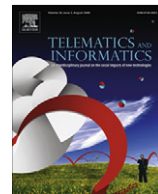




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Yearning to be the center of everything, when we are the center of nothing: The parallels and reversals in chaco, hubble, and facebook

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ABSTRACT

Humans have long sought to map their place in the cosmos and then situate their selves at the center of the universe. These patterns are displayed at three radically different sites – the Sun Dagger in Chaco Canyon, the Hubble Space Telescope, and social media and Facebook. Drawing from Marshall McLuhan, this article will theorize the parallels and reversals in these sites, where cosmological discoveries of the expanding universe have been countered by technological innovations involving electronic screens, such that social media counters space telescopes, cyberspace counters outer space, and Facebook counters Hubble. Perhaps the “revolution” of social media merely parallels other cultural reversals, all of which seek to return humans to the center of the universe, when we are the center of nothing. And this desire and delusion to be at the center of everything lies at the heart of contemporary issues facing the global civilization.

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1. Introduction

Humans are the only species on Earth to store information outside their bodies – from cave paintings to cinema to cyberspace, petroglyphs to photographs to 3D simulations, books to libraries to the internet. From our minds, we have extended a complex technological system around the planet and into the universe. Art and media technology are ways we extend our consciousness and expand our knowledge, to create and shape our identity, to represent reality to ourselves, and to map our place in the cosmos (Verdet, 1992; Thuan, 1993).

Using the technologies available at the time, humans have long sought to map their place in the cosmos, from Stonehenge to the Sun Dagger to the Hubble Space Telescope (Mohen, 1999; Sofaer, 2008; Cox and Cohen, 2011). Despite the impressive array of monoliths and petroglyphs used to track the sun and stars in relation to the Earth, premodern humans had no

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Table 1
cosmic parallels: chaco, hubble, facebook.

	Chaco	Hubble	Facebook
Observatory in the Sky	Sun Dagger	Space Telescope	
Iconic Cosmic Image	Supernova	Ultra Deep Field	
Our Location in the Cosmos	The center of the cosmos.	Not the center of the cosmos. The center of nothing.	The center of everything.
Mapping City and Culture into Cosmos	Ordered along lines of the cosmos: solstices and equinoxes.		Ordered along lines of codes: networks and hypertext.
Constructing Facades Around Empty Spaces	Monumental "Great Houses."		Profile walls
Representing Ourselves	Petroglyph Trail		Prolife photos
Image Site	Flat Rock Wall		Flat Screen
McLuhan's Reversal	Mapping the stars in space, showing faces on Petroglyph Trail.	Mapping stars in outer space...	... showing faces in Facebook (cyberspace).
Light Shining Through Space	Empty spaces between slabs.	Empty space between stars.	Empty space on screens.
Fate of the Civilization	Collapsed and vanished into point of historical place.		Collapsing into vanishing point of cyberspace?

telescopes and were reliant on the observations provided by the naked eye. Thus, they could only conclude they were at the center of a universe that revolved around planet Earth, with humans seemingly at the center of everything. In contrast, the Hubble Space Telescope has only amplified what Galileo's telescope first revealed for the eye to see, namely that humans are not the center of the universe.

Chaco, Hubble, and Facebook – three sites vastly separate in space and time, yet deeply related in illustrating the innate human drive to mirror and map our existential place in the universe. The parallels between Chaco Canyon's Sun Dagger and the Hubble Space Telescope are countered by the parallels and reversals of Chaco's Petroglyph Trail and Facebook's social media site. With Chaco and Facebook, we see the human drive to map the vast cosmos and then situate ourselves at the center of everything.

The deeper meaning of Facebook is far less about social networking and democratic media than serving as our compensation and consolation for not being the center of the universe as revealed by telescopes, especially the Hubble Space Telescope. This article will explain the parallels between Chaco, Hubble, and Facebook [Table 1], while also revealing a strange parallel between cosmological discoveries of the expanding universe and technological innovations involving electronic screens [Table 2].

Profound cosmological discoveries have been countered by technological and cultural reversals that allow humans to pretend they are center of the universe, while Facebook is the continuation of the trajectory of television, whose deepest existential stance has been to place humans at the center of everything. Facebook continues the dream on display in the Sun Dagger and Chaco Canyon, which is the human yearning to be at the center of everything, when, in reality, we are the center of nothing.

These are not merely philosophical observations with no pragmatic implications, for the delusion of having a destiny at the center of everything, on Earth or in the cosmos, is at the heart of some of the most profound problems facing civilization. Meanwhile, the acceptance our true cosmic conditions might be a first step in addressing the challenges that humans face in building a sane and sustainable civilization, a civilization that reflects the nature of our existence in the cosmos – as best we understand it through art, science, and cosmology (Abrams and Primack, 2011).

2. Chaco canyon, sun dagger, and petroglyph trail

Located in the deserts of the American Southwest, Chaco Canyon is the center of the lost civilization of the "Anasazi," who are also referred to as the Chacoans or Ancestral Puebloans that inhabited the area in 800–1200 CE. Chaco Canyon has been named a "World Heritage Site" by the United Nations Educational, Scientific and Cultural Organization (UNESCO). In a very real sense, Chaco Canyon is America's Stonehenge. Chaco is considered a sacred homeland by current day Hopi and Pueblo peoples, who are believed to be descendants of the Chacoans. The Puebloan civilization stretched across hundreds of miles of desert, with Chaco Canyon serving as the center of its culture and home to monumental architectural buildings which hosted ceremonies dedicated to celestial events and calendrical cycles. Within the Canyon, the Chacoans mapped a complex cosmology based in the patterns they observed in the skies above (Sofaer, 2008).

2.1. The Sun Dagger

At the heart of the Chaco cosmology is the famous "Sun Dagger" that mapped the sun through its solstices and equinoxes and provided the celestial order for the situating the Chaco culture at what they believed to be the center of the universe.

Table 2

Parallels and reversals in cosmology and media technology.

	COSMIC MEDIA We are Not the Center of the Universe We are the Center of Nothing	SOCIAL MEDIA We Are the Center of the Universe We are the Center of Everything
1925-1929	Expanding Universe <ul style="list-style-type: none"> • Edwin Hubble uses the Hooker telescope to discover galaxies outside the Milky Way; 1925. • the universe is much larger than previously imagined. • Hubble discovers the galaxies are moving away from the Milky Way; 1929. • the universe is expanding because of what is now known as the “big bang.” 	Electronic Screen <ul style="list-style-type: none"> • John Logie Baird transmits the first live moving images on a television screen: a human face; 1925-26. • humans are the center of the electronic screen. • Philo Farnsworth transmits the first all electronic images: a straight line, a dollar bill, and a human face; 1927-29. • humans are the center of the electronic screen, an expanding media universe of power and profit.
1968	Earthrise <ul style="list-style-type: none"> • Apollo 8 orbits the moon and captures the Earthrise image in December 1968. • hundreds of millions watching on TV see Earth floating in the cosmic void. 	Hypertext <ul style="list-style-type: none"> • Douglas Engelbart introduces hypertext in December 1968. • no longer passive viewers, each human is the central navigator of their place on the electronic screen.
1990	Hubble Space Telescope <ul style="list-style-type: none"> • NASA launches the telescope in April 1990. • the universe is soon to be revealed as much larger and older than expected. • Also, in February, 1990, the Voyager space probe captures the “Pale Blue Dot” image of Earth from space. 	World Wide Web <ul style="list-style-type: none"> • Tim Berners-Lee introduces the world wide web in May 1990. • humans and hypertext placed at the center of the global information network represented on the screens.
2004	Hubble “Ultra Deep Field” <ul style="list-style-type: none"> • completed in January 2004. • thousands of galaxies are found in an “empty” spot in the night sky, revealing a universe of mind-boggling size and scale. 	Facebook <ul style="list-style-type: none"> • launched in February 2004. • humans are placed at the center of a global network, a social media universe created for them, starring them.

The Sun Dagger is a spiral petroglyph on a rock wall that lies behind three vertical slabs of rock that lean perpendicular against the rock wall, all located high atop the Fajada Butte, 135 meters above the desert floor in Chaco Canyon.

The three slabs are about 10-12 feet tall and are separated by a few inches, just enough to let the sunlight shine between the jagged surfaces to create “daggers” of light on the rock wall. At high noon on the summer solstice, a dagger of light strikes the center of the spiral petroglyph pecked into the rock wall. On the winter solstice, two daggers of light shine through to frame the spiral. The Sun Dagger and another spiral petroglyph were used order their civilization within the cosmos, for the “great houses” (with hundreds of rooms) and ceremonial city were aligned to where the sun was rising and setting during the solstices and equinoxes. Because of soil erosion near the three slabs, the Sun Dagger site is no longer accessible for public viewing, but a short video about the Sun Daggers can be seen at the Solstice Project website: <http://accad.osu.edu/%7Eaprice/works/sundagger/index.html>. It is difficult to adequately describe in this short space the overall visual power of the site and the architecture, which are shown and explained in Anna Sofaer’s powerful and poetic documentary, *The Mystery of Chaco Canyon* (2003). Table 3 provides several key passages from the documentary. As these passages make clear, the goal of the Chacoans was to make the ceremonial city the center of their civilization by anchoring it in the center of the cosmos as they perceived it through their eyes and the Sun Dagger.

Without doubt, the Sun Dagger is an astonishing technological and cosmological achievement. Sitting atop Fajada Butte, the Sun Dagger served as the eye in the sky for the Chaco people, their version of the Hubble Space Telescope. And, just as the Chacoans had an eye in the sky gazing into the cosmos, they also had a wall for gazing at their culture and their selves.

2.2. Petroglyph Trail and Facebook

Petroglyph Trail follows a rock wall that faces the vast desert stretching beyond Chaco Canyon. The trail silently sits beneath the vast skies filled with the blazing sun in the day and radiant stars at night. Stretching about $\frac{1}{4}$ mile, Petroglyph Trail provides a complex array of images, which are haunting and beautiful and seem to have purposeful arrangements. Some images even use the artistic technique of *bas relief*, which was thought to exist at only one other ancient site, Easter Island. The petroglyphs show human faces and bodies, plants and animals, and various graphic designs suggesting “emergence,” “migration,” and the passage of the sun through the skies (National Park Service, 2010). The location of the rock wall and the images strongly suggest that the Chacoans intended to represent and mirror their lives and meaning to themselves and to the cosmos beyond Chaco Canyon. The following photos show Chacoans and “friends” on the wall of Petroglyph Trail (photos taken by Barry Vacker, 2011).



Petroglyph 1.



Petroglyph 2.

The meaning of Petroglyph Trail for the Chacoans is not unlike the meaning of the Profile Wall for Facebook users. The parallels are seen in several striking comparisons: 1) Just as the Chacoans created images to map their migrations across the vast desert spaces, Facebook users post images of their migration into cyberspace. This comparison is not merely a clever conceit, for how can we deny that the past two decades have seen a massive migration to an online existence, in which humans order their lives in real space via cyberspace, using the internet, PDAs, iPhones, and social media such as Twitter and Facebook. 2) Facebook users create Profile Walls and update their statuses with meaningful photographs and statements, ordering their identities in the lines of computer code and the glowing lights of cyberspace, just as the Chacoans ordered their existence in lines of the Sun Dagger, celestial patterns, and the glowing stars of the cosmos. 3) Much like the Chacoans' story is etched eternally onto the walls of the canyon for permanent viewing in real space, the Facebook user's story is etched permanently onto their Profile Wall and can exist forever within cyberspace. Much like the flat canyon walls provided a canvas for the Chacoan artists and cosmologists, flat screens are the canvas through which we represent ourselves and reality to ourselves and the rest of the people populating Facebook. 4) The Chacoans resisted cosmic obscurity, irrelevance, and meaninglessness by recording the most influential events of their cultural existence, such as the Supernova. With the Facebook "Timeline," only the most important visual events from one's Facebook history are displayed, making the user's personal highlights (supernovas) readily accessible for the rest of time. 5) The "Great Houses" of the Chacoans were not built for residential purposes, but rather ceremonial magnificence. Some of the walls were built next to the canyon walls, thus using "false front" architecture or facades that simulated large scale structures. Surprisingly, many of the thousands of rooms were completely enclosed, thus permitting no human access and serving no function other than as spaces of emptiness to create the illusion of external splendor. In other words, the Great Houses used facades and nothingness to simulate somethingness

Table 3

Sun dagger and the great houses: at the center of everything.

Quotes and descriptions from achaeoastronomers, archaeologists, and Hopi educators in <i>The Mysteries of Chaco Canyon</i> (Anna Sofaer 1999).		
SUN DAGGER AND THE CENTER OF THE COSMOS	THE CENTER OF THEIR CULTURE	SPECTACLE AND SIMULACRA IN THEIR “GREAT HOUSES”
<p>“And on top of this tower of stone, they marked with a dagger of light their knowledge of the sky, a knowledge they would use to guide the construction of the center of cosmology, taking 250 years to complete.” – Robert Redford, Narrator</p> <p>“So the moment of noon equinox is multiply marked. So we kind of have to ask – ‘What is this time?’ Well it’s the middle of the Sun’s passage through the year. [...] So it’s the middle of time.” – Anna Sofaer, Archaeoastronomer</p>	<p>“The migrations began over a period of centuries, always looking for that place that was to be the center of their world.” – Robert Redford</p> <p>“In this land of extremes, the relentless sun soars temperatures to 110°, parching the Earth and quieting all life. Six months later, frigid winds drop temperatures well below zero. In a canyon offering little shelter. And yet, here, ancient people chose to construct the center of their world.” – Robert Redford</p>	<p>“It’s built at a bigger than human scale. It’s designed to overwhelm you. And even as ruins, I think they do that. My opinion is that what it really is is a theatrical exercise.” – John Stein, Archaeologist</p> <p>“They often even incorporated false front architecture. A cliff would come along and instead of having a space in back of it, they would put a wall in front of it and it was a fake wall. It was just a cliff and they would use this thing to magnify the building. Rigid formality is also one of the characteristics of Chacoan buildings, this replication over and over again of these similar patterns. The whole complex gave this massive terraced appearance that was really built to present an exterior form and dominance.” – Mike Marshall, Archaeologist</p>
<p>“Here in Chaco, it’s as though the North and the South, the worlds of the below and the above are joined by the cycles of the sun and the moon in this sacred center.” – Robert Redford</p>	<p>“If there was a way to transfer the orderly nature of the cosmos down onto what seems to be chaos that exists here, then you began to integrate, at this place, both heaven and Earth, and this would be, of course, viewed, at least typically in Pueblo culture as a center place.” – Phillip Tuwaletstiwa, Hopi Indian and Deputy Director of the National Geodetic Survey</p>	<p>“What we see as rooms in Chaco buildings may be, in fact, just blocks of enclosed space, building blocks designed to support monumental exteriors.” – Robert Redford</p>
<p>“I find it fascinating that people came to this place because the land was so compelling and because the formations of the sun and the moon just drew them into such a fantastic order of themselves in relation to the universe.” – Anna Sofaer</p>	<p>“Like the small markings on Fajada, Pueblo Bonito was marking on a large scale, the middle of time at the center of Chaco Canyon, the middle place of their culture. And we were soon to find that the Chacoan architects had used these same midpoints, the sun, to guide their planning for the whole central complex.” – Anna Sofaer</p>	<p>“It’s as though everything is playing itself out to you in a program, in a pattern.” – Anna Sofaer</p>

on grand scales that were believed to be in harmony with the vast cosmos. Facebook functions in a subtly similar fashion, for it permits users to upload thousands of pictures to create a façade of life lived on a grand scale in harmony with the media universe. Facebook provides almost unlimited empty computer space for people to fill with personal pages that contain their memories, ideas, opinions, humor, and photographs.

“It’s as though everything is playing itself out to you in a program, in a pattern,” explained Anna Sofaer in *The Mystery of Chaco Canyon* (2003). In Chaco Canyon, this pattern is cosmic.

2.3. *The Supernova and the Hubble Deep Field*

Extending two miles beyond the Petroglyph Trail is the Penasco Blanco Trail, home to one of the most profound petroglyphs in Chaco Canyon (or anywhere else in the world). Painted under the overhang of a canyon wall is the “Supernova” panel, featuring a large star, a crescent moon, and a human hand, most likely the hand of the creator of the petroglyph. The star has eight points extending outward, as if to suggest size and/or brightness. Astrophysicist Brian Cox believes the star is a painting of the supernova that exploded on July 4, 1054, as precisely documented by Chinese astronomers. The supernova explosion was visible in daylight for three weeks and the night sky for two years; the remnants of the explosion are still visible in the form of the Crab Nebula. So why does Cox think this painting is of the supernova? Cox explains:

“Apart from the date of the painting, which is not precisely known, the best evidence that this does chronicle the event the Chinese astronomers recorded is the alignment of the painting. Every 18.5 years, the Moon and Earth will return to the same positions they were on the nights around 4 July AD 1054. If on one of those nights you go to Chaco Canyon and position yourself beside the painting, the Moon will pass by the position in the sky indicated by the hand print. At that moment, to the left of the Moon, exactly as depicted in the painting, you will see the Crab Nebula (2011, 179).”

Perhaps the Supernova is an ancestral version of the Hubble Deep Field, the mapping of stars in deep space. The sites in Chaco Canyon express a map of the cosmos, designed around solar patterns and created for the integration of humans into a cosmic narrative at the end of the first millennium and beginning of the second millennium (800-1200 CE). Now, a millennium later, we are in 2012 and floating in the sky is a space telescope that spans the end of the second millennium and the beginning of the third millennium. There is one big difference, though, for just as the Sun Dagger situated Chaco culture at the center of the universe, the Hubble Space Telescope shows no culture or peoples on Earth are at center of the universe. And, it is because we are not the center of the universe that we must compensate for space telescopes with electronic screens and social media.

3. The hubble space telescope and facebook

Launched in 1990, the Hubble is the most famous telescope in the world, allowing us to peer through deep space to mirror and map as much of the visible universe as possible and making it available for all to see via the internet. Launched in 2004, Facebook is the most famous social media site in the world, permitting us to network across cyberspace by personally mirroring and mapping our lives, making as much visible as possible and available for all to see, especially ourselves. The Hubble Space Telescope shows that electronic media and the internet can be forces for scientific and cosmic enlightenment in global culture, while Facebook mostly extends and personalizes the entertainment power of television and the internet.

Much has been written about the cosmological discoveries of the Hubble (Weiler, 2010) and the cultural effects of Facebook (Miller, 2010; Wittkower, 2010). At first glance, it would seem there is no connection between the Hubble and Facebook. Yet, there is a deep existential relationship between the space telescope in outer space and the social network in cyberspace, precisely both media technologies present an existential stance toward the cosmos and represent ways we mirror and map the universe and our place in it, cosmologically, culturally, and personally.

The best way to begin to understand this relationship is to consider the following cosmological discoveries and technological innovations of 2003-2004: 1) From September, 2003 to January, 2004, the Hubble telescope completed its third spectral photography and imaging of deep space, a continuation of the series known as the “Deep Field” images. The third photographic image was the “Ultra Deep Field” and it was released in March 2004. 2) Bracketing the Hubble Ultra Deep Field image were the launch of two most famous social media sites. In August, 2003, Myspace was launched. In February, 2004, Facebook was launched.

Within a tiny spot in the night sky, the Hubble telescope peered back in time almost 13 billion years to capture the Ultra Deep Field image, which revealed an estimated 10,000 galaxies and a universe of staggering size and scale. Within the circuits of the internet, Facebook has grown into a cultural phenomenon by creating an expanding media universe, with its galaxies of users approaching one billion people. Perhaps the appearance and explosion of Facebook immediately after the Ultra Deep Field image is not a mere coincidence, but represents a technological adaptation and compensation for the cosmological discoveries of the Hubble. Maybe social media and cyberspace are ways we counter space telescopes and deep space.

3.1. *The Telescope: the Most Existentially Radical Media Technology?*

The Hubble Space Telescope reminds us that the telescope is perhaps the most existentially radical media technology in human history. The telescope surely rivals or exceeds the effects of written language, the printing press, and the computer,

precisely because the telescope dislodged humans from the center of the cosmos and discovered the vast and expanding universe of the big bang. When Galileo pointed his telescope into the night skies, his discoveries confirmed the calculations and intuitions of Copernicus: Earth is not the center of the universe, for it is orbiting the sun. Since Galileo, astronomers and cosmologists have had the luxury of ever more powerful telescopes to map the cosmos and our place in it. Because of the telescope, the map of the cosmos has evolved from geocentric (Ptolemy) to heliocentric (Galileo) to clockwork cosmos (Newton) to the expanding universe of the big bang (Hubble). If our media technologies – telescopes attached to computers – are accurate, the visible universe contains at least 100 billion galaxies, with each galaxy containing hundreds of billions of stars. Current estimates suggest there may be three sextillion stars and perhaps one trillion galaxies in the universe. And, the galaxies and clusters of galaxies are accelerating away from each other at increasing velocities, thrust apart by expanding voids of space and an unseen energy, what astrophysicists term “dark energy.”

3.2. *The Hubble Ultra Deep Field*

The first Hubble Deep Field image was taken between December 18 and 28, 1995. Since the Hubble orbits in space, it captures much clearer images than terrestrial telescopes, which receive images distorted by the atmosphere. In the first Hubble Deep Field, the light was four billion times fainter than what can be seen by the human eye. In other words, the Hubble extended and amplified the power of the human eye by four billion times.

To capture the first Deep Field image, the Hubble was aimed at a single spot in the sky, a seemingly empty patch of darkness between the stars. The spot was about the size of a tennis ball at 100 meters. Over ten consecutive days, the Hubble was aimed at this spot, capturing 342 separate images. These were compiled into a single photographic image. Astronomers and scientists were stunned by what they saw – at least 1500 galaxies. Shining through the keyhole in the sky, there were galaxies in various shapes, sizes, and stages of development. This image suggested that the galaxies in the universe number in the many billions and stretch across billions of light years.

In the Hubble Ultra Deep Field, NASA decided to go even further across space and time. Aimed at a dark and empty spot near Orion, the Hubble used a new camera to capture at least 10,000 galaxies. At the NASA Web site, we can view the Ultra Deep Field image, allowing us to zoom into deep space via cyberspace. These images offer beautiful and sublime views of a universe far more vast, and far more awe-inspiring than anything previously imagined in human history.

Given that the Hubble Telescope was extending the human eye further into deep space than ever before, to reveal, yet again, a universe older and larger than previously thought, it is no surprise that such an extension would trigger a “reversal,” the very reversal found in social media like Twitter, Myspace, and Facebook. The potential for cosmic and cultural enlightenment countered by the culture of entertainment and simulated empowerment.

3.3. *The Existential Stance of Facebook*

As of 2012, Facebook is the most successful of the social media sites exploding around the world, the networked technologies which permit people to share and show everything from photos to status updates to the latest events in their lives. In this sense, Facebook and all social media are “apps” for the internet, applications which permit people to document, share, and show their lives to their friends and themselves. Facebook provides this free app in exchange for the panoptic power to surveil and archive every action taken in Facebook and provide that data for prying corporations and spying governments. In addition, Facebook is a celebration of narcissism, exhibitionism, and voyeurism. All this seems rather obvious.

Facebook is the latest example of the human drive to represent the world and our lives back to our selves. As described above, the line of photographs in a Facebook wall is like the trail of petroglyphs on the rock wall in Chaco Canyon – humans representing the world and themselves to themselves. Five minutes perusing Facebook shows it be a highly narcissistic media technology that empowers almost a billion people to gaze upon the images of themselves and their lives in infinite detail. This means that Facebook ranks as perhaps the most powerful “mirror” ever invented, except for the mirrors in our most powerful telescopes. The difference in the mirrors is the direction of the gaze – Hubble gazes outward, while Facebook gazes mostly inward.

The narcissism, surveillance, and social networking function in perfect harmony with the global celebrity system and the global media spectacle, where the image is more important than the reality it represents and misrepresents. Since Facebook is the continuation of television [Table 2] and is another perfection of the panopticon, it is no surprise that it is the latest evolution of celebrity and spectacle. Facebook is a micro-celebrity system that positions each user at the center of a global panoptic network, a network constructed such that each user is at the center of a media universe, a universe created for their self, starring their self. In this universe, the users are writers, directors, and paparazzi for the “star” of the show – their self. The users in Facebook are like “first person paparazzi,” people who create and/or embody images and avatars at the center of a virtual world in which they shoot photos of themselves, rather than bullets at others as in a video game (Cirucci, 2011). Simply put, Facebook lets everyone be a “supernova” at the center of the media universe.

The non-stop mirroring and mapping of everyone’s life in Facebook provides another example of Jean Baudrillard’s theory of “hyperreality” – the idea that if the media function as “maps” for our lives and reality, then the maps have become so vast and dominant that they have overtaken or obliterated the territories they were supposed to represent (Baudrillard 1994). In other words, the maps no longer merely mirror or represent territories, the media are generating the territories we inhabit on a daily basis, as illustrated by the enormous number of hours spent staring at glowing rectangular flat screens – watching television, viewing videos, playing video games, surfing the internet, and showing our lives in social media such as Twitter and Facebook.

4. Extension, retrieval, and reversal in McLuhan's "laws of media"

As illustrated in Table 2, there has been a long line of dual discoveries and innovations, cosmic discoveries revealing a vast universe of which we are not the center and technological innovations that place us at the center of the media universe. Drawing from Marshall and Eric McLuhan, this pattern of discoveries and innovations can be theorized and explained in terms of extensions, retrievals, and reversals described in *Laws of Media* (1988). As explained by the McLuhans, each medium and technology simultaneously extends our senses and retrieves something previously lost. At the same time, each technology contains the genetic code of its own *reversal*, the point when the technology is pushed to its limit – overextended or “overheated” – and users lose the enthusiasm for its original functions and benefits. Below are a few examples.

The Car: The car extends mobility into the highway system, but its overextension created traffic jams and the effects of fossil fuels, thus triggering a reversal in a return to bicycle riding and pedestrian culture. The acceleration of the car generated speed and fast food, thus triggering reversals into the movements of the slow city and slow food (Honore, 2005).

Radio and Mobile Phone: Both extend our voice, ears, and consciousness around the world, while retrieving town criers and oral traditions lost to print media.

Television: Television extends our eyes, ears, and consciousness around the planet, while the light shining through the screen retrieves cave paintings and campfire tales for urban and suburban homes. By retrieving images and information from around the planet and the cosmos, with image and information arriving as light shining through the screens, television reverses the vanishing point in mirroring and mapping the world, thus placing human consciousness at the center of everything (McLuhan and Parker 1969). Thus, the extension of television triggers the reversal of the vanishing point and the implosion of perspective in representing the world on Earth.

Satellites: Satellites extend our eyes and consciousness around the planet, thus putting Earth inside its own technological sphere and helping to retrieve ecology and environmentalism.

Telescopes: Telescopes and space probes extend our eyes and consciousness into deep space. Telescopes dislodged humans from the center of the universe, triggering for many people a reversal that seeks to return us to the center of the universe – in the form of electronic screens, theologies, creation myths, and the famed Apollo 8 Genesis reading on television while orbiting the moon in 1968.

The Hubble Space Telescope: The Hubble extends the electronic eye and consciousness into deep space, along with the television, the microchip, and the computer, while retrieving the petroglyph, the campfire, and the night sky lost to electric light in the metropolises. As with the television, the visual vanishing point is still reversed, but the additional information provided by spectral photography challenges the centrality of the human viewer by showing a universe of vast size, scale, and age.

4.1. Cosmological Discoveries and Technological “Reversals”

Since telescopes, satellites, and space probes have allowed humans to personally and collectively see they are not the center of the universe, a massive McLuhan-like reversal has been underway. The technologies of the space age were greeted with global enthusiasm in the 1960s, yet the very meanings of the vast universe have been largely ignored precisely as the media technologies pushed to the *very limit* all previous cosmologies, ideologies, and theologies. Humans had to rethink or reverse. For the most part, they have reversed.

The pattern of reversals is undeniable. The evolution of electronic television, hypertext, the world wide web, and Facebook follows a parallel trajectory to Edwin Hubble, the Hubble Space Telescope, and how we see ourselves in a vast and expanding universe. In a subtly profound way, television and the electronic screen have always been “social media,” emerging and evolving with key moments in the use of telescopes, the central “cosmic media” in revealing the size and scale of the universe. Table 2 shows the key moments in which the discoveries of cosmic media were paralleled by moments of major technological innovations in social media. Just as cosmic media show we are not the center of the universe, social media also us to pretend we are the center of the universe, at least the center of everything important.

Consider the following cosmological and technological events during 1925–1929. 1) Located near Los Angeles, the Hooker telescope was the largest in the world at the time. Using the Hooker telescope, Edwin Hubble made two monumental discoveries. In 1925, Hubble discovered galaxies outside the Milky Way, meaning that the universe is much larger than previously imagined. In 1929, Hubble realized that the galaxies were moving away from the Milky Way in all directions, thus discovering that the universe is expanding in what has come to be known as the big bang theory of the cosmos. 2) In England, in 1925–1926, John Logie Baird transmitted the first live moving images on an electronic television screen and the first two images were human faces. In America, in 1929, Philo Farnsworth transmitted the first all-electronic images and his first images included a human face, along with a straight line and a dollar bill. Perhaps Baird intuited that television was inherently a social media and Farnsworth anticipated that putting human faces on the electronic screen would be a straight line to wealth and power.

Hubble's discoveries with the massive Hooker telescope (and photographic plates) paralleled the reversal signaled by the invention of the small electronic screens of Baird and Farnsworth. The vastness of the impersonal cosmos was countered by the cozy small screen featuring human faces.

Consider the following cosmological images and technological events of December 1968: 1) The Apollo 8 astronauts captured the famed Earthrise image and read from Genesis to a global audience television audience. In what remains as one of the most widely viewed telecasts of all time, the Apollo 8 astronauts used television to show humans their true place in the cosmos, passengers and crew on “Spaceship Earth” (Fuller 2008), floating in dark voids of outer space. 2) In what has been termed “the mother of all demos,” Douglas Engelbart used a television screen to demonstrate hypertext and hyperlinks, the essential software technology that situates humans in cyberspace. Hypertext on the electronic screen came to the rescue, anchoring humans at the center of the media universe, just as television was showing we are not the center of the material universe.

Apollo 8 and television extended the photographic and electronic eyes into outer space, thus revealing — for all to see — what humans sensed and feared all along: we are not the center of the universe. Overextended, television and electronic media signaled the reversal of hypertext, which showed that humans could be at the center of the media universe. Just as TV and electronic media technology showed humans are the center of nothing, the same technology placed humans at the center of everything, at least everything that matters for a species living in an expanding universe of electronic media.

Consider the following cosmological and technological events of the spring of 1990: 1) In April, 1990, the Discovery space shuttle carried the Hubble telescope into outer space, extending from human consciousness the most powerful electronic eye ever developed (at that time). Hubble allowed humans to peer deeper into the universe than previously imagined. As suggested by the shuttle name, the great discovery of Hubble was a universe of stunning beauty with utterly mind-bending size and scale. Thousands of Hubble images have been made available to the public via the internet. 2) While working at CERN (European Organization for Nuclear Research) in Geneva, Tim Berners-Lee used Steve Jobs’ “NeXT” computer to develop the first web browser software. In May 1990, Berners-Lee and colleagues settled on the name “World Wide Web” — a network of interlinked hypertext pages and documents accessible via the internet. The same NeXT computer soon hosted the first web server on the internet and the first web site.

In February, 1990, Carl Sagan persuaded NASA to program the Voyager space probe to turn its cameras around and take a photo of the solar system, including planet Earth. Offering a preamble to the Hubble images, Voyager extended the electronic eye six billion miles into deep space, thus revealing Earth as a tiny speck of light amidst a vast sea of darkness — a “Pale Blue Dot” in the cosmic void. Sagan hoped that the Pale Blue Dot would generate in 1990 what Earthrise did in 1968, which was awe, euphoria, ecological awareness, and a sense of shared destiny among humans on Earth. This desire was not fulfilled; though the Pale Blue Dot was mentioned in the news, it was largely ignored and surely did not generate the global awe of Earthrise. Perhaps this was because of the ongoing implosion of communism in the former Soviet Union or because most humans had little use for an image that showed their place in the universe to be much tinier than that of Earthrise. Voyager and the Pale Blue Dot show that humans have extended their media technologies so far into space that our planet has disappeared into the vanishing point of our rearview mirrors. Humanity simply has no metanarrative of meaning for Earth disappearing into vast voids and vanishing points on our screens.

4.2. *The Hubble-Inspired Reversals*

Since the Hubble Deep Field images exponentially amplified the meaning of the Pale Blue Dot, it is natural that the Hubble Space Telescope would be felt as an “overextension” of electronic media with existential effects that would signal a reversal, the reversal of hypertext operating on a global scale to create the world wide web and internet of today. It is the screen and hypertext that center each user within the panoptic network that is the internet, giving users access to everything online, from art to science to sports to celebrity gossip to every possible ideology and belief system. As with television and light coming through, the vanishing point is reversed, with hypertext extending into the universe of information. On the internet, we are centered, but not necessarily the star. It takes Facebook to fulfill the next stage in reversing the vanishing point, by placing each user at the center of an imploding universe in which they are the star. To further visualize this reversal, imagine looking through the Hubble in reverse and seeing tiny people in Facebook.

Hubble extends the eye in the Deep Fields to also retrieve the night sky lost to electric light and the Sun Dagger of Chaco Canyon. Though it is easy to see how Hubble retrieved the night sky, it might be unclear how Hubble could retrieve the Sun Dagger. With the Sun Dagger, the light passes through the emptiness between the slabs to illuminate the darkness of the rock wall shadowed by the slabs. With the Deep Fields, the light passes through dark spots between distant stars to illuminate the mirrors in the Hubble. The emptiness between the slabs and the stars both seem without cosmological significance, until the arrival of human ingenuity and technology. That’s how Hubble retrieves the Sun Dagger — using light passing through an empty space to map our place in the cosmos, using nothingness to map something. The key difference is that the Sun Dagger was anchoring Chaco in the center of the universe, while the Hubble was showing the vastness of the universe, of which we are not the center.

5. **Chaco, hubble, facebook, and cultural and technological reversals**

The Sun Dagger is a profound and beautiful technological achievement, a testament to the human drive to mirror and map the universe. It also reveals the human hubris for imagining we have a destiny central to the cosmos. Without telescopes, Chacoans could only believe they existed at the center of the universe they were so poetically mapping.

So, what happened to this great civilization, with their science, art, and architecture? According to Jared Diamond, the Chacoans likely perished because of the confluence of several factors: population density, deforestation and resource deple-

tion, drought and poor water management, and the breakdown of friendly trading among partners, followed by the descent into warfare and cannibalism (2005 136-156). Diamond uses Chaco Canyon and other sites from the premodern world as warnings for the modern world and its plethora of civilizational challenges: renewable energy, ecological destruction, resource depletion, climate change, and the never ending tribal-imperialist warfare, as illustrated by WWI, WWII, the Cold War, the Terror War, and all the other local wars and genocides. Did the belief that their culture was at the center of the universe contribute to the demise of the Chacoans? We have no way to know, but it might have contributed to the lack of foresight in their resource depletion and the reversals signaled by the transition from an art and science-based culture to the tribal warfare which always claims special cosmic destinies on Earth.

Today, we have no plausible or reasonable excuse for believing we are the center of the universe, but we have ways to culturally and technologically console ourselves for this cosmic condition. Simply put, we have technologies and theologies whose existential stance allow us to pretend we are the center of the universe, with special destinies of meaning and purpose. Though the following observations and examples are unorthodox, it is the existential stance of theology and social media toward the universe that are deeply shaping key political and cultural movements of this era. After all, how can we address the same problems that faced the Chacoans if we believe our particular tribe has a special destiny ordained by theology or technology, both of which allow us to pretend we are the center of everything and permit comforting entertainment to prevail over cosmic enlightenment?

Apollo 8 and television extended the electronic eyes into space, thus revealing on the electronic screens what Copernicus, Galileo, Newton, and Hubble had demonstrated: Earth and the human species are not the center of the universe. The Earthrise image revolutionized ecology, but its message of “Spaceship Earth” floating alone in the cosmic voids is an unbearable cosmology for most humans, even the astronauts! That’s why the Apollo 8 astronauts read a sermon from Genesis while orbiting the moon, all to console almost one billion people watching on television back on Earth. Science, Earthrise, and television triggered a reversal that required the retrieval of sacred texts on glowing screens, texts that promised a secure and special destiny for the television viewers. What else can explain the compulsion to recite an ancient creation myth at the pinnacle moment for modernity and television enlightenment? The Apollo 8 astronauts were named “Men of the Year” by *Time* magazine for their modern heroic and premodern message of comfort against the cosmic void. How can the Genesis reading not be a cultural reversal, a reversal seen today in the proliferation of creationism, evangelicalism, fundamentalism, and anti-intellectualism around the world, along with precipitous declines in scientific literacy and the widespread denials of evolution and climate change in the United States (Jacoby, 2008; Mooney and Kirshenbaum, 2009)? Yet, America is the very nation that rocketed to the moon and launched the internet. And this reversal is happening amidst the greatest era of scientific discovery in human history, featuring explosions of knowledge in virtually every field and much of it is made accessible via the internet.

If any theistic cosmology claims that a deity created the universe (as described in the Genesis reading on TV) and has a plan for human destiny, then humans must be at the center of the universe or the center of the creator’s universe, in the past and at sometime in the future, if for only a brief moment or for an eternity, as the myths and texts claim. Though the telescope dislodged us from the center of the universe and radically changed our cosmology, most of the world remains in denial. The existential truth is simply unbearable – the existence of a vast universe in space and time, before we were born and after we die. Our cultural ideologies currently offer no metanarrative for this cosmology, no shared meaning to unite peoples on Earth in building a sane, sustainable, and secular civilization that reflects our species’ place on Earth and in the cosmos – as revealed by our most powerful media technologies and as best we understand these discoveries (Abrams and Primack, 2011).

This unbearable cosmic condition has been countered by the evolution of electronic screens, from television to hypertext to the worldwide web to social media. Thus it should be no surprise that the first images on television screens – human faces – are now glorified in Facebook. As with the Apollo 8 astronauts, *Time* magazine felt compelled to name “You” (meaning you and all other users of the internet) as Person of the Year in 2006 and Mark Zuckerberg as Person of the Year in 2010, both for various reasons, especially for cosmic comfort and ideological security. “You” must believe you are central to the grand destiny of “Web 2.0” and “for seizing the reins of the global media, for founding and framing the new digital democracy” (Grossman 2006). Lev Grossman perfectly summarized the potential of the internet and its existential stance of centering users: “This is an opportunity to build a new kind of international understanding, not politician to politician, great man to great man, but citizen to citizen, person to person. It’s a chance for people to look at a computer screen and really, genuinely wonder who’s out there looking back at them.” Enter Facebook.

Facebook users must be comfortable and secure in believing that Facebook represents a “revolution” and a grand destiny in the evolution of media, when almost the entire activity in Facebook represents the latest stage of television, surveillance, advertising, hype, and the entertainment and celebrity systems, with each user serving as paparazzi and star. Users must believe that their time in Facebook is part of a profound drama and destiny, not a simulation of empowerment in which the maps are generating and obliterating territories, precisely as war and torture, bailouts and corruption, exponential personal and government debt, and ignorance and ecological destruction all become normalized in America, the capitol of the internet and Facebook. As with viewers of the Genesis reading, users of Facebook simply have to believe they are part of something special and our shared destinies – individual and collective – are at the center of everything that matters, the expanding electronic media universe.

Regarding the Person of the Year in 2010, the above reasoning is why *Time* had to select Mark Zuckerberg and the entertainment of Facebook over Julian Assange and the enlightenment of WikiLeaks. With WikiLeaks, Assange and his associates

place us at the center of contemplating our most profound hubris and delusion as a species, namely the war crimes committed in the name of wars waged. In large part, the Terror War is a religious battle between two theistic tribes – empowered by the electronic networks and narcissistic screens – who are at war with modernity and each other, each seeking cultural reversals because they claim to have special and central destinies on Earth and in the universe, all grounded in near identical cosmologies (Vacker, 2008). With trillions of dollars squandered on war and death instead of renewable energies, ecological research, environmental protection, and general sustainability, it is no wonder that the modern world faces the same civilizational challenges as Chaco.

That WikiLeaks was so fervently denounced from across the media and political spectrum – with some religious and political leaders calling for the execution or assassination of Assange (Siddique and Weaver, 2010) – suggests that it revealed two deep truths: 1) the Terror War is not a war of sacred destiny with a deity on the side of America or anyone else, 2) the internet can be a radical and revolutionary force for enlightenment and empowerment, possessing the power to challenge government, corporate, theocratic, and media propaganda on a global scale. But, that power only exists when enlightened people have the courage to use it that way and is not the product of a special destiny. After all, popular internet companies like Amazon, Apple, and PayPal refused to stand up for WikiLeaks and removed them from their sites (Kelleher 2010). To its credit, Facebook has permitted a page supporting WikiLeaks, at least as of this writing.

Truth 2 is one reason that *Time* magazine named “the Protester” as the Person of the Year in 2011. As explained in the cover story, the use of “the Web and social media” enabled the “street protest” to become “the defining trope of our times” and “the protester once again became a maker of history” (Anderson 2011). Of course, *Time* had to name the Protestor the Person of the Year precisely as comfort for the fact that mainstream media failed far too often in their reporting on the Iraq War, WikiLeaks, and their subservience to the government in the responses to the 9/11 attacks and the ongoing Terror War. The various protesters deserve great credit for their courage in resisting unjust conditions and authoritarian regimes, however, the jury must remain out on the final verdict of the effect of the protests and “revolutions,” for the very reason that electronic networks and social media are also forces for narcissism and tribalization and not necessarily enlightenment or secular democracy. If the use of the Web to protest is a defining trope of the times, then why wasn’t Julian Assange named Person of the Year in 2010? What could be a more powerful form of protest than using the internet to reveal war crimes perpetrated by a nation with presidents and a majority of the populace that believe a deity is on their side in a special destiny?

We should recall that at the height of the space age and the Apollo euphoria of 1968 and 1969, many thinkers believed that the Earthrise image and the moonwalk could usher in a new era of global cooperation among nations and peoples, precisely because Earth as seen from space showed it to be a planet without national borders and without separate biospheric living systems (Fuller 2008). The Apollo triumphs and telecasts were seen as a profound moment for humanity, representing perhaps the only time that virtually all of the human species was united in celebration of human accomplishment. Apollo 8’s Earthrise, along with views of our planet from space via satellites and other spacecraft, helped revolutionize ecological sciences and environmental policies (Lovelock, 1979; Poole, 2010). But, Apollo and Earthrise’s impact on global peace seems unclear, though the United States and the Soviet Union signed the Strategic Arms Limitation Treaty in 1972. Earth Day was first celebrated in April 1970, a mere fifteen months after Earthrise, but the Cold War continued for two more decades, only to be followed by the Terror War. The complex effects of television, the images on the screen, and of Earthrise are why the verdict must remain open on the effect of social media and the protest movements.

Regarding protests via Facebook and photos via Hubble, who or what is more revolutionary? Is it the humans who use social media to lead another chapter of war and conquest among human tribes, where each side feels special and destined, especially those armed with sacred texts and tiny electronic screens? Or, is it the humans who gaze through space telescopes to discover the following: the universe is 13.7 billion years old, the Milky Way may have 100 billion planets, our planet is hurtling through the cosmos at 791,00 kilometers per hour, and every atom on our planet and in our bodies was born in an exploding supernova, all of which means humans are self-aware stardust and are but a single species on Spaceship Earth zooming through the cosmos? For most, the revolutionary message of space telescopes is too unbearable, plus we would have to rethink almost our entire political organization and systems of meaning on Earth. It is much easier to reverse to the more conventional “revolutions” and metanarratives of meaning. At least the Chacoans had the courage to organize their entire culture around an empirical and scientific cosmology, as best they understood it with their eyes and reasoning skills.

In the end, Facebook and social media allow humans to feel as if they are special, existing at the center of everything, when our cosmic media show we are the center of nothing, except our own individual consciousness, represented back to us by our face in Facebook. The possibility for enlightenment and empowerment exists, but it seems overpowered by the more preferred forms of entertainment and simulated empowerment. Haven’t most people traded the space age for the face age, the flat earth for the flat screen, being adrift in outer space for being aglow in cyberspace, the dread of being alone for the desire to show we exist? That’s why social media counters space telescopes, cyberspace counters outer space, and Facebook counters Hubble.

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