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Postcards from Google Earth

Re-mediated Maps and Artistic Appropriations Between Personal Collections and the Global Archive

Chiara Salari

- 1 The different components of Google’s mapping suite, including Google Maps and Google Street View (available as desktop programs and as mobile apps) participate in the creation of a new representation of the world, aggregating cartographic, photographic and satellite images. In this article, I explore Google Earth as a new aesthetic form of the visual, which has the power to influence our perception and understanding of the planet by expanding and complexifying our visual experience. Maps, aerial and satellite photography, GPS (global positioning system), developed mostly in military and territorial expansion contexts. Nonetheless, these objects or devices partially depart from their original functions through different uses. They become for example tools for the mobility or the knowledge of the world. While considering the cartographic projection used by Google Earth (its ideological function and its transformation through the augmented interactivity of its users), I focus on the acts of selection and of re-contextualization—through human choice and intention—of images captured automatically by machines in a range of artistic projects.
- 2 Google Earth is not only a geographic information system (GIS), but also a database (a type of archive) disguised as photographic representation, and becomes an idyllic visual inventory of the world, apparently achieving a dream which has existed at least since the emergence of photography.¹ If we consider Google’s mission to “organize the world’s information and make it universally accessible and useful,”² the utopian dream of an “instantaneous reproduction of the world”³ has been realized “techno-politically” but also betrayed, as this search engine preselects and prioritizes the information through “word clouds.”⁴ Google Earth, in particular, presents issues of accessibility that widen the digital divide concerning the representation of space, since some areas are more detailed than others, the Western world for instance.⁵ Even though the focus of this research is on the effects of technological innovations on our visual experience, visual culture, and geographic imaginary, it is important to stress from the beginning the tension between the supposed democratization of maps (the possibility to create a

personal cartography) and Google's Western or North American vision, imperial claims, and financial imperatives. If we assume the perspective of a "pragmatics of images,"⁶ questioning how images function and operate, their sensible configurations but also their political and economic stakes, we must be aware, for example, of Google's aim to make money with the users' data, including their position and traceability.⁷

- 3 As shown by recent research on "surveillance cultures," the digitization and dematerialization of surveillance technologies facilitate changes in cultural agency fundamental and that seem easy to ignore. Indeed, metaphors influenced by visual and optical components like security cameras, CCTV, drones and satellite photos are supplemented and outdone by the gathering of constantly increasing amounts of data.⁸ What has been called the "dataveillance" of a person's activity has given rise to a new imagination about surveillance: the infrastructure for which has been "normalized,"⁹ while it also is considered an aspect of daily life.¹⁰ Therefore, contrary to the classical panoptic form of surveillance that Michel Foucault described based on Jeremy Bentham's model for prisons,¹¹ actual "algorithmic surveillance"¹² is characterized by processes embedded in our everyday actions, even more silent and hidden, constituting a form of "dematerialized architecture of surveillance" that make it difficult for individuals and society to be aware of and scrutinize it.¹³
- 4 However, according to some research in geographic and cultural studies, Google Earth is not simply an online ideological state apparatus that reinforces hegemonic power, but also one that has the potential to become a "reversal of the panopticon,"¹⁴ especially if we augment the domination-resistance dialectic based on the idea of a "apollonian eye"¹⁵ to "dionysian alternatives," considering the dionysian as "a politics of the artist, anarchist, hacker."¹⁶ Indeed, we can interact with the system's structure and elements,¹⁷ and Google's universal, technological and automatic gaze can be defied by many artistic projects that reintroduce the human element in the management of what can be considered an external memory. This is obtained without destroying the system but by redirecting it: by countering the database (understood as an archival structure of dehumanized power) with the collection as a form of idiosyncratic, unsystematic, and human memory.¹⁸ Before focusing on the use of remediation and appropriation as instruments of resistance to the apparatus of control and surveillance that Google Earth represents, we are briefly describing the figure of the "artist as a collector" and some examples of images reactivation and association.
- 5 The figure of the "artist as a collector" has a long history, existing at least since Rembrandt, who was a collector of *naturalia* and *artificialia*.¹⁹ Yet it was during the 1960s that we witnessed an explosion of the archival impulse amongst artists,²⁰ and then the new contemporary redrawing of relationships between avant-gardes and mass culture, professionalism and amateurism,²¹ which allows all users to create new narratives and stories through specific collections. Starting from Aby Warburg's *Mnemosyne Atlas*,²² whose choice and juxtaposition of elements transform the very notion of the atlas through the creation of a space of dynamic thinking, the concept of the atlas as a reading modality stands out for many artistic and visual research projects. Some examples are Gerhard Richter's ongoing *Atlas* project,²³ Marcel Broodthaers'²⁴ and Georges Didi-Huberman's exhibition *Atlas, How to Carry the World on One's Back?*.²⁵ In *Nouvelles histoires de fantômes*, organized by Didi-Huberman and Arno Gisinger at the Palais de Tokyo in Paris in 2012, movies pictures blend and resonate with archival, documentary, anthropologic or ethnographic photographs, representing a new cross-

breeding in contemporary visual culture. These different types of collection or atlas practices represent some possibilities of images reactivation and association, but also of images juxtaposition and hybridization, which Google Earth expands.

- 6 Starting from an analysis of Google Earth as a new aesthetic form of the visual—based altogether on the virtualization of the geographic experience, on the interactivity, and on the aggregation of different types of images—I briefly describe Google Maps as a flexible and portable map, that can be modified, enriched with data or audiovisual content and associated with GPS. This description will provide me with the basis to explore a number of artistic projects which present themselves as personal collections of images captured while travelling through Google Earth or Google Street View, in order to examine how they both reveal and divert the “machine vision” underpinning its system. I employ a “media archeology” approach to identify the precursors of Google Earth, Maps and Street View (maps, aerial views, road photographic guides), to see the continuities and the ruptures in this new representation model of the world, made of heterogeneous temporalities and layers of visual realities. Doing so will allow us to recognize the contemporary move from the virtual window to the aggregated screen, emblematically embodied by Google Earth’s interface.

Google Earth as a New Aesthetic Form of the Visual

- 7 Originally called “Earth Viewer” and owned by Keyhole, this 3D model of the world was bought in 2004 by Google and became freely accessible in 2005.²⁶ Google Earth is a geographical information system (GIS). Google has made this once-specialized software available and usable for the mass market. It is also a cartographic model that the user can tilt, pan or rotate, travel across and interact with: there is a flight simulator, the possibility zoom in or out, have a panoramic view, to look at the sky and Mars, and from 2009 the user has had the opportunity to travel in time thanks to an historic timeline showing images from the past.²⁷ Presenting itself as a floating globe in space seen from 11,000 kilometers above the Earth’s surface, it seems to blend the iconicity of NASA photographs with a new level of interactivity distinctive of Web 2.0—characterized by blogging, networking, and the uploading of a variety of different media—and with a new level of fluidity among different types of images, that feels like the promise of an uninterrupted navigation of the globe.²⁸
- 8 The 1968 photograph now famously known as “Earthrise” had already become an iconic image for many social and political movements,²⁹ as well as the perfect visual representation of Marshall McLuhan’s 1964 idea that we have become a “global village.”³⁰ The 1972 photograph from the spacecraft Apollo 17 that came to be known as “Blue Marble” carried on spiritual and environmental lessons depicting the planet as a whole and fully lighted. The Earth seemed at once immense and knowable, a single and unified place.³¹ To get an impression of the distance we have covered since this picture was taken,³² Nicholas Mirzoeff proposes that we consider two photographs from space taken in 2012: the selfie showing the Earth reflected in his helmet by the astronaut Aki Hoshida and the new version of NASA’s “Blue Marble,” a composite assembled from a series of digital images produced by a satellite. We shift from the different perspective of the world provided by the first “Blue Marble” to the illusion of an image taken from one place in space, but which in reality is the result of several scans.³³

- 9 Such “tiled rendering” is indeed a standard means of constructing digital imagery and also a good metaphor for how the world is visualized today, when the user moves from seeing through the eyes of somebody else (with photography)³⁴ to seeing “from nowhere” (with the satellite).³⁵ In the 1980s Donna Haraway warned against the “conquering gaze from nowhere,” considering it a “god trick” and insisting on the embodied (and situated) nature of all vision: “I am arguing for the view from a body, always a complex, contradictory, structuring, and structured body, versus the view from above, from nowhere, from simplicity.”³⁶ Indeed, the satellite’s “all-seeing” perspective is an illusion, as satellites are positioned from such a distance that they are set up to see the entire world, but they only have an abstract vision and no real point of view. Developing the concept of “total image”, recently Ana Peraica has raised the question of the disappearance of a subjective viewpoint in post-digital photography and computed images, where we see both a deep combining and a division of human and machine visions. In particular: “Artificial intelligence can now be used to correct non-perspectival and non-placeable images and align them within a ‘view from nowhere’.”³⁷ Assembled from many computed and corrected photographs, Google Earth’s images lack a specific point of view, thus a subjective vision.
- 10 Google Earth is not faced with the same problem as maps (and of photographs)—transforming the three-dimensionality of the world into a two-dimensional representation—but rather the opposite challenge to transform flat images into 3D imageries, using the patent “Universal Texture”: a system which creates a giant collage made up of aerial photographs from all kinds of different sources and map it onto a three-dimensional model assembled from as many different sources. Users look at two spaces simultaneously (“through” a photograph and “at” a texture)³⁸ and can choose among different layers of reality: the experience of the globe, but also aerial and street views, all accessible on the same screen almost seamlessly thanks to the functionalities Google Maps and Street View (from our desktop or through mobile apps).
- 11 In her article “A World of ‘Slippy Maps’: Google Earth, Global Visions, and Topographies of Memory”³⁹ Veronica della Dora explains how the simple act of zooming in or switching to Street View merges two different traditions of spatial representation: the geographic and the chorographic.⁴⁰ With Ptolemy’s projection (2nd century AC) we witness the invention of the geographical grid (a system of coordinates, latitude and longitude, that we still use today), an effort to regulate systematically the whole world that will be opposed by Hereford’s imaginary world map (c. 1300). Drawn on calf skin, this map is considered the biggest and the most detailed in the history of cartography, made up by an ensemble of cartography, illustrations, symbols, drawings and inscriptions, mixing real places and religious imaginaries, physical and perceived worlds, facts and storytelling, reflecting the vision of the world in the Middle Ages.⁴¹ According to Della Dora, while resting on the “rhetoric of truth” traditionally ascribed to geographical science, Google Earth also ironically re-awakens at the same time this older chorographic tradition, which described particular regions, resting on peculiarities of places, on sequences of vivid images, rather than on geometrical spatial constructs.
- 12 Modern world maps are usually snapshots of a specific moment in history, reflecting the point of view and the ambitions of the culture or context of origin. For instance, the distortion of the land masses in the 1569 projection map by the Flemish cartographer and mathematician Mercator facilitated nautical navigation, but also served to

reiterate colonial domination by demonstrating the centrality and global importance of Europe.⁴² While Google Maps uses this projection map, Google Earth's compositional rhetoric is similar to that underpinning Medieval *mappae mundi*, whose primary function was not navigational but mnemonic. Indeed, through Google Earth the user can give a spatial form to his memories, which are externalized, added and embedded as images. He can also "navigate the world as a sequence of memory-places."⁴³ To put oneself "on the map", by posting photographs or videos of a journey for example, is an act of memorialization as well as of personalization. The users' images create a collective collection of favorite memories and places.

- 13 Based at the same time on the virtualization of the geographic experience and on different levels of interactivity, this new aesthetic form of the visual is also composed of multiple temporalities, including various overlapping images of the same places. It stands as a metaphor for how reality is experienced today: an aggregate made of many parallel and superimposed realities. Google Earth becomes a medium *per se* (a new medium which re-mediatizes the cartographic, photographic and satellite medium), positioning itself between public and private spheres and creating a new sense of space.⁴⁴ It is used in media production as a map, and more generally as a mobility tool, but can also be seen as a virtual space to explore, whose hybrid structure may be revealed. In what follows I briefly describe Google Maps (its cartographic projection and practical uses) before focusing on some artistic projects exploring this virtual world and appropriating its images.

Modifiable and Mobile Maps

- 14 Google Maps was created in 2005 as a virtual map covering Google Earth and today its API (application programming interface) is open and free and used by more than 350,000 websites across the globe.⁴⁵ During the 1990s MapQuest⁴⁶ and the general development of online cartographic services opened up a new era for cartography and the "democratization" of maps, whose access and comparison showed the variety and multitude of their purposes. Despite their objective appearance, maps have often been criticized for being imbued with the cultural perspectives of the society that created them and of its system of power, representing information sources but also points of view, organizing space and at the same time producing it.⁴⁷ Indeed, the history of cartography is also generally associated to colonialism: the cartographer chooses an aspect of reality for a particular purpose which is often motivated politically or ideologically.
- 15 If we ask which type of ideology can be found in Google Maps and its apparently neutral technology, we can answer that there is a reiteration of western domination on the distribution of information, but also the development of a new form of sovereignty which regulates global exchanges through networks.⁴⁸ With Google modulating networks, our vision of the world is being redefined by its logic, but at the same time the cartographic process and its ideological problems take on a new meaning in the age of the digital empire, because resistance to or subversion of master representations and narratives can be done through the re-contextualization of data and elements inside the existing structures by users. This technology is hegemonic but rebuttable and possible to counteract within its very system.

- 16 For example, with the social network Google Earth Community (lately “Google Earth Community Forums”),⁴⁹ we can observe a deconstruction and reinvention of the way we read maps from static to flexible signs. This is also due to the possibility of posting placemarks and creating overlays, adding paths or interest zones in the Google Earth software. Users are invited to spatially debate the very tools they are using (maps within maps) and there are new levels of interactivity and user agency, especially from non-professionals. We can say that space is constructed as a social experience, as the result of dialogue and collaborations. For instance, people are connected “across borders in the discussion of those borders.”⁵⁰
- 17 Google Map Maker (which has recently been integrated in Maps) also helps to improve the cartography of the places we know or are familiar with (adding or modifying a road for example).⁵¹ Personal photographs or videos can be uploaded. Applications and websites that use this digital map model are more and more numerous: the website “Recollecting Landscapes,”⁵² a re-photographic project on Flemish landscapes; the American “Mapping Main Street,”⁵³ a collaborative visual map and multimedia platform; “C’era una volta Ponte San Pietro,”⁵⁴ a postcard collector’s website from a village in the north of Italy. All of these sites use geolocalization of different types of images from different cultural perspectives. Google Maps is also used to geo-localize the “filmic memory,” and in general the visual heritage of places through digitized film archives like the Italian “La memoria visibile”⁵⁵—which associates old home movies to images of the same places on Google Street View—and the French “Mémoire filmique Pyrénées-Méditerranée,”⁵⁶ started by the Institut Jean Vigo in Perpignan and the Cinémathèque de Toulouse.
- 18 These websites mostly use Google Maps to geo-localize images or audiovisual content, enlarging our collective visual memory democratizing the accessibility of non-institutional archives. GPS⁵⁷ also allows us to see where we are on screens, and its association with mobile devices leads to a profound transformation of our everyday (visual) experience. As with several applications for bike routes for example—which use the Google Maps API—the virtual world of the mobile interface affects the way we move through our ordinary lives, creating a seamless interaction between reality and representation, material and virtual experience, devices and landscapes. If as Jason Farman affirms “our traversal of space has long been understood as the correspondence between the material world and the ways we represent that world,”⁵⁸ our ability to traverse space in a meaningful way is inherently tied to the mode of representation that constructs that space.
- 19 Users can personalize Google Maps, and mobile applications allow them to access georeferenced thematic layers and overlay images in real time: a new unified visual space is created, including places, their representations and some data or content added. We live in both virtual and real space simultaneously, virtual places expanding our perception of real ones. This is even done by artists. In the following section, I focus on how artists reveal the virtual space of Google Earth by appropriating images from its hybrid and constantly updating archive. An archive that is based on changing scales of landscape, thus, merging aerial, satellite, and street views.

Artistic Appropriations as Personal Collections

- 20 The first aerial photographic views taken from a hot-air balloon opened up new visual dimensions—representing a departure from the human level conventional landscape and the unique point of view of the Renaissance perspective.⁵⁹ From the beginning of the 20th century, the development of aerial vision devices and tools is linked to the evolution of military technologies: aerial scouting during the world wars served the creation of photographic battlefields maps, while the American satellite imagery developed as a response to the threat of the first Russian satellite (the Sputnik) during the cold war. Colonial and territory planning practices also helped to enlarge aerial vision uses.⁶⁰ In the field of urban planning in particular, aerial and then satellite photography came to be considered neutral, associated with machines and opposed to the point of view of the photographer or from the street. The development of the idea of “social space”, in the second postwar period, helped nonetheless to see the aerial view (general) and the street view (particular) as complementary: to keep together these two perspectives would be useful and necessary for a complete understanding of global phenomena.⁶¹
- 21 The dream to switch between a disembodied and a situated vision, and the ability to zoom from global to local and commute to street level—from maps to aerial or oblique views to landscapes—has been achieved through what was at the beginning (and partly still is) a commercial search engine. Every ten to twenty meters, the nine cameras on each Google Street View vehicle automatically capture whatever passes through their frames, then a computer software program stitches the photographs together to create 360° panoramic images, thus obtaining spheres. Street View (implemented in 2007) positions itself between the genres of navigation aid and comprehensive survey (mixing geographical map, videogame, and travel simulation). Its ancestors could be the G.S. Chapin’s “photo-auto guides” published during the first decades of the 20th century—book series replacing conventional maps with photographs taken from the driver’s point of view and arrows showing the directions—as well as the “Aspen Movie Map,” created in 1978 by MIT, the first interactive and multimedia map to allow a virtual journey in the city of Aspen, Colorado, with the possibility of choosing the season or the historic epoch.⁶²
- 22 As previously said, Google Earth is a new model of representation, an automated collection of data and images from different sources (hybrid images, 2D photographic data, and 3D topographic data) which are constantly updated and infinitely combined to create a seamless illustration. Many artists play with this representation of the world, revealing the system underpinning its aesthetics. For example, Clement Valla started in 2010 to capture screenshots from aerial perspectives for his project “Postcards from Google Earth”. Casting himself as a tourist of a temporal and virtual space (existing digitally for a moment), he “freezes” some images and pulls them out of the updating cycle, then collects them as a new type of postcard. The artist discovers by accident strange moments where the illusion of seamless space seems to break down, focusing our attention on the process of the software, and on the network of algorithms, computers, storage systems, automated cameras, maps, pilots, engineers, photographers, surveyors and mapmakers that generate them. For example, some buildings appear upside down, some bridges are cut in the middle and some roads or natural landscapes seem to melt. “I could tell there were two competing visual inputs

here—the 3D model that formed the surface of the earth, and the mapping of the aerial photography; they didn't match up.”⁶³ As explained by Valla these deformations are not glitches or errors in the algorithm, but rather a logical result or an edge condition of the “Universal Texture” system we already mentioned, which derives from the texture mapping developed in the 1970s and from 3D modelling: a texture map is a flat image that gets applied to the surface of a 3D model like skin and can be interpreted by our brain as a 3D photograph.

- 23 While Valla creates postcards of “alien” places, the images from Doug Rickard’s project “A New American Picture” (2010-) acquire a new documentary status because the artist re-photographs on his screen with a digital 35mm camera scenes found on Google Street View (of urban or rural decay, places devastated by the economic crisis like Detroit). In the tradition of American street photography but showing the opposite of the American dream, Rickard gives these images a new purpose and a new meaning through the acts of selection and re-framing (he collected almost 15,000 images in two years and only 80 were chosen for the book *A New American Picture* in 2012).⁶⁴ The manipulation of these low-definition images (often pixelized) amplifies the sense of isolation and anonymity of the human figures. The choice of a point of view and a frame on a 360° panoramic view freezes time and space. “The photographs are thus imbued with an added surrealism and anonymity, which reinforces the isolation of the subjects and emphasizes the effects of an increasingly stratified American social structure.”⁶⁵
- 24 Rickard travels again through the same streets of photographers who worked for the Farm Security Administration in the Thirties (for example, he revisits virtually Ben Shahn’s pictures of Amite City), whereas Franci Duran focuses on a single place for her video installation “8401,” a work that grapples with the oppressive state surveillance during Chile’s military dictatorship, also using screen captures from Google Street View. A video loop completed with a sound device shows images of a building (the former site of a detention, torture, and extermination center that is now a memorial park) and the streets in front. This is the result of a process of many years of cataloguing and rebuilding of the view into a series of collages based on the shifting perspectives, then layered and animated into “an undulating light painting of the site, fluctuating across time, recollection, and recognition.”⁶⁶
- 25 Jon Rafman doesn’t re-photograph or manipulate his screen shots (like Rickard and Duran) for his project “The 9 Eyes of Google Street View” (2009-), but he is attracted by the amateur aesthetic and spontaneous quality of images that we could consider in a raw state, taken through a supposed neutral look and an automated process with minimal human assistance. Considering this mode of production, a cultural text and a visual grammar, the author proposes a personal selection in order to reflect on the relation between collection and archive, the artist’s particular point of view and the blind or multiple vision of Google Street View. Through the researching, capturing, and re-contextualizing of automated images in different types of collections (regrouping for example images of car accidents, but also scenes in Henri Cartier-Bresson’s style or similar to Jeff Wall’s photographic tableaux), Rafman has the opportunity to interpret a new world in a new way: he explores what he has not yet managed to visit in person or revisits spots encountered during past travels, following the ideas of journey or human bonds rather than geographic continuity.⁶⁷

- 26 The character of his video “You, the World and I” (2010) returns to the locations he visited with his lover in the hope of finding images of her randomly captured on Google Street View. He travels the globe through the virtual landscape of Google Earth and Google Street View, a depopulated and technologically devastated landscape, made of distant figures and solitary objects, infinite routes or landscapes, but also well-known architecture like the buildings in downtown Chicago or the Maya pyramids. The atmosphere is disturbing and almost troubling, and a sense of mystery and melancholy is expressed emblematically by the found image of the ex-lover: a woman on a beach, petrified by the lack of environmental context and the digital noise, barely glimpsed and fast disappeared (when looked for again the image won’t be available anymore).⁶⁸ Rafman thus counters Google’s global archive through the creation of a personal collection: by capturing, saving and reactivating some images through a story.
- 27 While in different ways (more randomly or emotionally, following some historic or political issues) all the projects described are created through the artistic appropriation of images first captured automatically, then assembled by a machine, and which will eventually disappear as they are corrected or improved. Indeed, Google Earth’s system edits a particular representation of the world (automated, incessant and universal), and its landscapes could feel alien (like those collected by Valla) because they are incorrect representations of the earth’s surface, created by an algorithm which prefers flatter images, with fewer shadows and clouds and taken from higher angles.⁶⁹ These artists react to Google’s claims to organize the information (and the representation of the world) for us by opposing its detached and indifferent look with a personal collection and a human point of view. They reveal in this way the system governing Google Earth’s structure, while questioning at the same time our condition as spectators in front of its hybrid archive.

Conclusion: From the Virtual Window to the Aggregated Screen

- 28 Artists travel the world from their computer or mobile screens, collecting deformed, degraded or disappearing landscapes. Google Earth also allows us to discover artistic and mysterious places,⁷⁰ or to turn some forms of anxiety, like agoraphobia, into artistic potential. Jacqui Kenny started to explore the world on Google Street View in 2016, during a period of unemployment and depression after shutting down the company she cofounded nearly ten years before. Suffering from agoraphobia, she found a way to visit places that she could never go to herself and, having collected around 26,000 screenshots in a year, she began to post a selection of her favorite places on Instagram (“streetview.portraits.”). An exhibition opened in September 2017 in Manhattan, where visitors could see some of her travel sites in Virtual Reality, identifying her frame of view inside Google Street View panoramic shots: “In a 360-degree scene, a frame would slowly appear around the point where Kenny cropped out a photo as she explained in an audio track why she chose that sliver.”⁷¹ On a proposal from Google, she is also planning to “teach a neural network”⁷² to understand “her style” of photography, so that it could identify features she likes and make judgment calls for her. Kenny has the ability to parachute into anywhere in the world, but her views and angles and lighting are in Google’s hands, preventing her from following an interesting view in the distance that is not on the Google Street View itinerary: the

scenes are simultaneously revealing and distancing.⁷³ She can choose a particular frame, but inside the existing panoramic images and subjects.

- 29 The Google Earth interface presents itself as a window: from space (view from a satellite of our planet), from the sky (view from a plane of the earth surface), from a vehicle (view from a car of the road). At the same time, the globe we see on the screen can be manipulated like an object, the aerial views can reveal impossible or unreal landscapes (like in Valla's "Postcards from Google Earth"), the images from the streets are often pixelized and the faces encountered blurred (like in Rickard's "A New American Picture" and Rafman's "The 9 Eyes of Google Street View"). The system declares its transparency but reveals its opacity: we are supposed to be close to the real but the amount of mediation involved reveals our distance from the real world. This is the double logic of "remediation,"⁷⁴ aiming at the same time to multiply media and to hide their traces, to erase the distance between viewers and objects in order to go beyond mediation and attain the authenticity of experience. According to Richard Grusin the concept of "radical mediation" is more useful in the 21st century than that of remediation: better considered as "pre-mediation" or "pre-presentation" (not derivative but co-present with the act of creation), it is affective and experiential rather than strictly visual, and helps to open up 20th century references to communication with a new philosophical framework based on the continuity between artistic and non-artistic media, human and non-human elements. "Radical mediation also insists upon taking account of the multiple materialities of our communication media [...] takes everything as a form of mediation."⁷⁵
- 30 Remediation (and even more radical mediation) also means reforming or improving, not only the vision of, but reality itself. This can be connected to Jacques Derrida's insight that "the archivization produces as much as it records the event,"⁷⁶ thus the act of creating an archive can be considered as a form of remediation. In the case of Google Earth, as we saw, the archivization of images of the planet is made in a hybrid and partly nonhuman way, which in turn influences our perception of the real world. Indeed, its interface offers multiple visual perspectives and a diachronic view, by combining pictures from various time periods in a single representation and slicing space into layers, each of which is constrained by the apparatus of the screen. As Ana Peraica affirms, "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."⁷⁷ The artistic practices mentioned above try to "deconstruct" the "illusion of reality" of the Google Earth interface, whose computed images (only partly photographs) are based less on an indexical relation with the real world than on the creation of an effect of resemblance.
- 31 The aggregated form of the Google Earth interface is also revealed through some of the so called "Google Experiments," like "Land lines,"⁷⁸ a kind of game connecting many roads in the world which are not contiguous, starting from a line drawn by the user: a gesture which recomposes in a way the world through fragments of satellite views. Another Google Experiment, the interactive video of the Canadian rock band Arcade Fire "The Wilderness Downtown,"⁷⁹ presents simultaneously Google Earth and Street View images, and asks a past address (of the house one's grew up in) to show current images. While showing the digital divide concerning the representation of places,⁸⁰ this process reveals the contemporary aggregated screen, based on the heterogeneity of windows and contents available on the same surface.⁸¹ What we see is a multiple and

simultaneous perspective which includes still and moving images, aerial and street views, past memories and present moments, representing a “spatialized time.”⁸² The linear perspective system (on which photography is based), was supposed to define the space as well as the distance between subjects and objects, the vanishing point providing a way of measuring. As the traditional perspective disappears in multi-perspectival space, time becomes an essential dimension, and the personal selection an essential action. Artists’ travels inside Google Earth’s imaging, appropriating virtual landscapes first captured by machines, reconstitute a human and memorial perspective, and create various collections of a new type of postcard, mostly made of screen captures than of photographs.

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NOTES

1. Oliver Wendell Holmes presents the idea of a visual library (an “Imperial, National or City Stereographic Library”) and of a “Bank of Nature” in the articles he wrote between 1859 and 1863 in the *Atlantic Monthly*, in particular in “The stereoscope and the stereograph” and “Sun Painting and Sun Sculpture, with the Stereoscopic Trip Across the Atlantic,” quoted in Alan Trachtenberg, *Reading American Photographs: Images as History Mathew Brady to Walker Evans* (New York: Hill and Wang, 1989), 18. Later, just before World War I, the ambition of a photographic inventory of the surface of the globe was at the origin of Albert Khan’s “Archives of the Planet” project, an endeavor to create a photographic atlas of the entire world in order to show the unity and diversity of humankind. See Teresa Castro, “From the ‘Atlases’ to the ‘Archives’ of the World,” *Transbordeur* 1, (2017), and Jeanne Haffner, *The View from above: The Science of Social Space* (Cambridge [Mass.]: MIT Press, 2013), 25.
2. “How Google Search Works | Our Mission,” Google, <https://www.google.com/search/howsearchworks/mission/> <accessed on December 3, 2020>
3. Early in 1988 *The New York Times* reported that somewhere on a desolate prairie in North Dakota “the Federal Government was selling pictures of everywhere.” The Earth Resources Observation Systems Data Center (EROS) maintained an archive there of some six million images, “non-military” satellite and aerial photographs of practical use to geographers, city planners, relief and public interest groups. Alan Trachtenberg, *Reading American Photographs: Images as history, Mathew Brady to Walker Evans* (New York: Farrar, Strauss and Giroux, 1989).

4. Boris Groys, *Google: Words Beyond Grammar, 100 Notes-100 Thoughts*, Documenta Series #46 (Berlin: Hatje Kantz, 2012).
5. For the risk of reflecting and recreating the economic and racial divides online present in society see in particular Michael Crutcher and Matthew Zook, "Placemarks and Waterlines: Racialized Cyberscapes in Post-Katrina Google Earth," *Geoforum* 40, no. 4, (2009): 523-34.
6. Patrick Vauday, et al, "From an Ontology to a Pragmatics of Images," *ASAP/Journal*, 1/3, (September 2016): 389-408.
7. For the shift to a "personalized search" after 2009 see Eli Pariser, *The Filter Bubble: What the Internet Is Hiding from You* (London: Penguin Books, 2012).
8. Wibke Schniedermann and Wolfgang Hallet, "Editorial: On the Cultural Dimensions of Surveillance," *on_culture* 6, (2018). <https://www.on-culture.org/journal/issue-6/editorial-surveillance/> <accessed on December 3, 2020>
9. Jörn Ahrens, "The Ubiquitous View," *on_culture* 6, (2018), <https://www.on-culture.org/journal/issue-6/ahrens-ubiquitous-view/> <accessed on December 3, 2020>
10. David Lyon, "Exploring Surveillance Culture," *on_culture* 6, (2018), <https://www.on-culture.org/journal/issue-6/lyon-surveillance-culture/> <accessed on December 3, 2020>
11. Foucault describes this architectural figure as placing the prisoner in a conscious and permanent state of visibility, therefore assuring the automatic functioning of institutional power. Michel Foucault, *Surveiller et punir: naissance de la prison* (Paris: Gallimard, 1975), 201-04.
12. See João Carlos Magalhaes and Jun Yu, "Algorithmic Visibility: Elements of a New Media Visibility Regime," <https://ecpr.eu/Filestore/PaperProposal/e40a7961-0fe3-42a5-8727-f9097552f2fe.pdf> <accessed on December 3, 2020>
13. Kirstie Ball, Kevin Haggerty and David Lyon, eds., *The Routledge Handbook of Surveillance Studies* (Londres: Routledge, 2014), 43.
14. Asa Mittman, "Inverting the Panopticon: Google Earth, Wonder and Earthly Delights," *Literature Compass* 9, no. 12, (2012), 938-54.
15. Denis Cosgrove, *Apollo's Eye a Cartographical Genealogy of the Earth in the Western Imagination* (Baltimore: Johns Hopkins UP, 2001).
16. Paul Kingsbury and John Paul Jones, "Walter Benjamin's Dionysian Adventures on Google Earth," *Geoforum* 40, no. 4, (2009), 509. For a critique of this approach see Gwilym Eades, "An Apollonian Appreciation of Google Earth," *Geoforum* 41, no. 5, (2010): 671-73.
17. Here we can borrow from Claude Levi-Strauss's notion of bricolage as a way to adapt existing tools to new purposes (see *La pensée sauvage*, 1962), and from Guy Debord's idea of *détournement* as a way to subvert objects or concepts from their original uses and meanings, but also from the Situationists' theorization of a "psychogeography"—an approach to geography which emphasizes playfulness and "drifting" around urban environments—as a way to create personal and emotional paths.
18. Domenico Quaranta, et al., *Collect the WWWorld. The Artist as Archivist in the Internet Age* (Brescia: LINK Editions, 2011), 18.
19. We can also refer to Marcel Duchamp at the beginning of the 20th century. The Barbican Gallery recently did a whole exhibition on this theme, focusing on the personal collections of more than a dozen contemporary artists, who frequently treat collecting as an extension of their artistic work, through the notion of "creative collecting". See Lydia Lee, *Magnificent Obsessions: The Artist as Collector* (London: Barbican Art Gallery, 2015).
20. Here I refer to Hal Foster's "An Archival Impulse," *October* 110, (2004): 3-22. See his figure of the "artist-as-archivist."
21. As explained by Henry Jenkins in *Convergence Culture: Where Old and New Media Collide* (New York: New York UP, 2006).
22. Started in 1924 and unfinished at Warburg's death in 1929 it presents different types of historic and social memory through different kinds of photographs (from art, science, or

ordinary practices), whose selection is both representative of western culture and subjective of its creator. Using mapping as a visual form of genealogy, we take part in the deconstruction and reconstruction of the very notion of historicity as founded on chronology: heterogeneous elements and themes express contrasts and polarities rather than a unifying vision of styles. See Aby Warburg, *L'atlas Mnemosyne* (Paris: Ecarquille, 2012).

23. Started in 1962 as an album of photographs, collages and drawings to see in time and space (on an exhibition wall).

24. Marcel Broodthaers's *La Conquête de l'espace, Atlas à l'usage des artistes et des militaires* (Brussels and Hamburg: Lebeer Hossmann, 1975) is an artist's book embodying the artist's sardonic sense of humor with its plays on language and function: the title references the historic use of atlases by militaries for territorial conquests, but printed on a miniature scale, it is unusable for its intended function. Moreover, Broodthaers did not follow established geographical organization, choosing rather to present only a small selection of countries organized in alphabetical order and graphically represented in identical size.

25. Opened at the Museo Nacional Centro de Arte Reina Sofia in Madrid in 2010. See in particular Didi-Huberman's *Atlas ou le gai savoir inquiet. L'œil de l'histoire, 3* (Paris: Éditions de minuit, 2011) for a focus on an "interval iconology," a montage culture and a complex and polychronic temporality obtained through dialectic tensions and anachronistic juxtapositions among images.

26. Even though we must not forget the digital divide concerning the access to a fast Internet connection, which is not free.

27. Jason Farman, "Mapping the Digital Empire: Google Earth and the Process of Postmodern Cartography," *New Media & Society* 12, no. 6, (2010): 6-7.

28. This fluidity of the experience was already announced in the video "Powers of ten" by the couple of designers Charles and Ray Eames in 1977 (proposing a journey between the extremely big and the extremely small through zooming), showing a process more similar to a scan than to a mechanical photographic shot, and transforming all still images into moving ones.

29. The photograph—taken by the astronauts on board of the Apollo 8 spacecraft while it was entering its fourth orbit around the moon—was said to have been a key part of the start of the new environmental awareness movement as emblemized in Earth Day, initiated just over a year after the picture was taken. See Farman, "Mapping the Digital Empire," 2.

30. Marshall McLuhan, *Understanding Media, The Extensions of Man* (1964; Cambridge [Mass.]: MIT Press, 1994).

31. It inspired utopian thoughts of a world government, perhaps even a single global language, epitomized by its use on the front cover of *The Whole Earth Catalog*, the classic book of the counterculture. See Nicholas Mirzoeff, *How to See the World. An introduction to Images, from Self-portraits to Selfies, Maps to Movies, and More* (New York: Basic Books, 2016), 2.

32. That unified world, visible from one spot, often seems out of reach now, as the planet itself is transforming before our eyes due to climate change.

33. Mirzoeff, *How to See the World*, 6-8.

34. I refer here to Roland Barthes' opening in *Camera Lucida* (1980), where happening on a photograph of Napoleon's youngest brother he realized that he was "looking at eyes that looked at the Emperor," Roland Barthes, *Camera Lucida: Reflections on Photography*, trans. Richard Howard (London: Vintage, 2000), 3.

35. I refer to the title of the 2009 *Geoforum* issue "The 'view from nowhere'? Spatial politics and cultural significance of high-resolution satellite imagery," which was also quoting and questioning Thomas Nagel's *The View from Nowhere* (Oxford: Oxford UP, 1986).

36. Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* Vol. 14, No. 3, (Fall, 1988): 16.

37. Ana Peraica, *The Age of Total Images. Disappearance of a Subjective Viewpoint in Post-digital Photography* (Amsterdam: Institute of Network Cultures, 2019), 17.

38. See also the difference between “through” and “at” forms of attention in Richard A. Lanham, *The Economics of Attention: Style and Substance in the Age of Information* (Chicago: University of Chicago Press, 2007).
39. Veronica della Dora, “A World of ‘Slippy Maps’: Google Earth, Global Visions, and Topographies of Memory,” *Transatlantica* 2, (2012), 4-5, <https://journals.openedition.org/transatlantica/6156> <accessed on December 3, 2020>
40. This difference, as captured by Ptolemy almost two millennia ago, is not only one of scale (global vs. local), but also of mode (quantitative vs. qualitative, maths vs. art, space vs. place, specialized training vs. amateur skills) and of thinking (analytic science vs. the art of memory, the grid vs. pictorial vignettes).
41. Jerry Brotton, *A History of the World in Twelve Maps* (New York: Viking, 2012).
42. Farman, “Mapping the Digital Empire,” 5-6. The Gall-Peters projection of 1973 is considered truer to the world proportions, thus presenting ideological corrections, while the 2016 Japanese map “AuthaGraph” finally deforms the real size of continents as little as possible (there are different forms that the original sphere can take).
43. Veronica della Dora, “A World of ‘Slippy Maps’,” 9.
44. Enrico Menduni, *I media digitali. Tecnologie, linguaggi e usi sociali* (Bari: Laterza, 2007), 217-21.
45. Brotton, *A History of the World in Twelve Maps*, 425-26.
46. A free online web mapping service born in 1996 from a cartographic services company founded in 1967.
47. As Henri Lefebvre argues space is better intended as produced or co-produced (as a complex social construction) rather than as a container. See *La Production de l'espace* (Paris: éditions Anthropos, 1974).
48. Corresponding to our network society as described by Manuel Castells in his trilogy *The Information Age: Economy, Society and Culture: The Rise of the Network Society* (1996; Oxford: Wiley-Blackwell, 2009), *The Power of Identity* (1997; Oxford: Wiley-Blackwell, 2009), *End of Millennium* (1998; Oxford: Wiley-Blackwell, 2010).
49. It presents categories like “Earth” or “Civilization,” but also sections concerning the space around the earth or educational tools.
50. Farman, “Mapping the Digital Empire,” 19-22. Google Earth is able to present the debates spatially rather than in the form of a list, associating the dialogue of a community with the visual representation of the space that is the subject of the discussion.
51. We still need to understand if these changes in the system are effectively adequate for practical and urgent purposes. For instance, after the violent 2010 earthquake in Haiti the Port-au-Prince city map was developed on the crowdsourced mapping tool OpenStreetMap rather than on Google Maps. See Jason Farman, *Mobile Interface Theory: Embodied Space and Locative Media* (London: Polity, 2010), 52-3.
52. “Recollecting Landscapes”, <http://www.recollectinglandscapes.be/> <accessed on December 3, 2020>
53. “Mapping Main Street”, <https://docubase.mit.edu/project/mapping-main-street/> <accessed on December 3, 2020>
54. “C’era una volta Ponte San Pietro”, <http://www.ceraunavoltapontesanpietro.com/> <accessed on December 3, 2020>
55. “La memoria visibile”, <http://lamemoriavisibile.lab80.it/> <accessed on December 3, 2020>
56. “Mémoire Filmique Pyrénées-Méditerranée”, <https://memoirefilmiquedusud.eu/> <accessed on December 3, 2020>
57. The satellite tracing of a point position: satellites send to the Earth digital radio signals allowing whoever owns a receiving device to detect his own position through the measure of the time the signal takes to travel that distance. Developed by the US Defense Department in the

1970s and reserved for military usage until 1991, this device is today used by many practical applications like car navigators and mobile phone apps.

58. Farman, *Mobile Interface Theory*, 45.

59. The first known aerial photographs are those of Paris in 1858 by Gaspard-Félix Tournachon (“Nadar”). While these pictures were metaphorically considered “elevating” the art of photography (as shown in Honoré Daumier’s lithograph *Nadar élevant la Photographie à la hauteur de l’Art*, published in *Le Boulevard*, May 25, 1863), the aerial views by James Wallace Black and Samuel A. King of Boston in 1860 were welcomed as the precursor to practical experiments (“... the time has come when what has been used for public amusement can be made to subserve some practical end”). See Robert Taft, *Photography and the American Scene: A Social History, 1839-1889* (New York: Dover, 1938), 186-87.

60. From the 1920s in particular, when the regional tradition of “French human geography” was already firmly established. Aiming at understanding the relations between regions and between natural and human, it had been spearheaded by the geographer Paul Vidal de la Blache at the Ecole Normale Supérieure in Paris in the late 19th and early 20th centuries. See Jenne Haffner, *The View from Above*, 22.

61. Haffner, *The View from Above*, 7-17; 81-107.

62. Andrew Higgott, and Timothy Wray, eds, *Camera Constructs: Photography, Architecture and the Modern City* (Farnham/Burlington: Ashgate, 2012), 150.

63. Clement Valla, “The Universal Texture,” *rhizome.org*, July 31, 2012, <https://rhizome.org/editorial/2012/jul/31/universal-texture/> <accessed on December 3, 2020>

64. Doug Rickard, *A New American Picture* (New York: Aperture, 2012).

65. “A New American Picture”, <http://www.dougrickard.com/a-new-american-picture/> <accessed on December 3, 2020>

66. Franci Duran and Wibke Schniederermann, “Interview with Franci Duran about Her Video Art Installation 8401,” *on_culture* 6, (2018), <https://www.on-culture.org/journal/perspectives/duran-schniederermann-8401/> <accessed on December 3, 2020>

67. “9 Eyes,” <https://9-eyes.com/> <accessed on December 3, 2020>

68. Jon Rafman, “You, the World and I,” <http://youtheworldandi.com/> <accessed on December 3, 2020>

69. Clement Valla, “The Universal Texture,” *rhizome.org*, July 31, 2012, <https://rhizome.org/editorial/2012/jul/31/universal-texture/> <accessed on December 3, 2020>

70. Like Reijo Kela’s *Silent People*: a scarecrows field in Finland. See “Voici l’endroit le plus effrayant de Google Maps,” *Lesinrocks*, <https://www.lesinrocks.com/2017/10/news/voici-lendroit-le-plus-effrayant-de-google-maps/> <accessed on December 3, 2020>

71. Chris Ip, “‘The Agoraphobic Traveller’ Confronts Anxiety with Google Street View,” *Engadget.com*, <https://www.engadget.com/2017/10/02/street-view-photography-exhibition-jacqui-kenny-interview/?guccounter=1> <accessed on December 3, 2020>

72. For an example of an artificial neural network trying to simulate the way the brain works in order to learn we can consider the project “Creatism,” which mimics the workflow of a professional photographer, roaming landscape panoramas from Google Street View and searching for the best composition and aesthetics. See Hui Fang, “Using Deep Learning to Create Professional-Level Photographs,” Google Research Blog, July 13, 2017, <https://ai.googleblog.com/2017/07/using-deep-learning-to-create.html> <accessed on December 3, 2020>

73. Andrea DenHoed, “An Agoraphobic Photographer’s Virtual Travels, on Google Street View,” *Newyorker.com*, *The New Yorker*, 29 Jun. 2017, <https://www.newyorker.com/culture/photo-booth/an-agoraphobic-photographers-virtual-travels-on-google-street-view> <accessed on December 3, 2020>

74. As described by David Jay Bolter and Richard Grusin in *Remediation. Understanding New Media* (Cambridge [Mass.]: MIT Press, 1999).

75. Richard Grusin, "Radical Mediation," *Critical Inquiry* 42, no. 1, (2015):145.
76. Jacques Derrida, "Archive Fever: a Freudian Impression," *Diacritics* 25, no. 2, (1995): 17. Here the author links the need for archives to memory and psychoanalysis.
77. Ana Peraica, *The Age of Total Images. Disappearance of a Subjective Viewpoint in Post-digital Photography* (Amsterdam: Institute of Network Cultures, 2019), 37.
78. "Land Lines," <https://lines.chromeexperiments.com/> <accessed on December 3, 2020>
79. Chris Milk and Arcade Fire, "The Wilderness Downtown," <http://www.thewildernessdowntown.com/> <accessed on December 3, 2020>
80. If one looks nearly at anywhere in the Western world, especially in a big city, there is more likelihood that the images will be in high definition. On the other hand, an address in the "third world," especially one in a small village will have lower definition, if it is represented at all. This seems to be creating a new type of political map structured on image resolution and updating data. On resolution see also Francesco Casetti and Antonio Somaini, "Resolution: Digital materialities, thresholds of visibility," *Necsus* 7, No. 1, (Spring 2018):87-103, <https://necsus-ejms.org/resolution-digital-materialities-thresholds-of-visibility/> <accessed on December 3, 2020>
81. For some recent research on "surfaces" see Giuliana Bruno, *Surface: Matters of Aesthetics, Materiality, and Media* (Chicago: The University of Chicago Press, 2014); Rebecca Coleman and Liz Oakley-Brown, "Visualizing Surfaces, Surfacing Vision: Introduction," *Theory, Culture & Society* 34, no. 7-8, (2017): 5-27, and Tim Ingold, "Surface Visions", *Theory, Culture & Society* 34, no. 7-8, (2017): 99-108.
82. See Anne Friedberg's *The Virtual Window. From Alberti to Microsoft* (Cambridge [Mass.]: MIT Press, 2006).

ABSTRACTS

This article explores Google Earth as a new aesthetic form of the visual, which has the power to influence our perception and understanding of the planet by expanding and complexifying our visual experience. While considering the cartographic projection used by Google Earth, I focus on the acts of selection and of re-contextualization—through human choice and intention—of images captured automatically by machines. My aim is to demonstrate that this hegemonic technology can be potentially subverted through the augmented interactivity of its users. Following the idea that Google Earth is a new model of representation of the world—aggregating cartographic, photographic and satellite images—this paper first describes Google Maps as a flexible and portable map that can be modified, enriched with data or audiovisual content and associated with GPS. Then it explores a number of artistic projects which present themselves as collections of images captured while travelling through Google Earth or Google Street View, in order to examine how they both reveal and divert the "machine vision" underpinning its hybrid system and the aggregated form of its interface.

I employ a "media archeology" approach to identify the ancestors of Google Earth, Maps and Street View (maps, aerial views, road photographic guides), to see the continuities and the ruptures in this new aesthetic form of the visual, which is based at the same time on the virtualization of the geographic experience and on interactivity, as well as on a new level of fluidity among different types of images and layers of reality (the experience of the globe, aerial and street views). Devices developed mostly in military or territorial expansion contexts

contribute to the constitution of the contemporary screen multiple visual and temporal perspectives.

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