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Archaeology, film, and digital media: From film archaeology to media archaeology

Abstract. This article on the relationships between archaeology and film seeks to show various aspects of this issue using historical, comparative, and anthropological methods. Aside from cinematic fantasies about archaeology, accurate depictions of archaeology in fiction film have been exemplified; they are even more perfect in documentaries. The visualisation of archaeological monuments goes beyond the framework of classical cinema. It falls within the scope of digital technologies and three-dimensional digitalisation of archaeological features. The utmost subtlety of these relationships lies in the archaeological metaphor of the past in the media and film. Comparing all the analysed situations, we arrive at the conclusion that our approach has been based on the hermeneutic circle model that leads to a pre-understanding of the relationships between archaeology and film in popular culture, explaining of the rank of these relations in archaeological documentaries, and digital imaging of archaeological artefacts, ending with a correct understanding of the relationship of archaeology and film in contemporary concepts of media archaeology.

The furthest thing is the (not) obvious archaeological metaphor of the past of media and film. The furthest thing is the (not) obvious archaeological metaphor of the past of media and film. Comparing all the analysed situations, we come to the conclusion that our procedure was based on the formula of the hermeneutic circle, leading from pre-understanding the relationship between archaeology and film in popular culture, explaining the importance of these relationships in archaeological documentaries and digital imaging of archaeological monuments, to a proper understanding of the relationship archaeology and film in contemporary concepts of media archaeology.

Keywords: archaeology, film, mutual relations.

Introduction

In an attempt to analyse the relationships that occur between the notions of archaeology and film, we embark on our journey to comprehension starting from browsing websites that contain both these terms in their headlines. As it turns out, we are dealing with a catalogue of fiction films that have nothing in common

with pursuing archaeology as a science. On a website called *Filmaster*, we can find classical high-budget pictures such as *Raiders of the Lost Ark* (1981, directed by Steven Spielberg), *Indiana Jones and the Temple of Doom* (1984, directed by Steven Spielberg), *Indiana Jones and the Last Crusade* (1989, directed by Steven Spielberg), *Indiana Jones and the Kingdom of the Crystal Skull* (2008, directed by Steven Spielberg), *The Pyramid* (2014, directed by Grégor Levasseur) or *The Dig* (2021, directed by Simon Stone)[1]. The sole conclusion arising from the above list is that archaeology serves most perfectly as an inspiration for filmmakers, particularly those engaging in adventure and fantasy genres. Nonetheless, fiction films have contributed to the shaping of the stereotypical image of an archaeologist in modern culture modelled on the title character of Indiana Jones or Lara Croft from the picture *Lara Croft: Tomb Raider* (2001, directed by Simon West)[2].

According to Michał Pawleta, "the distant past and the image of archaeology operate within the framework of pop culture as some icons, or stereotypical or simplified patterns […]. However, the image of archaeology present in pop culture has little in common with the reality of the profession of an archaeologist; rather than a work of archaeologists themselves, it is a product of the media: the cinema, the press, books, or computer games. Many researchers believe it to be stereotypical and harmful, and even reality distorting […]. On the other hand, it has specific strengths, since it determines the attractiveness of archaeology in culture and contributes to the consolidation of its positive image […]. This is because it allows archaeology to function well in society, encourages people to learn about the past, shapes a favourable position towards archaeologists' work among society, particularly among investors, and facilitates research fundraising" (Pawleta 2012, pp. 1130–1131).

This article on the relationships between archaeology, film, and digital media seeks to show various aspects of this issue using historical, comparative, and anthropological methods in an attempt to arrive at a hermeneutical explanation of the research problem. As we have sought to demonstrate, aside from cinematic fantasies about archaeology, examples of an accurate depiction of archaeology in feature films can be found, and even more perfect one can be found in documentaries. The visualisation of archaeological artefacts even goes beyond the framework of classical films, transversing into the scope of digital technologies. The utmost subtlety of these relationships lies in the manner in which the archaeological metaphor of the past operates in various fields of culture. It turns out then that the notions of an "archaeological film" and "film archaeology" are further away from each other than the archaeology of the Palaeolithic and the archaeology of the modern era.

[1] *Filmy w gatunku: Archeologia*, https://filmaster.com/tag/archeologia/ (access date: 1.03.2023).

[2] *Lara Croft: Tomb Raider*, https://filmaster.com/film/lara-croft-tomb-raider/ (access date: 1.03.2023).

Fiction film and archaeology

In a fiction film, the depiction of history is strictly governed by a given filmmaker's imagination. It is often the case that historical facts become merely a backdrop for fictional events or undergo a thorough artistic reinvention. Inevitably, each historical construct convention models the image of the past (Piotrowska 2016, p. 69). The reflection on film, the concept of cinema and the image becomes a specific vision of the world held by members of culture who take part in its audio-visual aspect that often depicts their memory. For this reason, not only do filmmakers tell stories of historical episodes of cultural reality, but also co-create it by means of playing with the viewer using symbols and metaphors the language of which a given community can comprehend. In some cases, these are films of global nature (such as *Troy* directed by Wolfgang Petersen, from 2004), whereas in some others, pictures showing local phenomena. The cinematic visualisation of a historical situation is most often congruent with the way it is imagined typical of a given community. A picture tends to present a fragment of a cultural reality referring to the experience of history. From this perspective, it is worth asking to what extent is a given picture consistent with the social experience within the frameworks of which it has been formed (Piotrowska 2016, p. 75).

The depiction of archaeology in fiction film serves also as an expression of society's anticipation of great discoveries, heroic explorers, and extraordinary prehistory (Pawleta 2012, pp. 1124–1126). There are several shades to this problem, though, determined by the degree to which it is consistent with research findings. The first case involves total abandonment of realism in favour of fantasy. The second type of cinematic works employs available scientific findings, though it presents fictional events. The third kind of fiction film is a film version of events that occurred in reality. This classification can be further elaborate on using specific examples. Since the most distant history is bereft of written sources, films dedicated to it are most often artistic visions of directors and production designers classified as part of the science fiction genre. The presence of references to science is the element that differentiates science fiction from horror or fantasy (Loska 2004, p. 51). Analysing the relationships between archaeology and film in this context is not an easy task; nonetheless, one should bear in mind that these pictures shape the general belief about archaeology among viewers. As for *Raiders of the Losk Ark,* the film was seen in Polish theatres by nearly 10 million people.[3] In worldwide cinematography, the better-known works about the human's distant, fantastic past include two films bearing analogous titles, *One Million B.C.* and *One Million Years B.C.* Directed by Hal Roach, the former was made in the United States as

[3] *Filmy z największą widownią w polskich kinach*, http://boxoffice-bozg.pl/filmy-z-najwieksza-widownia-w-polskich-kinach-w-latach-80/ (access date: 1.03.2023).

early as in 1939. Its remake was directed by British director Don Chaffey in 1966. Both these films tell a story of times when aside from dinosaurs, our planet was inhabited also by early humans. The romantic story about love between human ancestors was interwoven with scenes about fighting to survive and building social structures threatened relentlessly by giant reptiles and other animals whose age is determined today at 250–260 million years (Loska 2004, p. 305). Krzysztof Loska writes about film, "prehistory […] is a recurring theme both in the stories that take place in prehistoric times (*One Million B.C.*, *Quest for Fire*) and in the stories about fantastical voyages in search of lost lands (*Lost World, Journey to The Beginning of Time*)" (Loska 2004, p. 62). Cinematographic works of similar content that underestimate the scientific image of prehistory are not solely an element of pop culture. The fantastical depiction of distant past that they present consolidates anti-evolutionist views and promotes the non-scientific theory of creationism according to which the man and all life on Earth have been created simultaneously, in their original form, by a supernatural force, and therefore, creationists believe that the first humans could have existed next to already extinct great reptiles and mammals (Johnson 1989, pp. 65–94).

A different take is presented on the beginnings of the culture of men in fiction films whose creators tried to put to use the current scientific knowledge on that subject, albeit still resorting to fictional stories and characters. The best example of this sort of film is *Quest for Fire* (1981, directed by Jean-Jacques Annaud). The film begins with a sequence showing boars, the animal kingdom from 80 thousand years ago: the camera moves slowly along night-time landscape that seems dead, to then suddenly stop at an unexpected sign of existence… a bonfire that lights up the dark. *Quest for Fire* is a breathtaking reconstruction of a world that bore silent witness to the transformation of an animal into the first man, the *Homo sapiens*. The titular fire is not solely a sign of life, but also a testimony of the birth of a primitive culture. The protagonists' reality is filled with atavistic fear and an ongoing struggle, a perpetual fight with nature and adverse tribes[4]. In the film, representatives of the *Homo sapiens* species co-exist with the Neanderthals, a belief that is accurate according to the most recent findings in evolutionary genetics. The results of long studies by a team of paleoanthropologists from Leipzig supervised by Svante Pääbo (and Richard Green of the University of California) confirmed that the genome of the Neanderthal was consistent with *Homo sapiens* in as much as 99.7%. In turn, tests on bones of the Neanderthal man from Vindija Cave, Croatia (from 38 thousand years ago) proved that he could crossbreed with *Homo sapiens*. Recent findings show also that Neanderthals shared more features with humans from outside Africa (Europeans and East Asians) than with those originating in the Dark Continent[5].

[4] *Walka o ogień*, https://www.cda.pl/video/110546119d (access date: 2.03.2023).

[5] *Walka o ogień (film),* https://pl.wikipedia.org/wiki/Walka_o_ogie%C5%84_(film) (access date: 2.03.2023).

The most objective relationships between fiction film and archaeology occur in films that depict actual historical events. Works of this sort do not pertain to prehistory in its strict sense but archaeological research and their authors. The most recent example of this is a fiction film *The Dig* (2021, directed by Simon Stone), which tells a story of the discovery of a famous royal burial from the 7th century in Sutton Hoo, East England[6], prior to the second world war. In 1938, Edith Pretty (Carey Mulligan) decided that mounds on her estate near Ipswich should be examined. She hired local archaeologist Basil Brown (Ralph Fiennes). Brown and his associates first opened three small mounds – all of them looted in antiquity. In the subsequent season, they explored a large kurgan. It turned out to be holding a wooden boat inside, 27 m long, with a grave chamber in the middle. In the course of subsequent weeks, a vast array of items has been unearthed, including metal arms, armour, jewellery, silver and bronze vessels, and other luxury objects – totalling 263 artefacts. The tomb was dated to the early 7th century. Later, the excavation works revealed rich burials in other kurgans nearby, showing that Sutton Hoo used to house a necropolis of a local Anglo-Saxon social elite (Bahn 2004, p. 320). With the story of the site in its backdrop, *The Dig* shows the relationship between the researcher and the owner of the excavation site, earning the title of the first "archaeological melodrama"[7].

A documentary and archaeology

"Faith in reality" and "faith in a picture" are two determinants that shape society's collective memory. These concepts form the bipolar nature of how a moving picture impacts contemporary culture. Film is an expression and an effect of a cultural game played with the means of that culture as part of social interactions. It becomes a new way of reflecting on the past. For this reason, today, film is promoted to the rank of a metaphor operating as a historical source. It serves as an alluring depiction of the past an account of which has been already told or penned by a historian (Piotrowska 2016, p. 60). Contemplations on the role of film in the popularisation of history are relevant for archaeology, too. A fortiori, the majority of archaeological sites under examination is available solely for researchers while the artefacts retrieved from these sites can be seen only once they had been properly processed and conserved in museum rooms. This lends a tremendous social role to archaeological documentaries (Pawleta 2012, p. 1126).

[6] *Wykopaliska (The Dig) – jak to było z odkryciem w Sutton Hoo?,* https://archeologia.com.pl/wykopaliska-the-dig-historia-sutton-hoo/ (access date: 2.03.2023).

[7] *Wykopaliska (2021) – recenzja filmu*, https://upflix.pl/aktualnosci/wykopaliska-2021-recenzja-filmu-2021-01-30 (access date: 2.03.2023).

An emotional approach to archaeology in film does not pertain solely to the "archaeological melodrama" in the fiction film *The Dig* (2021, directed by Simon Stone), as it can be noted in the title of a prominent artistic feature documentary *Cave of Forgotten Dreams* (2011, directed by Werner Herzog). Herzog's film was shot inside Chauvet Cave in Combe d'Arc (the department of Ardéche), France. It was discovered in 1994 by Jean Marie Chauvet and named after him. It is one of the largest and oldest caves featuring Palaeolithic paintings and bas-relief sculptures. The theme of the featured art involves impressions (negatives and positives) of human hands and depictions of upper Palaeolithic fauna. They are substantially different to the majority of paintings and bas-relief sculptures of the Franco-Cantabrian art since they represent mainly animals that are predators and pose a threat to humans, such as rhinoceroses, lions, and cave bears. Moreover, paintings of horses, the bison, the aurochs, deer, the ibex, and mammoths. Some are situated high on inaccessible walls of caverns. The paintings were made with red and black paint. Owing to preserved charred fragments of torches, it was possible to perform radiocarbon dating studies. The obtained results radically changed previous beliefs about the development of Palaeolithic art (Brezillon 2001, pp. 53–54). Famous sites in Lascaux and Altamira proved nearly two times younger. The age of the charcoals from Chauvet Cave ranges from 35,000 to 37,000 years, proving how complex and well-developed the art of the Aurignacian likely was, created by early *Homo sapiens sapiens* (von Petziger 2018, p 160). Immediately following the discovery of the cave, the French authorities decided to close it to tourists to protect the paintings against damage. Next to the cave, a building was erected housing its copy. The construction works and the fit-out spanned three years and cost about 45 million euros. The replica of the cave has been opened on 25 April 2015[8].

Due to the inability to see the original paintings inside Chauvet Cave, the film dedicated to that site by Herzog is of utmost artistic, social, and cognitive value. It impacts viewers' emotions, too, as accounted by one of the film reviews authored by Michał Walkiewicz. "Herzog is interested exclusively in ghosts. He asks repeatedly what nature was to the prehistoric human and how did the prehistoric human interpret its 'grave silence' (after all, the choral-mystery score speaks for itself). He finds no answer, for it is obviously impossible, and he arranges subsequent hypotheses into a […] *quasi*-scientific lecture on anthropology. When in the key scene, one of the researchers overwhelms Herzog with facts and numbers regarding prehistoric 'artists', the director asks with his […] voice, 'But what did they dream about?' […]. The journey into Chauvet Cave is worth taking regardless. Although the three-dimensional picture offers no grand escapist attractions, the sole dissonance between the oldest art known to mankind and the most cutting-edge technology used for exploring the former is a good reason to do so. 'Styled' as a prehistoric

[8] *Jaskinia Chauveta*, https://pl.wikipedia.org/wiki/Jaskinia_Chauveta (access date: 3.03.2015).

cult site and a holy land, the cave is fit for the role of the main film protagonist. After all, Herzog himself sees the paintings as pre-beginnings of motion pictures. Had he followed this path guided by a self-referential fascination, his film would have been something more than an account of a forgotten temple of art"[9].

As of today, approximately 400,000 archaeological sites have been recorded in Poland[10]. Documentaries that address them are unique. These include, among others, *Karpacka Troja* (2010, directed by Zdzisław Cozac), dedicated to the Bronze Age hillfort and the open-air museum in Trzcinica, Podkarpackie Voivodeship. The very same director shot also other archaeological documentaries with elements of a feature film, which pertain mostly to the origins of Poland: *Wyspa władców* (2012), *Krzyż i korona* (2016), *Miasto zatopionych Bogów* (2013), *Tajemnice początków Polski* (2014), and *Z otchłani pradziejów* (2019)[11]. The documentary *Karpacka Troja* presents a fictionalised history of the hillforts subsequently erected in Trzcinica, as agreed in with archaeologists. In the early 19th century, three pagan deities were discovered at that site. This location has drawn a more particular interest among researchers of antiquity as early as in the 19th century, while in the 20th century, excavation works were conducted there repeatedly. The first professional survey was carried out in 1957 by the Carpathian Archaeological Expedition headed by Andrzej Żaki. In the years 1958 and 1962, the excavations were led by archaeologist Antoni Kunysz. It was confirmed that early medieval hillfort remains used to exist there and artefacts dated to other prehistorical periods were unearthed. Later, presence of fragments of Mierzanowice culture pottery was determined among them by Michał Parczewski, and those of the Otomani-Füzesabony culture by Jan Gancarski. Trzcinica's fame and the outstanding scientific findings were brought by research conducted by J. Gancarski in the years 1991–1998 and 2005–2009. They covered the total feature area of over 20 ares and were of a multidisciplinary nature[12].

In the beginnings of the Bronze Age, a defensive settlement was built in that location. It was guarded by a wood-and-soil embankment with a palisade, a moat, and the steepness of its slopes. It was inhabited by the Pleszów group of the Mierzanowice culture (2100–1650 BC), which remained under strong Transcarpathian influences. The significantly fortified settlement of the Pleszów group covered 60 ares, defended from the south and the west by an embankment whose walls were made with wood and filled with soil. On the other sides, the settlement was guarded by very steep slopes and a palisade. The entry gate was situated from the side of

[9] M. Walkiewicz, *Głosy spod ziemi*, https://www.filmweb.pl/reviews/recenzja-filmu-Jaskinia+zapomnianych+sn%C3%B3w-11224 (access date: 3.03.2015).

[10] Everything on monuments in Poland on a single website, https://geoforum.pl/news/31212/wszystko-o-zabytkach-w-polsce-pod-jednym-adresem-internetowym (access date: 3.03.2015).

[11] *Zdzisław Cozac*, https://filmpolski.pl/fp/index.php?osoba=1183709 (access date: 3.03.2015).

[12] *Karpacka Troja. Historia badań*, https://karpackatroja.pl/karpacka-troja/historia-badań (access date: 3.03.2015).

the western upland. In 1650–1350 BC, the Transcarpathian people of the Otomani-Füzesabon culture of a very high civilizational level used to live there. It is likely that it took the hillfort over and assimilated its previous residents in a peaceful manner. They built a road and the entry gate leading inside the hillfort, strengthened the fortifications, and once they got destroyed in a fire, they rebuilt the fortifications and expanded the settlement, securing it with a palisade and a moat from the side that had provided the easiest access. The Otomani hillfort was nearly 3 hectares large, comprising of a vast acropolis and a settlement outside the city walls. At that time, this location was under the influence of major civilizations of the Mediterranean basin, as well as influences of the Trzciniec culture reaching from the north. For here, we are dealing with a significant prehistoric culture-forming centre. In the course of the most recent excavation studies, traces of occupation of people were recorded also for the time of the Roman influence. In the early Middle Ages, in the years 780–1031 AD, this location housed a local power centre and the immense, multi-unit hillfort covered over 3 hectares enclosed by embankments totalling at 1,250 metres in length. The fortifications of the hillfort in Trzcinica were great engineering structures of our ancestors[13]. The Carpathian Troy Archaeological Open Air Museum project in Trzcinica – a tourist attraction of the region – was co-financed by European Economic Area Financial Mechanism at the amount of over 1,700,000 euros. It was also significantly backed by the Marshall Office in Rzeszów and local governments. The building of the open-air museum began in October 2007 and finished in November 2009[14].

Yet a different take on the relationship between archaeology and film is shown in biographical documentary *Moja archeologia* (1995, directed by Lechosław Czołnowski, Michał Nekanda-Trepka). The film protagonist is prominent Polish archaeologist late Konrad Jażdżewski, who occupied himself with the prehistory of Central Europe and the beginnings of the state of Poland. In 1932, as a young employee at the State Archaeological Museum in Warsaw, he was delegated to take part in excavations of bell graves accidentally unearthed in Brześć Kujawski. From the very first moment, he was fascinated by the region, each of the land's piece hiding an abundance of mysteries, as he learned later on. For years, locals would encounter various odd items when ploughing, which they would then bring to the local school. Owing to K. Jażdżewski's commitment, an archaeological site was created in the vicinity of Brześć Kujawski, where with utmost meticulousness fragments of nearly 50 households of the Lengyel culture settlement from 3.5–3.2 thousand years BC were found. It was one of the first Danubian culture settlements to be found in Europe. The oldest traces of copper products aside, a shocking turn of

[13] *Karpacka Troja. Historia badań*, https://karpackatroja.pl/karpacka-troja/historia-badań (access date: 3.03.2023).

[14] Skansen, https://karpackatroja.pl/karpacka-troja/skansen (access date: 3.03.2023).

events on a pan-European scale was the unearthing of the structures that are today referred to in the global subject literature as Brześć Kujawski-type trapezoidal-shaped houses. Apart from this settlement, traces of 16 other cultures were also discovered – from the Mesolithic to the early medieval. Due to the ongoing nature of the occupation, for the archaeologist, this site was a true gem. Another grand discovery by K. Jażdżewski was the so-called tombs of Kuyavian giants, one of the oldest in Europe, formed at the same time as the Egyptian pyramids. After the war, Prof. K. Jażdżewski created from scratch the Łódź archaeological centre. Piling obligations prevented him from continuing his research work in Kuyavia; nonetheless, it was conducted further by his disciples. Many residents of Brześć remember Professor to this day. They recall him not solely as a scientist, but also as a kind, virtuous man. They also emphasise that he was a great friend to children, whom he would show numerous finds to with seriousness and for whom he would always carry some sweets in his pockets. In the film *Moja archeologia,* the main character is described by his students, family, and colleagues. Previously unknown film content shot before the war in Gdańsk, where Professor discovered the wooden and amber crosses that Saint Adalbert used for baptising fishermen in the 9th century[15], was also employed.

The latest tendencies in providing a film documentary of archaeology pertain to brief presentations of popularising nature uploaded on YouTube. For instance, on the website of the Faculty of Archaeology, University of Warsaw the following short films are available for viewing: *Prezentacja Europejskich Dni Archeologii 2022 na grodzisku w Bródnie*, *Textile technology in Bronze Age Greece, Cipher from the Past, Sympozja Egejskie: Iconography and Style, Archaeological Sciences, Craft and Production,* and others[16]. Similar online productions refer to the digital 'revolution' in archaeology and its relationship to digital media (Pawleta, Zapłata 2012, pp. 1169–1174).

New digital visualisation technologies and archaeology

The introduction of digital technologies to archaeology entailed the emergence of new opportunities for diagnosing, inventorying, protecting, testing, and popularising archaeological resources (Zapłata 2012, p. 491). Except for film fiction about prehistory, most often bereft of scientific grounds, the sole media used by archaeologists or directors addressing this subject were analogue film and photography. Film documentation was a form of recording the state of preservation and the manner

[15] *Moja archeologia*, https://filmpolski.pl/fp/index.php?film=429573 (access date: 3.03.2023).

[16] *Archeologia UW*, https://www.youtube.com/channel/UCdHizOCUI1nz1KndZuvLLzg (access date: 3.03.2023).

in which stratigraphic units and archaeological artefacts had been examined, thus serving as a non-obligatory complementary element of the documentary process. This form of taking records, modified owing to digital technologies, is more and mor3 often confirmed to be useful. This type of data recording accompanies also registering of research procedures directed at experimental archaeology works (Zapłata 2012, p. 487).

The process of digital visualization of archaeological features leads to the creation of their 3D (three-dimensional) images. According to Rafał Zapłata, the model of the process of devising a visual digital documentation is as follows: (1) specifying the real feature or analogue documentation as the basis for digitalization; (2) digitalization of the features directly to a digital form; (3) creating digital "counterparts" of the features and the analogue documentation; (4) digital documentation of the digitalised counterparts of the natural features and the digital features. The obtained result are records containing data of physical features, digital features, and documentation of data pertaining to digital features (metadata) (Zapłata 2012, p. 493). The complex process of digitalising archaeological features can culminate in a dynamic visualisation of the latter, similar to special effects in fiction films, albeit thoroughly consistent with the results of the scientific digital reconstruction of destroyed features or objects.

One of the examples described by Małgorzata Markiewicz is the most recent 3D visualisation of the Hallstatt settlement in Stary Śleszów, Żórawina commune, Lower Silesia. Broadacale excavation works at site 17 in Stary Śleszów, Żórawina commune, were commenced in 2000 by the Team of Archaeological Rescue Studies of the Institute of Archaeology and Ethnology, Polish Academy of Sciences in Wrocław. As a result of the conducted excavations, as many as 195 ares of the site were surveyed, revealing 283 features. In the course of the excavations, relics of a settlement from the early Iron Age were found, which stands out due to its layout. On its premises, a zone was designated, most likely fenced by a regular round-plan structure in the form of a palisade. This development featured Upper Lusatian-style buildings. It was an inhabited, distinct part of the settlement (Markiewicz 2018, p. 384). The objective of the innovative scientific project evolved into making a three-dimensional model of the buildings unearthed at the site in Stary Śleszów, which was employed for undertaking further studies on the spatial and functional organisation of the settlement. The digital reconstruction was created based on an analysis and interpretations of the source materials, in line with the guidelines contained in the London Charter. This document has been formulated in 2009 by the international team of researchers of the Department of Digital Humanities of the King's College in London and Science and Technology in Archaeology Research Centre, the Cyprus Institute. It is a collection of methods ensuring top quality of three-dimensional reconstructions and control mechanisms allowing one to verify historical accuracy of 3D models. The Charter is a record of recommended

principles that should be employed for using computer visualisations reliably in analysing, interpreting, and managing cultural heritage goods (Markiewicz 2018, p. 388).

As M. Markiewicz notes, works on the three-dimensional reconstruction of the buildings of the settlement in Stary Śleszów commenced with a broad source query. It consisted in analysing the available documentation pertaining to the archaeological research (site plans, feature plans, drawings, photographs, and descriptions: research logbook, catalogue of features), and publications on construction of the early Iron Age. In the course of these works, knowledge was obtained that is acquired during virtual reconstruction, in the process of analysing and interpreting the source material, and also by analysing the missing data. As part of the next stage, based on the previously digitalised and vectorised plans (in the scale of 1:100 and 1:20), three-dimensional models of individual buildings and the palisade were created. Models of animals, plants, and fences were also made, among others. The modelling of the features was done using software for creating 3D graphics – Autodesk 3ds Max with a V-ray Adv for 3ds max engine rendering (Chaos Group). Concurrently to the modelling, a process of creating textures, that is, photographs properly prepared in a raster graphics editor Adobe Photoshop was taking place. The reconstruction of the buildings from the Stary Śleszów settlement was made using, among others, photographs of old wood, stones, soil, sand, and animal fur. Once the modelling process was completed, textures were overlaid on specific elements of the architecture. In the subsequent phase of creating the 3D visualisation, a proper model for the light, reflection, and refraction was applied. The next step was to set up the virtual properties of cameras. Thus, the so-called observation points were established, which determine the entire perception of the entire visualization by the viewer. The last stage of the digital recreation of the settlement is rendering and saving the prepared digital images.

Rendering entails creating an image based on a model covered with a photorealistic texture. In that process, the software analyses the interactions between the matter and the light. This action aims at presenting the model in the most realistic way possible. The visualisation of the buildings of the Stary Śleszów settlement employed the V-ray rendering engine (Chaos Group). This allowed the obtained image to be reflected in a more realistic manner. In the subject literature, it is often stressed that photorealistic visualisations give a false impression that the depicted object really exists or that the data that the reconstruction is based on is true and have high credibility and reliability. Therefore, it is essential to provide a description of the reconstruction process, to show all the hypothetical elements so that the recipient was able to accurately interpret the image they are shown. To avoid issues related to data loss, individual actions were archived in accordance with the guidelines contained in the London Charter. As a result of the efforts to recreate the Stary Śleszów settlement buildings in 3D, as many as 38 files were

created containing subsequent stages of the reconstruction – from modelling specific elements to making an advanced lighting and camera setup. Eight three-dimensional digital images of the settlement and three tables showing: classification of the features function-wise, a spatial presentation of the GIS analysis results and development phases. Owing to the use of the software, proper manipulating of the 3D models, based on the mutual relations between them it was confirmed that there were two development phases previously suggested by Jarosław Kopiasz in the source study (Markiewicz 2018, pp. 392–393). Similar procedures have been conducted by M. Markiewicz in a different situation related to 3D visualisations of Hallstatt graves at the burial site in Domasław, Wrocław district (Markiewicz 2013, pp. 215–231).

Małgorzata Markiewicz believes that 3D reconstruction is a new form of learning, studying, and experiencing the past. This situation stems from a different manner in which the information about the world around us is acquired by contemporary society whose perception of reality has been shaped by the television and the Internet. It becomes increasingly more common for traditional verbal descriptions of monuments and artefacts, that is, descriptive narrative predominant in archaeology, to be replaced by an image. Digital visualization of features carries also a practical aspect since it increases the number of prospective recipients to entire society. Especially those groups that are not interested in the past, available mainly in the form of a descriptive (verbal) narrative that necessitates having specific knowledge of expert terminology. According to M. Markiewicz, 3D visualization is a form of narrative in archaeology that complements the descriptive message. In the modern society, where the dominant role starts to be played by the image in the cognitive process, popularised in the past by means of a digital reconstruction is tremendously important. It is visuality that determines how we experience and analyse historical knowledge. A visual message is communication, a carrier of information about the past. Showing the layout of the settlement in a spatial manner allows the recipient to better understand the message, since this image pertains to its own perceptual experiences. The three-dimensional reconstruction of the Stary Śleszów settlement was presented in a way that would make the recipient read the information as intended by the sender-researcher. The clear visual message requires no specialist preparation to be read. The image in the form of a reconstruction is complete, thoroughly said, meaning that it leaves no room for a broader interpretation. It is the researcher who defines the vision of a building to be reconstructed. For this reason, when formulating a visual message that carries information on cultural heritage, the author has to maintain critical distance to the analysis that is being performed. The obtained results are not a reproduction of the past (even if we have complete records at our disposal), but its version that has been made most likely (Markiewicz 2018, pp. 388–396).

Conclusion: from archaeological films to film archaeology

The journey to comprehension following archaeology, film, and digital media does not end with the new technologies offering digitalised visualisation of monuments. To some extent, it even surpasses the previously applied notion of archaeology. Siegfried Zielinski is one of the prominent media studies figure who initiated the debate referred to as the archaeological discourse, determining its coordinates. He considers his take on media archaeology to be an alternative to the "official" media history dictated by subsequent inventions that likely would not have taken place if not for the undertakings of marginal nature, believed by those close to inventors to be quirks, deviations from the norm. They have been described, profusely illustrated, and incorporated into a broad cultural context in the book *Archeologia mediów*. This is because from the perspective of the present-day dynamic growth of the media, the marginalised undertakings proved to be the "prehistory" of our times. They provided the basis for the explosion of the 20th-century mass media, serving as their technological foundations, particularly mental ones, for they brought a reflection on the role of seeing and hearing machines as devices on the border between magic and science. Today, these formerly peculiar ideas are distinctly fulfilled by the practice of virtual space. Like an archaeologist, the author of *Archeologia mediów* uncovers more and more layers of the past. In S. Zielinski's narrative, the history of tangible culture intertwines with the accounts of symbolic culture. The archaeology of the media complements the media landscape, adding the lost or abandoned forms of media awareness from the "old past", like magical imaging machines, a magical lantern, apparatuses for making that which is distant closer, *camera obscura,* and other archaic devices. Their repertoire is incredibly rich, whereas new media appear in this respect not quite new anymore, for originating in the power of imagination from distant past[17].

Thomas Elsaesser translated the archaeology of the media in accordance with principles similar to S. Zieliński to the area of cinema and film. According to T. Elsaesser, media archaeology pertains to retrieving diverse sources of deeply rooted contexts of what later became known as cinema. One of the methodological measures in media and film archaeology that makes it stand out from film history, is that it does not capture history as unconditionally linear, as if it was a vector of an unavoidable progress towards a specific goal. This is due to the fact that we need models that are more multidirectional and multiform rather than unidirectional, models that can capture both the negative and the positive feedback in the development of the media and the film mindset[18].

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[17] S. Zieliński, *Archeologia mediów*, https://prospero.e-teatr.pl/nauki-spoleczne/2201-archeologia-mediow.html (access date: 3.03.2023).

[18] *Historia filmu jako archeologia mediów. Z Thomasem Elsaesserem rozmawia Fryderyk Kwiatkowski*,

As we have attempted to prove, aside from film archaeological fantasies, there are examples of accurate depictions of archaeology in a fiction film, which are even more perfect in documentaries. The visualisation of archaeological artefacts has stepped beyond the framework of a classical film, stepping into the realm of digital technologies. The most advanced in this regard is the archaeological metaphorization of the past of the media and film. Comparing all the analysed situations, we arrive at the conclusion that our conduct was based on the hermeneutic circle formula (Rosner 1989, p. 42), leading from pre-understanding the relationship between archaeology and film in popular culture, explaining the rank of these relations in archaeological documentaries and digital imaging of archaeological monuments, ending with the proper understanding of the relationship between archaeology and film in the concepts of S. Zieliński and T. Elsaesser, which emphasise how the present-day state of archaeology and the media becomes combined with a past that is never "the past" but lives in the present (Markiewicz 2018, p. 396).

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