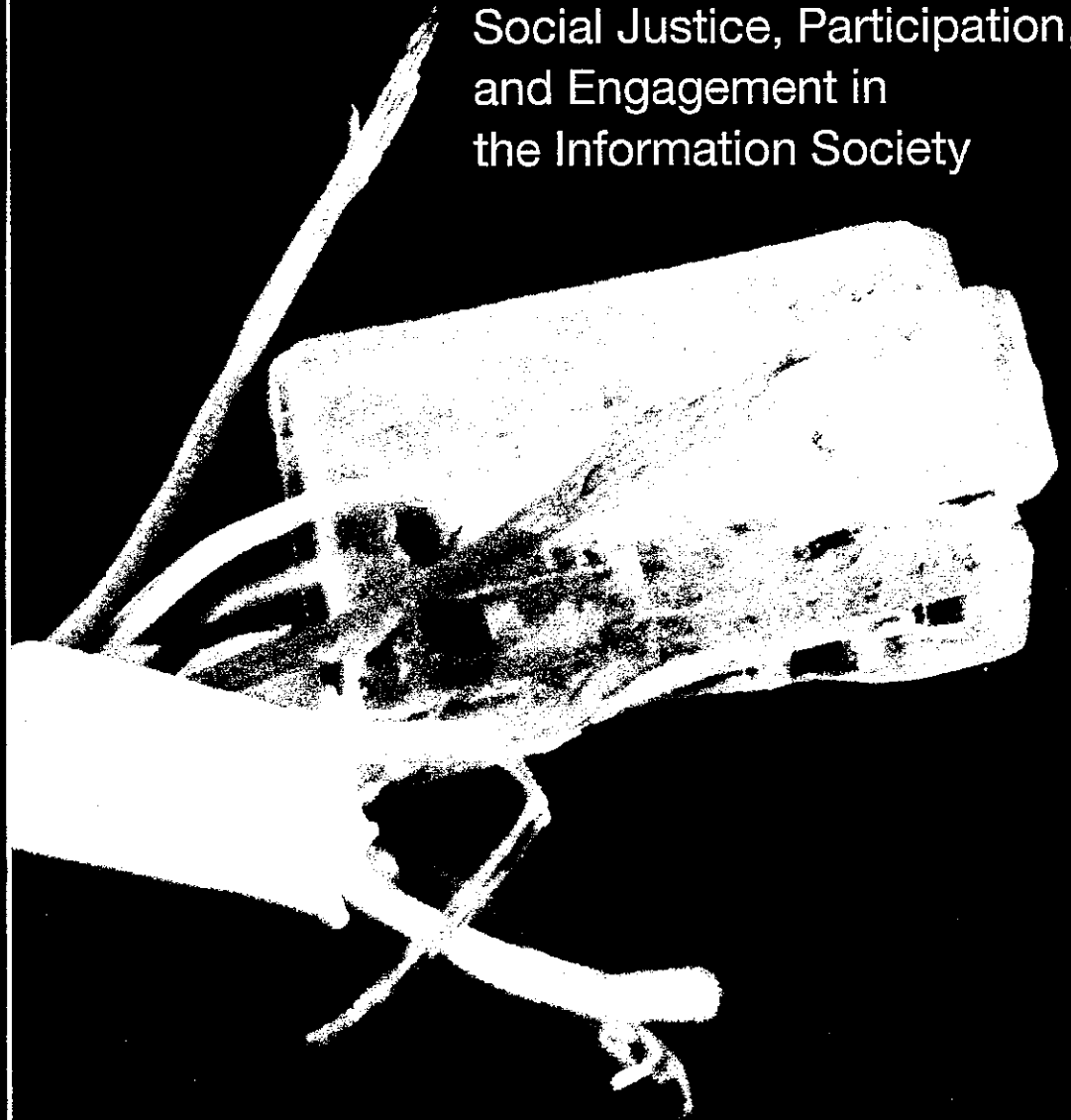


THE UNCONNECTED

Social Justice, Participation,
and Engagement in
the Information Society



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Chapter 13: Black Holes in the Electronic Galaxies: Metaphor for Resistance in the Information Society?

Barry Vacker and Agreen Wang

Introduction: "GOING DARK"

In September 2010, United States law enforcement officials announced their intent to seek new regulations that will provide the legal and technological powers to "wiretap" the Internet. The first two paragraphs in *The New York Times'* story perfectly summarized the issues:

Federal law enforcement and national security officials are preparing to seek sweeping new regulations for the Internet, arguing that their ability to wiretap criminal and terrorism suspects is "going dark" as people increasingly communicate online instead of by telephone.

Essentially, officials want Congress to require all services that enable communications—including encrypted e-mail transmitters like BlackBerry, social networking Web sites like Facebook and software that allows direct "peer to peer" messaging like Skype—to be technically capable of complying if served with a wiretap order. (Savage, 2010)

Of course, these requests should not be surprising, given the evisceration of the Bill of Rights by the 2001 USA PATRIOT Act, the 1994 CALEA legislation that mandated that phone companies empower government eavesdropping in their digital phone systems, and the fact that the National Security Agency (NSA) has built massive eavesdropping systems within the United States since 2001. Among the many expanded programs and powers sought by the U.S. government, perhaps the most philosophically provocative is the "Going Dark Program," which is operated by the Federal Bureau of Investigation (FBI) and includes a \$9-million budget dedicated to enhancing its electronic surveillance capabilities. Apparently, "Going Dark" began in 2009 with a budget of \$234 million to fund "the research and devel-

opment of new tools, technical support and training initiatives” (Zetter, 2009). For the purposes of this chapter, the budgets and technologies of this program are much less important than the symbolism in the name of the program, “Going Dark.”

With the name, Going Dark, the government has tapped into powerful symbolic imagery that may anticipate a *strange* future of technological resistance within a culture of total surveillance—a future of “black holes in the electronic galaxies.” In pointing toward such resistance and what it might look like, metaphorically and technologically, this chapter charts several broad cultural patterns that juxtapose “light” with “dark” across the seemingly disparate realms of: (a) philosophy, (b) cosmology, (c) film, (d) media theory, and (e) media technologies. These patterns are outlined in Table 13.1. The pattern can be summarized as follows: The information society exists within a network of electronic galaxies in an expanding media universe, aglow with light, seemingly destined for total surveillance and total representation. Total light is generating conditions such that the trajectory of the enlightenment project has begun a strange reversal, where representation is resisted through disconnection and disappearance, in a self-chosen unconnection.

This may seem utterly strange or ridiculous to the empiricist scholar or pragmatic policy expert. Yet, these patterns are very real, and to deny their existence and potential symbolic powers would be to overlook the complex cultural relations between art, science, technology, and interdisciplinary theory. Drawing from Plato, Marshall McLuhan, Guy Debord, Jean Baudrillard, and a host of scientists, filmmakers, and media theorists, this chapter connects the cultural dots to reveal a powerful pattern, however strange, for further exploration.

Table 13.1: The Evolution of a Metaphor For a New Resistance

5. "BLACK HOLES" IN MEDIA TECHNOLOGIES	
4. "BLACK HOLES" IN MEDIA THEORY	
3. EXITS FROM "LIGHT" IN FILM	<p>1963: X: <i>The Man with X-ray Eyes</i>, Roger Cornman</p> <p>• Exit total transparency, total vision, total light;</p> <p>• Exit total transparency, eyes gouged out.</p> <p>1965: <i>Alphaville</i>, Jean-Luc Godard</p> <p>• Exit light, total surveillance.</p>
2. BLACK HOLES IN COSMOLOGY	<p>1915: Albert Einstein, <i>General Theory of Relativity</i></p> <p>• Space-time warped by gravity</p> <p>• Source of knowledge, are source of knowledge.</p> <p>1939: Robert Oppenheimer</p> <p>• Massive stars collapse to a single point.</p> <p>1944: No Exit, Jean-Paul Sartre</p> <p>• No exit from total electric light.</p> <p>1948: <i>American Eight-Four</i>, George Orwell</p> <p>• Winston imprisoned in room of light.</p> <p>1964: <i>Understanding Media</i>, Marshall McLuhan</p> <p>• Electric light is pure information.</p> <p>1967: <i>The Society of the Spectacle</i>, Guy Debord</p> <p>• Society and "reality" are dominated by all encompassing techno-media spectacle.</p>
1. THE EVOLUTION OF "LIGHT"	<p>360 BC: Plato, <i>The Republic</i></p> <p>• The Cave: exit shadows into light.</p> <p>1626: Francis Bacon, <i>New Atlantis</i></p> <p>• "Multiplications of light" are source of knowledge.</p> <p>1944: No Exit, Jean-Paul Sartre</p> <p>• No exit from total electric light.</p> <p>1948: <i>American Eight-Four</i>, George Orwell</p> <p>• Winston imprisoned in room of light.</p> <p>1964: <i>Understanding Media</i>, Marshall McLuhan</p> <p>• Electric light is pure information.</p> <p>1967: <i>The Society of the Spectacle</i>, Guy Debord</p> <p>• Society and "reality" are dominated by all encompassing techno-media spectacle.</p>

<p>1984: <i>Neuromancer</i>, William Gibson</p> <ul style="list-style-type: none"> • Coined term: "cyberspace" • Envisions cyberspace as electronic universe, with galaxies of information. • Data in cyberspace protected by "Black ICE" (Intrusion Countermeasures Electronics). <p>2000: <i>The Internet Galaxy</i>, Manuel Castells</p> <ul style="list-style-type: none"> • The internet galaxy is the networked society. 	<p>1. THE EVOLUTION OF "LIGHT"</p>
<p>1997: <i>The Truman Show</i>, Peter Weir</p> <ul style="list-style-type: none"> • Exit from light, total media universe. • Exit glowing cubes (silicon chips?) into darkness, beyond which is light. 1998: <i>Enemy of the State</i>, Tony Scott • Exit from U.S. surveillance system. 1999: <i>The Matrix</i>, Wachowski Brothers • Exit from light, onslaught of information, media universe. 	<p>2. BLACK HOLES IN COSMOLOGY</p>
<p>1983: <i>In the Shadow of the Silent Majonites</i>, Jean Baudrillard</p> <ul style="list-style-type: none"> • The masses, messages, and meaning have imploded in a mediated black hole. 1995: <i>Burning All Illusions</i>, David Edwards • Politically "unsuitable" truths disappear into media black holes. 1998: <i>End of the Millennium</i>, Manuel Castells • Black holes of social exclusion effected by informational capitalism. 	<p>3. EXITS FROM "LIGHT" IN FILM</p>
<p>1968: <i>2001: A Space Odyssey</i>, Stanley Kubrick</p> <ul style="list-style-type: none"> • Exit light, total gaze of HAL, to enter darkness of deep space. 1970: <i>Colossus: The Forbin Project</i>, Joseph Sargent • No exit from total surveillance. 1971: <i>THX 1138</i>, George Lucas • Exit from illuminated futuristic city. 1973: <i>Westworld</i>, Michael Crichton • No exit from light in theme park. 1976: <i>Logan's Run</i>, Michael Anderson • Exit futuristic city of surveillance. 1982: <i>Tom, Steven Lisberger</i> • Exit from electronic light. 	<p>4. "BLACK HOLES" IN MEDIA THEORY</p>
<p>1970-2010: Seven Hawking</p> <ul style="list-style-type: none"> • Pioneering work on black holes. • Hawking radiation: black holes not 100% black. • Black hole: "cosmic censor-ship" 	<p>5. "BLACK HOLES" IN MEDIA TECHNOLOGIES</p>

Table 13.1: The Evolution of a Metaphor For a New Resistance (continued)

<p>1968: <i>2001: A Space Odyssey</i>, Stanley Kubrick</p> <ul style="list-style-type: none"> • Exit light, total gaze of HAL, to enter darkness of deep space. 1970: <i>Colossus: The Forbin Project</i>, Joseph Sargent • No exit from total surveillance. 1971: <i>THX 1138</i>, George Lucas • Exit from illuminated futuristic city. 1973: <i>Westworld</i>, Michael Crichton • No exit from light in theme park. 1976: <i>Logan's Run</i>, Michael Anderson • Exit futuristic city of surveillance. 1982: <i>Tom, Steven Lisberger</i> • Exit from electronic light. 	<p>1. THE EVOLUTION OF "LIGHT"</p>
<p>1970-2010: Seven Hawking</p> <ul style="list-style-type: none"> • Pioneering work on black holes. • Hawking radiation: black holes not 100% black. • Black hole: "cosmic censor-ship" 	<p>2. BLACK HOLES IN COSMOLOGY</p>
<p>1968: <i>2001: A Space Odyssey</i>, Stanley Kubrick</p> <ul style="list-style-type: none"> • Exit light, total gaze of HAL, to enter darkness of deep space. 1970: <i>Colossus: The Forbin Project</i>, Joseph Sargent • No exit from total surveillance. 1971: <i>THX 1138</i>, George Lucas • Exit from illuminated futuristic city. 1973: <i>Westworld</i>, Michael Crichton • No exit from light in theme park. 1976: <i>Logan's Run</i>, Michael Anderson • Exit futuristic city of surveillance. 1982: <i>Tom, Steven Lisberger</i> • Exit from electronic light. 	<p>3. EXITS FROM "LIGHT" IN FILM</p>
<p>1968: <i>2001: A Space Odyssey</i>, Stanley Kubrick</p> <ul style="list-style-type: none"> • Exit light, total gaze of HAL, to enter darkness of deep space. 1970: <i>Colossus: The Forbin Project</i>, Joseph Sargent • No exit from total surveillance. 1971: <i>THX 1138</i>, George Lucas • Exit from illuminated futuristic city. 1973: <i>Westworld</i>, Michael Crichton • No exit from light in theme park. 1976: <i>Logan's Run</i>, Michael Anderson • Exit futuristic city of surveillance. 1982: <i>Tom, Steven Lisberger</i> • Exit from electronic light. 	<p>4. "BLACK HOLES" IN MEDIA THEORY</p>
<p>1970-2010: Seven Hawking</p> <ul style="list-style-type: none"> • Pioneering work on black holes. • Hawking radiation: black holes not 100% black. • Black hole: "cosmic censor-ship" 	<p>5. "BLACK HOLES" IN MEDIA TECHNOLOGIES</p>

Table 13.1: The Evolution of a Metaphor For a New Resistance (continued)

The Evolution of Light

Since at least the time of Plato, philosophers have associated “dark” with falsehood and ignorance, while “light” has been associated with the pursuit of truth and enlightenment (Table 13.1, Column 1). This is illustrated by phrases and eras such as:

- “being in the dark”—having a lack of knowledge.
- “seeing the light of truth”—discovering or acquiring knowledge.
- “the Dark Ages”—the era often characterized as being dominated by ignorance and lack of knowledge of the empirical world.
- “the Enlightenment”—the era characterized by the growth of science and increasing knowledge of the empirical world, along with recognition of human rights.

A key origin of “light” as “truth” is likely to be Plato’s famed allegory of “the Cave” (1974, pp. 167–170). The allegory tells the story of several prisoners in a cave, chained to the ground in the darkness and facing a wall opposite the entry to the cave. The prisoners can only view shadows on the cave wall, shadows caused by people passing between the prisoners and the light outside the cave. One prisoner manages to break free and escape the cave to the light outside, which hurts his eyes at first but remains the new and ultimate source of “truth.” When the prisoner returns to the cave to alert the other prisoners to the world of light outside, they are skeptical and choose to remain chained in the darkness, gazing at the shadows, the only “reality” they have known. Echoing across the millennia, Plato’s tale of shadows in the cave and the “light” outside has served as a metaphor for the discovery of truth and human enlightenment.

For Francis Bacon, “light” was a condition for the birth of the modern utopia. In the famed 1626 essay, “New Atlantis,” Bacon envisioned an island-based utopia of science with the power to acquire knowledge from around the world. New Atlantis possessed “interknowledge” of world affairs and Houses of Light, in which light was

Table 13.1: The Evolution of a Metaphor For a New Resistance (continued)

5. “BLACK HOLES” IN MEDIA TECHNOLOGIES	<ul style="list-style-type: none"> • 2007: Hubble Project, U. of Washington • System finds black holes in the internet. • 2008: Fiberoptical black hole, Ulf Leonhardt, Friedrich Konig • Artificial event-horizon via intense light pulses. • 2008: Micro black holes, Brian Greene • LHC might create micro black holes to study. • 2009: Desktop mini black hole, Cai & Cheng • Circuit boards absorb electromagnetic radiation. • 2009: Blackest material ever, Mizuno, et al. • Layers of nanotubes absorb 99% of all light. • 2010: Slow light, U. of California-Santa Cruz • Speed of light slowed down using “quantum interference” on photons in a silicon chip. • 2010: Black Hole 1.0 • Update information from Mac with single click.
4. “BLACK HOLES” IN MEDIA THEORY	<ul style="list-style-type: none"> • 2013: “Black Holes in Electronic Circuits,” Vacker & Wang • Black holes as metaphor for disappearance as resistance.
3. EXITS FROM “LIGHT” IN FILM	<ul style="list-style-type: none"> • 2002: <i>Minority Report</i>, Steven Spielberg • Exit from light, total surveillance. • Eyes are replaced, echoing <i>X: The Man with X-ray Eyes</i>. • 2003: <i>The Matrix Reloaded</i>, Wachowski Brothers • Create black hole to hack the system. • 2008: <i>Wall•E</i>, Andrew Stanton • Humans exit electronic spacecraft floating in deep space, in a return to nature on Earth. • 2010: <i>TRON: Legacy</i>, Joseph Kosinski • Flynn lives “off the grid” in secluded, hidden realm of light surrounded by darkness.
2. BLACK HOLES IN COSMOLOGY	<ul style="list-style-type: none"> • 2008: Leonard Susskind • Information not lost in black holes. • Black holes are holographic.
1. THE EVOLUTION OF “LIGHT”	<ul style="list-style-type: none"> • 2009: <i>Total Recall</i>, Gordon Bell and Jim Gemmill • Everyone’s entire lives to recorded and stored in electronic memories.

multiplied to carry information around the world via reflections, refractions, and multiplications, of visual beams of objects (pp. 133–134).

It is no coincidence that Bacon was writing during the emergence of the Enlightenment. Preceding Marshall McLuhan (1964) by three centuries, Bacon seems to have anticipated the alteration of space-time to be effected by the electronic media and the spectacle of electric light. He also anticipated the conditions of surveillance, the power of seeing from afar through the magnification and amplification of light.

For McLuhan (1964), electric light was “pure information,” a medium that is “totally radical, pervasive, and decentralized” (pp. 23–25). McLuhan remarked that light was the only “medium without a message,” but it is not clear that claim holds up today. The global surveillance system relies on this existential and technological condition, using many of the different types of light waves. The typical surveillance camera relies on the band of light visible to the human eye, seen in the spectrum of colors (violet, blue, green, yellow, orange, and red). Deployed in airports and in many public or urban spaces, x-ray machines use light that travels in wavelengths less than the distance between atoms, much shorter than the spectrum visible to the human eye. If there is a message for this medium, then it might be total surveillance and total representation.

Perhaps such pervasive light is, in existential terms, less about spectral truth than total spectacle. Guy Debord (1994) theorized the spectacle as the outcome and goal of the dominant mode of production, with the spectacle reigning supreme over the structures of society. The spectacle is more than the technological proliferation of images and commodities, for the spectacle is “a weltanschauung that has been actualized, translated into the material realm, a worldview transformed into an objective force” (pp. 12–13). For Debord, the worldview of the spectacle is the logical progression of Western philosophy, which privileges sight in seeking to represent and understand social and natural phenomena. The effects of the spectacle are both subtle and profound, for the spectacle is not merely realizing philosophy, but rather the spectacle “philosophizes reality, and turns the material life of everyone into a universe of speculation” (p. 17). Light has become less the path to enlightenment, than to entertainment, distraction, and

simulation. Today we see this phenomenon happening on a global scale, from simulated conquests in sports spectacles on TV, flat-screen universes of Times Square, simulated cities in Las Vegas, and simulated friends, micro-celebrities, and self-surveillance in Facebook. What else are the Super Bowl, Times Square, and Las Vegas other than micro-cosms of our 24/7 media environment’s culture, sites for spectacle and simulation in movie-set galaxies of blazing lights?

In response to the events of September 11, the U.S. and the Pentagon have made their ultimate goals very clear: “Total Information Awareness.” Within the Pentagon’s Defense Advanced Research Projects Agency (DARPA), the Information Awareness Office (IAO) was created to oversee the Total Information Awareness surveillance system, to be effected in a massive computer and electronic network functioning on a global scale. This ambition was clearly illustrated in 2002 with the controversial logo for the Information Awareness Office.



Under public criticism, the name was changed to “Terrorist Information Awareness” and the program was then apparently defunded by Congress. Others question if the program died or was merely relocated to other classified programs (Williams, 2006). Given the ambition to wiretap the Internet, can we seriously doubt the U.S. government’s desire for total global surveillance? Such goals and trajectories were made clear in the logo for the IAO. Gazing down at Earth, the solitary eye is accompanied by Francis Bacon’s phrase *Scientia est Potentia* — “Knowledge is Power.” The logo’s meaning is clear: total global surveillance.

It should not be surprising that *Sputnik* and *Apollo* pointed the way toward planetary surveillance. Since the Soviet satellite orbited Earth in 1957 and American astronauts captured the “Earthrise” image in 1968, there has been a nonstop technological and cultural imperative to place the entirety of Spaceship Earth within the expanding global media environments. There is a clear trajectory from Earthrise to Spaceship Earth to Google Earth.

From cave painting to cyberspace to outer space, the human drive for representation is visible wherever people seek to communicate and make meaning of the world. History tells the story of state, church, and corporation, be it kings, monarchs, theologians, dictators, bureaucrats, corporate executives, or any other type of censor, seeking to suppress and eliminate that which brought to light their oppression and superstitions, crimes and corruption. In the twenty-first century, this struggle continues in many parts of the world (Chomsky, 2010) and in the controversy surrounding the 2010 WikiLeaks reports on the Terror War.

Overcoming this struggle was the Enlightenment-inspired ambition of the First Amendment to the Bill of Rights of the United States Constitution, however imperfect the amendment has been in practice and despite the federal and local governments’ never-ending attempts to override freedom of speech and press in the name of war, national security, social order, family values, religious beliefs, and so on. That freedom of expression is recognized as a human right by the United Nations attests to this Enlightenment ambition. The ultimate ground for the right to freedom of expression is the inherent human drive to represent the world and to see the world represented via art, language, and media, in all its forms.

The cultural trajectory toward total representation and planetary surveillance has evolved with the expansion of media technologies around the world, especially the global proliferation of satellites, cameras, computers, cell phones, databases, and the Internet, all powered by microprocessors and Moore’s Law (ever more miniaturization, decreasing costs, increasing technological powers). No wonder there are already 2 billion users on the Internet. Maybe cell phones, Facebook, Twitter, and the Terror War merely offer early glimpses of a

planetary culture moving toward total surveillance by its citizens in the dreams of total representation and nonstop personal expression.

Black Holes in Cosmology

Perhaps no recent scientific concept has exploded into the popular imagination like black holes (Table 13.1, Column 2). Though the term “black hole” appeared in 1967, the cosmology of black holes has its foundations in Albert Einstein’s theory of general relativity (Greene, 2003, pp. 53–84). In its most general sense, relativity shows that mass with sufficient gravity effects a curvature in the fabric of space-time. Visualize a bowling ball sitting on a sheet of foam rubber, thus creating a curved indentation. Large masses act the same way, with gravity curving space and bending the light passing through the curvature. The larger the mass, the larger the curve, and the greater the warping of space-time. Empirical proof of relativity came via a total solar eclipse in 1919, where photographs of distant stars revealed that the light waves had been curved by the gravity of the sun. In 1939, Robert Oppenheimer published an article suggesting that dying stars with sufficient mass collapse inward, generating a curvature in space so severe that the stars’ own light rays would bend inward, effectively sealing off the event of the star’s demise from any external observers (Hawking, 2007, pp. 47–48).

In 1963, John Wheeler announced that Oppenheimer had been correct; new electronic computers created simulations showing how dying stars would collapse inward. After Wheeler coined the term “black hole” (much more evocative than “gravitationally collapsed star”), the poetic name soon began to permeate popular culture (Hawking, 2007, p. 83).

When stars (with roughly three times the mass of the sun) burn up their fuel, they can enter a complete collapse, creating a curvature in space so severe that nothing escapes its gravitational pull, not even light. A black hole apparently collapses to a point of near-infinite density and curvature. This is the point of singularity, the region of space-time where the laws of relativity break down. Though nothing can escape a black hole, anything can enter a black hole. The “event horizon” is the point of no return, the point where the attraction is so strong that the object will eventually be pulled to the center of the black hole and

crushed into a subatomic string of particles. Once inside the event horizon, the edge of the horizon is defined by light rays hovering upon the horizon but unable to escape (Greene, 2003, pp. 79–81).

By the 1970s, Stephen Hawking (1988) used black holes to integrate relativity (macro cosmology) with quantum mechanics (micro cosmology) and thermodynamics (the science of energy), thus yielding insights into the big bang and the expansion and fate of the universe (pp. 83–101). As poetically described by Hawking, “the singularities produced by gravitational collapse occur only in places, like black holes, where they are decently hidden from outside view by an event horizon. Strictly, this is what is known as the weak cosmic censorship hypothesis” (p. 91). Gravity’s efforts at cosmic censorship seem to be just less than 100% effective, for Hawking (2007) also showed that black holes are not completely black (pp. 59–74).

It seems black holes range across the scales of the universe. As stars collapse into black holes, they may give off a shock wave in the form of a blast of bright light known as a “supernova.” Some stars may collapse and simply disappear with no blast of light in an “unnova.” In addition to the conventional stellar black hole, astronomers have identified supermassive black holes, comprised of the mass of millions or billions of stars, existing at the center of galaxies, including the Milky Way. Scientists now speculate that “micro black holes” might exist at the quantum level and may be temporarily created by the Large Hadron Collider (Greene, 2008).

Black holes exist at the cutting edge of current topics in cosmology. It seems that black holes do not permit information to escape from the universe, as Hawking had once theorized. Information is not lost, because when an object disappears into a black hole, the object’s information is simultaneously smeared across the surface of the event horizon, smeared because of the massive distortion of space-time. In other words, a black hole’s event horizon provides a two-dimensional representation of the three-dimensional world being distorted inside the black hole. This means black holes are holographic, as might be the entire universe (Susskind, 2008, pp. 290–306).

Exits from “Light” in Film

Marshall McLuhan (1964) viewed art as a potential “early warning system” for culture, capable of prefiguring cultural shifts and transformations. Artists function like “antennae,” offering intuitive perceptions of cultural change expressed through works of art. If McLuhan was correct, there would seem to be radical implications for specific artworks since the early 1960s—films that deal with exits from light precisely as black holes were emerging in popular culture.

George Orwell foresaw the dark side of electronic surveillance in the 1948 novel, *Nineteen Eighty-Four* (1984), which seems to have been inspired, in part, by Jean-Paul Sartre’s 1944 play, *No Exit* (1989), the dystopian tale of three people negotiating existence and meaning in conditions of total light, total surveillance, total representation. While Sartre and Orwell anticipated dystopian possibilities in realms of total light and electronic media, the first film to embrace an exit from light appeared in 1963, the same year in which John Wheeler announced computers had verified black holes.

The film was Roger Corman’s cult classic with the crazy title: *X: The Man with X-Ray Eyes*. Though Corman is a less prestigious filmmaker than Jean-Luc Godard, Stanley Kubrick, and Steven Spielberg, *X* anticipated key ideas that later appeared in the films of these directors and many others. From Hollywood to independent, low budget to big budget, action film to art film, numerous filmmakers have projected a dystopian future in which the “hero” or “antihero” must exit from light in a culture of total surveillance and total representation, an exit from the light of a mediated universe (Table 13.1, Column 3).

In *X*, a scientist named Dr. Xavier creates eye drops that provide an ever increasing power of “X-ray vision” in hopes of improved surgeries and increased scientific insights in medicine, only to discover that an accelerating X-ray vision is more dystopian than utopian. The once-famous scientist is reduced to wandering in Las Vegas, blinded by ever more intensifying light but further removed from reality. Eventually Xavier exits the world of total light by gouging his eyes out in the desert near Las Vegas. In effect, Corman’s film counters Plato’s Cave, suggesting that the pursuit of total light would eventually lead to blindness. The dream of total representation is countered by disappearance.

In 1965, Godard's *Alphaville* featured an anti-hero, named "Lemmy Caution," who must exit a space-age city of the future, a dystopian metropolis under complete computer surveillance. As Caution exits, he is blasted with bright light, apparently from the computer (or maybe also symbolizing a blast of light from a Cold War nuclear bomb). In Kubrick's 1968 masterpiece, *2001: A Space Odyssey*, the astronaut Dave Bowman must exit the computer surveillance of the HAL 9000, the all-seeing, all-knowing computer. Dave eventually exits the nonstop ambient light of the spacecraft, facing his future as an astral child in the darkness of deep space or an aging man amidst the glow of cyberspace.

Three decades after the astronaut's exit in deep space, *The Truman Show* presents an exit from light to darkness that perfectly illustrates the metaphor of a black hole. In the film, Jim Carrey stars as Truman Burbank, an average person whose entire existence, unbeknownst to him, is inside a simulacrum of a pastoral beach town that is the backdrop for a nonstop television show.

In the climax of the film, Truman tries to escape by manning a sailboat and setting out across the harbor of Seahaven, only to eventually crash into the outer wall of the studio television dome (looking like the horizon of a blue sky). Dumbfounded, Truman steps onto a stairway and ascends to a door with a handle, upon which is a circle containing the word "EXIT." The door opens to nothing but darkness. Staring into the dark, with his back to the television cameras, Truman is contemplating his fate when Christof (the creator of the show) whispers into his microphone: "Truman." The whisper is heard by Truman and the global audience viewing on television. Truman turns around and gazes up at the sky. The following dialog ensues:

Truman—Who are you?

Christof—I am the creator of a television show that gives hope and joy and inspiration to millions.

Truman—Then, who am I?

Christof—You're the star.

Truman—Was nothing real?

Christof—You were real. That is what made you so good to watch. Listen to me, Truman. There is no more truth out there than there is in the world I created for you. The same lies, the same deceit. But, in my world, you have nothing to fear. (...) Talk to me. Say something.

(Truman remained silent)

Christof—Well, say something God damnit! You're on television, live to the whole world!

Truman—Well, if I don't see you: Good afternoon, good evening, and good night!

Truman then turns away from the camera, steps through the doorway and disappears into a realm of darkness, never to be seen again in the movie. In effect, Seahaven is an electronic Cave, though the bright light is used for illusion and the prisoner's exit is into darkness. Truman is the existential "true man" of the information age, the prisoner inhabiting a mediated universe from which he felt he must exit. Finally, when informed he is "the star" of his universe, Truman exits into the darkness, into the void—becoming a black hole in the electronic galaxies.

Black Holes in Media Theory

The term "black hole" is used in metaphorical contexts in media theory, with the intended meaning generally referring to information that has disappeared, become unreachable, or is purposely hidden from access or purposely made inaccessible (Table 13.1 column 4).

In 1983, Jean Baudrillard argued that the masses and media effect a black hole through the implosion and absorption of all content and social meaning, while radiating out images in a culture of screens and signs without substance:

[T]he masses function as a black hole which inexorably inflects, bends and distorts all energy and light radiation approaching it: an implosive sphere, in which the curvature of spaces accelerates, in which all dimensions curve back on themselves and 'involve' to the point of annihilation, leaving in their stead only a sphere of potential engulfment. (pp. 3–4, 9)

To summarize, for the masses viewing the spectacle on the screens, the two-dimensional image represents the three-dimensional reality

warped by the media, holograms for hyperreality. (Baudrillard, 1994, pp. 105–110)

In 1996, David Edwards argued that the propaganda model of Noam Chomsky and Edward Herman can be understood in terms of “black holes” that protect entrenched economic and social powers. “Chomsky and Herman seek to explain not only distorted reporting of events, but also massive media black holes into which ‘unsuitable’ truths fall out of sight” (Edwards, 1996, p. 19). The recent massive expansion of the U.S. secrecy programs is an attempt to create black holes that hide information that apparently reveal military deceit and war crimes (Greenwald, September 8, 2010).

In 1998, Manuel Castells used the term “black hole” to refer to areas of socio-economic exclusion effected by informational capitalism and the digital divide. “These black holes concentrate in their density all the destructive forces that affect humanity from multiple sources,” such that “there is no escape from the pain and destruction inflicted on the human condition for those who, in one way or another, enter these social landscapes” (Castells, 2001, p. 167). Castells believed that this exclusion can be marginalized in a way that actually improves the efficiency of the network. “They’re not valuable as producers, consumers; in fact, if they would disappear, the logic of the overall system would improve. If you are outside the network, in other words, you don’t even exist” (Ogilvy, 1998).

Black Holes in Media Technologies

The term “black hole” has also migrated from cosmology to technology, especially in relation to the growth of the Internet over the past 20 years (Table 13.1, column 5). In 2007, computer scientists at the University of Washington designed the “Hubble” program to identify and map the black holes in the Internet. Named after the space telescope, the Hubble program uncovered 1.97 million “reachability problems” caused when one Internet address cannot reach another, even though the physical link is operational and the pathway was known to work before (Cox, 2008). Apparently, the traffic “seems to simply disappear into a black hole” (Moskowitz, 2008). In 2009, scientists in China and America created the first “desktop black hole,”

effected by 60 concentric layers of special circuit board made from materials used for “invisibility cloaks” that absorb microwave radiation from all directions (Ananthaswamy, 2009). In 2010, Apple made available a software application that allows users to clear sensitive information from their Macintosh with a single click. The application is called “Black Hole.”

Conclusion: Representation, Reversal, and Resistance in the Information Society

What do these patterns mean individually, collectively, and metaphorically?

1. Spaceship Earth exists within the electronic galaxies of the information society.

From Plato’s Cave to cyberspace, the extension of light has encircled the planet in the dream of total representation and total surveillance, where Spaceship Earth is to be ordered within ever more galaxies of information. That’s why the future of Spaceship Earth is to be under total surveillance by its passengers—governments and corporations, theologians and technologists, celebrities and citizens. This is not a utopian or futurist prophesy, merely an existential extrapolation of the dominant cultural and technological trends. How can this not be the mediated destiny for societies and citizens in the ever more connected global information society, given the emergence of phenomena such as Google Earth, Google Streetview, YouTube, Facebook, the blogosphere, hyperlocal journalism, weather satellites, spy satellites, the PATRIOT Act, IAO, and the Terror War? Combine the expanding technological powers with the longstanding cultural imperatives—political, commercial, ideological, theological, social, psychological, and personal—and it seems inevitable that life on Spaceship Earth is to be spinning within a 24/7, omnipresent, media universe of electronic galaxies. There will be no exit.

Total light serves two possible outcomes for global surveillance and total representation: 1). Total light and global surveillance express the panoptic powers first articulated by Jeremy Bentham, which were then extended to electronic media and “Big Brother” by George Orwell

(1984), and extended throughout the “power” relations of modern culture by Michel Foucault (1995). 2) Total light liberates information to undermine authoritarianism, thus making possible the digital democracy of a “transparent society” (Brin, 1999). In this view, total surveillance develops, but the power to serve authoritarianism is countered by the pervasive dispersal of surveillance technologies throughout society, made possible by the effects of Moore’s Law. The idea is that “the people” can watch the institutions that are watching them, such as corporations, governments, and theocracies. In the democratized surveillance of “the transparent society,” the panoptic powers extend in all directions, eliminating personal and institutional privacy in the proliferation of public information. Though it remains to be seen which of these outcomes will prevail, this view of social transparency seems naive, given the massive expansion of secrecy programs by the U.S. government during the Terror War (Greenwald, September 8, 2010).

2. Black holes offer a new metaphor for resistance to total surveillance.

3. The Enlightenment project may have entered a strange reversal.

Mirroring the rise of black holes in popular culture, there has been a striking pattern across five decades of film, wherein filmmakers project a potentially dystopian future in which exits from artificial light have been an existential theme. Perhaps these films suggest that the Enlightenment project has reached its climax and entered a reversal, where resistance may no longer be about representation and democracy, but rather non-representation and disappearance. Light has joined dark as a force for domination in the postmodern world, requiring an exit from light as a mode of resistance. In other words, survival for the hero or antihero requires escape from the world of total information and total spectacle. The many cinematic exits include: exits from natural light, exits from artificial light (in spacecrafts, futurist metropolises, theme parks), exits from computer surveillance, exits from networks, exits from media spectacles, and exits from mass society entranced with mass media.

McLuhan (1964) believed that 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 (pp. 33–40). Radio and the cell phone extended our voice and ears around the world, while retrieving town criers and oral traditions lost to print media. Television extends our eyes and ears around the planet, while retrieving cave paintings and campfire tales. Satellites extend our eyes and ears into space, while retrieving ecology and environmentalism.

When acoustic radio was pushed to the limit, it became audio-visual television and reverted back to the visual image lost to print culture. Telescopes and space probes have extended our eyes and ears— and electronic light—around the planet and into deep space, across 13.8 billion light years, triggering a reversal that seeks to return humans to the center of the universe.

4. This chapter extends black hole media theory to include resistance and reversal.

There might be no better example of Baudrillard’s media black hole than the Earthrise image and the Apollo 8 television broadcast from the moon to a billion people back on Earth in December 1968. Precisely as Earthrise and Apollo 8 confirmed the profound insights of Copernicus, Galileo, and Newton—Earth and its passengers are not at the center of the universe—the astronauts read from Genesis in an attempt to give the accomplishment philosophical meaning for those masses confronting the existential discoveries of the space age, revealed right before their eyes. In the text for Peter Granter’s art photography book about President Bush’s neoconservative Texas, Signs, the author writes:

At the moment of humankind’s greatest scientific and technological accomplishment, secular and modern philosophy were utterly absent as the astronauts recited creation myths to the humans on Earth, precisely as one billion humans were united in their gaze into the cosmic voids of the expanding universe. If the Apollo 11 moonwalk was a “giant leap for mankind,” then the Apollo 8 space-talk was a great leap backward for the human mind, with the superstitions born of the premodern mind suggesting not scientific revolution but spiritual devolution. As creation myths echoed down from

the moon to Mission Control at the speed of light, the space age crashed in Texas. (Vacker, 2008, p. 7)

Traveling at the speed of light, the electronic information that should have revolutionized human thought about global civilization was not accelerating into the future but was being warped deep into the past, with its existential meanings disappearing into a mediated black hole. Though Earthrise surely helped retrieve ecology and inspire the Gaia hypothesis, for billions of people the content and meaning of the information have been absorbed and neutralized, while the form is radiated as an image to circulate in the media networks.

The real meanings of Earthrise and *Apollo 8* have largely disappeared into a black hole, where the space age is sucked into the Stone Age, and Earthrise is little more than a hologram floating in the electronic galaxies of cyberspace. The same is true for the Pale Blue Dot and the Hubble Deep Field images as the telescope, computer, and space probe soak up natural light and extend electronic light to the very edge of the observable universe. The existential conditions revealed by our most advanced media technologies show we are a species living in the biosphere of a borderless planet orbiting one of 100 billion stars in our galaxy, itself one of hundreds of billions of galaxies, all in a vast cosmos of which *we are not the center*.

Since *Apollo 8* and Earthrise enabled 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 revealed by the technologies have been largely ignored precisely as the technologies pushed to the *very limit* all previous cosmologies, ideologies, and theologies. Humans had to rethink or reverse.

Since *Apollo 8* and Earthrise, technology and theology have been on a nonstop mission of reversal, seeking to return the masses to the center of the universe, be it mediated or material. In December 1968, hypertext made its public debut on computer screens, the very same time that sacred texts starred on television screens. Hypertext places users at the center of cyberspace, just as sacred texts place followers at the center of outer space. After all, Facebook and fundamentalism offer the same

thing: they allow people to pretend they are the center of the universe. Hypertext or sacred text, technology and theology, both now provide a sense of personal identity amidst global surveillance by data-mining corporations or deities promising destinies. Facebook users place themselves under surveillance in exchange for the power to represent themselves to themselves and their “friends,” to be a micro-celebrity, a star at the center of their personal media universe. Fundamentalists place themselves under “spiritual” surveillance in exchange for the power to save themselves and fellow followers, to be born again with a destiny at the center of their personal Creator’s universe.

The drive to be at the center of the universe explains why the *majority* of the American populace has not accepted evolution, has little scientific knowledge (Mooney & Kirshenbaum, 2009), has abandoned reason in cultural discourses (Jacoby, 2008), and has elected born-again presidents who defend and expand the militaristic-theological-corporate empires, all of which are used to justify total global surveillance in the Terror War. For example, how else to explain the populist “ignorance chic” celebrated by Sarah Palin and the Tea Party (Dowd, 2010)? And this dumbed-down media spectacle is happening despite nothing less than an explosion of scientific, biological, cognitive, and humanist knowledge since *Apollo 8*. In contrast to the supernova of expanding scientific knowledge, how can this growing cultural ignorance not be a supermassive cultural black hole in America, where the light of science and humanism is disappearing into the cognitive voids of ignorance and superstition among millions of people?

Of course, the problem is not merely America and its fundamentalists, for this is a global phenomenon. War, terror, genocide, and superstition have spread around the planet, with fundamentalists and theologies of all kinds claiming their sacred texts place their empires and destinies at the center of their Creator’s universe. Such beliefs, and the Terror War, necessarily reflect the ignorance and denial toward the most powerful and profound empirical observations provided by our electronic media technologies—we are a species living in the biosphere of a borderless planet in a vast cosmos of which we are not the center.

How are social justice and civil liberty furthered by the black holes of ignorance and superstition now being globalized by the masses and

mass media? How can this expanding black hole not signal a massive reversal in the technologies of electric light, an implosion of the information age and contraction of the space age, a retreat from the Enlightenment and the expanding knowledge necessary for building a global, secular, humanist civilization? Where is mass enlightenment in the information society?

So, what is an *individual* to do? How can an individual resist these forces in a civilized and non-violent manner? Participate in the simulacrum of "democracy" that is the two-party system? Lead a protest for a soundbite on CNN? Write a book? Submit op-eds to *The New York Times*? Form a group in Facebook? Create a blog? Post a video on YouTube? Isn't this exactly what the spectacle wants individuals to do?

If the Enlightenment project sought to liberate individuals, with representation via the mass media and democratic politics, then it seems representation and entertainment are overtaking liberation and enlightenment, like a map overtaking the territory it is supposed to represent. To be surveilled and represented as information is to exist and be "real" as patriot and citizen, while the *real* individual exists beyond the screens. The deeper message of total surveillance is not physical presence, but the representation of presence, to be observed and recorded in the databases. To have *real* presence would require that one *not be there*. In the future, perhaps the only way individuals can be real and free is to disappear, where existence as a private individual requires disappearance as a political subject. Maybe Mayer-Schonberger's *Delete* will be extended into a form of resistance, as a way of "erasing" one's self from the electronic galaxies (2009). Isn't that the very condition suggested by the cinematic exits from light?

5. Black holes have been created with information technologies and might be modes for future disappearance and resistance.

The films are artworks trying to imagine new modes of resistance. In countering the spectacle of total representation, the filmmakers suggest that persons should have the power or right to be not represented, the power to exit the scenes or disappear from the screens. There are two possible ways to effect a *nonviolent* nonrepresentation:

1. Reject all media and information technologies in a nonviolent Luddite resistance, choosing to quietly disconnect and disappear. Perhaps this is the "unnova" scenario.
2. Use cutting-edge media and information technologies to effect a disappearance, however imperfect or impermanent it might be. Perhaps this is the "micro-black hole" or "desktop black hole" scenario.

The first scenario will momentarily seem attractive to casual Luddites who get frustrated with the spectacle's inanities, the proliferating images, the information overload, or who just want to read a book in peace and quiet. The unnova scenario will be very attractive to serious Luddites, but either scenario will be less plausible over time in a future requiring total representation and no privacy.

The second scenario seems currently implausible, yet might be possible in the not-too-distant future. Some trends are moving in that direction. As listed in Table 13.1, the following information-related black holes have been created: artificial event horizons, fiber-optic black holes, and desktop black holes. Plus, scientists have slowed light to zero on a microchip and invented the blackest material ever. And then there are the wide-ranging possibilities for quantum encryption and the discovery of inexplicable black holes on the Internet. Though no one knows how these technologies will play out, Moore's Law will insure these kinds of technologies will be made more powerful, less expensive, and more accessible. This is another example of a McLuhan reversal, with extreme electric light pushing to the limits for individuals, only to effect a flip, a reversal into going dark, into the media technology of black holes. This is also a reversal or flip of Plato's Cave.

To effect a black hole, individuals could deploy future media technology to make information disappear or become inaccessible, to create a form of personal cosmic censorship within the electronic galaxies. Maybe the quantum encryption code would determine the artificial event horizon, that point at which no light or information can escape, and the point beyond which the information cannot be seen or accessed, remaining unreachable for outside observers. Since black holes apparently have an inner surface of curved light, as if light were circling the interior of a ball, we can imagine personal black holes as tiny spheres of privacy in the electronic galaxies. At the singularity in

the black hole, normal relativity is replaced by quantum existence, a chaotic state where the person's information, position, momentum, energy, and time are unknown. The personal black hole is the point of social singularity, the region in electronic space-time where the laws of state, church, and corporation break down.

Since black holes are not entirely black, we can imagine that any exit will produce virtual particles leaving traces on the electronic screens. Or maybe the personal data will be smeared across the event horizon, rendering any exit as a temporary void and distortion in a holographic universe. No exit will ever be complete, no unconnection will be possible.

We are living in an age of exponential power in media technologies that empower (and not merely entertain) us in pursuing our individual and collective destinies and should provide the power to resist domination and exploitation. Though no one knows exactly how these ideas and technologies will play out, black-hole resistance is becoming a reality. Such tactics are meeting fierce opposition in the Terror War, with the U.S. government concealing apparent war crimes in their black holes, while wiretapping the Internet and going supernova on the entire planet.

If there is an early example of these conclusions, then perhaps it is the recent case of Julian Assange and WikiLeaks, the whistleblower Web site that seeks to effect "total transparency" on a global scale (Khatchadourian, 2010). In its most dramatic leak, WikiLeaks released hundreds of thousands of documents that apparently reveal the deceit, misinformation, war crimes, and human-rights abuses hidden by the Pentagon and White House. While the U.S. would prefer the information remain hidden, WikiLeaks is bringing the information to light—the U.S. black hole is countered by the WikiLeaks supernova. Yet, to function successfully in accessing and releasing information provided by whistleblowers, Assange and WikiLeaks must deploy "state-of-the-art encryption" to keep the information hidden prior to release (Anderson & Assange, 2010). Assange describes the WikiLeaks site as "an untraceable system for untraceable mass document leaking and public analysis" (Khatchadourian, 2010). In effect, the documents are hidden in temporary black holes.

Naturally, the Pentagon denounced these leaks as "threats" to soldiers and American interests, while the mainstream media such as CNN and *The New York Times* smeared Assange's reputation across the event horizons of the electronic screens (Greenwald, October 24, 2010). For fear of being arrested or assassinated, Assange is constantly "going dark" by having no fixed address, constantly switching cell phones, avoiding credit card transactions, and so on. Welcome to the future, where resistance to domination requires that individuals and organizations become or create black holes in the electronic galaxies—even if no unconnection is permanent and no exit is perfect.

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