The Digital Globe as Climatic Coming Attraction: From Theatrical Release to Theatre of War

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ABSTRACT This article considers the politics of representation inherent in the emergence of the digital globe. It begins with a consideration of early Renaissance globes as separate and distinct cultural objects from the two-dimensional forms of cartography they followed. The article then considers the emergence of the digital globe as an object symptomatic of the multiple cultural factors that form its foundation. Crucially, beyond occidental perspectives that have structured many dominant cartographic accounts of the Earth since the Renaissance, this article argues that a multipolar environment of online digital globes is emerging to contest Western forms of representation that were intertwined with notions of technoscopic superiority during the twentieth century. Instead what is now emerging is a multiplicity of digital globes that function as spectacular theatrical platforms for different and diverse agencies.

KEYWORDS Climate change; Geo-engineering; Spectacle; Google Earth; Digital Earth

In 1966 the counterculture activist Stewart Brand started to campaign for NASA to release a photograph of the whole Earth. Following NASA’s release of the first colour image (153107 Z 3N) of the Western hemisphere in 1967, Brand created the Whole Earth Catalog and used the photograph as its iconic cover. The image and the Whole Earth Catalog’s distribution of it in a countercultural context were subsequently associated
with a global ecological movement of annual “Earth Day” celebrations that featured variants of NASA’s photograph as their logo. The heart of this movement, it is often claimed, was the realization, embodied in the photograph, that the Earth was not just an interconnected, closed-loop ecosystem, but that it was also fragile and vulnerable to industrial change.

Central to discourses surrounding the importance of the whole-Earth genre of images has been the claim they alerted the public and professional spheres alike to this idea. In such a context the iconic Whole Earth Catalog came to embody a philosophy of radical eco-protectionism manifested in a do-it-yourself, back-to-the-land ethos that the magazine’s “access to tools” fostered. With a certain symmetry, in 1965 James Lovelock, then a NASA scientist at the Jet Propulsion Laboratory, proposed his theory of Gaia: that the Earth was an interconnected organism in a vastly complex balance. In what reads like a Thomas Kuhn case study, Lovelock has described the slow process by which “Gaia theory” came to be accepted in the scientific community, noting especially the role that the genre of whole-Earth photographs had in helping visualize his concepts. The image, Lovelock points out, emerged after he first started formulating his theory, but its arrival came to summarize perfectly the argument he was trying to make. The image, he suggests, therefore aided an acceptance of his radically cross-disciplinary theory as well as contributed to a shift in public consciousness on the nature of our environment.

Curiously, in 2009 Brand released a book entitled Whole Earth Discipline in which he argued from what he called an “eco-pragmatist” point of view that geo-engineering was not only an obvious course of action but a necessary next step in our eco-stewardship of the Earth. In a chapter on what he called “eco-craft,” Brand argued that we are now faced with such dire consequences in the march of global climatic change that new and radical solutions must be entertained. On the back cover of this book James Lovelock (who only three years earlier had warned against geo-engineering on the grounds that “however benign a technological solution may seem it has the potential to set humanity on a path to the ultimate form of slavery” [Lovelock, 2006, p. 152]) endorsed Brand’s “eco-pragmatist” work with the comment that Brand was a “lifelong ecologist and futurist who sees everything in terms of solvable design problems” (n.p.). Strikingly then, both men, whose public careers had been formed on the understanding that the Earth was a complex, fragile, and interconnected living ecological organism, had by the new millennium come to see it as a necessarily “solvable design problem” (n.p.).

Though Brand’s new book used the whole-Earth image on its cover, its philosophy was perhaps better summed up in an image The Economist (2011) magazine ran on its front cover two years later. Around a rendering of the Earth as a scaffolded and riveted industrial structure ran the line “Welcome to the Anthropocene” (the term geologists have settled on to describe the current epoch in which humanity is now the driving force in the changing geology of the planet). It seemed that The Economist and the once-countercultural Brand now agreed on one thing: that the Earth’s environment is now so subject to anthropogenic change that it has become an industrial form in its own right (see Figure 1). Tellingly, however, perhaps looking beyond the still-image
tradition with which he started his activism, Brand argues that in the past decade we have begun a process of building a “digital gaia” necessary for the observation and simulation of changes taking place in our planet’s ecology, with the option to role-play and implement effective countermeasures.

In this article I consider two interrelated aspects of the spectacularly represented, industrialized “Earth” image as a geo-engineerable object. First, I argue that the transition from still, indexical photographic representations of the Earth to dynamic, digitally fabricated interactive globes has had, and is having, profound effects upon both academic and public conceptualizations of the Earth’s environment. Second, I argue that we can approach this transition as a function of the way in which computer simulation represents the Earth in multiply theatrical ways. In the years since the original whole-Earth photographs were taken, our culture has transitioned to software-oriented forms of production and distribution, and with this transition the ontological status of the Earth image has shifted. Where past manifestations of the image, and discussions of its cultural significance, revolved around mechanically reproduced indexical photography, contemporary evaluations are faced with the multiple implications of the digital-image culture within which a new form now sits. Where the whole-Earth photograph was the image almost exclusively referred to when thinking about and visualizing the planet across the multiple media formats of the late twentieth century, today digital globes are the primary Earth representations of our culture. This article considers the politics of representation inherent in the emergence of the digital globe. These theatrical struc-
tures each depend in turn upon digitally fabricated visualizations that lend themselves to an envisioning of the Earth as an inherently engineerable object.

As a new media object with the constant capacity to be reconfigured according to the environmental data that is fed into it, the digital globe has expanded the satellite-based, scopic structures of seeing and knowing the world that emerged in the second half of the twentieth century but which were dreamed of from before the Renaissance. From ice cap melt to deforestation, energy consumption to carbon dioxide production, digital globe plug-ins now present the user, teacher, news media organization, politician, and military strategist with an unprecedented capacity to spectacularly visualize the relationship between the Earth’s environment, resources, ecosystems, and politics and have already impacted policy decisions (Parks, 2009).

The digital globe as new media object also presents the user with another powerful principle upon which the visualization of our Earth is premised: the logic of the “undo” tool. Unlike the famous Blue Marble photo that presented a snapshot of the Earth’s ecosystems at one moment in time, the digital globe presents multiply simulated ecosystems at many moments across time. Here data is not fixed but constantly dynamic and updatable. Furthermore, data is not limited to the representation of what is or what was but extends to what may be. In the data-visualization of the simulation, the digital globe opens up the future as one of infinite possibilities and in doing so presents the Earth’s ecosystems as open to the possibility of the digital “undo.” This logic pervades many notions of the geo-engineered Earth. It is in this sense that I will approach the notion of the digital globe in this article as theatre in multiple senses of the word: as a theatre of environmental spectacle, as a military theatre of operations, as political theatre, as a lecture theatre of scientific contestation. This is not to make light of the very real significance of the digital globe and the high stakes involved in the representation of the Earth’s ecosystems over the coming decades. Rather, the intent of thinking of the digital globe as a form of theatre is to challenge the idea that it functions as a straightforward representation of data about the Earth. Instead, I will suggest that the digital globe is already a place within which competing rhetoric is deployed by various “actors.”

Before doing this, it is worth pointing out that this is not the first time the whole Earth has been described as a form of theatre. For while Marshall McLuhan has often come to be associated with his notion of the “global village,” he also coined another equally neat metaphor in 1974 that did not gain the same level of traction. Somewhat presciently he stated, “Ecological thinking became inevitable as soon as the planet moved up into the status of a work of art … at the moment of Sputnik the planet became a global theatre in which there were no spectators but only actors” (p. 49, emphasis added). While McLuhan’s description of the Earth as a “global theatre” was generally forgotten in favour of his characterization of the more sound bite-friendly “global village,” it is worth returning to it for no other reason than that he used it to relate the rise of ecological thinking about the planet to our capacity to monitor it from space and in turn dramatize the resulting data. While McLuhan referred to the planet as a work of art, however, he was writing on the cusp of the transition from the age of mechanical reproduction to that of digital transformation (Jenkins, 2003).
Starting with a consideration of early physical globes as separate and distinct cultural objects from the two-dimensional forms of cartography they followed, I will go on to consider the emergence of the digital globe, like its analogue predecessors, as an object symptomatic of the multiple social, cultural, political, philosophical, and ecological factors that form its foundation. Crucially, beyond occidental perspectives that have structured many dominant cartographic accounts of the Earth since the Renaissance, this article argues that a multipolar environment of online digital globes is emerging to contest traditional Western representations that were intertwined with notions of technoscopic superiority of the twentieth century. Instead what is now emerging is a multiplicity of digital globes that function as theatrical platforms for different and diverse actors and audiences. Here digital globes are analyzed in relation to the theatrical uses to which they are put: as sites of spectacular cinematic attractions, as sites for the dramatic staging of news media events, as sites of simulated military debriefings, as sites of emergency operation on a terminally ill patient, and consequently, as sites where the science of geo-engineering is dramatized. Though I shall refer in many instances throughout this piece to Google Earth, overall the term “digital globe” is applied throughout, firstly in recognition of the historical factors that feed into the contemporary simulated Earth, and secondly in cognizance of the fact that Google Earth is only one of many emergent digital globes\(^5\) that proliferate not only as computer programs but also as Hollywood studio logos, news brand identifiers, news content, gaming interfaces, and more (see the Beijing Declaration on Digital Earth, 2009).

In order to adequately analyze the political and representational consequences of the rise of the digital globe, however, we need to interrogate its function as simultaneously an amalgam of the analogue forms that it succeeded (whole-Earth photographs, physical globes, cartographic data sets) and as something entirely new. This in turn requires a nuanced understanding of the differences between the respective analogue forms that fed into the digital globe.\(^6\) As Elly Dekker (2007) points out, what differentiated 3-D globes from 2-D cartography at their inception during the Renaissance was the fact that they stood for more than the three-dimensional materialization of cartographic knowledge. Understanding globes, she argues, requires that they be “considered as (mechanical) representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world” (p. 136). What is true of the development of the physical globe during the Renaissance is doubly true for the digital globe today.\(^7\)

What unites these multiple conceptualizations of the Earth represented under the umbrella of the digital globe is that of industrialization: the industrial collection of data, the industrial scale of the data collected, the computer automated and therefore industrialized representation of such data, the industrial programs required to build and launch surveillance and data-gathering satellites and to keep them in orbit. Elsewhere I have argued that this translates into a cultural vision of the Earth itself as an industrial object (Gurevitch, 2013). Here I will expand this idea to consider the political implications of the industrially visualized digital globe and its functions as a spectacular attraction deployable across multiple new media forms. Specifically, I will consider the digital globe as a scopic symptom of the divide opening up between those
economies around the world that can fund industrial space programs and global research programs, and those that cannot. Rather than understanding this in terms of traditional distinctions of the West versus rest, this article will instead suggest that the divide is increasingly constituted of industrialized and industrializing nations with the power to research and visualize the Earth using this power to set the agenda for remediation of its climatic problems, versus countries without industrial space programs.

The historical emergence of environmental vision and scopic omnipotence: Theatrical attractions and the digital globe as special effect

Concepts of spectacular theatricality, panoptical god's-eye viewing positions, and natural environments as the set for human drama have pervaded culture at least as far back as the Ancient Greeks and likely longer. Appropriately, given that the spacecraft from which the first meta-panoramic images were taken was named after a Greek god, the whole-Earth images also marked the continuation of a spectatorial tradition set in motion by the development of Greek theatre some 3,000 years earlier. In Ancient Greece, notions of the personified god of nature (Pan) and the conceptions of the all-encompassing (also Pan) were brought together in theatres built into hillsides to give spectators an elevated, god's-eye view (panoptical and panoramic) of the action taking place in the wide arc of landforms below them. Theatres did not exist separately from the natural environment; rather the landscape acted as the set and became a part of the dramatic spectacle that unfolded. It has been claimed that Greek theatre's impact was such that it subsequently influenced landscape design (Gold & Revill, 2004). What better a tribute to Greek theatre and its entwined relationship between elevated, god's-eye viewing positions, the natural environment, and the spectacular than a photograph of the whole Earth which gave rise to a global environmental consciousness, taken from the Apollo space rocket? If the Blue Marble provided a visual materialization of our fragile planetary environment and set the stage for the dramatic action of twentieth-century eco-politics, however, it was, it turns out after much hyperbole, only a step on the continuing path of cartographic and spectacular representation of the Earth's ecosystems.

Some 2,500 years after the Ancient Greeks, the primacy of the god's-eye view was equally crucial to the visual culture of the Renaissance. The digital globe interface communicates with renewed vigour the centrality of the human agent, elevating the scopic powers of that agent through an interface that deploys a “code of spectacular vision” inherited from Renaissance perspective. Such perspective, as film theorist Jean-Louis Comolli (1985) argued, assured the “eye’s domination over any other organ of the senses” and put the eye “in a strictly divine place” (p. 126). With the digital globe, the user is placed in a divine space, the drive toward which, as de Certeau (1988) has asserted, should be considered a “fictional” construct of the Renaissance painter: “The desire to see the city preceded the means of satisfying it. Medieval or Renaissance painters represented the city as seen in a perspective that no eye had yet enjoyed” (p. 92; see Figure 2). This fiction, he argued, placed the medieval spectator in the privileged position of a “celestial eye” and in the process created scopic gods of them. The default entry point of Google Earth takes the scopic drive de Certeau describes to its
ultimate conclusion, with intriguing implications. De Certeau’s celestial eye becomes an omniscient eye, in Chad Harris’ (2006) appraisal of U.S. military research into what they term “total battlespace awareness.” Unsurprisingly, Google Earth was itself the product of a military-funded computer program named Keyhole (after the American spy satellite developed in 1976 and the first to utilize electro-optical digital imaging and deploy real-time optical observation capability).

**Figure 2: Venice as visualized by Braun & Hogenberg (1572) and Google Earth (2010)**

Sources: Braun & Hogenberg, 1572; Google Earth, 2010. “The totalizing eye imagined by the painters of earlier times lives on in our achievements. The same scopic drive haunts users of architectural productions by materializing today the utopia that yesterday was only painted.” De Certeau’s observation (1988, p. 92) holds true for visualizations of Venice by Braun and Hogenberg (1572) and Google Earth (2010).

However, the relationship between military deployment of scopic technology, the drive toward a godlike spectatorial position, and other forms of visual culture can be traced further back than the emergence of computer programs in the late twentieth century. Around the turn of the twentieth century, Charles Urban’s company Urban Films started to use the logo of a globe with the tagline “We put the world before you by means of Bioscope and Urban Films.” Following this, Universal deployed a similar logo (Figure 3). In doing so, both film companies were looking beyond a function of early cinema that Teresa Castro (2009) has described in her work on cinema’s mapping impulse. Castro draws attention to two key confluences in early cinema. The first was that of the panorama and the war-damaged landscape. Despite the panorama’s usual associations with the picturesque, Castro notes that it also functioned as a means of conveying the scale of damage inflicted upon landscapes. The second and similar confluence was that of the aerial view and the war-damaged landscape. Here again she points out that the camera angle and position exposed the scale of the devastation wreaked upon the landscape below. In both cases, these films served panoptical functions, both mapping and visually neutralizing dangerous and damaged terrain.

Though Castro does not mention it, these panoramas also functioned in another way: as rhetorical material in the propaganda processes of both the First and the Second World Wars. Footage of planes dropping bombs played frequently in newsreels as a celebration of both environmental destruction and the triumph of death simulta-
neously. In this case, then, we have the spectacle of environmental destruction as an index of success. War-damaged landscapes here marked the neutralization of the enemy and therefore progress toward a war’s ultimate goal. As a propaganda tool such footage also functioned in another way, correlating the capacity of the god’s-eye view to neutralize the unknown and dangerous environment with the emergence of a new kind of environmental spectacle. Perhaps this can be more accurately characterized as the coterminous development of the spectacular environment with the military theatre of war (although this link had been emerging since the deployment of military cartography and landscape battle paintings in the fifteenth century). The relevance of this history comes into sharp relief when we turn, as we shall later, to the question of both climate change and geo-engineering as potential forms of warfare.

Figure 3: Top left to bottom right: Bioscope & Urban Films ad (1903); logos for Universal (1927), RKO Radio Pictures (1940), and RKO Pathé Pictures (1931)

Sources: Ad from Luke McKernan collection; logos from YouTube
Whole-Earth and cinematic logos: The promise of global spectacle and the virtual mobility of theatrical attractions

In the current context, the link between the digital globe and the spectacular environment is equally as vibrant in contemporary Hollywood as it was in the past. Not only has the Universal Studios Corporation logo functioned as a digital globe laden with the promise of coming cinematic attractions for several decades now, it has also functioned as a literal gateway to the spectacular environments (sometimes ravaged or threatened) contained within. The most explicit example of this can be found in Kevin Reynolds’ film *Waterworld* (Costner, Gordon, Davis, & Reynolds, 1995), in which the polar ice caps melted on the spinning Earth logo as the topology was slowly inundated with water and the narrative began (see Figure 4). Elsewhere the globe has served as an object upon which the processes of climate change are dramatized within the film itself. Al Gore not only championed the idea of the digital Earth when he was vice-president, but he also used it in *An Inconvenient Truth* (2006). Similarly, in his film *The Day After Tomorrow*, Roland Emmerich (2004) deployed both crude, pared-down digital globes to signify the drama of dry “research” data at the same time as he used sophisticated CGI to render the Earth as it underwent dramatic climate change. In the latter case the “climate change” envisaged was so dramatically far beyond the suspension of disbelief, one wonders why such effort was spent making the CGI photo-real in the first place.

In its most recent iterations, the Universal globe has begun to deploy the mobile virtual camera more fully, tracking across a photo-realistically rendered Earth on an orbital path that quickly sees the Universal logo orbit over-

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*Figure 4: Top to bottom: Universal film logo of *Waterworld* (1995); the digital globe in *An Inconvenient Truth* (2006); the new photo-realistically rendered logo celebrates Universal’s centenary (2011).*

*Sources: Costner et al., 1995; Guggenheim, 2006; Universal Pictures, 2011*
head before pulling out to a wide shot of the whole Earth. After many years of relatively static and environmentally inert whole-Earth logos (lacking the ecological depth of cloud cover, ocean reflection, and any identifiable atmosphere in favour of its representational specificity as a logo), it seems that the Universal film logo now keeps pace with the scopic automobility facilitated by the virtual camera and the layers of ecology newly facilitated by the digital globe. In both cases, the explicit emergence of the Earth’s environment as a visualized and tangible feature of the cinematic special effect is a notable feature of the Universal logo’s development. With this logo, however, the digital globe functions passively, its interactive capacity constrained—albeit reconfigurable—by the medium it exists within. In news media, however, the interactive capacities of the digital globe as an environmental entity are increasingly deployed more extensively.

**Information, crisis, slow-motion catastrophe: News media, the digital globe, and climate change**

From the early days of the climate change debate to the more recent emergence of geoengineering, the digital globe has performed a rhetorical function explicitly linking the Earth’s environment with the theatrical visualization of its domain as a newsworthy spectacle. In this sense, the digital globe has become the staging post for what Mary Ann Doane (2006) identifies in “Information, Crisis, Catastrophe” as a circular logic: “television covers important events in order to validate itself as a medium and [because] an event is covered by television—because it is, in effect, deemed televisual—it is important” (p. 251). After all, little can be deemed more important and all-encompassing than the televisual confirmation that “all the world’s a stage” (literally) for news media events. Re-enforcing this, the promotional pitch aimed at television producers on Google Earth’s own website makes clear their recognition of its theatrical function:

> Since media organizations have special requirements, we offer the licensing, software, and content to make the most of mapping shots. We make it easy to build simple context shots for breaking news or sophisticated geo-infographics for analysis. From live TV news to syndicated dramas to websites, Google Earth is a great way to add a sophisticated look to any media show or broadcast. (Google Earth, 2012)

Tellingly, Google’s pitch sells its digital globe to TV news and syndicated dramas alike. As Doane (2006) notes, the relationship between drama and the process by which information is structured and conveyed during a news media crisis is symbiotic to say the least. Likewise, she goes on to argue that the spectacle of information (especially computer-simulated spectacle) is often primary in these processes, aligned as the “drama of information” is with the visual pleasure of the special effect. Television, she points out, “strains to make visible the invisible” (p. 254) and in doing so acknowledges the limitations of the eye in relation to knowledge, requiring that information step in to fill the gap through simulated visibility.

In her work on the “Global Awareness” layer of Google Earth, Lisa Parks (2009) points out that the program both builds upon practices of news media networks at the same time as it opens such representation in new and unprecedented ways to
users around the world. Concentrating on a case study of Google Earth specifically, Parks addresses what she terms the “practice of conflict branding” and the “practice of information intervention” (p. 536)—both of which we shall consider shortly in relation to geo-engineering. Beyond the specificities of Google Earth, however, there is a long-running association between news media and the globe, and the emergence of the digital globe in news media is the natural development of a relationship stretching back to the titles and logos of “old media” (*The Boston/Toronto/Jakarta/Zambia Globe, Le Monde, The News of the World, The BBC, RKO Pathé Pictures—and now continued in “new” media Google, Firefox, Internet Explorer). These have throughout the twentieth and twenty-first centuries used images of the Earth as their brand identifiers.

To take one of the longest-running televisual examples of this, the BBC television identifier and its accompanying news logo (see Figure 5) have long functioned simultaneously as special-effects sequences for the BBC brand and as visualizations that embody an amalgam of Marshall McLuhan’s global village, Benedict Anderson’s imagined communities, and, in more recent years, Manuel Castel’s information society. Here it might seem that there is a distinction to be made between the digital globe as a special effect that functions as a stylized brand identifier that prefigures the news and the real-time rendered digital globe as it features *within the content of a news program*. Certainly the brand identifier functions on the basis of repetition, continuity, and specificity (demarcating the branded territory of one news media organization over another), while the real-time digital globe program functions according to contextual adaptability and cross-platform pervasiveness (the Google Earth program, for instance, functions across many news media organizations and is not exclusive to any one show). Like the Universal film logo, the BBC brand identifier differs from its interactive digital cousin in the sense that one is presented as a post-produced special effect while the other is deployed as a platform commonly available to the public and fully interactive and dynamic as a real-time simulation.

The reality, however, is not so clear-cut, and unpicking the ways in which Google Earth functions for news media organizations takes us a long way to understanding the premise upon which we can begin to see the digital globe as a special effect, deployed in the process of dramatizing the spectacle of environmental change. While the Google Earth program that viewers are familiar with is based upon the same un-
derlying architecture as the version that news media organizations utilize in their broadcasts, it is not strictly speaking real-time, allowing as it does highly detailed “tours” to be programmed in “Google Earth Studio” and exported as video files. This allows newsmakers to create “the satellite and 3D imagery, along with the other features on Google Earth, simply and with much more control” (Google Earth, 2012). In effect, rather than a real-time viewer, Google Earth offers a post-production tool with which the digital globe is rendered as a special effect.

Despite this distinction, however, news media programs take advantage of the apparent real-time nature (or perhaps “real-timeness” would better describe it) of the Google Earth effects that they use as a part of what Doane has described as a “crisis of temporality.” This crisis of temporality, she argues, “signifies urgency and … is attached to the information itself as its single most compelling attribute.” As she goes on to explain:

Information becomes most visibly information, becomes a televisual commodity, on the brink of its extinction or loss…. The urgency associated with information together with the refusal to fully align the visible with the dictates of an indexical realism suggests that the alleged value of information, like that of television, is ineluctably linked with time rather than space. And indeed, both information and television have consistently been defined in relation to the temporal dimension. (Doane, 2006, pp. 253–254)

What is most striking about this crisis of temporality is the way in which it comes into direct conflict with the temporal message of the climate change research currently articulating the changes taking place on our planet. If, as Castells argues, we are witnessing a moment at which the functions of the network society are converging with the green movement's acknowledgment of deep time (geological time as it exists outside the realm of traditional human temporality), then we are also witnessing an interesting counterpoint: news media usage of the digital globe for a reversed conceptualization of time.

In much news media usage of the digital globe we have an inherent tension between the virtual Earth as a theatrical special effect—a signifier of ecological information on the brink of extinction and loss—and also the virtual Earth as a messenger of change that can only be understood when contextualized in terms of processes millennial in scope. In its rendering of global ecological change, the digital globe signifies the philosophical “transformation of time” (geological time outside the normal boundaries of human cultural experience) that Castells (2010) attributes to the environmental movement in his work “The Greening of the Self” (p. 180) at the same time as it is utilized and consumed by television as visualized information “on the brink of extinction or loss” (p. 180). This returns us to the globe's original function as more than simply the three-dimensional materialization of cartographic knowledge but something that facilitates a spatial understanding of things, concepts, conditions, processes, and/or human events.

Here news media is the place in which two counterpoising constructions of the digital globe come into direct conflict in attempts to address global warming and more specifically questions of geo-engineering. That is to say, the immovable object of news media’s “newness” (as Doane [2006] terms it) hits the irresistible force of the geological time scale required by climate change research and the environmental movement. As
we know, the implications of climate change are a strange case of one of the greatest data-gathering processes in scientific history accompanied by what appears to be the massive and widespread failure of political processes to tackle the enormity of the crisis and the action needed to avert catastrophe. But all of this is played out in slow motion: Doane’s “Information, Crisis, Catastrophe” has become “Information, Crisis, Slow-Motion Catastrophe” and therefore a catastrophe that does not sit well with news media narrative timelines. If geological time is a difficult concept for humanity to grasp, it is almost impossible for news media and its manic temporal logic of near-instantaneous information acquisition and subsequent extinction to represent. And yet in the digital globe there is an attempt to do just that, to grasp the ungraspable—which explains why the concept of geo-engineering has become a far more appealing prospect for the nightly news to report on. The principle of geo-engineering has two particularly attractive qualities for news media: firstly, it brings the temporal problems and solutions to climate change back within the reach of the graspable, and secondly, it makes for compelling special-effects visualizations that take the actions “required” to avert climate change into the realm of Hollywood science fiction (see Figure 6). In other words, the anthropocene presents a far more manageable concept in news media terms because it brings notions of climate change within the realm of temporal immediacy.

Whether it is in the form of reporting on a BP oil spill in the Gulf of Mexico (and Kevin Costner’s Waterworld oil separator technology) or that of demonstrating geo-engineered “solutions” (from sulphur-dispersing sky hoses to cloud-seeding fleets of ships) that can be envisaged through Google Earth’s reprogrammable new media logic, the theatrical vista of alternative ecological futures is both endless and temporally ambiguous. Industrial causes and industrial solutions to the ecological crisis we now face take little time to mock up, role-play, and broadcast, and their low produc-
tion cost makes them as disposable to the evening news as the news media content they are embedded within—perfect for a medium defined by “extinction and loss” whilst also profoundly ironic given the scale of the real extinction and loss now currently underway.

From news media to gaming culture: From god’s “eye” view to god’s “I” view
While news media makes partial use of the interactivity of the digital globe, it is in its direct use as a computer program that a user gains the most immediate scopic, spectacular, and theatrical experience. If the perspectival images and the celestial points of view that accompanied Renaissance imaging bequeathed their viewers a godlike scopic position, the digital globe provides users with an experience of omnipotence several orders of magnitude greater. As Margaret Wertheim (1999) has described in her study of the relationship between Renaissance structures of space and knowledge and the contemporary rise of cyberspace, the striking parallels between past dreams of omniscience and today’s digital equivalent is more than coincidental and in fact mark a historical continuum. What is more, structures of knowledge and visualization are similarly interrelated. As she points out, the modern emergence of online libraries and databases has meant that once again “the fantasy of omniscience shimmers over the digital horizon” (p. 28). Wertheim’s deployment of a visual metaphor to describe increased access to knowledge is particularly apt here: nothing could better describe the intertwined function of information and data “omniscience” that is acted out in the representational structure of the digital Earth. Here data omniscience is literally played out on its “digital horizon.” For this reason the digital globe is clearly an alluring tool for both television and cinema, but a direct analysis of the computer program itself is perhaps more revealing. In his investigation of spatial composition and the virtual camera, Mike Jones (2007) argues that the virtual camera changes our relationship to simulated space and our conception of ourselves as spectatorial subjects:

Through the virtual camera, and constructed or compositied 3D spaces, digital cinematic forms no longer stage for the camera but stage and compose the camera itself as a form of specific purpose scenic content. The constructed space becomes the marco-frame work [sic], what I’ve termed the mise-en-space, whereby camera ‘objects’ are composed into the space to serve as a viewer aware spatial-frame, extending well beyond the momentary framed window. (p. 227)

This idea of digital spectacle no longer entertaining a traditional relationship with mise-en-scène, requiring instead a new conception of mise-en-space in which the camera is composed for the space rather than the other way round, is crucial to our understanding of the digital globe and its functional construction of the user. For starters it marks a considerably changed image form from the Blue Marble. Where the whole-Earth genre represented the ultimate “composing of space” in the capture of the Earth image, the digital globe “composes the camera” and therefore the viewer. The difference is that in the former the Earth exists previous and subsequent to the composition and capture of its image; in the latter the simulated Earth exists as a by-product of the parameters dictated by the spatial specifics of the camera. This brings us to the heart
of the shift: with the digital globe, the Earth has been fabricated as an industrial object purely for the viewer. This is a profound philosophical development in which the viewer does not simply inhabit a seemingly omniscient power of scopic automobility, they also become the reason that the simulated Earth exists at all. For Jones (2007), this development can be traced back to user experience and expectations gained by gaming, and is aptly described by him as a shift “from ‘eye’ to ‘I’”:

The physical camera has long been associated with the ‘eye’, as a simulation of the ‘eye’ in an alternate world (either anthropomorphically or otherwise) and in doing so is rooted to a physical and tangible exploration and depiction of space that obeys rules of physics. … The virtual camera, by contrast, moves beyond this into new conceptualisations of space and the viewer’s connection to, or immersion in, it. Through intangibility beyond the depicted space, the virtual camera becomes a simulation of ‘I’ rather than ‘eye’; a simulation of viewer-derived presence in space rather than an anthropomorphically based viewing apparatus. (p. 228)

With the move to a simulated, viewer-derived presence in space, traditional representational politics are turned on their head. The space does not exist independent of the viewer, with the camera observing in the viewer’s bodily absence. Instead the space becomes the subject and slave of the viewer: it only exists, and is only simulated because the viewer’s virtual presence commands it into being. Taking this a stage further, some games such as Minecraft now facilitate the coming together of online communities with the explicit purpose of literally fabricating and constructing a digital globe replica. In this case it is not simply the viewer/user presence that commands the Earth into being; their collective, crowd-sourced actions are responsible for the vast, virtual

Figure 7: Top left to bottom right: XCOM’s digital globe interface, Minecraft’s crowd-sourced Earth replica, Spore, and Darwinia’s digital globe game play

Sources: XCOM: Enemy Unknown, 2012; Minecraft, 2009; Spore, 2008; Darwinia, 2005
engineering project required (see Figure 7). Unsurprisingly, many of these games reprise the “battlespace awareness” that Harris (2006) describes in games that amount to simulated military campaigns (not to mention the “war games” that have been a staple of military software development for decades now).

With the digital globes that run parallel to our physical Earth, however, the spectatorial shift in process is not only one experienced by the utilizer of the graphical user interface; it is also a shift for the occupier of the physical Earth. With every square metre of air space now the potential location of a future virtually simulated camera, communicants from Japanese tsunami survivors to high school pranksters to conceptual artists such as Helmut Smits start to treat all physical space as the potential location of virtual surveillance. In other work I have described this response as the treatment of the digital globe as a form of machinima (Gurevitch, 2013). Here again the cinematic and theatrical possibilities of the digital globe are exposed.

Perhaps the greatest implications of the shift we are seeing, however, are that the scopic regime of the digital globe begins to stand for a broader philosophical sleight of hand in which the Earth itself comes to be seen as an industrial object or a set of processes reducible to inputs and outcomes that, if simulated correctly, can be understood and modified. To return to Dekker’s (2007) assertion that the globe stands for more than the product of cartography rendered three-dimensionally, the digital globe in this sense is coming to stand as a visual representative of geo-engineering. As Clive Hamilton (2011) argues in an assessment of geo-engineering that could be read as a description of the functions of the digital globe:

Plans to engineer the earth through the deployment of contrivances to manipulate the atmosphere represent the fulfilment of three and a half centuries of objectification of nature. The earth as a whole is now represented no longer simply as a collection of objects but as an object in itself, one open to regulation through the “management”… Earth-as-object also underlies the idea that we can adjust the volume of greenhouse gases in the atmosphere to a level calculated to be “optimal”. Climate engineering represents a conscious attempt to overcome resistance of the natural world to human domination, the last great stride towards total ascendancy. (p. 21)

With this in mind we can turn to understandings of the digital globe as a lecture theatre of climate science discourse and as a theatre of operations in the military sense. Approaching these two conceptions requires an analysis of each in relation to the other, for the research, development, technology, and infrastructure that underpin the digital globe have frequently been symbiotic products of scientific research and military funding. In the contemporary context, digital globes renovate the capacity to visualize the environment in new and ever-expanding ways while they also stand as a representative echo of the military industrial complex and the geopolitical dynamics that shape their existence.

**Geo-engineering justified: From theatre of operations to operation theatre**

To return to our earlier analytical theme, it is in TV news media coverage of military con-
flict that the digital globe as a “theatre of operations” becomes visibly apparent. Here
the digital globe acts as a stage for re-enacting military action that has taken place and
in so doing functions as a propaganda tool, providing audiences with seemingly omniscient views of events and providing the sense of a military debriefing. Evening news items covering the Special Forces raid on Bin Laden’s “lair,” for instance, revealed a simulated structure of vision particularly suited to constructing a superior sense of access to information that is usually the privileged military domain of “total battlespace awareness.” As Lisa Parks (2005) has stated, forms of satellite imaging have been used by states, broadcasters, and scientists to “disembody vision and construct seemingly omniscient and objective structures of seeing and knowing the world, or worldviews ... and they often support and sustain scientific rational paradigms by positing the world (or cosmos) as the rightful domain of Western vision, knowledge, and control” (p. 14).13

There is a danger here, however, that we develop an oversimplistic dichotomy between the hegemony of Western knowledgerepresentation on the one hand and non-Western interests on the other. As differing rates of global economic and industrial development are starting to demonstrate, such hegemony is increasingly fragmentary or more widely distributed, as previously poor regions (of which India and China are the obvious examples) institute military industrial research programs of their own and digital globes are emergent in areas previously outside the domain of Western techno-economic influence. China hosted the first international symposium on Digital Earth in 1999 and began hosting the headquarters of the International Society for Digital Earth in Beijing in 2006 (for more detail, see particularly Shupeng & van Genderen, 2008).

What we often have in the digital globe, like the photos that are mapped onto its surface, is a patchwork of competing interests and data sets. Where this correlation becomes most apparent is in the fissures of the model: when competing interests clash and the fabric of the simulation is either blurred out, or conspicuously not blurred out with the ensuing controversy that that brings. Witness, for instance, the failure of Microsoft in 2007 to obscure highly sensitive images of a U.S. Ohio-class nuclear submarine’s propeller system in dry dock from its Virtual Earth program and vocal complaints by ex-admiralty that U.S. national security had been compromised (Scutro, 2007). What quickly becomes apparent here is the need for a more complex and nuanced account of the geopolitical and cultural functions of the different digital globes. Aside from the corporate and nationally specific globes in existence and in development, it is certain that national security apparatuses will each hold their own digital globes, just as past kings of European and Asian powers held maps and globes as a function of power and warfare. Like the growing trend toward nationally controlled intranets, it remains to be seen what the future holds for the digital globe, but it seems certain that Google Earth (already embargoed from periods of days through to months in countries from Bahrain to China and Sudan—in the last case at the request of the United States) will be only one of a competing wealth of nationally or corporately supported digital globes in the coming decades (The Open Source Center, 2008).

As a theatre of scientific discourse and of military operations, the digital globe has a unique capacity to visualize the possibilities of scientific research and present them
as potential geo-engineering “solutions.” If, as the history of previous climate-engineering projects has suggested (Nicholson, 2010), such solutions fall within the domain of military research or implementation, then by extension geo-engineering becomes another tool deployed under the auspices of “seemingly omniscient and objective structures of seeing and knowing the world, or worldviews … [that often] support and sustain scientific rational paradigms by positing the world (or cosmos) as the rightful domain of Western vision, knowledge, and control” (Parks, 2005, p. 14). Even if we accept that the geopolitical rise of the BRIC economies (Brazil, Russia, India, and China) will present a more nuanced balance of power in this dynamic, with nations capable of deploying such technology cooperating out of necessity, the world will still face a divide between those countries that can visualize, simulate, and implement “solutions” to the climate crisis and those that have no means of doing so. Indeed, the process has already begun. In October 2011, speaking at the Task Force on Climate Remediation, Jane Long addressed the issue of geo-engineering research and the release of their report calling for federal funding of geo-engineering research. At this address Long referred to the “kind of discussion society is going to have to have about this very difficult topic of managing our earth in an intentional manner” (Long, 2011, n.p.; Bipartisan Policy Center, 2011). She went on to point out that “we are changing the earth’s climate, we are doing things to the earth unintentionally, but when we switch to the process of trying to manage it intentionally a lot of emotions and different intellectual frameworks collide” (n.p.). Long’s appeal did not account for those without access to research processes and industries that allow for a framework that could put them in the running to have a collision at all. The question here, then, begins to revolve around which societies will get the opportunity to have this kind of discussion and which, by virtue of existing outside the scientific, industrial, governmental auspices of funded climate research, data collection, and visualization, will not.

Following the release of this task force’s report, a number of green groups and newspapers (Vidal, 2012) stressed that in the absence of federal funding, high-profile private entrepreneurs (among them Bill Gates and Richard Branson) were funding leading advocates of research into geo-engineering. Not only does this raise questions about the power of private entities to influence research with literally global ramifications, it potentially puts a whole new spin on the term “disaster capitalism.” The more sinister side of this road is the possibility that, as large cloud-seeding research projects funded by the U.S. military in the past have demonstrated (Nicholson, 2010), technologies of climate manipulation come to be seen as the domain of corporate and military capital expenditure, with the Earth functioning as an eco-theatre of operations. At present many climate scientists, including previously staunch opponents of geo-engineering,14 are beginning to treat both the digital and physical Earth not only as a theatre of operations but also as an operation theatre in which the patient is on the verge of cardiac arrest. As far back as 1996, political scientist Davis Bobrow argued that international affairs research would benefit from the deployment of health as a metaphor for “treating” global and local instability. As he argued, “our experiences with insecurity are usefully treated as resembling another particular prototypical subject for professional research and practice—that provided by human disease, illness, and decline”
Bobrow’s argument here did not apply specifically to global climate change but did have climate change included as a subcategory in a broader regime of insecurity analysis. Given that global warming increasingly displaces other previously more dominant causes of insecurity, it is not difficult to foresee future strands of insecurity analysis entrenching this equation of climate change with health metaphors.

Reinforcing the “planet as patient” metaphor, work on combined uses of the digital Earth and ubiquitous computing has started to encourage a blurring of the boundary between ecological/geological process and biological personification. For instance, De Longueville, Annoni, Schade, Osterländer & Whitmore (2010) argue for an understanding of digital globes as emergent crowd-sourced “nervous systems” that represent crisis events taking place in real time (see also Goodchild & Glennin, 2010). Here the digital globe is literally conceived as a dynamic digital organism (perhaps what Brand meant when he referred to an emergent “digital gaïa”), with human users metaphorically reframed as the communicatory neurons of the nervous system. The ironies and potential multiplicity of alternative metaphors that could frame human participants as deadly viruses rather than benign neuro-networked stewards are too numerous to list here.

A final development that seems likely to add weight to the drive to represent the planet as a “patient” comes from a consideration of the human subject and its potential role in driving these metaphors. In recent years the “human micro-biome” project has begun to alter the nature of medical thinking and research on the body and its environment. What is curious about this development is that its conceptualization of the human as a “biome”—subject to the hundreds of thousands of genes expressed in the microbial life that exist within, and on, the body—bears a striking similarity to Lovelock’s (2006) original theory of the Earth as an interconnected macro-organism. If the Earth continues to be seen as a vastly complex and interactive meta-biome and the human body (or indeed any body, human or otherwise) is likewise treated as a micro-biome equivalent, it seems likely that the “Earth as patient” metaphor will only grow in cultural currency. As Bobrow (1996) argues, “[W]e have little choice but to live by metaphors. The key is to pick one that provides especially appropriate and rich insights” (p. 437). The question this begs is whether any metaphor is not, by its nature, too crude when it comes to characterizing the ecosystem and our responses to its “health.”

Here then are some of the terms on which the public visualization of climate change and geo-engineering are presently laid out. In the digital globe there is more than a straightforward transposition of the analogue form to a digital equivalent, just as the transition from two-dimensional cartography to the three-dimensional globe was more than a transposition. What we can see in the digital globe across its many forms, however, are both key shifts and key recurrences. Where early military footage of war-damaged terrain was produced as a means of neutralizing and making safe the dangerous landscapes, one could argue that contemporary digital globes perform a similar function on a multiplied scale. Similarly, just as Renaissance painters sought to create god’s-eye views, so too do the contemporary virtual cameras of the digital globe. As Greek theatres did not exist separately from the natural environment, so too
in the digital globe is the landscape coming to act as the set and became a part of the
dramatic spectacle that unfolds. If Greek theatre’s impact was such that it subsequently
influenced landscape design, we might ask whether the digital globe is in the process
of doing so again on a much greater scale.

In all of this the temptation is to treat the digital globe as a negative force, but this
would be reductive to say the least. Al Gore’s plan for the digital Earth (as he termed
it) was for its deployment in schools to function as a tool to educate future generations
with a new degree of environmental understanding and awareness. Although this is
doubtless already taking place, the digital globe is no different from the emergent
Renaissance globes in one respect: they are a symptom of the cultural, political, and
technological knowledge sets of the contexts in which they are emergent. For this rea-
son the role of the digital globe as a special effect, as a visualizer of potentially profound
change (both inadvertent and deliberate), must be examined closely. In this role, the
digital globe as a multiply theatrical form will not only impact the people viewing and
making the narratives taking place within it, it will also affect those with no means of
interfacing with it at all. One of the more intriguing questions for future research in
this space is the effect that ubiquitous computing in the form of ever-cheaper smart-
phone handsets might have on this balance. Change on the “consumer” side of digital
globe technology, however, will not change the manner in which large proportions of
the world are locked out of the industrial surveillance, research, and development of
their changing ecosystem.

Acknowledgments
First and foremost I would like to thank Peter McGinty for his generous and timely
translation of the abstract of this article into French. Secondly, I would like to thank
Stephanie Chadwick for double-checking the translation. I would also like to thank
Chris Russill for his thoughtful input and Sue Irwin and Steve McCormick (as alw ays)
for taking the time to read over my work and offer feedback. Last but not least, this ar-
ticle is dedicated to the memory of my father, Harry Gurevitch: he would have liked
nothing more than to read this; I would have liked nothing more than to hear his
thoughts.

Notes
1. For more discussion of this point see Robert Poole’s book Earthrise (2008), in which he argues that
the origins of James Lovelock’s Gaia Theory can be approached through the viewfinder of the Apollo
mission’s Blue Marble photographs. Poole quotes Lovelock himself, who has stated, “When I first saw
Gaia in my mind I felt as must an astronaut have done as he stood on the Moon, gazing at our home,
the Earth” (Lovelock quoted in Poole, 2008, p. 172).

2. Or as Brand (2009) put it: “Ecosystem engineering is an ancient art, practiced and malpracticed by
every human society since the mastery of fire. We would be fools if we repeat their mistakes and just
as foolish if we ignore some of the brilliant practices that work for them” (p. 235).

3. Such globes include not only Google Earth but also NASA’s World Wind, Microsoft’s Virtual Earth,
City Surf, Skyline Terra Explorer, Marble, Earth Browser, and Earth 3D to name just a few.

4. This concept emerged in the 1800s and tied together notions of theatre as a “place of action” and
notions of landscape, cartography, and geostrategy.
5. While Google Earth is, and has been, the most publicized virtual-Earth program over the past five years, the story of its alternatives is a geopolitically telling one. In some cases, other programs (particularly NASA’s World Wind) can lay a stronger claim to being the direct virtual successor of the Blue Marble image. In other cases, reminiscent of the original race to capture whole-Earth photography, emergent superpowers are developing and releasing their own versions of virtual-Earth software (Buhvan in India, Map World in China, and Digital Thailand being just a few of the most immediate publicly available examples). In the current context, Google Earth rose rapidly to prominence in the industrialized North for reasons as reflective of the economics and demographics of early Internet culture as of the nuanced differences or similarities between the competitor programs that followed. Google Earth’s prominence is as much the result of Google’s dominant position as the gatekeeper of the early information society as it is related to any uniqueness in its capacity to visualize the Earth.

6. Here and throughout this article I have opted to consistently use the term “digital globe” rather than “digital Earth,” as it is often referred to. This is because the “digital Earth” is a term invested with a very specific cultural and political origin. First mooted by Al Gore in 1998, the push for a “digital Earth” continued in America as a means of educating children and allowing them interaction with concepts of the environment and its fragile/changing balance. With the subsequent Bush administration the digital globe was dropped as a phrase and a concept though, ironically, its use continued in the wider scientific and academic community and in China, where the International Society for Digital Earth headquartered was founded in 2006. My purpose in utilizing the phrase “digital globe” is less about rejecting Al Gore’s explicitly political and educational vision, or indeed failing to reappropriate it after the Republican rejection of it, and more about connecting the wider global history and politics of the digital globe to the analogue globes that went before it.

7. Intriguingly, Dekker (2007) even suggests that, in its capacity to allow users to work out the relationship between local times at different places, the early Renaissance globe “served as an analogue computer” (p. 150).

8. Echoing de Certeau and Comolli’s observations of the divinity of points of view located in the heavens, astronauts returned to Earth describing their experienced godlike power when looking back to home. As Steve Borman explains, “We said nothing to each other, but I was sure our thoughts were identical—of our families on that spinning globe. And maybe we shared another thought I had … This must be what God sees” (quoted in Poole, 2008, p. 20).

9. While in Waterworld the universal globe became the ecologically endangered Earth, more broadly it has in recent years functioned as the staging post in which the Earth is reconfigured to reveal something of the coming spectacle: turning into a hubcap in Fast & Furious (ironically), becoming a futuristic Earth at the beginning of Serenity, and turning into an 8-bit graphical parody in Scott Pilgrim vs. the World.

10. In Doane’s (2006) article she describes a special effect simulating the information of inner space (the body) rather than that of exterior space (the digital globe) but the effect is the same. Interestingly, dynamic of scale is played out in the Eames film Powers of Ten (Eames & Eames, 1977).

11. In its newest iteration this visualization (see Figure 5) has become the news title sequence in its own right, the special effect of the digital globe married with the visualization of metadata locating key geographic locations around the Earth and stylized rings encircling the planet, pulsing in time with the dramatic soundtrack and abstractly representing the ever-dynamic global communications networks that span the world.

12. While NASA was set up with a stated mission aim of providing a civilian space program, as Poole (2008) points out, the American arm of the Cold War space race, like its Soviet counterpart, was still essentially a military project.

13. In a twist of irony, the process of looking that first initiated the practice of empirical procedure (Galileo’s empirical confirmations of a heliocentric universe), challenged the power of the Catholic Church, and reoriented Europe’s philosophical world view from a theocratic one to a humanist one is
now turned on its head. For Parks, space-based satellites look back upon the Earth, providing an omniscient scopical regime that sustains the scientific rationalism that replaced such preceding theocratic structures.

14. James Lovelock (2006) is just one of the most high-profile examples of a scientist previously staunchly opposed to geo-engineering who is now an active proponent.

Audiovisual material
CNN. (2009, December 20). CNN & former Microsoft head talk of geo engineering the planet... [Television broadcast]. YouTube. URL: http://www.youtube.com/watch?v=5e5mXVIDbby [May 12, 2012].

References


