POLISH-JAPANESE ACADEMY
OF INFORMATION TECHNOLOGY

New Media Art Department

Graphics

Multimedia communication

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Bachelor

An illustrated calendar for children with fun facts about dinosaurs and AR aspect of reading out loud the information by a Polish professional actress.

Main Supervisor **Greta Samuel**

IT Supervisor **Marcin Wichrowski**

What Can the Depiction of Dinosaurs in Popular Culture Tell Us About How We Understand Facts in Our Visual Culture?

Theoretical Supervisor **Joshua Plough**

Warsaw, September, 2024

POLISH-JAPANESE ACADEMY
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Praca licencjacka

Ilustrowany kalendarz dla dzieci zawierający ciekawostki o dinozaurach z aspektami użycia technologii AR do odczytania tekstu przez profesjonalną polską aktorkę.

Promotor Główny- **Mgr. Greta Samuel**

Promotor Techniczny- **Mgr. Inż. Marcin Wichrowski**

Czego może nauczyć nas wizualizacja dinozaurów w popkulturze o naszym postrzeganiu faktów w kulturze wizualnej?

Promotor Teoretyczny- **Mgr. Joshua Plough**

Warszawa, wrzesień, 2024

ABSTRACT

This thesis explores the relationship between misinformation and mass media. Through the example of palaeo-art in pop culture and its subsequent creation of archetypes of *dilophosaurus* and *velociraptor mongoliensis,* this essay dives into how we understand images and facts. Recent examples, such as the Ukrainian war, the use of AI in fake news (particularly AI-generated photos of former president of USA, Donald Trump being arrested), and the alteration of images of high-profile figures (for instance, altered photos of Princess Catherine), are examined. The overarching question is how group behaviour influences with our perception of facts and visuals.

Keywords: palaeo-art, misinformation, mass media, authority, pop culture, images

STRESZCZENIE

Niniejsza praca bada związek między dezinformacją a mediami masowymi. Na przykładzie paleosztuki w popkulturze i jej późniejszym tworzeniu archetypów gatunków *dilophosaurus* i *velociraptor mongoliensis*, esej ten zgłębia, jak rozumiemy obrazy i fakty. Najnowsze przykłady obejmują wojnę na Ukrainie, użycie AI przy tworzeniu fake-newsów (konkretnie zdjęcia wygenerowane przez AI przedstawiające byłego prezydenta Stanów Zjednoczonych Ameryki- Donalda Trump'a, w trakcie aresztowania) oraz przekształcanie zdjęć osób szczególnego statusu (konkretnie obrobione zdjęcia księżniczki Catherine). Główne pytanie dotyczy tego, jak zachowania grupowe wpływają na naszą percepcją faktów i wizualiów.

Słowa kluczowe: paleosztuka, dezinformacja, media masowe, autorytet, popkultura, obrazy

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INTRODUCTION

Science as we know it has gone through many changes, revolutions and evolutions, following humankind as it progressed. The knowledge produced has been communicated in different ways in order to preserve it for future generations. One of those ways is the usage of media, specifically utilising images. Visualisation of the contents of our minds does not reach as far back in history as speech, but much further than writing. Therefore, it is only natural that pictures became one in the company of the ways of communication and as follows, preservation of our knowledge. As South African History Online portal says: "Cave drawings were murals that people painted onto the walls of caves and canyons to tell the story of their culture. They would tell stories of battles, hunts and culture."[1] Images were, are, and will always be a principle of communication, whether we are using mediums or just body language. Our brain is made to recognise visuals and make connections between what we see and the added semantics- the study of meanings in a language[2], whether we had them by means of evolution as a species or as a society.[3] The first chapter shows us the short history of dinosaurs in pop culture. The second chapter focuses on two examples of misinformation in popular media using the *Jurassic Park* movie adaptation. The third closing chapter informs about the power of image and uses modern political examples as a way to portray the phenomena of the public being more willing to trust information that is provided with an image.

[1] "The Oldest Forms of Human Communication", South African History Online, https://www.sahistory.org.za/article/oldest-forms-human-communication

[2] Definition of semantics Cambridge Advanced Learner's Dictionary & Thesaurus, Cambridge University Press, https://dictionary.cambridge.org/dictionary/english/semantics

[3] "The oldest forms of human communication", South African History Online, , https://www.sahistory.org.za/article/oldest-forms-human-communication

CHAPTER 1: PALAEO-ART AND THE POWER OF IMAGE

Palaeo-art is a field of art where artists are responsible for creating visualisations of depictions of life in prehistoric times, based on the available scientific research. “Available” happens to be a keyword in this case, in view of the fact that it guides us to the conclusion that older examples of palaeo-art in various media (and in general), had not as much knowledge to base the designs of lifeforms on. As Zoë Lescaze, the author of the documentary book titled *Paleoart: Visions of the Prehistoric Past*, says: “No one’s ever seen a prehistoric animal, and a fair amount of the dramatic narrative associations we all have of that time period do not come from the fossil evidence, but from people imagining what these animals looked like in life (...)”.[4] The issue that all of us are facing in modern times is that palaeo-art has been popularised in mass media and switched to imaginative visualisation, unobstructed by scientific research, and that is why most of it is made by a variety of artists and designers, who do not actually belong to the field of palaeo-art.

In discussions of prehistory, the term typically refers to creatures before the Palaeocene, largely due to the scarcity of preserved soft tissues in fossils from this period.[5]

Prehistory became a big part of media when dinosaurs found their place in popular culture, where afterwards, scientific and artistic imaginary became to a lesser degree able to be distinguished apart. This also shows us how we all perceive media and what influence it has on our ability to distinguish factual from fictional information.

Media since the times of the first man became a very indispensable way of passing information and of its storing.[6] The earlier in time we go, the not-so-developed version of it all of us can see, and in different quantities and accessibility. Some fields of science could not be contained in one of the forms (image, writing, and so forth) as humankind gathered a lot of knowledge as the time went on.

[4]Victoria Turk, "Bloodshed and Impressionism: how paleoartists imagined dinosaurs over the decades", Wired, 11 July, 2017, https://www.wired.com/story/paleoart-dinosaurs-art/

[5]William A. Berggren, “Cenozoic Life”, Britannica, https://www.britannica.com/science/Cenozoic-Era/Cenozoic-life

[6]“The oldest forms of human communication”, SAHO

A great example of this would be, where dinosaurs started to show up in media as various kinds of creatures, like dragons[7], and finished as fascinating, reptile-like ancestors of birds.

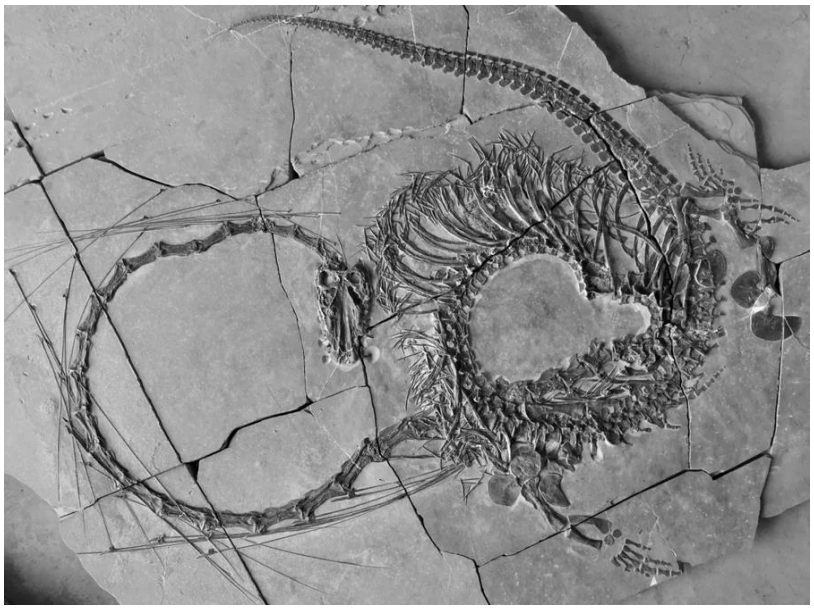

Fig.1 *Dinocephalosaurus orientalis*, National Museums Scotland

We can record humans discovering fossils back to ancient China, although "dragon" remains were not found on purpose. Hence some first documentations of dinosaur bone excavation expeditions date back to as little as the 18th century, after correctly documenting the bone from 1677, which at that point in time was thought to belong to a human giant.[8]

After that, the palaeontology field flourished and is improving to this day. However, it is a field of science that is still based mainly on theories and guesses.[9] That is why it is very prone to errors, although information in this field is constantly updated. Unfortunately, that does mean that some ideas are imprinted and probably will be for a long time, just as a consequence of the impact of mass media on humankind.

[7]Jack Tamisiea, "Stunning Dragonlike Fossil Reptile Found in China", 28 February, 2024, https://www.scientificamerican.com/article/stunning-dragonlike-fossil-reptile-found-in-china/

[8]Alexander W. A. Kellner *Brief Review of Dinosaur Studies and Perspectives in Brazil*, manuscript received on 22 May, 2000, accepted for publication on 19 June, 2000, https://www.researchgate.net/publication/26339862_Brief_review_of_dinosaur_studies_and_perspectives_in_Brazil

[9]"What Dinosaurs ACTUALLY Looked Like?" YouTube, uploaded by Kurzgesagt – In a Nutshell, 12 October 2021, https://www.youtube.com/watch?v=xaQJbozY_Is

1.1 THE FIRST DINOSAURS IN POP CULTURE

Amongst the first depictions of a dinosaur in pop culture was the one in Charles Dickens's *Bleak House* (1852). The creature depicted there was a Megalosaurus, a theropod that was in the class of the first-named dinosaurs. The author wrote, "As much mud in these streets as if the waters had but newly retired from the face of the earth, and it would not be wonderful to meet a

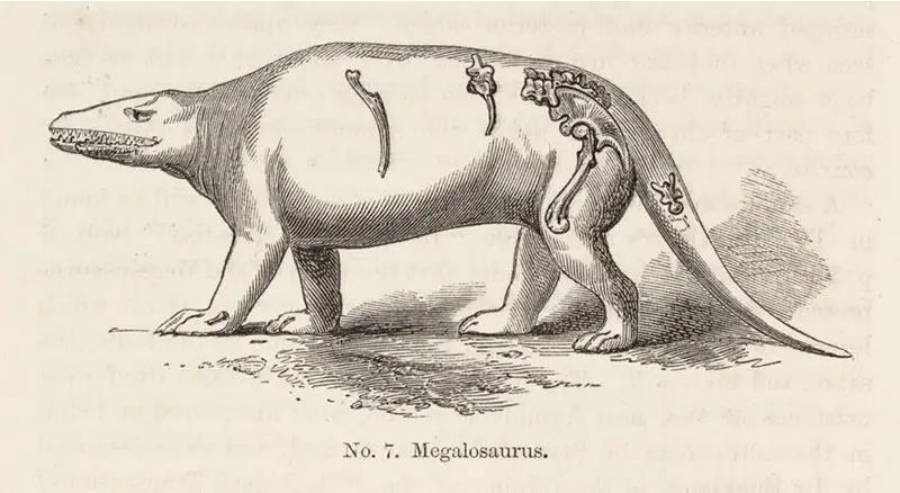

Fig.2 *Megalosaurus*, illustrated by Richard Owen, 1854, Linda Hall Library

Megalosaurus, forty feet long or so, waddling like an elephantine lizard up Holborn Hill."[10] From the illustration in the book, we all can conclude that people did not connect the dinosaurs and birds together, that is why the Megalosaurus here is shown as a quadruped (walking on all four limbs), a truly meaty animal. It looks like a combination of a bear, a shark, and some kind of crocodilian. Dinosaurs come in two groups- saurischians (if their hip arrangement correlated to lizards one)[11] and ornithischians (if their hip arrangement correlated to the one of birds)[12]. As a consequence of this way of distinction, after further inspection of the bones, there would be no way for Megalosaurus to be portrayed nowadays as a quadrupled reptile. Instead, it would be bipedal (walking on two hind legs), like all of the carnivorous dinosaurs we now know of.[13]

[10]Charles Dickens, *Bleak House*, 1852, Bradbury & Evans, fragment found on website, https://www.lindahall.org/about/news/scientist-of-the-day/charles-dickens/

[11]Britannica, T. Editors of Encyclopaedia, "saurischian.", Encyclopaedia Britannica, 24 February, 2019, https://www.britannica.com/animal/saurischian

[12]Britannica, T. Editors of Encyclopaedia, "ornithischian.", Encyclopaedia Britannica, 24 February, 2019, https://www.britannica.com/animal/ornithischian.

[13]"Were all carnivorous dinosaurs bipedal, or were there some that were quadrupedal?", Quora, https://www.quora.com/Were-all-carnivorous-dinosaurs-bipedal-or-were-there-some-that-were-quadrupedal

In the image below, taken in The Oxford University Museum of Natural History, we can see the evolution of the understanding of

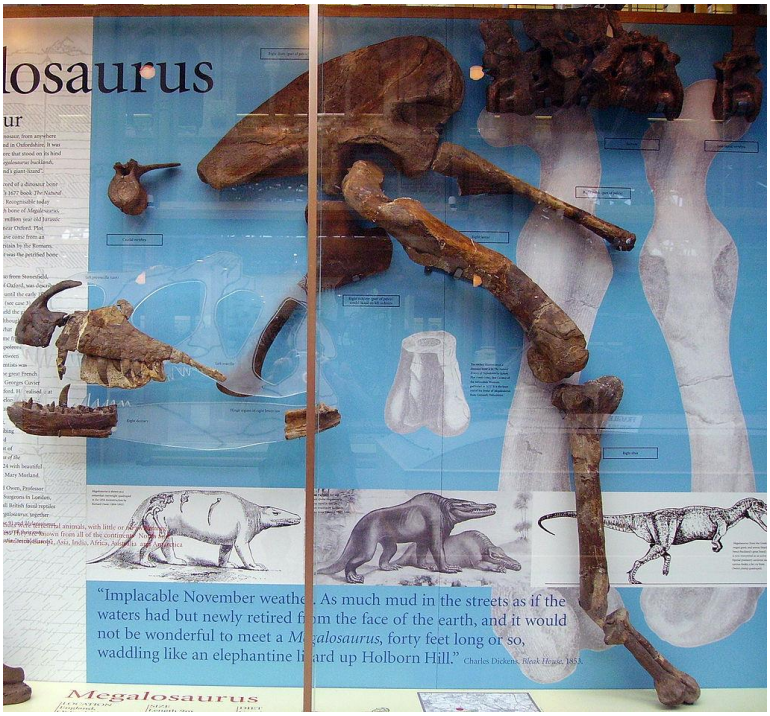

Fig.3 *Megalosaurus* exhibit, The Oxford University Museum of Natural History

the Megalosaurus. It is interesting how even the later version still shows it as a quadruple animal. Whereas if we would take a look at the other studies about dinosaurs, we all would be able to see that most carnivorous dinosaur species were bipedal. A conclusion can be made that the greatest influence on the design of this particular dinosaur species was the fact that scientists in those days did not see the relation between birds and dinosaurs. They did not put them in the category since dinosaurs were known as reptilian creatures. Thanks to modern science, most of society knows that dinosaurs are closely related to birds. Nowadays it is also known that dinosaurs, as was mentioned a few paragraphs above, are divided mainly by the arrangement of the pelvis, which is either positioned in a way specific for avian creatures or reptilian wildlife. In fact, it would only be enough to compare the pelvis of Megalosaurus to the pelvis of a bird and at that point, even a layman would know that this particular dinosaur species would most likely be bipedal, like all avian creatures.

However, due to the lack of these connections in information, we all can see how the depiction and understanding practically does not change at all. Only when we add modern knowledge to

it does the drastic metamorphosis occur from a four-legged, clumsy, massive lizard to a predatory, reminiscent of its avian relatives, two-legged creature. Analysing the first illustrations, it can be concluded that there was an assumption made, that the skull would be longer because, assuming that the dinosaur walked on all fours, at that moment such a short jaw would not make much evolutionary sense, since most animals like that, do not have a long enough neck. Maybe, it could be for the reason that scientists in former times, have seen that crocodilians, being quadrupled reptiles, have comparatively short necks and relatively long snouts. However, when a creature would walk on two legs, like birds, we would see that usually there is greater movement of the neck and is relatively long for the neck-to-body ratio.

These three illustrations in The Museum of Natural History show us how palaeo-art works, how indispensable it is and how much information an image can bring to the table. If it were not for the fact that all the illustrations are explained as representing the same particular species of a dinosaur, it would be possible for a member of the public to understand that the illustrations showed completely different species. Such is the power of images. "They act to frame our perception of the world, including gender, age, ethnicity, and social behavior. They act to confirm, reinforce, or dispel stereotypes. They act to constitute reality and to form identity".[14] It is amazing how differently scientific information and fossilized remains can be interpreted and how they can lead to completely different conclusions that are subsequently carried on in popular visual depictions.

Currently, palaeo-art also benefits from the use of modern technology in the field of palaeontology, such as 3D scanning,[15] which makes the work much easier, as it allows scientists to get a complete image of a fossil in different dimensions.[16] As it is written in one of the 29th CIPA Symposium *Documenting, Understanding, Preserving Cultural Heritage: Humanities and Digital Technologies for Shaping the Future* papers:

[14] Weber W, Eriksson Y and Tan S, *Editorial: The power of images: how they act and how we act with them,* 1 Front. Commun, 2023,
https://www.frontiersin.org/journals/communication/articles/10.3389/fcomm.2023.1320409/full

[15] "Edmontosaurus reimagined", National Geographic, 15 September, 2020, video,
https://www.nationalgeographic.com/science/article/edmontosaurus-reimagined

[16] Anshuman J. Das, Denise C. Murmann, Kenneth Cohrn, Ramesh Raskar, *A method for rapid 3D scanning andreplication of large paleontological specimens,* 5 July, 2017,
https://www.researchgate.net/publication/318219491_A_method_for_rapid_3D_scanning_and_replication_of_large_paleontological_specimens

> "The morphometric values of reference specimens that are used for comparison purposes are tabulated in scattered scientific papers. Moreover, there are several issues regarding the lack of consistency of the measurements recorded by different authors and the limitation to the study of the predefined features. These drawbacks could be sidestepped if precise three-dimensional models (...) were publicly available".

Thanks to 3D scanning, specimens can be tagged with more precision than ever. This helps palaeo-artists with visualizing the animal's body parts and their arrangement in a completely different way; some fossils are compressed enough that without a 3D scan, it would be difficult to visualize this particular specimen very close to reality, in terms of volume.[17] As it is written in the research article "A Method for Rapid 3D Scanning and Replication of Large Paleontological Specimens": "3D scanning can provide depth maps in a non-invasive, non-contact manner which is attractive for studying paleontological specimens due to their delicate physical properties. For instance, it has been used to estimate the mass of dinosaurs by combining it with computer modeling."[18]

It should come as no surprise, that in modern times science has an increased amount of tools than ever to reconstruct different concepts, however, what is also very significant is that palaeontologists managed to find some exceptionally well-preserved fossils that show us how most probably a species of a dinosaur looked like, when alive. For example, palaeontologists have classified fossils with imprints of quills and also some pigment particles that have fossilized, and that can show us what the pattern of the skin and the colour of it looked like.[19] As Theagarten Lingham-Soliar and Gerhard Plodowski say: "The present record of color is the first in a non-theropod dinosaur and only the second record in a non-avian dinosaur. Because

[17]J.M. Valle-Melón, J. Korro1, J.C. Corral, B. García, X. Pereda-Suberbiola, E. Isasmendi, A. Torices, Á. RodríguezMiranda, *A 3D Repository of Dinosaur Teeth: The Generation of Open Resources For The Classification And The Identification of Specimens*, 25–30 June, 2023, https://www.researchgate.net/publication/372345175_A_3D_REPOSITORY_OF_DINOSAUR_TEETH_THE_GENERATION_OF_OPEN_RESOURCES_FOR_THE_CLASSIFICATION_AND_IDENTIFICATION_OF_SPECIMENS

[18]Anshuman J. Das, Denise C. Murmann, Kenneth Cohrn, Ramesh Raskar, *A method for rapid 3D scanning and replication of large paleontological specimens*, https://www.researchgate.net/publication/318219491_A_method_for_rapid_3D_scanning_and_replication_of_large_paleontological_specimens

[19]Jakob Vinther, "Fossil Pigments Reveal the True Colors of Dinosaurus", Scientific American, 1 March, 2017, https://www.inverse.com/article/21037-psittacosaurus-dinosaur-color

of its resistance to degradation and ability to produce various color tones from yellows to blacks, we suggest that melanin was the dominant chemical involved in the coloration of Psittacosaurus."[20]. Some other versions of fossils that carry an enormous quantity of information for palaeontologists and palaeo-artists are for example the ones that have imprints of feathers, which could show that the particular species was covered in them. There also has been found a fossil that has preserved pigments of feathers (alongside them), and thanks to that palaeo-artists can reconstruct this bird-like species in very close detail, retaining the length of the feathers, the size of the species and its colouration.[21] As a result of these revolutionary discoveries, dinosaurs changed from dull-coloured, leathery lizards, to a colourful, and fascinating group of animals.

As time went on, dinosaurs gained increasing popularity in the media, while science also continued to gather more information about different species and also discover new ones. But even though science flourishes with time, the fine line between pop culture and science started to fade in the media. Palaeo-art had more "art" in it rather than "palaeo". Victor Monnin says in his *The Dinosaur Renaissance 1960s-80s: A Foundational Episode for the Historiography of Paleoart* article-

> "Considering this specific issue, as well as others related to the training of future paleoartists, the over-representation of dinosaurs and vertebrates in paleoart in proportion to other groups, the education of the public to distinguish actual paleoart from fictional and popular representations of prehistoric life, etc., a consolidated field of paleoart history could serve as a valuable resource for the needs of the paleoart community."[22]

Still, palaeontology is a field of science that is based mainly on theories and guesses (at least when it comes to data about the Cenozoic era).[23]

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[20]Lingham-Soliar Theagarten, Plodowski Gerhard, *The integument of Psittacosaurus from Liaoning Province, China: Taphonomy, epidermal patterns and color of a ceratopsian dinosaur*, 2010, https://www.researchgate.net/publication/42768853_The_integument_of_Psittacosaurus_from_Liaoning_Province_China_Taphonomy_epidermal_patterns_and_color_of_a_ceratopsian_dinosaur

[21]Jacqueline Ronson, "We know what colors dinosaurs were", 16 September, 2016, https://www.scientificamerican.com/article/fossil-pigments-reveal-the-true-colors-of-dinosaurs/

[22]Victor Monnin, *The Dinosaur Renaissance 1960s-80s: A Foundational Episode for the Historiography of Paleoart*, June, 2023, https://www.researchgate.net/publication/371582597_The_Dinosaur_Renaissance_1960s-80s_A_Foundational_Episode_for_the_Historiography_of_Paleoart

[23]"What Dinosaurs ACTUALLY Looked Like?" YouTube, Kurzgesagt – In a Nutshell, https://www.youtube.com/watch?v=xaQJbozY_Is

CHAPTER 2: MISREPRESENTATION OF DINOSAURS IN MASS MEDIA

2.1 MISREPRESENTATION OF THE VELOCIRAPTOR IN JURASSIC PARK AS AN EXAMPLE IN THE MEDIA

Fig.4 Two Velociraptors in the "kitchen scene" movie still, *Jurassic Park,* directed by Steven Spielberg, Universal, 1993

A fitting example of mass media spreading misinformation through visuals would be the misrepresentation of the Velociraptor (*velociraptor mongoliensis*). On the strength of the popular media, society has an imprinted visualization of it that differs drastically from scientific research. There were many factors to it such as simple human error in research, artistic freedom, ignorance, nostalgia for cinematic classics, and impact on other fields, not only science.

The chain of visual mistakes started with the creation of Michael Crichton's *Jurassic Park.* The author was fascinated by the social issue of genetic engineering- which flourished throughout the 1970s to 1990s- and decided to portray the issue by writing a science fiction screenplay in 1983.[24] Main focus was the dinosaurs, as he was transferring his idea to paper during the time

[24] Peter Hodges, " Jurassic Park at 30: How its CGI revolutionised the film industry" , The Strait Times, Opinion, last entry by 13 June, 2023, https://www.straitstimes.com/opinion/jurassic-park-at-30-how-its-cgi-revolutionised-the-film-industry

known as the "Dinosaur Renaissance".[25] He decided to publish it as a novel in 1990, which is now one of the best-recognized titles (mostly not as a consequence of the book, but more on that in later chapters).

Michael Crichton while creating his book wanted to stay true to science when it comes to prehistoric creatures, so consequently it would make the novel even more uncanny and impactful on readers. Unfortunately, some of the dinosaur species that he wanted to include- did not meet his expectations. While creating one of the main "antagonist" species- Velociraptor, he was basing this creation on Utahraptor (*utahraptor ostrommaysi*) and mostly on Deinonychus (*deinonychus antirrhopus*), which vary a great deal from the real specimen. He wanted the dinosaur to be terrifying, powerful and to be remembered. These two species (Utahraptor and Deinonychus) were perfect for the task. In the end, he chose to use Velociraptor as a name (where *velociraptor* is a bigger group, this research focuses on the *mongoliensis* one) for the terrifying creature that protagonists are stumbling upon throughout the books. Actually, this whole combination was made a bit earlier in the 1988 book *Predatory Dinosaurs of the World* by palaeo-artist Gregory Scott Paul, where the *deinonychus* group was put under the *velociraptor* name, because of their skeletal similarities[26]. Palaeontologists disagreed since *deinonychus* was native to North America and *velociraptor*- to Mongolia. Even after *Predatory Dinosaurs of the World* faced a big backlash from the scientific community, the damage has been done as the book (*Jurassic Park*) becomes a huge hit.[27] In the *Jurassic Park* novel, Velociraptors are described as reptiles with heads similar to those of a lizard or crocodilians, curved claws, and "leathery" skin "with a pebble-like texture", yellow-brown in colour with reddish stripes[28].

However, according to science, this dinosaur was much smaller and in all probability was covered in feathers (although the feather problem is more connected to the time, as, at that

[25] Victor Monnin, *The Dinosaur Renaissance 1960s-80s: A Foundational Episode for the Historiography of Paleoart*, HoST - Journal of History of Science and Technology, June, 2023, https://www.researchgate.net/publication/371582597_The_Dinosaur_Renaissance_1960s-80s_A_Foundational_Episode_for_the_Historiography_of_Paleoart

[26] *Bringing them back to life- the science and art of Gregory S. Paul*, http://gspauldino.com/part4.html

[27] Rob DeSalle, *The Science of Jurassic Park and The Lost World. Or How to Build a Dinosaur*, New York: BasicBooks, 1997, https://jurassicpark.fandom.com/wiki/The_Science_Of_Jurassic_Park_And_The_Lost_World_Or,_How_To_Build_A_Dinosaur

[28] Michael Crichton, *Jurassic Park*, Ballantine Books, Mass Market Edition, 2015, from thesis author personal records

Fig.5 *Velociraptor mongoliensis* next to *Dilong paradoxus* and a hen, photo by Matthew Wright, 2014

point in time, scientists did not have this amount of information about most of the dinosaurs, and what's more important, CGI methods were not advanced enough to present a feathered Velociraptor, even though Paul suggested it in the end)- these are the two main differences[29]. Finding out about this relatively unique for its time novel was none other than the world-famous director- Steven Spielberg. Having read it, Spielberg decided to make a movie adaptation of the book. The movie is widely known as one of the classics of cinematography and was also revolutionary in terms of computer-generated imagery methods (what is interesting, there were only six minutes of it in the whole movie), special effects techniques and advanced robotics in movies.[30]

Spielberg needed the dinosaurs to be as believable as possible to make an impact on the audience. And whilst it is the main task of the VFX team, everything starts with a design. Then, why in the movie, is the Velociraptor's design completely fictional? Not only they based their designs on the book (where it is known that the author stated that his portrayal of *velociraptor*

[29]Dawid Mika, "Velociraptor", Encyklopedia Dinozaury.com, corrections by Maciej Ziegler, Robsonek01, Tomasz Sokołowski, Mateusz Tałanda, Alan Broka, Krzysztof Stuchlik, Łukasz Czepiński, Kamil Kamiński, last entry by 23 June, 2023, https://www.encyklopedia.dinozaury.com/wiki/Velociraptor

[30]Peter Hodges, "*Jurassic Park* at 30: How its CGI revolutionised the film industry" , The Strait Times, 13 June, 2023, https://www.straitstimes.com/opinion/jurassic-park-at-30-how-its-cgi-revolutionised-the-film-industry

mongoliensis was not accurate[31]) but also they based their research on the wrong species altogether (although probably on purpose, to get closer to the design in the book since it was after all its adaptation). They based the design on the recently excavated Megaraptor (*megaraptor namunhuaiquii*), which resulted in a nearly two-meter-high creature with extremely high intelligence and an urge to kill.

In both *Jurassic Park* and *Jurassic World* movies (and subsequently also full franchises) the Velociraptor representatives of these species vary in sizes, colours and patterns, and in the *Jurassic World* franchise, also a little bit in behaviour.

After the film's massive success and the creation of a whole franchise, we happened to witness an interesting phenomenon where this certain visualization of the *velociraptor mongoliensis* became an archetype of this particular species. Now, even outside of the franchise the Velociraptor happens to be portrayed in a way that *Jurassic Park* stated, and all of us can see the same phenomenon affect other species portrayals in media, where artistic choices made in a movie were subsequently applied to other media creations that included them.

Fig.6 Velociraptor sculpture in Zlatibor Dinopark

[31]Riley Black, "You say "Velociraptor," I say "Deinonychus" Scientists evaluate the accuracy of raptors depicted in Jurassic Park", Smithsonian Magazine, 7 November, 2008, https://www.smithsonianmag.com/science-nature/you-say-velociraptor-i-say-deinonychus-33789870/

It should be mentioned here, that as of now, and according to the author's own research, there is only one video game where the Velociraptor is portrayed in another way than in *Jurassic Park*. The game is named *Beasts of Bermuda* and it is a simulator with internet multiplayer cooperation.[32] In the game the player is trying to survive and thrive as a chosen dinosaur species, a Velociraptor being one of them. In that game, the Velociraptor is covered in feathers, relatively small and colourful (looking at the preset skins we have a possibility to choose from, that are provided by the game and

Fig.7 Group of *velociraptor mongoliensis* in a nest, *Beasts of Bermuda*, Sastrei Studios, LLC, 2018

based mostly on modern birds). It has a lot of avian characteristics, such as an ability to soar while jumping from elevations to lower levels by using its wings, making nests in the trees, and making a comparatively chirping variety of sounds.[33] The experience is quite unique with Velociraptor, when it comes to playing games that included dinosaurs and were not specifically under the *Jurassic Park* trademark (because then it is obvious what the design would be and

[32]*Beasts of Bermuda*, Sastrei Studios, LLC, 21 December, 2018, available on Steam, PC platform, https://beastsofbermuda.com/

[33]"Velociraptor", Beasts of Bermuda Wiki, https://beastofbermuda.fandom.com/wiki/Velociraptor

that it is completely fine). It is relatively hard to find another game with an accurate Velociraptor portrayal, and as of now, there does not seem to be one. There are games with amazing dinosaur designs, however, it does not apply to this particular species, and lots of them get dropped before getting to the alpha version.

Fig.8 Velociraptor standing next to a player, *Ark Survival Evolved*, Jeremy Stieglitz, Studio Wildcard, 2 June, 2015

2.2 MISREPRESENTATION OF DILOPHOSAURUS IN JURASSIC PARK AS AN EXAMPLE IN MEDIA

A different *Jurassic Park* example would be the misrepresentation of another iconic species- the Dilophosaurus (*dilophosaurus).* In the whole franchise, this dinosaur is equivalent in terms of its fame, to some other species like the Velociraptor, which is shown in every movie, game and TV series, as an additional way of making human antagonists meet their fate.

Fig.9 Dilophosaurus before spitting venom in "Nedry's death scene", *Jurassic Park,* dir. by Steven Spielberg, Universal, 1993

In the book, Michael Crichton introduces us to this creature, when the protagonists are boating down the stream:

> "It was built on the basic carnivore pattern, with a heavy tail, strong hind limbs and a long neck. Its ten-foot-tall body was spotted yellow and black, like a leopard. (...) Two broad curving crests ran along the top of the head from the eyes to the nose. The crests met in the center, making a V shape above the dinosaur's head. The crests had red and black, stripes reminiscent of a parrot or toucan."[34].

[34]Michael Crichton, *Jurassic Park,* Ballantine Books, Mass Market Edition, 2015, from thesis author personal records

His portrayal is very accurate from what we can see in palaeontology studies, although when it comes to colours and the lack of feathers, all of us need to take it with a grain of salt since there is not much evidence on that as of now[35]. Regardless, in the movie adaptation of the novel, the audience would see a much, much smaller creature that spits venom and has a pair of frills, that could give us the impression they have been inspired by one out of the agama species of our times (most probably the frill-necked lizard *chlamydosaurus kingii*[36]).

Fig.10 *Chlamydosaurus Kingii*, Dreamtime Nature Photography

This is a very bold design that has become iconic in the world of dinosaur enthusiasts. It has influenced an abundance of fields of industry such as toys, amusement parks, illustrated books, games, and so on and so forth. Granting all this, nowadays industries
are slowly turning their heads towards the accurate version of the portrayal of this species, but to a greater extent more willingly than for the Velociraptor.
In one of the more famous accurate Dilophosaurus sculptures is placed at the Museum of Geology of the National Institute of Geology, in Warsaw, Poland.

[35]Michał Szewczak, Kamil Kamiński, "Dilophosaurus", correction by Maciej Ziegler, Karol Sabath, Marcin Szermański, Encyklopedia Dinozaury.com, last edited by 22 July, 2020, https://www.encyklopedia.dinozaury.com/wiki/Dilophosaurus
[36]Wikipedia The Free Encyclopedia, "Frilled lizard", last edited on 6 May, 2024, https://en.wikipedia.org/wiki/Frilled_lizard

Fig.11 *Dilophosaurus* "Dyzio" sculpture, Museum of Geology of the Polish National Institute of Geology, 1997

Nicknamed "Dyzio", the Dilophosaurus sculpture was placed in the year of 1997, which is interesting owing to the fact that it is only four years after the original cinematic release of *Jurassic Park.* "Dyzio" is a few meters tall, covered in small feathers, and has a comparatively massive crest on his head, a long striped tail and a fine neck.[37] Thanks to "him", we can see here that Michael Crichton stayed true to science when bringing the species alive in the book. Despite all that, after the release of *Jurassic Park*, it is not hard to still stumble across the popular design from the movie. It is comparatively common to see it in modern dino parks, as toys and even in video games.

[37]Marlena Świło, "NASZ DILOFOZAUR DYZIO SKOŃCZYŁ 21 LAT!", Museum of Geology of the Polish National Institute of Geology, 26 September, 2018, https://www.pgi.gov.pl/aktualnosci/display/10990-nasz-dilofozaur-dyzio-skonczyl-21-lat.html

Now, as a consequence of how widespread this design is, most people would probably portray the *dilophosaurus* the way Steven Spielberg's movie franchise did.

Fig.12 Scientifically "accurate" *dilophosaurus* toy, PAPO

Fig.13 *Dilophosaurus* sculpture, in Firefly Adventure Pods

As for now, there is a shortage of video games and movies which would represent this species accurately. Carla A. Feller states- "The animal looks like a carbon copy of the highly inaccurate *Jurassic Park* Dilophosaurus. This animal was far from a tiny venom-spitting killer, but rather a twenty-plus foot long, six-foot-tall heavy-bodied hunter. There is no evidence to support the frill or the venom that is depicted in the video game or the movie.". A small shift in the toy industry is visible, however, it is still mostly based on designs from *Jurassic Park*, since it just sells better as a consequence of the movie being this greatly impactful in various media and mass media fields. Showing a similar example with the *The Land Before Time* (an animated movie franchise, by George Lucas, Steven Spielberg, and Don Bluth), Carla A. Feller says-

> "For museums, the movie brought in more visitors and created a bigger passion for both dinosaurs and the ancient environment in which they lived. People were eager to learn and to have their children learn about these ancient creatures. Museums were still displaying older versions of the dinosaurs, but they were beginning to play catch up. While aimed at young children and families, the movie takes liberties with its depiction of dinosaur behavior and life. It follows the narrative of active warm-blooded dinosaurs that most paleontologists of the time would argue against. Toys were made, and children played pretend based on the adventures of these little dinosaurs. The toys were not scientifically accurate but mimicked what the movie showed. They were easy to produce and often found as promotions at food chains.".

She also states that "It would be difficult for the public to really find anything that showed accuracy until 1999 when the BBC would release Walking with Dinosaurs, a multi-part series that depicted the age of the dinosaurs as scientifically accurate as possible (Walking with Dinosaurs, BBC)."[38]

Fig.14 *Dilophosaurus* standing next to a player (with folded frills), *Ark Survival Evolved*, Jeremy Stieglitz, Studio Wildcard, 2 June, 2015

Some could think that it is a pity that when they watch a new movie or play a new game that is said to be realistic, creators mean realistic textures and some species of plants and creatures, usually excluding the iconic duo from Steven Spielberg's *Jurassic Park.* At least the *tyrannosaurus rex* got itself some justice in the latest *Jurassic World: Dominion* movie, after a breakthrough design of a *tyrannosaurus rex* based on the visualisation of "Sue" (specimen number: FMNH PR 2081) and "Victoria", two different skeletal remains of the *tyrannosaurus rex*, nicknamed by the scientific community, who sparked discussions anew regarding the depiction of the dinosaurs in the media.

[38]Carla A. Feller, *Dinosaur Representation in Museums: How the Struggle Between Scientific Accuracy and Pop Culture Affects the Public Perception of Mesozoic Non-Avian Dinosaurs in Museums*, State University of New York College at Buffalo - Buffalo State College, December, 2020, https://digitalcommons.buffalostate.edu/museumstudies_theses/27

Fig.15 “Rexy” the Tyrannosaurus in “T-Rex ambush scene”, *Jurassic Park,* dir. by Steven Spielberg, Universal, 1993

Fig.16 “Rexy” in the “car cinema scene” movie still, *Jurassic World: Dominion*, dir. by Colin Trevorrow, Universal, 2022

Fig.17 Feathered Tyrannosaurus in the “T. Rex and Giganotosaurus standoff” movie still, *Jurassic World: Dominion*, directed by Colin Trevorrow, Universal, 2022

Fig.18 Sculpture of Sue, Denver Museum of Nature And Science

Fig.19 Sue’s skeleton, Field Museum

Fig.20 Victoria’s skeleton, Melbourne Museum

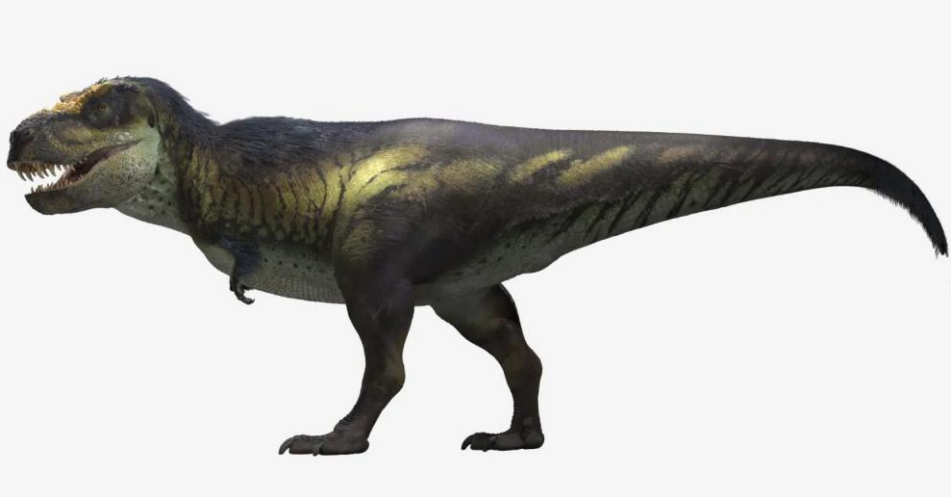

Fig.21 Official visualisation of Victoria, ANIMISM STUDIOS

CHAPTER 3: HOW DO WE UNDERSTAND FACTS IN OUR VISUAL CULTURE?

Ergo, now we come to an issue- how can the public be sure the information they consume from the media is correct?

Image is the principle of our communication. It is the second thing our species (*homo sapiens*) used to communicate and to understand the world[39]. Actually, it is something, apart from sound, that nearly all of the animals use as a principle of communication. A basic example would be our ability to interpret human facial expressions to recognize the distressed mimics on our companions, which could be equivalent to something bad- probably dangerous. Our species has evolved the competence to connect images and to add their semantics. For example, the danger sign is usually portrayed by a skull, which is equivalent to death in semiotics and therefore- danger.[40] Therefore very early on, the image was connected to semantics. According to Cambridge Dictionary, semantics is the study of meaning in a language- "Syntax describes the rules by which words can be combined into sentences, while semantics describes what they mean." In the principle of our discussion, we are also faced with something called group

[39]"The oldest forms of human communication", South African History Online, https://www.sahistory.org.za/article/oldest-forms-human-communication

[40]Liliia Molhamova, *Perpetuation of Memory as a Manifestation of the Socio-Cultural Dimension of the Concept of Death In Monuments of Art*, January 2023, https://www.researchgate.net/publication/376846613_PERPETUATION_OF_MEMORY_AS_A_MANIFESTATION_OF_THE_SOCIO-CULTURAL_DIMENSION_OF_THE_CONCEPT_OF_DEATH_IN_MONUMENTS_OF_ART

behaviour, and when it comes to spreading information or misinformation, we could potentially take social media trends as an example fitting our problem.

The more likes and views we all see, the more likely we are to do the same- to like and share the image or the video[41]. Hence, this group behaviour is very significant- if we would have enough people to spread misinformation, subsequently no one will question it or even bother to question it (knowledge of that comes in handy when you are in the field of politics). People will usually just follow the flow, since *homo sapiens* is a social animal species that live in complex social groups, herds.[42]

Therefore, if we do connect these two things- a principle of communication (an image) and social behaviour, like following the crowd (which all of us can see on the example of social media and mass media), in consequence, we have an example of a breeding ground suitable for spreading misinformation. Nowadays with the mass media, social media and communication technology very much advanced, it is not a problem to spread misinformation (most of the time- unintentionally).

3.1 INFORMATIVE TOLL

Now let us all think about how we are more willing to trust a piece of information if all of us are provided with a medium that accompanies it. To test it, a toll was made with nine participants, to find out the answer. While the amount of participants means we cannot make any authoritative conclusions, it can give an insight into how people related to the subject. About fifty-one percent of the participants identified themselves as women, and most of all participants (about ninety-two percent) were above the age of twenty and some of them were from central Europe (about thirty-nine percent). Asked about which movie genre they watch how often (science-fiction and documentary), the majority of participants answered “often” and “sometimes”. In the question of how they perceive science-fiction movies, about forty-four percent of participants stated that it depends on a certain thing if this genre has more fiction in it rather than science. It was surprising that in another question regarding fact-checking science-fiction movies, again, about forty-four percent of the participants answered that they do

[41]Victoria Halina, “The Psychology of Social Media — Why We Feel the Need to Share”, Medium, 31 January, 2019, https://victoriahalina.medium.com/the-psychology-of-social-media-why-we-feel-the-need-to-share-18c7d2d1236

[42]Smithsonian National Museum of Natural History, “What does it mean to be human? - Homo Sapiens”, page last updated by 3 January, 2024, https://humanorigins.si.edu/evidence/human-fossils/species/homo-sapiens

sometimes check the factuality in the movie and about thirty-two percent of participants stated that they do not check it. But it should come to no surprise, when after being asked from which source they get the most so-called “fun facts”, about sixty percent of the participants said- social media. Although about twenty-five percent of participants stated that they gather their information from books. When it comes to checking these fun facts that they gathered from social media, about twenty-seven point nine percent of participants said that they sometimes check them and about thirty-nine point five percent said that they do, which were the answers that were unexpected. Also, it was very interesting to see that about eighty-one percent of the participants stated that if provided with an image or any additional medium to the information, they are not willing to trust the information more or that it depends. From the percentage that said that they are more willing to trust a piece of information provided with an additional medium, about thirty percent of them said that they do fact-check them after all, which was surprising.

The next part of the toll dives into the “archetype” of the design issue. Nine of the participants read the *Jurassic Park* by Michael Crichton, which is a small number. Fortunately, ninety-five point three percent of participants did watch the movie adaptation by Steven Spielberg. When asked if they perceive dinosaur designs from the movie as scientifically accurate, fifty-one point two percent of answers said that it depends. In the next question, participants could choose multiple answers. They were asked what did they think about the designs of the dinosaurs in the movie. Fourty-six point five percent said that they were inaccurate, but it was justified by the fact that the science from the times bygone is expired by now; about twenty percent said it depended; forty-four point two percent said that since the movie was in the science-fiction genre, it does not matter if the designs were accurate; only four point two percent stated that they were accurate; twenty point nine percent answered that they never thought about it and four point seven percent did not watch the movie. The last question was a one-choice question. A question was stated- “Do you think the movie is guilty of spreading misinformation about dinosaurs? (“yes” if you've seen spreading of misinformation on big scale, “no” if you haven’t seen it on a big scale)”, and the results were interesting. Answering “no, it’s peoples fault that they believe science fiction” was forty-six point five percent of the participants. Only twenty point nine percent answered “yes, but it’s peoples fault that they

believe science fiction". We can come to a conclusion from this toll, that interpretation of images is solely based on individual human beings[43].

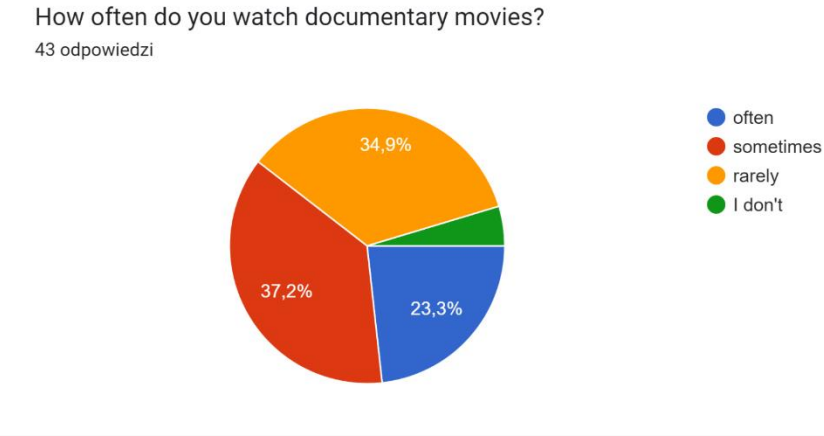

Fig.22 Toll

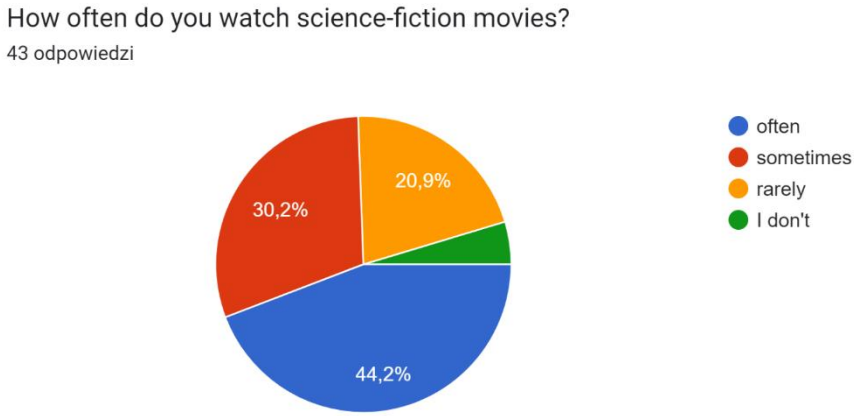

Fig.23 Toll

[43]Margarida Alpuim and Katja Ehrenberg, "Why images are so powerful - and what matters when choosing them", bonn institute, 3 August, 2023, https://www.bonn-institute.org/en/news/psychology-in-journalism-5#how-the-brain-processes-pictures-101269

How do you perceive science-fiction movies?

43 odpowiedzi

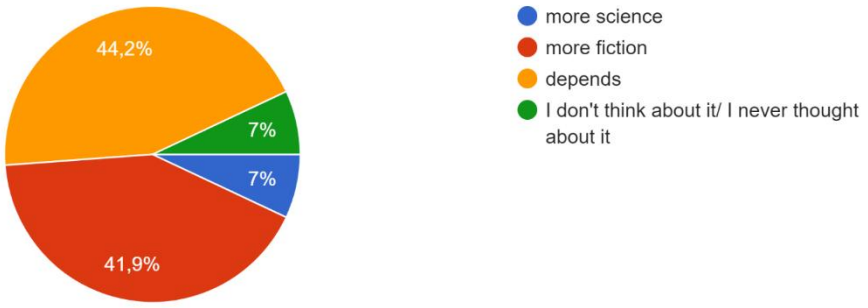

Fig.24 Toll

Do you fact-check science in science-fiction movies?

43 odpowiedzi

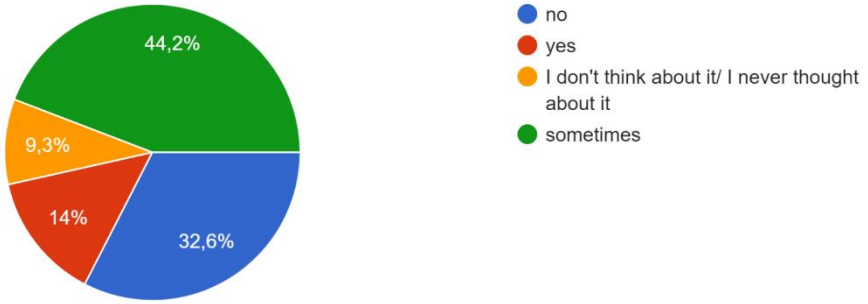

Fig.25 Toll

Through what mass media you recently got most of your knowledge, like some fun-facts?

43 odpowiedzi

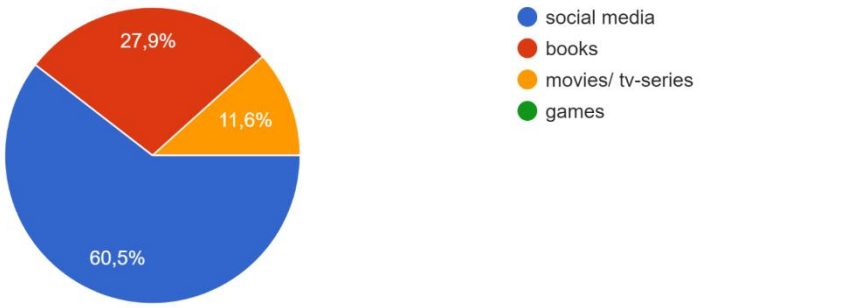

Fig.26 Toll

To the question above: If you got it from non-documental movies/tv- series,social media or from games , do you check the information you've just learned?

43 odpowiedzi

Fig.27 Toll

Are you more willing to trust an information that provides additional medium, like an image?

43 odpowiedzi

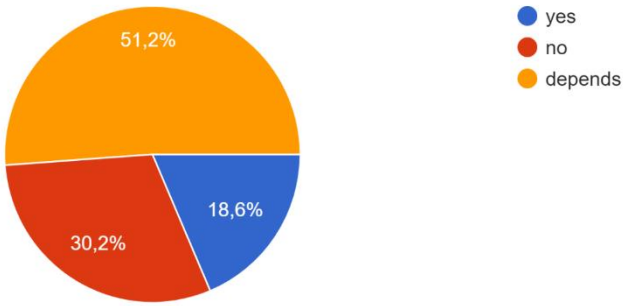

Fig.28 Toll

If so, do you fact check the image provided?

43 odpowiedzi

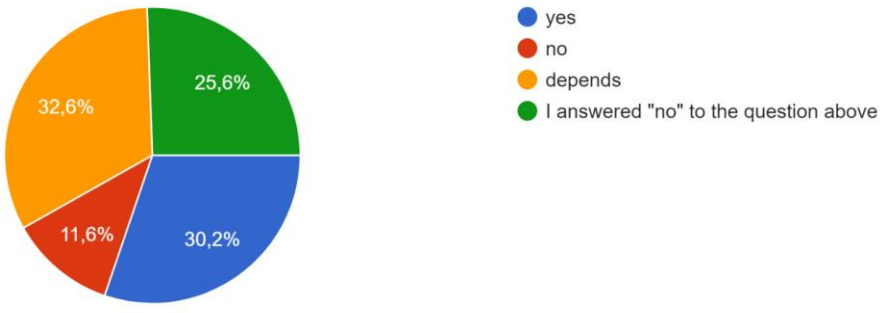

Fig.29 Toll

Have you read Michael Crichtons "Jurassic Park"?
43 odpowiedzi

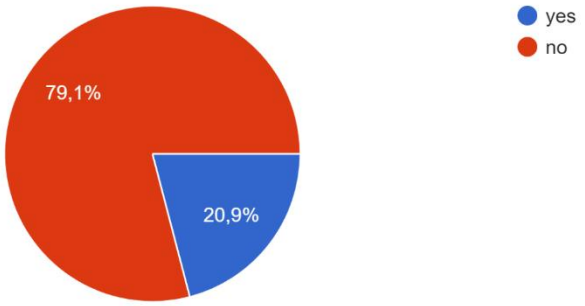

Fig.30 Toll

Have you watched Steven Spielbergs "Jurassic Park"?
43 odpowiedzi

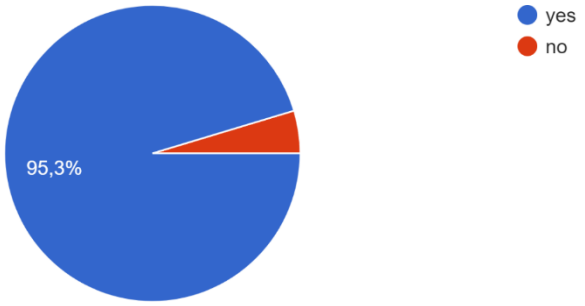

Fig.31 Toll

Do you perceive dinosaur designs shown in the movie as accurate?
43 odpowiedzi

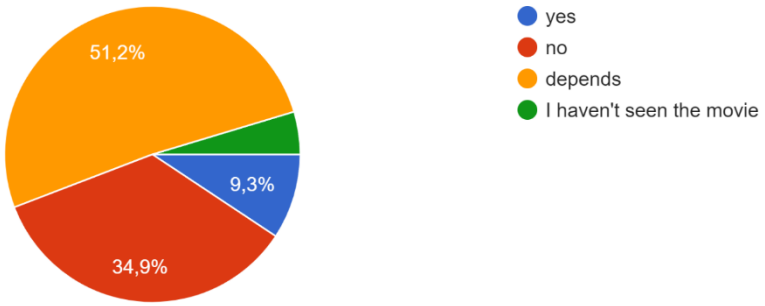

Fig.32 Toll

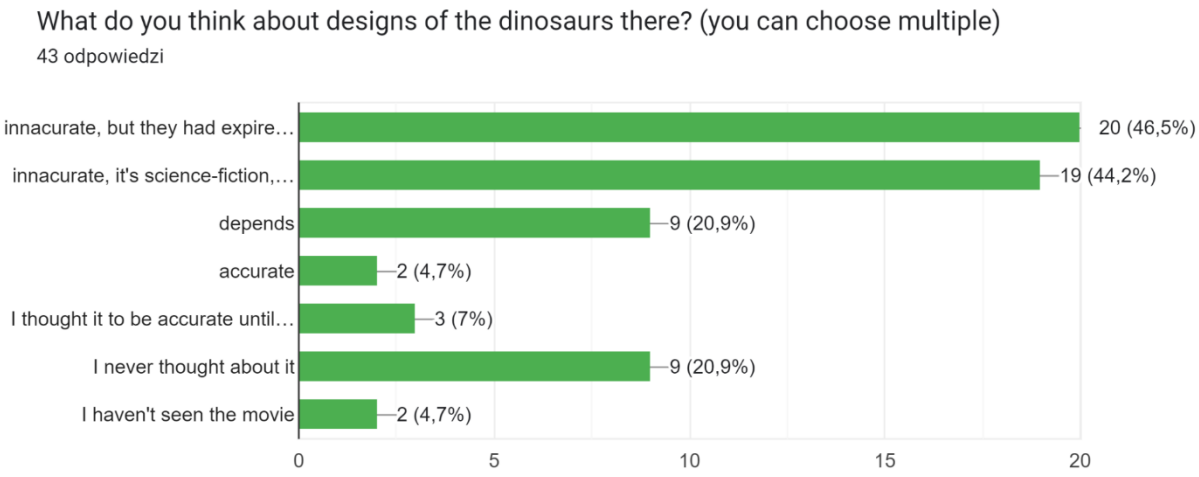

Fig.33 Toll

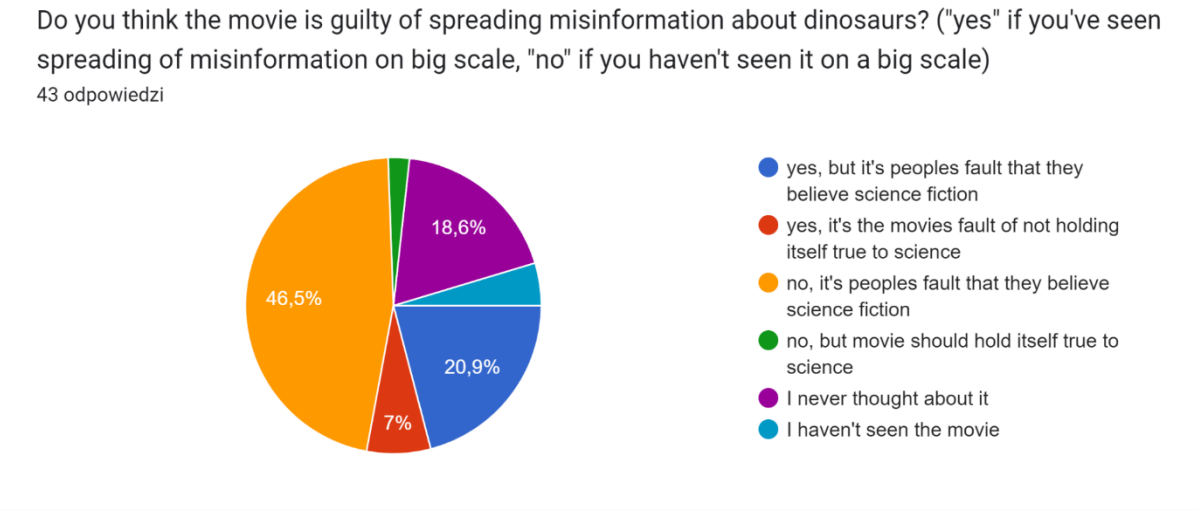

Fig.34 Toll

3.2 UNDERSTANDING OF IMAGES

It is comparatively common to see connecting images, semantics ("the study of meanings in a language")[44] and semiotics ("the study of signs and symbols, what they mean, and how they are used")[45] together, being used, combined with information. In scholarly textbooks, for example, we have infographics[46] (which are essentially images) so that it would not only be easier to understand what is portrayed in the text but also to make it more memorable. It is for this reason that,

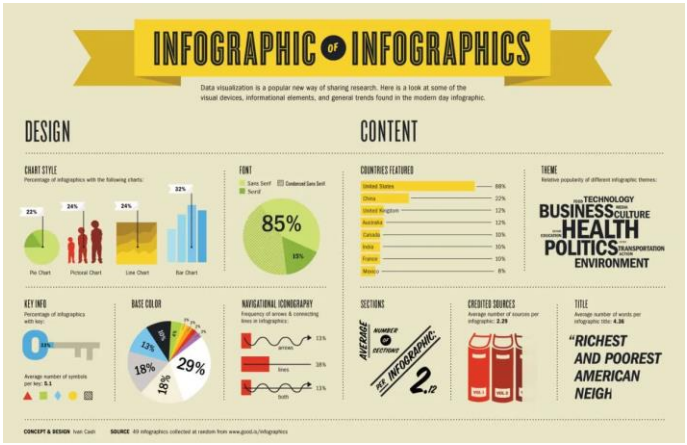

Fig.35 *Infographic of Infographics*, created by Ivan Cash

when we have both visuals and context of that text combined together, our brain tends to make connections between them. Infographics are an example where an image works as a principle of communication and preserving it. Without infographics, it would be more difficult to understand different

concepts. Accordingly, it offers some cognitive stimulation. For example, when we encounter a documentary book, like one about engineering, and it includes blueprints, it can help us understand the content better. It is similar to how infographics work—they make complex information easier to grasp.

[44]Definition of semantics by *Cambridge Advanced Learner's Dictionary & Thesaurus*, Cambridge University Press, https://dictionary.cambridge.org/dictionary/english/semantics
[45]Definition of semiotics by *Cambridge Advanced Learner's Dictionary & Thesaurus*, Cambridge University Press, https://dictionary.cambridge.org/dictionary/english/semiotics
[46]Hassan Khan, "The Psychology of Images and Infographics in Content Marketing", Visme Powered by AI, 10 August, 2015, https://visme.co/blog/the-psychology-of-images-and-infographics/

Plus, using visuals like this, can help spread the knowledge more effectively. According to the *Visualising Medical Research: Exploring the Influence of Infographics on Professional Dissemination* research-

> "Regarding data types suitable for infographic presentation, the study found that medical professionals consider a wide range of data types, including statistical data, medical imaging data, clinical trial results, and more, suitable for presentation in infographics. This suggests that infographics can effectively convey several types of medical research information. In the realm of dissemination, the study identified many platforms and channels medical professionals use to share infographics. Social media, science communication platforms, and institutional websites emerged as prominent choices, reflecting the importance of online and digital channels in modern research communication."[47]

Returning to the issue of misinformation it has caused.

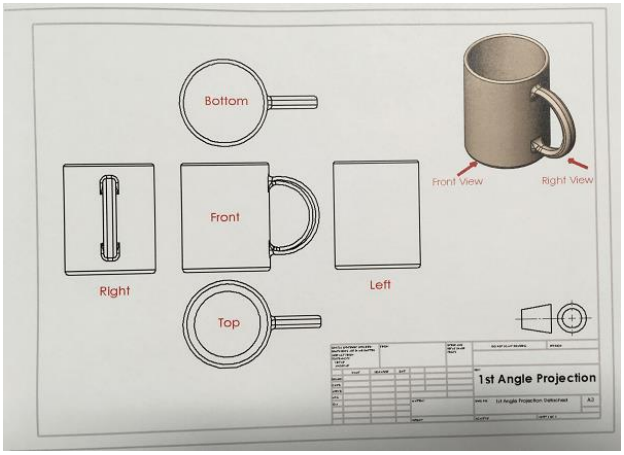

Fig.36 Engineering blueprint of a mug, author unknown

During times when pop culture was booming, especially in the science-fiction genre from the 1970s to the 1990s, when a movie comes out directed by a well-known movie director, with groundbreaking special effects, and coming into the genre using some nods to current topics of

[47]Butdisuwan, Sujin & Annamma, Lovely & A., Subaveerapandiyan & George, Biji & Kataria, Sanjay, *Visualising Medical Research: Exploring the Influence of Infographics on Professional Dissemination*, The Scientific World Journal, 2024, https://www.researchgate.net/publication/381516680_Visualising_Medical_Research_Exploring_the_Influence_of_Infographics_on_Professional_Dissemination

the scientific part of it (like genetic engineering), it is usually a recipe for success. These movies often become huge hits, with merchandise flying off the shelves and everyone talking about them. As a consequence of that, people do not tend to question the science behind them too much, especially since they are just meant for entertainment. If someone does point out inaccuracies, it usually does not matter much, in view of the fact that everyone is caught up in the excitement.

Later we have yet again come to the point of spreading misinformation, where people are hooked onto the visual aspects, the semantics of the image and onto the emotional connection (of what emotions they have experienced) of the visuals, and now when we happen to find ourselves in the area of mass media, social media and mass communication it is definitely much easier to spread it all. It is starting to become dangerous, in terms that nowadays this is a way of also spreading fundamental news all over the world.

3.3 SOCIAL MEDIA AS A MASS MEDIA MEDIUM FOR SPREADING MISINFORMATION

Sometimes we stumble upon misinformation that slips in between the cracks, and people start to unknowingly spread it.

A fitting example would be footage allegedly from the Russian invasion on Ukraine. According to the investigation by *NewsGuard*, it takes only within forty minutes for a new member of a social media platform called *TikTok* to receive a piece of fake information about the Ukrainian war.[48] For a long time, an uncanny amount of footage was not related to the conflict. A fair amount of footage posted on various social media was from different countries, years (like the Russian-Ukrainian conflict from 2014) and conflicts (usually from Syria, Libya and Chechnya) or just simply military town parades for such occasions as the Independence Day of that particular country. Some of the footages were even just tampered

[48]Alex Hern, "TikTok algorithm directs users to fake news about Ukraine war, study says", TheGuardian, 21 March, 2022, https://www.theguardian.com/technology/2022/mar/21/tiktok-algorithm-directs-users-to-fake-news-about-ukraine-war-study-says

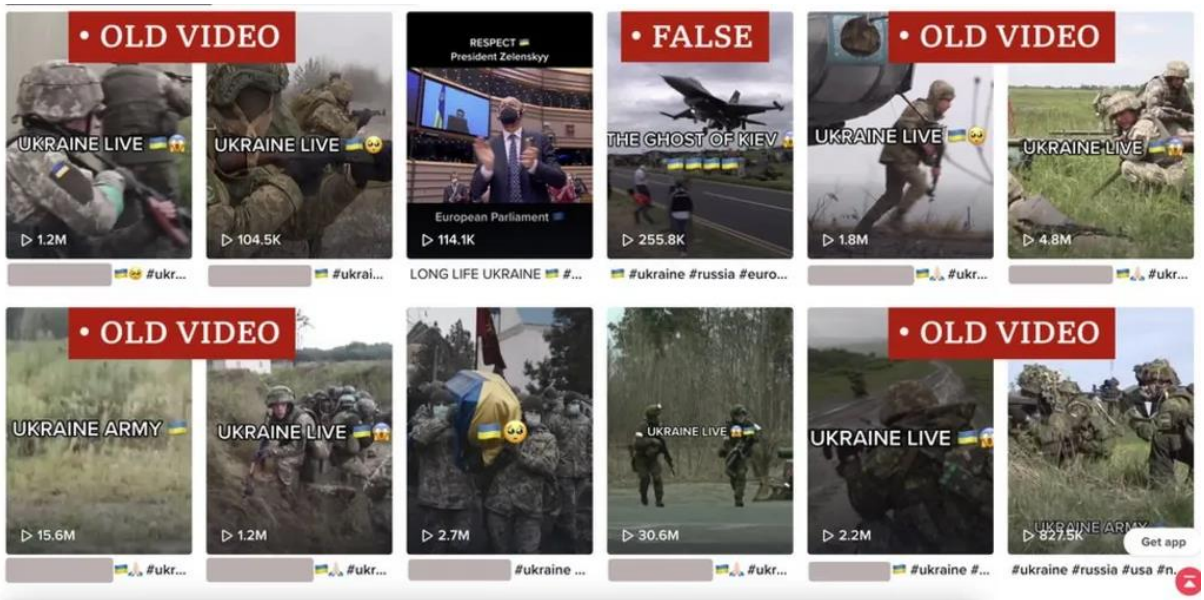

Fig.37 Screenshot of TikTok page with alleged Ukrainian war footage, BBC, 2022

advertisement campaigns of video games or footage from them or from some niche movie productions, even a simple use of computer-generated imagery on various videos, and fake live streams were also very popular. There was also footage that went viral that showed a man, throwing something that resembled a grenade out of the window, down onto the tank coming by, driving in the middle of the street between blocks. As it later turned out it was a recording of a part of an Airsoft match (a game similar to paintball)[49]. People very easily were falling for it, as if they had their vision blurred by the strong emotions, regarding the Ukrainian-Russian conflict itself. With *TikTok* specifically, there was also a problem with lack of transparency, since the platform lacked the tools that are supposed to help professionals track fake information that could potentially become dangerous and delete it. Hence, people followed a simple herd behaviour pattern. If we see that it has enough views and enough likes, meanwhile we are going to also share it and spread it and we are not going to question it owing to the fact that already so many people have done the same, consequently, it probably is true. We check how many comments it has as it also boosts the algorithm that works as a spreading tool. As an example, we could place a situation when a video was posted of a car falling from a few-story building and a person wrote in this post, stating that is the video footage showing riots in France, and everyone started sharing it, liking it, commenting on it, and so the algorithm sent

[49]Shayan Sardarizadeh, "Ukraine war: False TikTok videos draw millions of views", BBC Monitoring, 25 April, 2022, https://www.bbc.com/news/60867414

it out even more and people thought that it was real, until someone checked it and this video is actually footage from the year 2016, from making a *Fast and Furious 8* movie[50]. Even after debunking this video, it would still go viral for some time.

A similar thing happened when an image was posted on the internet of the former president of the United States of America- Donald Trump being arrested. This image was faked, generated by tools that are using artificial intelligence, but the moment people saw it- it went viral.[51]Also, as a big coverage example, when news magazines would also make stories about it and even explain that this footage is indeed fake it would not matter since the first thing we see is the thumbnail, where in this case it is him an arrest scene, and the header would also go along the lines of- "Former president of the United States of America- Donald Trump was arrested", subsequently many people would not bother reading into the article, and checking

Fig.38 AI-generated photo of former USA president Donald Trump getting arrested by law enforcements, Eliot Higgins, Twitter

if the footage was real. They will only read the header[52]. If they indeed would go into the article, would read through the whole part that says that this image shows the alleged arrest of President

[50]Reuters Fact Check, "Clip of cars falling from garage is movie footage shot in Cleveland, not France riots", Reuters, 3 July, 2023, https://www.reuters.com/article/idUSL1N38P1WZ/

[51]THE HINDU BUREAU, "Donald Trump arrest photos are fake, generated with AI - A series of photos on Twitter showing former U.S. President Donald Trump being restrained by police officers was deemed to be fake and made with AI technology", last update by 23 March, 2023, https://www.thehindu.com/sci-tech/technology/donald-trump-arrest-photos-fake-generated-ai/article66648580.ece

[52]Chris Cillizza, "Americans read headlines. And not much else.", The Washington Post , 19 March, 2014, https://www.washingtonpost.com/news/the-fix/wp/2014/03/19/americans-read-headlines-and-not-much-else/

Trump on this day and that day, furthermore, they would find that there is an explanation for it being fake. Despite that, most people will not even read the first part, they will just read the header or see the image, and they will assume that the title has all the key information, therefore being: "Former president of the United States of America, Donald Trump, was arrested", and subsequently they are going to spread it as the misinformation[53].

Sometimes, people would manipulate images according to their needs. It is a common manoeuvre in politics. One of the recent examples would be Buckingham Palace releasing a photo of Princess Catherine, that portrays her looking completely healthy and in overall good shape. However, it did not go unnoticed that she went out of the reach of the public eye for about two months after she had abdominal surgery. When people found out that the photo was faked, various news magazines retracted it (after the public brought to the light of day their concern about Princess Catherine's health) raising suspicions, planting a seed of doubt regarding the Royal Family's Health portrayal for the outer world, as for it being fake or true[54].

Now we come to this again that we have the core of information, the image that is the most used way of communication we know today (for example emojis, memes, and so on and so forth), we add to this an influential and respective figure, a little bit of truth and a little bit of false and we come to this as a perfect recipe for disaster- people spreading misinformation.

Fig.39 Edited photo of Princess Catherine and her children, photo by Kensington Palace, collage with highlighted errors by Agence France-Presse

[53]Kayleen Devlin and Joshua Cheetham, "Fake Trump arrest photos: How to spot an AI-generated image", BBC news, 24 March, 2023, https://www.bbc.com/news/world-us-canada-65069316

[54]Karla Adam and Praveena Somasundaram, "Princess of Wales apologizes for 'confusion' over altered Mother's Day photo", last update by 11 March, 2024, https://www.washingtonpost.com/style/media/2024/03/10/princess-kate-middleton-photo-manipulated/

CONCLUSION

Today, we are bombarded with information, and not only is our brain unable to keep up with it, but we also lack the resources, time, and simple human will to verify all the information we receive because there is just too much of it. It is a false belief that our species (*homo sapiens*) has the ability to multitask easily. Our brain is not suited for it and usually, we just switch from task to task at a rapid speed. It could be said that it is not healthy, if not dangerous, to receive such an enormous amount of information from every direction. We are not keeping up with it, and thus we restrict ourselves to extracting small pieces of information from visual forms and combining them together into one, bigger image. Consequently, we are more likely to believe information that has accompanying mediums such as videos or images, especially if it's popular. This is a consequence of our species being fundamentally simple, visual-focused, social animals, even though a fair amount of people may say otherwise. Nowadays we have more access to media than ever, however, it is a very powerful tool, if you know how an image works. It is easier than ever to learn something new but also to consume a fair amount of misinformation. I think that it will become only harder to distinguish fact from fiction apart and we will need to be more careful with our sources of information. It probably will be impossible to quickly distinguish misinformation from facts and it might be, or possibly will be, weaponized and used to do harm and for self-gain. It has already been proven in the history of our culture that knowledge and information are extremely powerful tools.

In conclusion, this thesis suggests that whether it is related to dinosaurs or politics, the public needs to remember to approach images critically.

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