

Explaining the Location of the Mass Shootings at Babyn Yar on September 29-30, 1941

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Where exactly did the SS and Police conduct the mass shootings at Babyn Yar on September 29-30, 1941, in which more than 33,000 Jews were shot, and how were they organized?

Surprisingly, in the summer of 2017, when I started to work with the Babyn Yar Holocaust Memorial Center (BYHMC), these two questions had still not been answered satisfactorily. It was clear that the Jews were shot at Babyn Yar, but the precise location still remained a subject of debate. The topography of the site had changed so completely since the war that the terrain was simply unrecognizable. Conflicting theories had been put forward as to where the shootings took place, but the evidence presented to support these theories was limited and unconvincing. In particular, descriptions of how the shootings were organized did not make clear reference to the distinctive features of the terrain. Most surprisingly, the dramatic photographs of Johannes Haehle, showing prisoners of war working in a ravine and clothing piled up in front of a steep cliff wall could not be located satisfactorily on a map. Where were these photos taken and how do they help us to understand what happened at Babyn Yar? These were the initial research tasks envisioned by Dutch historian Karel Berkhoff, which we sought to answer using aerial photographs, ground photographs, historical maps, and witness testimony. In particular, where was this most iconic photograph taken?¹



Source: Institute for Social Research Hamburg, Haehle Photo, # 008-015.

Initially the BYHMC Scientific Council, of which I was a member, was focused on preparing a Basic Historical Narrative as an outline and framework for the planned exhibit. This work was completed in late 2018. Therefore, it was not until the summer of 2019 that Karel Berkhoff's original challenge regarding the topography of Babyn Yar was taken up. Karel then put together a team of historians and researchers to examine this question in detail. Waclaw Godziemba-Maliszewski was tasked with attempting to locate additional aerial photographs of Babyn Yar and analyzing them. He had previously found the most significant photographs of the area, taken by the Germans on September 26, 1943; but he was convinced that additional images could still be found. My role was to compare the results from the aerial photographs with the considerable amount of available witness testimony and then to use this, as well as an extensive collection of historic maps and ground photographs, to assist in pin-pointing the correct locations for the Haehle photographs. Ukrainian historians, including Alexander Kruglov and Mikhail Kalnitsky, advised us on the current state of research on the topic and sent us additional relevant information and reports on specific issues. Beyond identifying the location of the Haehle photos, the project aimed to create a new more comprehensive explanation of the topography of the mass shootings on September 29-30, 1941. We wanted to confirm clearly the route taken by the Jews, the sites where property was discarded and clothing had to be removed, as well as the actual location of the shooting site within the network of ravines at Babyn Yar.

In July 2019 I travelled to Kyiv to give a presentation to members of the Scientific Council and staff at the BYHMC. When I flew to Kyiv, I still had no clear idea of exactly how we would be able to confirm the locations of the Haehle photographs, but we had already begun to find additional photographs and I was also starting to find useful references to specific terrain features in the witness statements. My presentation was entitled "Why aerial photography?" In it I explained the importance of obtaining high resolution digital scans that could then be enlarged to allow a fine-grained analysis of the aerial images. In addition, I gave examples of witness testimonies that included important clues to the terrain, such as the testimony of the Sonderkommando 4a driver Viktor Trill:

During my break [from shooting], I was able to view this broadly branching and connected network of ravines.[...] I established that in a side ditch, connected to the shooting ravine, the Jews were collected together. There they were guarded by members of the Sonderkommando and also Ukrainian auxiliaries. There I also saw gigantic piles of clothing. It was clear that the Jews had to undress in the ravine before the shooting. When I looked into this side ravine, around 300 Jews were located there...²

To conclude my lecture I showed another key Haehle image, which showed German SS troops rummaging through the piles of clothing with a steep cliff wall in the distance. My closing statement was: "locating this photo will help to explain the route taken by the victims on September 29-30."³

SS-men rummage through discarded clothing after the massacre



Source: Institute for Social Research Hamburg, Haehle Photo, # 008-005.

Having completed my presentation, I then sat down in the meeting room and observed the other presentations for the rest of the conference. Fortuitously, I was seated directly opposite several of the Haehle photographs that were placed alongside an iconic photo of the Babyn Yar ravine, which featured the “lone tree” on the skyline in the distance. I was struck particularly by the differences between the narrow ravine photographed by Haehle and the wider vista in the “lone tree” image. Could it be that there were two separate ravines? This possibility was reinforced by examining a map showing possible locations for the mass shootings, which identified the western spur as one of three marked sites. On returning to my room I then also went through my transcribed testimonies again. I found this statement by Adolf Janssen, which matched up with what could be seen in the Haehle photo looking down the whole ravine (#008-015 above):

It was only through this court hearing here that I learned at all that it was supposed to be in a ravine. At that time I had the impression that it was a gigantic gravel pit [riesige Kiesgrube] with washed out drainage ditches [Auswaschungen]. I am not familiar with the term ravine. I then introduced these two officers to Blobel. He went ahead with them to the ditches [Gruben]. I went across to the street and from there one

*could view diagonally into this ditch. There I saw dead people lying. I went straight back again, as I can't stand such things.*⁴

This reference to the street immediately brought to mind the road clearly visible in the foreground of the Haehle image. It seemed likely to me that Janssen was probably standing at the same place.

The main work of putting together the pieces of the puzzle then progressed through a combination of carefully examining the ground photographs and aerial photographs, while also assembling and translating a collection of hundreds of eye-witness testimonies, mainly gathered from a series of German investigations and trials that progressed from the late 1950s into the early 1970s. These statements were supplemented by a few documents from the Nuremberg trials and also from Soviet investigations conducted between 1943 and the 1980s, as well as a few survivor testimonies. Once the testimonies were available as digital translations it was also possible to search them for specific terms, such as “ravine,” “quarry,” “ditch,” or “clothing.” Thus it was also a project in digital history, trying to identify the key testimonies with regard to geo-location from a large collection. By focusing on a series of specific locations in turn, we slowly began to put more pieces of the jigsaw in place and the resulting overall picture became much clearer.

Part of the problem in identifying the shooting site was the intensive effort made by the SS to cover up all traces of the shooting before they retreated from Kyiv. Paul Blobel, the former leader of Sonderkommando 4a, who organized the shootings at Babyn Yar, was appointed by Heinrich Himmler to destroy the physical evidence (the bodies) from all the mass shootings in the East. He became commander of Sonderkommando 1005 that conducted large-scale exhumations and one of the first sites to be exhumed was at Babyn Yar between mid-August and the end of September 1943.⁵ As a result there were very few traces of the mass murder when the Soviet liberated the area west of Kyiv in the fall of 1943.⁶ However, since some of the prisoners involved in the exhumations at Babyn Yar escaped and survived, their testimonies give us a good idea of where the main exhumations were conducted.

An initial breakthrough came only a few weeks after the July 2019 conference. When I compared witness testimony about the bunkers used to house the prisoners involved in exhuming the corpses at Babyn Yar in August and September 1943 with what was visible in the aerial photograph dated September 26, 1943, I made a remarkable discovery. This aerial photograph had been available for some time, but now we were able to enlarge the high-resolution image effectively and two bunkers could be clearly identified in the middle of the sand quarry, which was located between the western spur and the main ravine. Careful analysis also revealed the shadow of a guard tower that stood directly opposite to the entrances of the bunkers. This matched up precisely with the accounts of surviving prisoners and the testimony of German guards.

Enlargement of the Sand Quarry on September 26, 1943



Shadow of Guard Tower

Two bunkers buried into the earth

Source: NARA, GX 3938, No. 105, September 26, 1943.

At the trial in Stuttgart of Germans linked to Sonderkommando 1005, who had supervised the exhumation work, former guard Franz Löbbert responded under questioning: *“In Kyiv there were two [bunkers] next to each other. Then there was a machine-gun post set up top and two men in front of [each of] the bunkers. One in front of the bunker constantly, and the other patrolling around the bunker. They [the prisoners] were also chained at night.”*⁷

In total there were more than 320 prisoners distributed among the two bunkers by the last week of September 1943. The larger bunker, sunken into the earth, held more prisoners than the smaller bunker next to it.⁸ Shortly before the completion of the exhumation work, many of the prisoners in the large bunker managed to escape in the middle of the night. Although most were recaptured and shot, more than a dozen got away successfully and survived the war. Among them was Yakov Kaper, who noted in his memoir that the underground barracks were enormous and that there was some ventilation in the bunker, as the door consisted of welded iron rods. He added: “Opposite the exit to the barracks, a watch-tower was erected and there were always Germans with machine guns aimed at the door of our barracks.”⁹

The discovery of the two bunkers on the aerial photograph confirmed that the prisoners conducting the exhumation were housed right next to the western spur. Some prisoner accounts indicate that the main site for the exhumation work and corpse burning was not far from the bunkers. Therefore, my attention was further attracted to the western spur, soon after the conference in Kyiv that had alerted me to the two ravines theory.

A detailed examination of the lone tree on the distant ridge soon provided clear affirmation of the differences between the separate ravines. Some historians have proposed that the Haehle photograph gives a view down the length of the main ravine, but the apparent absence

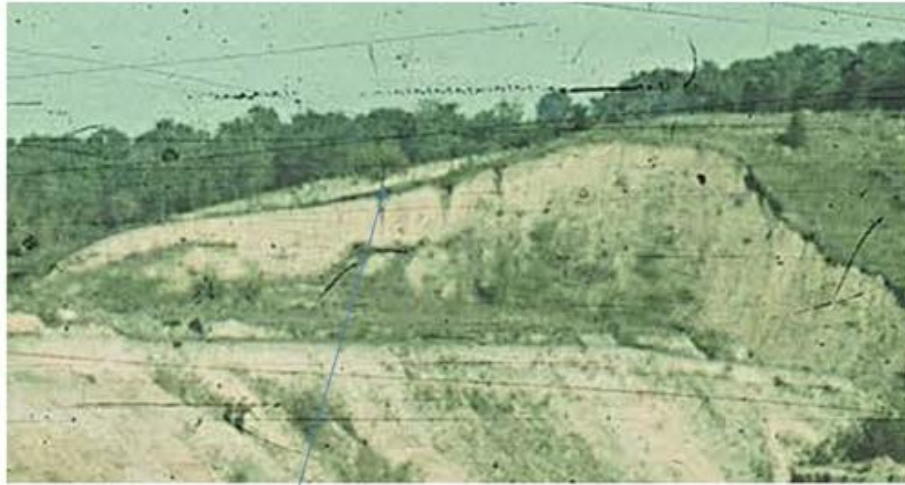
of the lone tree from the Haehle photograph made me wary of this hypothesis, as the lone tree was a distinctive feature of the iconic images of Babyn Yar presumably taken down the main ravine. Here too, careful analysis provided the solution. By enlarging the Haehle photo taken from the road (#008-015 see above), it becomes possible to see the lone tree, which from a distance seems to be invisible due to the cluster of other trees behind it. Literally you can't see the tree for the woods behind it. Unlike the other photos, where the tree stands silhouetted sharply against the sky, here it has other trees behind it, almost completely concealing it.

Image of the Lone Tree from the main ravine taken shortly after the war.



Source: A still frame from newsreel footage of an UNRRA visit to Babyn Yar in 1946.

IN FACT THE LONE TREE IS VISIBLE IN THIS ENLARGEMENT OF THE HAEHLE PHOTO, BUT IT ISN'T CLEARLY VISIBLE ON THE RIDGE, AS IT IS FROM A DIFFERENT ANGLE, WITH A LARGE STAND OF TREES BEHIND IT



Lone Tree

YOU CAN'T SEE THE LONE TREE FOR THE WOODS

THERE ARE TWO SEPARATE RAVINES, EACH WITH ITS OWN PERSPECTIVE ON THE LONE TREE



LINES OF SIGHT TO THE LONE TREE FROM THE TWO RAVINE BRANCHES

1 Hehle view of concealed tree down the western spur ;

2 View of lone tree down the main ravine

Source: NARA, GX 3938, No. 105, September 26, 1943.

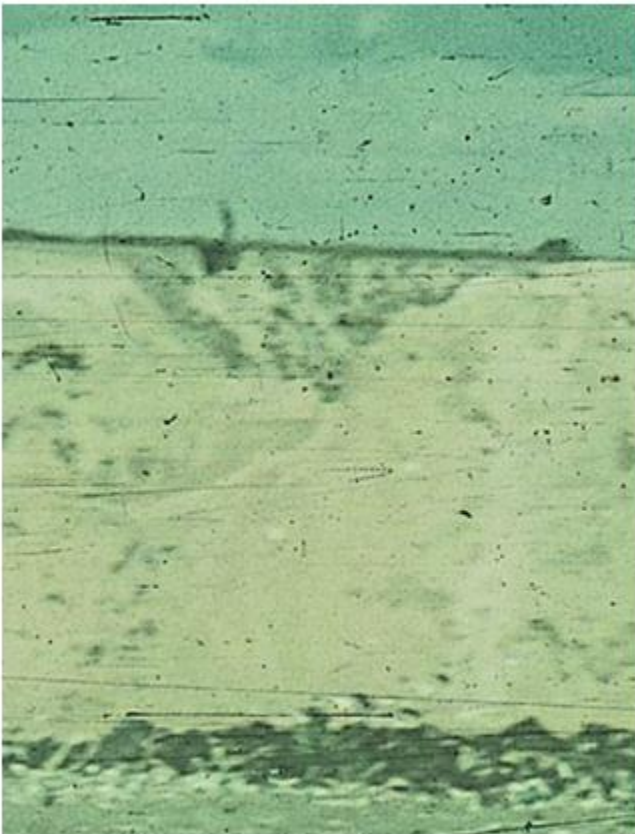


Lone Tree

THE TREE STANDS ALONE ON THE EDGE OF THE HIGH CLIFF – SEEN FROM ABOVE

Having successfully confirmed that the Haehle photograph shows a view down the length of the western spur, the rest of the topography slowly began to fall into place. The next concern was to locate the photographs of the discarded clothing taken with the impressive cliffs behind them. The level outline of cliff top definitely excluded the arched crescent-shaped cliff that dominates the skyline in some photos; but initially I assumed that the photo must have been taken where the western spur meets the main ravine, as this seemed to be the only place with cliffs of sufficient height. Yet this solution left the problem of there being insufficient space in front of the cliffs to get such a distant view of them. By comparing the cliff height with a small figure identified on the top it was possible to estimate that the actual height of the cliff was not more than about 18 meters.

ENLARGEMENT OF HAEHLE PHOTO # 008-004



FROM THE HEIGHT OF THE MAN SHOWN ON TOP OF THE CLIFF, THE ESTIMATED HEIGHT OF THE CLIFF IS APPROXIMATELY 18 METERS.

Source: Hamburg Institute for Social Research, Haehle, # 008-004.

Then when examining the testimonies of Jewish survivors and German policemen that guarded the route during the mass shootings, it became increasingly clear that the Jews were forced to undress in the sand quarry that existed during the war between the main ravine and the

western spur – that is the same sand quarry, where the bunkers were later located. Here are some of the quotations that identify the sand quarry as the place where the Jews undressed:

Hans Puchta, a member of Sonderkommando 4a, recalled:

“As I approached I saw a depression – an emptied-out sand mountain. I saw that the people were getting undressed. They went through a gap and disappeared. From the road I couldn’t see any more. I heard shots and I knew that here people were being shot.”¹⁰

According to the local witness, Maria Lutsenko, who lived on the opposite side of the ravine near the edge of the Jewish Cemetery:

“We could see very well from our yard how the people were forced to undress near a sand quarry...”¹¹

Albin Powa was a member of German Police Battalion 45, which was used to guard the Jews as they were escorted to the shooting site:

“We had to ensure that the Jews were sent into the quarry without any delay... Insofar as I was able to observe, the Jews had to undress at the end of the quarry, went partly naked, partly in their underclothes over a steep slope and disappeared into the adjacent valley or behind a mountain slope. From there one could hear shooting...”¹²

Having confirmed that the Jews were forced to remove their clothing in the sand quarry, the next stage was to visualize it. By incorporating Haehle’s and other images of the sand quarry into a 3-D model of Babyn Yar, constructed initially using a detailed topographical survey from 1924, the Spatial Tech team working with the BYHMC was able to recreate virtually what the scene would have looked like in 1941. As the sand quarry had only been excavated in the late 1930s, it was necessary to build this additional feature into the original topography from 1924. The resulting image (see below), representing the view from above, which was created using the 3-D model, shows how the Haehle photo depicts an extensive pile of clothing that curves around to the left, as the Jews were forced to undress successively along the route and most were led towards the steep slope that adjoined the western spur of the ravine in the far left corner of the quarry (seen from the entrance in the south).

Reconstructed Aerial View of the Quarry with the Scattered Clothing as in Haehle's Photo



Source: Spatial Tech 3-D model of Babyn Yar.

"THE JEWS HAD TO UNDRESS AT THE END OF THE QUARRY..."

HAEHLE PHOTOGRAPH OF DISCARDED CLOTHING



Source: Hamburg Institute for Social Research, Haehle, # 008-004.

Further confirmation that these photos were taken in the sand quarry was gained by comparing the vegetation with other similar photos taken between 1941 and 1946. Another key photo from 1941, found by Karel Berkhoff, can be matched with vegetation visible on the cliffs in the Haehle photos and also has piles of clothing in the foreground. On its right-hand edge, Berkhoff's photo also shows a dark patch of vegetation spreading down diagonally from the top of the cliff. This same distinctive mark can be found in the 1946 image that shows the right-hand edge of the sand quarry (see the still frame from newsreel footage of the UNRRA visit in 1946 above).

In compiling my own mental image of where the shooting took place, two key pieces of evidence for me were sketch maps drawn in the 1960s by German perpetrators. Amidst the voluminous pages of German trial records I did not find the sketch maps straightaway, but despite their primitive nature, once I found them, they served to confirm much of the picture I was getting from comparing the aerial and ground photographs with the witness testimonies. The first sketch map I found was by Viktor Trill, which together with his testimony, clearly explains how the Jews were fed into the "shooting ravine" from the adjoining sand quarry, where they were forced to undress.

In the accompanying statement given on June 29, 1961, Trill describes a so-called "bridge" across the ravine in some detail and notes that the trucks parked just short of it, as

shown also on his sketch. In fact the “bridge” was the point where the road crossed the tip of the western spur, providing a clear view down its length (as in the Haehle photograph # 008-015 above). Trill’s statement makes clear also that the long ravine extending to the right from the bridge was already full of bodies on his arrival, such that the bottom of the ravine could not be seen, confirming that he was there on the second day of the mass shooting:

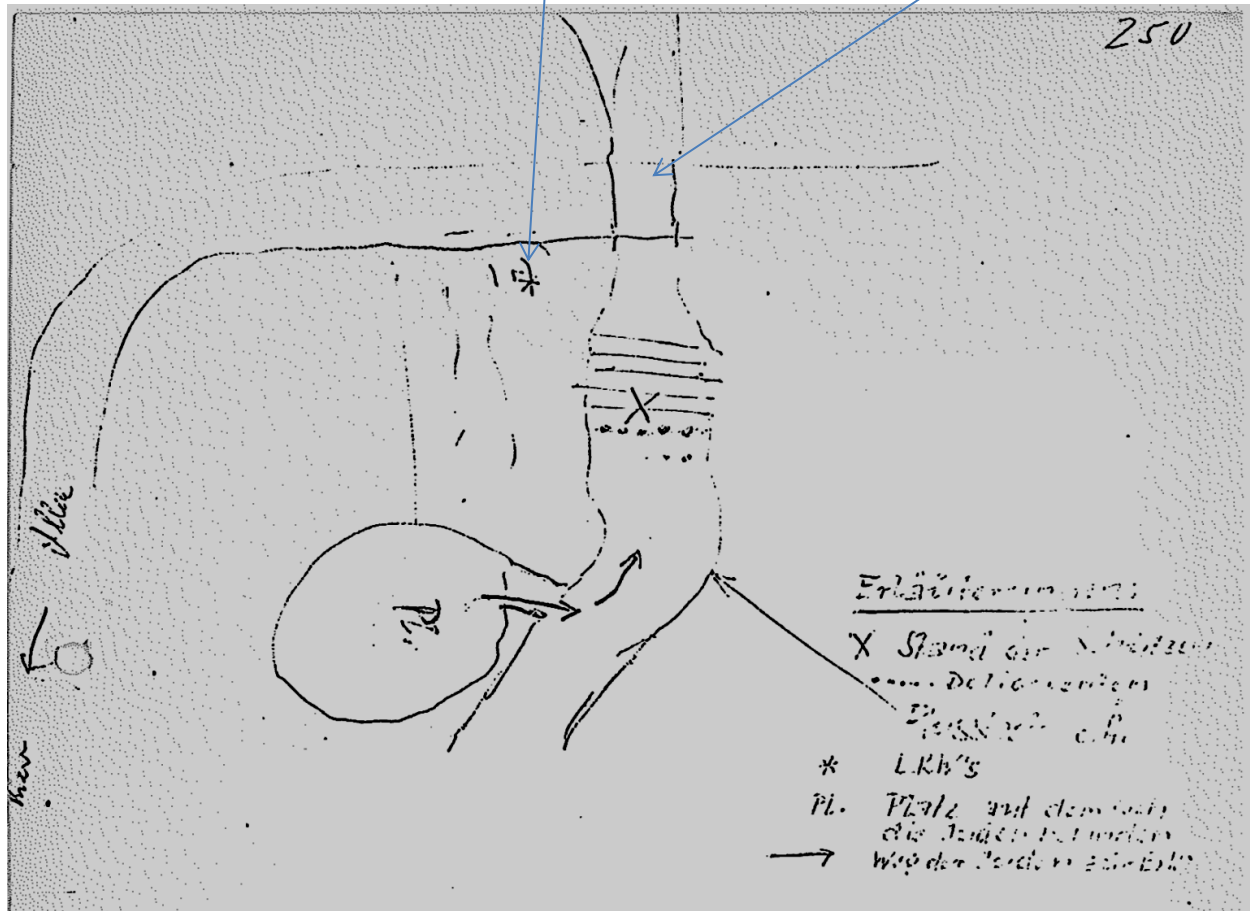
“On this occasion he [Blobel] said to me: ‘good that you are here, our boys are already tired, you have to jump in now too.’ In addition he explained to us that early the next morning we had to take part in a large-scale execution of Jews and other opponents. On the basis of this order, in the early morning hours of the next day, I, along with the two other drivers and all other members of Sonderkommando 4a were driven in trucks to an execution site outside the city. Like all the others, I had with me for this operation a machine pistol. Coming out of the city we drove in the trucks down a long Allee and turned right towards a bridge. Before the bridge the trucks stopped and we had to get out. Under the bridge on the left and right sides were dips in the landscape, which in my estimation represented a dried-up river bed. In this depression on the right-side of the bridge already lay countless naked corpses. They lay in many layers on top of each other. I would almost like to say like oil sardines in a tin. This comparison seems strange, but unfortunately true. Looking from the bridge the depression made a turn to the right, where behind this curve a large round depression in the ground was located. It is possible that this comprised a former sand or gravel pit. In this pit [Grube] there were also countless people, who I can safely assume were all Jews. Also in this pit were mountains of clothing of all sorts. At this point in time Blobel was present at the execution site. He assumed overall command of the execution that was now starting again. It took place as follows: the Jews standing in the pit had to take off all their clothing. They were then driven in groups of 10 or 15 into the dried up river bed. The shooters had to take up position on top of the corpses lying in the river bed. As soon as a group of Jews arrived in front of them, they issued short bursts of fire at the Jews, usually aiming at the head. Where the ‘delinquents’ fell they remained lying. Immediately a new group was led to the same spot, where they were shot in turn. The shooting squad consisted of 5 or 6 men. They had to remain in the ravine [Grube] about 30 minutes, where they had to shoot more or less non-stop. After this they were relieved by the next Kommando. The relieved group then went to the parked trucks, where they drank alcohol. I belonged to one of these squads. The execution took up the whole day. It is hard for me to say how many Jews were killed altogether. It would certainly have been at least several hundred. There were men and women. Youths were also among them, but I didn’t see any children. All the shooters who participated in the execution belonged to Sonderkommando 4a. I don’t know their family names. Even at that time I didn’t know most of them, mainly because we only spoke to each other using our first names...”

“...I have drawn a rough sketch of the operation just described in Kyiv. I am adding this sketch to the files. The explanations on the sketch are not from me but have been added by the investigating official. I was only ever a member of Sonderkommando 4a and not of Einsatzkommando 5...”¹³

Viktor Trill's Sketch Plan

Trucks parked

Trill's Bridge

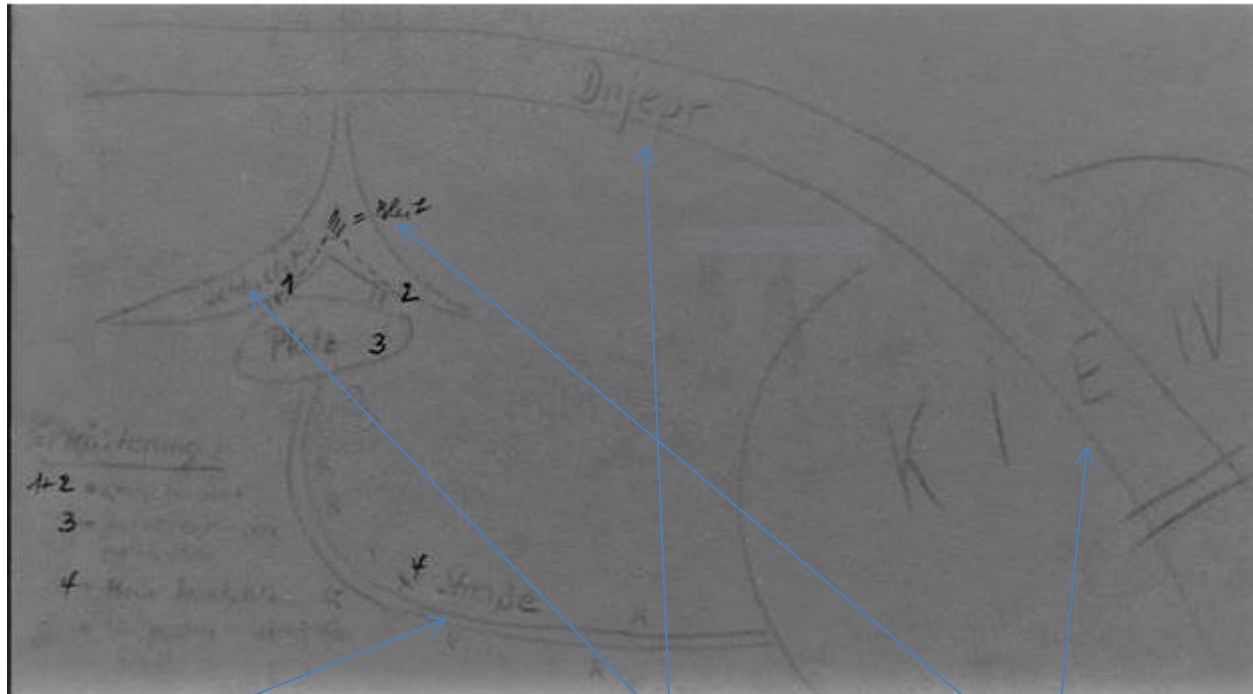


Source: BA-L, B 162/17922, p. 250, statement of Viktor Trill on June 29, 1961.

Erläuterungen	-	Explanations
X Stand der Schützen	-	Location of the shooters
..... [„]Deliquenten [“]	-	“Delinquents” [Victims]
→ Flussbett	-	River Bed
* LKW's	-	Trucks
Pl. Platz auf dem sich die Juden ausziehen [?]	-	Open space where the Jews undress[?] themselves
→ → Weg der Juden zu Erschss[?]	-	Path of Jews to shooting[?]
Allee → Kiew	-	Allee to Kyiv ¹⁴

The second sketch plan of Hermann Lass¹⁵, supplements Trill's sketch very well as it links the shooting ravine to the main ravine and also shows roughly how the Jews were brought up from the Allee into the sand quarry from the south. It contains some inaccuracies, but makes good sense, especially when combined with Lass's testimony and that of other SS and Police members.

Sketch Plan of Hermann Lass



Street [cordoned off]

Ravine

Pool of Blood at Ravine junction

River Dnepr

City of Kyiv

Explanations – Erläuterungen

1 + 2 – Shooting Places

3 – Place where Jews had to undress [Text on sketch not legible – but clear from statement]

4 – My Standpoint [while guarding]

The sketch indicates two separate pathways from the open area [sand quarry], where the Jews had to undress (3) into the two respective ravine branches. From Lass's statement it is clear that he climbed up a small hill to get up to the side of the ravine on the left (1); the second path is probably downhill to enter the main ravine on the right (but Lass admits he could not see into this ravine).

In his statement, Hermann Lass, who was a member of German Reserve Police Battalion 303, also engaged in cordoning off and escorting Jews to the shooting site, describes what he saw when he went up to the shooting ravine via the sand quarry:

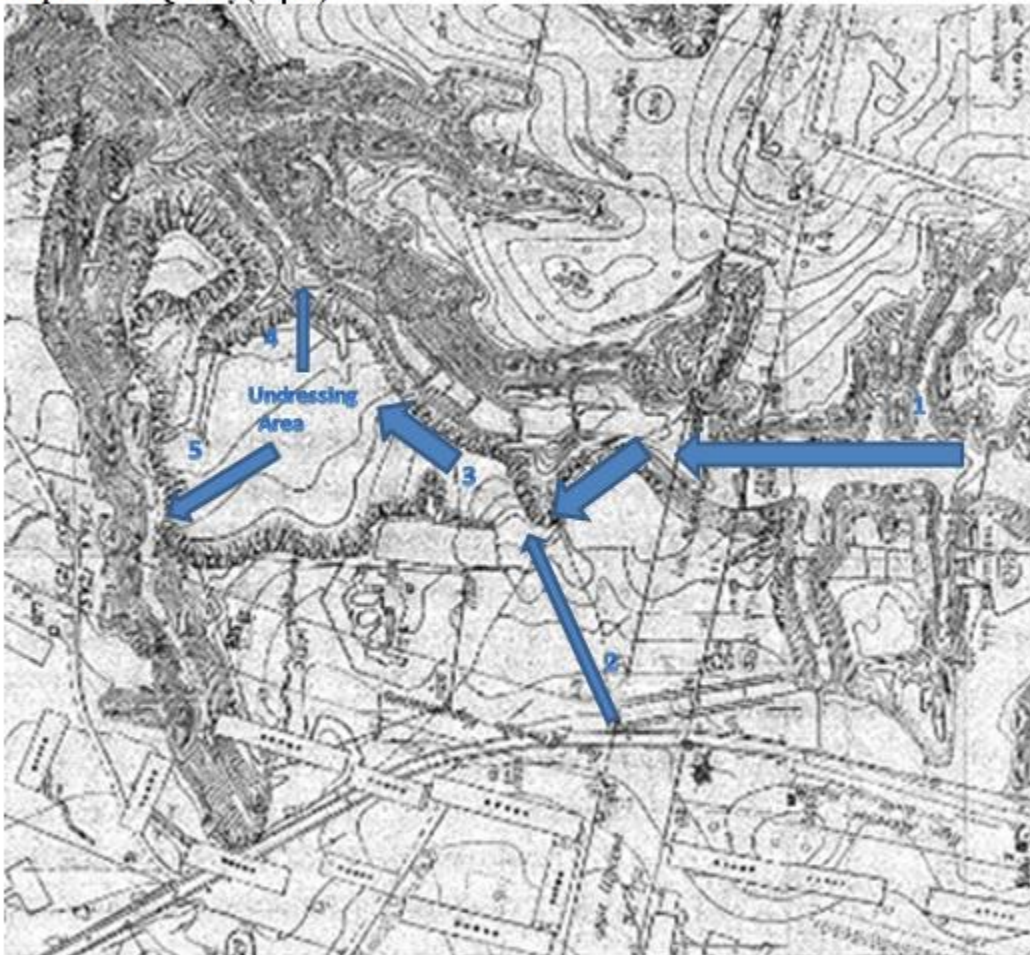
“Before we were relieved in the evening I walked with a few comrades... out of curiosity in the direction of the ravine. At this time there was not much happening. At the place, where the Jews had to undress, a few Jews (men, women, and children) were standing around naked. Who was guarding this place, I don’t know. Our company was not on guard there. The clothing lay in piles in the hollow in front of the ravine. The ravine itself, the actual place of execution, could not be seen from the undressing place.

Now we went from the undressing spot up the small hill to the edge of the ravine. The ravine was about 10-12 meters deep. In the ravine were lying tens of thousands of corpses on top of each other. They were all naked. I can reconstruct the shooting process as follows: on the edge of the ravine stood SD-men, who formed a chain down to the Jews in the clothing deposit area. The Jews from the clothing deposit area had to go past these SD-men. Whether these SD-men used any force in order to convey the Jews into the ravine, I don’t recall. Arrived in the ravine, they had to lie down on top of the Jews who had already been shot with their stomachs on the ground. Then they were shot by an SD man.”¹⁶

Based on the descriptions of Trill and Lass, as well as other witnesses, I have prepared a rough sketch of the two routes that were most likely used to bring Jews into the sand quarry and also the two routes that Lass describes for Jews to be taken from the sand quarry to the shooting site in the western spur. Some witnesses describe Jews being transported by truck down Dorogzhitsker Street and then to the entrance of the sand quarry using the road that goes up the western side of the main ravine. Most of the Jews were escorted on foot directly from the point where Dorogzhitsker Street approaches the shallow end of the main ravine. The precise route is uncertain, but there are indications that the Jews may have been driven northwards along the bottom of the main ravine, before crossing over to the western side to enter the sand quarry using the path that crosses the main ravine along the track that served as a continuation of Melnikov Street.

Routes used to escort Jews to the Undressing Area in the Sand Quarry

Map of Sand Quarry (1950s)

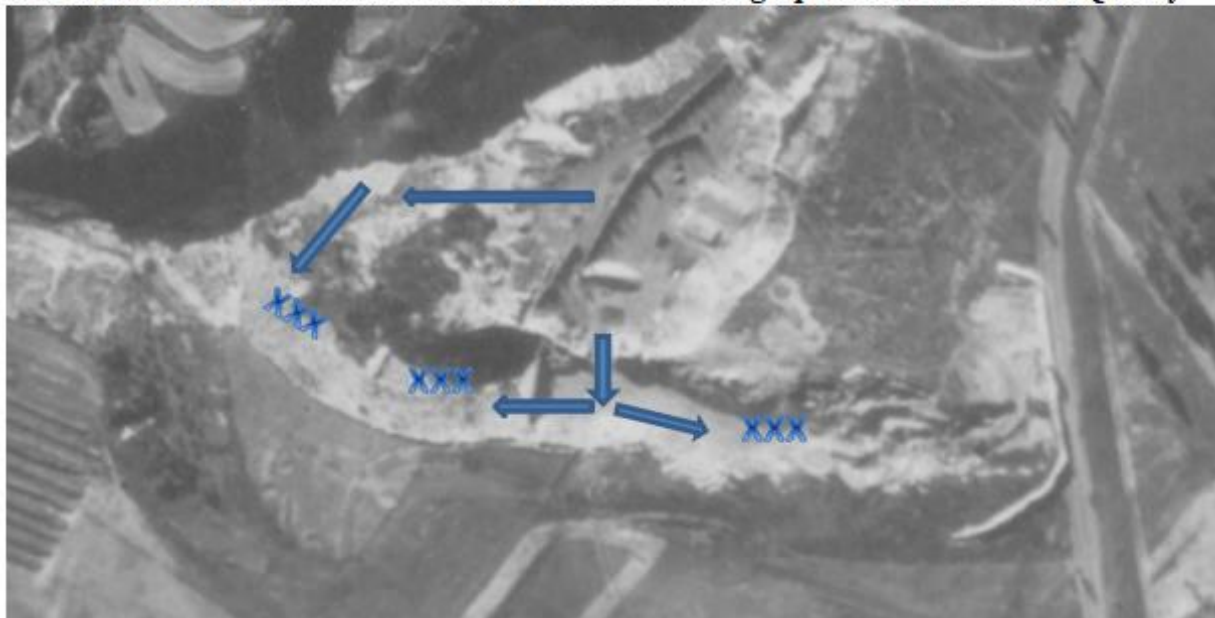


- 1 - Probable route of Jews arriving on foot from Dorogozhitsker Street
- 2 - Probable route of Jews arriving by truck along road and then on foot
- 3 - Descent into Sand Quarry
- 4 - Route down into Main Ravine as described in Sketch Plan of Hermann Lass
- 5 - Main Route up to Notch (passageways) and into Western Spur

From the available accounts, the main route for Jews to enter the western spur was up the steep hill in the left-hand corner of the sand quarry, where it bordered the “shooting ravine.” Some witnesses, such as Genia Batasheva, describe the entrance to the shooting ravine as a passageway or chute. Ukrainian historian, Gelinada Grinchenko, has translated Batasheva’s account as follows:

“According to Batasheva, this road led to a small square measuring approximately 250 by 150 meters. This square was already at Babyn Yar, she emphasizes. At the end of the square were chutes with artificial gangways, behind which was ‘death, they were already shooting there, machine guns were clattering away uninterruptedly...”¹⁷

Possible Scheme of how Jews were fed into the shooting squads from the Sand Quarry



This analysis must remain somewhat speculative, as only fragmentary evidence exists about how the Jews were escorted into the ravine. Furthermore, the organization almost certainly changed at various times over the two days of the main shooting operation. However, from a practical point of view, it was necessary to keep the shooting squads separated from each other. The other main reason to restrict shooting to the western spur was for purposes of concealment, as this could not be easily viewed, except from the western end, and it also served to limit the noise emerging from the shooting site, especially in the direction of the city and the approaching columns of Jews.

The earlier research of Vitalii Nakhmanovich and also Lev Drobiazko was quite successful in identifying the path taken by most of the Jews from the city center to the road (Dorogzhitsker Street) that runs down an Allee of trees between the two Christian cemeteries. This route is confirmed especially by a series of interviews conducted by the KGB in the 1980s with survivors and other witnesses.



Aerial photograph showing the route taken from the city center to the end of the main ravine down Dorogozhitsker Street.

According to many sources, the Jews were first marched down Melnikov Street towards the Jewish cemetery (3). At the Jewish cemetery they were then funneled left onto Kahatna Street, before turning sharp right down Dorogozhitsker Street to the end of the main ravine. It is along Dorogozhitsker Street that they had to surrender their warm coats and certain other possessions before being taken on another path towards the sand quarry.

This last section of the journey from the end of the Christian cemeteries that flank Dorogozhitsker Street to the sand quarry is the most difficult to determine from the available testimony. Neither the few Jewish witnesses, nor the many German testimonies, provide sufficient detail for the path to be identified precisely. Perhaps the best clue as to the route is provided by the Jewish survivor Yakov Yekel, who testified to the KGB in 1980:

“From Melnikov Street, the flow of citizens headed left towards Dorogozhitsker Street and then along this street towards the end of the Lukyanovsky and Military cemeteries, and then to the right along the natural boundary of Babyn Yar. On this site, the Nazis stood in two rows tightly next to each other and created a living corridor, along which they drove the people doomed to death in a continuous stream.

In this area, I stayed with my father; my mother and grandmother were somewhere ahead of us. Now I don't remember exactly where, but at one point there were many small ravines washed by rain streams and here the guards were standing farther apart from each other.

Seeing this, my father pushed me into one of the ravines and he himself followed me. We went out of the ravine to the cemetery, where we waited until late at night and then left for my father's house. There, a few days later, my father was arrested by the Nazis and executed, and for some time I was hiding with acquaintances, then in January 1942 I crossed the front line and was called up to the Soviet Army."¹⁸

Although I am reluctant to place too much weight on the recollection of one survivor, Yekel's testimony implies that he managed to escape down a side ravine while being marched up the main ravine from the South. This supports the idea that the "narrow corridor," through which the Jews were brutally driven forward by blows from the German SS and police according to the descriptions of Jewish survivor witnesses, served to link the meadow on the right of Dorozhitzker Street with the sand quarry.¹⁹ The route most likely ran along part or all of the southern section of the main ravine until joining the path where the track from Melnikov street crosses it, leading on then shortly after to the sand quarry, where the Jews undressed and deposited their clothing. However, this part of the route remains the most difficult to determine precisely and still requires further research.

In summary, the initial objective for the BYHMC's geolocation research project was to establish exactly where the Haehle photographs were taken and thereby determine the historical topography of the massacre on September 29-30, 1941. In a series of more than 30 reports, using ground photographs, aerial photography, maps, and also witness testimony, I was able to identify many of the key stages along the route from Melnikov Street to the sand quarry, where witness statements confirm that the Jews were forced to remove their remaining clothing. By examining carefully trees on the horizon in various photographs, as well as vegetation on the ravine sides, it was possible to identify the exact locations of almost all of the Haehle photographs and also to understand better what they show.

Finally, by comparing the ground and aerial photographs with witness testimony, it was possible to determine with a high degree of certainty the main site of the mass shootings along the western spur of Babyn Yar. Multiple witness testimonies describe parts of the terrain, just as it can be seen in the ground photos and aerial images. Two German witnesses even drew sketch maps, which when read carefully, show where the shootings took place. New research into the events of August-September 1943, when prisoners from the Syrets camp were forced to exhume and burn the bodies at Babyn Yar, strongly corroborates this new more complete interpretation.

There remain of course uncertainties about the precise extent of the shooting area and also some doubts about the final section of the route taken by the Jews to reach the sand quarry. The point of entry into the shooting ravine is also hard to reconstruct, as it was probably along a specially constructed path or paths that were then erased or altered soon after. However, many previous apparent contradictions and uncertainties have now been clarified; the topography can even be visualized with the help of a 3-D model prepared by the Spatial Tech team that has skillfully incorporated views through Haehle's camera into the detailed landscape of the model.

The next step is to consider what questions remain unresolved with regard to the topography of Babyn Yar and if the sources exist that can help us to resolve them? Equally important is to learn some of the lessons from this research; and to consider how these successful techniques of detailed topographical and textual analysis can be applied elsewhere to help us to explain and understand other Holocaust events, both in Ukraine and throughout Europe.

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² BA-L, B 162/19216, statement of Viktor Trill on 25.6.1960.

³ Powerpoint presentation given by Dr. Dean in Kyiv on July 10, 2020: “Why Aerial Photography?”

⁴ BA-L, B 162/17909, Callsen Trial Protocol, extracts from the testimony given by Adolf Janssen on November 7, 1967.

⁵ See especially Andrej Angrick, „Aktion 1005.“ *Spurenbeseitigung von NS-Massenverbrechen 1942-1945: eine „geheime Reichssache“ im Spannungsfeld von Kriegswende und Propaganda* (Göttingen: Wallstein, 2018), pp. 346-382.

⁶ Some photos taken by the Soviet Extraordinary Commission can be found in *ibid.* pp. 392-393.

⁷ BA-L, B 162/18087, fr. 41, testimony of Franz Löbbert.

⁸ BA-L, B 162/18091, fr. 60ff., testimony of former prisoner Vladimir Davydov.

⁹ David Budnik and Yakov Kaper, *Nothing is Forgotten (Nichto ne zabyto: yevreiskie sud'by v Kieve, 1941-1943)* (Konstanz, Germany: Hartung-Gorre Verlag, 1993), pp. 283-284.

¹⁰ BA-L, B 162/17911, p. 965, Callsen Trial Protocol, January 9, 1968.

¹¹ SBU Archive, Fond 7, Series 8, File No. 1, pp. 168-171. An online version of the Russian original can be found on this website: <http://www.kby.kiev.ua/book1/documents/doc57.html>.

¹² BA-L, B 162/6664, pp. 611-615, statement of Albin Powa on February 21, 1968.

¹³ BA-L, B 162/17922, pp. 245-47, statement of Viktor Trill on June 29, 1961.

¹⁴ Thanks go to Alexander Kruglov for assistance with deciphering the explanations.

¹⁵ BA-L, B 162/6672, pp. 376-380, statement and sketch of Hermann Lass, October 10, 1966. A reproduction of the sketch plan can also be found in Karl Schneider, „Auswärts eingesetzt“: *Bremer Polizeibataillone und der Holocaust* (Essen: Klartext, 2011), p. 468.

¹⁶ BA-L, B 162/6672, pp. 376-380, statement and sketch of Hermann Lass, October 10, 1966.

¹⁷ Genia Batasheva's USHMM testimony, RG-50.120*0008, 30 April 1992, as summarized by Gelinada Grinchenko, “Babyn Yar as Oral History,” in Vladyslav Hrynevych and Paul Robert Magosci, eds., *Babyn Yar: History and Memory* (Ukraine: Dukh I Litera, 2016), pp. 189-190.

¹⁸ SBU Archive, Fond 7, Series 8, File No. 1, pp. 231-234, Statement of Yakov Petrovich Yekel, Jewish survivor, on July 28, 1980. The Russian language original can be found here: <http://www.kby.kiev.ua/book1/documents/doc63.html>.

¹⁹ On the “narrow corridor,” see for example the testimonies of Dina Pronicheva, as translated by Karel Berkhoff, available at https://training.ehri-project.eu/sites/training.ehri-project.eu/files/EHRI_Ua_B_Pronicheva.pdf.