# Introduction

The crisis of physical dimensions, just as a crisis of measurement, is tied up with the crisis of determinism and affects today the whole ensemble of representations of the world. (Paul Virilio, Lost Dimension)[[1]](#footnote-1)

## Planet Earth as a Filmic character

Figure 1: Astronaut in Space (royalty free – Creative Commons Zero - CC0, Pxsfuel.

In the blockbuster film *Gravity* (2013), the actress Sandra Bullock plays an astronaut who is lost in space.[[2]](#footnote-2) Constantly throughout the film, the viewer sees the planet Earth behind her back. These images, we learn from the film description, were taken from NASA and Roscosmos, the American and Russian space agencies, respectively, chosen for their likeness to the views of astronauts while on missions in space. From the perspective of visual studies, these images are particularly interesting. Not only do they recall the iconic representations of the Earth, such as those from the Apollo missions, but they also serve to create a scale of the distance between the protagonist in outer space, played by Bullock, and the Earth. In addition to being a persistent reminder in the filmic narrative about Bullock’s characters’ motivations, these images of the Earth are also a visual backdrop for all of the events in the film. Constantly present in a film that has only few protagonists, the Earth itself becomes the movie character itself, as Bullock struggles to get back home to the planet which appears so close and yet so far away.

Our home planet has been a character in other movies as well. For example, in *The Great Dictator* (1940), Charlie Chaplin plays with the globe as if being a ball.[[3]](#footnote-3) Comparing the filmmakers’ approaches to the two films, the contrasts do not end at the level of filmic genre, with one film being a work of science fiction, and the other one of comedy. There are also significant differences in how the planet is represented. In *Gravity* (2013), the Earth stands for itself, appearing as a background, a two-dimensional planar image, while in the *The* *Great Dictator* (1940), the Earth is a model of itself, appearing as a ball, a three-dimensional globular object. Although in both movies the Earth is present via representations, we are led to believe that in *Gravity* we confront the image of the planet itself and not one in a studio. Beyond the illusion of the science fiction genre, this belief in the reality of the Earth is supported by a call upon the authority of science in general and, here, astronomy in particular. In the *Great Dictator*, on the contrary, there is no call upon such authority, but just a cynical reference to the politics while Earth appears in the form we actually know it, as an experience of the globe. Thus, between the two films we can also differentiate two epistemic relations to our knowledge about the Earth, one based on the authority of science, and the other based on everyday lived experience.

Figure 2 - Still from Charlie Chaplin, The Great Dictator, 1940 (the work in the public space)

It is often taken for granted that in photography ‘seeing is believing’. But there are differences in the ways in which we assign truth and trust to photographic images. For example, most of us are more likely to believe a scientific than a popular image. Therefore, we are more likely to trust an astrophotographic record than an image of an unidentified flying object (UFO). Although, in reality, we cannot verify for ourselves that the object in an astrophotographic record actually exists any more than we can that UFOs do or do not exist. None of us have ever seen either a planet or a starship with our naked eyes. Such images belong to a field of view beyond unaugmented, unprostheticized human vision. Moreover, given the ‘light time delay’, or the delay which is caused by the time it takes for light to travel from a celestial object in outer space to the Earth, a telescope does not provide an image of the world which currently exists, but rather one which is already long-vanished.[[4]](#footnote-4) Thus, even when using a telescope while in the employ of science, we can only capture an illusion of existence.

Although it is not as problematic to try to see the Earth from space as it is to see distant celestial objects from Earth, there are still many reasons to be skeptical not only of popular imagery but also of scientific photography. For example, it is difficult to discriminate by the naked eye which picture among many pictures of the Earth that are present online are authentic. Some of these online images are in fact recorded by NASA, while others which can be found on the Internet cannot be traced back to their origin. In both cases, we are not able to access the original, which we would need to do in order to be able to validate for ourselves the truthfulness and trustworthiness of the record. For many other images of the Earth which we might come across online, whether in a Google search or on social media, there is no proof of veracity, neither photographer nor publisher given, no signature of authority. And if we go directly to NASA’s online image and video library or image archive, many if not most images of the Earth and of outer space have been adjusted to at least some degree or other. Thus, our regular experience of images of the planet, whether in film or online, may be confusing. In this book, I will analyze the rise of such images in society for the general population, as well as consequences that untestable, unverifiable images of the planet are having on general understanding of it. Thus, I will address two types of images: those which have a truth-claim grounded in scientific authority, and those based on either no experience or only limited experience.

## Prothesis of the Eye

A large number of photographs do not show a view comparable to that of human experience. Whereas most conventional photography is used to record what may be naturally perceived, an ever-increasing segment of photographic practices focus on what may be recorded through a complex assemblage of machinic and computational processes. This development was already began in the 19th century with the merging of optical and photographic technologies. It sped up in the 20th century as the power of lenses enhanced not only distant recordings of celestial bodies from space and ground telescopes but also recording of the Earth from outer space. In parallel, innovations in lens technology have amplified our knowledge about both the microscopic and macroscopic worlds as we have become capable of recording all manner of things from the atomic to the astronomic level. The clash between these two completely different strata of universe, the micro and macro, both of which are beyond the capacity of the human gaze, were recorded in the movie *Powers of Ten and the Relative Size of Things in the Universe* (1977) by Charles Ormond Eames, Jr. and Bernice Alexandra ‘Ray’ Kaiser Eames.[[5]](#footnote-5) Anticipating deep photography in video form, this short movie has had many reinterpretations and reiterations in the past half century. The Eames husband and wife industrial design team employed a system of exponential powers to visualize the importance of scale. Through the movie, the viewer is taken on a visual odyssey from the picture of the couple laying on the grass, far out into the distant galaxy, and then comes back again through the skin of a person and into his sub-atomic constellation. Such a view, which was based on the available scientific knowledge of the day, has further evolved in subsequent decades. Today, the power of a lens has grown to such an extent, as with the Event Horizon Telescope (EHT), that lens technology has made possible the recording of a black hole 55 million light years away.[[6]](#footnote-6) And at the same time, photographic apparatuses can now be used to record the tiniest of details, down to even an atom’s shadow.[[7]](#footnote-7)

What such a view affords is an image which, even though it still is indexical, does not seem to be representational, but rather abstract. Despite its appearance to the naked human eye, however, such an abstract image, recorded with the aid of an extremely powerful lens, is perhaps the most real image of them all. But such images can be confusing not only because they are difficult to compare with reality, but also because the macro or micro have this strange resemblance to each other, as the Eames’ *Powers of Ten* exemplifies. The abstract patterns which are shown in such images, whether a distant and outer view of the human environment, or the near and inner view of the human body, look like each other to a non-specialist, untrained eye.

## Total Images

One reason why such aerial photographs seem so foreign to our everyday experience is that neither a human angle of view nor the subject of human vision is held in common. It is a vision fitting for machines not humans. And there is a considerable difference between machine and human vision. To briefly compare images which are produced through naked and supported vision: The human view is at once both selective and dynamic; that is, humans cannot simultaneously see details and the whole. Given the many biological, cognitive, and neurobiological factors involved in human vision, such as attention, focus, interpretation, and memory, there is great variability in what we see and how we see it.[[8]](#footnote-8) Such variability would be considered errors or glitches in machine vision, would be considered unacceptable, and would be corrected during the stages of design and implementation. This difference between naked human and supported machine vision is perhaps best exemplified in the scope of the angle or field of view. Human vision lacks an overall sharpness, and the ability to provide an image that is both detailed and wide. The eye in the sky of airplane, drone, or satellite post-digital photography suffers from no such limitation.

The space of the world is continuous, but human vision, however, is constrained in various ways. For example, humans cannot see behind their own back without the help of a smart phone camera, mirror, or some other device. However, a so-called round camera system can achieve a 360-degree view by incorporating multiple lenses. Even before the invention of the round camera, the prosthetic view of photographic technologies has been extended in three principle techniques: by elevating or raising the position of the photographer and, consequently, of the viewer, thereby widening the angle or field of view; by combining a number of image together through computational or pre-computational processes and practices; and by layering other kinds of information over the original photographic record. Through these techniques, any subjective point or angle of view is dismissed, replaced by a more-than-human view.[[9]](#footnote-9) The view in such a image is not described by the position of the author of the image. Rather, the view is dispersed uniformly throughout the space of the image and activated by the navigation of the user.

Discriminating between human and nonhuman images on the basis of appearance, especially in terms of the wideness of the visual field, I propose a concept of ‘the total image’. The notion of such an image has already been employed by Ingrid Hoelzl and Remi Marie to describe the unique effects of Google Street View, which to date marks the furthest step taken in the totalization of cartographic or geographic imagery.[[10]](#footnote-10) Expanding on their definition in this book, I use the term total image to mean any and all images which are liberated from the constraints of naked human vision and, particularly, the angle of view (AoV) or ‘view-angle,’ sometimes called the field of view (FoV), which is the extent of a given scene which can be imaged. A total image, therefore, is the result of a long process of research and development in image technologies in order to extend human vision to the point of being able to see the whole of our world all at once.[[11]](#footnote-11)

Only a few theoreticians have described the various levels of such total images. For example, Christine Buci-Glucksmann defines the view from above via the narrative on Icarus, referring to an ‘Icarian gaze’.[[12]](#footnote-12) Icarus, son of Daedalus, fashioned a pair of wings from feathers and wax, but flew too close to the sun, until the wings melted and he fell to his death in the sea. This Icarian gaze ‘opposes the vision dependent on heaviness and its constraints - horizons, orientations between the above and below - with a “being in trajectory”’.[[13]](#footnote-13) The early aerial views, whether the view from the top of the hill to the view from low altitude flight, the low or the high oblique, is best described by Ola Söderström concept of the ‘zenithal gaze’.[[14]](#footnote-14) In order to describe the view of the surface of the Earth as seen from space, such as during the Apollo space missions, Denis Cosgrove referred to an ‘Apollonian view’.[[15]](#footnote-15) Views which simulate this view from high up above, like in a map, Claire Reddleman defines as ‘the view from nowhere’, ‘a highly abstract viewpoint [which] is the signature viewpoint of modern cartography’.[[16]](#footnote-16) Also regarding maps, Alberto Toscano and Jeff Kinkle elaborate on ‘cartographies of the absolute’.[[17]](#footnote-17) Irmgard Emmelhainz also writes about a groundless view, which diverges point of view and synthetic image, describing them as tautological or self-referential.

## Human Photographic Condition

Aerial, drone, and satellite images afford an enhanced and extended perspective on the Earth, which is not only foreign to humans, but also surpasses the human. Indeed, this view as only been see by a chosen few, those astronauts who have journeyed beyond the boundaries of our home planet. Yet, such images have a bigger purpose, inspiring us to imagine more things than in heaven and Earth than we have dreamt in our philosophy, and transcend the ‘human condition’, as Hannah Arendt once called it in her comments about the Sputnik mission.[[18]](#footnote-18) Arendt notes:

The most radical change in the human condition we can imagine would be an emigration of men from the earth to some other planet. Such an event, no longer totally impossible, would imply that man would have to live under man-made conditions, radically different from those the earth offers him.[[19]](#footnote-19)

Yet with photographic record of such a view it is not only human but also a ‘human photographic condition’, as a specific limited view-frame of humans, that is changed, to paraphrase Joanna Zylinska.[[20]](#footnote-20) Human photographic condition is the one tied to human natural way of living, perspectival ground views, the cut-out of the view-frame, contrary to a full-round, 360-degree vision. This, ordinary, earthly, human frame, is contrasted by the nonhuman one which refers to both assisted and automated recordings made from non-natural positions. A new, nonhuman condition lifts the position of the viewer, deliberates the image of the perceptual shortening, and merges multiple viewpoints into a single image. By doing so, it undoes the human, earthly, limited, and singular act of vision, producing an unearthly, unlimited, multiplied act of visualizing in its place.

With the nonhuman photographic condition, the view is extended beyond the limitations of the human body and eyes. But, perhaps even more significantly, this set of circumstances or factors also affects the role and importance of subjectivity, especially regarding interpretation during the imaging process, through the introduction of a polyfocal perspective which distorts the order of planes and distances, even with the photographic camera which is a perspectival tool. Images are computed to lay the non-perspectival and thus non-relativist scene, the one human race never had. They are corrected to fit the frame of the non-perspectival and non-placeable intelligence. Automated and precise, the new view is also dropping the living limits of the human. Besides a viewing- subject dropout, the total image is pointing to a nonhuman creator, or at least above the human one, as its goal is to simulate the neutrality and objectivity of the image, as demanded by epistemological theories of photography, which are derived from non-locality and omnipresence. This nonhuman aspect is consisting of the simulation of the above the human being, being it physical power or the metaphysical instance, rather than a machine. Thus, all enhancements of the powers of vision from above and from outside of the Earth are necessarily non-human too, since the very beginning of conquering this position. By means of this conquering, total view is also in-human by its politics.

## Post-digital Divide

The novelty of the total view comes from both its usefulness for control as well as its seeming perfection. On the one hand, the limitations of natural human sight were one of the reasons for the invention and development of such assisting, prosthetic technology in the first place. On the other hand, the application and integration of this technology has also deepened the divide between human and machine vision.

With the photographic gaze in traditional analogue photography, the two eyes work together in simultaneous action, with one eye looking through the viewfinder of the camera, while the other looks out into the landscape to control the indexical relationship between the view in the photograph and the reality of the world. With post-digital photography, however, the photographer no longer plays the part of the epistemic guarantor. And they do not themselves witness to the veracity of the image. Consequently, the parameters of the photographic medium itself have been disturbed: most importantly, the photographic claim to knowledge and truth. In essence, the truth-claim of post-digital photography is framed by the fact that humans cannot produce objective knowledge, even when using camera. Only machines can be objective, with their non-subjective, non-human artificial intelligence.

## Images by Machine and for the Machine

The post-digital age is characterized by the clear and present divide (and collaboration), rather than integration, between naked human and supported machine vision.[[21]](#footnote-21) New imaging techniques and technologies only serve to strengthen this divide as well as the dualistic opposition between the subjective and objective. And, I suggest, this age is also characterized by a hierarchical dynamic between these natural and unnatural ways of seeing, with the human subordinated below the machine, if not enhancing the machine working independently.

Photography in the post-digital age with both its deep combining and division between the human and machine, is characterized by two essential effects. The first effect centers around the integration of human and machine vision, and the second around an emancipated machine vision made by and for machines. As defined by David Berry and Michael Dieter, the integration of human and machine vision is ‘a cultural condition which enhancements algorithmic logic, and mediated perception’, emancipated machine vision in and of itself is characterized by a space without time following from the introduction of digital technologies.[[22]](#footnote-22) Joanna Zylinska, one of the premier theorists on post-digital photography, describes the first effect as one in which human and nonhuman photography, in order to act together, enable different ‘modes of visuality and self-identification’.[[23]](#footnote-23) The second effect, however, is marked by the complete absence of humans and, consequentially, of humanity. Yet the first effect, which collapses the flow between natural and unnatural perception, is a prerequisite for the second, in which control over the medium of photography is handed over in its entirety to machines. Unmanned photography, or photography which is not conducted by humans, has thus slowly become fully nonhuman, a technology that works independently from its creators.[[24]](#footnote-24)

Photography done by machine no longer needs a photographer. Now, machine vision leads human vision, as even digital cameras guide a photographer where to point and shoot, offering a set of targeting tools, and have automatic settings. It is the machine that controls each step in the process of making an image, a process where photographers once exercised their free and creative will. Today, the machine is the one responsible for major decisions and actions of focusing, calculating, and measuring, thus literary commissioning, but also editing as suggesting the points of the image junction to produce a complex photographic visualization. Machines today do not even need the photographer to press the button. But photography does not only not need a photographer. Today, it does not need a viewer either. Images are not made for humans but also for another machine that will process them.We have arrived in an era of automated photography in which images are being made by machines and for them too. Such images Paul Virilio refers to as ‘images without spectators’ or ‘images created by machine for machine’.[[25]](#footnote-25) Such a photograph challenges contemporary visual culture because it is not meant neither for ordinary human affairs and sciences.

Against the emergence of new visual technologies and visualization techniques, good old human photography simply cannot compete. Without authors and audience, photographic image is no longer merely an aesthetic product, having a long-lasting purpose of musealization, but also a functional, and use- or purpose-oriented one. Images travel between one and other machine to produce a deep learning conclusion, or to select images. [[26]](#footnote-26)  In order to explain the intentionality of the machine image, Friedrich Kittler used concept of the ‘operational images,’ while Vilém Flusser referred to ‘technical images,’ which are themselves the end of linearity of history, existing on the basis of the text.[[27]](#footnote-27) Operational images or ‘image acts’ as Horst Bredekamp has named them, are used in data collecting, analyzing, reconstructing and visualization.[[28]](#footnote-28) And it is not only photography, but also the other means of visual representations that are failing to become fixed products but are rather becoming that what Marta Jecu names catalytic, or trajectory entities.[[29]](#footnote-29) Photography and photography-based technologies have become expanded the function of the medium for storing visual memories, an immediate memorizing tool itself, or even a tool of a complex information storage. In addition, they have become an active agent which creates several types of visualities by rendering new from old visual information.

Nonhuman Photography

For not being objects of ordinary human affairs and sciences, but trajectory objects, nonhuman photography is often not taken seriously enough in analysis of contemporary visual culture. Yet, new images are fully integrated in our daily experience, also changing our understanding of the world. The reason for negligence of the role the post-digital photography has to our lives may also lie in the fact that it is not produced by humans and is thus disregarded as relevant in terms of its emancipated intentions, means and purposes. Thus, Zylinska asked for; ‘*Embracing nonhuman vision as both a concept and a mode of being in the world will allow humans to see beyond the humanist limitations of their current philosophies and worldviews, to unsee themselves in their godlike positioning of both everywhere and nowhere*’…[[30]](#footnote-30) Finally each of these technologies influences our understanding of the world.

The use of nonhuman photography changes significantly all of the visual relationships in traditional photography, such as the plane, depth, and scale of the land, by introducing a multifocal perspective which distorts the distance and the order of planes in the image. In order to achieve a more total image, one which encompasses still more space, these images not only record from nature, but are also computed. And during these computational processes, more of the visual relationships from traditional photography are dismissed. Artificial intelligence can now be used to correct non-perspectival and non-placeable images and align them within a ‘view from nowhere’. Images are adjusted, layered, and corrected *ab ovo* or from the very beginning. Therefore, these images fall outside the limits of the human. And once these photos begin to be computed by machines, there can no longer be the same truth claim about the object or objects being represented in the image.

Due to biological constraints, humanity does not have the ability to compare between technical and natural vision. These changing conditions do not support a consistent and reliable system of guaranties for the validity of an image, such as scientific authority, political institution, the credibility of the publisher, or as authors of the second order that justify the image in a certain discourse, on which I was writing elsewhere.[[31]](#footnote-31) Scholars in disciplines such astronomy, criminology, ethnology, history, and medicine consider the truthfulness of the photograph to be foundational in their research. But with nonhuman photograph, the causal relationship between the image and its reference has been interrupted, and what is seen cannot be believed. We may then ask ourselves several questions: Firstly, is the existence of an object beyond its visual representation necessary or merely contingent? Secondly, are qualities of such an object based on a trustworthy and truthful vision, or are they being interpreted through visualization, and so only causally related to the object’s existence? To simplify these questions: How do we see the world we live in? And how does our vision influence the way we know the world?

## Limits of Scientific Authority

Each prospective change of technology brings a subsequent change in the culture, writes Edward Shanken.[[32]](#footnote-32) With the miniaturization of the camera and automation of its functions, the prosthetic which is photographic technology records beyond the capacity of human vision, while continuing to revolutionize our relationship to reality. Aerial, drone, and satellite images, when combined into complex post-digital photographs, such as hypermaps, can serve as assistants which help us to locate ourselves, navigate our surroundings, and predict the weather, constantly intervening in our daily lives. All of the newly innovated functionalities of photographic technology, such as memory externalization, nonhuman automatization, and prosthetic extension, which characterize photography in this post-digital era, also change our actual reality. Still, they are no longer photographic visions referring to the physical reality in the indexical sense once recognized by semiotics of photography.[[33]](#footnote-33) Rather, they become visualizations of some weak reality, reduced on a mere effect of realism of the photographic image.

Accordingly, photography does not necessarily record a reality, though its relationship to it remains epistemic (as it continues to bring ‘some’ knowledge, at least on the metaphorical level). Today it also actively produces reality as such. Thus, photographic reality can be taken as yet another one in the object-orientated-ontologies defined by Graham Harman, or as Manuel deLanda named it ‘flat ontology’, producing hyperobjects.[[34]](#footnote-34) According them the new reality of objects would be real, independently our implementation of them, and they can actively produce it. Thus, any change in photographic medium or technology, will act on its production. But what happens when humans’ sense of reality is dependent solely on images that are not made by or for humans at all? How do these images influence our knowledge about the world, in these post-digital times?

For example, there are a wide range of images of the Earth used today, including globes, landscapes, maps, and photographs, the various hybrids of these, and their digital or virtual iterations. Some of these image forms, genres, or types are integrated into satellite monitoring systems, others into smart phone applications, and some into both. But during the processes for many if not most such complex systems, the shape of the Earth is corrected, its sphericity dismissed, and flatness embraced, if only for the practical reason of efficient computability. Yet, all such representations continue to inform and influence our understanding of the world, especially where they are implemented with tools for our physical navigation, impacting our attitudes, beliefs, and desires toward the planet. Thus, it comes as no surprise that the aerial or bird’s eye view from up above in the sky or in space has challenged our thinking about who we are and how our planet looks alike. Since the idea of the known world as a spherical shape was first introduced in Antiquity, our ideas as well as our representations for the planet have changed.

## New Medievalism

The idea that the planet we live on is flat is only one among many various beliefs from the Medieval Period which some individuals and communities have started to believe in again in the late 20th and early 21st centuries. James Bridle calls this era the ‘New Dark Age’.[[35]](#footnote-35) The such a Dark Age indeed becomes visible in the surveillance logic of big brother and the eye in the sky. But can also be seen in economic segregation as well as the large migration and movement of entire populations. To this list can also be added the growing distrust in science and religious fundamentalism in the last decades, as is evident in the belief that chemtrails of condensed water vapor created by airplanes traveling at high altitudes are damaging to our health, or that vaccines cause autism, and on and on.

All such tendencies lead to the rise of a ‘New Medieval Age’, as I termed this phenomenon in my previous book, *Culture of the Selfie*.[[36]](#footnote-36) As my book was published a year earlier than Bridle’s, now I will further distinguish my earlier concept of ‘New Medievalism” from Bridle’s latter concept ‘New Dark Age’.[[37]](#footnote-37) There are several avenues of inquiry from which to approach how a conception of the world from the Medieval Period has returned, including educational, medial, philosophic, religious, and technological, to name but a few. It is possible, for example, to analyze the level of the education of disbelievers, in particular their mandatory education syllabus. Besides, an independency of the education can be taken into the account, as well as the impact from the religion, or families and societies in shaping belief systems. It is also possible to analyze general policy and investment in public education, and more general socio-political atmosphere surrounding the education process. The status of the public science in a certain culture can also be taken into comparison, forwarding questions if the science is meeting the criteria of the publicity and accessibility. Besides, the percentage of sceptics in a certain population can be screened as well. From there yet other questions may be raised – what the impact of the Internet on the disbelief in science is, that besides the shape of the Earth also challenges medical recommendations for vaccinating children and chemotherapy use in cancer cure etc. Finally, it is possible to approach the problem by analyzing dominant visual culture and the hegemonic elements embedded in it, which is the approach taken in this book.

## A Note on the Organization of this Book and the Definition of Terms

Through the fields of art history, media theory, photographic theory, and visual studies, I will begin my analysis in Chapter 1 by addressing some of the reasons how and why flat Earth theories have reemerged in the 20th and 21st centuries. In Chapter 2, I will elaborate on the historical development of aerial photography, and in Chapter 3, imaging of the planet from space. For this discussion, I will draw upon a diverse range of images and media, encompassing aerial photography from the civilian, geological, and military sectors, sculpted globes and digital globes, as well as drone and satellite imaging. Then, in Chapter 4, going beyond the photographic medium and all its varieties over the past hundred-and-fifty years, I will analyze maps which simulate this aerial or bird’s eye view from above. In Chapter 5, I will further distinguish between two types of representations of space, the landscape and the map, as well as their contemporary hybridization. In Chapter 6, expanding upon these foundational genres, I will catalogue and categorize the diverse image forms where aerial photography and map making are in some way combined, such as the orthophoto, photomap, and hypermap, as well as computational photography and deep photographs. And lastly, in Chapters 7 and 8, I will discuss the problems of perspective and of perspectival systems in the aerial view from the Medieval Period to the post-digital age, along the theme of control by viewing from above.

Since its invention in the early 19th century, the photographic medium has for the most part been characterized by its indexical or factual relationship to reality. And today, photographs may be constructed out of many different kinds of materials. Overall, my analysis will encompass two types of representations: photographs and image constructs that might look alike photographs. Such constructs can be made on photographic and non-photographic base. Photography-based constructs, on one hand, are visual artefacts which are made out of the photographic medium, either as an element or as a layer, while constructs made on non-photographic base ones made from various materials.

To briefly introduce the terminology and typology for such photography-based constructs, as I will explore over the course of this book: I will deal here with image constructs, made out of photographic and non-photographic base. When an image is made on the photographic base, it can range from panoramic image and 360 images, connected by sides, photogrammetric image resulting from tiled constructions, to overlapping constructions of deep photo and GAN photography. When a photograph would be made out of photographs from various sources, assembling them, I will name it *pseudo-photographs*, while when made out of the photographic material of the same record - *deep photographs*. To briefly define, pseudo-photographs are visual artefacts in which a photographic realistic appearance was attributed to an artefact made out of photographic material which is not necessarily related to the same reality, or if it relates – the representation significantly oscillates from it because of interventions on the image. The most common example of pseudo-photography is today a product of neural software, creating images from other images.[[38]](#footnote-38) Each section of the process of recording can be modified by computer calculus by specifically programmed computers as Halide.[[39]](#footnote-39) Such software can change the appearance of the photo, as for example coloring the black and white pixels, enhancing the mobile phone image into a quality of a professional shooting. Still, the empowering is commonly not done in production, but rather post-productive choice made upon a number of deeply recorded images or by computing them (as in case of wrong exposure, motion blur, changing illumination).

To be able to clearly distinguish combinations with non-photographic materials, I will refer to genres - *orthophotographs* or *orthophotos*, that would be corrected, map-like photographs, *photographic maps* (or *photomap*) that would be maps looking like photographs, or photographs corrected to match the map that would present itself as rather more truths-worthy than the optical record itself, *photomaps* that are maps made on photographic basis and *hypermaps* which are the maps including a photo as one among layers. Also, in contrast to geographic analysis of photomaps, I will use the definition of orthophoto maps differently from that of photomap, although some authors warn orthophoto was yet another stage of developing of photomaps (the other two stages being planimetric, preceding photomaps, and satellite view, succeeding it).[[40]](#footnote-40) These objects, named MLO (*map-like objects*) Dahlberg defines as ‘mosaicked image tied to a coordinate base’, and I will be investigating rather as photo-alike objects, as they actually employ and engage photographic realism as a bare effect in suggesting a certain conceptualization of reality.[[41]](#footnote-41) In order to maintain clearance I will use, at many places, charts and tables.

|  |  |  |
| --- | --- | --- |
| Photographic constructs | * On photographic base |  |
|  | 1. Sidelaped (tiled constructions, planimetric, peripheral or rollout photography) | Photomontages |
|  |  | Panorama and 360 |
|  |  | Photogrammetry |
|  | 1. Overlapped | Deep photos |
|  |  | GAN photographs (pseudophotograph) |
|  | * On nonphotographic base |  |
|  |  | Orthophoto |
|  |  | Photomaps |
|  |  | Photographic maps |
|  |  | Hypermaps |

Table 1: Nomenclature and branching of total images.

In order to compare and contrast the many differences between various images of the Earth and ways of perceiving it, for my analysis, I will bring together many different theoretical frameworks, including: space and place, art historical space studies of pre-photographic landscape, autonomous photographic theory of space (predominantly epistemology), measured space in metric and military photography. I will also approach different histories of the medium of photography, and the genre of aerial recording in social urbanism, military studies, sociology, and geography. I will lay down visual, and more specifically landscape, theories of space from above in historical perspective, so as to be able to analyses how the view from above changed our perception of our habitat, but also how it was schematized further to satisfy utilitarian ends, no longer matching the strong epistemic ties among the photograph and photographed.

Through these themes I will analyze the most radical of influences of representation onto the object: the image that attempts to bring out the definition of totality, either as being recorded from above of the object, or ones overlapping in situ, or by assembling multiple views on the horizontal axis, in order to provide a larger amount of data than the ‘ordinary’ photography would. I will address whether or not and to what degree this visual episteme provides sufficient grounds for different belief systems. The two already mentioned questions, ontological and epistemic, oriented the other way around and having a strong political resonance appear as assumptions in Frederic Jameson’s theory of cognitive mapping.[[42]](#footnote-42) According his hypothesis, the inability to map and have a total picture is a reason for the social disintegration, whereas the cognitive mapping in a total image results in identification with ideology. Although I will not deal with political theory, in the closing words of this book, I will nevertheless draw upon theory from the disciplines of philosophy and sociology in order to analyze the role and importance of total images in totalitarian systems, also referring to assembled totality of today’s world. While I will not focus on political ideologies per se, I will trace the historical development of total images in our visual culture, and find the moments when these images either follow from or lead to conflict in our ideas and ideals about the world.

Although I will refer to the theme of flat Earth many times, starting with the next chapter, my purpose in this manuscript is not to question whether or not the Earth itself is actually flat; it is not. Rather, my purpose is epistemic, relating to this knowledge and the degree of its validity or invalidity. How does post-digital photography inform or inspire our perception and understanding of the planet? Further, how have views of the world been imagined and constructed at different times across history? And how have these views changed our knowledge about the Earth and how do they now?

1. Paul Virilio, *The Lost Dimension*, trans. Daniel Moshenberg, New York: Semiotext(e), 1991. [↑](#footnote-ref-1)
2. *Gravity*, directed by Alfonso Cuarón, starring Sandra Bullock and George Clooney, 2013. [↑](#footnote-ref-2)
3. *The Great Dictator*, directed by Charlie Chaplin, starring Charlie Chaplin, Paulette Goddard, and Jack Oakie, 1940. [↑](#footnote-ref-3)
4. Carl Sagan similarly writes that ‘telescopes are time machines’. Carl Sagan, *Pale Blue Dot: A Vision of The Human Future in Space*, New York: Ballantine Books, 1997, 47. [↑](#footnote-ref-4)
5. Charles and Ray Eames, *Powers of Ten and the Relative Size of Things in the Universe*, 1977, available at: https://www.eamesoffice.com/the-work/powers-of-ten/. [↑](#footnote-ref-5)
6. ‘Event Horizon Telescope’, https://eventhorizontelescope.org/. [↑](#footnote-ref-6)
7. Ker Than, ‘First Picture of an Atom’s Shadow: Smallest Ever Photographed: Technique Might Help Turn Atoms into Vehicles for Secret Messages’, *National Geographic News*, 13 July 2012, https://www.nationalgeographic.com/news/2012/7/120710-first-picture-atom-shadow-photograph-science-nature-smallest/. [↑](#footnote-ref-7)
8. See: Eric Kandel, *Reductionism in Art and Brain Science: Bridging the Two Cultures*, New York: Columbia University Press, 2018. [↑](#footnote-ref-8)
9. For more on theories of objectivity, see my book: *Fotografija kao Dokaz*, Zagreb: Multimedijalni Institut, 2018. [↑](#footnote-ref-9)
10. Writing: ‘Google's achievement in building the 'total image' of our world has gone much further than being an interactive mapping tool.’ Ingrid Hoelzl and Remi Marie, *Soft Image: Towards a New Theory of the Digital Image*, Chicago: Intellect, Chicago University Press, 2015, 24. [↑](#footnote-ref-10)
11. By such an expansion, I will refer also to reverberating the political idea and practice of totalitarianism, relying on Jean Luc Nancy’s definition of the total human as free from alienation, emancipated from natural, economic, and ideological subjection. Jean Luc Nancy, *After Fukushima: The Equivalence of Catastrophes*, New York: Fordham University Press, 2014. [↑](#footnote-ref-11)
12. Christine Buci-Glucksmann, ‘Icarus Today: The Ephemeral Eye’, *Public* 18 (1999): 53–77. [↑](#footnote-ref-12)
13. Describing the Icarian as ‘aeriality that re-examines and accepts a world without height or base, a world cosmically liberated from weight to become the object of artistic experimentation and conceptualization’, Buci-Glucksmann asks ‘have we not all become Icarian in the enchanted world of virtual map-worlds from which we cannot fall?’ Buci-Glucksmann, ‘Icarus Today’, 58. [↑](#footnote-ref-13)
14. Ola Söderström, ‘Paper Cities: Visual Thinking in Urban Planning’, *Ecumene* 3.3 (1996): 249–281. [↑](#footnote-ref-14)
15. Denis Cosgrove, *Apollo’s Eye: A Cartographic Genealogy of the Earth in the Western Imagination*, Baltimore, MD: John Hopkins University Press, 2001. [↑](#footnote-ref-15)
16. Claire Reddleman, *Cartographic Abstractions in Contemporary Art*: *Seeing with Maps*, London:Routledge, 2018, 11. [↑](#footnote-ref-16)
17. Alberto Toscano and Jeff Kinkle, *Cartographies of the Absolute*, John Hunt Publishing, 2015. [↑](#footnote-ref-17)
18. Hannah Arendt, *The Human Condition*, Chicago, University of Chicago Press, 1998 (1958); Zylinska. *Nonhuman Photography*. [↑](#footnote-ref-18)
19. Arendt, *Human Condition*, 10. Notably this discussion was so intriguing and influential that an asteroid was named after Arendt in 1990. [↑](#footnote-ref-19)
20. Arendt, *Human Condition.* [↑](#footnote-ref-20)
21. See: Peter McLaren and Petar Jandrić, *Postdigital Dialogues on Critical Pedagogy, Liberation Theology and Information Technology*, London: Bloomsbury, 2020. [↑](#footnote-ref-21)
22. David Berry and Michael Dieter, *Postdigital Aesthetics: Art, Computation and Design*, London: Palgrave Macmillan, 2015. [↑](#footnote-ref-22)
23. Joanna Zylinska, *Nonhuman Photography*, Cambridge, MA: MIT Press, 2017, 5. [↑](#footnote-ref-23)
24. Zylinska, *Nonhuman Photography.* [↑](#footnote-ref-24)
25. Paul Virilio, *The* *Vision Machine,* Bloomington and Indianapolis: Indiana University Press, 1994. [↑](#footnote-ref-25)
26. Such as GANs, Generative Adversarial Network-programs. [↑](#footnote-ref-26)
27. Friedrich Kittler, *Optical Media: Berlin Lectures 2009,* Cambridge:Polity Press, 2012;Vilém Flusser, *Into the Universe of Technical Images*. University of Minnesota Press, 2011. [↑](#footnote-ref-27)
28. Horst Bredekamp, *Image Acts: A Systematic Approach to Visual Agency*, trans.Elizabeth Cregg, Berlin:De Gruyter, 2017. [↑](#footnote-ref-28)
29. MartaJecu defines postdigital architecture through a concept of catalytic space, having a mere purpose-function, staying unconsumed in the process, contrary to lived space that is altered by social processes, revoking thus again the difference of space and place and establishing the place/space mediation. ‘The interplay between digital, biological, cultural, and technological elements, between conceptual and real space, between embodied and virtual media are manifestedly post-digital'. Marta Jecu, *Architecture and the Virtua*l, Bristol and Chicago: University of Chicago Press, 2016, 13. [↑](#footnote-ref-29)
30. Zylinska, *Nonhuman Photography*, 15, original Italics. [↑](#footnote-ref-30)
31. Peraica, *Fotografija kao dokaz*. [↑](#footnote-ref-31)
32. Edward Shanken, ‘Virtual Perspective and the Artistic Vision: A Genealogy of Technology, Perception and Power’, in M. Roetto (ed) *Seventh International Symposium on Electronic Art (ISEA) Proceedings*, Rotterdam: ISEA96 Foundation, 1996. [↑](#footnote-ref-32)
33. See, for example: Clive Scott, *The Spoken Image: Photography and Language*, London: Reaktion Book, 1999. [↑](#footnote-ref-33)
34. Graham Harman, *The Quadruple Object*, Winchester and Washington: Zero Books, 2011.

    Manuel deLanda, *Intensive Science and Virtual Philosophy,* London:Bloomsbury Academic, 2013. [↑](#footnote-ref-34)
35. James Bridle, *New Dark Age: Technology and the End of the Future*, London and Brooklyn: Verso, 2018. [↑](#footnote-ref-35)
36. See my: *Culture of the Selfie*, Institute of Network Cultures, Amsterdam, 2017. [↑](#footnote-ref-36)
37. New Medievalism is defined on the basis the theme of *acheiropoieton*, a God-made image in selfies, as well as the dismissal of perspectival knowledge as a visual and demonstrative way of measuring the space around us in technologies of selfies. [↑](#footnote-ref-37)
38. Neural network creates photorealistic images people are not real; DIY Photography https://www.diyphotography.net/neural-network-creates-photo-realistic-images-people-arent-real/. [↑](#footnote-ref-38)
39. Computational photography already has made an impact on commercial photography, as for example in services as Meero, that function as platform photographing. In Meero, photographers are serving as input to machines, providing an amount of RAW images of a certain kind which are latter processed by AI. See: https://www.meero.com/en/technology. [↑](#footnote-ref-39)
40. R.E. Dahlberg, ‘The Design of Photo and Image Maps’, *The Cartographic Journal* 30 (1993): 112-118.  [↑](#footnote-ref-40)
41. Dahlberg, ‘The Design of Photo and Image Maps’. [↑](#footnote-ref-41)
42. The concept of cognitive mapping was first used by Edward Toi, back in 1948, to be redefined as cognitive by Jameson and mental by Lynch. Kevin A. Lynch: *Image of the City*, Cambridge, MA: MIT Press, 1960. Jameson also refers to writings of Lynch, see Fredric Jameson: *Cognitive mapping*, in Nelson, C Grossberg, L (eds) *Marxism and the Interpretation of Culture*, Chicago: University of Illinois Press, 1999, 347-60. See also: Fredric Jameson, *The Geopolitical Aesthetic: Cinema and Space in the World System*, Bloomington, Indiana University Press, 1995. [↑](#footnote-ref-42)