# Mapping the Digital Empire:
# Google Earth and the Process of Postmodern Cartography

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"The territory no longer precedes the map, nor does it survive it."
Jean Baudriallard[1]

In 1968, as the Apollo 8 spacecraft was entering its fourth orbit around the moon, the astronauts on board took a photograph now famously known as "Earthrise."[2] This image of the entire earth was the first of its kind taken by a human and became the iconic image for many social and political movements (the photograph, for example, was said to have been a key part of the start of the new environmental awareness movement as emblematized in Earth Day, initiated just over a year after the picture was taken). The image has become one we are now accustomed to: the whole earth viewed from a quiet distance of nearly 240,000 miles above its surface. "Earthrise" also became the perfect visual representation of Marshall McLuhan's 1964 idea that we have become a "global village."[3] This image symbolizes the global awareness and cross-cultural connections that extend beyond borders in the late 20th and early 21st centuries. However, visual representations of Earth have historically coupled such positivist ideals with far less benign agendas. Voyeuristic imagery, under the pretense of objective empiricism, has been critiqued across such disciplines as film and media studies, anthropology and ethnography, and in the Earthrise photograph's ancestor of mapmaking. Matthew H. Edney points out in his seminal study, *Mapping an Empire: The Geographical Construction of British India, 1765-1843*, "Imperialism and

mapmaking intersect in the most basic manner. Both are fundamentally concerned with territory and knowledge."[4] He continues by noting that the "maps came to define the empire itself, to give it territorial integrity and its basic existence. The empire exists because it can be mapped, the meaning of empire is inscribed into each map."[5]

These critiques of cartography have carried over into the digital implementation of maps, most notably in the proliferation of new Geographic Information Systems (GIS), such as Google's 2005 release of the Google Earth software program. Yet, what type of colonialism could be present in the seemingly neutral technology of Google Earth? By connecting this popular GIS to the colonial history of cartography, this paper seeks to analyze the cultural implications of this software program and the potential dangers that are often attributed to GIS. I also seek to counter these critiques by showing how Google Earth uniquely engages its users, not as disembodied voyeurs, but as participants in global dialog, represented spatially on the digital map. Ultimately, this study seeks to find a way in which recontextualization and subversion from the "master representations" of maps can be achieved *within* the authorial structure of the map. Can shifts in power happen from within rather than re-authoring the existing software?

A description of the Google Earth software program will offer an important foundation to my analysis. Originally called Earth Viewer and owned by Keyhole, Inc., the program was a part of the many acquisitions Google became known for pursuing (such as the famous acquisition of the start-up video sharing site, YouTube, in 2006). Earth Viewer was renamed to "Google Earth" in 2005. The program falls under the category of Geographic Information System and has made this once-specialized software available and usable for the mass market (the program is downloadable and fully usable for free). It compiles satellite

imagery and aerial photographs into a 3D virtual globe that can be interacted with in a wide variety of ways. Once started, the program situates viewers from roughly the same distance to Earth as some of the Apollo 8 whole-earth photographs - about 16,000 miles - and then zooms in (or "flys to" in Google Earth terminology) on the user's region (North America on my computer). Users can zoom in on an object as small as one meter in any largely populated area of Europe or North America. Other less populated areas, and other continents such as Africa, can be zoomed in to an average of 15 meters. Users can map automobile travel, and even see panoramic images at street level of portions of their journey (a feature added in April of 2008). A fly-through of the Grand Canyon is available, based on topographic information and the visual overlay of the area, as well as a "flight simulator" that users can engage and travel around 3D representations of city skyscrapers. Users can even escape Earth altogether and gaze at the stars and galaxies surrounding the planet through the "Google Sky" option in the program. One of the most unique things about Google Earth is the social network that has developed around the program called the "Google Earth Community." This network, which is essentially a spatial Bulletin Board System (BBS), was integrated into the early versions of the program. Members of the community can post placemarks that relate information about a specific location for any user to see. Many in the Google Earth Community also create "overlays" that offer a literal replacement or augmentation of the existing map (such as a detail of the path of Cyclone Nargis and the affected areas in Myanmar). These overlays can be downloaded and implemented by any user of the program.

The potentials of the program are obvious, yet the problems surrounding the use of GIS such as Google Earth are largely overlooked by the majority of users (as evidenced in the lack of critical dialog about the program itself inside the Google Earth

Community forums). Critiques of cartography by the "new geographers" (see Wood and Fels 1986; Harley 1988, 1992; Edney 1990; Wood 1992; and Pinder 1996) argue that maps are subjective and should be "read" as representations of "the culture that produces them as much as they are a representation of a section of the earth or activities upon it."[6] This understanding has been reflected in critical analyses of GIS by such people as Mei-Po Kwan, who notes:

> While many maintain that the development and use of GIS constitute a scientific pursuit capable of producing objective knowledge of the world, others criticize GIS for inadequate representation of space and subjectivity, its positivist epistemology, its instrumental rationality, its technique-driven and data-led methods, and its role as surveillance or military technology deployed by the state.[7]

One of the key components to Kwan's critique of GIS is the tradition of disembodied visualization that is indelibly linked to the act of viewing GIS maps. As Google Earth zooms in to the earth from a distance, the "disembodied master subject" as Donna Haraway theorized is "seeing everything from nowhere."[8] These representations are believed to be objective; they are simply images of reality and outside the realm of cultural interpretation. The problem with such a positioning of GIS as a program that simply gathers empirical data and presents it as fact, is that such "scientific objectivity" is typically situated and privileges those in power. The reading of objective space is indeed a "reading," an interpretation. All forms of visual media have fallen under such scrutiny since, as Kwan recognizes (citing Susan Roberts and Richard Schein), "A GIS is a gendered technology relying on scientific knowledge…The technology is socially constructed as masculine in the same way that the camera itself has been recognized as an extension of a

'redoubled masculine will' implying (or forcing) the subject's 'surrender.'"[9] Theories of The Gaze in cinema and theatre can be applied to the act of gazing at the GIS representations of the globe.

The relationship between gazing and being "owned" by the gaze is particularly apt to the cartographic technology of GIS. Maps have been, as previously noted by Edney, a way for empires to intimately know the territory they have conquered. War and imperialism have a significant investment in maps as a way of delineating "us" versus "them" as well as defining "our territory." Militaristic actions, while lived by the soldiers, are often not realized until they are connected to the "reality of the map." For example, this is seen in Hemingway's character of Harold Krebs in the novella *In Our Time*. Krebs returns home from World War I and spends most of his time reading books about the war, especially books with maps:

> He sat there on the porch reading a book on the war. It was a history and he was reading about all the engagements he had been in. It was the most interesting reading he had ever done. He wished there were more maps. He looked forward with a good feeling to reading all the really good histories when they would come out with good detail maps. Now he was really learning about the war. He had been a good soldier. That made a difference.[10]

Krebs' involvement in the war is materialized in the connection of his lived experience to spatial information on the map. We get a sense that, since he is unable to recount his personal history of the war to anyone in his town, that the only way to make the action "real" is to connect it to the maps in the history books. Living through the war wasn't enough to teach him about war, instead he finds such lessons in studying the maps: "Now he was really learning about the war." Recalling the quote at the beginning of this

paper from Baudrillard, "The territory no longer precedes the map, nor does it survive it. It is nevertheless the map that precedes the territory - *precession of simulacra* - it is the map that engenders the territory."[11] Granted, for Baudrillard, someone like Krebs never inhabited a sphere of "reality," but was instead always caught up in the simulacrum. Nonetheless, Krebs' lived experience never enters the realm of signification until he is able to trace his military actions on the visual representation of the map. Thus, the military actions and zones of "us" and "them" have a historical intimacy with maps, how they are read, and how such actions enter the realm of a lived, phenomenological experience.

The intimate relationship between maps and military actions exists only as long as the maps are reliable and usable. Alan M. MacEachren notes that, despite the postmodernist views of the new geographers, maps are still often expected to be reliable (i.e. accurately connected to "reality") and that such a view is essential to our everyday navigation of lived space. He writes,

> If we accept the premise that maps can 'work' (i.e., they are a useful way of obtaining spatial information), we have an obligation to facilitate their use as information sources. The fact that we cannot eliminate the cultural baggage inherent in any human artifact does not give us a license to ignore the practical consequences of our decisions in designing that artifact. […] [R]esearch that makes maps used by air traffic controllers or pilots less prone to misinterpretation would probably be valued by anyone who travels by air, perhaps even a "postmodernist."[12]

The connection of maps and GIS to "reality" is typically an inherent expectation of the map and is implemented through something as simple as charting your route to work to something as deadly as the

al-Aqsa Martyr's Brigade's use of Google Earth to map out targets for missile attacks into Israel.[13]

The main problem with this expectation of maps and GIS "representing reality" is that it assumes such representations are neutral and outside of cultural interpretation. As Raymond B. Craib writes, commenting on Baudrillard's discussion of maps,

> Jean Baudrillard's choice of the map as an example is highly appropriate - no other image has enjoyed such prestige of neutrality and objectivity. […] The most oppressive and dangerous of all cultural artifacts may be the ones so naturalized and presumably commonsensical as to avoid critique.[14]

Which returns me to the question I presented at the beginning of this paper - if Google Earth's ancestry is colonial cartography, what, if anything, is the empire mapped by this GIS? I want to argue that Google Earth's charting of the globe onto an interactive, web-based GIS is inherently connected to the desire to map out a new territory: the digital empire. McLuhan's notions of a "global village" have indeed been actualized in the digital age, yet this is a village connected by an uncharitable World Wide Web. Mapping these global connections across the web is a nearly impossible task, yet there is still a desire to locate oneself spatially within cyberspace. One possibility for beginning to chart this new global relationship is to replicate the visual connectivity that was initiated by the "Whole-Earth" photographs of the Apollo space missions. By representing the new global village as a virtual globe that can be navigated and interacted with, Google has taken the steps to chart out visually the territory that it has sought to command: an interconnected global village. While it may be extreme to refer to this as the Digital Empire mapped out by Google, it is important to recall that those who are in control of the design and distribution of maps are the ones in the position of power.

Though I will not compare the corporate concerns of Google with the corporate (and ultimately political) concerns of the East India Company and its participation in the mapping of colonial India,[15] I will stress that Google's corporate concerns are fundamentally linked to political concerns. From disputes of the proper labeling of Taiwan to the disappearance of Tibet from the program, the creation or erasure of national borders has caused worldwide debates that demonstrate the indelible link between this technology and political concerns. National governments, such as Chile, have demanded that Google change the borders on its program to accurately reflect the borders that have been previously established. Google responded to Chile's demands, correcting the border near the town of Villa O'Higgins (named after a national hero who fought for independence) to reside in Chile instead of Argentina.[16] However, Google has remained silent to the requests of Taiwan to be labeled as its own country instead of a province of China.

Another historically problematic issue with maps that inherently ties into political issues is the map projection used. Google Earth is made up of various flat photographs that need to be altered into a 3D sphere and, as with any map projection, distortion occurs. The effects of this distortion and its political consequences are determined by the mathematical projection used. For example, the famous Mercator projection from the 16th Century was designed for nautical voyages yet distorts many land masses: continents closer to the equator are smaller and those closer to the poles are larger (thus, Africa looks about as large as Greenland, when it is actually around 14 times the size of Greenland).[17] Though the projection Google Earth uses (an equirectangular projection) is well suited for a spherical representation of Earth, any decision regarding which projection to use is far more politically loaded than simply choosing the projection that best represents "reality." These

decisions (the delineation of borders and the choice of map projection) reiterate the authorial control Google has over the representation it presents to its users.

Since maps are, by and large, accepted as representing some ontological reality that exists beyond the limited subjectivity of its viewers, a transference of the power of the gaze is placed upon the viewer rather than the cartographer. By accepting the map as reality, the viewer enters into partnership with the map's author over the hegemonic assumptions such a visual representation makes. However, as David Wood writes in his book, *The Power of Maps*, "Once it is acknowledged that the map *creates* these boundaries, it can no longer be accepted as *representing* these 'realities,' which alone the map is capable of embodying."[18] Wood goes on to cite Harley, who argues, "Could it be that what cartographers do, albeit unwittingly, is to transform by mapping the subject they seek to mirror so as to create not an image of reality, but a simulacrum that redescribes the world?"[19]

Google Earth, however, functions to trouble this transference of the gaze by including a crucial element to the map's own deconstruction: the fundamental component of a participatory culture. One major draw to the Google Earth program is the interactive nature it offers with a social network, the "Google Earth Community." By integrating a social network with GIS technology, the authorial nature of the map can be brought into pubic debate and refigured by the user-generated content created by the community. The Google Earth Community is essentially a Bulletin Board System (BBS) that is spatially related to particular locations on the map. Users post forum comments that relate to particular pinpoints users stick onto the map. For example, one user placed a pinpoint (or a "placemark") on Lhasa, Tibet that said, "No Human Rights Here." As users clicked on the placemark, the community member's post opened up to discuss the human rights violations committed by

the Chinese government in Tibet. Various users responded, asynchronously in forum style, to the post, discussing the topic and its situated locale.

Utilizing what is arguably the first form of social networking, the BBS (the first of which being "Community Memory," a computerized bulletin board system started in 1972 in a few Laundromats and public places in the San Francisco area), Google Earth is able to connect people across borders in the discussion of those borders. While most current BBSes exist in list form, displayed in the HTML of a forum, Google Earth is able to present these debates spatially, associating the community dialog with the visual representation of the space being discussed. Users can take dialog about the map one step further: they can actually replace or alter the map through the use of "overlays." Overlays function as a way for users to augment the map by offering a different visual representation of a specific area and can range from the simple (a user replaces the low resolution imagery of Bora Bora in French Polynesia with a higher resolution aerial photograph) to the complex (an animated overlay that shows the shrinking Artic icecaps). The overlays highlight the fact that the maps are not simply static visual facts to be received, but instead flexible signs that can be engaged in free play. Upon entering Google Earth and engaging the Google Earth Community, it becomes quickly obvious that there is not a "central" map of authority that will dominate user interactions; instead, the map users are initially presented with is acted upon, changed, and replaced. This is a very different experience of maps than has been historically presented in the public education system in the United States: throughout its history, the U.S. public schools have used a map that was designed in 1569, the Mercator Projection. Due to the characteristics attributed to maps, that is, they are simply representations of reality, a map that was designed in 1569 is just as good as any map designed in the

20th Century. If maps are understood to be undisputed, static representations of physical reality, there has never been a reason to question them, alter them, or replace them. The user-generated content of the Google Earth community brings this symbol, which has enjoyed the status of being a grounded sign, into a relationship with the users that allows them to engage in free play. Such levels of interactivity with maps have historically been reserved for those in positions of cartographic skill or authoritarian power.[20]

Does the inclusion of a social network that is able interact and alter the maps within Google Earth solve the fundamental problems presented by postmodern cartographers and theorists? There is, after all, still a mapmaker, a designer, and a coder. Decisions are still carried out by the Google corporation that constantly affect the ways users can interact with the maps. After all, Google is the one that made the option of overlays available to users in the first place. Also, as with almost all BBSes, there is a forum moderator, who ultimately decides what content is appropriate for the bulletin board and what content or users will not be allowed past the gates. Aren't we forced to read Google Earth as simply adhering to centralized power over user interactions as laid out by the Google corporation?

My response is, no, we do not have to read Google Earth as remaining within the static authorial control of its authors/programmers. Drawing from the rich debates that have surrounded the term "interactivity" in such fields as electronic literature or game studies, I argue that resistance to master narratives can come through a recontextualization from within the existing structures. While I understand and identify with those who argue that structures that oppress must be replaced, the method of subversion and replacement must be questioned (a replacement that is inevitable, since all structures or power, i.e. all "centers" in the Derridian sense, are always reduced and replaced). Though I admire

the work of feminists such as Audre Lorde, who argued that, "the master's tools will never dismantle the master's house,"[21] I believe that true interactivity that leads to social reform comes from a recontextualization of the existing master narratives - a refiguring that ultimately works to deconstruct the grounded signification demanded by any master narrative.

For example, one might argue that the overlays that I discuss are not sufficient to reposition authorial control from Google since the overlays are available only because Google has made them available. These are the "master's tools" and, since such tools are limited and exist only according to the authorial and programming decisions of Google, they are not sufficient to completely undo the problems of cartographic authority. Agency, it seems, is only at the discretion of those in power. Such arguments go against our experience of navigating through everyday life and the authorial structures that bound us on every side. As Marie-Laure Ryan says, "[B]oundaries are everywhere: boundaries within the representing discourse, and boundaries with the represented system of reality; boundaries with gates to get across, and boundaries with only windows to look through."[22] Despite the fact that boundaries exist according to authorial structures, we have the ability to freely navigate the space and ultimately recontextualize the spaces that we inhabit (though they are bounded by various power structures and master sign systems). Navigating through an urban landscape is the perfect example: despite some authority placing streets in certain locations and stoplights that interrupt your journey, we rarely feel that we have lost all agency. Instead, we feel the freedom to take a wide array of routes to our destination. Though we cannot go literally anywhere due to the structure and layout of streets and buildings, we do not feel that we have lost all power in relationship to the shape of our journey.

Such a reading of interacting with the existing structures to formulate a path of resistance resonates strongly with the work of Guy Debord and the Situationist International (SI). Debord's theories of the *dérive* and *détournement* begin to point toward the recontextualizing of existing sign systems. Debord's *dérive* (translated as "drifting" or "wandering") is a way to alter the body's experience of the urban environment. The drifter decides to encounter the city in a new way - by letting the signs and flows guide his or her wandering.[23] Rather than using a map or having a specific destination in mind, the drifter lets the landscape, the architecture, and the signs of the city guide his or her direction. In conjunction with this theory, as it is applied to my analysis of subverting the authority of the map, is Debord's theory of *détournement*. *Détournement*, as discussed in his book *The Society of the Spectacle*, is a shift in the semiotic structure that is apparent through an alteration of modes of interpretation of established sign systems.[24] For Debord, one such power structure that disseminated authoritarian sign systems was the structure of the urban landscape. The mapping and layout of streets and highways, the implementation of stop signs and traffic lights, buildings that block passage from point A to point B are all scripted structures that each person has to contend with. To counter such an authority is found in the ability to *dérive* though the city streets, creating a journey based on new semiotic relationships between the body and the urban signs. This is improvisation *within* the scripted landscape. It does not do away with the script; it instead utilizes the script as a source for new associations to be created in the moment.

The user-generated content disseminated in Google Earth by the social network that has developed around the program are tools that ultimately recontextualize the static map presented by Google. These spatial discussions and map overlays interactively involve users in the representation of the social space of the global village.

Though it is often argued that the age of the Internet is a borderless space, borders are constantly reiterating their presence. From the disputes over borders within the Google Earth program to the borders established by the software and its system operators to limit the types of interactions users can have with this GIS, many feel so bounded by these borders to argue that such authorities need to be replaced by a complete reauthoring of the software. Such perspectives unfortunately do not take advantage of the existing software for social change, including the major social change of reevaluating the static nature of maps and cartography. Such a change in perspective has the potential for deep and positive repercussions for interactive media that utilize previously established representational media. By altering our process of interacting with and interpreting visual sign systems, we can ultimately transform the larger social roles around which such sign systems exist.

## Notes

[1] J Baudrillard, *Simulacra and Simulation*, S. F. Glaser (Trans.). The University of Michigan Press, Ann Arbor, 1994, pg. 1.
[2] W David Woods and F O'Brien, 'Apollo 8: Day 4: Lunar Orbits 4, 5, and 6,' National Aeronautics and Space Administration, 1 June 2008 <http://history.nasa.gov/ap08fj/14day4_orbits456.htm>.
[3] M McLuhan, *Understanding Media: The Extensions of Man*, Signet Press, New York, 1964, pg. 19–20.
[4] M Edney, *Mapping an Empire: The Geographical Construction of British India, 1765-1843*. University of Chicago Press, Chicago, 1990, pg. 1.
[5] Ibid., pg. 2.
[6] A MacEachren, *How Maps Work: Representation, Visualization, and Design*, The Guilford Press, New York, 1995, pg. 10.
[7] M Kwan, 'Feminist Visualization: Re-envisioning GIS as a Method in Feminist Geographic Research,' *Annals of the Association of American Geographers*, 92.4 (2002), 645.
[8] D Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature*, Routledge, New York, 1991, pg. 189.
[9] M Kwan, op. cit.
[10] E Hemingway, *In Our Time*, Scribner, New York, 1925, pg. 72.
[11] J Baudrillard, op. cit.
[12] A MacEachren, op. cit., pg. 11.
[13] *The Guardian* published a video news story discussing al-Aqsa Martyr's Brigade and the use of Google Earth to map out their targets in the 25 October 2007 story called, "Google Earth Used to Target Israel."
<http://www.guardian.co.uk/technology/2007/oct/25/google.israel>.

[14] R Craib, 'Cartography and Power in the Conquest and Creation of New Spain,' *Latin American Research Review*, 35.1 (2000), pg. 8.
[15] See M Edney's chapter, "Scientific Practice: Incorporating the Rationality of Empire" in *Mapping an Empire: The Geographical Construction of British India, 1765-1843*, pg. 293-318.
[16] L Haines, "Google cedes Chilean village to Argentina," *The Register*, 30 April 2007, <http://www.theregister.co.uk/2007/04/30/google_cedes_village/>.
[17] The problems with the Mercator projection and its ubiquitous use in United States public schools was written into the fictional story on the television show, *The West Wing*. When shown the Peters Projection as a replacement for the Mercator Projection, character C.J. Craig exclaims, "What the hell is that?" to which the presenter of the map responds, "That's where you've been living this whole time." To see video of the scene, visit: <http://techproject-education.blogspot.com/2007/11/west-wing-and-mercator-map.html>.
[18] D Wood, *The Power of Maps*, The Guilford Press, New York, 1992, pg. 19.
[19] Ibid., pg. 198.
[20] There is also a rich tradition and connection between mapmaking and the arts. See R Rees, "Historical Links between Cartography and Art," *Geographical Review*, 70.1 (1980), pg. 61-78.
[21] A Lorde, 'The Master's Tools Will Never Dismantle the Master's House,' *This Bridge Called My Back: Writings By Radical Women of Color*. C Moraga and G Anzaldúa (eds). Kitchen Table, New York, 1983, pg. 99.
[22] M Ryan, *Possible Worlds, Artificial Intelligence, and Narrative Theory*, Indiana University Press, Bloomington, 1991, pg 175.

[23] G Debord, 'Theory of Dérive,' *Les Lèvres Nues*, 9 (November 1956), <http://library.nothingness.org/articles/all/all/display/314>.
[24] G Debord, *The Society of the Spectacle*, Zone Books, New York, 1994, pg. 145-146.

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