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ARTICLES

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CURRENT PALAEOANTHROPOLOGY AND PALAEOARCHAEOLOGY IN THE MUSEUMS OF POLAND IN THE TOURISM CONTEXT. INVISIBLE HERITAGE?

ABSTRACT

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The heritage of prehistory, in the fields of both palaeoanthropology and palaeoarchaeology, constitutes a huge physical and interpretative resource, even though the majority of artefacts have never left museum storage rooms. The current significant development in research into human fossils does lead to considerations about the current ways of exhibiting museum collections regarding this kind of heritage. In Poland, artefacts of prehistory, including human fossils, are distributed between different kinds of museums – historical, archaeological, natural history, and geological ones, as well as museums belonging to universities and scientific institutes. None of them builds their brand based on palaeoanthropological artefacts. Moreover, since the excavations have stopped, the sites of discoveries of that kind remain illegible to the general public due to the lack of on-site markers and appropriate educational tourist facilities. All these facts together underline the problem of limited visibility of the recent discoveries and palaeoanthropological and palaeoarchaeological heritage in the Polish museum and tourist market.

Keywords: palaeoanthropology, palaeoarchaeology/Palaeolithic archaeology, museum studies, tourism, Poland

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INTRODUCTION

In the 21st century, research into the history of humankind is experiencing its true “golden years”. This is due to the development of modern laboratory research techniques and breakthroughs in genetics, such as the sequencing of fossil DNA of the protohumans (Meyer *et al.* 2016). The obtained information about our direct ancestors and extinct human species not only enriches the existing knowledge, but forces us to revise many established views (*e.g.*, on Neanderthal life and culture) about human evolution, migration and the contribution of protohuman species (or populations) to the genetic heritage of modern humans.

The heritage of prehistory in archaeology, palaeontology and palaeoanthropology (the latter deals with the morphological analysis of fossil bone remains, Ławecka 2003, 182) is an enormous resource, both physical and interpretative, even though most artefacts have never left the drawers of museum storage rooms. Others, such as dinosaur fossils, have enjoyed not only scientific but also pop-cultural success, inspiring many – from authors of literature or film to toy manufacturers. Among this wealth, the heritage of palaeoanthropology and palaeoarchaeology (also called ‘Palaeolithic archaeology’; Clark 2009) are increasingly taking the lead, also in the context of tourism, although not everywhere and not to the same extent.

The aim of this article is to analyse the tourism potential of the heritage of palaeoanthropology (mainly fossil bone remains of protohumans) and palaeoarchaeology (*e.g.*, stone tools of protohumans, and the remains of the first representatives of *Homo sapiens* and other extinct human species) in Poland against the background of contemporary trends in museology and in the context of commonly used modes of interpretation. The presented paper was based on desk study (analysis of secondary sources, literature) and observation (selected museum collections, *in situ* sites related to the prehistory in Poland).

THE HERITAGE OF PALAEOANTHROPOLOGY AND PALAEOARCHAEOLOGY IN TOURISM

The objects of interest in archaeotourism are legible or “legibilised” archaeological sites in the landscape as well as artefacts collected in museums and available to the general public. Archaeological heritage includes “all remains, objects and any other traces of mankind from past eras” (European Convention on the Protection of the Archaeological Heritage (Revised)..., Valletta 1992), relics of past worlds acquired through both purposeful research and accidental discovery. Palaeoarchaeology deals with the earliest material heritage of humans (*e.g.*, stone tools, traces of encampment, and other activities of protohumans), while palaeontology also provides us with knowledge of the evolution of the ani-

mal world (with humans as a part of it) and the plant world on Earth. The preserved traces from the sometimes very distant past allow scholars to understand processes that shaped the Earth in its geographical and cultural layers, as well as the cyclical nature of certain phenomena on a macro scale and their consequences for the modern world (e.g., great extinctions).

Palaeoanthropological heritage occurs in the form of fossils of the most ancient forms of humans and is exhibited mostly in museums. It originates in the discoveries made in the geographical environment. The archaeotourism attraction of Palaeolithic human discovery sites often overlaps with the geotourism attraction (e.g., caves, see Antić *et al.* 2022), hence archaeotourism may co-occur with geotourism. This occurs primarily when prehistoric artefacts remain at the site of their discovery simply because they cannot be taken anywhere else without being harmed. Such a situation occurs, for example, in the famous caves of El Castillo (Ripoll *et al.* 2021) or Altamira in Spain (Parga Dans and González 2019), where tourists are able to admire spectacular works of both nature (extensive cave chambers, speleothems) and human beings (prehistoric cave art). Another *in situ* attraction that the visitors can admire is the famous palaeoanthropological site at Laetoli showing the footprints of representatives of the bipedal species *Australopithecus afarensis* dating back to 3.6 Ma BP, imprinted in hardened pyroclastic sediments in eastern Tanzania (International Union of Geological Sciences 2021, 114, 115). The frequency of significant palaeoanthropological discoveries in the past has turned some regions into palaeontological eldorado, while becoming their tourist brand: Awash Plains in Ethiopia, the caves of the Swabian Jura in Germany, or the Sierra de Atapuerca of the Dolina Trench in northern Spain (with the famous Sima de los Huesos/Pit of Bones, Carbonell *et al.* 1999). At the same time, the “success” of these locations in the context of the science of the evolution of humankind and the scale of scientific, not always ethical, exploitation of the fossils made many people realise that “bones” are a non-renewable resource, requiring particular protection (see White 2014, 342).

At times, sites of famous palaeontological finds are visited in this context, even when the artefacts unearthed there have long since gone to museums. This is the case at places such as Olduvai Gorge in Tanzania, the La Chapelle caves in France, or Sterkfontein and Blombos – both in South Africa (Table 1). The geographical features and location of these destinations also make them the focus of various forms of cognitive, qualified or adventure tourism (see Antić *et al.* 2022).

The mere fact of the discovery of Palaeolithic artefacts (Table 1), including the remains of protohumans, may be subject to practices of commemoration and celebration. The 1908 discovery of a Neanderthal skeleton called “The Old Man” from La Chapelle (LCS1), which (partly) falsely shaped the public image of representatives of this species for nearly a century, is celebrated at the Musée de l’Homme de Neandertal located between Brive-la-Gaillarde and Rocamadour, not far from the site of the original discovery (in la Bouffia Bonneval, Rendua *et al.* 2014).

Table 1. Sites of selected famous finds in the field of human prehistory.
Source: author's own research

Location	Meaning
The Olduvai Gorge, Tanzania	Discovery of the remains of <i>Zinjanthropus boisei</i> (1.848 Ma), <i>Homo habilis</i> (1.848-1.832 Ma), <i>Homo erectus</i> , <i>Homo sapiens</i> , and numerous stone tools (International Union of Geological Sciences 2021, 114-115)
Laetoli, Tanzania	Footprints of the march (27 m trail) of the <i>Australopithecus afarensis</i> , dated to be 3.6 Ma BP. (International Union of Geological Sciences 2021, 114-115)
Trachilos, Crete, Greece	Traces of the march of bipedal humans from 5.7 Ma BP (Gierlinski <i>et al.</i> 2017)
Sterkfontein Cave, SA	<i>Australopithecus africanus</i> remains (2.8-2.4 Ma), <i>Homo habilis</i> skull (1.5 Ma), fossil fauna (Kuman 1994)
Blombos Cave, SA	Snail shell beads and a silkrette flake with a pattern drawn in ochre-colored crayon found in an approximately 73,000-year-old Middle Stone Age level (Henshilwood <i>et al.</i> 2018).
Hadar, Etiopia	"Lucy", a largely preserved skeleton of an <i>Australopithecus afarensis</i> individual, 3.25 Ma BP (Johanson 2017)
Hadar, Etiopia	"First Family," 13 individuals of the <i>Australopithecus afarensis</i> species living in one group, or members of one family, 3.2 Ma BP (Johanson 2017)
Buxton-Norlim Limeworks quarry near Taung, SA	The "Taung child," a skull of an <i>Australopithecus africanus</i> individual 2.8 Ma BP (Berger and Clarke 1995)
Liang Bua Cave, Flores, Indonesia	"Hobbits," members of the species <i>Homo floresiensis</i> , dating back to 74-17 ka BP (Aiello 2013)
Cave system called Rising Star Cave, Dinaledi Chamber, SA	Discovery of remains of at least 15 <i>Homo naledi</i> individuals (dating back to 335-236 ka BP). This is one of the largest bone collections obtained from a single hominin species in Africa (Berger <i>et al.</i> 2015)
La Chapelle cave, France	Discovery of an intentional burial of a representative of <i>Homo neanderthalensis</i> with a preserved complete skeleton, the so-called "Old Man" from La Chapelle, 60 ka BP (Trinkhaus 1985).

In the case of several locations famous for their finds, the nature of the artefacts particularly susceptible to destruction, led cave managers to decide to close them to the public. The spectacular Palaeolithic hunter paintings and other related finds of the Lascaux and Chauvet caves in France (Geneste 2017) can be admired today only through virtual tours or by visiting exact replicas of the caves and their painted decorations (Lascaux II, III and IV and Cave Chauvet 2, Ardèche) (Hammer 2015).

Some fossil remains of protohumans are extremely valuable, but also extremely fragile, hence they are rarely made available to visitors in their original form. They are kept in the collections of high-ranking museums (*e.g.*, the bones of the Neanderthal "Old Man" from La Chapelle (LCS1) at the Muséum National d'Histoire Naturelle in Paris, France, or the remains of the *Australopithecus afarensis* "Lucy" (AL 288-1) at the National Museum of Ethiopia in Addis Ababa) or in the research units involved in their discovery (*e.g.*, the skull of the "Taung Child", a representative of the *Australopithecus africanus* species, kept at the University of the Witwatersrand in Johannesburg). The original bones are made avail-

able to scientists for study. A certain rarity in the context of making authentic artefacts available to visitors is the repeated lending of “Lucy” bones by the National Museum in Addis Ababa for a kind of “tour” to other museums, including those abroad.

The most famous finds documenting the history of humankind are in museums, usually natural history museums, constituting an important part, less frequently the core, of the collection. There are exhibitions devoted to the evolution of the human species at the Natural History Museum in London, the Muséum National d’Histoire Naturelle in Paris, the Museum für Naturkunde in Berlin, the Naturhistorische Museum in Vienna (the collection includes figures of the so-called Venus of Willendorf and “Fanny” of Stratzing, dated at 29.5 and 36 ka BP, respectively), the American Museum of Natural History in New York, the Smithsonian National Museum of Natural History in Washington, the Harvard Museum of Natural History, and many others. Due to the dynamic development of knowledge about extinct species of protohumans, including Neanderthals, involving a change in the perception of their physicality, adaptive skills, ability to think in abstract terms and even create culture, museums dedicated to specific species (populations?) of humans have been recently established. An example is the Neanderthal Museum in Mettmann, Germany, where Neanderthals are shown as outright members of the human family, close relatives whose DNA is still present in the genome of modern humans (non-Africans) (Reilly *et al.* 2022), thus breaking with the damaging stereotype of uncultured and primitive troglodytes. The art of prehistoric humans, preserved not only on cave walls but also in the form of movable objects of often symbolic significance, tens of thousands of years old, is a trademark adornment of the collections of museums such as the Israel Museum in Jerusalem (Venus of Berekhat Ram), the Urgeschichtliches Museum Blaubeuren (Venus of Hohle Fels) and the Museum Ulm (Lion Man of Hohlenstein-Stadel Cave).

In terms of presenting the history of human evolution, modern museology is characterized by a kind of conglomerate of traditional 19th-century display-case exhibition and modern reconstructions or visualizations, also using virtual reality. The opportunity for visitors to see authentic, sometimes millions of years old fossil skeletal remains of protohumans is, in this case, a great advantage of the traditional “behind glass” exhibition, enriching the experience of visitors to a degree incomparable to any, even the fanciest, modern visualisation. The latter serve mainly to expand the knowledge of the issues presented in a way that engages all the senses of the viewers, so that the cognitive effect is as durable as possible. In accordance with Tilde’s (1957) rules of museum interpretation, palaeo-anthropological expositions often turn to so-called “windows of the past”, dioramas, where genre scenes are shown in a specially arranged space, in which protohumans and the conditions of their lives were recorded at key moments in the evolution of the species or at individual moments of life or death. Commenting on the Mettmann museum’s exhibition on Neanderthals in light of the latest scientific knowledge about them, Drell (2000) pointed to the then novel museum trend of depicting protohumans in a more “human” way, with greater empathy, exposing features previously reserved mainly for *Homo sapiens* (ability

to think abstractly, social behaviour). Visitors were thus able to see the “home/family” life of the Neanderthals (not just hunting scenes), rich in emotions (which, however, we can only guess) that modern people could easily identify with. The fossilised skeletal remains of the protohumans are usually presented in the form of replicas, casts (see Nowacki 2012 for the rules of modern heritage interpretation described broadly). Huge interpretative possibilities have emerged in modern times with the development of 3D scanning techniques, thanks to which it is possible to make prehistoric artefacts available to visitors without the risk of their destruction and with the possibility of their extremely insightful observation. Collaboration with artists and being based on the data that was obtained from the analysis of fossil DNA provided the opportunity to reconstruct the potential appearance of protohumans (eye and hair colour, complexion), granting them individual human characteristics.

Instead, special reconstructions, “genre scenes” showing various aspects of the life of early humans at these sites (*e.g.*, Einhornhöhle cave in Germany) are frequently placed at the discovery sites, often caves, rock shelters, from which artefacts related to ancient people have been removed (remains, traces of residence, tools, *etc.*).

PALAEOANTHROPOLOGICAL AND PALAEOARCHAEOLOGICAL COLLECTIONS IN POLAND

Museums

In Poland, palaeoanthropological collections are usually part of broader palaeontological collections, mainly maintained by universities or research institutes (Table 2). Due to modest local discoveries of the oldest protohuman remains, the collections mostly consist of replicas of the most famous finds, crucial to the history of the evolution of the mankind, increasingly enriched with artistic reconstructions of the hominins, according to the latest knowledge about them and the palaeoenvironments in which they lived. The museums rely mainly on traditional, display-case exhibitions, not deviating significantly from the display practices used in most museums of this type. This seems to be due partly to the size of the collections associated with protohumans. Apart from the Human Museum at the University of Wrocław (which, however, will soon become part of the UWr Natural History Museum), none of the university museums presenting human evolution expose this fact in the name of the institution.

The material remains related to protohumans as such (their biology) are often presented in conjunction with material creations of Palaeolithic cultures (usually, however, the latter are much younger than the oldest known human remains, their age counted not in millions, but tens of thousands of years). They also appear on the margins of collections in some regional museum and are also found in the collections of archaeological or ar-

Table 2. Museums of universities and scientific institutes with palaeoanthropological collections in Poland.

Source: author's own research based on sources such as
<https://muzeauczelniarne.pl/muzea/> and <https://muzeumewolucji.pl/?p=967> (20.01.2023)

Museum	Exhibits	Offer
Museum of Evolution at the Institute of Palaeobiology at the Polish Academy of Sciences in Warsaw	The collection of fossil human skulls illustrates the most important evolutionary trends leading to the emergence of humans; An artistic reconstruction of the australopithecus "Lucy" made by a sculptor Marta Szubert under the supervision of Charles Sabath.	Traditional visit Virtual visit Museum classes Young Palaeontologist Club
Museum of Earth Sciences of the University of Silesia in Sosnowiec	An exhibition on human evolution; Reconstructions: <i>Sahelanthropus tchadensis</i> reconstructed on the basis of a skull dated by the discoverers to 6-7 Ma BP. Figure against the backdrop of the natural environment in which the species occurred – a grassy savanna; <i>Homo neanderthalensis</i> is shown against a Pleistocene environment.	Traditional visit Museum classes Field workshops
Museum of Earth at Adam Mickiewicz University in Poznań	A replica of the most complete skull of the first adult australopithecus (<i>Australopithecus africanus</i>) discovered by Robert Broom at Sterkfontein Caves (South Africa) in 1936. A copy was made at the Sterkfontein Museum and, together with a cast of the <i>Homo habilis</i> skull, was given to Prof. Jerzy Fedorowski, Rector of the Adam Mickiewicz University (1990-1996).	Traditional visit
Natural History Museum of the University of Łódź in Łódź, Poland	In the room dedicated to the history of life on Earth, there is a life-size model of Neanderthal man <i>Homo neanderthalensis</i> . The head of the model was made based on the skull of the so-called Old Man of La Chapelle-aux-Saints; a replica of the Old Man's skull.	A visit with an audioguide
Human Museum at the Department of Human Biology of the University of Wrocław (after reorganization part of the Natural History Museum of UWr)	Bone material and replicas of fossil hominid remains	Traditional visit (currently unavailable due to organisational and location changes)

chaeological-historical museums. An approximately 15,000-year-old Palaeolithic Venus figurine from Wilczyce (one of many acquired at this archaeological site, Kuczyńska-Zonik 2014, 135-139) is exhibited at the Archaeological and Ethnographic Museum in Łódź. Other figures of Palaeolithic Venus (made of hematite), discovered in Poland, come from

sites such as the Dzierżysko site in Opole region (Ginter and Połtowicz 2006; Kuczyńska-Zonik 2014, 113) and represent the Magdalenian cultures. Rich Palaeolithic collections from the Ciemna, Nietoperzowa, Jama and Okiennik caves, as well as Palaeolithic and Mesolithic assemblages of flint artefacts from the Rydno site near Skarżysko-Kamienna, from the area around Warsaw, as well as from eastern and northeastern Poland have been deposited at the State Archaeological Museum in Warsaw (closed to visitors since 2018 due to renovation of the museum building). These collections, despite their considerable value, are usually made available in the form of thematic temporary exhibitions. The Archaeological Museum in Kraków presents a permanent exhibition called “Prehistory and Early Middle Ages of Małopolska” in the form of a classic diorama with models of prehistoric and indigenous inhabitants of the region complemented with multimedia narratives (the scenes staged in the diorama are rather static). As part of the museum’s virtual offer, visitors can see animations and 3D visualisations related to the oldest and most valuable relics in the institution’s collection, including the Prądnik Knife from the Ciemna Cave and a Shouldered Point from Kraków (Spadzista Street). Palaeolithic artefacts from the Mamutowa Cave and the Maszycka Cave are in the collection of the Archaeological Museum in Kraków, but are not part of permanent exhibition. At the Jura Natural and Cultural Heritage Centre in Podlesice (a small regional educational centre) tourists might visit a modern exhibition with a multimedia presentation devoted to the research under the cave deposits of the Jura. The museum collection was prepared on the basis of knowledge and selected materials collected during research carried out in the nearby Stajnia Cave.

Given the fact that collections related to protohumans do not constitute separate museum exhibitions and usually form a minority in aggregated collections (except Krasiejów, mainly as a result of its specificity: it is closer to an entertainment centre than a traditional museum), they are not able to conduct comprehensive narrative of the evolution of humankind, focusing more on selected episodes than on the whole story in all its complexity (complexity not only in the historical sense, but rather in relation to the changing environment and other elements of nature). Dioramas/history windows try to reflect the (usually) environmental and situational context of the presented artefacts, but it is necessarily limited. However, museums whose collections include palaeoanthropological or, more broadly, prehistoric collections usually conduct educational and popularising activities aimed at young people at various stages of education, including early primary schools.

Sites of discoveries related to protohumans and their cultures

So far in Poland, there have been few bone finds associated with known protohuman species. In fact, discoveries of material culture artefacts documenting various Palaeolithic cultures remain much richer. Fragments of Late Pleistocene human bones have been found during excavations at the Stajnia Cave and the Ciemna Cave, both in the Silesian-Częstochowa Upland.

The Stajnia Cave is located in the northern slope of Grzęda Mirowska within a limestone outcrop called the Rock with Grotto, on private land. The cave has two entrances and consists of basically one spacious 23 m-long corridor, 2.5 m wide, 8 m high (Zygmunt 2013). In the cave, artefacts dating back to 110-115 ka BP have been found (Zygmunt 2013), as well as three teeth from representatives of the *Homo neanderthalensis* species (Urbanowski *et al.* 2010; Źarski *et al.* 2017; Picin *et al.* 2020), located in a layer dated by various methods to 49-52.9 ka BP (Dąbrowski *et al.* 2013). The obtained material culture relics included an ornamented mammoth bone pendant, believed to be the oldest ornament made by *Homo sapiens* 41.5 ka BP (Talamo *et al.* 2021), and a horse bone awl. A single tourist information board, located near the entrance to the site, informs visitors about the palaeoanthropological discoveries in the Stajnia Cave.

The Ciemna Cave, also known as the Królewska Cave, is located in Ojców, in the Prądnik Valley within the Ojców National Park. The so-called “Prądnik knives”, *i.e.*, a specific type of flint knife characteristic of Neanderthal man’s culture made using a specific formation method (Prądnik technique), were discovered and distinguished here for the first time. The presence of Neanderthal man is documented in the cave by numerous flint and stone artefacts. The cave, formed in Jurassic rocky limestone, has a slightly more complex plan than the Stajnia Cave, with three entrance holes leading to it. The main hall is 88 m long, a maximum of 23 m wide, and is 8-10 m high (Gradziński and Michalska 2020). An undisturbed sequence of seven cultural levels dating to the Middle Palaeolithic period was discovered inside. The oldest human remains in Poland were found in the cave: the phalanges of a Neanderthal child dating to about 115 ka BP, and a tooth dated to 50 ka BP (Willman *et al.* 2019). The Ciemna Cave has been one of the tourist attractions easily accessible for centuries. Today, however, it is open to the public under supervision, visits are possible only with a guide. The prehistoric context has been visualised to tourists in a rather modest form: a replica of a Neanderthal encampment and an observation platform with a panoramic view of the Prądnik Valley have been located in front of the cave entrance.

The Oblazowa Cave located near Nowa Biała was inhabited as early as the Palaeolithic 100-40 ka BP, first by Neanderthals and later also by *Homo sapiens*. Stone tools were found there, as well as an object made from a mammoth tusk in the shape of a boomerang attributed to *Homo sapiens*. Other discoveries included *Conus* shells with traces of incisions (Valde-Nowak 2015) and peculiarly made perforations, two horn wedges, one of them with a curvilinear sculpted ornament, pendants made from polar fox tusks and other stone artefacts. From later times comes a stone tile shaped into a typical Venus female figure, representing the Western European Lalinde-Gönnersdorf style – <https://archo.uj.edu.pl/jaskinia-oblazowa>, accessed 14.02.2023; Valde-Nowak and Nadachowski 2014). A hunting camp with a campfire, dating to the first half of the Allerød interstadial, has been recognized in the cave (Valde-Nowak 2008; Valde-Nowak *et al.* 2019). The architectural project of a modern exhibition centre within the archaeological reserve aimed at protection and popularization of the Oblazowa Cave is still at an early stage of realization (looking for funds).



Fig. 1. Educational panels of the educational path in the former brickyard on the slopes of Wine Mountain in Trzebnica dedicated to the prehistory of humans, photo by the author (2021). The panels' diagrams and content allow viewers to locate the layers where prehistoric relics were found in the sedimentary exposures they are looking at

Some of the oldest Palaeolithic artefacts discovered in Poland come from the Mamutowa Cave (Wierzchowska Lower Cave). They include a small, quadrangular plate made of mammoth bone, with two hanging holes, decorated with rows of punctures, dated to around 30,000 years, and elements of a necklace made of pendants made of mammoth tusk and drilled animal teeth; as well as an object made of a bone of a reindeer toe segment, presumably serving as a whistle (*Archeologiczny Atlas Małopolski. Jaskinia Mamutowa, Jaskinia Wierzchowska Dolna n.d.*).

A collection of Palaeolithic art of the Magdalenian culture has been obtained from the Maszycka Cave (in the Prądnik Valley), consisting, among other things, of a collection of skids (arrowheads) made of reindeer horn decorated with engraved symbolic representations, bone handles with split ends, and an object made of reindeer antler with a hole in the



Fig. 2. Educational panels of the educational path in the former brickyard on the slopes of Wine Mountain in Trzebnica dedicated to the prehistory of humans, photo by the author (2021). The panels' diagrams and content allow viewers to locate the layers where prehistoric relics were found in the sedimentary exposures they are looking at

centre and phallic decoration on the ends of the appendages, presumably an attribute of shamanic power. The age of the artefacts is estimated to be around 15 ka BP (Kozłowski *et al.* 2012).

The lack or limited use of information about valuable palaeoanthropological and palaeoarchaeological finds and their interpretation, both concerning on-site markers (in geographical space, in specific locations) and various types of popular off-site markers (on their role in creating tourist attractions – MacCannell 1999), does not allow us to take advantage of this heritage in the effective marketing of the place and building local identity (see Mikos von Rohrscheidt 2020).

Sites associated with traces of life of protohumans in present-day Poland also include a clay quarry site in Pleistocene sediments of a former brickyard on the slopes of Wine

Mountain (Winna Góra) in Trzebnica, Lower Silesia. The Trzebnica 2 site has revealed traces of a human encampment of *Homo heidelbergensis* from the Małopolska interglacial period 500 ka BP. Approximately 1,500 stone artefacts and remains of hunted fauna prove that the site served Palaeolithic hunters as a place to quarter game (Burdukiewicz 2006). The second level associated with prehistoric settlement was dated at about 300-350 ka BP. After years of unsupervised tourist or recreational exploration of the former brickyard, the area has lived to see professional tourist development. As part of the so-called Trzebnica Wine Mountain Park, entailing the so-called documentation site “Loess of Wine Mountain” (“Lessy Winnej Góry”; Uchwała... 2016), it included a nature trail (Figs 1-2) dedicated to both geotourism (loess, Pleistocene sediments, fossil valley) and palaeoarchaeological attractions of the site (Palaeolithic hunter encampments). A disadvantage of the otherwise interesting and substantive presentation of the content is the fact that the boards are placed with their backs to the geostationary site (loess outcrop) viewed by visitors, which makes it difficult to compare the description with the reality.

Science and Human Evolution Park in Krasiejów

The Science and Human Evolution Park is part of the Jura Park in Krasiejów. One of Poland's largest “dinoparks” (next to Bałtów and Solec Kujawski), it was created on the site of a cemetery of Mesozoic reptiles and amphibians discovered in 1993 on the site of an open pit clay mine. In the siltstone layer, remains of animals living 225 million years ago were discovered (Dzik 2003). Krasiejów is the richest skeletal excavation area of its kind available for research in Europe, research work has been done here for more than 20 years.

The development of Krasiejów, involving the careful visualisation of Mesozoic life in the landscape of the open pit, has contributed to the popularization of knowledge about the history of the Earth in the age of dinosaurs and its tourist use. The park pursues scientific and educational purposes (palaeontological pavilion, models of prehistoric animals), but is primarily a family amusement park with a 5D cinema, an oceanarium, a time tunnel, and a food and souvenir complex. All that is maintained in the style following pop-culture products such as films about dinosaurs or “fun” prehistory, popular in the late 20th century, e.g. “Jurassic Park” (1993, directed by Steven Spielberg) or “The Flintstones” (1994, directed by Brian Levant). The Science and Human Evolution Park, located in the immediate vicinity but outside the dinopark's boundaries complements the complex. It is a joint or individual tourist product, depending on visitors' preferences. The facility does not have the status of a museum, it is more of a knowledge and science centre, similar to such facilities as Wrocław's Hydropolis or the Copernicus Science Centre in Warsaw. In terms of the display tools used, it does not deviate from the latest trends in museology. Dr. Andrzej Boczarowski, among others, was responsible for the substantive layer of the exhibition. Using a “space shuttle,” visitors leave behind the present and take a journey to the begin-



Fig. 3. One of the dioramas – “windows of prehistory” of the Science and Human Evolution Park in Krasiejów, photo by the author with permission of the Science and Human Evolution Park in Krasiejów (2022)

nings of the history of mankind. Guided by a virtual tutor (3D glasses, augmented reality) and by a remotely played narration (audioguide), visitors follow subsequent “windows of prehistory”. These are professionally prepared dioramas referring to the most important palaeoanthropological discoveries, documenting the evolution of the hominidae. They are a reminiscence of traditional forms of museum display of natural history collections, and those related to man, alluding to the famous 19th century natural history museums. The depicted scenes, usually dynamic and full of emotion, captivate not only with realism, but also reflect the current state of knowledge about specific types of hominidae and about the lives and circumstances of death of specific individuals. This is the case, for example, with the scene showing a pair of adult australopithecines witnessing the abduction of their child by a bird of prey (Fig. 3). According to research, the remains of the Taung Child (*Australopithecus africanus*) bear the marks of attack and feeding by such an animal (Berger 2006).

The scenes selected in this visual time travel include one that “de-emphasizes” the image of Neanderthals as incapable of social behaviour characteristic of *Homo sapiens*. The diorama (Fig. 4) depicts a group of individuals burying and mourning the deceased (Neanderthal floral burial from Shanidar Cave; Leroi-Gourhan 1975; Pomeroy *et al.* 2020). The portrayed scene is deeply emotional. However, it is noteworthy that the intentional laying flowers on a Neanderthal grave is contested in the light of current studies (Hunt *et al.* 2023).



Fig. 4. "First funeral" diorama. Science and Human Evolution Park in Krasiejów, photo by the author with permission of the Science and Human Evolution Park in Krasiejów (2022)



Fig. 5. The Ancestors Gallery, Park of Science and Human Evolution in Krasiejów, photo by the author with permission of the Park of Science and Human Evolution in Krasiejów (2022)

The Krasiejów exhibition is extended with the Ancestors Gallery with a collection of casts of skulls of ancestors and cousins of modern humans (Fig. 5), complete with interactive multimedia to supplement knowledge, replicas of the oldest products of human culture like the famous Palaeolithic Venus, as well as painted and sculpted representations of prehistoric animals, and the history of selected tools such as flint knives. Some parts of the Krasiejów exhibition focus on the more recent (and commonly more recognizable) history of modern humans. Extraordinary visual and factual precision was shown by the creators of dioramas depicting the so-called Oetzi mummy, a man found in an Alpine glacier from over 5,000 years ago (Kutschera and Rom 2000). Visitors learn about the dramatic circumstances surrounding the death of this prehistoric man and the purpose of the objects he was carrying. The choice of this particular artefact for the Krasiejów exhibition (and others, devoted to protohumans) does not seem to be accidental from the point of view of effective, “hot” interpretation – the dramatic moments that the hunter experienced before his death make him the hero of a downright criminal, therefore intriguing, mystery.

The narrative of the remotest past of mankind is complemented by information about the migrations of human ancestors over millions of years and their impact on modern human populations, as well as reports of sensational new discoveries in the field of palaeontology, to which Polish scientists have also contributed (*e.g.*, the discovery of traces of the march of bipedal hominidae from 5.7 Ma BP, at Trachilos in Crete, Gierliński *et al.* 2017).

DISCUSSION

Although the potential of palaeoanthropology and palaeoarchaeology in Poland, both in museums and *in situ* sites (places of discoveries), seems if not high (especially regarding the former type of heritage), then certainly significant, the question arises whether it is sufficiently visible against the background of other types of heritage used in various ways for educational as well as tourist purposes. This is certainly not helped by the considerable dispersion of collections presented in different types of museums. These are Earth museums, natural history museums, and historical and archaeological museums. This is due to the fact that the protohumans are usually set in two strong contexts, namely as parts of nature (subject to its laws) and producers of culture (changing the world for their needs). Although these contexts are strongly linked, they are often displayed separately in the museum space.

As stated earlier, no museum’s name emphasises the heritage of human evolution or the oldest Palaeolithic cultures. The most valuable museum collections related to these two categories are never or rarely the subject of permanent exhibitions, just occasionally leaving museum storage rooms. Full catalogues of the antiquities (not only those presented in exhibitions) are not made available in easily accessible, open channels of communication with the viewer/visitor. Therefore, it is difficult to know the whereabouts of the remains

related to the prehistory of humans and their most ancient cultures found in Poland. If this information is available, visitors often do not know whether they will be interacting with the original artefacts in the exhibitions or with their replicas. In terms of recognising the palaeoanthropological context, the Science and Evolution Park in Krasiejów is certainly in the avant-garde, but despite its great educational potential, it is not able to provide the power of the original (often very old) artefact.

From the point of view of achieving marketing goals, the dispersal of palaeoanthropology and palaeoarchaeology monuments is not beneficial for this heritage. Ideologically, however, it is justified. Małczyński (2022), for example, points out that natural history museums can be regarded today as museums of the Anthropocene, emphasizing man's place in nature and the impact he has on the world (in all its complexity) in which he lives. The author (2022, 93) writes: "Dioramas have become a 'natural' habitat for many extinct species which can now only be seen in museum display cases" and "the collected (...) artefacts conceal narratives about complex relationships between species." A similar way of presenting the remains of extinct human species surrounded by extinct or endangered fauna can therefore give visitors food for thought in the context of man's destructive impact on the environment and the future of the human race in a world which is now changing drastically as a result of human activity. Małczyński (2022, 93) claims that natural history museums also create, scary as it sounds, "retrospective predictions" on the basis of their collections. According to Stobiecka (2020, 16), on the other hand, an archaeological museum, especially one that develops the concept of a critical museum, negotiates meanings and promotes interpretive polyphony. In the case of such a thriving science as palaeoanthropology today, this can be of colossal importance not only for the dissemination of currently acquired or modified knowledge, but also for shaping the image of an extremely vital science, looking to the past through the use of innovative methods and high-tech tools. In both cases – a natural history museum or an archaeological museum – even modest palaeoanthropological or palaeoarchaeological exhibits can constitute the basis for "hot" interpretation, referring directly to the most pressing problems of the present day. In her reflections, Stobnicka (2020) emphasises the importance of original artefacts, even when they do not seem exciting in terms of form. According to the author, it is the animation of artefacts, rather than so-called "digital escapism", that is the best path forward for archaeological exhibitions (and thus also those presenting palaeoanthropological or palaeoarchaeological collections). The author best sums up her view of the role of artefacts in contemporary museology with the words:

An exhibit, therefore, is a material, given to us element of museum reality which, as a result of scientific framing, becomes a foundation in the process of presenting knowledge. As such, it has the potential to stimulate the imagination. I believe that the exhibit, understood in such a way, is the most important museum tool in the process of showing the current state of research, scientific developments, and prevailing theories (Stobiecka 2020, 108).

Thus, it seems that museums presenting fossilised human remains and cultural heritage of the oldest human history should reconcile the goals of aesthetic exhibitions, which emphasise the qualities of the artefact itself (in this case, the fossilized bone material of protohumans and the products of their culture), and contextual exhibitions, where the essence of a visit to the museum is additional information placed on boards, walls, labels, or transmitted to visitors in a multimedia version. In both types of exhibitions, where original artefacts are presented, the support (but not the core of the exhibition) can be modern multimedia display tools used in different ways and for different purposes.

In the case of palaeoanthropological collections, most artefacts need to be “clothed in flesh” in order to be legible yet attractive to visitors. Traditional dioramas use figural representations made by artists based on existing scientific knowledge of various species of protohumans. However, realistic figures are not only bones and muscles, they are also poses, gestures, emotional facial expressions, but also the contexts in which these reconstructions are presented. Visualizations of representatives of specific species of protohumans in museums are not repetitive templates. Although they reflect the main typological features, they vary in detail. In this context, questions arise about the boundaries between the truth confirmed by facts and the images of the past, and the desire to see in the ancestors a reflection of ourselves – modern people. The problem of authenticity and credibility arises also from multimedia visualizations. Stobiecka (2020, 249) writes: “(...) a digitally generated image may seem, on the one hand, too real and thus be uncritically accepted as objective ‘truth’”.

Preparing substantively credible yet visually appealing models is an arduous, costly process, requiring extensive consultations, both scientific and technical. As Boczarowski, the author of numerous scenarios for paleontological exhibitions, emphasizes, it also requires creativity and, in a way, sense and intuition (Rożko 2008). The quality of the resulting visualisations is responsible not only for the nature of the viewer’s tourist experience and emotions, but also ultimately for the image (true or false) and knowledge (reliable or not) they will take away from the exhibition.

The role of modern means of virtual exhibition seems particularly important for virtual museums. They are complementary to visits to traditional museums and, at the same time, indispensable when the visitor does not have the opportunity to interact with the original exhibit. This is usually the case for two reasons: when a valuable artefact is too fragile, sensitive to be the subject of regular display, or when most collections for practical reasons rarely or never leave museum storage rooms. Small, fragmentary artefacts tend to be overlooked in grand narratives (Pearce 1990). Most Polish museums whose collections contain palaeoartefacts related to the biology of the protohumans or the products of their culture have an online offer of a virtual walk-through, during which the viewer has the opportunity to familiarise themselves with the spatial organization of the exhibitions and, to some extent, the exhibits presented. To a small degree, they can use such advanced virtual exhibition tools as narrated 3D animations of major artefacts, which is, for example, a fre-

quent practice of such museums as the Smithsonian National Museum of Natural History. A Polish archaeological museum which stands out in this regard is the Archaeological Museum in Kraków, implementing the COME-IN! project, which includes the visualisation of selected (very few) artefacts (including a 50,000 year old Prądnik knife and a 35,000 year old shouldered point) with audio-description and commentary in sign language (<https://ma.krakow.pl/aplikacja-comein/> – accessed 07.02.2023). Improving the visibility of the heritage of paleoanthropology and paleoarchaeology against other categories of heritage would certainly be helped by digitizing, classifying and making the artefacts available virtually, given the vastness of the collection, probably including the most valuable exhibits first. This process is taking place in Polish archaeological museums, but it is progressing slowly and so far in a selective rather than comprehensive manner. Virtual access to artefacts serves both to conduct research on them (*cf.*, Pyne 2019, 270) and to make them available for a wider audience, especially among people who are looking for non-academic ways to develop their scientific passions.

In her discussion of the shape of the modern archaeological museum, Stobiecka (2020) points out that the multimedia tools of the exhibition make it a dynamic, inclusive and participatory creation. She writes (2020, 238): “multimedia exhibitions provide visitors not only with an image of the past, but also with the means to ‘feel’ it with their senses”. In a museum treated as an institution of living culture, as a space for dialogue, emotion and experience rather than a simple depository of the past, this is an undoubted advantage. On the other hand, however, an excess of multimedia of various types and quality may trivialize exhibitions, obscuring the value of original museum artefacts, reducing a visit to the museum to playing with gadgets. Given the nature of the museums described and the degree of saturation with modern means of museum display, there is still a long way to go to such a situation. In the Science and Human Evolution Park in Krasiejów, the described problem does not seem to be primary, as the exhibitions are based on multimedia and replicas.

Given the nature of the bone material acquired in Poland from the most ancient people, one may ask whether an interesting museum narrative can be built on a single human phalanx or tooth? While opinions are probably divided, it seems that in this case the strength of this humble heritage is the knowledge it reveals about the past through modern research methods and tools. Their use may come as a surprise to visitors. These additional touches to the museum narrative help build the image of sciences perceived statically (archaeology, palaeology, palaeontology, anthropology), happening in serious lecture halls, locked in glass (dusty) display cases, as vital, creative and dynamic. It is increasingly a world of sterile laboratories, and in the field the researcher’s intuition is supported by GPR (Ground Penetrating Radar), lidar scanning and other modern research tools.

As for the sites from which have been obtained both bone material and material culture relics related to the most protohuman history, only the Ciemna Cave is equipped with infrastructural elements that emphasise this context of their tourist attractiveness. The remaining sites are spaces of free exploration, mainly in various forms of qualified tourism

(*e.g.*, hiking, climbing, caving tourism, *etc.*), devoid of any tools of tourist interpretation. In the case of caves whose palaeoanthropological and palaeoarchaeological context is not directly recorded in the form of a site, and where the objects found have been deposited in museums, it is necessary to authenticate the distant past in the landscape using display tools similar to the geotourism that is thriving today. In geotourism, special emphasis is placed on the illustrative (demonstrative), cognitive qualities of unique, rare landscape forms, representative of specific geological, geomorphological (and other) processes (Welc and Miśkiewicz 2020). Presented in a broader context, the final goal is to increase visitors' awareness of the complexity and beauty of the Earth's heritage, the human impact on the environment, and vice versa. Geotourism also aims to effectively communicate science: to reach a wider audience with highly factual scientific knowledge in an accessible way.

Tourism infrastructure for geotourism emphasizes the direct relationship of the information presented to the object observed. Thus, it is not enough to provide visitors with "dry facts," they must be properly linked to both the site/object with its specific features, and the observer's experiences/emotions. In interpreting the most ancient ancestors/cousins of humans, not only their physical skills that guarantee survival in a hostile environment are increasingly emphasized, but those characteristics and behaviours which distinguish humans in the animal world and at the same time bridge the gap between the past and present. Equally important are the palaeoenvironments they inhabit, which are more than just a backdrop for evolution.

Most caves mentioned in this paper – places of palaeoanthropological and palaeoarchaeological discoveries – are easily accessible locations that do not require the use of speleological techniques in tourist exploration. The physical remains (fossilised remains of protohumans, artefacts and other material items) obtained during scientific research there are not available on-site. Thus, regarding prehistorical context visitors have to rely on their imagination, admiring instead the beauty of extensive rock shelters and rock labyrinths. In this particular case, the availability of high-quality and substantive prepared multimedia on-site (*e.g.*, via QR codes) becomes a necessary condition to show visitors how caves functioned as human shelters, hunting camps, or places of worships several dozen thousand years ago. According to Nowacki (2020), both virtual reality (VR) and augmented reality (AR) are of great potential to intensify immersive experiences, they can be included in the process of heritage interpretation *in situ* (while travelling, on-site) and *ex situ* ('armchair archaeology') as well.

CONCLUSIONS

The media interest generated by the latest discoveries in palaeoanthropology and their importance for understanding the history of humankind, and in light of the current changes related to global warming revealing the future of humans on Earth to be fragile and uncertain,

it is time for the legacy of this science to find a more prominent place in the museum mainstream. Although artefacts related to early humans and their culture have been present in Polish museology for a long time, they do not stand out significantly from the collections. Among the possible recommendations for achieving change in this regard would be actions aimed at:

- Giving prominence of this type of heritage in museums by focusing on both: “physicality” of specific representatives of humankind and the network of interconnections between humans, other species, the whole of nature and environment (a challenge might be in maintaining balance in this whole narrative); This approach is known and partially practiced in Polish museums with palaeoanthropological and palaeoarchaeological collections (as previously described – usage of dioramas, history windows, replicas, and staged authenticity), but due to the size of the exhibitions, it still leaves room for museum creativity and further development. The author’s proposal is in line with Mikos v. Rohrscheidt (2020), who underlines the necessity of diversity of interpretative messages that results from knowledge about the use of stimuli in learning processes, as well as knowledge of the expectations of modern tourists who prefer a variety of experiences;

- Making fuller use of the tourist potential of *in situ* sites (places of palaeoanthropological and palaeoarchaeological discoveries) through the implementation in archaeotourism of the rich experience of geotourism in the creation of a tourist infrastructure that allows full and optimal use of the wide-ranging tourist values of the sites. Since the tourist experience is usually complex and the tourist exploration is motivated by different needs, in the places of palaeoanthropological discoveries one should reach for their different contexts – related to human biology, culture, the environment in which protohumans lived, and the transformations that took place in this environment under the influence of the presence of our ancestors. Different kinds of tourist attractiveness of the site should not be separated;

- Expansion of the offer and fuller use in school education of museum lessons in museums and open-air museums offering palaeoanthropological and palaeoarchaeological collections, as well as field education in sciences such as biology, geography and selected humanities subjects (history, cultural science, art) for better communication of science in the social dimension. This proposal seems to be a natural consequence of the postulate of presenting palaeoanthropological and palaeoarchaeological collections in extensive spatial, environmental, socio-cultural and scientific/technological contexts. Museums with palaeoanthropological and palaeoarchaeological collections in Poland, as shown, have the regular educational offer, but not always equally broad and targeted at different groups of recipients (mainly early school children, less for special interest groups).

Regarding the small number and rather not spectacular nature of the fossilised remains of protohumans obtained in Poland, it seems that contextual exhibitions will be a more appropriate form of organizing exhibitions. However, where original exhibits can also be shown, a “turn towards objects” is postulated by which is meant, according to

Stobiecka (2017), a turn towards materiality, physical sense, and sensory cognition, allowing for fuller involvement of visitors which encourages reflection on the presented museum artefacts.

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