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An Environmental Perspective on the Ethnography of Archaeological Practice: The Case of Exhumations in Death Valley (Chojnice, Poland)

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Abstract
Forensic archaeology has become highly influential branch of archaeology in Poland in recent decades. We claim that the significant element of the applied research methodology in case of exhumations should be ethnographic observations and interviews with families of the murdered, witnesses, and local communities, as well as volunteers and members of the archaeological research team. Inspired by environmental anthropology, we propose to expand the term "ethnography of exhumations" or "ethnography of archaeological practice" to amplify the relation between the process of excavations and exhumations and the embodied experience of archeological work in particular environment. The article seeks for nonhuman agencies (such as hydrological conditions and vegetation over mass graves) that shaped the "forensic landscape" of Death Valley in Chojnice, Poland, and defined subsequent stages in archaeological process that led to reveal the cremated remains of several hundred Poles murdered by the Nazis near the town at the end of January 1945.

Keywords Environmental anthropology · Archaeology of contemporary past · Mass graves · Exhumations · Second World War · Pomeranian Crime of 1939

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Introduction: Following the Water

This article concerns the relationship between archaeological practice (exhumations carried out in Death Valley in Chojnice, Poland) and the microscale environmental changes in the local riparian ecosystem that accompanied the process of archaeological research (Kobiałka 2000, 2022, 2023a, 2023b; Kobiałka et al. 2021). We follow the very idea of Matt Edgeworth (2003, 2006) that implementing an ethnographic perspective in archaeological research can complement the process of knowledge production not only about the past and its material remnants, but also about the present and its lively iterations.

This is why we apply Cornelius Holtorf's (2002) life-histories approach to the archaeological excavation site, understanding the material and vegetal surroundings of the deposition site, in this particular case of the human remains and the artifacts of the deceased, as an ongoing process that alters the landscape as being practiced, investigated, and excavated. For this reason we also draw upon a similar dynamic approach introduced by the anthropologist Tim Ingold (1993) under the term of "temporality of the landscape" seeking for significant markers that demonstrate the dynamics of the environment, both human- and nonhuman-made, associated with the exhumation site as an important place for human cultural practices (e.g., of commemoration and mourning) but also for the local topography, hydrological conditions, and composition of species, especially in the closest vicinity of the 1945 mass graves investigated in Death Valley.

In the recent article on the environmental memories associated with the Death Valley memorial site and its vegetal surroundings, we tried to pinpoint several crucial themes that were identified during the archaeological research accompanied by ethnographic fieldwork (Smykowski and Kobiałka 2023). Following the idea of a transdisciplinary strategy, we expand the area of expertise toward the environmental factors that have played a significant role in the process of identification, exploration, and investigation of aforementioned mass graves, but we also examine how the landscape itself – including vegetation and terrain formation – has influenced the memories preserved in the collective imagination of the local community, but also – and what is particularly important for this article – the state of preservation of the material and human remains deposited in the mass graves discovered during the archaeological work. It should not to be underestimated that the state of preservation of the artifacts and human remains was highly affected by the presence of stagnant water on the surface of the marshy terrain, where the graves were found. The hydrological conditions of the archaeological site, as we claim, impacted all the subsequent archaeological procedures undertaken to rescue material traces of the crime and exhume victims of Nazi atrocities committed in Chojnice in 1945.

The article therefore aims to (1) reconstruct with the ethnographic detail, the process of desiccation undertaken by the archaeological teams that prepared the ground for the further research; (2) problematize the environmental impact of the archaeological investigation on the local ecosystem; and (3) indicate that the environmental factors may be considered as substantial data for the archaeological practice (excavations, exhumations) and should be analyzed closely and included in the description of scientific procedures (see also Dreyfus and Anstett 2014; Anstett and Dreyfus 2015).

We base the thesis of this article on a case study of actions that preceded the exhumation works carried out in 2021 in Death Valley in Chojnice, Poland, which revealed the cremated remains of several hundred people murdered by the Germans near the town at the end of January 1945 (Fig. 1). Therefore, the primary focus will not be put on the very process of exhumation itself (although we believe that the presentation of its outcomes is crucial to understanding the scale of a crime), but on the activities that accompanied the process of identification of mass graves from 1945 onward, namely the attentive and intuitive observation of the close vicinity of the grave and beyond: the local warscape and memoryscape, as well as the natural landscape (Renshaw 2020). The central theme of our discussion here will be the ethnographically narrated process of "following the water" in order to prepare the ground for the archaeological work.

Theories and Methods: Environment as Evidence and Archaeological Source

Our theoretical and methodological perspective is situated at the intersection of several interrelated fields of research. The primary standpoint for the ongoing project "Archaeology of the Pomeranian Crime of 1939" (e.g., Kobiałka 2023a, 2023b; Kobiałka et al. 2025) is the horizon of archaeology of the contemporary past (e.g., González-Ruibal 2019; Harrison and Schofield 2010; Olivier 2001) and forensic archaeology (e.g., Ferrándiz and Robben 2015; Groen et al. 2015; Moran and Gold 2019; Staniewska and Domańska 2023). The Polish experience in researching the dark heritage (Thomas et al. 2019) of the Second World War was also an important point of reference for us (e.g., Kola 2005; Ławrynowicz and Żelazko 2015; Zalewska 2016), especially because we situate our work in the context of crimes committed in East Central Europe, with a particular emphasis on the mass graves of Second World War in Poland.

The research approach adopted is complemented by an ethnography of exhumations, which provides insights into the broader social reception of the excavations of mass graves (Ferrándiz and Robben 2015). As it is well known, collecting the remains of victims of crimes perpetrated several decades ago, when their children and grandchildren are often still alive, is a delicate and complex issue from a scientific, ethical, and moral point of view (Crossland 2002; Crossland and Joyce 2015; Ferrándiz 2006, 2018). Taking into account the experience of scientists who have carried out similar projects, a broadly understood ethnographic approach was adopted in the subsequent research seasons (Kobiałka 2023b). Informants included not only the family members of the people murdered in Death Valley, but also members of the archaeological team, volunteers participating in the field research, and local citizens involved in the commemoration of the researched site, as well as people living near the crime scene, or rather inhabiting the "landscape of the crime" (Cyr 2014; Renshaw 2020).

The obtained data set revealed a wide range of valorisations of the role and broader social significance of archaeological work in Death Valley (e.g., Curry 2021, 2024). In general, the goal was to use ethnographic and environmental perspectives to record and analyse the complex process of knowledge production during and after the archaeological research. We recognize the need for further collaboration between the disciplines that we represent and follow the suggestions in the article by Rebecca

Fig. 1 The landscape of the crime. (**A**) a view of the crop fields where the Germans hid the bodies of the murdered near Chojnice. The local population called this landscape Death Valley to remember the executions. (**B**) a view of the area known today as Death Valley (in archival documents the names Ostrówek and Witki can be found). The plant cover was used during the murders in the autumn of 1939 and in January 1945 (author D. Frymark)

K. Zarger and Thomas Pluckhahn (2013) concerning the integration and assessment of ethnographic and archaeological methods, especially in order to obtain the "thick description" of the social-cultural-environmental context of the material culture. Bridging archaeology and anthropology (including new subfields of the latter discipline, such as multispecies ethnography) has broadened our research perspective and let us include threads that are usually ignored when conducting similar scientific projects.

It is important to stress that we think anthropologically about the whole archaeological process, from the very idea of where to seek for the mass graves' site, through the practical application of archaeological methodology during the excavations and exhumations, to the end of evaluating the process of data collection and writing reports. This is why ethnography as a specific practice of posing questions was involved in the "Archaeology of the Pomeranian Crime of 1939" project from the very beginning. Last but not least, the ethnographic perspective defined our standpoint for complementing the physical and embodied involvement of the project team members with their own stories and reflections behind the work they performed on the archaeological site.

Taking into consideration specificity of the investigated area where the 1945 mass graves were located, it seemed desirable to apply the environmental perspective in order to obtain a fully detailed case study. We chose to turn toward the inspirations that come from anthropological subdiscipline of multispecies ethnography (Kirksey and Helmreich 2010) to emphasise that the biodiversity of an archaeological or ethnographic site can be of crucial importance for the observation and analysis in order to obtain substantial data for the ongoing investigation or research. The multispecies paradigm is also well recognized in contemporary archaeological thought, which seeks a more complementary and comprehensive epistemology to explain the complex relationships between humans and other organisms in the past (Birch 2018; Domańska and Stobiecka 2024; Hamilakis and Overton 2013). We agree with Suzanne E. Pilaar Birch (2018: 4), that "Multispecies archaeology can really be viewed as archaeo-ecology, as an archaeology of life which understands the past through networks and interactions rather than stochastic events and places" and propose a direct application of that assumption into the archaeological and ethnographic practice.

Both archaeology and ethnography share similar initial methods of fieldwork, especially in terms of terrain recognition, such as walkover survey (Sturdy Colls 2015) or walking methodologies (Pierce and Lawhon 2015; Springgay and Truman 2018) including ethnography on foot (Ingold and Vergunst 2008). Noninvasive techniques of reconnaissance, participant observation, collecting visual data, were an inherent methodological component of the research project and led us to the identification of the main problem of the article, that we consequently developed through the ethnographic interviews conducted with both archaeologists and members of the local community. The search for overlaps between vernacular knowledge of the local topographies and vegetation formations with archaeological data and scientific knowledge helped us not only to specify the exact area of the prospected mass graves, but also to anchor the violent wartime past in the particular environment.

While adopting the perspective of environmental anthropology on archaeological practice, our goal was to analyze how invasive investigation techniques implemented during the archaeological research influenced the local microscale environmental changes. It is well known that any interference in the ecosystem during archaeological excavation, leaves permanent changes that cannot be undone. The environmental disturbances caused by the excavations in search of mass graves in Death Valley occurred by disrupting the soil level and stratigraphy, and consequently affected changes in hydrological conditions, namely surface runoff trajectories, soil humidity, followed by modification of species composition of the local flora. Many contemporary projects that aim at exhuming victims of the Second World War do not seem to include similar consequences of archaeological practice on the environment and stick to analyzing only the outcomes of their work in a more anthropocentric manner, focusing mostly on the identification of human remains. For the sake of obtaining the comprehensive and detailed case study, we considered it fundamental to include the environmental impact of archaeological research. We are also following the recent studies on the environmental history of the crimes committed in Poland during the Second World War and the Holocaust introduced by the transdisciplinary team of Polish researchers that set new directions in the field of studies on genocides and their lasting aftermath (in the sociocultural, material, and environmental sense) (Domańska 2020; Domańska et al. 2022; Dziuban 2017; Małczyński 2018; Małczyński et al. 2020; Smykowski 2018, 2020). It is also worth mentioning that the environmental impact of First and Second World War mass graves was recognized by geographer Józef Żychowski (2008, 2011, 2021), the pioneer in the ecology and geomorphology of the mass graves-related sites in southern Poland.

We are hugely inspired by the concept of "forensic landscape" that shifts the attention of researchers from the separate and isolated crime scene to its surroundings including the nearby environmental and topographical characteristics. We read the notion introduced by Ian Hanson through the explication of the term authored by Rachel Cyr (2014), who expands its conceptual capacity. According to Cyr (2014: 85) "the forensic landscape constitutes a physical parameter within which a sequence of events is discernible in the noted topographical disturbances in and around a burial site." The notion of landscape reframes the meaning of human remains deposition site from the grave itself to the broader terrain in which the acts of movement of the evidences occurred. What we find interesting and stimulating for our research is the idea of expanding the examined area and treating the landscape as a reservoir of traces that can lead to potential body of evidence that could not be found at the crime scene identified during the forensic or archaeological investigation.

To sum up, our goal is to include the ethnographically induced narratives concerning the archaeological practice during the exhumations under a very specific environmental conditions characteristic to the forensic landscape of examined mass graves in Death Valley in Chojnice.

The Pomeranian Crime of 1939: The Case of Death Valley

Death Valley in Chojnice is the site of the mass crimes committed during the Second World War. In the autumn of 1939, the Germans carried out mass executions of

selected citizens of the Second Polish Republic in the surrounding fields and meadows. Among them were representatives of the so-called "intelligentsia" (i.e., priests, teachers, policemen, border guards, townhall officials, postal workers, landowners, merchants, politicians, members of patriotic organizations) (Lorbiecki 2017).

As a crime scene, Polish military trenches were chosen, dug by the Polish Army in the summer of 1939 in the event of an armed conflict with the Third Reich – Chojnice was a border town (see Kobiałka et al. 2021). The ditches prepared for the war were used a few months later as ready-made mass graves, where it was possible to quickly and easily hide the traces (bodies of the victims) of the crimes committed. One of the people who escaped alive was Józef Zblewski. Zblewski hid in the forests as a partison. His companion at that time was Władysław Kulesza who described Zblewski's story a few decades later as:

> After a while of marching, this sad procession was directed to a field covered with clover. They descended from the hill by the road into the valley where the aforementioned car with a group of SS-men was parked. The prisoners were led to the car, and surrounded by Selbstschutz members and were ordered to undress to the waist. Their clothes and documents were placed in the car. The entire valley was surrounded by Selbstschutz members armed with machine guns. The naked prisoners were led two by two towards the military trenches left after the September War. Józef Zblewski was in the third two from the front on the right side. He suddenly realised that he was in the 'Death Valley', which he had already heard about. The autumn sun was setting, touching the horizon. In this scenery, Józef's last hope disappeared. He instinctively sensed that the last moment of his life was approaching, that he was seeing this beautiful sunset for the last time. In his feverish mind, images of his wife, children, family passed by like in a kaleidoscope. The fear of death prevented him from focusing his chaotically scattered thoughts. The glimmers of hope were overwhelmed by the sight of the place of execution. At one point, when they were approaching the trench, some mysterious force tells Józef to run away. Without thinking, pushed by a superhuman force in the face of death, he jumps to the side and runs away (Kulesza 1986: 9; translated by authors).

Archival materials show that at the end of October 1939, the Germans murdered residents of the local National Social Welfare Institutions near Chojnice. Witnesses' testimonies give different numbers, but the minimum number of people with mental disorders or disabilities murdered in the fields outside the town was at least 218 – this grave was finally found in 2024 (Curry 2024). Eventually, trenches on the northern outskirts of the town became the grave for 15 members of the Jewish community of Chojnice too (Fig. 2).

The mass crimes of the autumn of 1939 near Chojnice were not isolated and spontaneous events (Bojarska 1972; Jastrzębski 1974; Jastrzębski and Sziling 1979; Steyer 1967). On the contrary, they were planned and coordinated operations, codenamed *Intelligenzaktion* (Wardzyńska 2009) and T4 (Evans 2004) in the period preceding the outbreak of the war. Currently, there are approximately 400 known places similar to Death Valley in Chojnice, where the Germans carried out individual, collective,

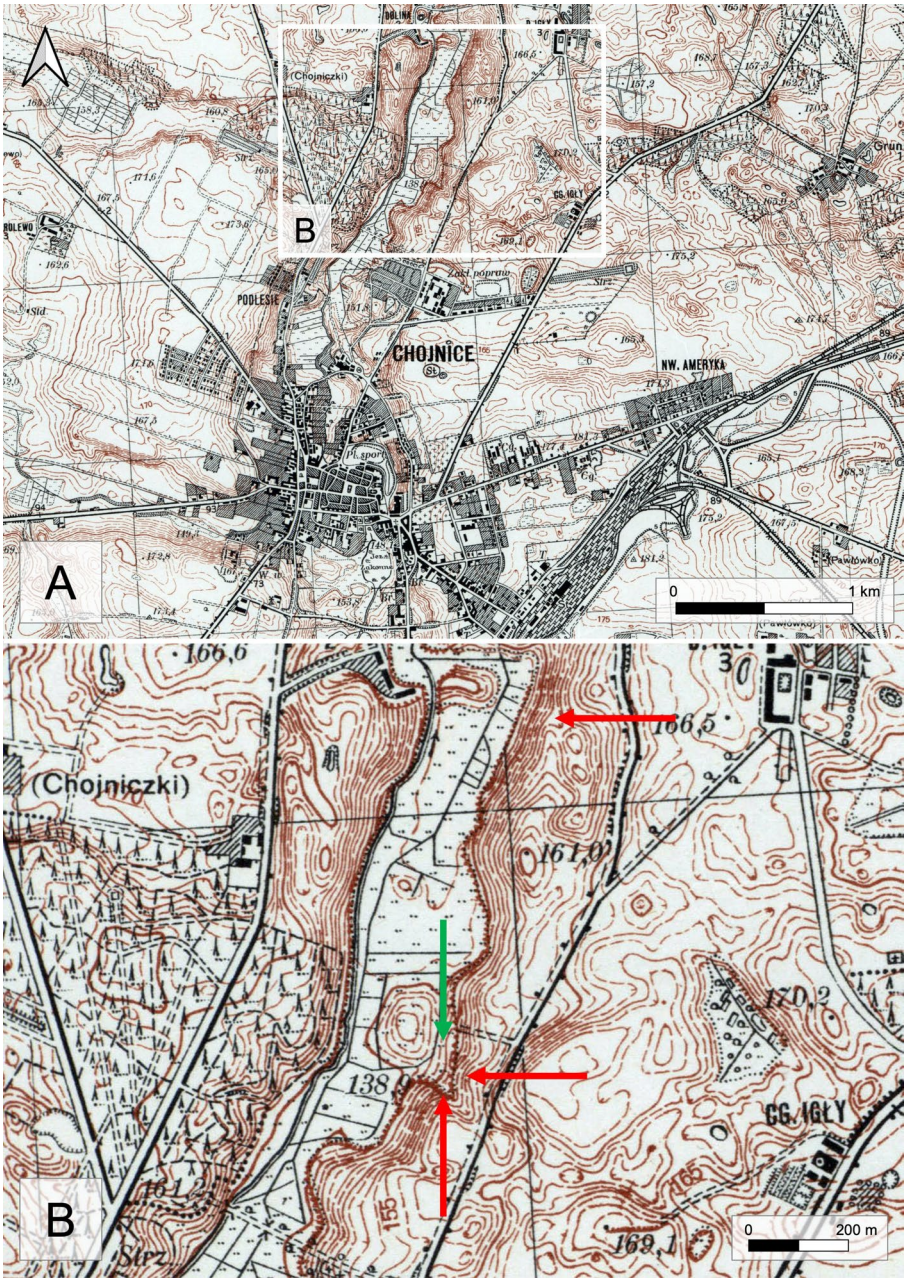

Fig. 2 The landscape of the crime. (**A**) Polish topographic map from 1937 showing the northern outskirts of Chojnice. (**B**) arrows indicate crime sites – red arrows indicate mass graves from the autumn of 1939, green arrow indicates the crime site from the end of January 1945 (prepared by K. Karski, private collection)

and mass crimes against selected representatives of the Second Polish Republic in the autumn of 1939. The largest of these are the Piaśnica Forests (Bojarska 2009), the Szpęgawsk Forest (Kubicki 2019) and the Mniszek-Grupa (Kozłowski 1992), each of which may have claimed several thousand victims. Today, all these events are increasingly referred to by one term: *The Pomeranian Crime of 1939* (Ceran et al. 2018; Ceran 2024).

The Germans tried to keep the organized crimes a secret. For this reason, they usually chose places far away from the nearest human homes. Forests were often chosen for this reason. In the case of Chojnice, the terrain (a hilly, post-glacial area) also favored the organization of crime. Moreover, the buildings of the National Social Welfare Institutions, located approximately 2 km from the town, were used as a detention camp, which also limited the number of potential witnesses. In addition, the distance from the buildings to the execution site was also short and had convenient and easy access.

After the war, the District Committee for Commemorating the Victims of Nazi Crimes was established, whose aim was, among others, to locate and exhume the graves of those murdered during the occupation. Work was carried out in Death Valley at the end of November 1945. As a result, the remains of 168 people were found. 53 victims were identified by their families and relatives. The committee also found the grave of people with mental disorders or disabilities. In this case, only the skulls of 61 people were recovered, leaving the rest of the bodies at the site (Kobiałka et al. 2021).

Death Valley once again became the scene of mass crimes (Kobiałka 2023a). At the end of January 1945, the Germans led a group of several hundred Poles to the northern outskirts of the town. People who testified after the war claimed that gunshots were heard, and that for three days and three nights in a terrible burning smell and a glow of light could be smelled and seen in Death Valley, especially at night. Based on these circumstantial evidence, it was assumed that this group has been murdered and that the bodies of the victims were then burned to cover up the traces of the crime. The crime scene itself was an ally of the executioners – the executions were carried out in a hollow in the area, which was covered by trees on all sides. None of the several hundred people managed to escape the execution, and there was no eyewitness who would testify to the crime after the war.

The commemoration unveiled in Death Valley in 1959 contained information that up to 2,000 Poles could have lost their lives near Chojnice as a result of the bloody autumn of 1939 and at the end of January 1945. This was repeated in the following decades (Lorbiecki 2017). Even if the estimates are considered exaggerated, Death Valley should be understood literally as a place (landscape) of mass crimes. Crime scenes, even from eight decades ago, constitute research topics in a separate branch of archaeological research – forensic archaeology (Anstett and Dreyfus 2015; Ferrándiz and Robben 2015; Moran and Gold 2019). The hypothesis that material traces of German crimes from 1939 to 1945 could have survived near Chojnice was the basis for the scientific work that started in 2020 and continues to this day.

The Investigation of Mass Graves in Death Valley

The first archaeological work in Death Valley was inaugurated on May 8, 2020 (Kobiałka et al. 2021). Its methodology was based on a commonly accepted procedure, which included the stage of desk-based research, noninvasive research, and invasive work (excavation) (e.g., Sturdy Colls 2015; Wright et al. 2005). Historical and ethnographic research was also part of the applied methodology (Fig. 3). The greatest hopes were put on metal detector surveys. It should be emphasized that the area of Death Valley is in fact a strip of land approximately 100–200 m wide and stretching for over 2 km. It is not one large mass grave, and executions took place at only a few points in the surrounding fields and meadows. The assumption was that several hundred people were murdered near Chojnice, and their material traces must have remained in the form of casings, bullets, personal belongings of the victims, or items taken/lost by the executioners. The methods and tools of archaeological research can be used to find and map them.

Indeed, the adopted line of reasoning and the research procedure proved to be correct. Already on the first day of research, several dozen metal objects or their fragments were found in Death Valley, which could be associated with the period of the Second World War (Kobiałka et al. 2021). Importantly, all of the artifacts found were tracked in three dimensions using an RTK GPS device, which later allowed for the preparation of visualizations with the spatial distribution of the material culture found. Already on the first day of field research, certain concentrations with an increased number of artifacts were visible. June 13, 2020 was another day of metal detector survey (Fig. 4). It was then that a large collection of objects items was found, including silver coins, buttons, pistol casings and bullets, and a man's gold wedding ring. While picking up another object, Karol Woliński, one of the volunteers involved in the project work, recovered cremated bones, among which there was a metal object – later identified as a gold wedding ring belonging to a woman named Irena Szydłowska. The bones were submitted for anthropological analysis, which confirmed that the material was of human origin (Kobiałka 2023a). Knowing the historical context, it could be assumed that the found place was related to the crime of late January 1945.

In accordance with Polish law, the Institute of National Remembrance was informed about the case. As a result of the joint work, in 2021, almost a ton of cremated human remains were recovered from the site, lying in three death pits (Kobiałka 2023a) (Fig. 5). The found remains were lying in a swamp, which had important implications. The fact that the execution site was flooded made it inaccessible to potential thieves and the so-called treasure hunters. Nature provided a form of protection that allowed the evidence of the crime to survive until archaeological works in 2020. Nevertheless, the same water was the main challenge before the commencement of excavations – the research area had to be dried first out before it was possible to carry out the scientific work aimed at exhuming the cremated remains of several hundred people.

Fig. 3 Ethnography of the exhumations – interviews with families and recording of memories and documents are crucial elements of the applied methodology. (**A**) souvenirs of Jan Dzwonkowski, a merchant from Chojnice, murdered by the Germans near the town in the autumn of 1939 (author D. Kobiałka). (**B**) ID card of Anna Stołowska, murdered in Death Valley (private collection of W. Tyszkiewicz) in January 1945. The victim's wedding band was found during exhumations in 2021

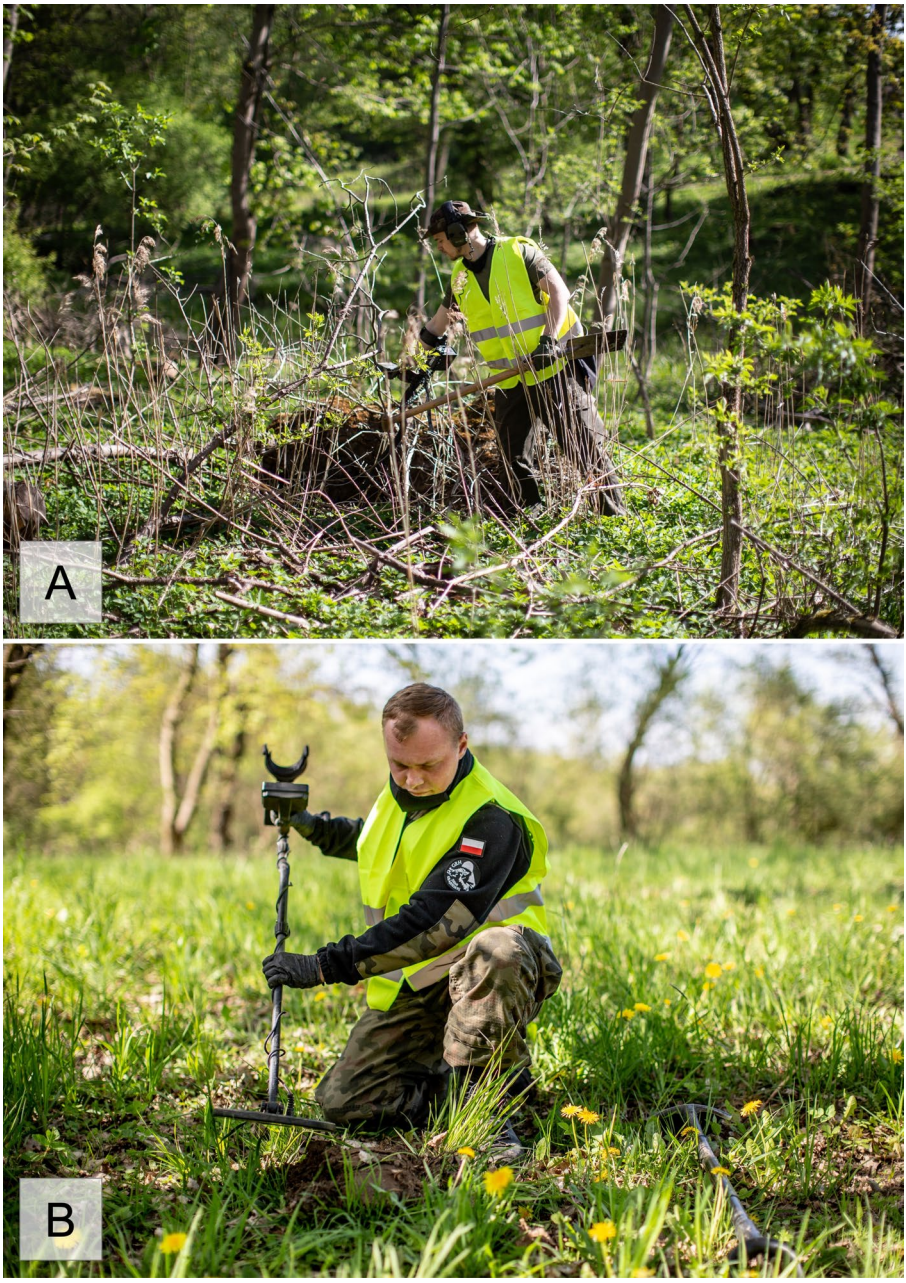

Fig. 4 Archaeological research in Death Valley. (**A**-**B**) the metal detector survey was one of the key methods used to locate execution sites and mass graves of people murdered near the town during the Second World War. To date, the remains of approximately 700 victims have been found (author D. Frymark)

Fig. 5 Exhumation of human remains deposited in death pits from 1945. (**A**) close-up of the exploration of one of the burial pits. (**B**) cremated human remains during drying and preparation for proper anthropological analyses (author D. Frymark)

Death Valley's Hydro- and Topography

Specificity of "Death Valley," due to its hydrological, topographical, and environmental conditions, has been quite demanding in preparing and conducting the archaeological investigation. Mainly because of the unspecified boundaries of the area, lush spontaneous vegetation growing on marshy ground, and the fact that there were only a few witnesses that barely remembered the events that gave the nearby valley its dark name. Based on various documents and books dedicated to the history of Pomeranian Crime, the localization of potential mass graves in Death Valley has been estimated, followed by the subsequent terrain recognition. The point of reference for further investigation was the first postwar book on the mass crimes committed by the Germans in Chojnic during the Second World War authored by Wojciech Bucholc (1947: 27), who claimed that: "Not far from Chojnice, in the fields near Igły, there is a valley which the people rightly called Death Valley" (translated by authors). As he evocatively pointed out:

> In 1945, hundreds of Poles murdered by the Germans were recovered from the military trenches filled in in 1939. Even if one is unaware of the events that took place here in the past, one will instinctively feel that something terrible has happened here. A kind of terror emanates from these gloomy fields. It seems that today we can still hear the German curses and shots, the desperate screams and begging, the groans of the dying and the last death prayers to God. You can't stay here alone for long. A mysterious fear and dread grips man. The slopes of the valley seem to have preserved, as an eternal souvenir and testimony, the agony and despair, all the fear that accompanied the last moments of the mortal agony that hundreds of unfortunate convicts endured (Bucholc 1947: 27; translated by authors).

The toponym "Valley" appears on the prewar maps of about 1936/37 as a description of a depression in the area between the Town Forest and the terrains bordering on Chojniczki village, and Igły Fields, stretching toward Czartołomie and Jarcewo (nearby villages) (see Fig. 2). It was common among the local community shortly before the war. Literally, it referred to the valley of the local stream known as Jarcewska Struga that flows through Chojnice in a south-north direction. The river is mostly canalized in urban areas and flows along into Death Valley on the northern borders of Chojnice as a canal with a regulated bed resembling a drainage ditch.

Józef Borzyszkowski (2010: 544–545), in one of the chapters of Dzieje Chojnice *Dzieje Chojnice* (*The History of Chojnice*), notes that the inhabitants started to use the name Death Valley from around November/December 1939. Andrzej Lorbiecki (2017), a local historian and regionalist points out that it was not widely used before the war. He mentions, however, that the name was created after the war and popularized, as it seems to have been a common term to describe the killing sites also in many other locations in Poland, for instance in Bydgoszcz (Fordon). Lorbiecki indicates further that the toponym "Death Valley" in the Chojnice context refers to the whole area where the postglacial riverbed of the Jarcewska Struga is situated, mainly because until the archaeological research that began in 2020 there was no single,

unequivocal evidence of the location of any individual mass murder site. Therefore, the area to which the name applies is heterogeneous and comprises a topographically diverse landscape formation, derived from the postglacial moraine valley, which today consists of: (1) the vast area of agricultural land referred to as Igły Fields after the name of the local hamlet; (2) the area of the present dairy, formerly known as Witki (according to local knowledge, the name comes from the wicker harvested in the area characterized by high soil humidity); (3) and the Ostrówek – such name functions in vernacular discourse and refers to an uplifted thickets on the banks of the Jarcewska Struga, the site of remembrance of Poles killed in Death Valley between 1939 and 1945.

The toponym Death Valley is still in use today and connotes the tragic events of the war. According to the outcomes of the ethnographic fieldwork (three two-week fieldwork stays from autumn 2022 to summer 2023), the term "Death Valley" strongly evokes associations with the death inflicted in a swampy land depression to the north of Chojnice, covered of dense riparian vegetation. Although much less affectively than it was 80 years ago, it still refers in the collective memory to all those places where local citizens were murdered during the Second World War. It is also used as a rhetorical figure and a metaphorical *totum pro parte* for all the mass graves, both identified and unidentified, located on the northern outskirts of the town. All three topographical components of Death Valley – Igły, Witki and Ostrówek – are situated along the river basin of Jarcewska Struga.

The most interesting from the perspective of the following study are the bushy surroundings of Ostrówek – the lower terrain that is annually covered by water in the springtime. The mass graves identified and exhumed in 2021 were located in a very center of a tiny watercourse flowing down form Igły Fields through the lower terrain of the valley straight into the Jarcewska Struga. The main challenge in preparing for the excavation of the mass graves was to remove stagnant water in order to ensure the possibility of archaeological work. The area was particularly challenging, specifically because of the seasonal swamps, lush marshy vegetation, dead standing trees, and a ton of woody debris that had to be removed (Fig. 6).

Vegetal Surroundings of Mass Graves in Death Valley

Death Valley's catchment area and the slope of the nearby terrain causing the rainwater runoff toward Jarcewska Struga as well as the high level of soil absorption where the mass graves from 1945 were located increase the level of bioretention. According to Zbigniew Celka (2021), the local flora is specific to the wetlands' plant formation such as riparian forests. Celka, a botanist and expert who authored the "Expertise for the study of vegetation growing on the site of human remains deposition discovered during the archaeological research and exhumations in Death Valley (Chojnice)" conducted a botanical study preceding the archaeological excavations. According to Celka, in June of 2021, the most common species found here were wood club-rush (*Scirpus sylvaticus*), Juncus effusus (*Juncus effusus*), common nettle (*Urtica dioica L.*), white dead-nettle (*Lamium album*), lesser celandine (*Ficaria verna*) commonly known as a buttercup, ground elder (*Aegopodium podagraria*), lesser pond-sedge

Fig. 6 Nature of the crime scene. (**A**) the crime scene before the start of exhumation works in 2021. (**B**) aerial view of the 1945 crime scene (as of 2023) (author D. Frymark)

(*Carex acutiformis*), fowl bluegrass (*Poa palustris*), yellow star-of-Bethlehem (*Gagea lutea*) and other less common plant species.

As Celka assumes, the species structure of the depression in the area where the mass graves from January 1945 were located and in their immediate vicinity clearly indicates a native and established native plant formation. Moreover, what is important from the perspective of the bioretention problem discussed here:

In terms of habitat, the area of the mass graves of the January 1945 victims on plot no. 341/25 is represented by an ash-elm forest (*Ficario-Ulmetum minoris*) in the eastern part and marshes dominated by a wood clubrush (*Scirpetum sylvatici*) in the western part, bordering on the watercourse. Both of these plant communities are natural components of the Polish vegetation, associated with waterside ecosystems, developing, among others, in the valleys of small watercourses and local, swampy depressions (Celka 2021: 16–17; translated by authors).

The concluding part of Celka's report clearly emphasizes that there are no species at the archaeological site with distinguishing features or bioindicators that could indicate the underground presence of bone material or biochemical changes in the soil as a result of long-term decomposition of organic material from the bodies of victims of the Second World War shootings (Celka 2021: 17–18). However, this does not mean that the plants growing in this place are meaningless. Celka's report indicates that the area of the mass graves from January 1945 shows signs of being disturbed by anthropogenic changes, especially since the expert opinion was preceded by cleaning and earthworks carried out by the team of archaeologists. Recognizing where to dig was not as obvious as it might seem – identifying the location of mass graves site required an attentive observation in the sense proposed by multispecies ethnographers (arts of attentiveness, arts of noticing) (Tsing 2015; Van Dooren et al. 2016). Practicing observant and attentive surface survey, following the cropmarks and water runoffs, combined with the analysis of archaeological data, such as aerial photographs, and ethnographic material, such as interviews with witnesses and local citizens, helped to estimate the exact location of the graves. Awareness of the affordances of the local environment has led to the conviction that Ostrówek could have been recognized by the perpetrators in 1945 as a place potentially suitable for locating the mass graves.

At present, as a result of the above-mentioned activities, the area of Ostrówek has been drained for the purpose of archaeological exhumation carried out in June and July of 2021 (Fig. 7). What is interesting from a phytotoanthropological point of view is that at the end of research season of 2023, one of the most dominant species growing commonly on the verges of plot no. 341/25, where the mass graves were situated, was small balsam (*Impatiens parviflora*), which was not even mentioned in the expertise of species composition preceding the archaeological research made by Celka (2021). It is very likely that its succession in this place is a consequence of another anthropogenic disturbance of the surrounding vegetation as a result of the drainage of the area and the excavations carried out in 2021. The whole terrain does not resemble what it looked like in the early spring of 2020. We assume that if any ground works had been undertaken there by nonarchaeological subjects, after a few vegetative cycles the site could be even more difficult to detect during the archaeological survey, as the plant formation would be indistinguishable from the surrounding ruderal flora.

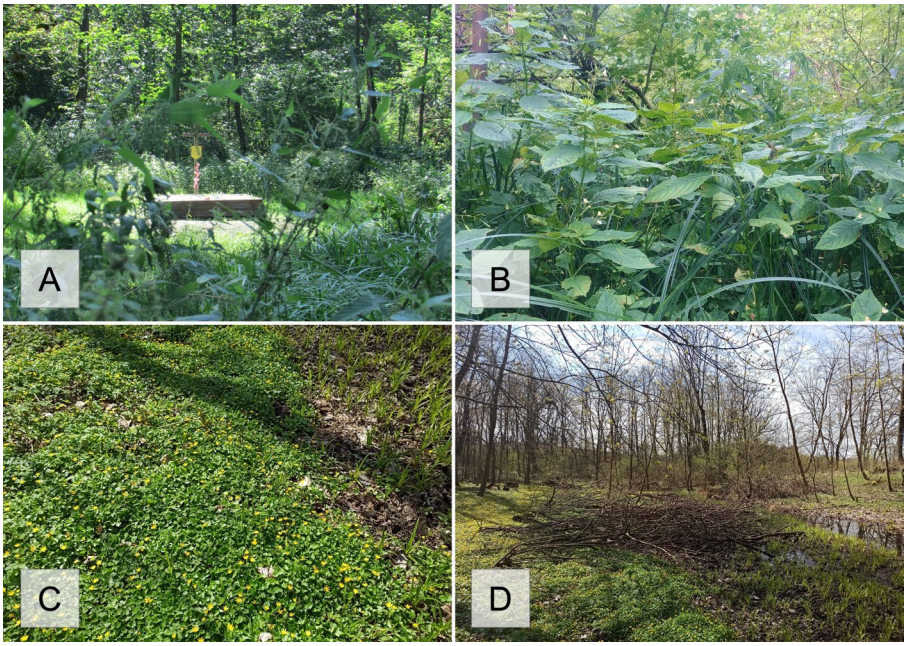

Fig. 7 Nature of the crime scene – plant surroundings of the January 1945 mass graves in Death Valley. (**A**) lush specimens of common nettle (*Urtica dioica L.*) in the foreground. (**B**) small-flowered impatiens (*Impatiens parviflora*) was one of the most abundant species growing during the ethnographic research in August 2022. (**C**) patches of yellow-flowered spring grain wort (*Ficaria verna*), a perennial plant the covered the top layer of the mass graves from January 1945 (before the exhumation works). (**D**) the area of plot no. 341/25, where the mass graves of January 1945 were located, periodically flooded; the wet riparian forest favors the growth of forest rushes (*Scirpus sylvaticus*) (condition before exhumation works)

Desiccation of Mass Graves from 1945 in Death Valley

Around 30 sites with mass graves of people murdered in the autumn of 1939 in Gdańsk Pomerania were destroyed by the Germans in the second half of 1944. The graves were located, the bodies were extracted by special commandos consisting mainly of concentration camp prisoners, and then burned in the cremation pyres or – as some archival materials indicate – in "mobile crematoria" (Kubicki 2019). There have been testimonies of people who claimed that the burned remains were additionally ground, as was the case with the destruction of graves in concentration camps. Eventually, the prisoners who exhumed and burned the bodies were also murdered in order to limit the number of people who could later testify to cover up the traces of mass crimes. The activities were strictly secret and were codenamed 1005 (or Aktion 1005) (e.g. Hoffmann 2013; Kobiałka 2024; Meissner 1980).

However, the above-mentioned activities were not carried out near Chojnice though – this was probably due to time and manpower constraints. In Gdańsk Pomerania alone there were several hundred places similar to Death Valley, where Poles were murdered on a mass scale. Nevertheless, it can be argued here that the experience gained during Action 1005 in Gdańsk Pomerania was taken into account in orga-

nization and execution of a mass crime against Poles at the end of January 1945 in the area of today's Death Valley. After the executions, the bodies of several hundred people were not buried deep in the ground, but were immediately cremated in order to prevent the identification of the victims and to estimate the scale of the murder. Field observations reveal a clear *modus operandi* of the perpetrators and a specific rationality of action (Kobiałka 2022, 2023a). Human remains were found several centimeters below the modern ground surface. The surrounding marshland was supposed to be an effective way of hiding the material traces of the crime. However, the opposite was the case – the marshy environment allowed for the good preservation of burned human remains, metal artifacts, but also organic materials – fragments of fabrics, footwear, leather belts, and even spools of thread, among others. Even burned grains of cereal and fragments of bread were found in the soil samples taken from the fill of the burial pits (Fig. 8).

The mass crime in Death Valley in 1945 and its cover-up was made easier for the perpetrators by the fact that the whole place as a land depression was periodically under water. Probably for this particular reason there was no immediate necessity to remove potential evidence of the executions so they were left beneath the water level. Since then, it has been the water that has hidden the crime scene for a long 80 years making it impossible for the local communities and researchers to discover the site – but on the other hand also to disturb or even potentially desecrate it. The local hydrological conditions appear to have played a key role in protecting not only the

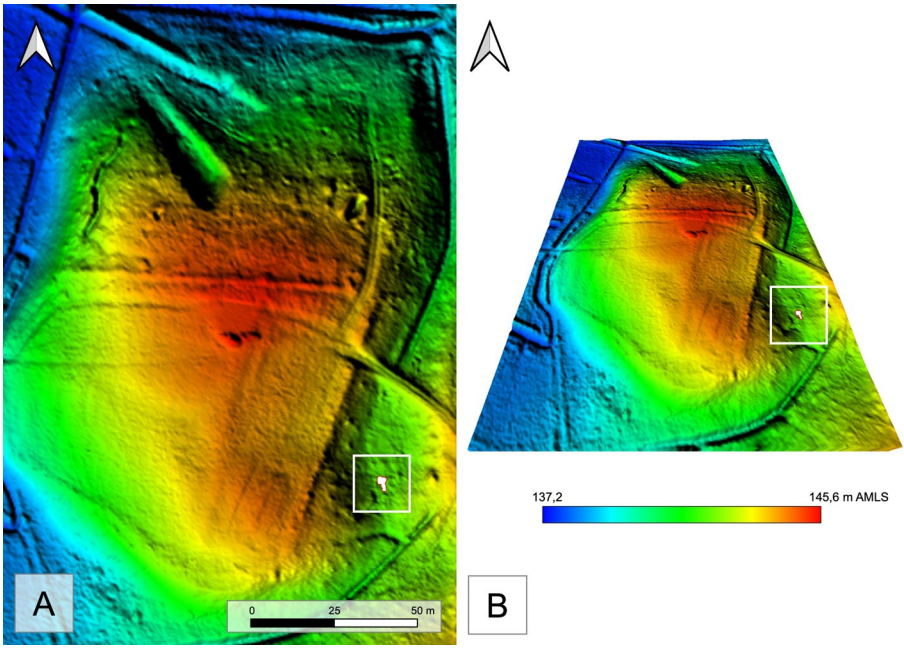

Fig. 8 Documentation of the crime landscape. (**A**–**B**) visualizations of LiDAR data with marked (white square) locations of death pits from January 1945 (prepared by M. Kostyrko, K. Karski; collections of the Head Office of Geodesy and Cartography, Poland)

human remains buried under the flooded ground, but also the material possessions of the victims.

Before the main archaeological work could begin on the terrains identified as a potential mass grave sites in Death Valley, the archaeological team faced a major challenge. During the spring, the field research area was flooded by the surface runoff of meltwater from the Igły Fields. As one of the team members mentions:

> "The problem with water was really serious, because Ostrówek – the site of the cremation pyre – is located in the lowest basin of Death Valley. It was a serious problem especially when the exhumations were planned, the terrain was soppy, in general the basin was seasonally in flooded with water. Late autumn, winter and early spring. It was a huge puddle. Literally, everything was under the water (fragment of an interview, translated by authors)."

Despite the fact that there was a drainage ditch in the close proximity to the stagnant water mirror, it was so clogged that the water could not flow freely (Fig. 9). The decrease in groundwater levels occurred only during periods of increased temperatures and atmospheric drought (more frequent due to climate changes observed in

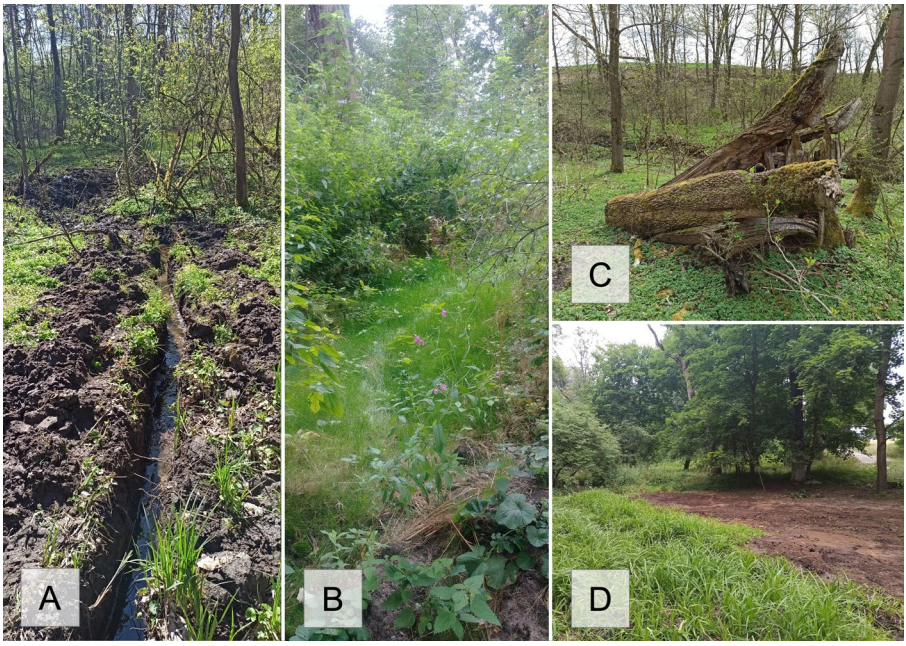

Fig. 9 Nature of the crime scene. (**A**) ditch draining water from the area of the mass graves from January 1945. (**B**) an overgrowing drainage ditch dug in May 2021. (**C**) relics of a fallen ash tree, described by the Interviewee as a "stump"; in the background, a ditch mentioned during the ethnographic interview, draining water that flooded the mass graves. (**D**) a depression in the area where the mass graves were located in January 1945, drained and levelled during drainage works in May 2021. The state of preservation after exhumations in 2021. At the bottom of the photo one can notice the progressive secondary succession of forest rushes (*Scirpus sylvaticus*)

central and northwestern Poland in recent last years), which caused the top layer of soil covering the flooded grave to dry out. According to the Interviewee:

> "It looked almost like the cracked surface of a great dried-up lake […]. Such a crust, for the material remains of the crime itself, there are probably no worse conditions. Seasonal large inflow of water, seasonal rapid drying, cracked earth with large channels for oxygen access to the artifacts, these relics started to be in a very deplorable state (fragment of an interview, translated by authors)."

As the interviewee's evocative description suggests, it was necessary to carry out land reclamation of the potential site of the mass graves as soon as possible after January 1945, especially because of the ongoing subsequent draining of the land, which was exacerbated by the progressive climatic changes in Poland, such as the more frequent atmospheric draughts, which could have a negative impact on the state of preservation of the artifacts buried in the ground. However, as we have already mentioned, it would be impossible to conduct any archaeological work and further exhumations without carrying out land melioration.

The main logistical problem faced by the team was therefore how to drain the area. One of the research team member describes the circumstances surrounding this process, indicating reasoning based on the common sense and practical knowledge that comes in handy in times of need:

> We stand in front of the site in rubber boots: "How can we dry this place?" You can't even stick a trowel in it, because we're standing in water; a month later, two months later, the water has receded to a depth of 3–4 centimeters. Dawid asked all his friends in Chojnice for advice on how to dry the area. The only feedback we received from local experts in this technology was blood-curdling. It would cost 300,000 zlotys, which we could not afford. But it was also not possible to dig in such a soft ground. So Dawid's father, Józef, and I sat on a nearby tree stump and wondered how we could carry on without a leveler, or any heavy machinery.

So I look around and I said, "Here is the highest point, there was an old drainage ditch, so if it was there, it must have probably been working to make the water move." Then we checked the water level. I said to Józef, "You know what? What if we unblocked this ditch?" and we walked around a bit, measuring with home-made poles. Dawid said: "What are you doing?" and we replied: "Listen, we are going to unclog this ditch, but first we're going to check if we can do it at all, whether the old drain is going into the archaeological site or not." Well, the remains of the old ditch were quite far away, so we thought it would be safe to deepen it without damaging the grave. Well that's that! Józef took a spade, I took a spade, Dawid took a spade and step by step… The further we went down to the lowest point, the more the water came up to us, literally before our very eyes, the water moved to the bank of the Ostrówek. It was simply going down before our own eyes (fragment of an interview, translated by authors).

The excess water was drained, together with the surface runoff, toward Jarcewska Struga, which made it possible to introduce archaeological works and, consequently, to exhume the victims killed in January 1945. It seems that a careful way of observing and identifying the local environmental conditions influenced the practice that led to the realization of the ground works, which in turn was a necessary condition for further archaeological investigation.

For almost 80 years, the rainwater that permeated the archaeological site of Ostrówek became a significant factor that shaped not only the above-ground topography, but also the soil stratigraphy and had huge impact on the bone material of the people murdered in Death Valley. In short, the *postmortem* environment influenced the state of preservation of the discovered human remains.

Discussion: Environmental Markers as the Past Crime Evidences

Archaeology in the context of mass crimes reveals what has been deliberately buried, unearths what has been hidden, brings to light what was supposed to be "shrouded in darkness" and never to be found. It can be said that archaeology, to a certain extent, resurrects those who have died or been murdered in cold blood. This was the case with the 2021 exhumations in Death Valley. The lower terrains of Ostrówek were deliberately chosen as a crime scene. Several hundred people were not brought to this place by an accident. Although there is no clear evidence (such as documents or orders), the archaeological survey proved that the shape of the terrain and the vegetation (trees and bushes that made it impossible for bystanders to observe the execution and incineration of the corpses) were taken into account by the perpetrators at the stage of planning the execution. The graves were located a few meters to the south of the road along which the victims were led to be shot – the "economy of organizing mass crime" is clearly visible after a thorough examination of the Death Valley landscape.

Moreover, archaeological work in 2021 uncovered almost a ton of cremated human remains, estimated to be from 400 to 500 people murdered north of Chojnice at the end of January 1945 and then burned to cover up the traces of the crime. Nearly 4,500 fragments of material evidence were discovered and secured – pistol casings and bullets, items of clothing and footwear, personal belongings of the victims, as well as objects that belonged to the executioners and were abandoned by them (e.g., bottles of alcohol proving that the perpetrators carried out the executions in a state of intoxication). Finally, ecofacts (such as wood and charcoal from the cremation pyre) and anthropogenic soil (necrosol) from the filling of the death pits and their surroundings were collected. It turns out that only one species of wood – Scots pine (*Pinus sylvestris*) – was used to build the pyre that was intended for incineration of several hundred bodies. This finding is important for the reconstruction of the "economy of crime" because Scots pine prefers dry, sandy soil rather than wet areas. Scots pine does not grow near the crime scene, nor did it grow there during the Second World War. Hence the conclusion that this particular species of tree (pine has highly flammable softwood) was intentionally brought to the crime scene because of its characteristics. On the other hand, the perpetrators could not afford to cut down any of the

surrounding trees in order to maintain the natural camouflage of the wooded area that became the crime scene.

Nature was therefore an important element in the events described at several stages of the organization and the course of the crime. Basically, the Nazis' idea was to cover up the traces of the crime as completely as possible. Hence, the bodies of the victims were burned and the ashes were then deposited in a wetland. The three covered burial pits were relatively small (3 m x 3 m, 1.5 m x 1 m, 1 m x 1 m) and shallow (up to 40–50 cm). Hiding almost a ton of bones in a swampy area was supposed to lead to their natural drowning in the mud. However, this did not happen completely – the remains of the victims sank only up to 50 cm into the marshy ground. The sedimentation of incinerated bone fragments was slowed down by the thickness of the boggy soil texture and was only partial.

A few months after Chojnice was "liberated" by the Red Army on February 14, 1945, in June 1945, criminal investigations were carried out with the aim of finding mass graves and exhuming the remains of victims murdered by the Germans in the town and county of Chojnice during the Second World War (Lorbiecki 2017). During one of the local visits to Death Valley, bured fragments of wood and bones were found by members of the District Committee for Commemorating the Victims of Nazi Crimes in Chojnice – an organization established specially to find, among other things, mass graves from 1939 to 1945 in the Chojnice district. The scale of the crime could not be completely concealed – after the spring thaw, some traces of the burning of several hundred people were still visible, such as burned fragments of wood, shreds of clothing, or cremated bones, which were already correctly interpreted as human remains. However, the main goal of the executioners was achieved – the Polish authorities did not proceed to investigate the site where the cremated bones and burned wood were found, assuming that the evidence would not be able to estimate the scale of the crime and identify the victims. Therefore, right after site inspection, the Committee was no longer interested in conducting any research there.

In the following years, the crime scene began to became gradually overgrown with various types of vegetation, especially with plants that prefer conditions typical of riverbanks, as the water was still stagnant in the area, which began to be called Ostrówek because of its presence. Every year pond was forming on the surface of the death pits. The water – according to perpetrators' intention – was supposed to hide the crime scene, and it did so for several decades. The death pits, and the crime itself remained almost forgotten. However, as Elisabeth Anstett (2022: 102) once wrote "Time shouldn't be seen as an obstacle to unearthing the artifacts, unravelling denial, and ultimately recovering long-silenced facts. For these facts are stubborn, and time is on our side." What was hidden away, thanks to the attentive observation of the landscape and its vegetal formation, led to initialize archaeological works that began in 2020 and were continued in the following years to restore the memory of the murdered. This could only be achieved by transforming of the area that had once been flooded. This process was irreversible, yet unavoidable, because of the recovery of human remains was of the utmost importance, not only from a scientific perspective, but above all for the families of the people killed in Death Valley in 1945.

The crime and the perpetrators' attempts to cover it up were an intervention in the local environment, a disturbance in a small ecosystem. We are also aware that this

was also the case with the archaeological work in 2021, as it is a widely known issue that every archaeological excavation is an invasive work that reshapes the local environment to a greater or lesser extent. The cleaning and desiccating of the Ostrówek allowed to drain the standing water and – as a result – the area which was still wet at the beginning of May 2021, was relatively dry a month later, allowing exhumations to be carried out. The outline of the trench can be seen in the slight differences in height due to the disturbance of the natural layers by the archaeological work and the succession of vegetation that is slowly reclaiming the site where it was once dense and luxuriant (Fig. 10).

During the excavation, all possible artifacts, places where samples were taken for specialized analyses and human remains with diagnostic potential were located three-dimensionally using a total station. The location and dimensions of the death pits themselves were also documented. In their place, local authorities erected a temporary memorial. The site is regularly maintained and the grass is cut so that visitors can stand freely in front of the death pits (Fig. 11). However, the surrounding nature itself looks neglected and not subject to regular arrangements. It is to some extent, wild and – indeed – natural. This is not a deliberate attempt on the part of the institutions responsible for managing this area – nevertheless, in its current form it somewhat reflects the situation from 1945.

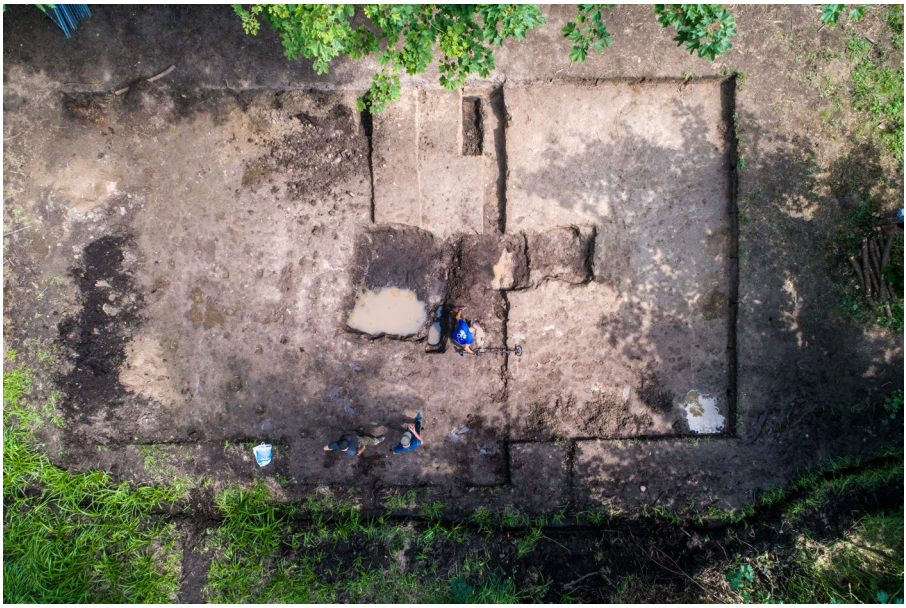

Fig. 10 Nature of the crime scene – crime scene after completion of the exhumation works in 2021 (D. Frymark)

Fig. 11 Crime scene – a temporary memorial erected upon the death pits in Death Valley (D. Frymark)

Conclusions: Integrating Environmental Stories with Archaeological Data

The use of nature to carry out mass crimes by the Germans during the Second World War and the attempts to cover them up are mentioned by authors dealing with the mass killings of Poles (Ceran 2024) and Jews (Smykowski 2017, 2018, 2020) on the invaded territories of Poland. In recent studies, the environmental conditions are no longer reduced to the passive background of given events, although they are still not the subject of mainstream research and need broader theoretical reflection in the context of the Pomeranian Crime (and also *Aktion Tannenberg*, *Aktion T4,* and *Aktion 1005*). For this reason, we proposed to implement an ecologically oriented approach that complements current historical debates and give a full-detailed depiction of procedures of extermination as well as their long-lasting aftermath in local environments of northern Poland, such as Death Valley (Smykowski and Kobiałka 2023), but also the Szpęgawsk Forest or the vast woodlands of Piaśnica.

Although the lenses of the ethnography of exhumations and the ethnography of archaeological practice are the dominant perspectives for reconstructing the process of identifying and unearthing the human remains in Death Valley, we have tried to highlight the environmental narratives, vegetal tropes and motifs that anchor the embodied experience of excavations with the particular characteristics of the researched area. At the heart of the problem discussed here, based on the interpretation of empirically induced ethnographic data is the transformation of the topography

of Ostrówek and the "problem of water" – as one of the interviewees put it – that needed to be solved in order to carry on with the exhumations.

The pool of water that has been temporarily formed on the surface of the mass graves, although it was a primary form of natural camouflage, has played a crucial role in protecting the crime scene for decades to come: it was not only the cover-up as has been assumed, but also the protective water layer that prevented random or purposeful acts of violating the posthumous remains of the victims and their desecration. In the end, contrary to the perpetrators' intentions, it drew particular attention of the archaeological team that returned to Death Valley in search of mass graves after almost 80 years after the war. Though the whole area of Ostrówek, was not overgrown with plant species that could be recognized as burial indicators, it somehow emphasized the difference in species composition and influenced the surface survey, terrain recognition as well as the further idea of the excavation. It was in this marshy ground that one of the personal items of the victim was found: the golden wedding band that had been plucked from the deep mud which, in turn, was a clear signal for the archaeologists to start digging.

Careful examination of the potential area of investigation and attention to any evidence of the wartime past recorded in the topography of the landscape led to the precise location of the mass graves hidden by the Nazis. During the war crimes investigation procedures tracing environmental data is crucial for identifying the crime scene. Forensic botany and geology in "environmental profiling" can be "particularly valuable in providing strong circumstantial evidence linking a suspect or suspects to a scene of crime" (Brown 2006: 204). However, that methodology may be applied shortly after the crime has been committed (e.g., in order to establish the non-human factors involved in the process of perpetrating the crime or subsequent acts of destroying the evidences or their purposeful cover up). After 80 years – as the Celka's (2021) report clearly confirms – it is almost impossible to identify any site-specific plants as mass grave indicators. We believe the role that the multispecies ethnography or environmental anthropology may play in the archaeological survey, as in case of Death Valley, is to enhance the scope of observation by the attentiveness to the potentially distinctive areas: peculiar, disturbed, "haunted" or avoided by the locals. Then, by combining noninvasive methods from different, but related disciplines – archaeology and ethnography/anthropology, as well as by encountering environmental stories with historical data, it is possible to find a synergy that facilitates the process of complex understanding of both the social and environmental history of the archaeological site. The example of such history is Death Valley that shows that nature was not only a passive background to the mass killings in 1945 but also an important agent in saving the genocide traces in the local ecosystem, and finally an evidence for the conducted exhumations and the official investigation reissued by the Institute of National Remembrance after the discovery of human remains in 2020.

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Data Availability Datasets and source material can be obtained in the project archive in the University of Łódź Repository (PL). http://hdl.handle.net/11089/48482

Declarations

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Consent for Publication Not applicable.

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