Thus Spoke the Cool

Dark Skies, Earthworks, and a New Media Art (For Nietzsche's Abyss)

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Abstract

From the remote regions of the Texas-Mexico border to the vast cosmos of NASA and ESA, this essay theorizes a profound connection between the Dark Skies movement, the monumental Earthworks in the American deserts, and the proliferation of telescopes around the planet. Combining Friedrich Nietzsche with Julia Hildebrand's and Barry Vacker's cool media theory, this essay theorizes Earthworks (also called "land art") and telescopes as forms of Nietzschean new media art and technology, co-evolving in the deserts and dark skies of America and the world. Earthworks and telescopes cast our gaze out and away from ourselves, away from civilization, into desert galleries with distant walls of vistas and ceilings of starry skies—perfect for experiencing the sublime. Nietzschean new media art speaks the cool, the chilly abyss of dark skies beyond city skyglow, where the cool gaze confronts the light pollution of Elon Musk's Starlink satellite system.

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Coldly floweth all deep knowledge. Ice-cold are the innermost wells of the spirit: a refreshment to hot hands and handlers.
—Friedrich Nietzsche

It is interesting to build a sculpture that attempts to create an atmosphere of awe. ... To create a transcendent work of art means to go past everything.
—Michael Heizer (Creator of "Double Negative")

It's about the feeling you get when you're grasping your relationship to the stars. Ultimately, it's about the earth's environment—both in time and space—extending out to the stars.
—Charles Ross (Creator of "Star Axis")

1. The Largest "International Dark Sky Reserve" on Planet Earth

In the remote regions of far west Texas and northern Mexico, "Dark Skies" activists created the "Greater Big Bend International Dark Sky Reserve"—the largest International Dark Sky Reserve on Planet Earth. Officially approved by the International Dark-Sky Association in 2022, the Big Bend Dark Sky Reserve spans approximately 15,000 square miles (39,000 square kilometers) of Texas and Mexico (Karas 2022). That's almost the size of Vermont, Connecticut, and Rhode Island, collectively.

Figure 1. Map of the Greater Big Bend International Dark Sky Reserve (2022). Map provided by Stephen Hummel, Dark Skies Coordinator at the University of Texas at Austin McDonald Observatory. Used with permission. Key areas in Texas include the McDonald Observatory (the core area), Big Bend National Park, Big Bend Ranch State Park. Key areas in Mexico include Área de Proteccion Flora y Fauna Canon Santa Elena, Área de Proteccion Flora y Fauna Ocampo, and Área de Proteccion Flora y Fauna Maderas del Carmen.

This is the largest single area combatting the many effects of light pollution from the metropolises, big city, or small town, all ever-more aglow in electric light. The glow of electric light permeates our existence, from the skyglow of our cities to the screenglow on our phones, tablets, laptops, and computers—key sights for the creation and experience of much new media art. Could it be that another kind of new media art is emerging as counter to the skyglow and screenglow, a new form of an ancient art, a form known as *Earthworks*—the most famous which are *Double Negative* (Michael Heizer 1969), *Spiral Jetty* (Robert Smithson 1970), *Sun Tunnels* (Nancy Holt 1976), *Star Axis* (Charles Ross 1973—nearing completion now) and *Roden Crater* (1979—nearing completion also). Perhaps the preservation of dark skies is a necessary corollary to Earthworks, suggesting a

larger pattern, a *big bend* in the narratives for the human species, a chilly bend born of *cool media* and a new *new media art*.

2. The Big Bend vs. Skyglow

The "Big Bend" region is named for the big bend in the Rio Grande, the river which serves as the border between Texas and Mexico. The light pollution threatens the dark skies essential to the Big Bend National Park, the Big Bend Ranch State Park, and the University of Texas's McDonald Observatory (no connection to McDonald's hamburger chain). The Big Bend National Park is one of the largest and most spectacular national parks in the world, spanning 801,000 acres (324,000 hectares) in the Chihuahuan desert ecosystem. In 1976, UNESCO designated the park as a Biosphere Reserve, making it one of the first and largest parks to receive this designation. Already designated as "Dark Sky Parks" by the International Dark Sky Association (IDA), the two Big Bend parks are central to the International Dark Sky Preserve. Along with the three protected nature areas in Mexico, this reserve protects diverse and beautiful ecosystems, home to species found nowhere else on Earth.

Owned and operated by the University of Texas at Austin, the McDonald Observatory is one of the premiere astronomical facilities in the world and home to the Hobby-Eberle Telescope, currently the fourth largest optical telescope in the world. Many kinds of astronomical research are conducted at the facility, including studying the expansion rate of the universe effected by dark energy and searching for habitable exoplanets orbiting nearby stars. So why the need for a massive international dark sky reserve? Consider the following image.

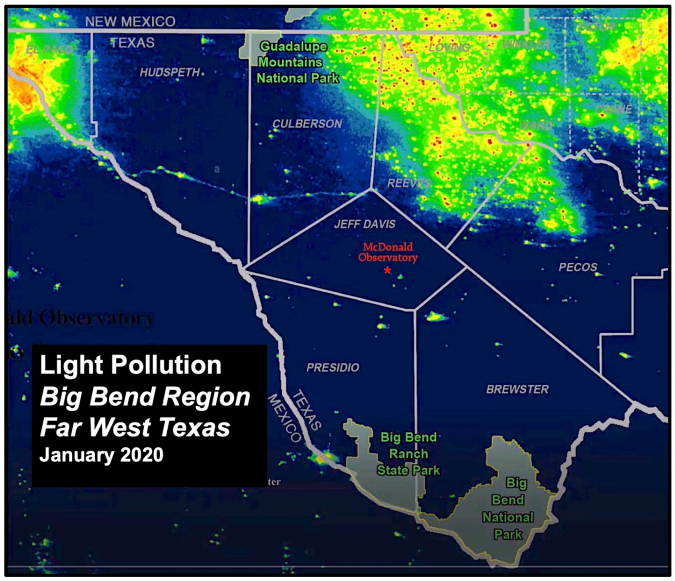

Figure 2. Map of Light Pollution in the Big Bend Region of Far West Texas. Source: NOAA's National Geographic Data Center, 2020. White text added by Barry Vacker.

The bright yellow and green colors are not skyglow from a massive metropolis. Rather, the bright lights are from the massive sprawl of fracking fields in the beautiful desert expanse. Those lights span almost 10,000 square miles and help provide the fossil fuel power for electric civilization and the 24/7 media spectacle that spans the planet. The fracking fields provide the juice for our cities, homes, media networks, and electronic screens.

According to a recent study of light pollution, 99 percent of Europeans and Americans live under heavily light-polluted skies, such that 80 percent of Americans can't even see the Milky Way. Around the world, almost 80 percent of humanity lives in light-polluted skies and the skyglow is spreading (Donahue 2016; Gholipour 2018). Given these totals and trends, it's not hard to imagine a near future in which most everyone will never see the Milky Way with their own eyes.

Skyglow is complemented by screenglow, for inside our electrified bubbles we park ourselves in front of an array of electronic screens, light pouring forth and bathing our eyes in the antics and drama of the human species, including many of its arts—traditional and new media. Of course, this issue may seem irrelevant to the more than 90 percent of humanity now living their entire lives inside an artificially illuminated existence, where nature is shoved aside and the night skies are erased from consciousness. Add on the screenglow of our electronic media, and it is clear that living in a perpetual electric glow is now the dominant state of existence for humanity. Skyglow and screenglow reinforce the existential narcissism of the human species, which is dominated by theist and consumerist worldviews that place us—individually and collectively—at the center of everything, the center of all meaning, all value, all purpose.

Apple got it right—iPod, iPad, iPhone, as in I am the center of the universe. The same is true for Samsung Galaxy, a media universe that orbits around each of us, bringing all events through our screens, glowing in our eyes and on our faces. It is this techno-existential narcissism that is dramatically countered by dark skies, cool media, and Earthworks.

3. Dark Skies, Cool Media, and Earthworks as New Media Art

Embedded in the International Dark Sky movement is an entirely new stance for technological civilization. If the Milky Way and dark skies could be returned to human consciousness on a regular basis or become easily accessible in national parks and dark-sky reserves, then this might help inspire the development of a planetary system of values and a new cosmic narrative for our species. The Greater Big Bend International Dark Sky Reserve brings together nature and science, ecology and cosmology, and peaceful cooperation along a contentious border—all quietly pointing toward a new transborder narrative and a new philosophy for the human species.

The Big Bend Sky Reserve and protecting dark skies are also in sync with the emergence and evolution of Earthworks (also known as land art), especially the monumental Earthworks in the deserts of the American Southwest. The most famous of these Earthworks are Double Negative, Spiral Jetty, Sun Tunnels, Star Axis, and Roden Crater. All of these can be viewed in the daylight

hours, but are best experienced at night, beneath dark, starry skies. But, to think of these as only Earthworks is to understate their power and existential significance, for they are also forms of cool media. By "cool media," we do not mean McLuhan's outdated version from the 1960s, but rather a twenty-first century model that accounts for massive telescopes and monumental Earthworks (Hildebrand and Vacker 2018). Given all the above, we can think of the Earthworks as new media art, specifically emerging in the 1960s and 1970s as a reaction to the commodification of art in the gallery system, but also as a response to the space age and the rise of television (and the early proliferation of screens).

This may seem strange, considering that new media art is typically understood as based in digital and electronic media. These include categories such as virtual art, computer graphics, computer animation, digital art, interactive art, sound art, internet art, video games, cyborg art (cybernetic implants), robotic art, and 3D printing. Obviously, this list is not exhaustive and is only to illustrate typical categories of new media art, most of which are viewed on a screen, in a soundscape, in a multisensory room, or inside a VR headset. This essay argues that Earthworks are a form of new media art—a merger of ancient and contemporary art, along with contemporary cool media technologies (such as massive telescopes and naked eye observatories). These technologies would be impossible without powerful computers, as would be the creation and construction of the apertures of Star Axis and Roden Crater.

The Big Bend Dark Sky Reserve, the McDonald Observatory, and monumental Earthworks are deeply connected with a new philosophical outlook. What are the connections? Let's just say they are deep, broad, chilly, and strongly suggest an expansion of how we think about new media art, especially its relation to science, ecology, and our place in the Nietzschean abyss that is the NASA universe. Surely, not all new media art must be experienced in a gallery or on a screen. "Thus Spoke the Cool" is about the direction and temperature of the gaze, with massive art and media technology directing our view away from our hot selves and screens, deep into the starry skies and the chilly universe. In these desert galleries, framed with distant walls of vistas and ceilings of dark skies, the Earthworks are surrounded and visually isolated by vast *negative* spaces—realms perfect for immersion in nature, the cosmos, and the sublime.

Of course, these panoramas are threatened by expanding skyglow and light pollution. And there's another problem. This one philosophical and existential: the Nietzschean abyss that is the vast universe unveiled by cool media and contemporary astronomy. It is here that cool media and Earthworks possess their greatest power, in the momentary unity of the infinite and infinitesimal, in the sublime tightrope transcending the abyss.

4. "A Rope Over an Abyss"

In *Thus Spoke Zarathustra*, Nietzsche explores the death of God, the eternal recurrence (the endless recycling of world events), and the possible rise of the "Overman." Nietzsche speculates that since humans are the superior species that evolved from apes, there might be an equally greater species that would evolve from humans — what he termed the *Ubermensch* or Superman: "What is the ape to man? A laughing-stock, a thing of shame. And just the same shall man be to the Superman: a laughing-stock, a thing of shame" (Nietzsche 2012, 26).

Nietzsche suggested the next stage of human evolution could occur if we accepted our place on Earth—in the material world—rather than looking to otherworldly gods for meaning and purpose. Writing in the wake of Newton, Darwin, and the birth of technological civilization, Nietzsche knew that the death of God presented a huge philosophical challenge for the human species: "man is a rope stretched between the animal and the Superman—a rope over an abyss" (Nietzsche 2012, 28).

Nietzsche's Ubermensch was meant to symbolically replace the decaying mythos of an omnipotent God, which humanity had created to ease the suffering of a meaningless existence. Employing the ethos of scientific and technological progress, this "theoretical" future human would deny the divine impulse, instead choosing to *understand* and *create* the ineffable value of existence. In the universe of Newton and Darwin, this future human pursues the sublime phenomenology in the aesthetics of awe and wonder, stolidly peering into the voids of eternity, gazing backwards into each future which altered the past. Sensing this new universe would be unbearable for humanity, Nietzsche muses "You are no eagles: so neither do you know the spirit's joy in its terror. And he who is not a bird shall not make his home above abysses" (Nietzsche 1956, 125). This was prophetically the case in the duality between Apollo 8 and Apollo 11—when "the Eagle has landed."

In the 1920s, Edwin Hubble expanded Nietzsche's abyss with the twofold discovery of *other galaxies* outside the Milky Way and the expanding universe in which the galaxies are moving away from each other. Since then, the Hubble Space Telescope and other telescopes have revealed an epic universe of two trillion galaxies stretching across 100 billion light years. Nietzsche's abyss has only grown exponentially, and nothing symbolizes the abyss better than the "Hubble Deep Field" images, produced when the Hubble telescope peers into empty spaces in the night sky and finds thousands of galaxies located billions of light years away from Earth. The universe of Hubble and the Hubble telescope—that's the abyss over which we have yet to weave the needed philosophical and existential rope, even in the wake of Apollo—the first god of NASA.

5. Apollo and the Black Monolith: Inspiring the First Earthworks

While Earthworks have roots in ancient megaliths that are found all around the planet (Mohen 1999), their contemporary origins reside in icons of the space age. It is no surprise that the monumental Earthworks follow the Apollo moon landing (1969) and *2001: A Space Odyssey* (1968). Media theorist Marshall McLuhan asserted that seeing Earth from space converted our planet into a work of art to be modeled and controlled. We can add that Earth amid the vast negative space provided existential inspiration for artworks in the desert, surrounded by the negative space of vast landscapes and dark skies.

Prior to the Hubble images, Nietzsche's abyss was first televised around the world when Apollo 8 and Apollo 11 went to the moon. Bill Anders, one of the Apollo 8 astronauts, took the famed photograph known as *Earthrise*. The version of Earthrise released by NASA does not represent the true orientation of the original image. Anders's shot featured Earth *next* to the moon, not *above* it. It is not surprising that everyone, including NASA, preferred the version that was flipped on its

side so that the blue and white Earth seemed to be "rising" above the moon's grey horizon. Earth rising *above* the moon is much more comforting, providing the cognitive warmth of a morning sunrise. By contrast, Earth floating *beside* the moon with nothing above or below it is visually vertiginous.

This existential copout seems to express Nietzsche's suggestion that we humans "are no eagles." It's no surprise, then, that the Apollo 8 astronauts soon read the more comforting, opening lines of Genesis to one billion people watching on television on Planet Earth. In effect, Apollo 8 orbited the moon, but clipped its own wings, philosophically crashing back to Planet Earth (Vacker 2017, 15-21). The view of Earth was just too cool, too chilly for the "hot hands and handlers" on Earth. NASA's flipping of Earth proved McLuhan correct, for NASA's goal was to control the view of Earth in space so as to control the philosophical narrative on Earth.

Apollo 11 momentarily corrected this trajectory when "the Eagle" (the lunar module) landed on the moon in the summer of 1969. As the first human stepping onto another celestial body, Neil Armstrong famously said: "That's one small step for a man, one giant leap for mankind." Watching Apollo 11 on TV, one billion people cheered and gazed with awe and wonder, instinctually yearning for a new beginning, a new era, a new destiny, all requiring a new philosophy. Six decades later, that era and secular philosophy has yet to arrive, at least in any large-scale way in popular culture.

Though *2001* pointed the way, its vision has been utterly overtaken in pop culture by the endless *Star Wars* sagas. In the meantime, perhaps inspired by the black monolith, Earthworks are inspiring us to steer our gaze in the direction of *2001*'s vision.

Figure 3. The first appearance of the black monolith, *2001: A Space Odyssey* (d. Stanley Kubrick 1968)

2001: A Space Odyssey is Stanley Kubrick's masterpiece of space philosophy amid the Nietzschean abyss. In *2001*, Kubrick depicts a past and future in which humans have evolved

from apes to astronauts via science and technology, along with an assist from a mysterious black monolith—all primed to propel an enlightened species into a massive and majestic universe in which we are not alone. Early in the film, a tall and sleek black monolith appears in the middle of the night. An ape is awakened and glances up at the sky. Soon tribes of apes are gazing upon the monolith, at first in terror and then seemingly with wonder and reverence. After shrieking wildly for a few moments, the apes gather around the monolith, touching it gingerly and eventually caressing it with affection. The monolith inspires a tribe of apes to invent technology and give birth to the evolution of the human species. In one key scene, an ape hurls a bone (used as technology to kill animals for food) high in the air, and just after the bone peaks in its ascent, the scene cuts to a spacecraft orbiting Earth against the black void of space. The cut from the bone to the spacecraft captures in a single moment and in a single thought the entire trajectory of human technological evolution, from the Stone Age to the Space Age.

Across the plot trajectory of *2001*, it's clear that the black monolith comes to symbolize a blank slate for writing a new narrative for the human species. Is this monolith not a symbolic version of Nietzsche's rope across the abyss?

Is the black monolith not also a work of fictional land art? Standing alone in the desert, surrounded by empty spaces, the monolith inspired the apes to look to the skies for their destiny. Looking to the skies and contemplating our destiny is the specific goal of monumental Earthworks like Spiral Jetty, Sun Tunnels, Star Axis, and Roden Crater, set all alone in remote territories of the America desert. Should we be surprised that these monumental Earthworks appear in the wake of *Earthrise*, *2001*, and Apollo 11? Just as the Star-Child and Neil Armstrong momentarily flew above the chilly abyss, artists on Earth began to represent that abyss on Earth. And that art is speaking the cool.

6. Hot and Cool Media in the 21st Century

In *Thus Spoke Zarathustra*, Nietzsche observes "Coldly floweth all deep knowledge. Ice-cold are the innermost wells of the spirit: a refreshment to hot hands and handlers" (Nietzsche 2012, 141). Nietzsche was on to something that is clearly evident in twenty-first century media technologies. Inspired by contemporary cosmology, NASA, Nietzsche, and Marshall McLuhan, Julia Hildebrand and Barry Vacker crafted a twenty-first century media theory, a single theory both sleek and spacious—a theory that encompasses our ways of seeing with media technology, including art (Hildebrand and Vacker 2018). With a combination of theory and aesthetics, the essay won the John Culkin Award for Praxis, an international award from the Media Ecology Association, and inspired an art installation at the Association's annual conference at the University of Toronto.

Below is a graphic illustrating the layers of media technologies that shape our ways of seeing and our modes of being. From the Large Hadron Collider to the Hubble Space Telescope, these layers are generating planetary effects, at once very hot and very cool. The graphic inspired *Rope Over Abyss (Nietzsche's Telescope),* one of the mixed-media canvases in the overall installation.

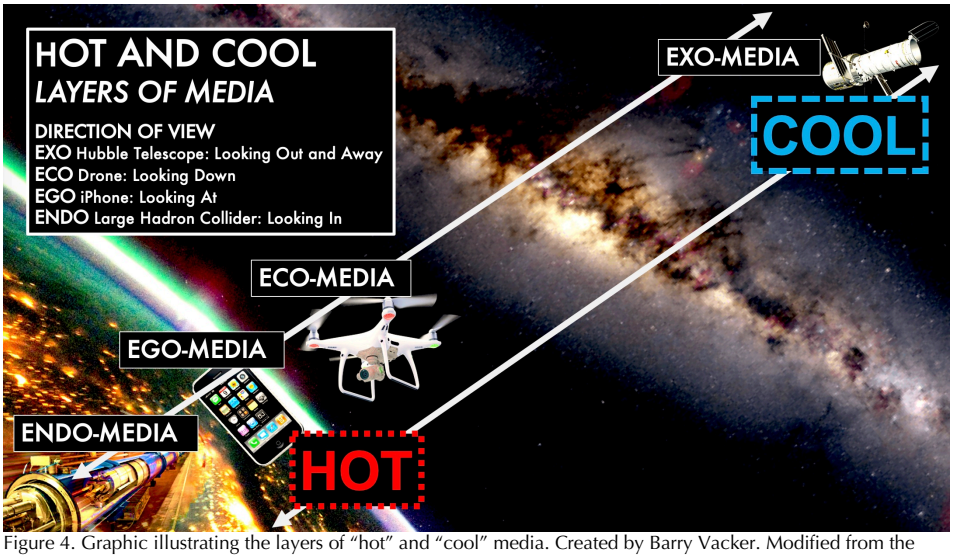

Figure 4. Graphic illustrating the layers of "hot" and "cool" media. Created by Barry Vacker. Modified from the original in Hildebrand and Vacker (2018).

Hot media are concentrated in endo- and ego-media. Hot media promote an *inward gaze*, with the viewing subject and viewed objects in *close proximity* to each other. These *look at* humanity's socio-cultural activities, the individual and the collective, the self and the other, the profane and the sacred. Examples include cave paintings, drawings, photographs, cinema, television, computers, smartphones, and, of course, social media.

Hot media deal with higher densities of atoms, matter, events, energy, images, humans, and thus are high friction. In proximity, entities can rub or smash against one another. Acceleration, quick reactions, short attention spans, instant feedback loops. *Temperatures are higher, tempers are hotter*. Hence, heat and friction also lie within our global layers of hot media, giant clusters of networks and webs, all jammed with ever more content and contexts.

We live in a hot media visual culture. Everything is in utmost proximity, on our electronic screens and in our galleries and museums—images and artworks collide and crash upon our consciousness. We click from page to page on our screens, wander from room to room in the galleries and museums.

Cool media are exo-media, though they can include eco-media. Cool media provide an *outward gaze*, with objects *further apart* or moving away. Earth is below us, the stars are beyond us, and galaxies are moving away. Cool media deal with lower densities, lower friction, with distance, drift, wander, wonder, wow. Temperatures are lower, tempers are cooler. Whatever is hot out

there—such as stars, black holes, and supernovas—is surrounded by the cool, the void, the entropy toward absolute zero. Big bang to the big chill. Deep space, deep time, deep futures.

Current examples are the Hubble Space Telescope, Very Large Telescope, the Atacama Array, Voyager, and any other telescopes and space probes. Other examples include aerial imaging technologies such as satellites and drones. Of course, Earthworks are cool, exo-media that direct our gaze into the chilly skies of the Milky Way.

Can hot and cool overlap? Yes. That's why this is a hot-cool scale and not a typology with fixed categories and clear-cut boundaries. Google Earth gets hotter the closer it zooms in toward Streetview but gets cooler the further it zooms out to show Earth as a planet in its totality. Hot and cool art can overlap, but that is a topic beyond the scope of this essay.

There is a clear parallel between the expanding size of dark sky areas and the expanding size of telescopes, both terrestrial and those in space. The massive Greater Big Bend Dark Sky Reserve parallels the Giant Magellan Telescope (six round mirrors, each 8.4 meters and surrounding a central mirror also 8.4 meters) and the European Extremely Large Telescope (798 hexagonal mirrors, each 1.4 meters across). Currently, these are the two largest telescopes, and both are located in the Atacama Desert in the Andes Mountains of Chile. In fact, Chile has become a sort of telescope utopia, with its clear, dark skies and dry air amid the remote mountaintops.

It's likely that the most famous new telescope will be the *James Webb Space Telescope (JWST),* the successor to the Hubble Space Telescope. Launched in 2022, the JWST was built by NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA). The JWST has more than 100 times the power of the Hubble Telescope and will be parked one million miles from Earth, at a stationary location known as LaGrange Point 2 (while actually following Earth in its orbit around the sun).

Made possible by powerful computers and the most perfect mirrors ever created, these telescopes produce images that should be considered new media art: Terabytes of data are filtered through digital technologies and converted into images that scientists think best represents the data and thus the empirical reality. Both science and art are present, because the scientists and technicians are making aesthetic judgments about the best image to represent the data (Kessler 2012). These cosmic images are represented on screens, like much new media art.

Through the power of cool media, look at what we've discovered so far. An epic and wondrous universe—two trillion galaxies, three sextillion stars, black holes galore, billions of planets in the Milky Way, and a cosmic web organized around supervoids and gigantic galaxy clusters that stretch for billions of light years. The energy of this universe is destined to last for trillions upon trillions of years.

All of this means that we need art, the sublime, and secular philosophy to get us across Nietzsche's abyss. In "The Challenge of Every Great Philosophy," Nietzsche argues: "The whole future of the sciences is staked on an attempt to understand this canvas and these colors, but not

the image . . . for without such a regulative total image they are strings that reach no end anywhere and merely make our lives still more confused and labyrinth" (Nietzsche 1956, 124). That is the very challenge embraced by cool media technologies and Earthworks, the chill artform for the sublime, the starting point for the new philosophy to span the abyss.

7. Earthworks as Cool Media

Though Earthworks have been created in many countries, the most famous Earthworks are in the American Southwest. Tapping into the ancient traditions of megalithic art around the world, "Earthworks" are massive art works built into the natural landscapes and environments, which is why they are often described as "land art." Located in remote areas with awe-inspiring vistas and dark night skies, the goal of Earthworks is to inspire us to look away from ourselves, away from the skyglow-screenglow of our electric civilization, to connect with Earth, nature, wilderness, and the universe. Most Earthworks are another form of cool media and new media art.

The mainstream art historians tell us that Earthworks signify a rejection of the gallery system in art centers like New York City, while also reflecting ecological interests in sync with the rise of environmentalism in the 1960s. While true, this still situates Earthworks almost solely as a reaction against the gallery system, as if the Apollo space program and the emerging vastness of the universe had nothing to do with the existential stance of land art.

Earth floating in the emptiness of deep space, monoliths sitting in the deserts of space cinema, and Earthworks sitting in the emptiness of the deserts—all burst into global consciousness in the late 1960s. Earthworks rose to prominence in the Space Age, with the Apollo program and the media theories of Marshall McLuhan paralleling the Earthworks of Michael Heizer, Robert Smithson, and Nancy Holt (among others). Then and there, Earthworks and *Earthrise* both confronted negative space and vast voids.

Earthworks do not gaze upon us, while classic, modern, and contemporary artworks mostly do; they look at us, or inside us, and/or at our actions or effects, with objectivity and/or subjectivity. We gaze at each other or inward into ourselves or upon our society and its effects. Abstract expressionism is mostly hot, Earthworks are super cool. Galleries are mostly hot, desert spaces and night skies are cool. The smaller the negative space, the hotter the art. That's the canvas and gallery wall. The larger the negative space, the cooler the art. That's the desert spaces and night skies. The closer the proximity, the hotter the art. The farther away, the cooler the art. Jackson Pollock is quantum hot, Spiral Jetty is cosmic cool. Andy Warhol is celebrity hot, Michael Heizer is ancient cool. Jenny Holzer is text hot, Nancy Holt is cylinder cool. Cindy Sherman is mirror hot, Teresita Fernandez is mirror of nature cool. Dan Flavin is electric hot, Donald Judd is aluminum and concrete cool. James Turrell's pure light installations are electric hot, while his Roden Crater is abyss cool.

Over the years, co-author of this essay Barry Vacker has had the good fortune to personally visit several of these Earthworks (except for Roden Crater). When the sun sets and temperatures drop, the lower temps naturally help our minds get into the chill gaze, allowing the cool to speak to us.

Cut into the rim of a mesa north of Las Vegas, Michael Heizer's *Double Negative* (1969) comprises two empty trenches (together about 1,500 feet long) that directly pose the challenge of the philosophical abyss in the surrounding desert and universe above. Like *Spiral Jetty*, *Double Negative* is experienced by looking into the empty space within each trench and away into the empty space beyond—toward the skies or the desert basin running beside the mesa. Negative space surrounds the sculpture and the viewer forcing one to situate one's self on Planet Earth, yet within nature and upon the starry tightrope extending into the universe.

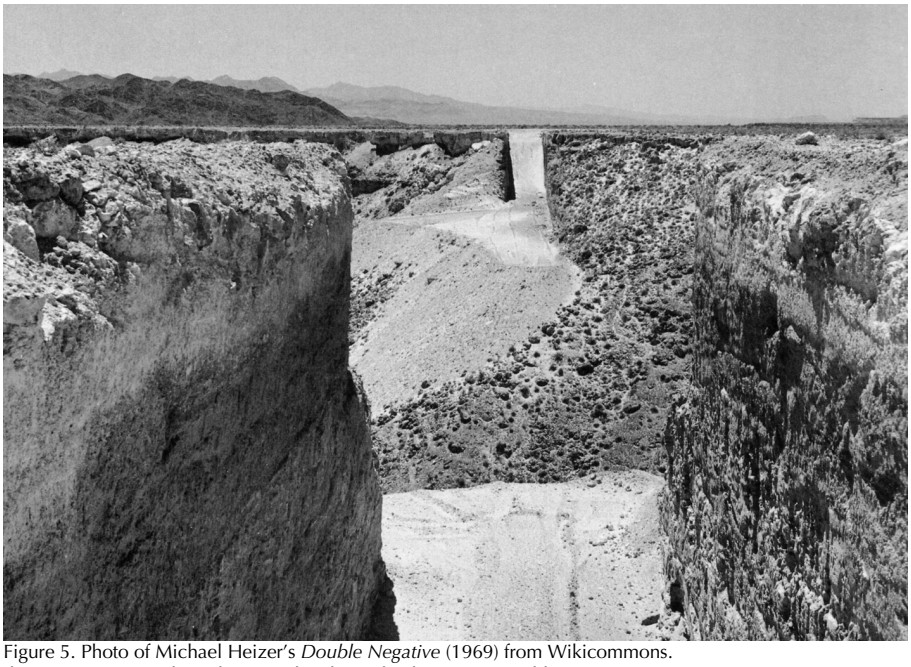

Figure 5. Photo of Michael Heizer's *Double Negative* (1969) from Wikicommons. [https://commons.wikimedia.org/wiki/File:Michael_Heizer,_Double_Negative,_1969_(7841453092).jpg]. Use of image permitted under the Creative Commons 2.0; original source: http://doublenegative.tarasen.net/double-negative.

Set on the edge of the Great Salt Lake in Utah, Robert Smithson's *Spiral Jetty* (1970) is a 1,500-foot spiral of dirt and boulders that references the Milky Way above, while salt crystals show emergence and entropy over time. This Earthwork is experienced by looking at it and looking away toward the horizon and sky. *Spiral Jetty* is framed by a vast realm of negative space. The aesthetic canvas is the Great Salt Lake, the daytime sky, and the starry sky at night. In Smithson's film about *Spiral Jetty*, the artist includes an image of Edwin Hubble's famed 1936 book, *The Realm of the Nebulae* along with this passage: "Gazing intently into the gigantic sun, we at last decipher the riddle of its unfamiliar aspect. It was not a single flaming star, but millions upon

millions of them, all clustering thickly together . . . It was, in fact, a vast spiral nebula of innumerable suns" (Smithson 1970).

Figure 6. *Spiral Jetty* (Robert Smithson1970). Photo by Barry Vacker (2016). Photo taken during a cloudy sunset.

Set in the flat emptiness of northern Utah, Nancy Holt's *Sun Tunnels* (1976) are four giant concrete cylinders aligned with the summer and winter solstices; the cylinders are nine feet in diameter and eighteen feet in length. The holes on the tops of the cylinders align with various constellations. The *Sun Tunnels* is a cool medium that encourages us to look away from ourselves, while the artwork collectively forces us to situate ourselves in the vastness of the negative space of sky, stars, and desert.

Figure 7. *Sun Tunnels*, Nancy Holt (1976). Photo by Barry Vacker (2016).

Built into the edge of a spectacular mesa in northern New Mexico, Charles Ross's *Star Axis* (begun in 1973 and only now nearing completion) is a giant steel and stone sculpture designed to be a naked-eye observatory aimed at the North Star. One ascends toward the stainless-steel aperture, where one sits on a stone bench that situates the spine parallel with the equator—as they gaze into the starry skies, with the North Star stationary at the center as the Earth rotates. Is there a better artwork depicting a rope over an abyss? *Star Axis* will be accurate for thousands of years.

Figure 8. Star Axis (Charles Ross, 1973-nearing completion) [Editors, can we get a photo *of Star Axis*? During my 2013 tour of Star Axis, led by Ross, photos were not permitted. However, images are starting to appear in the media. This image is from *The Guardian*. https://www.theguardian.com/artanddesign/2016/may/11/deserts-and-dynamite-my-journey-to-the-cosmic-heart-of-land-art]

Located in a dormant volcano east of the Grand Canyon, James Turrell's *Roden Crater* (begun in 1979 and still in development) contains a series of his "skyspaces" and several naked-eye observatories. According to Turrell: "In this stage set of geologic time, I wanted to make spaces that engage celestial events in light so that the spaces perform a 'music of the spheres' in light." Recently, Kanye West donated several million dollars to help complete the project and obtained permission to film a music video inside Roden Crater.

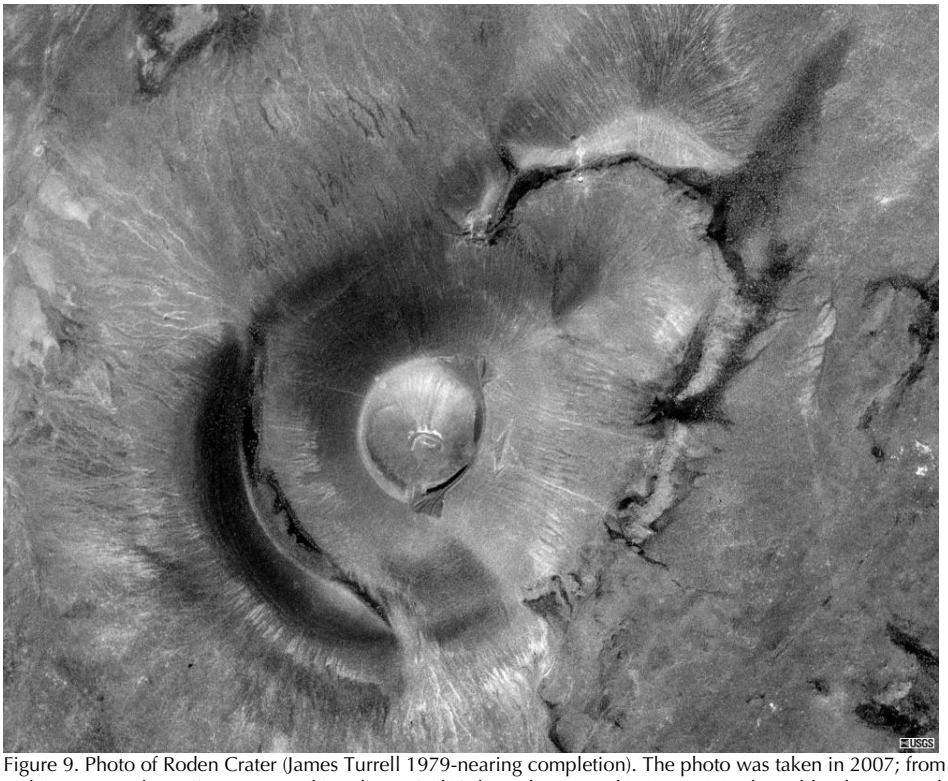

Figure 9. Photo of Roden Crater (James Turrell 1979-nearing completion). The photo was taken in 2007; from Wikicommons [https://commons.wikimedia.org/wiki/File:Roden.jpg]. This image is in the public domain in the United States because it only contains materials that originally came from the United States Geological Survey, an agency of the United States Department of the Interior.

I've found that these sites are all much more impressive when experienced *in person*. The photos of these Earthworks might look great or interesting, but they are not a substitute for being there. That's because the immensity of the surrounding desert and skies function as "negative space" and set off the Earthworks, forcing us to see them in a *larger cosmic narrative*. It's the same concept as *Earthrise*, in which the blackness is the negative space that frames Earth in the universe.

Commented [GC1]: You've mentioned this already above

Of course, these Earthworks are not easy to visit. That's part of what make them special. Far removed from museums and metropolises, these Earthworks inherently situate us in universal narratives of space, time, and existence—in direct contrast to the 24/7 hot media spectacle that situates us in the momentary fragments of tweets, selfies, status updates, and the endless antics of the human species. Day or night, these monumental Earthworks are new media art that remove us from the center of the universe and stimulate the cosmic sublime.

8. Cool Media and the Cosmic Sublime

Whether at an Earthwork or Observatory, directly experiencing the stars and nearby galaxies from both an aesthetic and scientific perspective is thrilling and inspiring. It's like what I (co-author Vacker) directly experienced at various Earthworks and at the McDonald Observatory in the desert mountains of far west Texas. Seeing the dark skies filled with the radiant Milky Way has enabled me to experience the cosmic sublime and transcendent moments in which I am connected to a narrative much larger than the human-centered narratives that dominate the 24/7 hot media spectacle.

During my many visits to McDonald Observatory's "star parties" (where visitors are permitted to look at the stars, planets, and galaxies through very powerful telescopes), I have gazed upon the Andromeda and Whirlpool Galaxies, neighbors of the Milky Way. Andromeda is over two million light years from the Milky Way, while the Whirlpool Galaxy is at least fifteen million light years away. Imagine seeing the tilted spiral of Andromeda, with photons from one trillion stars traversing the voids of the cosmos at the speed of light for two million years—light leaving that galaxy long before any human walked on Earth! On one particular visit, it occurred to me that, after eons of space traveling, the starlight I was witnessing was passing through the telescope's lenses and into my own eyes; photons from the Andromeda Galaxy were actually converting into bioelectrical patterns in my brain.

Andromeda's photons merged with my neurons. In that existential moment, my consciousness was reconnected with the cosmos, and a tiny fragment of the universe was directly aware of itself on a grand scale—connecting the infinite and infinitesimal. Though tiny in relation to the cosmos, I felt the exaltation and affirmation of human existence, the power of human reason to grasp what I was seeing and sensing. It is likely I have never felt more inspired and at peace in the same moment. That's the power of cool media and the cosmic sublime.

When we gaze up at the Milky Way with our eyes, or visit a naked eye observatory, or peer through telescopes into deep space and across the universe, the amazement we experience is part of the sublime. An aesthetic concept, the sublime has challenged many of the great philosophers, from Immanuel Kant in the 18th century to Jean-Francois Lyotard in the 20th.

In the conclusion to *The Critique of Practical Reason*, Kant offered this famed statement: "Two things fill the mind with ever new and increasing admiration and awe, the oftener and the more steadily we reflect on them: the starry skies above and the moral law within" (Kant 1967, 260). For Kant, the starry skies above— "worlds upon worlds and systems of systems"—annihilates our importance as individuals and as a species, while reducing our planet to a "speck in the universe" (Kant 1967, 260). Lyotard believed the cosmic sublime is "the sole serious question to face humanity today" and "everything else seems insignificant" (Lyotard 1992, 9). In the immensity of the universe, with all its energy and matter, our sun is due to die out in 4.5 billion years and expand to consume Earth, effecting what Lyotard terms the death of human thought. (This will be certainly true unless we migrate to other habitable planets.) Tapping into the sublime in terms of space and time, Lyotard writes, "This arrangement is transitory — lasting a

few billion years more or less. Lunar years. Not a long time on a cosmic scale. The sun, our earth and your thought will have been no more than a spasmodic state of energy, an instant of established order, a smile on the surface of matter in a remote corner of the cosmos" (Lyotard 1992, 10).

For Lyotard, these cosmic conditions *annihilate* and render absurd the passions that consume society, with its wars, politics, economics, and belief that the "smile on the surface of matter" actually matters to the cosmos. Humans are the product of chance and the laws of the universe and have no intrinsic meaning or purpose beyond what we have conjured in our beliefs and thoughts. So far, the cosmos permits us to exist but does not care if we exist (Sim 2001).

Borrowing from Kant, Lyotard, and other thinkers, here is what we mean by the cosmic sublime: We encounter the cosmic sublime when there's a tension between our perceptions and our reason. Our senses are *overwhelmed*, yet our minds can still order the percepts into *knowable*, *pleasurable,* or *terrifying* concepts. The vast universe includes immense scales of space and time, dynamic systems of stars and galaxies; sprawling voids and seeming emptinesses; immeasurable realms of cosmic destruction and renewal. Such features stimulate our imaginations in awe-inspiring experiences. We grasp the *affirmation* of human rationality and *annihilation* of our centrality, We feel *exaltation* before the universe in tandem with sensing the *extinction* of our species' dominant narratives and philosophies. We feel the impulse of human *freedom* in conjunction with our *void in meaning*. We can feel connected to the universe or crushed by its vastness (Kant 1952, 90-130; Shaw 2006, 1-11, 73-89; Hoffman and Whyte 2011).

The sublime moment is filled with emotional and cognitive overload. We instantly realize that we are no physical match for the universe, yet we embrace the intellectual challenge of exploring the cosmos via science and technology. The cosmic sublime affirms our right to exist at the same time that it points to the inevitability of our own extinction. The sublime evokes paradoxical and contradictory emotions in us that coexist, side by side, such as pleasure and pain, attraction and repulsion, and power and fear (Vacker 2017, 13-15).

The telescopes of NASA and the ESA also provide profound experiences of the sublime, as do Earthworks. The sublime is a complex existential and *aesthetic* experience, a moment of *radical wonder,* a universal experience that 1) connects us to each other and 2) connects us to our origins and destiny, to nature and the universe from which we evolved. We ardently propose this experience represents the power of Earthworks as a new media art and the importance of protecting dark skies for observatories and Earthworks.

But will the dark skies and Earthworks survive Elon Musk?

9. Starlink's Night Sky Pollution

Are the starry skies soon to be cluttered with satellites? Will the dark skies be ruined above the world's Earthworks and observatories? Will hot media overtake cool media?

Beginning with the first satellite in 1957 (Sputnik) and up to 2019, there were approximately

4,000 satellites in orbit around Earth. That number is expected to explode in the coming decade. By 2025, more than 1,000 satellites could be launched every year. With approval from the FCC, Elon Musk's Starlink plans to launch 12,000 satellites (and likely 30,000 more) in low-Earth orbit by 2027 (Ryan-Mosley, Winick, and Kakaes, 2019). Supposedly, the main goal of Starlink is to provide high-speed bandwidth for 4K video on a global basis, surely a worthy endeavor for those living in remote places or underserved locations and are unable to access the internet. Other firms planning to compete with Starlink include Amazon (3,200 satellites) and OneWeb, a UK-based company planning on launching 650 satellites. *All the above means that we could go from 4,000 satellites in 2019 to over 40,000 in the coming decade, an increase by a factor of ten.*

Of course, Starlink and the others will be conduits for the daily torrent of hot media circulating around our planet, along with much new media art that is online. In so doing, Starlink and others may well destroy the dark skies. Consider the following image.

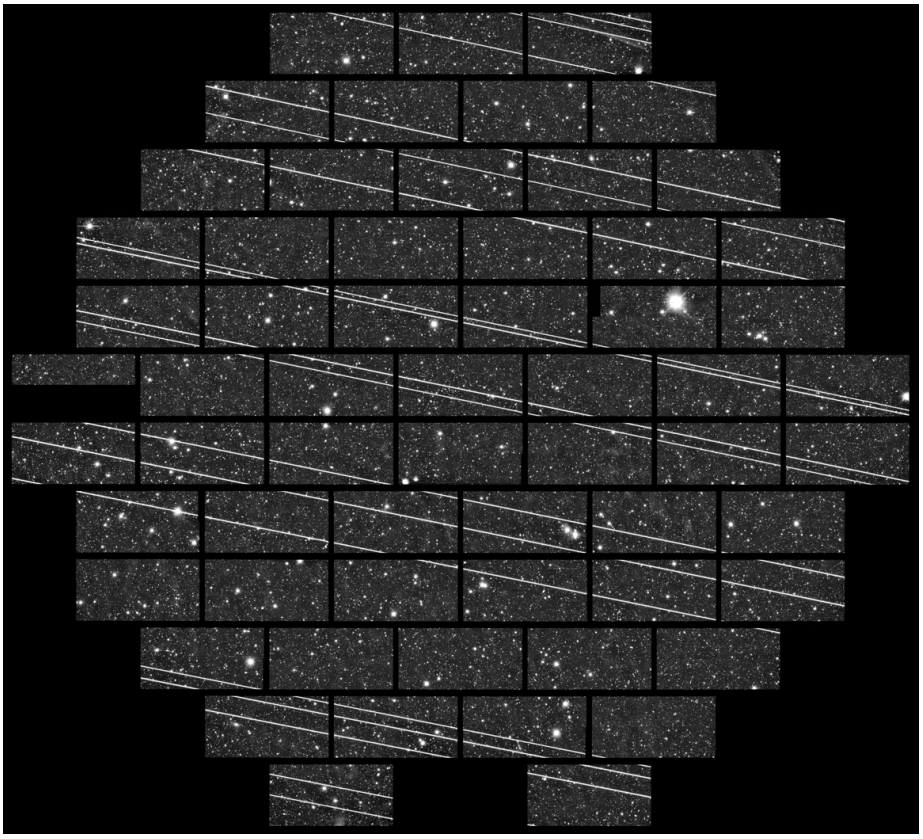

Figure 10. Streaks in night sky imagery caused by Starlink satellites (2019). Image from Blanco 4-meter telescope at the Cerro Tololo Inter-American Observatory (CTIO), 333 seconds-exposure image by astronomers Clara Martínez-Vázquez and Cliff Johnson. Image in public domain, Wikicommons [https://commons.wikimedia.org/wiki/File:Astro.jpg].

The first Starlink satellites have already received complaints from scientists and astronomers because the satellites are reflecting light back down to Earth and interfering with dark skies needed at the observatories around the world (Grush 2020; Clark 2020)**.** For example, Northwestern University astronomer Cliff Johnson was surveying the Magellanic Clouds (two dim dwarf galaxies that orbit the Milky Way) with the telescopes at the Cerro Tololo Inter-American Observatory in Chile. Suddenly, long streaks appeared in the images from the telescope. For five minutes, a "train of 19 satellites had crossed into the telescope's view, scarring the observation with bright parallel marks, and degrading their scientific value" (Resnick 2020).

Clarae Martínez-Vázquez, a colleague of Johnson, expressed her frustration on Twitter: "Wow!! I am in shock!! The huge amount of Starlink satellites crossed our skies tonight at @cerrotololo. Our DECam exposure was heavily affected by 19 of them! The train of Starlink satellites lasted for over 5 minutes!! Rather depressing… This is not cool! (Resnick 2020).

By stating Starlink's sky pollution is "not cool," Clarae Martínez-Vázquez is spot on in more ways than one, for this is a clear example of hot ego-media overtaking the territories of cool exo-media. Starlink has pledged to address the matter, though they are still still launching the reflective satellites. Caitlin Casey, an astronomer at the University of Texas at Austin, poetically summarizes the issue: "The fact that one person, or one company, can take control and completely transform humans' experience of the night sky, and not just humans, but every organism on Earth . . . that seems profoundly wrong. [The night sky is] the one thing that all humans have had in the past 200,000 years, millions of years, it's always been there . . . My whole attachment to science and pursuing this as a career dates back to seeing the night sky as a child and being mesmerized. Astronomy is a unique science: we can't tinker with things in a lab, experimenting on stars. The entire science is looking up at the sky, and losing that would be tragic" (Resnick 2020).

Starlink's sky pollution involves more than astronomy, for it threatens all Earthworks at night. Under dark skies, there are somewhere between 4,000to 6,000 stars visible to the naked eye. Currently, the Starlink satellites are brighter than most stars! Under current plans to reduce the reflection, the satellites will still be as bright as many stars. Imagine 40,000 satellites roaming across the sky every night, like ants crawling across an ant bed stretching from horizon to horizon.

10. Conclusion: Thus Spoke the Cool

Lost will be the cool gaze that has existed for the human species since its emergence on Planet Earth. Prior to electric light and Starlink, every human being and every civilization that has ever existed was able to bask in the radiance of the Milky Way. We are literally polluting and erasing our connection to our cosmic origins, for we are made of the stardust we see in the Milky Way. If the dark skies could be returned to human consciousness on a regular basis or become easily

accessible in national parks and dark-sky reserves, then this might help inspire the development of a planet-wide sense of humanity's shared destiny in a new and singular cosmic narrative. That's the unstated philosophy in the Earthworks and Greater Big Bend International Dark Sky Reserve. Cool media—in the form of technology and new media art—and the sublime aesthetic experience are collective starting points for ascending the tightrope over Nietzsche's ever-so-chilly abyss.

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