# Chapter 3: Image of the Globe

## Widening the View

Historically, aerial photographs were the first media in which the total image which before had only been imagined in maps was actually realized. Aerial recording technologies afforded images which are compatible neither with photographs taken from the land, tied as they are to the horizon as their reference, nor architectural plans, with their perspectival illusion. Such high oblique aerial image did not include the horizon. In order to record the world from a distance science and technology would first have to achieve two innovations: technologies for flight and powerful telescope optical systems.[[1]](#footnote-1) Photography of the Earth from space led to substantial changes in the use of the globe as a tool, by distancing from it.

This history begins with a photograph taken by American Army Air Corps officer and aerial photographer Captain Albert Stevens in South Dakota on November 11, 1935 while flying the Explorer II craft, which at the time set the world record of an altitude of 22,066 meters, and the first image to depict the round-appearing horizon of the Earth. American astronaut John Glenn was the next to record this surface of the Earth during the first American orbital spaceflight of the Mercury-Atlas 6 in 1962. After this, astronauts recorded a number of images that changed the way we see the planet, from *Earthrise* (1968), to the *Blue Marble* or *22727* (1972), to the *Pale Blue Dot* (1990). Perhaps the most well-known of these images is the black and white *Earthrise*, recorded by astronaut William Anders during the Apollo 8 mission on Christmas Eve of 1968, the first photo of the Earth from the Moon. It was taken from distance of 45,000 km using a Hasselblad camera, 80 mm lenses, and 70 mm film which had to be brought back physically from outer space to be developed. Almost twenty years later, another iconic image, the *Pale Blue Dot* was taken, commissioned by astronomer and author Carl Sagan, and recorded by the Voyager 1 upon leaving the solar system at a distance from the Earth of more than 6.4 billion kilometers, capturing what Hannah Arendt described as the story of our departure from the human condition. [[2]](#footnote-2) In the years since, NASA has continued to produce new images of the Earth, such as with the project *Blue Marble: The Next Generation* (2012), which has made available the observation of change in the planet since this recording was initiated.

Figure 16: Capt. Albert Stevens’ record from South Dakota, 1935 (work in the public domain)

Figure 17: Capt. William Anders, Earthrise, 1968 (NASA, work in public domain)

Figure 18: Eugene Cernan, Ronald Evans and Harrison Schmitt, Blue Marble, 1972 (NASA, work in the public domain)

## Global and Single World

Figure 19: One of globalization images (the work in CC0 license)

The first images of the Earth from space in the 1960s had a profound cultural impact on us, its inhabitants. Among the many newly-emerging references to the planet as a unique whole, two main approaches are distinguishable, according to Denis Cosgrove: One-World, the unitary approach of advocates for globalization on the basis of economics, and Whole Earth, a theory where an ecological standpoint is taken.[[3]](#footnote-3) The first may have in some form already been promoted by US President Lyndon Baines Johnson (LBJ) in the 1960s, given that he was among the first to distribute the *Earthrise* photograph. Consequently, today *Earthrise* has become a symbol of globalization representing ideas of connectivity and networking, as well as a symbol of economic and financial systems, such as the World Bank, but also the World Wide Web and Internet. For this reason, Benjamin Lazier, call our present time the ‘Earthrise era’.[[4]](#footnote-4)

Looking back on the evolution of spaceflight since the 20th century and of space photography since the 1960s, it is incredible what a profound impact these visuals, or more precisely these photographs, have had on our understanding of the mother Earth. Yet, flat Earth skeptics claim that these are just images, that none are true, and that none can be trusted. In fact, these images have indeed been recorded in such a way that a human could never see their subject using only their naked eye. These images dislocated the viewer from their place down on Earth, replacing the subjectively-viewed landscapes for transsubjectively- viewed maps.

## Global world Splitting Apart

In the years since, these images of the Earth have been used again and again to the point where they have become a graphic icon. ‘[I]deas of globalization draw their expressive and political force’ from these planetary images, Denis Cosgrove claims.[[5]](#footnote-5) As John Pickles noted, ‘The globe has served as an icon for expansive capitalism and nationalism’.[[6]](#footnote-6) The principle representation for globalization is, of course, the image of a ‘global earth’. While paradoxically, this icon of the Earth suggests both the globalist drive itself as well as how the achievement of globalism will undoubtedly come at a cost to the planet’s biodiversity and ecosystem. Thus, Bill McKibben noted that we no longer live on the *Blue Marble* as pictured in 1972 but rather on an inhospitable planet.[[7]](#footnote-7) Other authors also pointed out that the impact of humans on the planet is all the more visible from outer space.[[8]](#footnote-8)

The destructiveness to the planet from industry which develops part and parcel alongside globalization is closely related to the theory of the Whole Earth, according to Cosgrove, as exhibited, for example, in *The Whole Earth Catalogue* by Stewart Brand printed from 1968 to 1971.[[9]](#footnote-9) Through this *Catalogue*, Brand promoted a critical standpoint on how the idea of the globe should be implemented. Spaceflight has enabled the recording of the Earth as a sphere from the distant position of outer space, making the whole planet look like a miniature ball, almost a toy or some dummy model. Thus, late-20th century images of the Earth not only matched but illustrated Lovelock’s thesis on Gaia as a self-sustainable system.[[10]](#footnote-10) Not long after *The Whole Earth Catalogue*, as Bruno Latour criticized, even the Whole Earth theory itself was appropriated into environmental criticism. And the Earth has become a ‘signifier for one collective existence’, wrote Tobias Boes.[[11]](#footnote-11) That is, images of the Earth have ceased to be only just iconic, and resemble that which they represents, the Earth itself, but have also become symbolic, encoded layer upon layer of culturally-learned interpretations and meanings.

## Global Connectivity

Finally, in addition to these two approaches to images of the Earth that have developed since the 1960s, One-world and Whole Earth theories, images of the Earth have become a symbol of our connectivity. This is due at least in part to astronomical imaging techniques which make visible the Earth in ways that humans cannot themselves naturally see, as well as astronomical imaging programs which are run over extended periods of time. For example, from 1959 to 1972, the Corona reconnaissance satellite program resulted in a number of panoramic images of the Earth which are classified still to this day. Since then, various space agencies all around the world have launched a huge number of unmanned satellites from the Earth’s surface and into outer space which can directly record images of the Earth, including those not necessary within the light spectrum visible to humans, leading to new kinds of visual records. One of the longest running is the Landsat satellite program, launched in 1972, and jointly operated by the National Aeronautics and Space Administration (NASA) and the United States Geological Survey (USGS), which has been running since the early 1970s.[[12]](#footnote-12) One of the best known of such imaging systems was the Advanced Research and Global Observation Satellite (ARGOS), launched in 1999 and terminated in 2003.

With the merging of systems for visual representation and data location, locating data occurred with the first GPS monitored by 24 satellites, three of which are needed to map the mobile device, by triangulation. In addition to these, more satellites for specific purposes, such as Ikonos or GeoSci, were used in order to produce what we know today as the ‘digital globe’. Some of these projects include NASA’s World Wind (2004), Virtual Earth by Microsoft, today a part of Bing Maps (2005), Earth browser (2008), to name but a few. Google Earth itself relies on images from the satellites of NASA and the USGS, including Landsat 8 and previously Landsat 7, as well as various aerial images and crowd-sourced GIS mapping platforms such as Panoramio, which incorporated millions of geotagged photographs which were also used in early days of Google Earth. Today, the images of the Google Earth are not crowdsourced, as they were at the beginning of the project, but directly recorded by satellite light detection and ranging systems. The ever less-and-less blue and green surface of the Earth is computed from images transmitted by low-orbit satellites only 800 kilometers distant from the surface. Google claims that these satellites based camera systems are focused on 15 centimeters, with positional accuracy less than 1 meter above the Earth’s surface so as to maintain no visible loss to resolution.[[13]](#footnote-13) Being so close, the satellites cannot supply one image of the whole Earth. Moreover, because of the curvature of the Earth, an image of the entire sphere of the Earth cannot be taken at once or even simultaneously. Therefore, Google muse use many images of the Earth taken from many places. Due to the high demands of this process of recording, to be up to date, images must be taken continuously across a three-year period. But this causes some images of some parts of the Earth to be asynchronous with others. The diachronic view of the images from Google Earth is further enhanced by its ‘historical imagery’ feature, which shows before and after sequences of this image record. Thus, while offering a total image across space, this total image is segmented and assembled from substantially different images. Google Earth offers pictures from various time periods combined into a single representation of the Earth.

## Earth as Symbol

As Stefan Helmreich sees the situation, in an application of Charles Sanders (C.S.) Peirce’s semiotic triad, Google Earth is ‘a mixture of representation forms. Indexical: satellite images. Iconic: road maps. Symbolic: nation state boundaries’.[[14]](#footnote-14) The resulting total image is itself more of an aggregate image than an indexical photograph. Although we tend to perceive Google Earth as being indexical rather than aggregate. Once merged into Google Earth, however, these image records produce an illusion which does not fully provide an experience of three dimensions, as such. Indeed, Alexander Galloway wrote about how:

[N]o longer will the viewer experience montage via cuts over time, proceeding from shot to shot, one must now “cut” (but in its opposite, as “suturing”) within any given frame, holding two or more source images side by side which themselves will persist montage-free over much longer “takes” than their cinematic predecessors.[[15]](#footnote-15)

Moreover, any information that is found to be missing from between images within this image composite are generated algorithmically.[[16]](#footnote-16) They are mathematical computations produced out of many different systems for detecting light, from visible light to the infrared spectrum. Combining images from various times with maps, and merging them algorithmically, it creates a total image which is more fiction than document.

## Travelling around Digital Globe

Today, composites images of the Earth such as virtual globes are more complex than being simply a set of joint or merged images. Google Earth now represents data for the entire globe of the Earth, a place we once understood and imagined only on the basis of our own personal, subjective point of view. Thus, virtual globes such as Google Earth may alienate us from experiencing our own habitat. While in the early 16th century sailors first circumnavigated the globe, inspiring a renaissance in globe making, in the early 21st century virtual globes replace this idea of coming to understand the Earth through the visual and tactile exploration of its sphericity with travel inside of its imaging.

That is, these new digital models of the Earth allow the interactor or user to navigate within an image, from macro to micro and back again, from a wide view to the smallest detail, as shown in *Powers of Ten* mentioned in the Introduction. Through functions such as magnification or zooming, a user can move close to or even inside the detail, which in turn produces the effect of movement through space, and thus an illusion of three dimensionality. Beyond these viewing options, several other kinds of interaction with the images are enhanced, such as the movements up-down, left-right, and forward-back.[[17]](#footnote-17) Even so, more complicated motions such as combining left-forward are not available in the system. And rather than create a natural and embodied feeling of movement through a three-dimensional space, ultimately, the interaction feels unnatural and even ‘robotized’ because the flow is not smooth but rather broken into metered sequences or stages. The space represented by such an image, such as Google Earth or Google Street View, although it exists as a three-dimensional architecture, still consists only of many two-dimensional records. Thus, the space is actually sliced into layers, each of which is constrained to the apparatus of the screen.

Has Globe Lost its Importance?

The Google Earth project is one of several digital projects for imaging the Earth in which some degree of animation serves as the interface by which people interact with the sphere.[[18]](#footnote-18)

Yet such model of the Earth as a sphere no longer has the same function that it once did. Even when using projects such as Google Earth, we navigate an electronic galaxy not some global exploration.[[19]](#footnote-19) We have at least to a certain extent outlived the usefulness of representing the Earth as a globe. Certainly, globalization has brought people into a greater degree of interconnectivity, making physical distances less and less relevant for work and home life. And with the iconization of images of the whole Earth, which in design and style make it appear flat, the representation of the planet as a sphere is rarely in daily use. By stepping back from the various processes of recording images of the planet, we have also excluded ourselves from the act of understanding our own habitat.

In order to explain how these total images have had a profound impact on our understanding of the very planet on which we live, in the Chapter 4 I will analyze two concepts, space and place, through a sociological framework, and apply these concepts to discussions from the field of geography and differences between the landscape and a map. Today, the Earth is no longer recorded from any one specific position in the universe, not even the most one of a drone pilot or space astronaut. New photographic technologies are automated. And these post-digital photographic devices assemble and compute a total image out of many other images. These images become ‘hyperobjects’, to employ Timothy Morton’s term, a complex non-material structure that can have a significant impact on our lives.[[20]](#footnote-20)

1. After Galileo Galilei’s telescope, significant inventions would also include, for example, the refracting telescope as well as the astronomical revolving unit. [↑](#footnote-ref-1)
2. Arendt*,* ‘The Human Condition’. Eventually, *Pale Blue Dot* was distributed by US president Lindon Johnson among world leaders. While the Soviets certainly pursued and made great achievements in their own space program, they did not record any image. See: Sagan, *Pale Blue Dot.* [↑](#footnote-ref-2)
3. Denis Cosgrove, ‘Contested Global Visions: One-World, Whole Earth, and the Apollo Space Photograph’, 84.2 (June 1994): 270-294. [↑](#footnote-ref-3)
4. # Lazier, ‘Earthrise’, 605.

   [↑](#footnote-ref-4)
5. Cosgrove, *Apollo’s Eye.* [↑](#footnote-ref-5)
6. John Pickles, *A History of Spaces: Cartographic Reason, Mapping and the Geo-Coded World,* London: Routledge, 2003, 8. [↑](#footnote-ref-6)
7. He writes: ‘Imagine we live on a planet. Not our cozy, taken-for-granted earth, but a planet, a real one, with melting poles and dying forests and a heaving, corrosive sea, raked by winds, strafed by storms, scorched by heat. An inhospitable place.’ Bill McKibben, *Eaarth: Making a Life on a Tough New* *Planet*, London: St. Martin's Griffin, 2011. [↑](#footnote-ref-7)
8. Krewani, ‘Google Earth’. [↑](#footnote-ref-8)
9. The iconic image of the whole Earth has been widely referred, and Whole Earth theory widely analyzed, by culturalists, including Stewart Brand’s *Whole Earth Catalogue*, printed 1968-1971 in Sausalito, which was followed by *CoEvolution Quarterly* in period 1974-1984, and *New Whole Earth Catalogue* in 1980. Since then, Brand has further developed his early work in *Whole Earth Discipline: An Ecopragmatist Manifesto*, New York: Viking, 2009. Brand’s works have also been recently revived through a spectrum of Anthropocene theories presented by Anselm Franke and Diedrich Diederichsen (eds) *The Whole Earth Catalogue: The Whole Earth California and the Disappearance of the Outside*, Berlin: Sternberg Press, 2013. [↑](#footnote-ref-9)
10. Lovelock, *Gaia.*  [↑](#footnote-ref-10)
11. Tobias Boes, ‘Beyond Whole Earth: Planetary Mediation and the Anthropocene’, *Environmental Humanities* 5.1 (2014): 155-170. See Also: Yaakov Jerome Garb, ‘The Use and Misuse of the Whole Earth Image’, *Whole Earth Review* (March 1985): 18-25. [↑](#footnote-ref-11)
12. For Landsat, an autonomous real-time ground ubiquitous monitoring system is employed. Its images are also used in today’s Google Earth. [↑](#footnote-ref-12)
13. Google Answers: https://support.google.com/mapsdata/answer/6261838?hl=en. [↑](#footnote-ref-13)
14. Helmreich, ‘From Spaceship Earth to Google Ocean’, 1222. [↑](#footnote-ref-14)
15. Galloway, *The Interface Effect*, 114-115. [↑](#footnote-ref-15)
16. For this purpose, some contemporary image processing systems include DSMAC (digital scene matching area code), which is used for image comparison, as well as DARPA’s ‘Mind’s Eye’, a kind of artificial intelligence known as visual intelligence (VI). [↑](#footnote-ref-16)
17. For the limitations of travel in Google Earth, see also: Hoelzl and Marie, *Softimage*. [↑](#footnote-ref-17)
18. Google Earth was developed from Earth Viewer 3D by Keyhole Inc, 2001. [↑](#footnote-ref-18)
19. Cosgrove, ‘Contested Global Visions’. [↑](#footnote-ref-19)
20. Timothy Morton, *Hyperobjects*, Minneapolis: University of Minnesota Press, 2013. [↑](#footnote-ref-20)