The individual transports are each accompanied by a list of the deportees, and the individual entries are in turn linked to the respective data record sheets of the persons concerned. As in the Federal Archives' memorial book, permalinks ensure that the web addresses of the individual data record sheets can be cited, and remain discoverable online. Although this is a book of commemoration for the murdered Jews from Munich, for the sake of completeness these lists also include men, women and children who were deported from other places via Munich, or Jews from Munich who survived. However, because of data protection reasons no personal record sheets are available for them.

While the relational linking of records in the *Biografisches Gedenkbuch der Münchner Juden 1933–1945* has so far been limited to deportations from Munich, and the individual records – as in the case of the Federal Archives' memorial book – are not related to each other, Yad Vashem's *Transports to Extinction* application offers considerably more far-reaching research and contextualization options which, in addition, are not limited to transports from the 'Altreich'. In contrast to the first two projects mentioned above, this is not a memorial

²⁰ Cf. Munich Municipal Archives: "Biografisches Gedenkbuch der Münchner Juden 1933–1945". Available at: <https://gedenkbuch.muenchen.de/>. Last accessed: 12.01.2022. In the underlying database, 14,292 people are currently recorded.

²¹ Cf. Munich Municipal Archives: "Die Deportationen aus München". Available at: <https://gedenkbuch.muenchen.de/index.php?id=deportationen>. Last accessed: 12.01.2022. Gender and last place of residence prior to deportation are indicated.

book, but an online portal that combines various content from the different Yad Vashem database applications by focusing on the deportation of Jews.²² A basic search allows users to find all places, events, people, and terms relating to the deportations. In contrast to the memorial books where the focus is on the person, here there is a separate data record sheet for each individual transport. The search results are displayed on a map. Places of departure that contain the search result are marked in green and places of arrival in red. The search results can also be displayed in list form for clearer presentation. Search results can be narrowed down further using a timeline and filter functions according to places of departure and arrival. The filter functions offer a convenient quick entry point for a general overview of the regional scope of deportations as well as of deportations from different time periods.

The data record sheets contain different densities of information on the transports, including details of the route, the size of the transport, the deportees, and the perpetrators and institutions involved. They are completed – where available – by bibliographic references and links to various sources from the Yad Vashem digital collections that are connected to the transport in question. These include written sources from the document archive, photographs from the photo archive, and eyewitness interviews from the survivor testimonies archive section. If there are entries in the *Central Database for Shoah Victims' Names* for people deported on this transport, these are also linked.

The variety of information and cross-references are of great value for research and educational work. All the more astonishing then that there are significant gaps in the application, especially with regard to information on deportees: The names of deportees are not listed on the data record sheets, even if this information is known, and a transport list exists and is interlinked to the transports data record sheet.²³ Biographical research on the deportations is therefore

22 For basis and editing status, see Yad Vashem: “About the Holocaust (Shoah) Deportation Database”. Available at: <https://yadvashem.org/collections/about-deportation-project.html>. Last accessed: 12.01.2022.

23 See, for example, the data record sheet on the first transport from Munich to Kaunas on November 20, 1941. Yad Vashem: “Transport, Train Da 27 from Muenchen, Germany to Kaunas, Lithuania on 20/11/1941”. Available at: <https://deportation.yadvashem.org/index.html?language=en&itemId=9437950&ind=-1>. Last accessed: 12.01.2022. The heading “Victims’ Names” only contains links to the Central Database of Shoah Victims’ Names, which means that only three entries are listed here for this transport, although some 1,000 people were part of the transport. In the case of the first transport from Vienna, however, on which again over 1,000 people were deported to Nisko, there are 1,697 entries available, since this includes the number of cross-references to the Central Database of Shoah Victims’ Names, including in many cases several entries for one and the same person. See Yad Vashem: “Transport from Vienna, Austria to Nisko, Poland

only possible to a very limited extent. Unfortunately, the data record sheets are not stored with permalinks either making it much more difficult for other projects to link to this important source of information.

A search for individual people is not possible on the website *statistik-des-holocaust.de* either. This site actually pursues the aim of making statistical data from primary sources about the Jewish population in the ‘*Altreich*’ available for Holocaust research.²⁴ The deportations are subdivided according to the various regions, and the individual transports are listed chronologically. Each individual transport has its own data record sheet, which is stored with a permalink and, in addition to statistical data, describes the circumstances and special features of the transports, and addresses open issues. As a rule, the information is based on the surviving deportation lists. If these are not available for a region, the data is reconstructed from various other sources.²⁵ In addition to the total number, the origin of the deportees is also listed. A search for details of gender and age, which can be found in most deportation lists, and which are of considerable informational value in terms of research, is however futile. Nevertheless, *statistik-des-holocaust.de* contains the largest amount of statistical information on the deportations from the ‘*Altreich*’. For historians and other interested parties, the website is a central research tool, also especially because of the digital copies of the original deportation lists for each transport gathered from disparate archives.

The Arolsen Archives do not provide a memorial book or a specific research tool on deportations. However, their online archive is also one of the most important portals for deportation research. The collections contain numerous documents that include information on individual transports and deported persons. The Arolsen Archives have digitized most of its collections in the last two decades. Recently, partly with the help of volunteers,²⁶ the information on individual documents has been indexed. In the run up to the *Deportations in the Nazi Era – Sources and Research* conference, the Arolsen Archives rescanned some of

on 20/10/1939”. Available at: <https://deportation.yadvashem.org/index.html?language=en&itemId=6970463&ind=0>. Last accessed: 12.01.2022.

24 Thomas Freier: “Statistik und Deportation der jüdischen Bevölkerung aus dem Deutschen Reich”. Available at: <https://statistik-des-holocaust.de/index.html>. Last accessed: 12.01.2022.

25 As in the case of the people deported from Koblenz and Aachen to Izbica on March 22, 1942, see Thomas Freier: “Koblenz–Aachen nach Izbica”. Available at: https://statistik-des-holocaust.de/list_ger_rhl_420322.html. Last accessed: 12.01.2022.

26 See Zooniverse: “#everynamecounts”. Available at: <https://www.zooniverse.org/projects/arolsen-archives/every-name-counts?language=en>. Last accessed: 12.01.2022.

the transport lists preserved in its holdings and subjected them to deeper indexing for the first time.²⁷

By drawing on this index data when searching, not only is a list of the primary sources related to the search term displayed. The search function also enables an aggregation of knowledge, as the following example shows. If an indexed transport list is available in the Arolsen Archives online collection, a search by date and destination, for example, will return hits in the two basic search areas ‘People’²⁸ and ‘Topics’. While a digital copy of the corresponding primary source is displayed under ‘Topics’, all the persons mentioned in the source are listed under ‘People’. However, there is still a certain lack of clarity as other people may also be included for whom the search terms may occur in a different context. As the index data in the archive database are stored in a general description field, it is not possible to limit the search results. If you search for the first transport from Munich, for example, you will return 1,035 hits instead of the 999 people on the deportation list.²⁹ This example is good for drawing attention to another problem: Not every transport is easy to find. Cataloging in the Arolsen Archives refers to information as it appears on the respective source. The first transport from Munich to Riga was originally scheduled for November 15, 1941, but was postponed until November 20. The destination was also changed at short notice from Riga to Kaunas. If a user searches for the terms Kaunas and 11/20/1941, they return no hits as the original deportation list still contains the original deportation destination and departure date, and the information on the actual departure date and destination has not been added to the document description.³⁰ Only a search for Riga and 11/15/1941 returns the desired result. There are similar problems with name searches, as there are often different spellings on the lists.

27 The lists of transports from the German Reich can be found mainly in Collection 1.2.1.1. Cf. also the deportation lists from the archives of the Jewish Religious Community in Leipzig in Collection 7.5.4. See also the contribution of Kim Dresel and Christian Groh in this volume.

28 Similar to a search in the Yad Vashem Shoah Victims’ Names database, all results are displayed here as hits containing the searched name.

29 Quite a few people are indexed twice, for example, Alfred Alster, born October 7, 1930 in Munich. In fact, only 997 people were deported. See Munich Municipal Archives: “Am 22.11.1941 nach Kaunas (Welle I, Transport 379) deportierte Personen”. Available at: https://gedenkbuch.muenchen.de/index.php?id=gedenkbuch_transport&ddat=20.11.1941&ziel=Kaunas. Last accessed: 12.01.2022.

30 See deportation from State Police district Munich to Riga, 15.11.1941, 1.2.1.1/8227200/ITS Digital Archive, Arolsen Archives.

Cross-Linking Potential

If we take a general look at the research options in the applications presented here, it is striking that all portals limit themselves to the provision of their own results, although it is linking them that offers considerable potential both for research and from a culture of remembrance perspective. This becomes even more obvious when comparing the strengths and weaknesses of the individual applications. While *statistik-des-holocaust.de* and *Transports to Extinction* provide information on the individual transports and related sources but contain little or no information on the deportees themselves, the memorial books and the Arolsen Archives' online collection provide this detailed information but offer little additional information on the individual transports.

The cross-linking of different sources of information is not only user-friendly, it would also allow the closing of gaps that cannot be closed by the respective portal operators by themselves, or only with considerable human resources. Let us take the listing of deportees as an example. Compiling lists of deportees is time-consuming, but even more time-consuming is it to review the names and information they contain. Most of the original deportation lists have already been indexed in the Arolsen Archives, and in the databases behind the different memorial books the information about the people has also been verified. The gaps on deportees in the Arolsen Archives' online database and on *statistik-des-holocaust.de* could therefore be closed comparatively easily in the case of many transports by cross-linking them with the memorial books and/or the cataloged sources from the Arolsen Archives. Reconciling data between the different applications would also make it possible for the different operating institutions and initiatives to double check their own datasets. Let us go back to the different search result for the first deportation from Munich in the memorial books of the Federal Archives and the Munich Municipal Archives. If the different databases were cross-linked, the local memorial books could be of central importance for the Federal Archives in two respects. As a rule, their database is up to date with the latest research and is therefore highly plausible. In addition, the density of information is particularly high there. In any case, it is easy from a technical point of view to identify and link the data records on deported persons using flag fields. These are usually the date of departure, the place of departure and the destination of the deportation.

The need for cross-linking also becomes clear when it comes to making available digitized sources that are scattered across a wide range of archives. This is particularly evident in the case of Yad Vashem's *Transports to Extinction* project, in which, although the provision of documents on the deportations is

conceived as a central element, the potential of this important function has so far remained largely unexploited. This is mainly due to the fact that most relevant documents in the Yad Vashem Archives are not yet sufficiently indexed in order to be able to link them to the relevant transports. But even if the corresponding metadata would be available, it is not possible to link the photos, testimonies and documents accessible in Yad Vashem with the relevant transports, especially in the case of person-related sources³¹ since, as already explained, most of the deportees' names are not stored in the data sheets.

First and foremost, it is obvious that due to the limitation to individual collections, further sources can only be provided to a limited extent. It is true that like the USHMM and the Arolsen Archives, the Yad Vashem Archives have for decades been acquiring relevant sources from other archives on a large scale, digitizing them and gradually including them in their online services.³² However, in spite of this large wealth of available sources in the Yad Vashem Archives, many other sources are still only accessible via other archives. Although more and more portals are currently being created, which enable cross-institutional searches, these are generally limited to the reproduction of higher-ranking information on the level of single collections; a search for individual events and people is often not really possible here either at present.³³

31 Yad Vashem too is making more attempts to form clusters in order to structure its data better. Users are encouraged to create a 'personal file' for Holocaust victims by comparing various documents relating to a person. However, only documents contained in the institute's own *Central Database of Shoah Victims' Names* are included, i.e. neither digital copies from the institute's own archives, nor external sources. See Yad Vashem: "We invite you to take part in creating a 'personal file' for Holocaust victims". Available at: https://www.yadvashem.org/newsletters/invitations/clusters-eng.html?utm_source=twitter&utm_medium=organic-english&utm_campaign=research-from-home. Last accessed: 12.01.2022.

32 Not all sources can be put online for legal reasons.

33 For documents relating to the Holocaust, see, for example, EHRI: "EHRI project". Available at: <https://www.ehri-project.eu/> and especially "EHRI Portal". Available at: <https://portal.ehri-project.eu/>. Both last accessed: 12.01.2022. For Jewish history in Europe, see, for example, the Rothschild Foundation Hanadiv Europe: "Yerusha. European Jewish Archives Portal". Available at: <https://yerusha.eu/>. Last accessed: 12.01.2022. In terms of records, further specific web offerings are planned, for instance the Federal Ministry of Finance has begun setting up a portal that is intended to offer a general standardized digital access to all restitution files, see Federal Ministry of Finance: "Themenportal Wiedergutmachung – Dokumentenerwerb für die Zukunft". Available at: https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Oeffentliche_Financen/Vermögensrecht_und_Entschädigungen/2020-07-07-themenportal-wiedergutmachung-zukunftsaufgaben.html. Last accessed: 12.01.2022.

Challenges in Linking Data

The central problem involved in linking information is its unique identification. It is not only missing or incorrect information that presents obstacles, as described in the case of the first deportation transport from Munich. The unique identification of people in particular is often not possible. Different spellings and discrepancies in dates are just two problems that can now be solved more and more effectively through improved search algorithms. The biggest challenge is to filter out from the often large number of results returned, the search results that actually relate to the person you are looking for. In view of the effort involved in manually linking a large number of people with an even larger amount of information, the linking of sources to people is often omitted, or it remains the user's task to filter out the correct data records from the abundance of hits.

As complex as the unique identification of a person on a document is, it is easy from a technical perspective to establish the relationship between the document and the respective personal data record. To this end, the ID of the relevant personal data record is assigned in the document catalog file for the person named. Cross-database mapping is more complicated because personal data records have different IDs in all applications. To solve this problem, more and more institutions are turning to authority files.³⁴ If a person is reliably identified, the data record is assigned the corresponding ID from the authority file as an attribute, in addition to the internal database ID.

Authority files now provide a good set of data for better known personalities. On the other hand, there are still no entries for many people – including the majority of those persecuted under the Nazis. It is possible in theory to create relevant data records for individual projects in the various authority files, but, as in the case of places, events etc., the linking of people to an authority file is associated with considerable additional effort in terms of formatting data and cataloging. The corresponding authority data records must firstly be identified or

³⁴ In German-speaking countries, the Gemeinsame Normdatei (GND, Integrated Authority File) managed by the German National Library is the best known, cf. German National Library: "Gemeinsame Normdatei". Available at: https://gnd.network/Webs/gnd/EN/Home/home_node.html;jsessionid=1D0EC071C36_A3935B22_A45386799B6E9.internet571. Last accessed: 12.01.2022. Wikidata is gaining increasing acceptance internationally, cf. MediaWiki: "Wikidata". Available at: https://www.wikidata.org/wiki/Wikidata:Main_Page. Last accessed: 12.01.2022. There is also a large number of authority files for various special areas, for example MemArc for the concentration camp complex, see Flossenbürg Concentration Camp Memorial: "Memorial Archives". Available at: <https://memorial-archives.international/>. Last accessed: 12.01.2022.

created, and in any case needs to be manually linked to the personal data record in the individual database application.

The effort is however worth it. Linking to the authority file ensures that identical IDs are used across projects and applications. Consequently, people are not only uniquely identifiable, they can also be found via relevant interfaces. This makes it possible to link data records, and the information and documents associated with them, automatically across platforms even without manual effort. It is already possible in some German archive portals, to have source references to individual result clusters, which are based on GND authority files, displayed cross-institutionally.³⁵ The *Memorial Archives* project has shown how identified people – in this case concentration camp prisoners – can be assigned to different groups and deportation transports in this way.³⁶

International holocaust research has not yet committed to the use of an integrated authority file.³⁷ However, the understanding of how to establish functioning communication between the various applications has grown. Not only has the establishment of the *European Holocaust Research Infrastructure* (EHRI) portal contributed to this in a special way, but also the challenges that increasingly arise in the field of digital memory.³⁸

³⁵ In the Baden-Württemberg State Archives e.g., several online collections of various archives are searchable. See State Archives of Baden-Württemberg: “Online-Findmittelsystem”. Available at: <https://www2.landesarchiv-bw.de/ofs21/home.php>. Last accessed: 12.01.2022.

³⁶ Johannes Ibel: “Vernetztes Forschen in den Memorial Archives”, in Jadwiga Pinderska-Lech and Gabriela Nikliborc (eds.): *Transporte polnischer Häftlinge in den KZ-Systemen Auschwitz, Dachau und Flossenbürg / Transporty polskich więźniów w kompleksach obozowych KL Auschwitz, KL Dachau i KL Flossenbürg*, Oświęcim: Państwowe Muzeum Auschwitz-Birkenau, 2020, 58–68, here 62–66 in particular.

³⁷ This is especially true in the case of people. In the case of places, many projects – for example EHRI – now use Wikidata. Cf EHRI: “Using Wikidata to build an authority list of Holocaust-era ghettos”. Available at: <https://blog.ehri-project.eu/2018/02/12/using-wikidata/>. Last accessed: 12.01.2022.

³⁸ Cf. in this respect, for example the *Digital Memory – Digital History – Digital Mapping. Transformationen von Erinnerungskulturen und Holocaust-Education* online conference from September 22 to 24, 2021 at the University of Graz.

Potential Applications Using a Local Example

The digital name memorial for the victims of National Socialism planned in Munich³⁹ is an example for the opportunities that the cross-linking of various information in different online portals can provide for research and the culture of remembrance. Based on the biographical memorial book for Munich Jews⁴⁰, the various databases of victims and memorial books on Jews and other groups for Munich are currently being merged at the Munich Institute for Urban History and Remembrance (IfSE)⁴¹ into the *Victims of National Socialism* (OdN) database, standardized, and supplemented by individual research.⁴²

A “contemporary online memorial book” is being developed at the IfSE as the basis for the digital memorial of names,

which will make all names and personal details of the Munich victims of the Nazi regime accessible to the public. Like the *Biographical Memorial Book for Munich Jews*, this online database is intended not just as place of remembrance, but also as a central research tool for relatives, schools, history workshops, academic institutions and anyone interested in history. The online memorial book is also intended to offer space for participation for those involved in the culture of remembrance.⁴³

The aim is to create an application in which the information is closely interlinked. By linking people, places, events, and time periods, complex interrelationships will be presented in a simple way, and formatted for academic evaluation. Different clusters can be formed depending on the relevant interest, which in turn can be correlated with each other. The aim here is not only to clearly

39 Originally, a physical memorial was planned but the plan was abandoned in favor of a digital name memorial. The cultural department is currently preparing for a design competition. Cf. conference document no. 14–20/V 03773, plenary session of the Munich City Council July 29, 2015; conference document no. 14–20/V 17642, plenary session of the Munich City Council March 18, 2020, pages 12–14. The documents are accessible online, see City of Munich: “Rats-Informationssystem”. Available at: <https://risi.muenchen.de/risi>. Last accessed: 12.01.2022.

40 On the basis and genesis of the database, see Munich Municipal Archives: “Das Biografische Gedenkbuch der Münchner Juden 1933–1945”. Available at: <https://gedenkbuch.muenchen.de/index.php?id=projekt0>. Last accessed: 12.01.2022.

41 Work was located at the Munich Municipal Archives until the end of 2021; since the beginning of 2022 it has been focused at the newly founded IfSE. On the founding of IfSE, see conference document no. 20–26/V 03810, plenary session of the Munich City Council July 28, 2021.

42 The extension to other groups of victims was decided in 2009, see city council application no. 02–08/A 04045, plenary session of the Munich City Council March 18, 2009.

43 Conference documents no. 14–20/V 17642, plenary session of the Munich City Council March 18, 2020, page 15. Translation by the author.

show family connections, but also to be able to answer academic questions. In terms of research on deportations, this will mean: In the future, not only will all persons who were deported on a specific transport be issued as a cluster, these clusters will also be able to be further differentiated, for example with regard to their social composition, i.e. their gender, age, marital status or origin, or with regard to their last places of residence. Consequently, it will be possible to investigate hitherto little-known connections between social background, ghettoization and deportation. The georeferenced illustration of the respective clusters is a central element in the project design.⁴⁴

However, the cross-linking of information will not be limited to relationships within the database. In the future, they will be linked to external sources of information as well. There are two main considerations here. The first is pragmatic in nature: In view of the ever-increasing amount of information available on the internet, it no longer seems appropriate that specific information has to be provided in all applications. Take glossaries for example: unknown terms, but also further information on places, events and people can now be looked up in numerous popular knowledge databases,⁴⁵ ideally, they are interlinked directly to them.

This is also true particularly for the deportations. Information relating to the individual transports from Munich will be linked directly to the Yad Vashem *Transports to Extinction* portal, and to the deportation lists accessible in the online collections of the Arolsen Archives, Yad Vashem and at *statistik-des-holocaust.de*. In addition, individual personal records will also be dynamically linked to the corresponding personal entries in other online memorial books, such as those managed by the Federal Archives, Yad Vashem or *holocaust.cz*. Establishing common standards for the continuous exchange of data will be necessary. Successful matching requires the use of authority files and unique terms as well as the reconciliation of data via standardized search queries in specific database fields. The aim is not only to keep the information in the individual

⁴⁴ Relevant prototypes exist in Vienna for example, see Documentation Centre of Austrian Resistance (DÖW): “Memento Vienna”. Available at: <https://www.memento.wien/>. Last accessed: 12.01.2022. A corresponding application is also currently being developed for Prague, cf. Michal Frankl et al.: “Present and absent: Exploring the Holocaust of Jews in Prague using a mobile application”. Available at: https://austriaca.at/0xc1aa5576_0x003c13df.pdf. Last accessed: 12.01.2022.

⁴⁵ For example, *Historisches Lexikon Bayerns* or *Deutsche Biographie*. See Bavarian State Library: “Historisches Lexikon Bayerns”. Available at: <https://www.historisches-lexikon-bayerns.de/Lexikon/Startseite>. Last accessed: 12.01.2022; Historische Kommission bei der Bayerischen Akademie der Wissenschaften: “Deutsche Biographie”. Available at: <https://www.deutsche-biographie.de/>. Last accessed: 12.01.2022.

application up to date, but also to interlink them with other portals, to ensure that information on the Munich victims of National Socialism does not become outdated there as well.⁴⁶

Particular importance will be attached to the linking of historical source material. In addition to research, archive records relating to individuals are increasingly being used in education.⁴⁷ Pupils usually find it easier to visualize complex relations on the basis of individual fates. Learning outcomes are thus deepened through biographical approaches.⁴⁸ The Munich Municipal Archives are therefore currently digitizing those parts of its sources that are important for research into National Socialism, and are integrating them into its online collections.⁴⁹ These documents will be linked to the respective personal data records in the memorial book. However, by far the most individual-based documents on the Munich victims of National Socialism are stored in external archives. Source references should be placed here. Where sources are already accessible online, these should be linked directly to the relevant personal data files of the online memorial book. Together with the Arolsen Archives, an initial pilot project will test whether automated matching between the data records from the *OdN* database in Munich and the indexed Arolsen Archives source collections is possible. In addition, the involvement of a volunteer community will be relied upon to supplement and link the information.⁵⁰

⁴⁶ Information from the *Biographical Memorial Book for Munich Jews* in the USHMM Holocaust Survivors and Victims Database is badly out of date, for instance, having been imported on one occasion more than a decade ago. Cf. United States Holocaust Memorial Museum: "Holocaust Survivors and Victims Database". Available at: https://www.ushmm.org/online/hsv/source_view.php?SourceId=20535. Last accessed: 12.01.2022.

⁴⁷ Cf. Akim Jah: "Biografische Quellen zur nationalsozialistischen Verfolgung: Historisches Lernen mit dem Online-Archiv der Arolsen Archives", in Oliver von Wrochem (ed.): *In aller Öffentlichkeit. Die Verfolgung und Deportation von Juden, Sinti und Roma in Europa 1938–1945. Konzepte der Vermittlung in Ausstellungen und Bildungsarbeit* (working-title, forthcoming).

⁴⁸ See, for example, the Arolsen Archives' documentED project. Arolsen Archives: "documentED: Material for visits to memorial sites". Available at: <https://arolsen-archives.org/en/learn-participate/initiatives-projects/documented/>. Last accessed: 12.01.2022.

⁴⁹ See Munich Municipal Archives: "Online-Archivkatalog des Stadtarchivs München". Available at: <https://stadtarchiv.muenchen.de/scopeQuery/suchinfo.aspx>. Last accessed: 12.01.2022. Some digitization and cataloging will be carried out in partnership with the Arolsen Archives.

⁵⁰ Crowdsourcing has been used for a long time in the creation of memorial books, for example, since 1998 in the *Namen statt Nummern. Gedächtnisbuch für die Häftlinge des KZ-Dachau* project. See Dachauer Forum e.V.: "Gedächtnisbuch für die Häftlinge des KZ Dachau". Available at: <https://www.gedaechtnisbuch.org/>. Last accessed: 12.01.2022. See also the Arolsen Archives #everynamecounts campaign: Arolsen Archives: "everynamecounts". Available at: <https://enc.arolsen-archives.org/en/>. Last accessed: 12.01.2022.

Summary

The *Transports to Extinction* portal and *statistik-des-holocaust.de* represent two strong tools for researching deportations of Jews in the Nazi era. The Federal Archives memorial book and local online memorial books, like the one in Munich, also offer a great deal of well-formatted information on deportations. As a result of more cataloging, systematic searches for transports and deportees are now also possible in some online archives, such as the one by the Arolsen Archives. The biggest gap is in the recording of the deportees' names. There is no publicly accessible application that allows a complete and, above all, verified allocation of the deportees to the respective transports. Each of the online applications described has strengths and weaknesses. In the meantime, many research questions can be answered through cross-database research, but the individual applications are currently seldom interlinked, which is due not least to the considerable effort required for manual linking between the individual offerings of information. This is not only time-consuming for users. Important information may not be discovered. The scope of the respective applications remains limited. The aim must therefore be not only to provide better interfaces for data exchange, but also to consistently catalog, structure and format individual data records in such a way that links between people, events (such as the deportations), and sources can be established more automatically in the future. To this end, further optimization of search routines will be needed, but also more thought needs to be given to the introduction of authority files for the unambiguous identification of people, places and events.

Information on the deportations that is available on the internet will continue to grow. The map-based web app *Mapping the Lives*, for instance, which illustrates the places where victims of National Socialism lived, already includes a search function on the deportations.⁵¹ In the course of the forthcoming 80th anniversary of the deportations from the German Reich, a digital picture atlas is being created under the title *#LastSeen*,⁵² in which existing photos of the deportations will be recorded, deep cataloged, formatted and shown. Another project is the digital memorial platform *deportiert-aus-muenchen.de* comprising individual biographies of Jews, Sinti and Roma deported from Munich, which is being produced by the IfSE together with schools. The Westdeutscher Rundfunk is also

51 Cf. Tracing the Past e.V.: "Mapping the Lives". Available at: <https://mappingthelives.org/>. Last accessed: 12.01.2022.

52 See Arolsen Archives: "*#LastSeen*". Available at: <https://lastseen.arolsen-archives.org/en/>. Last accessed: 12.01.2021.

planning to add historical material on the deportations to its recently released *Stolpersteine* app.⁵³ It remains to be seen whether a targeted linking of the various projects can create a network of information that not only offers academics, relatives and people interested in history an access to the available data as simple and broad as possible, but also promotes the formation of new knowledge clusters.

In conclusion: Research and the culture of remembrance on Nazi history have been heading for the digital age for a long time. The present is already digital. In the future, however, it will not be sufficient to limit oneself to reproducing individual research on the internet, nor will it be necessary to find, evaluate and format all available information single-handedly. It will in fact be the task of the respective database and portal operators to interrelate their digital information to the one of others. The future is therefore no longer just about making information available digitally, but about making it easier to find and mapping it correctly. This guiding principle must be anchored more firmly as a central maxim in our work going forward.

53 The material is being collected in partnership with over 150 towns and communities in North Rhine Westphalia. Cf. Westdeutscher Rundfunk: “Stolpersteine NRW – eine WDR-App gegen das Vergessen”. Available at: https://presse.wdr.de/plounge/wdr/programm/2021/07/20210728_stolpersteine_nrw.html. Last accessed: 12.01.2021. The web version with database offers numerous filter functions, see Westdeutscher Rundfunk: “Stolpersteine NRW”. Available at: <https://stolpersteine.wdr.de/web/>. Last accessed: 24.01.2021.

