# Corollary: Physical Globes and Digital Projections

## Guarantor of Veracity

Because source photographs from NASA and their composite images of the Earth can at first appear similar to what can be seen by the human eye, an epistemic question may be asked: which authority guarantees the truth claims for these images, and how is it possible to determine their veracity? Moreover, the object of such qualities was not recorded as such at any point, and there is no epistemic guarantor which stands parallelly to the image recording, as for example photographer witnessing the scene while recording it. So, there is none we can blame for lying.[[1]](#footnote-1)

Without the possibility of comparing an image to the reality, and with only a second-order shaky authority, the disappearance of perspectival knowledge becomes an effect of New Medievalism phenomenon. Knowledge of perspective, like the idea of the planet as a sphere, was built into the very center of our science already by Antiquity. But this knowledge was completely lost during Medieval times. It was reborn again with the Renaissance recovery of geometrical perspectival thinking.[[2]](#footnote-2) But now, with the ever-increasing use of post-digital photography for representing the Earth, both our immediate surroundings and on the far side of the world, again we are suffering a loss to our ability to represent not only height, width, and depth, but our position in relation to each other. Such New Medievalism has also had an influence upon construction for the new scale model of planet Earth. This globe may actually be crucial for understanding change and abolishment of known perspective systems. In this chapter, I will analyze how our knowledge of the planet Earth has been distorted by the media used in its representation, and has become tied to the interface, or becoming the interface itself in projects as Google Earth.

## Globe

A globe is a model of space presented on a three-dimensional surface. And the idea of the world as a sphere has long been closely tied to attempts to represent it three-dimensionally. As Benjamin Lazier wrote, ‘Globes stand before us. We observe and act upon them from without. Globes are things that we make. They are artifacts’.[[3]](#footnote-3) Globes afford a hypothetical view of the planet from space which is actually impossible, a view which is enhanced by a certain distance between the person doing the viewing of the globe itself, and a view which could never be achieved in reality or, at least, was inaccessible until the space programs of the late 20th century and remains accessible only for a select few privileged astronauts. Moreover, according to Angela Krewani, notions of the globe distance humans from subjective concepts of the Earth and world.[[4]](#footnote-4) This is because, when using a globe, we imagine the planetary body on which we live as separate from us, thereby objectifying it. In order to define the shape of a thing, the observer first must be separate from that thing, and second must know their distance relative to it. Thus, to define the shape of our planet, we would need to have a certain distance from it.

Figure 10: Donnus Nicholas Germanus, cartographer Johannes Schnitzer or Johannes de Armssheim, engraver Ptolemy Jacobus Angelus, The World (the work in the public domain)

The first representation of the planet as a globe corresponds with the time of the early imaginings of the Earth as a sphere, dating to around 380 BCE, when a first globe made by Eudoxus of Cnidus is mentioned in a poem by Aratus of Soli. Crates of Mallus is also said to made a globe by 150 BCE.[[5]](#footnote-5) Ptolemy’s work also refers to globes and one appears on the frontispiece of his *Geographia*.[[6]](#footnote-6) One of the oldest globes, still preserved today from the time of antiquity, is called the *Farnese Atlas*, now housed in Naples, to whom Peter Sloterdijk addressed lines in the middle part of his trilogy on *Spheres*, analyzing figure as an allegory of power, rather than knowledge.[[7]](#footnote-7) This globe is held in hands of a sculpted marble figure from 150 CE, which represents the god Atlas.[[8]](#footnote-8) Tiny metal globes named *Mainz globe* and *Kugel globe* came after.[[9]](#footnote-9) Soon after these two only few centimeters large objects, the idea of the world as a sphere was terminated by growing doxas of Medieval ages.

As Western civilization fell under the influence of the Christian Church from 4th to the 15th centuries CE, the idea that the Earth is spherical in shape gradually became increasingly heretical. While the idea of the globe was absent from the West it continued to be developed in the Arabic countries.[[10]](#footnote-10) Only after the mid-15th century did the production of the globe pick up again in Western culture, accelerated by new discoveries. And once the practice of globe production was reinvented, it has continued to be developed and explored, particularly in the countries of imperialist nations, such as England, Spain and the Netherlands, whose explorers were discovering new information about the planet which could be included in maps and globes, as Fuller noted.[[11]](#footnote-11) A new generation of globes was made, including the *Bernkastel-Kues globe*.

One of the principle differences between types of globe is the information which they carry. Until 16th century, there were two types of globes in use, celestial and terrestrial globes. For purposes of navigation, these would be used together, supplementing each other by describing the land and the sky, respectively, with one standing for the positive and the other the negative of a total image, as if projected onto concave and convex surfaces. With increasingly varied interpretations, the information which was inscribed in globes became richer. For example, in the 16th century, terrestrial globes might encompass a mixture of narrative and symbolic elements, including Christian and pagan iconographies, such as cosmologies antique, heraldic, mythological, and zodiacal, details which were deliberate aesthetic or poetic, as well as social context. Up until the time when the Polish mathematician and astronomer Nicolaus Copernicus (1473-1543) wrote *On the Revolution of the Heavenly Spheres* (1514), sources about the sphericity of the Earth was primarily limited to antique writings of Ptolemy and calculations or notes left by of sailors. The knowledge about the shape of the Earth changes further with Gemma Frisius’ *On the Principles of Astronomy and Cosmography, with Instruction for the Use of Globes, and Information on the World and on Islands and Other Places Recently Discovered by 1529*. This book summarized all of the knowledge that was used in practice by sailors, providing a compendium of most of accessible knowledge of the time.

Still, not only general knowledge about the planet but also its precise measurements were necessary in order to produce these accurate ‘3D maps’. Starting in the 16th century, after the projections calculated by Flemish geographer Gerardus Mercator, globes began to be used as precise tools for geographical orientation.[[12]](#footnote-12) Mercator introduced a projection of the three-dimensional planet onto a flat two-dimensional surface that would serve as the base calculus for representations of the Earth over the next hundreds of years, and is even used today in the Google Earth project. From the 17th to the 19th centuries, numerous models of globe covers were designed. The azimuthal is still used today, as is Gleason’s, which is important to the Flat Earthers.

Figure 11: Martin Behaim, Globe (Nouveau Larousse illustré, the work in the public domain)[[13]](#footnote-13)

Across time, globes have been made from many kinds of materials, with some more expensive and some more luxurious than others. At the turn of the 16th century, each globe was a unique object, made manually, and decorated, painted, or sculpted by hand. Because of their uniqueness, which was similar to the uniqueness of manuscripts, Sylvia Sumira, specialist in the conservation of printed globes, named the globes produced at the time ‘manuscript globes’.[[14]](#footnote-14) And indeed, printed information was often attached to the wood structure from which some globes were carved. As with books, the invention of the printing press greatly diminished the labor costs for the production of globes, rendering them more affordable. In the late 15th and early 16th centuries, Martin Waldseemüller, who is credited with the first recorded usage of the word America in honor of Amerigo Vespucci, was also the first to produce a printed globe. These processes in turn would enhance the future mass production of globes. With the invention of the printing press, complex calculations could now be undertaken to produce the gore of a globe.

The gore was literally a sheet of paper. It was designed for the sphere of a globe. And it was printed with a map and geographic information which, once cut, would perfectly match the surface area of the spherical globe. This gore was a way of representing 3D space in a 2D print, and was designed as a series of thin vertical sections printed on a single piece of paper which, when cut and glued onto the surface of the globe, depicted the sphere of the Earth. Variations to the design of the gore might include its size, production materials, surface quality, and information. Some producers explored the production of miniature globes, while others, like Vinzenzo Coronelli, produced globes with a diameter of one meter or more, as with the *Marly Globe* (1688). One globe which was uniquely tailored, and described with substantial detail in the history of globes by Sumira, is Abraham Nathan Myers’ globe from 1866. This globe is a 3D puzzle, in which the surface as well as subface of the sphere is dissected into eight layers, each of which consists of an additional six cuts.[[15]](#footnote-15) The purpose of the globe was educational. To compile the information from the globe, its sections had to first be arranged into shape of the ball, and using the information which was represented on its printed texture or gore.[[16]](#footnote-16)

Throughout the centuries, globes have also been desirable objects which decorated the libraries and living rooms of the upper class. This can be seen, for example, in the work room depicted in the *Geographer* (1668-9), a painting by the 17th century Dutch artist Johannes Vermeer. Three hundred years later, however, with the mass production of globes in the 20th century, these illustrational and informational spheres have become a common decorative element in public and personal libraries as well as also practical tool used in school. Also, many playful variants on the idea of the globe have been invented, such as the balloon globe, ball globe, and lighting globe, which can also be used in toy designs. In fact, today the majority of physical, spherical models of the Earth which exist and are still in active use are those which serve as toys for young children or for pet animals, who play with them like the actor Charlie Chaplin did in the satirical film *The Great Dictator* mentioned in the Introduction. And there are fewer and fewer decorative globes standing on the writing desks of academics and politicians or in the working rooms of institutions and libraries, as there has been for some five centuries.

Today, the over-exploitation of globes for non-educational purposes has produced a strong reaction among many artists, who respond by intervening in the discourse about globes and the practice of globe-making through personalizing them. As the terrestrial part of the Earth has by now been fully discovered, and a globe which represents the surface landmass has been made into a mechanically-reproducible object, artists have started to reinvent its use. Some examples include Yves Klein’s *Blue Globe* (1957), Claudio Parmiggiani’s *Pelle Mondo* (1969), and the many globes made by Dimitrije ‘Mangelos’ Bašičević. Such artistic experiments with the globes culminated during the time of James Lovelock’s thesis of Gaia in which he claimed that the planet is a self-sustainable system like an organism.[[17]](#footnote-17)

The materials used to model and conceptualize the Earth have gradually shifted from dimensional globes to dimensionless globes. A large number of the globes which are produced today are neither concretely physical nor as stable and fixed as sculptural objects as they once were. For example, Andreas Riedl describes virtual hyperglobe, such as Google Earth, the tactile hyperglobe, which serves as an interface, and the hologlobe, which is a holographic projection.[[18]](#footnote-18) The digital or virtual globe serves both as a data cloud as well as a visual metaphor, simultaneously having a powerful influence on our lives materially and with all-to-real consequences, as it begins to be the only Earth that we know. Such virtual globes can function on a different level of complexity than can physical ones, simultaneously providing us with many layers of variously coded information, which in turn influences our experience and understanding of the Earth itself.[[19]](#footnote-19)

For example, Ingo Günther makes numerous references to the shape of the world in his media art. He has made approximately two hundred globes, including tactile hyper globes, such as in his *Geospace Project*, *Omniglobe*, *Terravision,* *Magic Planet*, and others, but also hologlobes, such as *Perspecta* by Actuality systems (2002) and *Heliodisplay* (2005).[[20]](#footnote-20) Günther’s series *The World Processor* powered by Geo-Cosmos WP(x)GC (2013), produced in collaboration with the Miraikan National Museum of Emerging Science and Innovation in Tokyo, is built around the idea of the digital globe as a physical object in space which has been made into a projective surface in order to host various data. Still, Günther is not trying to present a realistic image of the Earth through his globes, but rather to visualize information about the Earth. When an audience interacts with *World Processor*, it displays various data and data visualizations on the surface of the globe, such as data on population, life on the planet, languages used, the laying of fiber optics, life expectancy, or geopolitical symbols. Therefore, like in early days of globe production, this globe carries data which is iconographically, symbolically, heraldically, or zodiacally contextualized, bringing extended information up and onto a visible surface.[[21]](#footnote-21) Such globes, whether in the media arts or beyond, are the rare instances where the idea of the Earth as a sphere have survived.

The model of planet Earth slowly dematerialized in digital hyperimages which consist of photographs and maps, but also other data. As globes have vanished as functional physical objects, in the following subsections, I will give further attention to two types of data that would be applied to contemporary data globes: photographic or visual layouts which bring the visual appearance and recognition, and mapping measure that add the precision, as well as their integration into hybrids. I will analyze two forms, the landscape and a map, separately, then following their merge in hybrid forms, trying to understand what their gains and losses in description of the planet are. Although our actual place can indicate certain elements of the shape of the planet, there are various reasons that prevent us from experiencing it.

1. Which is a precondition for a lie in photography, according saying attributed to Lewis Hine: ‘Photographs don’t lie, but liars may photograph’. [↑](#footnote-ref-1)
2. Leon Battista Alberti, *On Painting*, Cambridge: Cambridge University Press, 2011. [↑](#footnote-ref-2)
3. Benjamin Lazier, ‘Earthrise; or, The Globalization of the World Picture’, *The American Historical Review* 116.3 (2011): 614. [↑](#footnote-ref-3)
4. Angela Krewani, ‘Google Earth: Satellite Images and the Appropriation of the Divine Perspective’, in Solvejg Nitzke and Nicolas Pethes (eds) *Imaging Earth: Concepts of Wholeness in Cultural Constructions of Our Home Planet,* Berlin: Transcript Verlag, 2018, 45-60. [↑](#footnote-ref-4)
5. Sylvia Sumira, *Globes*: *400 Years of Exploitation, Navigation, and Power*, Chicago: Chicago University Press, 2014, p. 13. See also: David Woodward and RB Harley, *The History of Cartography, Volume 1: Cartography in Prehistoric, Ancient and Medieval Europe and the Mediterranean*, University of Chicago Press, 1987. [↑](#footnote-ref-5)
6. Ptolemy, *Geographia*. Accessible at https://archive.org/details/claudiiptolemaei02ptol. [↑](#footnote-ref-6)
7. 1. Peter Sloterdijk, *Spheres, Volume 2, Globes: Macrospherology*,South Pasadena: Semiotext(e), 2014.

   [↑](#footnote-ref-7)
8. In Roman mythology, Atlas was one of the Titans, cursed by Zeus to stand on the Western edge of Gaia to carry the sky, or, according to some, the celestial bodies. [↑](#footnote-ref-8)
9. The Mainz and Kugel globes are Roman celestial globes from 2nd century A.D. The first one is kept in Mainz, while the second is in Paris. [↑](#footnote-ref-9)
10. Sumira, *Globes.* [↑](#footnote-ref-10)
11. Buckminster Fuller, *Operating Manual for Spaceship Earth*. [↑](#footnote-ref-11)
12. Mercator was also the first person to name a book of maps after the Roman god Atlas. [↑](#footnote-ref-12)
13. *Behaim Globe* was named after Martin Behaim from Nurnberg was the first to start a larger production of globes by the end of the century. [↑](#footnote-ref-13)
14. Sumira, *Globes*, 14. [↑](#footnote-ref-14)
15. The idea of the gore was elaborated by many but Fuller’s projection Dymaxion shape made by Buckminster Fuller might be the most challenging. His dymaxion (from; dynamic, maximum, and tension). His projection of a gore was made in order to show all the continents are connected as an island. See: Buckminster Fuller, *Operating Manual for the Spaceship Earth.* [↑](#footnote-ref-15)
16. Sumira, *Globes,* 35-36. [↑](#footnote-ref-16)
17. James Lovelock, *Gaia: A New Look at Life on Earth*, Oxford/New York: Oxford University Press, 2000. [↑](#footnote-ref-17)
18. Riedl, ‘Digital Globes’, in W. Cartwright, M.P. Peterson, and G. Gartner (eds) *Multimedia Cartography*, Berlin/Heidelberg/New York: Springer, 2007, 256. [↑](#footnote-ref-18)
19. See Manuel deLanda, *Assemblage Theory: Speculative Realism,* Edinburgh: Edinburgh University Press, 2016. [↑](#footnote-ref-19)
20. See Ingo Gunther, ‘Ingo Gunther’, https://ingogunther.com. [↑](#footnote-ref-20)
21. Similarly, Google Ocean consists of icons and symbols. Helmreich writes: ‘Google Ocean as existential graph is a logical diagram that conjoins multiple representations, real and fictive, and multiple semiotic registers, iconic, indexical, symbolic, which can operate independently of one another (in different layers) while still forming part of a composite.’ See Stefan Helmreich, ‘From Spaceship Earth to Google Ocean: Planetary Icons, Indexes, and Infrastructures’, *Social Research* 78.4 (2011): 1235. [↑](#footnote-ref-21)