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How "Tools" Produce "Data": Searching in a Large Digital Corpus of Audiovisual Holocaust Testimonies

Abstract: The field of Jewish Studies is facing many new challenges as a result of ongoing digitization. This chapter focuses on digital oral histories of the Holocaust. Following the digital revolution in oral history, many institutions now provide access to multiple collections at once. One of the new challenges is thus related to the simultaneous availability of several archives, as well as various search engines which apply different methods to browse their content. The aim of this chapter is to identify and describe participants' practices for working with a large corpus of audiovisual Holocaust testimonies, especially in terms of locating relevant results within the collection by using three different search systems. We have conducted an empirical study in an experimental setting designed to emulate work with various search engines. Three pairs of novice users solved ten tasks over video-conferencing software, utilizing three different search "tools" (USC Shoah Foundation's Visual History Archive, Amalach, and Pixla). Our main findings consist of formulating a fundamental structure and elements of participants' collaborative work, composed of three complementary actions: testing, sharing, and implementing. Furthermore, users obtained the search results by two main approaches: aggregation and query refinement. Interestingly, they did not upgrade the searching skills progressively, but rather used the current "best knowledge" for all the tasks and search engines at once. The participants' emergent competence was continuously developed on the basis of collaborative work with the search engines and the results obtained so far through their work on the previous tasks.

Keywords: Holocaust testimonies, database searching, digital ethnography, oral history, social interaction, video analysis

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1 Introduction

Research in the field of Jewish Studies is facing a number of new challenges as a result of ongoing digitization.[1] In this chapter, we focus on the specific domain of digital oral histories of the Holocaust.[2] Following the digital revolution in oral history research,[3] many institutions now provide access to several divergent collections at once. One of the new challenges is thus related to the simultaneous availability of multiple archives, as well as various search engines which apply different methods to browse their content. In this context, our chapter aims at providing a methodological and epistemological reflection of the common approach to the qualitative research praxis. This approach consists of using search tools to obtain data that respond to predefined research questions. Nonetheless, in our chapter, we aim to explore how "tools" create "data," how these two notions intertwine in the practical organization of "search" in large digital corpora of audiovisual materials, and how these issues might project onto research design and the formulation of research questions.

Since the onset of the digitization wave at the turn of the millennium, which engulfed archival sources of various kinds, creators of digital collection systems and their respective user interfaces were posing questions on how the digital turn is reflected in the interaction between users and sources. Search for answers is mostly conducted in the methodological and conceptual domain of user studies, a subfield of human-computer interaction research, which takes into account aspects and variables highly relevant for our research as well, such as the diversity of users, their level of expertise, search tools at hand, terminology representing data and tools, and many more.[4] Audio and video recordings of interaction sequences have been a fundamental method for obtaining relevant data for user

1 We would like to thank the reviewers and the editors for their thoughtful remarks and suggestions, as well as the audience at the online conference event for their inspiring comments and advice. This text was written with the support of the Ministry of Education, Youth and Sports of the Czech Republic, Project No. LM2018101 LINDAT/CLARIAH-CZ, and Charles University Research Centre No. 9 (UNCE VITRI).

2 See, e.g., Cord Pagenstecher, "Testimonies in Digital Environments: Comparing and (De-)Contextualising Interviews with Holocaust Survivor Anita Lasker-Wallfisch," *Oral History* 46, no. 2 (Autumn 2018): 109–18, accessed February 10, 2021, http://www.jstor.org/stable/44993579; Victoria Grace Walden, "What Is 'Virtual Holocaust Memory'?," *Memory Studies*, November 2019, doi:10.1177/1750698019888712.

3 Alistair Thomson, "Four Paradigm Transformations in Oral History," *The Oral History Review* 34, no. 1 (2007): 49–70, accessed February 10, 2021, http://www.jstor.org/stable/4495417.

4 Wendy M. Duff, "User Studies in Archives," in *User Studies for Digital Library Development*, ed. Pierluigi Feliciati, Andy O'Dwyer, and Milena Dobreva (London: Facet Publishing, 2012), 199–207.

analysis and in this sense, our chapter can be considered closely related to this field of study as it is informed by the same type of source material.[5] Nevertheless, unlike the more typical approach of user studies, our chapter neither puts prevalent emphasis on the technological dimension of this issue, nor does the opposite – observe the achieved results through an epistemological prism of research in history, oral history, or social sciences. It rather positions itself at an intersection of both domains and seeks to contribute by approaching the topics in question primarily as situated social practices. In the analysis, we reach our research aims by simultaneously confronting novice user pairs with a set of tasks archetypical for the field of digital oral history, and draw on their collaborative work with multiple tools while focusing on the interactional process of reaching the solutions.[6]

This text draws largely from our experience gained as the staff of the Malach Centre for Visual History (CVHM) at the Charles University in Prague.[7] Over the last decade, CVHM has been providing access for students, researchers, and the general public to several established collections of oral history interviews. Since 2009, CVHM has been an access point to the University of Southern California Shoah Foundation's *Visual History Archive* (VHA), which is an ever-growing collection of interviews with witnesses and survivors of genocides, especially the Holocaust. At the present moment, the VHA contains almost 56,000 audiovisual recordings of oral history interviews in more than 40 languages. Since 2018, the *Fortunoff Video Archive for Holocaust Testimonies* of the Yale University Library with more than 4,400 audiovisual recordings of oral history interviews is also available at CVHM. In addition, users in CVHM can work with smaller collections lacking an integrated user interface such as the *Refugee Voices* archive (150 English interviews), and a small portion of interviews from the Melbourne Holocaust Museum, formerly known as the Jewish Holocaust Center in Melbourne (15 interviews with people of Czechoslovak origin). One of our tasks as employees of the CVHM is therefore to

5 For instance Joyce C. Chapman, "Observing Users: An Empirical Analysis of User Interaction with Online Finding Aids," *Journal of Archival Organization* 8, no. 1 (2010): 4–30, accessed February 10, 2021, doi:10.1080/15332748.2010.484361.

6 Numerous studies present a structurally similar design, but their main interest relies in large part on the evaluation of finding correct solutions. Instead, the process of the solution method negotiation itself is utterly central to us. For instance: Sadegh Kharazmi, Sarvnaz Karimi, Falk Scholer, and Adam Clark, "A Study of Querying Behaviour of Expert and Non-expert Users of Biomedical Search Systems," in *Proceedings of the 2014 Australasian Document Computing Symposium* (ADCS '14), Association for Computing Machinery, New York, NY, USA, 10–17, doi:10.1145/2682862.2682871.

7 See Jakub Mlynář, "Malach Center for Visual History," in *Sborník Semináře o digitálních zdrojích a službách ve společenských a humanitních vědách (WDH 2015)*, ed. Jaroslava Hlaváčová (Prague: Charles University, 2015), 83–89; Jiří Kocián, Jakub Mlynář, and Petra Hoffmannová, eds., *Malach Center for Visual History on Its 10th Anniversary* (Prague: Matfyzpress, 2020).

assist and advise researchers in their pursuit of audiovisual materials relevant to their interests.

In this chapter, we examine some characteristic problems that emerge during work with large digital archives by focusing on the example of the Czech-language subsection of the VHA. We first provide a background and rationale for our efforts (in Section 2), problematizing the common-sense link between the "tools" and the "data." We then move in Section 3 to the description of an experiment which was conducted to make visible some of the users' intrinsic practices in working with the database systems available at CVHM. Analysis of the video recorded experimental sessions yielded several main findings, which we present in Section 4. In conclusion, we discuss the findings in a broader context and address the question of how they relate to the use of digital oral history resources such as the VHA in Holocaust research.

2 Background and Rationale

Rather frequently, current research praxis in digital environments is conceived in terms of using "tools" upon "data." For example, researchers use search systems ("tools") that allow them to identify relevant units in a corpus of materials ("data"). In the case of the materials available at CVHM, incoming researchers as "our users" ultimately expect to watch interviews (or segments of interviews) that are related to "their research topics." In this sense, for searching within the contents of the VHA, researchers can use several search systems ("tools"). (1) *The integral VHA search systems*: People Search (approx. 1 million personal names), Index Search (around 67,000 hierarchically ordered keywords), Biographical Search (date of birth, place of birth, experience, etc.), Places Search (utilizing indexing terms with Google Maps), and Quick Search (combining all of the above). (2) *Amalach search*: a phonetic fulltext search engine created at the University of West Bohemia (Pilsen, Czechia).[8] Amalach has been available at CVHM in beta-testing since 2012, with many new versions introduced since then, which also incorporate comments and suggestions from the CVHM visitors and staff. (3) *Pixla search*: A phonetic fulltext search similar to Amalach, but voice-controlled, developed also at the University of West Bohemia.[9] Pixla has

8 Jan Švec et al., "On the Use of Grapheme Models for Searching in Large Spoken Archives," in *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, AB*, 2018, 6259–63, doi:10.1109/ICASSP.2018.8461774.

9 Adam Chýlek, Luboš Šmídl, and Jan Švec, "Question-Answering Dialog System for Large Audiovisual Archives," in *Text, Speech, and Dialogue: TSD 2019*, ed. Kamil Ekštein, 385–97 (Cham:

been available at CVHM since May 2020 for user testing, which was, however, heavily hindered by the COVID-19 pandemic.

Despite the rich variety and admirable effectiveness of these search systems, the awareness of their mutual differences in generating the sets of possibly relevant interviews is crucial for a successful implementation in research. A reasonable common-sense presupposition of a researcher-user would be that all these research tools allow users to search within "the same data" – in our case, the complete corpus of 558 interviews in the Czech language. However, we argue that in practice, the "tools" effectively produce the "data." As Ørmen puts it, the "search results are made in the act of searching."[10] Not only that each search system requires very different search mindsets at the input, but the plurality of three fundamentally diverse search tools renders it nearly impossible to arrive at "the same results" by using either of them. Using a "tool" therefore requires a fine-tuned way of formulating the search query, and the results provided by the search engine are ontologically framed by the boundaries of this formulation. Ultimately, the users' knowledge of the search engines and resulting "datasets," gained hermeneutically through numerous iterations of processing their research requests, also projects onto the way in which they pose their research questions and assess the feasibility of related research designs. At the center of this chapter, therefore, we put the users' situated practices rather than the technically intended features of the "tools," following the apt advice given by Egon Bittner to social scientists already in 1965: "It seems reasonable that if one were to investigate the meaning and typical use of some tool, one would not want to be confined to what the toolmaker has in mind."[11]

3 Experiment

To illustrate our point and inspect our assumptions, we focused on three types of research topics at three different levels of concreteness. Accordingly, we designed a typology of research questions characteristic to the domains of Jewish and Holo-

Springer, 2019); Adam Chýlek, Luboš Šmídl, and Jan Švec, "Multimodal Dialog with the MALACH Audiovisual Archive," in *Proceedings from Interspeech 2019*, 3663–64, accessed February 10, 2021, doi:10.21437/Interspeech.2019.

10 Jacob Ørmen, "Googling the News: Opportunities and Challenges in Studying News Events through Google Search," *Digital Journalism* 4, no. 1 (2016): 107–24, accessed February 10, 2021, doi:10.1080/21670811.2015.1093272.

11 Egon Bittner, "The Concept of Organization," *Social Research* 32, no. 3 (Autumn 1965): 249, accessed February 11, 2021, https://www.jstor.org/stable/40969788.

caust studies based on which we formulated a set of ten specific tasks that served as a guiding framework for the observed experimental interaction (see Table 1). The tasks were provided to the experiment participants in Czech language as an online form which also included blank fields to fill in the results of their work (names of narrators).

Table 1: Search tasks overview.

Geographical terms	Reaching from supra-localized reference points such as buildings, geographically located institutions or street names to macro-level concepts	Q1: Find narrators who mention Pankrac prison
		Q2: Find narrators who mention Vinohradská street
		Q3: Find narrators born in the territory of interwar Czechoslovakia
		Q4: Find narrators born in Carpathian Ruthenia between 1919 and 1939
Paralinguistic phenomena	Including functional components of oral and visual history (nonverbal cues, visual demonstrations, emotions, sounds)	Q1: Find narrators who interact with their relatives (during the interview)
		Q2: Find narrators who show their tattoos (during the interview)
		Q3: Find narrators who show military decorations (during the interview)
		Q4: Find narrators who show Jewish religious objects (during the interview)
Abstract concepts	Having an implicit or explicit verbal representation, such as identity (a typical relevant topic in human and social sciences)	Q1: Find narrators who mention transformation of their religious identity
		Q2: Find narrators who mention the loss of their identity

In order to emulate and uncover the fundamental user practices in solving qualitatively different types of research questions with various search engines, we have conducted three experimental sessions with six novice users (university students). Reflecting on the intersection of disciplines in Digital Humanities, we selected participants of the experiment based on their educational background. Accordingly, three of them were from the IT sphere while the others were from humanities and social sciences. They were working in pairs through the video-conferencing platform ZOOM. They had approximately 40 minutes to explore the "tools," deal with the experimental tasks, and complete the form with "data"

considered relevant. For analytical purposes, we treated each pair as a collective actor operative as an element in the correlative research triad: user – tool – search query.

4 Findings

The recordings of the video-mediated interactions were analyzed through the perspective of qualitative sociological analysis and multimodal interaction analysis. A methodological note is in place here. We are aware of the fact that the experiment setting and available corpus of recordings could be possibly seen as insufficient from a cognitivist point of view, because we purposely did not obtain access to the participants' individual work with their computers (via screen-capture apps, eye-tracking, etc.[12]). However, our analytical approach is grounded in a praxeological point of view and in naturalistic video-based studies of human sociality,[13] exemplified in earlier studies of video-mediated interaction.[14] We aim to describe the participants' own practices through which they methodically and obviously achieve the completion of their tasks. Thus, we record and analyze those aspects of the video-mediated interaction that are observably consequential for the participants in their collaborative work as a pair. In short, as the participants manage to do their assignments without the need of accessing each other's private on-screen conduct or locating the precise position of their interlocutor's on-screen gaze, we should also be able to do without it in our analyses. Everything that the participants themselves need is already there. The subject matter of our research is the *witnessable* social order,[15] and we take into account what the members of the pair themselves observably orient to.

12 Cf. Robert J. Moore, "A Name Is Worth a Thousand Pictures: Referential Practice in Human Interactions with Internet Search Engines," in *Mobile Speech and Advanced Natural Language Solutions*, ed. Amy Neustein and Judith A. Markowitz (New York: Springer, 2013), 259–86; Robert J. Moore and Elizabeth F. Churchill, "Computer Interaction Analysis: Toward an Empirical Approach to Understanding User Practice and Eye Gaze in GUI-based Interaction," *Computer Supported Cooperative Work* 20, no. 497 (2011): 497–528, accessed February 10, 2021, doi:10.1007/s10606-011-9142-2.

13 See, e.g., Charles Goodwin, *Co-Operative Action* (Cambridge and New York: Cambridge University Press, 2018).

14 A review is provided by Jakub Mlynář, Esther González-Martínez, and Denis Lalanne, "Situated Organization of Video-Mediated Interaction: A Review of Ethnomethodological and Conversation Analytic Studies," *Interacting with Computers* 30, no. 2 (2018): 73–84, accessed February 10, 2021, doi:10.1093/iwc/iwx019.

15 Harold Garfinkel, *Ethnomethodology's Program: Working Out Durkheim's Aphorism* (Lanham, MD: Rowman & Littlefield, 2002); Eric Livingston, "Context and Details in Studies of the Wit-

Through our research, we have identified three basic sequential practices of collaborative work in the experimental setting (*testing*, *sharing*, *implementing*). Furthermore, the participants seem to employ either *aggregation* or *refinement* as two general strategies for obtaining relevant results. Amongst most participants, we observed a tendency towards establishing universal solutions utilizable for a larger number of tasks. "Tools" seem to effectively produce "data" through the practice of *querying*, which consists of breaking down the task (question at hand) into searchable units: either through "keywording" (transforming the question into possible keywords in metadata) or through "discoursing" (transforming the question into possible phrases in the speech) – the former dominating.

We should state from the outset that we are conscious of the limits of our study, which is primarily intended as explorational. The experimental setting is a very specific (and indeed unusual) situation. Some of the practices described below could therefore be a residue of the experimental design. For instance, if participants would not have access to all ten questions for the whole duration of their work, their methods of task solution could develop in a quite different way. This is a conjecture that can only be evaluated by conducting further empirical studies where these specific conditions are modified. With this in mind, more research is needed to confirm and elaborate our findings. In the future, we plan to conduct follow-up experiments, this time also providing instructions to the participants and observing any possible changes in their search practices. Nevertheless, we believe that the results presented below have merit and can serve as a useful point of departure for further work. Concurrently, we hope to inspire other researchers to conduct similar studies in both experimental and – perhaps more importantly – naturalistic everyday settings.

In the following subsections, we present the main observations and findings from our analysis of the recordings of the experimental sessions. We describe and conceptualize the participants' practical approach to searching and solving the task(s) by employing the available search systems. First, we focus on the practice of testing, sharing, and implementing in the course of searching. Then we move to aggregation and refinement as two typical general approaches to search querying. Third, we describe how participants transform the experimental search tasks into searchables by "keywording" and "discoursing."

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nessable Social Order: Puzzles, Maps, Checkers, and Geometry," *Journal of Pragmatics* 40, no. 5 (2008): 840–62, accessed February 10, 2021, doi:10.1016/j.pragma.2007.09.009.

4.1 Testing, Sharing, Implementing

As a basic structure within the sequential development of the participants' collaborative work, we have identified the triad of *testing*, *sharing*, and *implementing*. Testing consisted of experimenting with the search systems and trying them out, typically in a solitary manner. Because of the predominantly individualistic nature of testing, the next phase of sharing has to do with intersubjective orientation, and learning from each other about the knowledge that emerged from the separate testing. The next synthetical step is implementing, which has to do with a specific use of the search systems for different experimental tasks. Abstraction and generalization of findings, in terms of practical procedures for working with the search systems and their relation to the displayed set of results, happened quite often within this step as well.

Our initial understanding of testing, sharing, and implementing was to conceive of them as three subsequent steps or phases in the temporal structure of collaborative work with the search engines. Progressively, through more refined analysis, we have arrived at a dynamic understanding of these concepts as labels for mutually interdependent work practices which are recurrently combined throughout the session. We believe that the second conception is more useful and closer to the reality of the users' actual work with the digital archives under scrutiny. However, the labels "testing," "sharing," and "implementing" remain approximate glosses, which only serve to underscore certain aspects of the participants' work and provide a general framework for it. In praxis, they consist of various verbal and nonverbal practices, including not only talk-in-interaction[16] and embodied action[17] but also the observable work with the software interfaces (such as demonstrations on a shared screen). In the following two subsections, we will describe and illustrate some of the more nuanced practices as components of the setting-specific actions of testing, sharing, and implementing.

4.2 Aggregation and Refinement

This subsection describes and illustrates the two main approaches to task solution, identified in our analysis of the video recorded experiments. The first method used by the participants is *aggregation*. This approach seems to aim at generat-

16 Emanuel A. Schegloff, *Sequence Organization in Interaction: A Primer in Conversation Analysis* (Cambridge: Cambridge University Press, 2007).

17 Christian Meyer, Jürgen Streeck, and J. Scott Jordan, eds., *Intercorporeality: Emerging Socialities in Interaction* (Oxford: Oxford University Press, 2017).

ing "any" results, even with a low level of relevance – i.e., typically yielding high numbers of interviews. Obtained results are then manually sorted and some of them selected as "proper" results which are reasonably answering the question at hand. As an example, consider Extract 1 below, in which Participant 1 (P1) and Participant 2 (P2) work together on the question "Find narrators born in the territory of interwar Czechoslovakia," already more than 30 minutes into the session. P2 has been sharing her screen throughout the whole session. They decided to use the VHA system upon which P1 commented that "there you can search for the years of birth." According to P1's suggestion, P2 types "1918–1939" in the Quick Search field and then they use a suggested search query. The excerpt begins when they have just clicked "Search" and are waiting for the results.[18]

Extract 1: First group / 34:05–34:40

(1) ((results appear, see Figure 1))

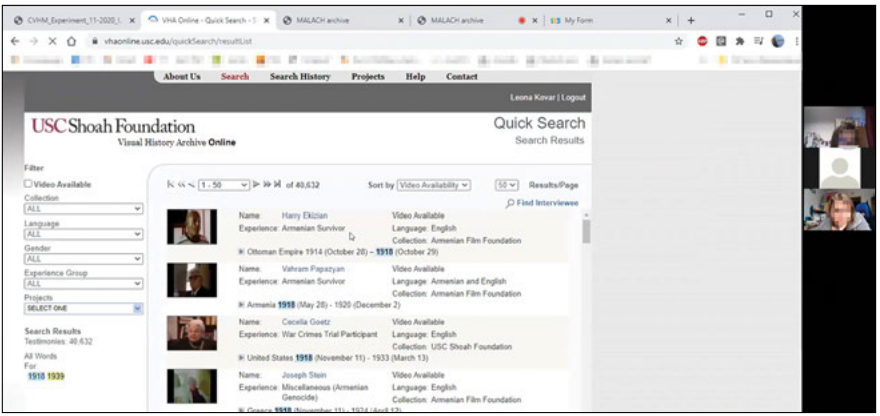

Figure 1: Shared screen after the search results for "1918–1939" appeared. Webpage: http://vhaonline.usc.edu, date: 27 November 2020.

18 Screenshots displayed below as Figures 1–5 and 7 are not illustrative, but come from the obtained video recordings and constitute our research data as documents of social interaction. In our case, the meeting in the video conferencing platform, including the use of shared screen, is the work environment used by the participants in our study. The figures show the on-screen appearance of the particular moment of the interaction. This accounts for the slightly impaired resolution of the webpages, as they have been shared in real time during the video call. The participants' faces and names have been anonymized.

(2) ((1 second pause))
(3) **P2: Well …**
(4) **P1: Try to use the 'collection,' what is in that 'collection'?**
(5) **P2:** ((clicks on the *Collection* menu, see Figure 2))

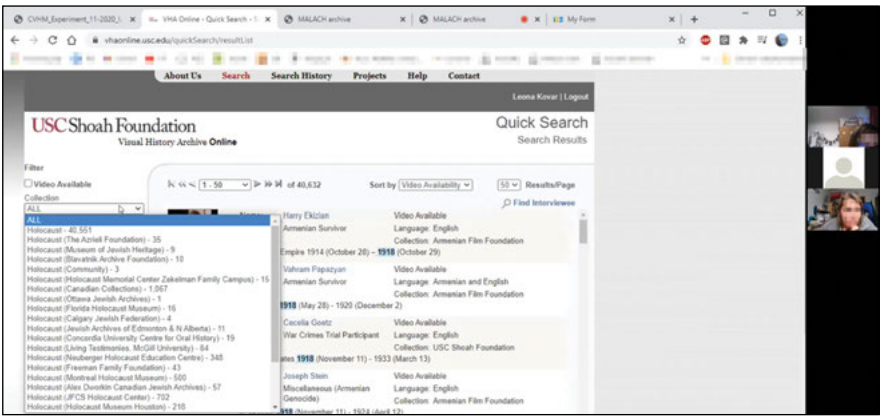

Figure 2: Shared screen after P2 clicked on the Collection menu. Webpage: http://vhaonline.usc.edu, date: 27 November 2020.

Well … Probably not. Probably no.
(6) **P1: Uuuuhhhh …** ((silently reading aloud)) **Museum of Jewish …**
(7) **P2:** ((closes *Collection* menu, clicks on *Language* menu))
(8) **P1: Language … Yeah set it to Czech language just so we see.**
(9) **P2:** ((clicks on *Czech*, results are loading))
(10) ((0.8 second pause))
(11) **P1: Aah, I hope that this could filter those …** ((looks at her second screen))
(12) ((results appear on P2's shared screen, see Figure 3))
(13) **P2: Hm …** ((scrolls down))

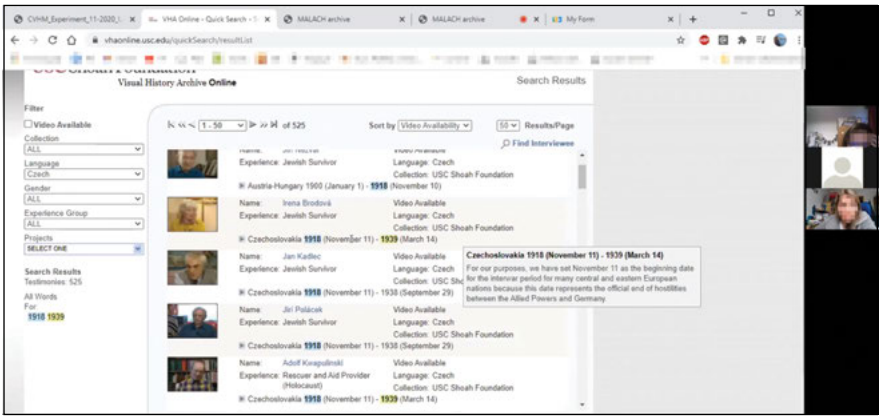

Figure 3: Shared screen after the search results filtered by language appeared. Webpage: http://vhaonline.usc.edu, date: 27 November 2020.

(14) **P1:** ((looks back on the shared screen)) **Yes. Great.**
(15) **P2: Yes?**
(16) **P1: And that's … OK. So.** ((starts writing a name into the form)) **Irena Brodová …**
(17) **P2: Next one Jan Kadlec …**
(18) **P1:** ((types on her other computer)) **Mhmm.**

As we can see, although P2 shares her screen, she is depending – at least in this sequence – mostly on guidance and advice from P1 (lines 4 and 8). Furthermore, the crucial moment when the results on screen are determined to be proper answers which can be considered solutions to their task, is also decided by P1 (line 14). The procedure started with typing a range of years ("1918–1939"), which generated a set of results displayed in Figure 1. These results are not treated as adequate (lines 3 and 4), as they visibly are not related to Czechoslovakia. Thus the next step consists of finding a way to "filter out" the interviews related to Czechoslovakia, which is done first by an attempt to use the "Collections" filter (see Figure 2) and later by setting the language of interview to Czech (lines 8–11). The results that appear thereafter (see Figure 3) are treated as satisfactory by P1, who produces a "jubilatory 'yes'"[19] and a positive assessment of the results ("great") in line 14. Then she moves to writing down the displayed results in the online form which is open on her second computer screen. She reads the first

19 Philippe Sormani, "The Jubilatory YES! On the Instant Appraisal of an Experimental Finding," *Ethnographic Studies* 12 (2011): 59–77, accessed February 10, 2021, doi:10.5449/idslu-001104716.

name aloud for herself; but perhaps not just for herself, as P2 picks up this practice and reads out the following name in the list (line 17), providing P1 with a next writable,[20] which is confirmed and typed by P1 in line 18. After another 30 seconds (not included in the transcript) and three more names written in the form they decide that "perhaps this is enough."

Along with aggregation, participants have also used query refinement as the second approach to obtaining search results. Its aim is to make the search as specific as possible, in order to receive a low number of very relevant interviews, which could be directly copied to the form as "proper" results answering the question. An example is provided in Extract 2, which shows Participant 3 (P3) and Participant 4 (P4) working on the task "Find narrators who mention transformation of their religious identity." P3, who is sharing her screen, had used Pixla to search for a *textual* query "religious identity" (although Pixla is intended as a *voice* interface). As the excerpt begins, they are discussing the two results obtained (see Figure 4).

Extract 2: Second group / 20:00–20:40

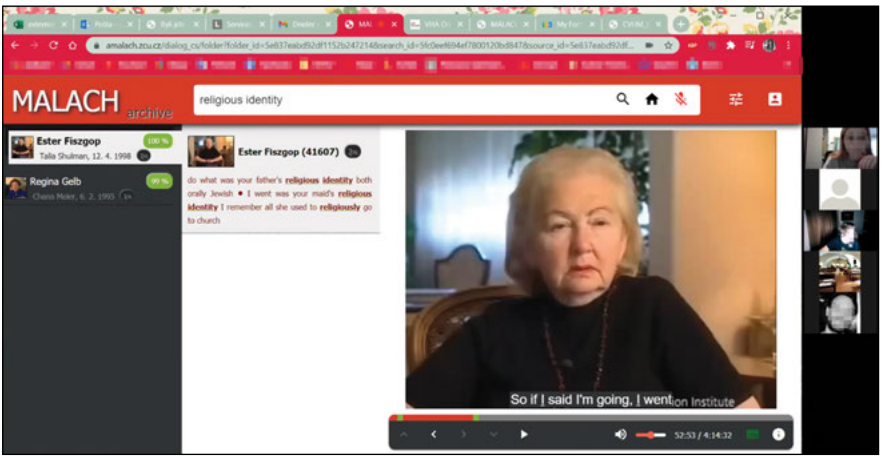

Figure 4: Shared screen with the search results of a textual query "religious identity" in Pixla. Webpage: http://amalach.zcu.cz, date: 27 November 2020.

20 Lorenza Mondada, "Going to Write: Embodied Trajectories of Writing of Collective Proposals in Grassroots Democracy Meetings," *Language and Dialogue* 6, no. 1 (2016): 140–78, accessed February 10, 2021, doi:10.1075/ld.6.1.05mon.

(1) **P4: Just I think that in this task it's something else well, ehm, that …** ((P3 changes the tab to the online form; P4 reads out part of the task)) **transformation of *their* religious identity, so I think those that changed their religion, or … their beliefs.**
(2) **P3: Yeah?**
(3) **P4: So I'd rather formulate the query like uhh, 'change religion'** ((said in English)). **Like change of religion rather than religious identity.**
(4) **P3: I have put it in this formulation into another one but … There it has … It didn't find much** ((types 'change' in the search field)) **but it found 'change politics'** ((said in English))**, so maybe this …**
(5) ((4 second pause, P3 types 'identity' in the search field))
(6) **P3: Yes.** ((submits query, results start loading))
(7) **P3: Into this …** ((switches tab to VHA, see Figure 5))

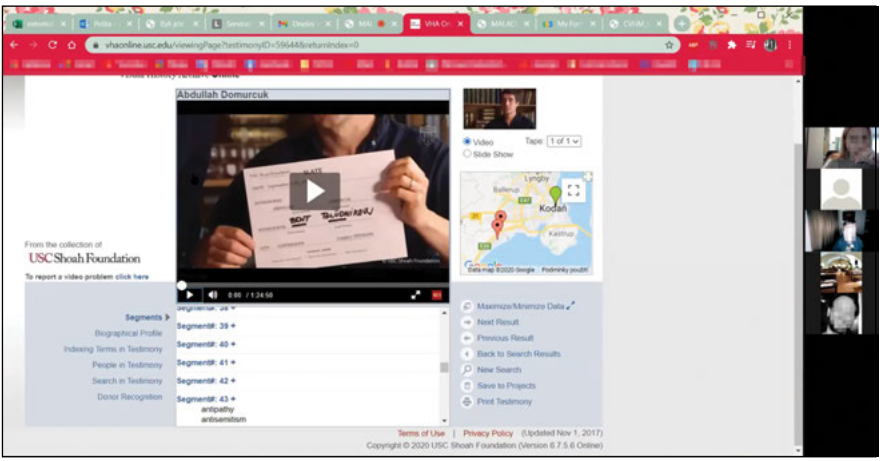

Figure 5: Shared screen after P3 switches from Pixla to VHA Webpage: http://vhaonline.usc.edu, date: 27 November 2020.

(8) **P3: I have put it into this one.**
(9) **P4: Mhm.**

In line 1, P4 mentions the task formulation, and after he produces several hesitation markers, P3 switches the tab in her browser to the form with the tasks. Now P4 uses the on-screen text as a resource and reads aloud the second part of the task. Thereafter he suggests that they should reformulate the search query in a way which would be in a better accord with the task: "change religion" (line 3). In line 4, P3 responds that she already tried that earlier in the VHA system, but

she agrees that they can also try here in Pixla, and in lines 5 and 6 she types and submits the query, providing online commentary on her ongoing activity (lines 6 and 7). Next, while they are waiting for the results to appear (lines 7 to 9), she switches the tab again, this time to the VHA interface (see Figure 5), where she then proceeds to show P4 the results of her previous attempt (not displayed in the transcript). Contrary to Excerpt 1, P3 and P4 are reformulating and specifying the search query rather than handsorting the relevant results, possibly just because the number of obtained results is too low and not responding to the task (see Figure 4). Note that in lines 3 and 4, both participants resort to code-switching – i.e., alternation between two languages in the course of a single interactional sequence.[21] Here, rather than switching between two languages for the sake of mutual understanding or expressing oneself, the language choice is a "significant aspect of talk organization"[22] in a different sense: English is used because it appears to be taken as the language of the search system. The participants in this strip of interaction seem to operate with the assumption that the search query must be written in English. Therefore, they formulate the query in their talk precisely as it should be typed in – i.e., they use words from the English language.[23]

4.3 Querying: Keywording and Discoursing

After describing the findings on the interactional practices of collaborative work which emerged in the observed experimental settings, in this section, we will focus in some detail on the relation of the work praxis to the software search systems. Responding to our central question posed in the title of the chapter, we proceed to the argument that "tools" produce "data" through the process of querying (see Figure 6). This consists of breaking down the question into searchable units by way of two practices: "keywording" and "discoursing." They were not

21 See, e.g., Monica Heller, ed., *Codeswitching: Anthropological and Sociolinguistic Perspectives* (Berlin: Mouton de Gruyter, 1988).

22 Joseph Gafaranga, "Language Choice as a Significant Aspect of Talk Organization: The Orderliness of Language Alternation," *Text* 19, no. 2 (1999): 201–225, accessed February 11, 2021, doi:10.1515/text.1.1999.19.2.201.

23 It can be noted that although the participants seem to employ this assumption in their work, it is not quite correct, because the search system could also process queries in Czech, and in fact it would be the right approach as their overall task was to find interviews in Czech language. However, our chapter did not set out as an evaluative undertaking, and we aim at describing and explicating the participants' action rather than assessing it.

equally present as practical methods in the recordings of the three user pairs, but participants appeared to orient to them and verbalize aspects of them. We will describe and illustrate these practices in the following paragraphs.

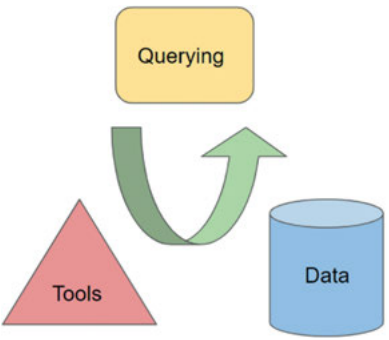

Figure 6: Querying as the interplay of "tools" and "data." Graph by the authors.

The practice of "keywording" – turning the task/question into possible keywords in archival metadata – is illustrated by Extract 3. We encounter the same pair as in Extract 1, but this time they are at the very beginning of the session, discussing how to organize their collaborative work. Before the excerpt begins, P1 agrees that she will be sharing her screen and P2 informs that she has the online form open on her second screen.

Extract 3: First group / 4:07–4:30

(1) **P1:** ((switches tabs in her browser)) **Hm hm hmm. Yep.**
(2) **P2:** **I would start with some … Some task which looks like, maybe the last one …**
(3) **P1:** ((switches to VHA login screen, then to her mailbox, and to the list of the tasks, see Figure 7))

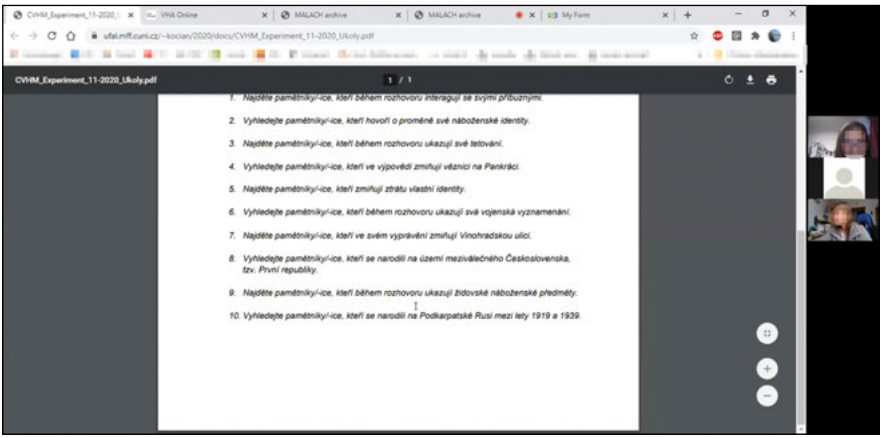

Figure 7: Shared screen with the list of the tasks sent in PDF to the participants for their collaborative work.

(4) **P2: That looks like there are enough keywords which could be used for the search.**
(5) **P1: Yeah.** ((0.5 second pause)) **Alright so … Should we try it?**
(6) **P2: There you search like …** ((P2 looks at her second screen; P1 points with the cursor to 'Podkarpatské Rusi' [Carpethian Ruthenia] in the text)) **Well, ehm, 'Podkarpatská Rus' and birth …**
(7) **P1:** ((switches to tab with VHA))

While P1 prepares her screen and produces a conventionalized melodic triad of fillers or placeholders[24] which indicates waiting (line 1), P2 turns to her second screen where the online form with the list of tasks is displayed. In line 2, she suggests that they should start with a specific type of question – one that "looks like" something – but doesn't finish the phrase and rather changes to a more concrete designation ("the last one"). P2 seems to take this utterance as an instruction to look at the last question in the list, as she switches tabs to the PDF with the tasks (which the participants received by e-mail just before the experiment; see Figure 7), locating the last question: "Find narrators born in Carpathian Ruthenia between 1919 and 1939." Meanwhile, having already specified the exemplar instance of a more general question type, P1 repeats "that looks like" in line 4 and then makes explicitly relevant the use of keywords as a search method. P1 aligns in

24 Nino Amiridze, Boyd Davis, and Margaret Maclagan, eds., *Fillers, Pauses and Placeholders* (Amsterdam and Philadelphia: John Benjamins, 2010).

line 5 ("Yeah"), holding her cursor under the word "Podkarpatská" ("Carpathian") on her shared screen, and then suggests that they could open one of the search systems to "try it." P2 does not align but continues her explanation, describing very precisely how the process of "keywording" actually works: the question is transformed into two searchable items, "Carpathian Ruthenia" ("Podkarpatská Rus" in Czech) and "birth" ("narození" in Czech). Note that none of these terms are present as such in the question: P2 lemmatizes "in Carpathian Ruthenia" ("na Podkarpatské Rusi") and instead of using "born in" she suggests the noun "birth."

The alternative practice of "discoursing" – turning the task/question into possible phrases in the archived speech – is illustrated by Extract 4. Twenty minutes into the session, the pair consisting of Participant 5 (P5) and Participant 6 (P6) works on the question "Find narrators who show their tattoos (during the interview)." This pair was the only one that decided not to share one of the participants' screens for the whole duration of the experimental session (although they did share it occasionally in an *ad hoc* manner). Just before the excerpt starts, P5 summarizes that they have done three questions out of ten, being around 15 minutes into the job.

Extract 4: Third group / 19:52–20:58

(1) **P5:** **Well, now I think we need to find out how to search for those that are about showing something. Because that's, apart from the Carpathian Ruthenia, those are all the remaining questions.** ((Laughs))
(2) **P6:** ((Laughs)) **So according to what is going on in the video?**
(3) **P5:** **(What is) going on in the interview, here, right** ((starts reading from the list of tasks)) **– interact with their relatives, show their tattoo, show their military decorations, show Jewish religious objects.**
(4) ((1.2 second pause))
(5) **P5:** **And then** ((continues reading aloud)) **mention the loss of their identity, mention transformation of their religious identity, and then there is the Carpathian Ruthenia.**
(6) **P6:** **Mhm. So there must be … For this there must be some special tool. Right, probably?**
(7) **P5:** **We must somehow find out how to use it.**
((2 second pause, two hearable clicks from P6))
(8) **P5:** **So I will try … I'll try that Amalach, and I'll try for instance tattoo, just like … Like 'look at my tattoo'?**
(9) **P6:** ((Laughs)) **'Look at my tattoo!' Heh heh heh. 'Watch this!' Heh heh heh heh.**
(10) **P5:** ((Laughs))

In line 1, P5 states that the remaining questions are questions of a certain type – they have to do with "showing something." P6 joins her in laughter and asks a follow-up question about the nature of this question type, which P5 confirms and specifies by reading out aloud all relevant parts of the questions that they still need to do (in lines 3 and 5). Note how precisely her categories are overlapping our own typology displayed in Table 1. First, in line 3, she lists the questions that include a visible feature of the narrator or their environment. After a pause she lists a next category of questions, which have to do with identity, and then she mentions the question about Carpathian Ruthenia, which does not fit either of those categories, but they have decided earlier (after spending some time with attempting a search) that they will put this question aside for later. P6 responds by producing first an acknowledgment token[25] and then a formulation of the gist[26] of P5's previous turns (line 6), which specifies that there must be a "special tool" for these categories of questions. P5, perhaps in a corrective manner, responds that they must "find out how to use it" – i.e., they already have the tool but they need to acquire the competence to use it efficiently. After 2 seconds of silence she suggests that she will use Amalach and type in an imagined speech phrase which could possibly accompany a video-recorded scene of someone showing a tattoo (line 8). Although her suggestion is then treated (first by P6 and then also by P5 herself) as laughable, even somewhat ironicized by P6 ("Watch this!" in line 9),[27] and we are indeed not sure whether she has typed the phrase into the search field (her screen is not shared and she doesn't account for it), this sequence clearly shows participants' orientation to the practice of "discoursing" as a form of querying. The fact that it is treated as laughable might indicate that it is more unusual in comparison to the practice of "keywording," which is utilized much more routinely (see Extract 3).

It seems that in the VHA, perhaps given the abstraction required to produce some results via search query, search results obtained by way of "keywording" are treated as less "certain" and require further checking. On the other hand, Amalach (and Pixla), in its "concreteness," provides results through "discoursing" practices with higher certainty which can also be checked more easily (and

25 Gail Jefferson, "Notes on a Systematic Deployment of the Acknowledgement Tokens 'Yeah' and 'Mm hm'," *Papers in Linguistics* 17 (1984): 197–206, accessed February 12, 2021, doi:10.1080/08351818409389201.

26 John Heritage and D. Rod Watson, "Formulations as Conversational Objects," in *Everyday Language: Studies in Ethnomethodology*, ed. George Psathas (New York and London: Irvington, 1979), 123–62.

27 Cf. Elizabeth Holt, "On the Nature of 'Laughables': Laughter as a Response to Overdone Figurative Phrases," *Pragmatics* 21, no. 3 (2011): 393–410.

are less opaque). Such predilection for keywording or discoursing contingent upon particular search systems seems true, however, only to a certain extent. In the analyzed interactions, the participants often used the same querying practices independently from the type of search engine. For example, querying by keywording in VHA generated not only a set of resulting interviews, but also offered new keywords that came up as results of the first keyword search. These newly "discovered" keywords were then typed into other search systems such as Amalach – i.e., used as resources in the "discoursing" practice.

5 Concluding Remarks

The aim of this chapter was to identify and describe participants' practices for working with a large corpus of audiovisual Holocaust testimonies, especially in terms of locating relevant results within the collection by using three different search systems. We have started from the assertion that various search devices and systems, rather than working as non-problematical "tools," dynamically produce and practically construe what can be conceived as "data." Instead of formulating further insights on a theoretical or conceptual basis, we have tackled our subject matter through a low-scale empirical study. It consisted of an experimental setting where three pairs of novice users solved ten tasks over video-conferencing software, utilizing three different search "tools" (VHA, Amalach, and Pixla). The experiment was designed to emulate work with various search engines, such as that of the researchers working in the Malach Center for Visual History.

Our main findings presented in this chapter consist of formulating a fundamental structure and elements of participants' collaborative work, which appears to be composed of three complementary actions: *testing*, *sharing*, and *implementing*. The tasks were solved, and relevant results obtained, by two main approaches: *aggregation* and *query refinement*. Each singular search act is taken as an instance or an example of some – thus far unknown (to the users) – general features of the systems, which are to be discovered and identified. The systems are then discussed regarding their utility for solving questions of "a certain kind" (cf. Table 1). In order to conduct searching, the participants seek to transform the textual task into a working query that returns a set of relevant results. They do this mostly by *keywording* (turning the question/task into a set of keywords), and much less often by *discoursing* (turning the question/task into a possible expression in natural language). This might be partially caused by the force of habit as searching keywords is the prevalent practice when using database systems in

contrast to direct interaction with such a system in natural language, though the Pixla system is specifically designed for this purpose. However, it became apparent that participants were able to differentiate the effectiveness of both practices in different environments. The practice of "keywording" seems to stimulate abstraction and is used more often in regard to the VHA search interface, while the practice of "discoursing" stimulates concretization and is used more often in regard to Amalach and Pixla systems. All the concepts as presented in this chapter were drawn inductively and illustrated by examples from the empirical materials, aiming to capture the dynamic process of development and utilization of progressively improving shared knowledge of the workings of the search systems.

Nevertheless, we have realized that the participants surprisingly did not upgrade their searching skills progressively step by step. Their emergent knowledge of the search systems rather seemed to be implemented hermeneutically, again and again, for the whole set of experimental tasks, leading to an improvement of the whole list of answers – each time a new attribute of the search systems had been discovered. Most of the time, they used the current "best knowledge" for all the tasks and all search engines at once. The systems and the tasks were taken for all practical purposes not as separate entities, but as parts of a whole. Also, the "best knowledge" did not alter depending on the qualitative differences between the search questions. Accordingly, the "best knowledge" has universalizing tendencies: the participants aim to establish practices which are utilizable for solving multiple tasks. Still, such knowledge is not a static entity, but it is continuously improved on the basis of participants' collaborative work with the search engines and the results obtained so far, in and through their work on the previous tasks.

One of the important findings of our study points to what we call the "googling paradigm," indicating thus the user's orientation to the search process as not requiring a knowledge of the search tool's inner workings.[28] The practices of breaking down questions into searchable queries (keywords or discursive units) establish the horizon of the materials to be searched. Furthermore, it also seems to structure the participants' practical engagement with the user interfaces – e.g., in the case of VHA, during the time dedicated to the experiment, our participants (as untrained novice users) very rarely moved beyond the simple "Quick Search," which is visually highlighted and designed in a way that resembles a Google search field. In 2010, Lee et al. called Google "one of the most influential

28 Hillis, Petit, and Jarrett find the naturalization of "knowledge of" search without "knowledge about" how it actually works a direct consequence of the Google "magic box." Ken Hillis, Michael Petit, and Kylie Jarrett, *Google and the Culture of Search* (New York: Routledge, 2013), 14–15.

symbols of the new Internet paradigm" since the turn of the century.[29] Another ten years later, we are witnessing a googling paradigm – to which new members of society are ordinarily introduced[30] – as it operates in a broad cultural environment beyond simple web searches and structures the way we routinely approach the very procedures of locating relevant information.

Though the last mentioned observations reflect the recent digitalization of society in general, one must consider the specificities of the Holocaust research domain. Our study is inherently set in this field as well, already by default owing to the nature of the sources we use. It is necessary to bear in mind the singularity of the Holocaust as the ultimate cultural trauma, constant memento, and a negative point of reference for the contemporary "Western" value system. In this respect, among the primary imperatives (both research and ethical) are adequate source representation and interpretation, which is perhaps even more crucial when working with survivor testimonies. As we argued, search tools have a direct impact on displayed data, while the process of searching can lead to de-contextualization and re-contextualization of the original archival recordings. Not only can the user overlook the broader context of the found "segment" within an individual's entire personal life story, but imperfectly formulated search queries may also cause omission of some important aspects of the historical reality. Although any user interface generates a certain learning curve, we observed a considerable lack of adjustment in participants' actions that would respond to the particularities of the systems in use. This seemed to have possibly dissuaded them from discovering more about the tools as well as the resulting sources. We believe this is a critical goal for the future development of technologies for accessing Holocaust related sources. Whichever the "tools" will be, the users should be clearly made aware of how they arrived at their "data," what those results represent, and how they thus ultimately affect their research.

Abbreviations

CVHM – Malach Center for Visual History at the Charles University
PDF – Portable Document Format
VHA – Visual History Archive of the University of Southern California Shoah Foundation

29 Sang Hoon Lee et al., "Googling Social Interactions: Web Search Engine Based Social Network Construction," *PLoS ONE* 5, no. 7 (2010): e11233, accessed February 10, 2021, doi:10.1371/journal.pone.0011233.

30 Sandra Houen et al., "Web Searching as a Context to Build on Young Children's Displayed Knowledge," in *Children's Knowledge-in-Interaction: Studies in Conversation Analysis*, ed. Amanda Bateman and Amelia Church (Cham: Springer, 2017), 57–72.

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